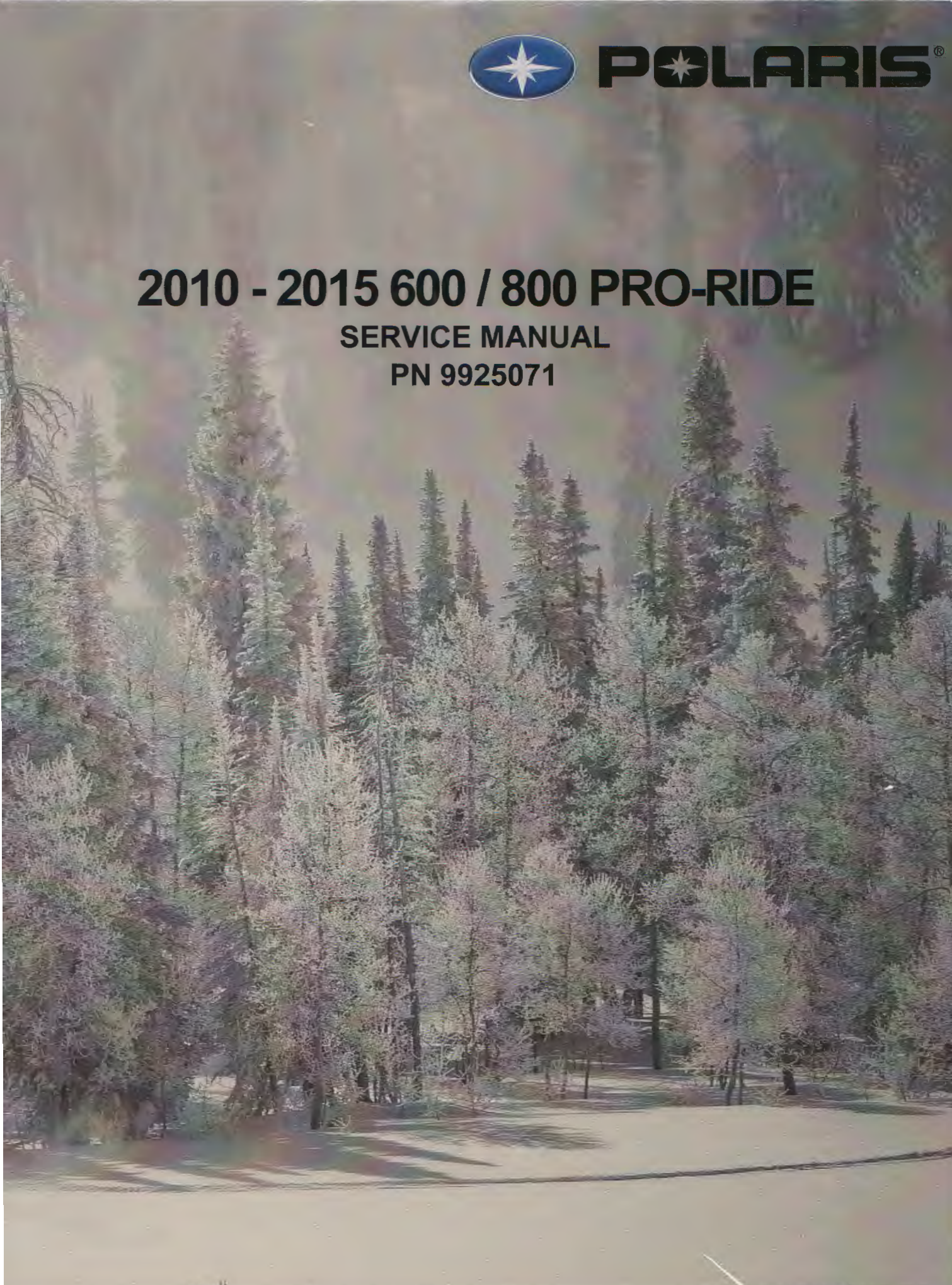


2010 - 2015 600 / 800 PRO-RIDE

SERVICE MANUAL

PN 9925071

2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

FOREWORD

The information printed within this publication includes the latest product information at time of print. The most recent version of this Service Manual is available in electronic format at www.polarisdealers.com.

This Service Manual is designed primarily for use by certified Polaris Master Service Dealer® technicians in a properly equipped shop and should be kept available for reference. All references to left and right side of the vehicle are from the operator's perspective when seated in a normal riding position.

Some procedures outlined in this manual require a sound knowledge of mechanical theory, tool use, and shop procedures in order to perform the work safely and correctly. Technicians should read the text and be familiar with the service procedures before starting any repair. Certain procedures require the use of special tools. Use only the proper tools as specified. If you have any doubt as to your ability to perform any of the procedures outlined in this Service Manual, contact an authorized dealer for service.

We value your input and appreciate any assistance you can provide in helping make these publications more useful. Please provide any feedback you may have regarding this manual. Authorized dealers can submit feedback using 'Ask Polaris'. Click on 'Ask Polaris', and then click on 'Service Manual / Service Literature Question'.

Consumers, please provide your feedback in writing to: Polaris Industries Inc. ATTN: Service Publications Department, 2100 Hwy 55, Medina, MN 55340.

Publication Printed August 2014 (PN 9925071 R01)

UNDERSTANDING SAFETY LABELS AND DIRECTIONS

Throughout this manual, important information is brought to your attention by the following symbols:

⚠ WARNING

SAFETY ALERT WARNING indicates a potential hazard that may result in severe injury or death to the operator, bystander or person(s) inspecting or servicing the vehicle.

⚠ CAUTION

SAFETY ALERT CAUTION indicates a potential hazard that may result in minor personal injury or damage to the vehicle.

CAUTION

CAUTION indicates special precautions that must be taken to avoid vehicle damage or property damage.

NOTE:

NOTE provides key information by clarifying instructions.

IMPORTANT:

IMPORTANT provides key reminders during disassembly, assembly and inspection of components.

TRADEMARKS

POLARIS ACKNOWLEDGES THE FOLLOWING PRODUCTS MENTIONED IN THIS MANUAL:

Loctite, Registered Trademark of the Loctite Corporation

Nyogel, Trademark of Wm. F. Nye Co.

Fluke, Registered Trademark of John Fluke Mfg. Co.

Mity-Vac, Registered Trademark of Neward Enterprises, Inc.

Torx, Registered Trademark of Textron

FOX, Registered Trademark of FOX RACING SHOX

RydeFX, Registered Trademark of ArvinMeritor

Walker Evans, Registered Trademark of Walker Evans Racing

Some Polaris factory publications can be downloaded from www.polarisindustries.com, purchased from www.purepolaris.com or by contacting the nearest Polaris dealer.

2013 600 Switchback

600 Switchback
S13BR6GSA / S13BR6GSL

600 Switchback Adventure
S13BA6GSL

600 Switchback PRO-R
S13BS6GSA / S13BS6GSL / S13BS6GSM
INTERNAIONAL: S13BS6GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4506-6044-OA6G
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204567
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	136 (345.4)
Pitch Plies	2.52 2

TRACK	
ITEM	**VALUE**
Lug Height-Inches (cm) Base Adventure/PRO-R PRO-R (International)	 1.25 (3.175) (Ripsaw) 1.352 (3.43) (Cobra) 1.75 (4.4) (Back Country)
Track Tension	1/4"-3/8"(6.3-9.6mm)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	469 / 212
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.8 / 3.6
Cooling System Capacity(Qts/ L)	5 / 4.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 40 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks BASE/Adventure PRO-R	 Fox HPG w/IFP Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6

2013 800 RUSH PRO-R LE

S13BV8GSN / S13BV8GSP
INTERNATIONAL: S13BV8GEN / S13BV8GEP

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4509-8044-OA8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0041-.0053 / 0.105-0.131
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204570
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	465 / 211
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.8 / 3.6
Cooling System Capacity(Qts/ L)	5.0 / 4.7
Brake Fluid	DOT 4

GENERAL	
ITEM	**VALUE**
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 36 70 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	121 (307)
Pitch Plies	2.52 2
Lug Height-Inches (cm) PRO-R LE PRO-R LE (International)	 1.352 (3.43) (Cobra) 1.5 (3.81) (Ripsaw)
Track Tension	1/4"-3/8"(6.3-9.6mm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks	Walker Evans Piggyback 16 Click Compression Adjustable / 16 Click Rebound Adjuster Factory Compression Setting** = 6 Factory Rebound Setting = 8
IFS Spring Rate lbs/in (N/mm)	80 (14)
Preload-Inches (cm)	3.0 (7.6)
Travel-Inches (cm)	9 (22.9)

MODEL SPECIFICATIONS

2010 600 RUSH

S10BF6KSA / S10BF6KSL / S10BF6KEA

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4202-6044-OP6N
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.014-.020 / 0.356-0.508
Operating RPM ±200	8250
Idle RPM	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-4
Throttle Body Marking	1203978
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	120 (304.8)
Pitch Plies	2.86 2
Lug Height-Inches (cm)	1.25 (3.175) (Ripsaw)
Track Tension Sag-Inches (cm)	7/8"-1-1/8"(2.2-2.9cm)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	459 / 208
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	5.25 / 5.0
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 23 39 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE
Shocks	Walker Evans Needle w/ Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	80 (14)
IFS Spring Installed Length- Inches (cm)	Preload = 3.75 (9.5) 10.25 (26)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.52 (105)

2013 800 RUSH

800 RUSH
S13BF8GSA / S13BF8GSL

800 RUSH PRO-R
S13BP8GSA / S13BP8GSL / S13BP8GSM
INTERNATIONAL: S13BP8GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4509-8044-OA8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0041-.0053 / 0.105-0.131
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204570
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated)
Premium Mode	91+ (Non-Oxygenated)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	48 / 122
Length (in/cm)	108 / 274
Height (in/cm)	48 / 122
Estimated Dry Weight (lb/kg)	464 / 211
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.8 / 3.6

GENERAL	
ITEM	**VALUE**
Cooling System Capacity(Qts/ L)	5.0 / 4.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 36 70 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	121 (307)
Pitch Plies	2.52 2
Lug Height-Inches (cm) Base PRO-R PRO-R (International)	 1.0 (2.54) (Hacksaw) 1.25 (3.175) (Ripsaw) 1.352 (3.43) (Cobra)
Track Tension	1/4"-3/8"(6.3-9.6mm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks Base PRO-R	 Fox HPG w/IFP Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	80 (14)
Preload-Inches (cm) Base	 3.75 (9.52)

2011 600 RUSH

600 RUSH
S11BF6NSA / S11BF6NSL / S11BF6NSB / S11BF6NSM

600 RUSH LX
S11BD6NSL / S11BD6NSM

600 RUSH PRO-R
S11BP6NSA / S11BP6NSL / S11PB6NEL / S11BP6NSB
S11BP6NSM / S11BE6NSM

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4215-6044-OO6N
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM ±200	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-4
Throttle Body Marking	1203978
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	121 (307)
Pitch Plies	2.52 2

TRACK	
ITEM	**VALUE**
Lug Height-Inches (cm) RUSH RUSH PRO-R	 1.0 (2.54) (Hacksaw) 1.25 (3.175) (Ripsaw)
Track Tension Sag-Inches (cm)	1/2"-1.0"(1.3-2.54cm)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/ kg)	469 / 212
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity (Qts/ L)	6 / 5.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 23 39 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE
Shocks RUSH RUSH PRO-R	 Fox HPG w/IFP Walker Evans Needle Piggyback 16 Click Compression Adjustable

2013 600 RUSH

600 RUSH
S13BF6GSA / S13BF6GSL

600 RUSH PRO-R
S13BP6GSA / S13BP6GSL / S13BP6GSM
INTERNATIONAL: S13BP6GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4506-6044-0A6G
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.51 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.005 / 0.085-0.124
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204567
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	121 (307)
Pitch Plies	2.52 2

TRACK	
ITEM	**VALUE**
Lug Height-Inches (cm) Base PRO-R PRO-R (International)	 1.0 (2.54) (Hacksaw) 1.25 (3.175) (Ripsaw) 1.5 (3.81) (Ripsaw)
Track Tension	1/4"-3/8"(6.3-9.6mm)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	48 / 122
Length (in/cm)	108 / 274
Height (in/cm)	48 / 122
Estimated Dry Weight (lb/kg)	464 / 211
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.8 / 3.6
Cooling System Capacity(Qts/ L)	5.0 / 4.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 40 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks Base PRO-R	Fox HPG w/IFP Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6

2011 800 RUSH

800 RUSH
S11BF8GSA / S11BF8GSL / S11BF8GSB / S11BF8GSM

800 RUSH LX
S11BD8GSM

800 RUSH PRO-R
S11BP8GSA / S11BP8GSL / S11PB8GEL / S11BP8GSB
S11BP8GSM / S11BP8GEM / S11BE8GSM

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4139-8044-OO8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	465 / 211

GENERAL INFORMATION	
ITEM	**VALUE**
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6 / 5.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 36 70 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	121 (307)
Pitch Plies	2.52 2
Lug Height-Inches (cm) RUSH RUSH PRO-R	 1.0 (2.54) (Hacksaw) 1.25 (3.175) (Ripsaw)
Track Tension Sag-Inches (cm)	1/2"-1.0"(1.3-2.54cm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE
Shocks RUSH RUSH PRO-R	 Fox HPG w/IFP Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	100 (17.5)

2013 600 INDY/INDY SP

600 INDY
S13CB6GSA / S13CB6GSL
INTERNATIONAL: S13CB6GEA

600 INDY SP
S13CP6GSA / S13CP6GSL
INTERNATIONAL: S13CP6GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4504-6044-0A6G
Displacement / # Cylinders	599CC / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.51 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.005 / 0.085-0.124
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204567
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated)
Premium Mode	91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	121 (365.76)
Pitch Plies	2.52 2

TRACK	
ITEM	**VALUE**
Lug Height-Inches (cm) INDY INDY (International) INDY SP INDY SP (International)	 .91 (2.3) (Shockwave) 1.352 (3.4) (Cobra) 1.0 (2.54) (Hacksaw) 1.5 (Ripsaw)
Track Tension	7/8"-1 1/8" (2.2-2.9cm)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 122
Length (in/cm)	115 / 292
Height (in/cm)	48 / 122
Estimated Dry Weight (lb/kg)	447 / 203
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.8 / 3.6
Cooling System Capacity(Qts/ L)	5.0/4.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 40 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks INDY INDY SP	 RydeFX MPV Fox HPG w/IFP
IFS Spring Rate lbs/in (N/mm)	80 (14)

2011 800 Switchback Assault

800 Switchback Assault 1.3
S11CW8GSA / S11CW8GSB
INTERNATIONAL: S11CW8GEA / S11CW8GEB

800 Switchback Assault 2.0
S11CW8GST

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4229-8044-OO8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	144 (365.76)
Pitch Plies	2.52 2

TRACK	
ITEM	**VALUE**
Lug Height-Inches (cm) 1.3 2.0	 1.352 (3.43) (Cobra) 2.0 (5.08) (Series 4)
Track Tension Sag-Inches (cm)	3/8"-1/2"(1-1.3cm)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	126 / 320
Height (in/cm)	48 / 121.9
Estimated Dry Weight (lb/kg)	457 / 212.7
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6.0/5.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 23 39 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE
Shocks	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	100 (17.5)

2012 800 PRO RMK 155/163

800 PRO RMK 155
S12CG8GSA / S12CG8GEA / S12CG8GSB
S12CG8GSC / S12CG8GSL / S12CG8GSM
S12CG8GSP

800 PRO RMK 163
S12CH8GSA / S12CH8GEA / S12CH8GSB
S12CH8GSC / S12CH8GSL / S12CH8GSM
S12CH8GSP

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4359-8044-OL8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1
Length (in/cm)	155 = 129/327.7 163 = 134/340.4
Height (in/cm)	51 / 129.5

GENERAL INFORMATION	
ITEM	**VALUE**
Estimated Dry Weight (lb/kg)	155 = 431/195.5 163 = 437/198.7
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	155=5.3/5.0 163=5.5/5.2
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7) 163 (414)
Pitch Plies	2.86 1
Lug Height-Inches (cm)	2.4 (6.1) Series 5.1
Track Tension Sag-Inches (cm)	3/8"-1/2"(1.0-1.3cm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK GR9A-EG

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	Walker Evans HPG w/IFP
IFS Spring Rate lbs/in (N/mm)	100 (17.4)
IFS Spring Installed Length-Inches (cm)	10.25 (26)
Front Vertical Travel Inches (cm)	9 (22.9)

2011 800 RMK 155

Model Numbers:

S11CM8GSA / S11CM8GSL / S11CM8GEA
S11CM8GSB / S11CM8GSM

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4229-8044-OO8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0040-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	440 / 199.6
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	5.3/5.0

GENERAL INFORMATION	
ITEM	**VALUE**
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7)
Pitch Plies	2.86 1
Lug Height-Inches (cm)	2.4 (6.1) Series 5.1
Track Tension Sag-Inches (cm)	3/8"-1/2"(1.0-1.3cm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	RydeFX Twin Tube
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length-Inches (cm)	10.5 (26.7)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out Inches (mm)	0 -1/8" (0-3)

2012 800 RMK Assault

S12CN8GSA / S12CN8GEA / S12CN8GSB
S12CN8GSL / S12CY8GSA

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4359-8044-OL8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0040-.0055 / 0.105-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**FUEL DELIVERY**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	446 / 202.3
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	5.3/5.0
Brake Fluid	DOT 4

GENERAL INFORMATION	
ITEM	**VALUE**
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7)
Pitch Plies	2.86 2
Lug Height-Inches (cm) Base Powder	 2.125 (5.4) (Competition) 2.4 (6.1) Series 5.1
Track Tension Sag-Inches (cm)	3/8"-1/2"(1.0-1.3cm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK GR9A-EG

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Wide Adjustable
Shocks	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	130 (22.75)
IFS Spring Installed Length-Inches (cm)	10.75 (27.3)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm)	41.5-42.5-43.5

2011 800 RMK Assault

S11CN8GSA / S11CN8GSB / S11SN8GEA

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4092-8044-OO8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0040-.0055 / 0.105-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated)
Premium/Non-Ethanol 160Ω Resistor	91+ (Non-Oxygenated)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	446 / 202.3
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	5.3/5.0
Brake Fluid	DOT 4

GENERAL INFORMATION	
ITEM	**VALUE**
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7)
Pitch Plies	2.86 2
Lug Height-Inches (cm)	2.125 (5.4) (Competition)
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/ 40cm ahead of rear idler shaft	3/8"-1/2"(1.0-1.3cm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Wide Adjustable
Shocks	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	130 (22.75)
IFS Spring Installed Length-Inches (cm)	10.75 (27.3)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm)	41.5-42.5-43.5 (105.4-108-110.5)

2012 800 RMK 155

S12CM8GSA / S12CN8GSL / S12CM8GEA

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4361-8044-OL8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0040-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	440 / 199.6
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6.3/6.0
Brake Fluid	DOT 4

GENERAL INFORMATION	
ITEM	**VALUE**
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7)
Pitch Plies	2.86 1
Lug Height-Inches (cm)	2.4 (6.1) Series 5.1
Track Tension Sag-Inches (cm)	3/8"-1/2"(1.0-1.3cm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK GR9A-EG

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	RydeFX Twin Tube
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length-Inches (cm)	10.5 (26.7)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

2011 800 PRO RMK 155/163

800 PRO RMK 155
S11CG8GSA / S11CG8GSL / S11CG8GSB
S11CG8GSM / S11CG8GEA

800 PRO RMK 163
S11CH8GSA / S11CH8GSB / S11CH8GEA

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4092-8044-OO8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1
Length (in/cm)	155 = 129/327.7 163 = 134/340.4
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	155 = 431/195.5 163 = 437/198.7

GENERAL INFORMATION	
ITEM	**VALUE**
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	155=5.3/5.0 163=5.5/5.2
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7) 163 (414)
Pitch Plies	2.86 1
Lug Height-Inches (cm)	2.4 (6.1) Series 5.1
Track Tension Sag-Inches (cm)	3/8"-1/2"(1.0-1.3cm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	Walker Evans HPG w/IFP
IFS Spring Rate lbs/in (N/mm)	100 (17.4)
IFS Spring Installed Length-Inches (cm)	10.25 (26)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance	

2012 600 PRO RMK 155

S12CG6GSA / S12CG6GSL / S12CG6GEA

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4452-6044-OL6G
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1203978
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7)
Pitch Plies	2.86 1
Lug Height-Inches (cm)	2.4 (6.1) Series 5.1
Track Tension Sag-Inches (cm)	3/8"-1/2"(1.0-1.3cm)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1
Length (in/cm)	129/327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	431/195.5
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	5.3/5.0
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK GR9A-EG

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	Walker Evans HPG w/IFP
IFS Spring Rate lbs/in (N/mm)	100 (17.4)
IFS Spring Installed Length-Inches (cm)	10.25 (26)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

2012 600 RUSH

600 RUSH
S12BF6NSA / S12BF6NSL

600 RUSH PRO-R
S12BP6NSA / S12BP6NSB / S12BP6NSC / S12BP6NSL
S12BP6NEL / S12BP6NSM / S12BP6NSP

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4357-6044-OL6N
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM ±200	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**FUEL DELIVERY**
Type-Number of Fuel Injectors	DC-CFI-4
Throttle Body Marking	1203978
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	121 (307)
Pitch Plies	2.52 2

TRACK	
ITEM	**VALUE**
Lug Height-Inches (cm) Base PRO-R International Models	 1.0 (2.54) (Hacksaw) 1.25 (3.175) (Ripsaw) 1.352 (3.43) (Cobra)
Track tension sag in/mm with 10 lbs/4.54kg placed 16 in/ 40cm ahead of rear idler shaft	1/4"-3/8"(6.3-9.6mm)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	48 / 121.9
Estimated Dry Weight (lb/kg)	469 / 212
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6 / 5.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 23 39 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks Base PRO-R	 Fox HPG w/IFP Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6

2012 600 RMK 155

S12CM6GSA / S12CM6GSL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4316-6044-OL6G
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1203978
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7)
Pitch Plies	2.86 1
Lug Height-Inches (cm)	2.4 (6.1) Series 5.1
Track Tension Sag-Inches (cm)	3/8"-1/2"(1.0-1.3cm)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	440 / 199.6
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6.3/6.0
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK GR9A-EG

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	RydeFX Twin Tube
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length-Inches (cm)	10.5 (26.7)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

2012 800 RUSH

800 RUSH
S12BF8GSA / S12BF8GSL

800 RUSH PRO-R
S12BP8GSA / S12BP8GSB / S12BP8GSC / S12BP8GSL
S12BP8GEL / S12BP8GSM / S12BP8GSP

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4360-8044-OL8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	465 / 211
Fuel (Gallons / Liters)	11 / 41.6

GENERAL INFORMATION	
ITEM	**VALUE**
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6 / 5.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 36 70 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	121 (307)
Pitch Plies	2.52 2
Lug Height-Inches (cm) Base PRO-R International Models	 1.0 (2.54) (Hacksaw) 1.25 (3.175) (Ripsaw) 1.352 (3.43) (Cobra)
Track Tension Sag-Inches (cm)	1/4"-3/8"(6.3-9.6mm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK GR9A-EG

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks Base PRO-R	Fox HPG w/IFP Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	80 (14)

2012 600 RMK 144

S12CK6GSA / S12CK6GSL / S12CK6GEA

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4316-6044-OL6G
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1203978
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
Width-Inches (cm)	15 (38)
Length-Inches (cm)	144 (393.7)
Pitch Plies	2.52 2
Lug Height-Inches (cm)	2.0 (6.1) Series 4
Track Tension Sag-Inches (cm)	3/8"-1/2"(1.0-1.3cm)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1

GENERAL INFORMATION	
ITEM	**VALUE**
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	440 / 199.6
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6.0/5.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK GR9A-EG

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	RydeFX Twin Tube
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length-Inches (cm)	10.5 (26.7)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

2012 800 RUSH PRO-R LE

S12BV8GSM / S12BV8GEM

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4360-8044-OL8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated)
Premium/Non-Ethanol 160Ω Resistor	91+ (Non-Oxygenated)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	465 / 211
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6 / 5.7
Brake Fluid	DOT 4

GENERAL INFORMATION	
ITEM	**VALUE**
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 36 70 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	121 (307)
Pitch Plies	2.52 2
Lug Height-Inches (cm)	1.352 (3.43) (Cobra)
Track Tension Sag-Inches (cm)	1/4"-3/8"(6.3-9.6mm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK GR9A-EG

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks	Walker Evans Piggyback 16 Click Compression Adjustable / 16 Click Rebound Adjuster Factory Compression Setting** = 6 Factory Rebound Setting = 8
IFS Spring Rate lbs/in (N/mm)	80 (14)
Preload-Inches (cm)	3.25 (8.25)
Travel-Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.52 (105)

2012 Switchback Assault

Switchback Assault 1.3
S12CW8GSA / S12CW8GSL

Switchback Assault 2.0
S12CL8GSB / S12CL8GSM / S12CL8GEL

ENGINE INFORMATION	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4361-8044-OL8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	144 (365.76)
Pitch Plies	2.52 2

TRACK	
ITEM	**VALUE**
Lug Height-Inches (cm) 1.3 2.0	 1.352 (3.43) (Cobra) 2.0 (5.08) (Series 4)
Track Tension Sag-Inches (cm)	3/8"-1/2"(1-1.3cm)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	126 / 320
Height (in/cm)	48 / 121.9
Estimated Dry Weight (lb/kg)	457 / 212.7
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6.0/5.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 23 39 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK GR9A-EG

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	100 (17.5)

2012 600 Switchback

600 Switchback
S12BR6NSA / S12BR6NSL

600 Switchback Adventure
S12BA6NSL

600 Switchback PRO-R
S12BS6NSA / S12BS6NSB / S12BS6NSC / S12BS6NSL
S12BS6NEL / S12BS6NSM / S12BS6NSP

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4357-6044-OL6N
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM ±200	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-4
Throttle Body Marking	1203978
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	136 (345.4)
Pitch Plies	2.52 2

TRACK	
ITEM	**VALUE**
Lug Height-Inches (cm) Base Adventure/PRO-R International Models	 1.25 (3.175) (Ripsaw) 1.352 (3.43) (Cobra) 1.5 (3.81) (Ripsaw)
Track Tension Sag-Inches (cm)	1/4"-3/8"(6.3-9.6mm)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	469 / 212
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	5 / 4.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 23 39 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks BASE/Adventure PRO-R	 Fox HPG w/IFP Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6

2012 800 Switchback

800 Switchback
S12BR8GSA / S12BR8GSL

800 Switchback PRO-R
S12BS8GSA / S12BS8GSB / S12BS8GSC / S12BS8GSL
S12BS8GEL / S12BS8GSM / S12BS8GSP

800 Switchback PRO-R Adventure INTL
S12BC8GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4360-8044-OL8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274

GENERAL INFORMATION	
ITEM	**VALUE**
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	465 / 211
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity (Qts/ L)	5 / 4.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 36 70 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	136 (345.4)
Pitch Plies	2.52 2
Lug Height-Inches (cm) Base/Adventure PRO-R International Models	 1.25 (3.175) (Ripsaw) 1.352 (3.43) (Cobra) 1.5 (3.81) (Ripsaw)
Track tension sag in/mm with 10 lbs/4.54kg placed 16 in/ 40cm ahead of rear idler shaft	1/4"-3/8"(6.3-9.6mm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK GR9A-EG

2012 800 Switchback

800 Switchback
S12BR8GSA / S12BR8GSL

800 Switchback PRO-R
S12BS8GSA / S12BS8GSB / S12BS8GSC / S12BS8GSL
S12BS8GEL / S12BS8GSM / S12BS8GSP

800 Switchback PRO-R Adventure INTL
S12BC8GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4360-8044-OL8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274

GENERAL INFORMATION	
ITEM	**VALUE**
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	465 / 211
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity (Qts/ L)	5 / 4.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 36 70 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	136 (345.4)
Pitch Plies	2.52 2
Lug Height-Inches (cm) Base/Adventure PRO-R International Models	 1.25 (3.175) (Ripsaw) 1.352 (3.43) (Cobra) 1.5 (3.81) (Ripsaw)
Track tension sag in/mm with 10 lbs/4.54kg placed 16 in/ 40cm ahead of rear idler shaft	1/4"-3/8"(6.3-9.6mm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK GR9A-EG

2012 600 Switchback

600 Switchback
S12BR6NSA / S12BR6NSL

600 Switchback Adventure
S12BA6NSL

600 Switchback PRO-R
S12BS6NSA / S12BS6NSB / S12BS6NSC / S12BS6NSL
S12BS6NEL / S12BS6NSM / S12BS6NSP

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4357-6044-OL6N
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM ±200	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-4
Throttle Body Marking	1203978
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	136 (345.4)
Pitch Plies	2.52 2

TRACK	
ITEM	**VALUE**
Lug Height-Inches (cm) Base Adventure/PRO-R International Models	 1.25 (3.175) (Ripsaw) 1.352 (3.43) (Cobra) 1.5 (3.81) (Ripsaw)
Track Tension Sag-Inches (cm)	1/4"-3/8"(6.3-9.6mm)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	469 / 212
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	5 / 4.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 23 39 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks BASE/Adventure PRO-R	 Fox HPG w/IFP Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6

2012 Switchback Assault

Switchback Assault 1.3
S12CW8GSA / S12CW8GSL

Switchback Assault 2.0
S12CL8GSB / S12CL8GSM / S12CL8GEL

ENGINE INFORMATION	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4361-8044-OL8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	144 (365.76)
Pitch Plies	2.52 2

TRACK	
ITEM	**VALUE**
Lug Height-Inches (cm) 1.3 2.0	 1.352 (3.43) (Cobra) 2.0 (5.08) (Series 4)
Track Tension Sag-Inches (cm)	3/8"-1/2"(1-1.3cm)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	126 / 320
Height (in/cm)	48 / 121.9
Estimated Dry Weight (lb/kg)	457 / 212.7
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6.0/5.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 23 39 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK GR9A-EG

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	100 (17.5)

2012 800 RUSH PRO-R LE

S12BV8GSM / S12BV8GEM

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4360-8044-OL8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	465 / 211
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6 / 5.7
Brake Fluid	DOT 4

GENERAL INFORMATION	
ITEM	**VALUE**
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 36 70 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	121 (307)
Pitch Plies	2.52 2
Lug Height-Inches (cm)	1.352 (3.43) (Cobra)
Track Tension Sag-Inches (cm)	1/4"-3/8"(6.3-9.6mm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK GR9A-EG

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks	Walker Evans Piggyback 16 Click Compression Adjustable / 16 Click Rebound Adjuster Factory Compression Setting** = 6 Factory Rebound Setting = 8
IFS Spring Rate lbs/in (N/mm)	80 (14)
Preload-Inches (cm)	3.25 (8.25)
Travel-Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.52 (105)

2012 600 RMK 144

S12CK6GSA / S12CK6GSL / S12CK6GEA

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4316-6044-OL6G
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1203978
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
Width-Inches (cm)	15 (38)
Length-Inches (cm)	144 (393.7)
Pitch Plies	2.52 2
Lug Height-Inches (cm)	2.0 (6.1) Series 4
Track Tension Sag-Inches (cm)	3/8"-1/2"(1.0-1.3cm)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1

GENERAL INFORMATION	
ITEM	**VALUE**
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	440 / 199.6
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6.0/5.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK GR9A-EG

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	RydeFX Twin Tube
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length-Inches (cm)	10.5 (26.7)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

2012 800 RUSH

800 RUSH
S12BF8GSA / S12BF8GSL

800 RUSH PRO-R
S12BP8GSA / S12BP8GSB / S12BP8GSC / S12BP8GSL
S12BP8GEL / S12BP8GSM / S12BP8GSP

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4360-8044-OL8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	465 / 211
Fuel (Gallons / Liters)	11 / 41.6

GENERAL INFORMATION	
ITEM	**VALUE**
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6 / 5.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 36 70 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	121 (307)
Pitch Plies	2.52 2
Lug Height-Inches (cm) Base PRO-R International Models	 1.0 (2.54) (Hacksaw) 1.25 (3.175) (Ripsaw) 1.352 (3.43) (Cobra)
Track Tension Sag-Inches (cm)	1/4"-3/8"(6.3-9.6mm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK GR9A-EG

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks Base PRO-R	 Fox HPG w/IFP Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	80 (14)

2012 600 RMK 155

S12CM6GSA / S12CM6GSL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4316-6044-OL6G
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1203978
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated)
Premium/Non-Ethanol 160Ω Resistor	91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7)
Pitch Plies	2.86 1
Lug Height-Inches (cm)	2.4 (6.1) Series 5.1
Track Tension Sag-Inches (cm)	3/8"-1/2"(1.0-1.3cm)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	440 / 199.6
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6.3/6.0
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK GR9A-EG

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	RydeFX Twin Tube
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length-Inches (cm)	10.5 (26.7)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

2012 600 RUSH

600 RUSH
S12BF6NSA / S12BF6NSL

600 RUSH PRO-R
S12BP6NSA / S12BP6NSB / S12BP6NSC / S12BP6NSL
S12BP6NEL / S12BP6NSM / S12BP6NSP

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4357-6044-OL6N
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM ±200	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**FUEL DELIVERY**
Type-Number of Fuel Injectors	DC-CFI-4
Throttle Body Marking	1203978
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	121 (307)
Pitch Plies	2.52 2

TRACK	
ITEM	**VALUE**
Lug Height-Inches (cm) Base PRO-R International Models	 1.0 (2.54) (Hacksaw) 1.25 (3.175) (Ripsaw) 1.352 (3.43) (Cobra)
Track tension sag in/mm with 10 lbs/4.54kg placed 16 in/ 40cm ahead of rear idler shaft	1/4"-3/8"(6.3-9.6mm)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	48 / 121.9
Estimated Dry Weight (lb/kg)	469 / 212
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6 / 5.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 23 39 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks Base PRO-R	 Fox HPG w/IFP Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6

2012 600 PRO RMK 155

S12CG6GSA / S12CG6GSL / S12CG6GEA

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4452-6044-OL6G
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1203978
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7)
Pitch Plies	2.86 1
Lug Height-Inches (cm)	2.4 (6.1) Series 5.1
Track Tension Sag-Inches (cm)	3/8"-1/2"(1.0-1.3cm)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1
Length (in/cm)	129/327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	431/195.5
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	5.3/5.0
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK GR9A-EG

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	Walker Evans HPG w/IFP
IFS Spring Rate lbs/in (N/mm)	100 (17.4)
IFS Spring Installed Length-Inches (cm)	10.25 (26)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

2011 800 PRO RMK 155/163

800 PRO RMK 155
S11CG8GSA / S11CG8GSL / S11CG8GSB
S11CG8GSM / S11CG8GEA

800 PRO RMK 163
S11CH8GSA / S11CH8GSB / S11CH8GEA

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4092-8044-OO8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1
Length (in/cm)	155 = 129/327.7 163 = 134/340.4
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	155 = 431/195.5 163 = 437/198.7

GENERAL INFORMATION	
ITEM	**VALUE**
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	155=5.3/5.0 163=5.5/5.2
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7) 163 (414)
Pitch Plies	2.86 1
Lug Height-Inches (cm)	2.4 (6.1) Series 5.1
Track Tension Sag-Inches (cm)	3/8"-1/2"(1.0-1.3cm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	Walker Evans HPG w/IFP
IFS Spring Rate lbs/in (N/mm)	100 (17.4)
IFS Spring Installed Length-Inches (cm)	10.25 (26)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance	

2012 800 RMK 155

S12CM8GSA / S12CN8GSL / S12CM8GEA

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4361-8044-OL8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0040-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	440 / 199.6
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6.3/6.0
Brake Fluid	DOT 4

GENERAL INFORMATION	
ITEM	**VALUE**
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7)
Pitch Plies	2.86 1
Lug Height-Inches (cm)	2.4 (6.1) Series 5.1
Track Tension Sag-Inches (cm)	3/8"-1/2"(1.0-1.3cm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK GR9A-EG

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	RydeFX Twin Tube
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length-Inches (cm)	10.5 (26.7)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

2011 800 RMK Assault

S11CN8GSA / S11CN8GSB / S11SN8GEA

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4092-8044-OO8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0040-.0055 / 0.105-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated)
Premium/Non-Ethanol 160Ω Resistor	91+ (Non-Oxygenated)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	446 / 202.3
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	5.3/5.0
Brake Fluid	DOT 4

GENERAL INFORMATION	
ITEM	**VALUE**
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7)
Pitch Plies	2.86 2
Lug Height-Inches (cm)	2.125 (5.4) (Competition)
Track tension sag in/cm with 10 lbs/4.54kg placed 16 in/ 40cm ahead of rear idler shaft	3/8"-1/2"(1.0-1.3cm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Wide Adjustable
Shocks	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	130 (22.75)
IFS Spring Installed Length-Inches (cm)	10.75 (27.3)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm)	41.5-42.5-43.5 (105.4-108-110.5)

2012 800 RMK Assault

S12CN8GSA / S12CN8GEA / S12CN8GSB
S12CN8GSL / S12CY8GSA

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4359-8044-OL8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0040-.0055 / 0.105-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**FUEL DELIVERY**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated)
Premium/Non-Ethanol 160Ω Resistor	91+ (Non-Oxygenated)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	446 / 202.3
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	5.3/5.0
Brake Fluid	DOT 4

GENERAL INFORMATION	
ITEM	**VALUE**
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7)
Pitch Plies	2.86 2
Lug Height-Inches (cm) Base Powder	 2.125 (5.4) (Competition) 2.4 (6.1) Series 5.1
Track Tension Sag-Inches (cm)	3/8"-1/2"(1.0-1.3cm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK GR9A-EG

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Wide Adjustable
Shocks	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	130 (22.75)
IFS Spring Installed Length-Inches (cm)	10.75 (27.3)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm)	41.5-42.5-43.5

2011 800 RMK 155

Model Numbers:

S11CM8GSA / S11CM8GSL / S11CM8GEA
S11CM8GSB / S11CM8GSM

ENGINE SPECIFICATIONS	
ITEM	VALUE
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4229-8044-OO8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0040-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	VALUE
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL INFORMATION	
ITEM	VALUE
Width (in/cm)	46.5 / 118.1
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	440 / 199.6
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	5.3/5.0

GENERAL INFORMATION	
ITEM	VALUE
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	VALUE
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7)
Pitch Plies	2.86 1
Lug Height-Inches (cm)	2.4 (6.1) Series 5.1
Track Tension Sag-Inches (cm)	3/8"-1/2"(1.0-1.3cm)

ELECTRICAL	
ITEM	VALUE
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	VALUE
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	RydeFX Twin Tube
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length-Inches (cm)	10.5 (26.7)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out Inches (mm)	0 -1/8" (0-3)

2012 800 PRO RMK 155/163

800 PRO RMK 155
S12CG8GSA / S12CG8GEA / S12CG8GSB
S12CG8GSC / S12CG8GSL / S12CG8GSM
S12CG8GSP

800 PRO RMK 163
S12CH8GSA / S12CH8GEA / S12CH8GSB
S12CH8GSC / S12CH8GSL / S12CH8GSM
S12CH8GSP

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4359-8044-OL8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated)
Premium/Non-Ethanol 160Ω Resistor	91+ (Non-Oxygenated)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1
Length (in/cm)	155 = 129/327.7 163 = 134/340.4
Height (in/cm)	51 / 129.5

GENERAL INFORMATION	
ITEM	**VALUE**
Estimated Dry Weight (lb/kg)	155 = 431/195.5 163 = 437/198.7
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	155=5.3/5.0 163=5.5/5.2
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7) 163 (414)
Pitch Plies	2.86 1
Lug Height-Inches (cm)	2.4 (6.1) Series 5.1
Track Tension Sag-Inches (cm)	3/8"-1/2"(1.0-1.3cm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK GR9A-EG

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	Walker Evans HPG w/IFP
IFS Spring Rate lbs/in (N/mm)	100 (17.4)
IFS Spring Installed Length-Inches (cm)	10.25 (26)
Front Vertical Travel Inches (cm)	9 (22.9)

2011 800 Switchback Assault

800 Switchback Assault 1.3
S11CW8GSA / S11CW8GSB
INTERNATIONAL: S11CW8GEA / S11CW8GEB

800 Switchback Assault 2.0
S11CW8GST

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4229-8044-OO8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	144 (365.76)
Pitch Plies	2.52 2

TRACK	
ITEM	**VALUE**
Lug Height-Inches (cm) 1.3 2.0	 1.352 (3.43) (Cobra) 2.0 (5.08) (Series 4)
Track Tension Sag-Inches (cm)	3/8"-1/2"(1-1.3cm)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	126 / 320
Height (in/cm)	48 / 121.9
Estimated Dry Weight (lb/kg)	457 / 212.7
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6.0/5.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 23 39 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE
Shocks	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	100 (17.5)

2013 600 INDY/INDY SP

600 INDY
S13CB6GSA / S13CB6GSL
INTERNATIONAL: S13CB6GEA

600 INDY SP
S13CP6GSA / S13CP6GSL
INTERNATIONAL: S13CP6GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4504-6044-0A6G
Displacement / # Cylinders	599CC / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.51 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.005 / 0.085-0.124
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204567
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	121 (365.76)
Pitch Plies	2.52 2

TRACK	
ITEM	**VALUE**
Lug Height-Inches (cm) INDY INDY (International) INDY SP INDY SP (International)	 .91 (2.3) (Shockwave) 1.352 (3.4) (Cobra) 1.0 (2.54) (Hacksaw) 1.5 (Ripsaw)
Track Tension	7/8"-1 1/8" (2.2-2.9cm)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 122
Length (in/cm)	115 / 292
Height (in/cm)	48 / 122
Estimated Dry Weight (lb/kg)	447 / 203
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.8 / 3.6
Cooling System Capacity(Qts/ L)	5.0/4.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 40 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks INDY INDY SP	 RydeFX MPV Fox HPG w/IFP
IFS Spring Rate lbs/in (N/mm)	80 (14)

2011 800 RUSH

800 RUSH
S11BF8GSA / S11BF8GSL / S11BF8GSB / S11BF8GSM

800 RUSH LX
S11BD8GSM

800 RUSH PRO-R
S11BP8GSA / S11BP8GSL / S11PB8GEL / S11BP8GSB
S11BP8GSM / S11BP8GEM / S11BE8GSM

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4139-8044-OO8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-300	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204094
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	465 / 211

GENERAL INFORMATION	
ITEM	**VALUE**
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6 / 5.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 36 70 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	121 (307)
Pitch Plies	2.52 2
Lug Height-Inches (cm) RUSH RUSH PRO-R	 1.0 (2.54) (Hacksaw) 1.25 (3.175) (Ripsaw)
Track Tension Sag-Inches (cm)	1/2"-1.0"(1.3-2.54cm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE
Shocks RUSH RUSH PRO-R	 Fox HPG w/IFP Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	100 (17.5)

2013 600 RUSH

600 RUSH
S13BF6GSA / S13BF6GSL

600 RUSH PRO-R
S13BP6GSA / S13BP6GSL / S13BP6GSM
INTERNATIONAL: S13BP6GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4506-6044-0A6G
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.51 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.005 / 0.085-0.124
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204567
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	121 (307)
Pitch Plies	2.52 2

TRACK	
ITEM	**VALUE**
Lug Height-Inches (cm) Base PRO-R PRO-R (International)	 1.0 (2.54) (Hacksaw) 1.25 (3.175) (Ripsaw) 1.5 (3.81) (Ripsaw)
Track Tension	1/4"-3/8"(6.3-9.6mm)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	48 / 122
Length (in/cm)	108 / 274
Height (in/cm)	48 / 122
Estimated Dry Weight (lb/kg)	464 / 211
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.8 / 3.6
Cooling System Capacity(Qts/ L)	5.0 / 4.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 40 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks Base PRO-R	 Fox HPG w/IFP Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6

2011 600 RUSH

600 RUSH
S11BF6NSA / S11BF6NSL / S11BF6NSB / S11BF6NSM

600 RUSH LX
S11BD6NSL / S11BD6NSM

600 RUSH PRO-R
S11BP6NSA / S11BP6NSL / S11PB6NEL / S11BP6NSB
S11BP6NSM / S11BE6NSM

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4215-6044-OO6N
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM ±200	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-4
Throttle Body Marking	1203978
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	121 (307)
Pitch Plies	2.52 2

TRACK	
ITEM	**VALUE**
Lug Height-Inches (cm) RUSH RUSH PRO-R	 1.0 (2.54) (Hacksaw) 1.25 (3.175) (Ripsaw)
Track Tension Sag-Inches (cm)	1/2"-1.0"(1.3-2.54cm)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/ kg)	469 / 212
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity (Qts/ L)	6 / 5.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 23 39 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE
Shocks RUSH RUSH PRO-R	 Fox HPG w/IFP Walker Evans Needle Piggyback 16 Click Compression Adjustable

2013 800 RUSH

800 RUSH
S13BF8GSA / S13BF8GSL

800 RUSH PRO-R
S13BP8GSA / S13BP8GSL / S13BP8GSM
INTERNATIONAL: S13BP8GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4509-8044-OA8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0041-.0053 / 0.105-0.131
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204570
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	48 / 122
Length (in/cm)	108 / 274
Height (in/cm)	48 / 122
Estimated Dry Weight (lb/kg)	464 / 211
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.8 / 3.6

GENERAL	
ITEM	**VALUE**
Cooling System Capacity(Qts/ L)	5.0 / 4.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 36 70 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	121 (307)
Pitch Plies	2.52 2
Lug Height-Inches (cm) Base PRO-R PRO-R (International)	 1.0 (2.54) (Hacksaw) 1.25 (3.175) (Ripsaw) 1.352 (3.43) (Cobra)
Track Tension	1/4"-3/8"(6.3-9.6mm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks Base PRO-R	 Fox HPG w/IFP Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	80 (14)
Preload-Inches (cm) Base	 3.75 (9.52)

MODEL SPECIFICATIONS

2010 600 RUSH

S10BF6KSA / S10BF6KSL / S10BF6KEA

ENGINE SPECIFICATIONS	
ITEM	VALUE
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4202-6044-OP6N
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.014-.020 / 0.356-0.508
Operating RPM ±200	8250
Idle RPM	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	VALUE
Type-Number of Fuel Injectors	DC-CFI-4
Throttle Body Marking	1203978
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol 24Ω Resistor Premium/Non-Ethanol 160Ω Resistor	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	VALUE
Width-Inches (cm)	15 (38)
Length-Inches (cm)	120 (304.8)
Pitch Plies	2.86 2
Lug Height-Inches (cm)	1.25 (3.175) (Ripsaw)
Track Tension Sag-Inches (cm)	7/8"-1-1/8"(2.2-2.9cm)

GENERAL INFORMATION	
ITEM	VALUE
Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	459 / 208
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	5.25 / 5.0
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 23 39 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	VALUE
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	VALUE
Suspension Type	PRO-RIDE
Shocks	Walker Evans Needle w/ Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	80 (14)
IFS Spring Installed Length-Inches (cm)	Preload = 3.75 (9.5) 10.25 (26)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	42.5 (108) 41.52 (105)

2013 800 RUSH PRO-R LE

S13BV8GSN / S13BV8GSP
INTERNATIONAL: S13BV8GEN / S13BV8GEP

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4509-8044-OA8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0041-.0053 / 0.105-0.131
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204570
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated)
Premium Mode	91+ (Non-Oxygenated)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	465 / 211
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.8 / 3.6
Cooling System Capacity(Qts/ L)	5.0 / 4.7
Brake Fluid	DOT 4

GENERAL	
ITEM	**VALUE**
Drive Belt	
Part Number	3211115
Width (inches / cm)	1.460 / 3.7
Side Angle	26°
Circumference (inches / cm)	46.77 / 118.8
Center Distance (inches / cm)	11.5 / 29.2
Chaincase	
Center Distance (inches)	7.53
Top Gear (Stock)	22
Bottom Gear (Stock)	36
Chain (Stock)	70
Gear Lube	Polaris Synthetic (80W)
Capacity (oz / ml)	9 / 266
Reverse System	PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	121 (307)
Pitch	2.52
Plies	2
Lug Height-Inches (cm)	
PRO-R LE	1.352 (3.43) (Cobra)
PRO-R LE (International)	1.5 (3.81) (Ripsaw)
Track Tension	1/4"-3/8"(6.3-9.6mm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output	
Operating Voltage	13.5-14.5 VDC
Watts @ 13.5 VDC (Total)	400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks	Walker Evans Piggyback 16 Click Compression Adjustable / 16 Click Rebound Adjuster Factory Compression Setting** = 6 Factory Rebound Setting = 8
IFS Spring Rate lbs/in (N/mm)	80 (14)
Preload-Inches (cm)	3.0 (7.6)
Travel-Inches (cm)	9 (22.9)

2013 600 Switchback

600 Switchback
S13BR6GSA / S13BR6GSL

600 Switchback Adventure
S13BA6GSL

600 Switchback PRO-R
S13BS6GSA / S13BS6GSL / S13BS6GSM
INTERNAIONAL: S13BS6GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4506-6044-OA6G
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204567
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	136 (345.4)
Pitch Plies	2.52 2

TRACK	
ITEM	**VALUE**
Lug Height-Inches (cm) Base Adventure/PRO-R PRO-R (International)	 1.25 (3.175) (Ripsaw) 1.352 (3.43) (Cobra) 1.75 (4.4) (Back Country)
Track Tension	1/4"-3/8"(6.3-9.6mm)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	469 / 212
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.8 / 3.6
Cooling System Capacity(Qts/ L)	5 / 4.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 40 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks BASE/Adventure PRO-R	 Fox HPG w/IFP Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6

FRONT SUSPENSION	
ITEM	**VALUE**
IFS Spring Rate lbs/in (N/mm)	80 (14)
Preload-Inches (cm) Base/Adventure PRO-R	 3.75 (9.52) 3.0 (7.6)
Travel-Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.52 (105)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE Progressive
Front Track Shock (FTS) Base/Adventure PRO-R	 Fox HPG w/IFP Walker Evans w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 2
FTS Spring Rate lbs/in (N/mm)	120-310 (21-54.25)
FTS Spring Preload Inches (cm)	1.375 (3.49)
Rear Track Shock (RTS) Base Adventure/PRO-R	 Fox HPG w/IFPWalker Evans Needle

REAR SUSPENSION	
ITEM	**VALUE**
	w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 4
Standard RTS Spring Rider Weight* 120-260lbs. Rate lbs/in (N/mm)	PN: 7043160-133 150 (26.25)
LW RTS Spring Rider Weight* 90-150lbs. Rate lbs/in (N/mm)	PN: 7041575-385 120 (21)
HD RTS Spring Rider Weight* 240-335+lbs. Rate lbs/in. (N/mm)	PN: 7043585-385 260 (45.5)
RTS Spring Rider / Weight Setting	Spring length set to rider weight using adjustment gauge. STD Gauge PN: 9923267 STD gauge supplied with vehicle. LW and HD springs-Use tape measure and RTS Spring Guide Table located in the Steering/Suspension Chapter.
Rear Travel Inches (cm)	14 (35.6)
* = Rider weight in everyday clothing. ** = From full soft (CCW) position.	

CLUTCH SETTINGS

ALTITUDE METERS (FEET)	DRIVE CLUTCH		P2 DRIVEN CLUTCH		
	SHIFT WEIGHT	CLUTCH SPRING (ELECTRIC START)	CLUTCH SPRING	DRIVEN HELIX	GEARING
0-600 (0-2000)	10-64	120-310 7043681 (120–340 7042083)	130-180 Tabbed 7043873	58/42-.45 5137176	22:40-72
600-1200 (2000-4000)	10-62				
1200-1800 (4000-6000)	10-60				
1800-2400 (6000-8000)	10-58				
2400-3000 (8000-10,000)	10-56				20:41-72
3000-3600 (10,000-12,000)	10A-L				

Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2013 800 Switchback

800 Switchback
S13BR8GSA / S13BR8GSL

800 Switchback PRO-R
S13BS8GSA / S13BS8GSL / S13BS8GSM / S13BC8GSN / S13BC8GSP / S13BD8GSN / S13BD8GSP
INTERNATIONAL: S13BS8GEL / S13BD8GEP

800 Switchback PRO-R Adventure
S13BA8GSL
INTERNATIONAL: S13BA8GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4509-8044-OA8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204570
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274

GENERAL	
ITEM	**VALUE**
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	465 / 211
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity (Qts/ L)	5 / 4.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 36 70 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	136 (345.4)
Pitch Plies	2.52 2
Lug Height-Inches (cm) Base PRO-R PRO-R (International) PRO-R Adventure PRO-R Adventure (INTL)	 1.25 (3.175) (Ripsaw) 1.352 (3.43) (Cobra) 1.75 (4.4) (Back Country) 1.352 (3.43) (Cobra) 1.5 (3.81) (Ripsaw)
Track Tension	1/4"-3/8"(6.3-9.6mm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks Base Adventure/PRO-R	 Fox HPG w/IFP Walker Evans Needle Piggyback

FRONT SUSPENSION	
ITEM	**VALUE**
	16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	80 (14)
Preload-Inches (cm) Base Adventure/PRO-R	 3.75 (9.52) 3.0 (7.6)
Travel-Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.52 (105)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE Progressive
Front Track Shock (FTS) Base Adventure/PRO-R	 Fox HPG w/IFP Walker Evans w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 2
FTS Spring Rate lbs/in (N/mm)	120-310 (21-54.25)
FTS Spring Preload Inches (cm)	1.375 (3.49)
Rear Track Shock (RTS)	

REAR SUSPENSION	
ITEM	**VALUE**
Base Adventure/PRO-R	Fox HPG w/IFP Walker Evans Needle w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 4
Standard RTS Spring Rider Weight* 120-260lbs. Rate lbs/in (N/mm)	PN: 7043160-133 150 (26.25)
LW RTS Spring Rider Weight* 90-150lbs. Rate lbs/in (N/mm)	PN: 7041575-385 120 (21)
HD RTS Spring Rider Weight* 240-335+lbs. Rate lbs/in. (N/mm)	PN: 7043585-385 260 (45.5)
RTS Spring Rider / Weight Setting	Spring length set to rider weight using adjustment gauge. STD Gauge PN: 9923267 STD gauge supplied with vehicle. LW and HD springs-Use tape measure and RTS Spring Guide Table located in the Steering/Suspension Chapter.
Rear Travel Inches (cm)	14 (35.6)
* = Rider weight in everyday clothing. ** = From full soft (CCW) position.	

CLUTCH SETTINGS					
ALTITUDE METERS (FEET)	**DRIVE CLUTCH**		**DRIVEN CLUTCH**		
	SHIFT WEIGHT	**CLUTCH SPRING**	**CLUTCH SPRING**	**DRIVEN HELIX**	**GEARING (1.75 TRACK)**
0-600 (0-2000)	10-66	120-310 7043681	BLU/BLK 123-203 7043064	64/42-.36 5135401	22:36-70 (19:39-70)
600-1200 (2000-4000)	10-64				
1200-1800 (4000-6000)	10-62				
1800-2400 (6000-8000)	10-60		BLK/PUR 160-240 7043363		
2400-3000 (8000-10,000)		140-330 7043829			20:38-70 (19:39-70)
3000-3600 (10,000-12,000)	10-58				
Drive Clutch Bolt Torque: 80 ft-lbs (108Nm) Re-torque after running engine. **OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.**					

2013 Switchback Assault

Switchback Assault 1.3
S13CW8GSA / S13CW8GSB / S13CW8GSL / S13CW8GSM

Switchback Assault 2.0
S13CL8GSB / S13CL8GSM
INTERNATIONAL: S13CW8GEL / S13CL8GEM

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4510-8044OA8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204570
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	144 (365.76)
Pitch Plies	2.52 2
Lug Height-Inches (cm) 1.3 2.0	 1.352 (3.43) (Cobra) 2.0 (5.08) (Series 4)
Track Tension	3/8"-1/2"(1-1.3cm)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	126 / 320
Height (in/cm)	48 / 121.9
Estimated Dry Weight (lb/kg)	457 / 212.7
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6.0/5.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 23 39 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length-Inches (cm)	10.0 (25.4)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	42.5 (108) 41.52 (105)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	VALUE
Suspension Type	Switchback 144 Tipped
Front Track Shock (FTS)	Walker Evans Piggyback 16 Click Compression Adjustable Factory Setting** = 8
FTS Spring Rate lbs/in (N/mm)	170 (21-54.25)
FTS Spring Installed Length Inches (cm)	7.25 (18.4)

REAR SUSPENSION	
ITEM	VALUE
Rear Track Shock (RTS)	Walker Evans w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 8
Torsion Springs	.359/77° LH=7041629-329 RH=7041630-329
Rear Travel Inches (cm)	14.5 (36.8)

CLUTCH SETTINGS					
ALTITUDE METERS (FEET)	DRIVE CLUTCH		DRIVEN CLUTCH		
	SHIFT WEIGHT	CLUTCH SPRING	CLUTCH SPRING	DRIVEN HELIX	1.3 GEARING (2.0 GEARING)
0-600 (0-2000)	10-66	120-310 7043681	BLU/BLK 123-203 7043064	64/42-.36 5135401	23:39-72 (20:42-72)
600-1200 (2000-4000)	10-64				
1200-1800 (4000-6000)	10-62				
1800-2400 (6000-8000)	10-60		BLK/PUR 160-240 7043363		21:40-72 (20:42-72)
2400-3000 (8000-10,000)		140-330 7043829			20:42-72
3000-3600 (10,000-12,000)	10-58				

Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2013 600 RMK 144

S13CK6GSA / S13CK6GSL
INTERNATIONAL: S13CK6GEA / S13CK6GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4504-6044-OA6G
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204567
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	144 (393.7)
Pitch Plies	2.52 2
Lug Height-Inches (cm)	2.0 (6.1) Series 4
Track Tension	3/8"-1/2"(1.0-1.3cm)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	440 / 199.6
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6.0/5.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	RydeFX Twin Tube
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length-Inches (cm)	10.5 (26.7)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
Suspension Type	RMK 144 Tipped
Front Track Shock (FTS)	RydeFX Twin Tube
FTS Spring Rate lbs/in (N/mm)	170 (21-54.25)
FTS Spring Installed Length Inches (cm)	7.25 (18.4)

REAR SUSPENSION	
Rear Track Shock (RTS)	RydeAFX Twin Tube
Torsion Springs	.359/77° LH=7041629-329 RH=7041630-329
Rear Travel Inches (cm)	13 (33)

CLUTCH SETTINGS

ALTITUDE METERS (FEET)	DRIVE CLUTCH		DRIVEN CLUTCH		
	SHIFT WEIGHT	CLUTCH SPRING	CLUTCH SPRING	DRIVEN HELIX	GEARING
0-450 (0-1500)	10-64	120-340 7042083	BLK/PUR 160-240 7043363	56/42-.36 5135403	20:42-72
450-900 (1500-3000)	10-62				
900-1500 (3000-5000)	10-60				
1500-2100 (5000-7000)	10-58				
2100-2700 (7000-9000)	10-56				
2700+ (9000+)	10-54				

Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2013 600 RMK 155

S13CM6GSA / S13CM6GSL
INTERNATIONAL: S13CM6GEA

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4504-6044-OA6G
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204567
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7)
Pitch Plies	2.86 1
Lug Height-Inches (cm)	2.4 (6.1) Series 5.1
Track Tension	3/8"-1/2"(1.0-1.3cm)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1

GENERAL	
ITEM	**VALUE**
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	440 / 199.6
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6.3/6.0
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	RydeFX Twin Tube
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length-Inches (cm)	10.5 (26.7)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	RMK Coil-Over 155
Front Track Shock (FTS)	RydeFX Twin Tube
FTS Spring Rate lbs/in (N/mm)	150 (26.25)
Rear Track Shock (RTS)	RydeAFX Twin Tube
Standard RTS Spring Rate lbs/in (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* <160lbs./72kg 160-220lbs./72-99kg 220-280lbs./99-127kg 280-340lbs./127-154kg	PN: 7043680-133 210 (36.75) 10-3/4" (27.3) 10-1/4" (26) 10-1/8" (25.7) 9-3/4" (24.8)

REAR SUSPENSION	
ITEM	**VALUE**
	CAUTION: Do not adjust STD spring length greater than 10-3/4" or less than 9-5/8".
HD RTS Spring Rate lbs/in. (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* 250-300lbs./113-136kg 300-350lbs./136-159kg	PN: 7043741-067 250 (43.75) 10-1/8" (25.7) 10" (25.4) **CAUTION: Do not adjust HD spring length greater than 10-7/8" or less than 9-7/8".**
Rear Travel Inches (cm)	16 (40.6)
* = Rider weight with gear.	

CLUTCH SETTINGS					
ALTITUDE METERS (FEET)	**DRIVE CLUTCH**		**DRIVEN CLUTCH**		
	SHIFT WEIGHT	**CLUTCH SPRING**	**CLUTCH SPRING**	**DRIVEN HELIX**	**GEARING**
0-450 (0-1500)	10-64	120-340 7042083	BLK/PUR 160-240 7043363	56/42-.36 5135403	20:42-72
450-900 (1500-3000)	10-62				
900-1500 (3000-5000)	10-60				
1500-2100 (5000-7000)	10-58				
2100-2700 (7000-9000)	10-56				
2700+ (9000+)	10-54				
Drive Clutch Bolt Torque: 80 ft-lbs (108Nm) Re-torque after running engine. **OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.**					

2013 600 PRO RMK 155

S13CG6GSA / S13CG6GSL
INTERNATIONAL: S13CG6GEA

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4505-6044-OA6G
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204567
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7)
Pitch Plies	2.86 1
Lug Height-Inches (cm)	2.4 (6.1) Series 5.1
Track Tension	3/8"-1/2"(1.0-1.3cm)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1

GENERAL	
ITEM	**VALUE**
Length (in/cm)	129/327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	431/195.5
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	5.3/5.0
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
QuickDrive System Center Distance (inches) Top Sprocket Bottom Sprocket Belt Pitch Reverse System	 7.53 21 44 68 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	Walker Evans HPG w/IFP
IFS Spring Rate lbs/in (N/mm)	100 (17.4)
IFS Spring Installed Length-Inches (cm)	10.25 (26)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.85 (93.6) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
Suspension Type	RMK Coil-Over 155
Front Track Shock (FTS)	Walker Evans HPG w/IFP

REAR SUSPENSION	
FTS Spring Rate lbs/in (N/mm)	150 (26.25)
FTS Spring Installed Length Inches (cm)	8.50 (21.6)
Rear Track Shock (RTS)	Walker Evans HPG w/IFP
Standard RTS Spring Rate lbs/in (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* <160lbs./72kg 160-220lbs./72-99kg 220-280lbs./99-127kg 280-340lbs./127-154kg	PN: 7043714-133 210 (36.75) 10-3/4" (27.3) 10-3/8" (26.3) 10-1/8" (25.7) 9-3/4" (24.8)

REAR SUSPENSION	
	CAUTION: Do not adjust STD spring length greater than 11.0" or less than 9-3/4".
HD RTS Spring Rate lbs/in. (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* 250-300lbs./113-136kg 300-350lbs./136-159kg	PN: 7043740-067 250 (43.75) 10-1/8" (25.7) 10" (25.4) **CAUTION: Do not adjust HD spring length greater than 10-7/8" or less than 9-7/8".**
Rear Travel Inches (cm)	16 (40.6)
* = Rider weight with gear.	

CLUTCH SETTINGS

ALTITUDE METERS (FEET)	DRIVE CLUTCH		DRIVEN CLUTCH		
	SHIFT WEIGHT	CLUTCH SPRING	CLUTCH SPRING	DRIVEN HELIX	BELT GEARING
0-450 (0-1500)	10-64	120-340 7042083	BLK/PUR 160-240 7043363	56/42-.36 5135403	21:44-68
450-900 (1500-3000)	10-62				
900-1500 (3000-5000)	10-60				
1500-2100 (5000-7000)	10-58				
2100-2700 (7000-9000)	10-56				
2700+ (9000+)	10-54				

Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2013 800 RMK 155

S13CM8GSA / S13CM8GSL
INTERNATIONAL: S13CM8GEA

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4510-8044-OA8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0040-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204570
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	440 / 199.6
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6.3/6.0
Brake Fluid	DOT 4

GENERAL	
ITEM	**VALUE**
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7)
Pitch Plies	2.86 1
Lug Height-Inches (cm)	2.4 (6.1) Series 5.1
Track Tension	3/8"-1/2"(1.0-1.3cm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	RydeFX Twin Tube
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length-Inches (cm)	10.5 (26.7)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	RMK Coil-Over 155
Front Track Shock (FTS)	RydeFX Twin Tube
FTS Spring Rate lbs/in (N/mm)	150 (26.25)
Rear Track Shock (RTS)	RydeAFX Twin Tube
Standard RTS Spring Rate lbs/in (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* <160lbs./72kg 160-220lbs./72-99kg 220-280lbs./99-127kg 280-340lbs./127-154kg	PN: 7043680-133 210 (36.75) 10-3/4" (27.3) 10-1/4" (26) 10-1/8" (25.7) 9-3/4" (24.8)

REAR SUSPENSION	
ITEM	**VALUE**
	CAUTION: Do not adjust STD spring length greater than 10-3/4" or less than 9-5/8".
HD RTS Spring Rate lbs/in. (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* 250-300lbs./113-136kg 300-350lbs./136-159kg	PN: 7043741-067 250 (43.75) 10-1/8" (25.7) 10" (25.4) **CAUTION: Do not adjust HD spring length greater than 10-7/8" or less than 9-7/8".**
Rear Travel Inches (cm)	16 (40.6)
* = Rider weight with gear.	

CLUTCH SETTINGS					
ALTITUDE METERS (FEET)	**DRIVE CLUTCH**		**DRIVEN CLUTCH**		
	SHIFT WEIGHT	**CLUTCH SPRING**	**CLUTCH SPRING**	**DRIVEN HELIX**	**GEARING**
0-600 (0-2000)	10-68	140-330 7043829	BLACK 155-222 7043063	56/42-.36 5135403	20:42-72
600-1200 (2000-4000)	10-66				
1200-1800 (4000-6000)	10-64				
1800-2400 (6000-8000)	10-62				
2400-3000 (8000-10,000)	10-60		BLK/PUR 160-240 7043363		
3000-3600 (10,000-12,000)	10-58				

Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2013 800 RMK Assault

S13CN8GSA / S13CN8GSB / S13CN8GSL / S13CY8GSA
INTERNATIONAL: S13CN8GEA / S13CN8GSL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4508-8044-OA8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0040-.0055 / 0.105-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204570
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated)
Premium Mode	91+ (Non-Oxygenated)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	446 / 202.3
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	5.3/5.0

GENERAL	
ITEM	**VALUE**
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7)
Pitch Plies	2.86 2 (Competition) 1 (Series 5.1)
Lug Height-Inches (cm) Base Powder	 2.125 (5.4) (Competition) 2.4 (6.1) Series 5.1
Track Tension	3/8"-1/2"(1.0-1.3cm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Wide Adjustable
Shocks	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	130 (22.75)
IFS Spring Installed Length-Inches (cm)	10.75 (27.3)
Front Vertical Travel Inches (cm)	9 (22.9)

FRONT SUSPENSION	
ITEM	**VALUE**
Ski Center Distance Inches (cm)	41.5-42.5-43.5 (105.4-108-110.5)
Setup Width	38.58 (98) Measured inside of spindles.
Camber Inches (cm)	2.25 ± 0.31 (5.7 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	RMK Coil-Over 155
Front Track Shock (FTS)	Walker Evans HPG w/IFP
FTS Spring Rate lbs/in (N/mm)	180 (31.5)
FTS Spring Installed Length-Inches (cm)	8.50 (21.6)
Rear Track Shock (RTS)	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6

REAR SUSPENSION	
ITEM	**VALUE**
Standard RTS Spring Rate lbs/in (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* <160lbs./72kg 160-220lbs./72-99kg 220-280lbs./99-127kg 280-340lbs./127-154kg	PN: 7043572-133 190 (33.25) 10-7/8" (27.6) 10-1/4" (26) 10" (25.4) 9-1/2" (24.1) **CAUTION: Do not adjust STD spring length greater than 11.0" or less than 9-3/8".**
HD RTS Spring Rate lbs/in. (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* 250-300lbs./113-136kg 300-350lbs./136-159kg	PN: 7043740-067 250 (43.75) 10-1/8" (25.7) 10" (25.4) **CAUTION: Do not adjust HD spring length greater than 10-7/8" or less than 9-7/8".**
Rear Travel Inches (cm)	16 (40.6)
* = Rider weight with gear.	

CLUTCH SETTINGS					
ALTITUDE METERS (FEET)	**DRIVE CLUTCH**		**DRIVEN CLUTCH**		
	SHIFT WEIGHT	**CLUTCH SPRING**	**CLUTCH SPRING**	**DRIVEN HELIX**	**GEARING**
0-600 (0-2000)	10-68	140-330 7043829	BLACK 155-222 7043063	56/42-.36 5135403	20:42-72
600-1200 (2000-4000)	10-66				
1200-1800 (4000-6000)	10-64				
1800-2400 (6000-8000)	10-62				
2400-3000 (8000-10,000)	10-60		BLK/PUR 160-240 7043363		
3000-3600 (10,000-12,000)	10-58				

Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2013 800 PRO RMK 155/163

800 PRO RMK 155
S13CG8GSA / S13CG8GSL / S13CG8GSB / S13CG8GSM / S13CG8GSC / S13CG8GSP
INTERNATIONAL: S13CG8GEA / S13CG8GEB

800 PRO RMK 163
S13CH8GSA / S13CH8GSB / S13CH8GSC / S13CH8GSL / S13CH8GSM / S13CH8GSP
INTERNATIONAL: S13CH8GEA

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4508-8044-OA8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204570
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1
Length (in/cm)	155 = 129/327.7 163 = 134/340.4
Height (in/cm)	51 / 129.5

GENERAL	
ITEM	**VALUE**
Estimated Dry Weight (lb/kg)	155 = 431/195.5 163 = 437/198.7
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	155=5.3/5.0 163=5.5/5.2
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
QuickDrive System Center Distance (inches) Top Sprocket Bottom Sprocket Belt Pitch Reverse System	 7.53 21 44 68 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7) 163 (414)
Pitch Plies	2.86 1
Lug Height-Inches (cm)	2.4 (6.1) Series 5.1
Track Tension	3/8"-1/2"(1.0-1.3cm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	Walker Evans HPG w/IFP
IFS Spring Rate lbs/in (N/mm)	100 (17.4)
IFS Spring Installed Length-Inches (cm)	10.25 (26)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm)	39-40-41 (99.1-101.6-104.1)

FRONT SUSPENSION	
ITEM	**VALUE**
Setup Width	36.85 (93.6) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	RMK Coil-Over 155/163
Front Track Shock (FTS)	Walker Evans HPG w/IFP
FTS Spring Rate lbs/in (N/mm)	150 (26.25)
FTS Spring Installed Length Inches (cm)	8.50 (21.6)
Rear Track Shock (RTS)	Walker Evans HPG w/IFP
Standard RTS Spring Rate lbs/in (N/mm) Installed Length In. (cm) (Track off ground)	PN: 7043714-133 210 (36.75)

REAR SUSPENSION	
ITEM	**VALUE**
Rider Weight* <160lbs./72kg 160-220lbs./72-99kg 220-280lbs./99-127kg 280-340lbs./127-154kg	10-3/4" (27.3) 10-3/8" (26.3) 10-1/8" (25.7) 9-3/4" (24.8) **CAUTION: Do not adjust STD spring length greater than 11.0" or less than 9-3/4".**
HD RTS Spring Rate lbs/in. (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* 250-300lbs./113-136kg 300-350lbs./136-159kg	PN: 7043740-067 250 (43.75) 10-1/8" (25.7) 10" (25.4) **CAUTION: Do not adjust HD spring length greater than 10-7/8" or less than 9-7/8".**
Rear Travel Inches (cm)	16 (40.6)
* = Rider weight with gear.	

CLUTCH SETTINGS					
ALTITUDE METERS (FEET)	**DRIVE CLUTCH**		**DRIVEN CLUTCH**		
	SHIFT WEIGHT	**CLUTCH SPRING**	**CLUTCH SPRING**	**DRIVEN HELIX**	**BELT GEARING**
0-600 (0-2000)	10-68	140-330 7043829	BLACK 155-222 7043063	56/42-.36 5135403	21:44-68
600-1200 (2000-4000)	10-66				
1200-1800 (4000-6000)	10-64				
1800-2400 (6000-8000)	10-62				
2400-3000 (8000-10,000)	10-60		BLK/PUR 160-240 7043363		
3000-3600 (10,000-12,000)	10-58				

Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2014 600 INDY/INDY SP

600 INDY
S14CB6GSA / S14CB6GSL
INTERNATIONAL: S14CB6GEA

600 INDY SP
S14CP6GSA / S14CP6GSL / S14CP6GS
INTERNATIONAL: S14CP6GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4769–6044–0R6G
Displacement / # Cylinders	599CC / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.51 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.005 / 0.085-0.124
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204816
Throttle Body Bore	46 mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	121 (365.76)
Pitch Plies	2.52 2

TRACK	
ITEM	**VALUE**
Lug Height-Inches (cm) INDY INDY (International) INDY SP INDY SP (International)	 .91 (2.3) (Shockwave) 1.352 (3.4) (Cobra) 1.0 (2.54) (Hacksaw) 1.5 (Ripsaw)
Track Tension	7/8"-1 1/8" (2.2-2.9cm)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 122
Length (in/cm)	115 / 292
Height (in/cm)	48 / 122
Estimated Dry Weight (lb/kg)	447 / 203
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.8 / 3.6
Cooling System Capacity(Qts/ L)	5.0/4.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 40 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks INDY INDY SP	 RydeFX MPV Fox HPG w/IFP
IFS Spring Rate lbs/in (N/mm)	80 (14)

FRONT SUSPENSION	
ITEM	**VALUE**
IFS Spring Installed Length- Inches (cm) INDY INDY SP	 10.0 (25.4) 10.75 (27.3)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.52 (105)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	INDY 121
Front Track Shock (FTS) INDY INDY SP	 RydeFX MPV Fox HPG w/IFP

REAR SUSPENSION	
ITEM	**VALUE**
FTS Spring Rate lbs/in (N/mm)	130-270 (22.7-47.2)
FTS Spring Preload Inches (cm) INDY INDY SP	 1 Spring Retainer .74(1.88)
Rear Track Shock (RTS) INDY INDY SP	 RydeFX MPV Fox PS-5
Torsion Springs INDY/INDY SP	.347/80°/10# LH=7043859-329 RH=7043860-329
Torsion Springs INTERNATIONAL	.359/80°/12.5# LH=7043079-067 RH=7043080-067
Rear Travel Inches (cm)	13.9 (35.3)

CLUTCH SETTINGS					
ALTITUDE METERS (FEET)	**DRIVE CLUTCH**		**P2 DRIVEN CLUTCH**		
	SHIFT WEIGHT	**CLUTCH SPRING (ELECTRIC START)**	**CLUTCH SPRING**	**DRIVEN HELIX**	**GEARING**
0-600 (0-2000)	10-64	120-310 7043681 (120–340 7042083)	130-180 7043873	58/42-.45 5137176	22:40-72
600-1200 (2000-4000)	10-62				
1200-1800 (4000-6000)	10-60				
1800-2400 (6000-8000)	10-58				
2400-3000 (8000-10,000)	10-56				20:41-72
3000-3600 (10,000-12,000)	10A-L				
Drive Clutch Bolt Torque: 80 ft-lbs (108Nm) Re-torque after running engine. **OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.**					

2014 800 INDY SP

S14CP8GSA / S14CP8GSL / S14CP8GS
INTERNATIONAL: S14CP8GEL / S14CP8GEM

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4775–8044–0R8G
Displacement / # Cylinders	794 cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204815
Throttle Body Bore	48 mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	121 (365.76)
Pitch Plies	2.52 2
Lug Height-Inches (cm) INDY SP INDY SP (International)	 1.0 (2.54) (Hacksaw) 1.5 (Ripsaw)
Track Tension	7/8"-1 1/8" (2.2-2.9cm)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 122
Length (in/cm)	115 / 292
Height (in/cm)	48 / 122
Estimated Dry Weight (lb/kg)	447 / 203
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.8 / 3.6
Cooling System Capacity(Qts/ L)	5.0/4.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (International) Bottom Gear (International) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 23 (22) 39 (40) 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks	Fox HPG w/IFP
IFS Spring Rate lbs/in (N/mm)	80 (14)
IFS Spring Installed Length-Inches (cm)	10.75 (27.3)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.52 (105)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	VALUE
Suspension Type	INDY 121
Front Track Shock (FTS)	Fox HPG w/IFP
FTS Spring Rate lbs/in (N/mm)	130-270 (22.7-47.2)
FTS Spring Preload Inches (cm)	.74(1.88)
Rear Track Shock (RTS)	Fox PS-5

REAR SUSPENSION	
ITEM	VALUE
Torsion Springs	.347/80°/10# LH=7043859-329 RH=7043860-329
Torsion Springs INTERNATIONAL	.359/80°/12.5# LH=7043079-067 RH=7043080-067
Rear Travel Inches (cm)	13.9 (35.3)

CLUTCH SETTINGS					
ALTITUDE METERS (FEET)	DRIVE CLUTCH		DRIVEN CLUTCH		
	SHIFT WEIGHT	CLUTCH SPRING	CLUTCH SPRING	DRIVEN HELIX	GEARING (INTL. MODELS)
0-600 (0-2000)	10-66	120-310 7043681	RED/BLK 7043058	64/42/.36 5135401	23:39–72 (22:40–72)
600-1200 (2000-4000)	10-64				
1200-1800 (4000-6000)	10-62				
1800-2400 (6000-8000)	10-60				
2400-3000 (8000-10,000)		140-330 7043342			20:41-72
3000-3600 (10,000-12,000)	10–58				

Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2014 600 RUSH PRO-R

S14BP6GSA / S14BP6GSL
INTERNATIONAL: S14BP6GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4771–6044–0R6G
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.51 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.005 / 0.085-0.124
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204816
Throttle Body Bore	46 mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	121 (307)
Pitch Plies	2.52 2
Lug Height-Inches (cm) PRO-R PRO-R (International)	 1.25 (3.175) (Ripsaw) 1.5 (3.81) (Ripsaw)
Track Tension	1/4"-3/8"(6.3-9.6mm)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	48 / 122
Length (in/cm)	108 / 274
Height (in/cm)	48 / 122
Estimated Dry Weight (lb/kg)	464 / 211
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.8 / 3.6
Cooling System Capacity(Qts/ L)	5.0 / 4.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 40 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	80 (14)
Preload-Inches (cm) Base PRO-R	 3.75 (9.52) 3.0 (7.6)
Travel-Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.52 (105)
Toe Out Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE Progressive
Front Track Shock (FTS)	Walker Evans w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 2
FTS Spring Rate lbs/in (N/mm)	120-310 (21-54.25)
FTS Spring Preload Inches (cm)	2.0 (5.08)
Rear Track Shock (RTS)	Walker Evans Needle w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 4
Standard RTS Spring Rider Weight* 120-260lbs. Rate lbs/in (N/mm)	PN: 7043195-133 170 (29.75)
International RTS Spring Rider Weight* 120-260lbs. Rate lbs/in (N/mm)	PN: 7043572–133 190 (33.27)

REAR SUSPENSION	
ITEM	**VALUE**
LW RTS Spring Rider Weight* 90-150lbs. Rate lbs/in (N/mm)	PN: 7041575-385 120 (21)
HD RTS Spring Rider Weight* 240-335+lbs. Rate lbs/in. (N/mm)	PN: 7043585-385 260 (45.5)
RTS Spring Rider / Weight Setting	Spring length set to rider weight using adjustment gauge. STD Gauge PN: 9923267 STD gauge supplied with vehicle. LW and HD springs-Use tape measure and RTS Spring Guide Table located in the Steering/Suspension Chapter.
Rear Travel Inches (cm)	14 (35.6)
* = Rider weight in everyday clothing. ** = From full soft (CCW) position.	

CLUTCH SETTINGS					
	DRIVE CLUTCH		**P2 DRIVEN CLUTCH**		
ALTITUDE METERS (FEET)	**SHIFT WEIGHT**	**CLUTCH SPRING (ELECTRIC START)**	**CLUTCH SPRING**	**DRIVEN HELIX**	**GEARING**
0-600 (0-2000)	10-64	120-310 7043681 (120–340 7042083)	130-180 7043873	58/42-.45 5137176	22:40-72
600-1200 (2000-4000)	10-62				
1200-1800 (4000-6000)	10-60				
1800-2400 (6000-8000)	10-58				
2400-3000 (8000-10,000)	10-56				20:41-72
3000-3600 (10,000-12,000)	10A-L				
Drive Clutch Bolt Torque: 80 ft-lbs (108Nm) Re-torque after running engine. **OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.**					

2014 800 RUSH PRO-R

S14BP8GSA / S14BP8GSL
INTERNATIONAL: S13BP8GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4774–8044–0R8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0041-.0053 / 0.105-0.131
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204815
Throttle Body Bore	48 mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated)
Premium Mode	91+ (Non-Oxygenated)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	48 / 122
Length (in/cm)	108 / 274
Height (in/cm)	48 / 122
Estimated Dry Weight (lb/kg)	464 / 211
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.8 / 3.6
Cooling System Capacity(Qts/ L)	5.0 / 4.7
Brake Fluid	DOT 4

GENERAL	
ITEM	**VALUE**
Drive Belt	
Part Number	3211115
Width (inches / cm)	1.460 / 3.7
Side Angle	26°
Circumference (inches / cm)	46.77 / 118.8
Center Distance (inches / cm)	11.5 / 29.2
Chaincase	
Center Distance (inches)	7.53
Top Gear (International)	22 (22)
Bottom Gear (International)	36 (40)
Chain (International)	70 (72)
Gear Lube	Polaris Synthetic (80W)
Capacity (oz / ml)	9 / 266
Reverse System	PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	121 (307)
Pitch	2.52
Plies	2
Lug Height-Inches (cm)	
PRO-R	1.25 (3.175) (Ripsaw)
PRO-R (International)	1.352 (3.43) (Cobra)
Track Tension	1/4"-3/8"(6.3-9.6mm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output	
Operating Voltage	13.5-14.5 VDC
Watts @ 13.5 VDC (Total)	400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	80 (14)
Preload-Inches (cm)	3.0 (7.6)
Travel-Inches (cm)	9 (22.9)
Ski Center Distance	
Inches (cm)	42.5 (108)
Setup Width	41.52 (105)
Toe Out Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE Progressive
Front Track Shock (FTS)	Walker Evans w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 2
FTS Spring Rate lbs/in (N/mm)	120-310 (21-54.25)
FTS Spring Preload Inches (cm)	2.0 (5.08)
Rear Track Shock (RTS)	Walker Evans Needle w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 4
Standard RTS Spring Rider Weight* 120-260lbs. Rate lbs/in (N/mm)	PN: 7043195-133 170 (29.75)
LW RTS Spring Rider Weight*	PN: 7041575-385

REAR SUSPENSION	
ITEM	**VALUE**
90-150lbs. Rate lbs/in (N/mm)	120 (21)
HD RTS Spring Rider Weight* 240-335+lbs. Rate lbs/in. (N/mm)	PN: 7043585-385 260 (45.5)
RTS Spring Rider / Weight Setting	Spring length set to rider weight using adjustment gauge. STD Gauge PN: 9923267 STD gauge supplied with vehicle. LW and HD springs-Use tape measure and RTS Spring Guide Table located in the Steering/Suspension Chapter.
Rear Travel Inches (cm)	14 (35.6)
* = Rider weight in everyday clothing. ** = From full soft (CCW) position.	

CLUTCH SETTINGS					
ALTITUDE METERS (FEET)	**DRIVE CLUTCH**		**DRIVEN CLUTCH**		
	SHIFT WEIGHT	**CLUTCH SPRING**	**CLUTCH SPRING**	**DRIVEN HELIX**	**GEARING (INTERNATIONAL MODELS)**
0-600 (0-2000)	10-66	120-310 7043681	BLU/BLK 123-203 7043064	64/42-36 5135401	22:36-70 (22:40–72)
600-1200 (2000-4000)	10-64				
1200-1800 (4000-6000)	10-62				
1800-2400 (6000-8000)	10-60		BLK/PUR 160-240 7043363		
2400-3000 (8000-10,000)		140-330 7043829			20:38-70 (20:41–72)
3000-3600 (10,000-12,000)	10-58				
Drive Clutch Bolt Torque: 80 ft-lbs (108Nm) Re-torque after running engine. **OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.**					

2014 800 RUSH PRO-R LE

S14BV8GS
INTERNATIONAL: S14BV8GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4774–8044–0R8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0041-.0053 / 0.105-0.131
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204815
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	465 / 211
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.8 / 3.6
Cooling System Capacity(Qts/ L)	5.0 / 4.7
Brake Fluid	DOT 4

GENERAL	
ITEM	**VALUE**
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (International) Bottom Gear (International) Chain (International) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 (22) 36 (40) 70 (72) Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	121 (307)
Pitch Plies	2.52 2
Lug Height-Inches (cm) PRO-R LE PRO-R LE (International)	 1.352 (3.43) (Cobra) 1.5 (3.81) (Ripsaw)
Track Tension	1/4"-3/8"(6.3-9.6mm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks	Walker Evans Piggyback 16 Click Compression Adjustable / 16 Click Rebound Adjuster Factory Compression Setting** = 6 Factory Rebound Setting = 8
IFS Spring Rate lbs/in (N/mm)	80 (14)
Preload-Inches (cm)	3.0 (7.6)
Travel-Inches (cm)	9 (22.9)

FRONT SUSPENSION	
ITEM	**VALUE**
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.52 (105)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE Progressive
Front Track Shock (FTS)	Walker Evans w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 2
FTS Spring Rate lbs/in (N/mm)	120-310 (21-54.25)
FTS Spring Preload Inches (cm)	2.0 (5.08)
Rear Track Shock (RTS)	Walker Evans Needle w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 4
Standard RTS Spring Rider Weight* 120-260lbs. Rate lbs/in (N/mm)	PN: 7043195-133 170 (29.75)

REAR SUSPENSION	
ITEM	**VALUE**
International RTS Spring Rider Weight* 120-260lbs. Rate lbs/in (N/mm)	PN: 7043572-133 190 (33.27)
LW RTS Spring Rider Weight* 90-150lbs. Rate lbs/in (N/mm)	PN: 7041575-385 120 (21)
HD RTS Spring Rider Weight* 240-335+lbs. Rate lbs/in. (N/mm)	PN: 7043585-385 260 (45.5)
RTS Spring Rider / Weight Setting	Spring length set to rider weight using adjustment gauge. STD Gauge PN: 9923267 STD gauge supplied with vehicle. LW and HD springs-Use tape measure and RTS Spring Guide Table located in the Steering/Suspension Chapter.
Rear Travel Inches (cm)	14 (35.6)

* = Rider weight in everyday clothing.
** = From full soft (CCW) position.

CLUTCH SETTINGS					
ALTITUDE METERS (FEET)	**DRIVE CLUTCH**		**DRIVEN CLUTCH**		
	SHIFT WEIGHT	**CLUTCH SPRING**	**CLUTCH SPRING**	**DRIVEN HELIX**	**GEARING (INTERNATIONAL)**
0-600 (0-2000)	10-66	120-310 7043681	BLU/BLK 123-203 7043064	64/42-.36 5135401	22:36-70 (22:40-72)
600-1200 (2000-4000)	10-64				
1200-1800 (4000-6000)	10-62				
1800-2400 (6000-8000)	10-60		BLK/PUR 160-240 7043363		
2400-3000 (8000-10,000)		140-330 7043829			20:38-70 (20:41-72)
3000-3600 (10,000-12,000)	10-58				

Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2014 600 Switchback

600 Switchback
S14BR6GSA / S14BR6GSL

600 Switchback Adventure
S14BA6GSL

600 Switchback PRO-R
S14BS6GSA / S14BS6GSL
INTERNATIONAL: S14BS6GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4771–6044–0R6G
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.0054 / 0.085-0.137
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204816
Throttle Body Bore	46 mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	136 (345.4)
Pitch Plies	2.52 2

TRACK	
ITEM	**VALUE**
Lug Height-Inches (cm) Base Adventure/PRO-R PRO-R (International)	 1.25 (3.175) (Ripsaw) 1.352 (3.43) (Cobra) 1.75 (4.4) (Back Country)
Track Tension	1/4"-3/8"(6.3-9.6mm)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	115 / 292
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	469 / 212
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.8 / 3.6
Cooling System Capacity(Qts/ L)	5 / 4.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (INTL) Bottom Gear (INTL) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 (21) 40 (41) 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks BASE/Adventure PRO-R	 Fox HPG w/IFP Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6

FRONT SUSPENSION	
ITEM	**VALUE**
IFS Spring Rate lbs/in (N/mm)	80 (14)
Preload-Inches (cm) Base/Adventure PRO-R	 3.75 (9.52) 3.0 (7.6)
Travel-Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.52 (105)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE Progressive
Front Track Shock (FTS) Base/Adventure PRO-R	 Fox HPG w/IFP Walker Evans w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 2
FTS Spring Rate lbs/in (N/mm)	120-310 (21-54.25)
FTS Spring Preload Inches (cm)	1.375 (3.49)
Rear Track Shock (RTS) Base Adventure/PRO-R	 Fox HPG w/IFPWalker Evans Needle w/Remote Reservoir 16 Click Compression Adjustable

REAR SUSPENSION	
ITEM	**VALUE**
	Factory Setting** = 4
Standard RTS Spring Rider Weight* 120-260lbs. Rate lbs/in (N/mm)	PN: 7043160-133 150 (26.25)
International RTS Spring Rider Weight* 120-260lbs. Rate lbs/in (N/mm)	PN: 7043195–133 170 (29.7)
LW RTS Spring Rider Weight* 90-150lbs. Rate lbs/in (N/mm)	PN: 7041575-385 120 (21)
HD RTS Spring Rider Weight* 240-335+lbs. Rate lbs/in. (N/mm)	PN: 7043585-385 260 (45.5)
RTS Spring Rider / Weight Setting	Spring length set to rider weight using adjustment gauge. STD Gauge PN: 9923267 STD gauge supplied with vehicle. LW and HD springs-Use tape measure and RTS Spring Guide Table located in the Steering/Suspension Chapter.
Rear Travel Inches (cm)	14 (35.6)
* = Rider weight in everyday clothing. ** = From full soft (CCW) position.	

CLUTCH SETTINGS					
	DRIVE CLUTCH		P2 DRIVEN CLUTCH		
ALTITUDE METERS (FEET)	**SHIFT WEIGHT**	**CLUTCH SPRING (ELECTRIC START)**	**CLUTCH SPRING**	**DRIVEN HELIX**	**GEARING (INTERNATIONAL)**
0-600 (0-2000)	10-64	120-310 7043681 (120–340 7042083)	130-180 7043873	58/42-.45 5137176	22:40-72 (21:41–72)
600-1200 (2000-4000)	10-62				
1200-1800 (4000-6000)	10-60				
1800-2400 (6000-8000)	10-58				
2400-3000 (8000-10,000)	10-56				20:41-72 (20:41–72)
3000-3600 (10,000-12,000)	10A-L				
Drive Clutch Bolt Torque: 80 ft-lbs (108Nm) Re-torque after running engine. **OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.**					

2014 600 INDY Voyager

S14CS6GSL
INTERNATIONAL: S14CS6GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4769–6044–0R6G
Displacement / # Cylinders	599 cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.51 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.005 / 0.085-0.124
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204816
Throttle Body Bore	46 mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	144 (365.76)
Pitch Plies	2.52 2
Lug Height-Inches (cm)	2.0 (5.08) (Series 4)
Track Tension	7/8"-1 1/8"(2.2–2.9cm)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1

GENERAL	
ITEM	**VALUE**
Length (in/cm)	129 / 327.5
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	498 / 225
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6.0/5.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	RydeFX MPV
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length-Inches (cm)	10.5 (26.6)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	VALUE
Suspension Type	144 Tipped
Front Track Shock (FTS)	RydeFX MPV
FTS Spring Rate lbs/in (N/mm)	190 (33.3)
FTS Spring Installed Length Inches (cm)	1 Retainer

REAR SUSPENSION	
ITEM	VALUE
Rear Track Shock (RTS)	RydeFX MPV
Torsion Springs	.375/77° LH=7041942-329 RH=7041943-329
Rear Travel Inches (cm)	13 (33)

CLUTCH SETTINGS					
ALTITUDE METERS (FEET)	DRIVE CLUTCH		P2 DRIVEN CLUTCH		
	SHIFT WEIGHT	CLUTCH SPRING	CLUTCH SPRING	DRIVEN HELIX	GEARING
0-600 (0-2000)	10-64	120-310 7042083	130-180 7043873	58/42-.45 5137176	20:42-72
600-1200 (2000-4000)	10-62				
1200-1800 (4000-6000)	10-60				
1800-2400 (6000-8000)	10-58				
2400-3000 (8000-10,000)	10-56				
3000-3600 (10,000-12,000)	10A-L				

Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2014 600 Switchback Assault

600 Switchback Assault 1.3
S14CW6GSA / S14CW6GSL

600 Switchback Assault 2.0
S14CL6GSA / S14CL6GSL
INTERNATIONAL: S14CW6GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4769–6044–0R6G
Displacement / # Cylinders	599 cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.51 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.005 / 0.085-0.124
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204816
Throttle Body Bore	46 mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	144 (365.76)
Pitch Plies	2.52 2

TRACK	
ITEM	**VALUE**
Lug Height-Inches (cm) 1.3 2.0	 1.352 (3.43) (Cobra) 2.0 (5.08) (Series 4)
Track Tension	3/8"-1/2"(1-1.3 cm)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	126 / 320
Height (in/cm)	48 / 121.9
Estimated Dry Weight (lb/kg)	457 / 212.7
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.8 / 3.6
Cooling System Capacity(Qts/ L)	5.0 / 4.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear: 1.3 / 2.0 / INTL Bottom Gear: 1.3 / 2.0 / INTL Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 / 20 / 21 40 / 42 / 41 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	100 (17.5)

FRONT SUSPENSION	
ITEM	**VALUE**
IFS Spring Installed Length-Inches (cm)	10.0 (25.4)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	42.5 (108) 41.52 (105)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	Switchback 144 Tipped
Front Track Shock (FTS)	Walker Evans Piggyback 16 Click Compression Adjustable

REAR SUSPENSION	
ITEM	**VALUE**
	Factory Setting** = 8
FTS Spring Rate lbs/in (N/mm)	170 (21-54.25)
FTS Spring Installed Length Inches (cm)	7.25 (18.4)
Rear Track Shock (RTS)	Walker Evans w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 8
Torsion Springs	.359/77° LH=7041629-329 RH=7041630-329
Rear Travel Inches (cm)	14.5 (36.8)

CLUTCH SETTINGS					
	DRIVE CLUTCH		**P2 DRIVEN CLUTCH**		
ALTITUDE METERS (FEET)	**SHIFT WEIGHT**	**CLUTCH SPRING (ELECTRIC START)**	**CLUTCH SPRING**	**DRIVEN HELIX**	**1.3 GEARING 2.0 GEARING (2.0 INTL MODELS)**
0-600 (0-2000)	10-64	120-310 7043681 (120–340 7042083)	130-180 7043873	58/42-.45 5137176	1.3: 22:40-72 2.0: 20:42–72 (21:41–72)
600-1200 (2000-4000)	10-62				1.3: 22:40-72 2.0: 20:42–72 (21:41–72)
1200-1800 (4000-6000)	10-60				1.3: 22:40-72 2.0: 20:42–72 (21:41–72)
1800-2400 (6000-8000)	10-58				1.3: 22:40-72 2.0: 20:42–72 (21:41–72)
2400-3000 (8000-10,000)	10-56				1.3: 20:41-72 2.0: 20:42–72 (21:41–72)
3000-3600 (10,000-12,000)	10A-L				1.3: 20:41-72 2.0: 20:42–72 (21:41–72)

Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2014 800 Switchback

800 Switchback
S14BR8GSA / S14BR8GSL

800 Switchback PRO-R
S14BS8GSA / S14BS8GSL
INTERNATIONAL: S14BS8GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4774–8044–0R8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204815
Throttle Body Bore	48 mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	465 / 211
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.8 / 3.6

GENERAL	
ITEM	**VALUE**
Cooling System Capacity (Qts/ L)	5 / 4.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (INTL) Bottom Gear (INTL) Chain (INTL) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 (21) 36 (41) 70 (72) Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	136 (345.4)
Pitch Plies	2.52 2
Lug Height-Inches (cm) Base PRO-R PRO-R (International)	 1.25 (3.175) (Ripsaw) 1.352 (3.43) (Cobra) 1.75 (4.4) (Back Country)
Track Tension	1/4"-3/8"(6.3-9.6mm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks Base PRO-R	 Fox HPG w/IFP Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	80 (14)
Preload-Inches (cm) Base	 3.75 (9.52)

FRONT SUSPENSION	
ITEM	**VALUE**
PRO-R	3.0 (7.6)
Travel-Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.52 (105)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE Progressive
Front Track Shock (FTS) Base PRO-R	 Fox HPG w/IFP Walker Evans w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 2
FTS Spring Rate lbs/in (N/mm)	120-310 (21-54.25)
FTS Spring Preload Inches (cm)	1.375 (3.49)
Rear Track Shock (RTS) Base PRO-R	 Fox HPG w/IFP Walker Evans Needle w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 4

REAR SUSPENSION	
ITEM	**VALUE**
Standard RTS Spring Rider Weight* 120-260lbs. Rate lbs/in (N/mm)	PN: 7043160-133 150 (26.25)
International RTS Spring Rider Weight* 120-260lbs. Rate lbs/in (N/mm)	PN: 7043195–133 170 (29.7)
LW RTS Spring Rider Weight* 90-150lbs. Rate lbs/in (N/mm)	PN: 7041575-385 120 (21)
HD RTS Spring Rider Weight* 240-335+lbs. Rate lbs/in. (N/mm)	PN: 7043585-385 260 (45.5)
RTS Spring Rider / Weight Setting	Spring length set to rider weight using adjustment gauge. STD Gauge PN: 9923267 STD gauge supplied with vehicle. LW and HD springs-Use tape measure and RTS Spring Guide Table located in the Steering/Suspension Chapter.
Rear Travel Inches (cm)	14 (35.6)

* = Rider weight in everyday clothing.
** = From full soft (CCW) position.

CLUTCH SETTINGS

ALTITUDE METERS (FEET)	DRIVE CLUTCH		DRIVEN CLUTCH		
	SHIFT WEIGHT	CLUTCH SPRING	CLUTCH SPRING	DRIVEN HELIX	GEARING (INTERNATIONAL)
0-600 (0-2000)	10-66	120-310 7043681	BLU/BLK 123-203 7043064	64/42-.36 5135401	22:36-70 (21:41-72)
600-1200 (2000-4000)	10-64				
1200-1800 (4000-6000)	10-62				
1800-2400 (6000-8000)	10-60		BLK/PUR 160-240 7043363		
2400-3000 (8000-10,000)		140-330 7043829			20:38-70 (20:41-72)
3000-3600 (10,000-12,000)	10-58				

Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2014 800 Switchback PRO-R Adventure

S14BA8GSL
INTERNATIONAL: S14BA8GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4774–8044–0R8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204815
Throttle Body Bore	48 mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	465 / 211
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.8 / 3.6
Cooling System Capacity (Qts/ L)	5 / 4.7
Brake Fluid	DOT 4

GENERAL	
ITEM	**VALUE**
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (INTL) Bottom Gear (INTL) Chain (INTL) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 (21) 36 (41) 70 (72) Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	136 (345.4)
Pitch Plies	2.52 2
Lug Height-Inches (cm) PRO-R Adventure PRO-R Adventure (INTL)	 1.352 (3.43) (Cobra) 1.5 (3.81) (Ripsaw)
Track Tension	1/4"-3/8"(6.3-9.6mm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	80 (14)
Preload-Inches (cm) Adventure	3.0 (7.6)
Travel-Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.52 (105)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE Progressive
Front Track Shock (FTS)	Walker Evans w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 2
FTS Spring Rate lbs/in (N/mm)	120-310 (21-54.25)
FTS Spring Preload Inches (cm)	1.375 (3.49)
Rear Track Shock (RTS)	Walker Evans Needle w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 4
Standard RTS Spring Rider Weight* 120-260lbs. Rate lbs/in (N/mm)	PN: 7043160-133 150 (26.25)
International RTS Spring Rider Weight* 120-260lbs. Rate lbs/in (N/mm)	PN: 7043195–133 170 (29.7)

REAR SUSPENSION	
ITEM	**VALUE**
LW RTS Spring Rider Weight* 90-150lbs. Rate lbs/in (N/mm)	PN: 7041575-385 120 (21)
HD RTS Spring Rider Weight* 240-335+lbs. Rate lbs/in. (N/mm)	PN: 7043585-385 260 (45.5)
RTS Spring Rider / Weight Setting	Spring length set to rider weight using adjustment gauge. STD Gauge PN: 9923267 STD gauge supplied with vehicle. LW and HD springs-Use tape measure and RTS Spring Guide Table located in the Steering/Suspension Chapter.
Rear Travel Inches (cm)	14 (35.6)
* = Rider weight in everyday clothing. ** = From full soft (CCW) position.	

CLUTCH SETTINGS					
ALTITUDE METERS (FEET)	**DRIVE CLUTCH**		**DRIVEN CLUTCH**		
	SHIFT WEIGHT	**CLUTCH SPRING**	**CLUTCH SPRING**	**DRIVEN HELIX**	**GEARING (INTERNATIONAL)**
0-600 (0-2000)	10-66	120-310 7043681	BLU/BLK 123-203 7043064	64/42-.36 5135401	22:36-70 (21:41–72)
600-1200 (2000-4000)	10-64				
1200-1800 (4000-6000)	10-62				
1800-2400 (6000-8000)	10-60		BLK/PUR 160-240 7043363		
2400-3000 (8000-10,000)		140-330 7043829			20:38-70 (20:41–72))
3000-3600 (10,000-12,000)	10-58				
Drive Clutch Bolt Torque: 80 ft-lbs (108Nm) Re-torque after running engine. **OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.**					

2014 800 Switchback PRO-R LE

S14BC8GS / S14BD8GS
INTERNATIONAL: S14BD8GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4774–8044–0R8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204815
Throttle Body Bore	48 mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	108 / 274
Height (in/cm)	46 / 117
Estimated Dry Weight (lb/kg)	465 / 211
Fuel (Gallons / Liters)	11 / 41.6
Oil (Quarts / Liters)	3.8 / 3.6
Cooling System Capacity (Qts/ L)	5 / 4.7
Brake Fluid	DOT 4

GENERAL	
ITEM	**VALUE**
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 21 41 72 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	136 (345.4)
Pitch Plies	2.52 2
Lug Height-Inches (cm)	1.352 (3.43) (Cobra) 1.75 (4.4) (Back Country)
Track Tension	1/4"-3/8"(6.3-9.6mm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	80 (14)
Preload-Inches (cm) Base Adventure/PRO-R	 3.75 (9.52) 3.0 (7.6)
Travel-Inches (cm)	9 (22.9)

FRONT SUSPENSION	
ITEM	**VALUE**
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.52 (105)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE Progressive
Front Track Shock (FTS)	Walker Evans w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 2
FTS Spring Rate lbs/in (N/mm)	120-310 (21-54.25)
FTS Spring Preload Inches (cm)	1.375 (3.49)
Rear Track Shock (RTS)	Walker Evans Needle w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 4
Standard RTS Spring Rider Weight* 120-260lbs. Rate lbs/in (N/mm)	PN: 7043160-133 150 (26.25)

REAR SUSPENSION	
ITEM	**VALUE**
International RTS Spring Rider Weight* 120-260lbs. Rate lbs/in (N/mm)	PN: 7043195–133 170 (29.7)
LW RTS Spring Rider Weight* 90-150lbs. Rate lbs/in (N/mm)	PN: 7041575-385 120 (21)
HD RTS Spring Rider Weight* 240-335+lbs. Rate lbs/in. (N/mm)	PN: 7043585-385 260 (45.5)
RTS Spring Rider / Weight Setting	Spring length set to rider weight using adjustment gauge. STD Gauge PN: 9923267 STD gauge supplied with vehicle. LW and HD springs-Use tape measure and RTS Spring Guide Table located in the Steering/Suspension Chapter.
Rear Travel Inches (cm)	14 (35.6)

* = Rider weight in everyday clothing.
** = From full soft (CCW) position.

CLUTCH SETTINGS					
ALTITUDE METERS (FEET)	**DRIVE CLUTCH**		**DRIVEN CLUTCH**		
	SHIFT WEIGHT	**CLUTCH SPRING**	**CLUTCH SPRING**	**DRIVEN HELIX**	**GEARING**
0-600 (0-2000)	10-66	120-310 7043681	BLU/BLK 123-203 7043064	64/42-.36 5135401	21:41–72
600-1200 (2000-4000)	10-64				
1200-1800 (4000-6000)	10-62				
1800-2400 (6000-8000)	10-60		BLK/PUR 160-240 7043363		
2400-3000 (8000-10,000)		140-330 7043829			20:41–72
3000-3600 (10,000-12,000)	10-58				

Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2014 800 Switchback Assault

800 Switchback Assault 1.3
S14CW8GSA / S14CW8GSL / S14CW8GS

800 Switchback Assault 2.0
S14CL8GSA / S14CL8GSL / S148GSA
INTERNATIONAL: S14CL8GEL / S14CL8GEM

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4775–8044–0R8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204815
Throttle Body Bore	48 mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	144 (365.76)
Pitch Plies	2.52 2
Lug Height-Inches (cm) 1.3 2.0	 1.352 (3.43) (Cobra) 2.0 (5.08) (Series 4)
Track Tension	3/8"-1/2"(1-1.3cm)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	126 / 320
Height (in/cm)	48 / 121.9
Estimated Dry Weight (lb/kg)	457 / 212.7
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.8 / 3.6
Cooling System Capacity(Qts/ L)	5.0 / 4.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear: 1.3 / 2.0 / INTL. Bottom Gear: 1.3 / 2.0 / INTL Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 23 / 20 / 21 39 / 42 / 41 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length-Inches (cm)	10.0 (25.4)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.52 (105)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	Switchback 144 Tipped
Front Track Shock (FTS)	Walker Evans Piggyback 16 Click Compression Adjustable Factory Setting** = 8
FTS Spring Rate lbs/in (N/mm)	170 (21-54.25)
FTS Spring Installed Length Inches (cm)	7.25 (18.4)

REAR SUSPENSION	
ITEM	**VALUE**
Rear Track Shock (RTS)	Walker Evans w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 8
Torsion Springs	.359/77° LH=7041629-329 RH=7041630-329
Rear Travel Inches (cm)	14.5 (36.8)

CLUTCH SETTINGS

ALTITUDE METERS (FEET)	DRIVE CLUTCH		DRIVEN CLUTCH		
	SHIFT WEIGHT	CLUTCH SPRING	CLUTCH SPRING	DRIVEN HELIX	1.3 GEARING 2.0 GEARING (2.0 INTL. MODELS)
0-600 (0-2000)	10-66	120-310 7043681	BLU/BLK 123-203 7043064	64/42-.36 5135401	1.3: 23:39-72 2.0: 20:42–72 (21:41–72)
600-1200 (2000-4000)	10-64				1.3: 23:39-72 2.0: 20:42–72 (21:41–72)
1200-1800 (4000-6000)	10-62				1.3: 23:39-72 2.0: 20:42–72 (21:41–72)
1800-2400 (6000-8000)	10-60		BLK/PUR 160-240 7043363		1.3: 23:39-72 2.0: 20:42–72 (21:41–72)
2400-3000 (8000-10,000)		140-330 7043829			1.3: 24:41–72 2.0: 20:42–72 (20:42–72)
3000-3600 (10,000-12,000)	10-58				1.3: 24:41–72 2.0: 20:42–72 (20:42–72)

Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2014 600 RMK 144

600 RMK 144
S14CK6GSA / S14CK6GSL
INTERNATIONAL: S14CK6GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4769–6044–0R6G
Displacement / # Cylinders	599CC / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.51 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.005 / 0.085-0.124
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204816
Throttle Body Bore	46 mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	144 (365.7)
Pitch Plies	2.52 2
Lug Height-Inches (cm)	2.0 (5.08) Series 4
Track Tension	3/8"-1/2"(1.0-1.3cm)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1
Length (in/cm)	144 = 125 / 318
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	440 / 199.6
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.0 / 2.8
Cooling System Capacity(Qts/ L)	144 = 6.0 / 5.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	RydeFX Twin Tube
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length-Inches (cm)	10.5 (26.7)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
Suspension Type	RMK144 Tipped
Front Track Shock (FTS)	RydeFX Twin Tube
FTS Spring Rate lbs/in (N/mm)	170 (21-54.25)
FTS Spring Installed Length Inches (cm)	7.25 (18.4)

REAR SUSPENSION	
Rear Track Shock (RTS)	RydeAFX Twin Tube
Torsion Springs	.359/77° LH=7041629-329 RH=7041630-329
Rear Travel Inches (cm)	13 (33)

CLUTCH SETTINGS

ALTITUDE METERS (FEET)	DRIVE CLUTCH		DRIVEN CLUTCH		
	SHIFT WEIGHT	CLUTCH SPRING	CLUTCH SPRING	DRIVEN HELIX	GEARING
0-450 (0-1500)	10-64	120-340 7042083	BLK/PUR 160-240 7043363	56/42-.36 5135403	20:42-72
450-900 (1500-3000)	10-62				
900-1500 (3000-5000)	10-60				
1500-2100 (5000-7000)	10-58				
2100-2700 (7000-9000)	10-56				
2700+ (9000+)	10-54				

Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2014 600 RMK 155

600 RMK 155
S14CM6GSA / S14CM6GSL
INTERNATIONAL: S14CM6GEA

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4769–6044–0R6G
Displacement / # Cylinders	599CC / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.51 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.005 / 0.085-0.124
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204816
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7)
Pitch Plies	2.86 1
Lug Height-Inches (cm)	2.4 (6.1) Series 5.1
Track Tension	3/8"-1/2"(1.0-1.3cm)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1
Length (in/cm)	155 = 129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	440 / 199.6
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	155 = 6.3 / 6.0
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	RydeFX Twin Tube
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length-Inches (cm)	10.5 (26.7)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	 39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	RMK Coil-Over 155
Front Track Shock (FTS)	RydeFX Twin Tube
FTS Spring Rate lbs/in (N/mm)	150 (26.25)
Rear Track Shock (RTS)	RydeAFX Twin Tube
Standard RTS Spring Rate lbs/in (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* <160lbs./72kg 160-220lbs./72-99kg 220-280lbs./99-127kg 280-340lbs./127-154kg	PN: 7043680-133 210 (36.75) 10-3/4" (27.3) 10-1/4" (26) 10-1/8" (25.7) 9-3/4" (24.8)

REAR SUSPENSION	
ITEM	**VALUE**
	CAUTION: Do not adjust STD spring length greater than 10-3/4" or less than 9-5/8".
HD RTS Spring Rate lbs/in. (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* 250-300lbs./113-136kg 300-350lbs./136-159kg	PN: 7043741-067 250 (43.75) 10-1/8" (25.7) 10" (25.4) **CAUTION: Do not adjust HD spring length greater than 10-7/8" or less than 9-7/8".**
Rear Travel Inches (cm)	16 (40.6)
* = Rider weight with gear.	

CLUTCH SETTINGS					
ALTITUDE METERS (FEET)	**DRIVE CLUTCH**		**DRIVEN CLUTCH**		
	SHIFT WEIGHT	**CLUTCH SPRING**	**CLUTCH SPRING**	**DRIVEN HELIX**	**GEARING**
0-450 (0-1500)	10-64	120-340 7042083	BLK/PUR 160-240 7043363	56/42-.36 5135403	20:42-72
450-900 (1500-3000)	10-62				
900-1500 (3000-5000)	10-60				
1500-2100 (5000-7000)	10-58				
2100-2700 (7000-9000)	10-56				
2700+ (9000+)	10-54				

Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2014 600 PRO RMK 155

S14CG6GSA / S14CG6GSL
INTERNATIONAL: S14CG6GEA

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4770–6044–0R6G
Displacement / # Cylinders	599cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.005 / 0.085-0.127
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204816
Throttle Body Bore	46mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7)
Pitch Plies	2.86 1
Lug Height-Inches (cm)	2.4 (6.1) Series 5.1
Track Tension	3/8"-1/2"(1.0-1.3cm)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1

GENERAL	
ITEM	**VALUE**
Length (in/cm)	129/327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	431/195.5
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.0 / 2.8
Cooling System Capacity(Qts/ L)	5.3/5.0
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
QuickDrive System Center Distance (inches) Top Sprocket Bottom Sprocket Belt Pitch Reverse System	 7.53 21 44 68 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	Walker Evans HPG w/IFP
IFS Spring Rate lbs/in (N/mm)	100 (17.4)
IFS Spring Installed Length-Inches (cm)	10.25 (26)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.85 (93.6) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
Suspension Type	RMK Coil-Over 155
Front Track Shock (FTS)	Walker Evans HPG w/IFP

REAR SUSPENSION	
FTS Spring Rate lbs/in (N/mm)	150 (26.25)
FTS Spring Installed Length Inches (cm)	8.50 (21.6)
Rear Track Shock (RTS)	Walker Evans HPG w/IFP
Standard RTS Spring Rate lbs/in (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* <160lbs./72kg 160-220lbs./72-99kg 220-280lbs./99-127kg 280-340lbs./127-154kg	 PN: 7043714-133 210 (36.75) 10-3/4" (27.3) 10-3/8" (26.3) 10-1/8" (25.7) 9-3/4" (24.8)

REAR SUSPENSION	
	CAUTION: Do not adjust STD spring length greater than 11.0" or less than 9-3/4".
HD RTS Spring Rate lbs/in. (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* 250-300lbs./113-136kg 300-350lbs./136-159kg	PN: 7043740-067 250 (43.75) 10-1/8" (25.7) 10" (25.4) **CAUTION: Do not adjust HD spring length greater than 10-7/8" or less than 9-7/8".**
Rear Travel Inches (cm)	16 (40.6)
* = Rider weight with gear.	

CLUTCH SETTINGS

ALTITUDE METERS (FEET)	DRIVE CLUTCH		DRIVEN CLUTCH		
	SHIFT WEIGHT	CLUTCH SPRING	CLUTCH SPRING	DRIVEN HELIX	BELT GEARING
0-450 (0-1500)	10-64	120-340 7042083	BLK/PUR 160-240 7043363	56/42-.36 5135403	21:44-68
450-900 (1500-3000)	10-62				
900-1500 (3000-5000)	10-60				
1500-2100 (5000-7000)	10-58				
2100-2700 (7000-9000)	10-56				
2700+ (9000+)	10-54				

Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2014 800 RMK 155

S14CM8GSA / S14CM8GSL
INTERNATIONAL: S14CM8GEA

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4775–8044–0R8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0041-.0053 / 0.105-0.131
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204815
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	440 / 199.6
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.0 / 2.8
Cooling System Capacity(Qts/ L)	6.3/6.0
Brake Fluid	DOT 4

GENERAL	
ITEM	**VALUE**
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7)
Pitch Plies	2.86 1
Lug Height-Inches (cm)	2.4 (6.1) Series 5.1
Track Tension	3/8"-1/2"(1.0-1.3cm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	RydeFX Twin Tube
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length-Inches (cm)	10.5 (26.7)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	RMK Coil-Over 155
Front Track Shock (FTS)	RydeFX Twin Tube
FTS Spring Rate lbs/in (N/mm)	150 (26.25)
Rear Track Shock (RTS)	RydeAFX Twin Tube
Standard RTS Spring Rate lbs/in (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* <160lbs./72kg 160-220lbs./72-99kg 220-280lbs./99-127kg 280-340lbs./127-154kg	PN: 7043680-133 210 (36.75) 10-3/4" (27.3) 10-1/4" (26) 10-1/8" (25.7) 9-3/4" (24.8)

REAR SUSPENSION	
ITEM	**VALUE**
	CAUTION: Do not adjust STD spring length greater than 10-3/4" or less than 9-5/8".
HD RTS Spring Rate lbs/in. (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* 250-300lbs./113-136kg 300-350lbs./136-159kg	PN: 7043741-067 250 (43.75) 10-1/8" (25.7) 10" (25.4) **CAUTION: Do not adjust HD spring length greater than 10-7/8" or less than 9-7/8".**
Rear Travel Inches (cm)	16 (40.6)
* = Rider weight with gear.	

CLUTCH SETTINGS					
ALTITUDE METERS (FEET)	**DRIVE CLUTCH**		**DRIVEN CLUTCH**		
	SHIFT WEIGHT	**CLUTCH SPRING**	**CLUTCH SPRING**	**DRIVEN HELIX**	**GEARING**
0-600 (0-2000)	10-68	140-330 7043829	BLACK 155-222 7043063	56/42-.36 5135403	20:42-72
600-1200 (2000-4000)	10-66				
1200-1800 (4000-6000)	10-64				
1800-2400 (6000-8000)	10-62				
2400-3000 (8000-10,000)	10-60		BLK/PUR 160-240 7043363		
3000-3600 (10,000-12,000)	10-58				

Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2014 800 PRO RMK 155/163

800 PRO RMK 155
S14CG8GSA / S14CG8GSL / S14CG8GS
INTERNATIONAL: S14CG8GEA / S14CG8GEB

800 PRO RMK 163
S14CH8GSA / S14CH8GSL / S14CH8GS
INTERNATIONAL: S14CH8GEA

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4773–8044–0R8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0041-.0053 / 0.105-0.131
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204815
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated)
Premium Mode	91+ (Non-Oxygenated)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1
Length (in/cm)	155 = 129/327.7 163 = 134/340.4
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	155 = 431/195.5 163 = 437/198.7

GENERAL	
ITEM	**VALUE**
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.0 / 2.8
Cooling System Capacity(Qts/ L)	155=5.3/5.0 163=5.5/5.2
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
QuickDrive System Center Distance (inches) Top Sprocket Bottom Sprocket Belt Pitch Reverse System	 7.53 21 44 68 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7) 163 (414)
Pitch Plies	2.86 1
Lug Height-Inches (cm)	2.4 (6.1) Series 5.1
Track Tension	3/8"-1/2"(1.0-1.3cm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	Walker Evans HPG w/IFP
IFS Spring Rate lbs/in (N/mm)	100 (17.4)
IFS Spring Installed Length-Inches (cm)	10.25 (26)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	 39-40-41 (99.1-101.6-104.1) 36.85 (93.6) Measured inside of spindles.

FRONT SUSPENSION	
ITEM	VALUE
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	VALUE
Suspension Type	RMK Coil-Over 155/163
Front Track Shock (FTS)	Walker Evans HPG w/IFP
FTS Spring Rate lbs/in (N/mm)	150 (26.25)
FTS Spring Installed Length Inches (cm)	8.50 (21.6)
Rear Track Shock (RTS)	Walker Evans HPG w/IFP
Standard RTS Spring Rate lbs/in (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight*	PN: 7043714-133 210 (36.75)

REAR SUSPENSION	
ITEM	VALUE
<160lbs./72kg 160-220lbs./72-99kg 220-280lbs./99-127kg 280-340lbs./127-154kg	10-3/4" (27.3) 10-3/8" (26.3) 10-1/8" (25.7) 9-3/4" (24.8) **CAUTION: Do not adjust STD spring length greater than 11.0" or less than 9-3/4".**
HD RTS Spring Rate lbs/in. (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* 250-300lbs./113-136kg 300-350lbs./136-159kg	PN: 7043740-067 250 (43.75) 10-1/8" (25.7) 10" (25.4) **CAUTION: Do not adjust HD spring length greater than 10-7/8" or less than 9-7/8".**
Rear Travel Inches (cm)	16 (40.6)
* = Rider weight with gear.	

CLUTCH SETTINGS					
ALTITUDE METERS (FEET)	DRIVE CLUTCH		DRIVEN CLUTCH		
	SHIFT WEIGHT	CLUTCH SPRING	CLUTCH SPRING	DRIVEN HELIX	BELT GEARING
0-600 (0-2000)	10-68	140-330 7043829	BLACK 155-222 7043063	56/42-.36 5135403	21:44-68
600-1200 (2000-4000)	10-66				
1200-1800 (4000-6000)	10-64				
1800-2400 (6000-8000)	10-62				
2400-3000 (8000-10,000)	10-60		BLK/PUR 160-240 7043363		
3000-3600 (10,000-12,000)	10-58				
Drive Clutch Bolt Torque: 80 ft-lbs (108Nm) Re-torque after running engine. **OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.**					

2014 800 RMK Assault

800 RMK Assault
S14CN8GSA / S14CN8GSL / S14CN8GS
INTERNATIONAL: S14CN8GEA / S14CN8GEB

800 RMK Assault Powder
S14CY8GSA / S14CY8GSL / S14CY8GS

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4773–8044–0R8G
Displacement / # Cylinders	794cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0041-.0053 / 0.105-0.131
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204815
Throttle Body Bore	48mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	446 / 202.3
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.0 / 2.8

GENERAL	
ITEM	**VALUE**
Cooling System Capacity(Qts/ L)	5.3/5.0
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7)
Pitch Plies	2.86 2 (Competition) 1 (Series 5.1)
Lug Height-Inches (cm) Base Powder	 2.125 (5.4) (Competition) 2.4 (6.1) Series 5.1
Track Tension	3/8"-1/2"(1.0-1.3cm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Wide Adjustable
Shocks	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	130 (22.75)
IFS Spring Installed Length-Inches (cm)	10.75 (27.3)

FRONT SUSPENSION	
ITEM	**VALUE**
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm)	41.5-42.5-43.5 (105.4-108-110.5)
Setup Width	38.58 (98) Measured inside of spindles.
Camber Inches (cm)	2.25 ± 0.31 (5.7 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	RMK Coil-Over 155
Front Track Shock (FTS)	Walker Evans HPG w/IFP
FTS Spring Rate lbs/in (N/mm)	180 (31.5)
FTS Spring Installed Length-Inches (cm)	8.50 (21.6)
Rear Track Shock (RTS)	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6

REAR SUSPENSION	
ITEM	**VALUE**
Standard RTS Spring Rate lbs/in (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* <160lbs./72kg 160-220lbs./72-99kg 220-280lbs./99-127kg 280-340lbs./127-154kg	PN: 7043572-133 190 (33.25) 10-7/8" (27.6) 10-1/4" (26) 10" (25.4) 9-1/2" (24.1) **CAUTION: Do not adjust STD spring length greater than 11.0" or less than 9-3/8".**
HD RTS Spring Rate lbs/in. (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* 250-300lbs./113-136kg 300-350lbs./136-159kg	PN: 7043740-067 250 (43.75) 10-1/8" (25.7) 10" (25.4) **CAUTION: Do not adjust HD spring length greater than 10-7/8" or less than 9-7/8".**
Rear Travel Inches (cm)	16 (40.6)
* = Rider weight with gear.	

CLUTCH SETTINGS					
ALTITUDE METERS (FEET)	**DRIVE CLUTCH**		**DRIVEN CLUTCH**		
	SHIFT WEIGHT	**CLUTCH SPRING**	**CLUTCH SPRING**	**DRIVEN HELIX**	**GEARING**
0-600 (0-2000)	10-68	140-330 7043829	BLACK 155-222 7043063	56/42-.36 5135403	20:42-72
600-1200 (2000-4000)	10-66				
1200-1800 (4000-6000)	10-64				
1800-2400 (6000-8000)	10-62				
2400-3000 (8000-10,000)	10-60		BLK/PUR 160-240 7043363		
3000-3600 (10,000-12,000)	10-58				

Drive Clutch Bolt Torque: 80 ft-lbs (108 Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2015 600 INDY / INDY SP

600 INDY
S15CB6GSA / S15CB6GSL
INTERNATIONAL: S15CB6GEA

600 INDY SP
S15CP6GSA / S15CP6GSL / S15CP6GS
INTERNATIONAL: S15CP6GEM

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4948–6044–0I6G
Displacement / # Cylinders	599 cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.51 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.005 / 0.085-0.124
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204816
Throttle Body Bore	46 mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	121 (365.76)
Pitch Plies	2.52 2

TRACK	
ITEM	**VALUE**
Lug Height-Inches (cm) INDY INDY (International) INDY SP INDY SP (International) 60TH	 .91 (2.3) (Shockwave) 1.352 (3.4) (Cobra) 1.0 (2.54) (Hacksaw) 1.75 (4.445) (BackCountry) 1.25 (3.175) (Ripsaw II)
Track Tension	7/8"-1 1/8" (2.2 - 2.9 cm)

GENERAL INFORMATION	
ITEM	**VALUE**
Width (in/cm)	48 / 122
Length (in/cm)	115 / 292
Height (in/cm)	48 / 122
Estimated Dry Weight (lb/kg)	447 / 203
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.8 / 3.6
Cooling System Capacity(Qts/ L)	5.0/4.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 40 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks INDY INDY SP	 RydeFX MPV Fox HPG w/IFP
IFS Spring Rate lbs/in (N/mm)	80 (14)

FRONT SUSPENSION	
ITEM	**VALUE**
IFS Spring Installed Length-Inches (cm) INDY INDY SP	 10.0 (25.4) 10.75 (27.3)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.52 (105)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	INDY 121
Front Track Shock (FTS) INDY INDY SP	 RydeFX MPV Fox HPG w/IFP

REAR SUSPENSION	
ITEM	**VALUE**
FTS Spring Rate lbs/in (N/mm)	130-270 (22.7-47.2)
FTS Spring Preload Inches (cm) INDY INDY SP	 1 Spring Retainer .74(1.88)
Rear Track Shock (RTS) INDY INDY SP	 RydeFX MPV Fox PS-5
Torsion Springs INDY/INDY SP	.347/80°/10# LH=7043859-329 RH=7043860-329
Torsion Springs INTERNATIONAL	.359/80°/12.5# LH=7043079-067 RH=7043080-067
Rear Travel Inches (cm)	13.9 (35.3)

CLUTCH SETTINGS

ALTITUDE METERS (FEET)	DRIVE CLUTCH		DRIVEN CLUTCH		
	SHIFT WEIGHT	CLUTCH SPRING (ELECTRIC START)	CLUTCH SPRING	DRIVEN HELIX	GEARING
0-600 (0-2000)	10-64	120-310 7043681 (BLK/GRN 7042083)	RED/BLK 7043058	56/42-.36 5135403	22:40-72
600-1200 (2000-4000)	10-62				
1200-1800 (4000-6000)	10-60				
1800-2400 (6000-8000)	10-58				
2400-3000 (8000-10,000)	10-56				20:41-72
3000-3600 (10,000-12,000)	10A-L				

Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2015 800 INDY SP

S15CP8GSA / S15CP8GSL / S15CP8GS
INTERNATIONAL: S15CP8GEL / S15CP8GEM

ENGINE SPECIFICATIONS	
ITEM	VALUE
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4953–8044–0I8G
Displacement / # Cylinders	794 cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0041-.0053 / 0.105-0.131
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	VALUE
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204815
Throttle Body Bore	48 mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated)
Premium Mode	91+ (Non-Oxygenated)

TRACK	
ITEM	VALUE
Width-Inches (cm)	15 (38)
Length-Inches (cm)	121 (365.76)
Pitch Plies	2.52 2
Lug Height-Inches (cm) INDY SP INDY SP (International) 60TH	 1.0 (2.54) (Hacksaw) 1.75 (4.445) (BackCountry) 1.25 (3.175) (Ripsaw II)
Track Tension	7/8"-1 1/8" (2.2 - 2.9 cm)

GENERAL INFORMATION	
ITEM	VALUE
Width (in/cm)	48 / 122
Length (in/cm)	115 / 292
Height (in/cm)	48 / 122
Estimated Dry Weight (lb/kg)	447 / 203
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.8 / 3.6
Cooling System Capacity(Qts/ L)	5.0/4.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear Bottom Gear (International) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 39 (40) 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	VALUE
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	VALUE
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks	Fox HPG w/IFP
IFS Spring Rate lbs/in (N/mm)	80 (14)
IFS Spring Installed Length-Inches (cm)	10.75 (27.3)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.52 (105)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	VALUE
Suspension Type	INDY 121
Front Track Shock (FTS)	Fox HPG w/IFP
FTS Spring Rate lbs/in (N/mm)	130-270 (22.7-47.2)
FTS Spring Preload Inches (cm)	.74(1.88)
Rear Track Shock (RTS)	Fox PS-5

REAR SUSPENSION	
ITEM	VALUE
Torsion Springs	.347/80°/10# LH=7043859-329 RH=7043860-329
Torsion Springs INTERNATIONAL	.359/80°/12.5# LH=7043079-067 RH=7043080-067
Rear Travel Inches (cm)	13.9 (35.3)

CLUTCH SETTINGS

ALTITUDE METERS (FEET)	DRIVE CLUTCH		DRIVEN CLUTCH		
	SHIFT WEIGHT	CLUTCH SPRING	CLUTCH SPRING	DRIVEN HELIX	GEARING (INTERNATIONAL MODELS)
0-600 (0-2000)	10-66	120-310 7043681	RED/BLK 7043058	64/42/.36 5135401	23:39-72 (21:41-72)
600-1200 (2000-4000)	10-64				23:39-72 (21:41-72)
1200-1800 (4000-6000)	10-62				
1800-2400 (6000-8000)	10-60				
2400-3000 (8000-10,000)		140-330 7043342			20:41-72
3000-3600 (10,000-12,000)	10-58				

Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2015 600 Switchback Assault

600 Switchback Assault 1.3
S15CW6GSA / S15CW6GSL / S15CW6GS

600 Switchback Assault 2.0
S15CL6GSA / S15CL6GSL
INTERNATIONAL 1.75: S15CW6GEM

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4948–6044–0I6G
Displacement / # Cylinders	599 cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.51 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.005 / 0.085-0.124
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204816
Throttle Body Bore	46 mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	144 (365.76)
Pitch Plies	2.52 2

TRACK	
ITEM	**VALUE**
Lug Height-Inches (cm) 1.3 2.0 INTL 1.75	 1.352 (3.43) (Cobra) 2.0 (5.08) (Series 4) 1.75 (4.445) (BackCountry)
Track Tension	3/8"-1/2"(1 - 1.3 cm)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	126 / 320
Height (in/cm)	48 / 121.9
Estimated Dry Weight (lb/kg)	457 / 212.7
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.8 / 3.6
Cooling System Capacity(Qts/ L)	5.0 / 4.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear: 1.3 / 2.0 / 1.75 INTL Bottom Gear: 1.3 / 2.0 / 1.75 INTL Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 22 / 20 / 21 40 / 42 / 41 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6

FRONT SUSPENSION	
ITEM	**VALUE**
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length-Inches (cm)	10.0 (25.4)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	42.5 (108) 41.52 (105)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	Switchback 144 Tipped
Front Track Shock (FTS)	Walker Evans Piggyback

REAR SUSPENSION	
ITEM	**VALUE**
	16 Click Compression Adjustable Factory Setting** = 8
FTS Spring Rate lbs/in (N/mm)	170 (21-54.25)
FTS Spring Installed Length Inches (cm)	7.25 (18.4)
Rear Track Shock (RTS)	Walker Evans w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 8
Torsion Springs	.359/77° LH=7041629-329 RH=7041630-329
Rear Travel Inches (cm)	14.5 (36.8)

CLUTCH SETTINGS

ALTITUDE METERS (FEET)	DRIVE CLUTCH		DRIVEN CLUTCH		
	SHIFT WEIGHT	CLUTCH SPRING (ELECTRIC START)	CLUTCH SPRING	DRIVEN HELIX	1.3 GEARING 2.0 GEARING (1.75 INTL MODELS)
0-600 (0-2000)	10-64	120-310 7043681 (120–340 7042083)	RED/BLK 7043873	56/42–.36 5135403	1.3: 22:40-72 2.0: 20:42–72 (21:41–72)
600-1200 (2000-4000)	10-62				1.3: 22:40-72 2.0: 20:42–72 (21:41–72)
1200-1800 (4000-6000)	10-60				1.3: 22:40-72 2.0: 20:42–72 (21:41–72)
1800-2400 (6000-8000)	10-58				1.3: 22:40-72 2.0: 20:42–72 (21:41–72)
2400-3000 (8000-10,000)	10-56				1.3: 20:41-72 2.0: 20:42–72 (20:41–72)
3000-3600 (10,000-12,000)	10A-L				1.3: 20:41-72 2.0: 20:42–72 (20:41–72)

Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2015 800 Switchback Assault

800 Switchback Assault 1.3
S15CW8GSA / S15CW8GSL / S14CW8GS

800 Switchback Assault 2.0
S15CL8GSA / S15CL8GSL
INTERNATIONAL 1.75: S15CW8GEN/ S15CW8GEM

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4953–8044–0R8G
Displacement / # Cylinders	794 cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.004-.0055 / 0.103-0.141
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204815
Throttle Body Bore	48 mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	144 (365.76)
Pitch Plies	2.52 2
Lug Height-Inches (cm) 1.3 2.0 INTL 1.75	 1.352 (3.43) (Cobra) 2.0 (5.08) (Series 4) 1.75 (4.445) (BackCountry)
Track Tension	3/8"-1/2"(1 - 1.3 cm)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	126 / 320
Height (in/cm)	48 / 121.9
Estimated Dry Weight (lb/kg)	457 / 212.7
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.8 / 3.6
Cooling System Capacity(Qts/ L)	5.0 / 4.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear: 1.3 / 2.0 / 1.75 INTL. Bottom Gear: 1.3 / 2.0 / 1.75 INTL Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 23 / 20 / 21 39 / 42 / 41 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE (Fixed Camber)
Shocks	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length-Inches (cm)	10.0 (25.4)
Front Vertical Travel Inches (cm)	9 (22.9)

FRONT SUSPENSION	
ITEM	**VALUE**
Ski Center Distance Inches (cm) Setup Width	 42.5 (108) 41.52 (105)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	Switchback 144 Tipped
Front Track Shock (FTS)	Walker Evans Piggyback 16 Click Compression Adjustable Factory Setting** = 8
FTS Spring Rate lbs/in (N/mm)	170 (21-54.25)

REAR SUSPENSION	
ITEM	**VALUE**
FTS Spring Installed Length Inches (cm)	7.25 (18.4)
Rear Track Shock (RTS)	Walker Evans w/Remote Reservoir 16 Click Compression Adjustable Factory Setting** = 8
Torsion Springs	.359/77° LH=7041629-329 RH=7041630-329
Rear Travel Inches (cm)	14.5 (36.8)

CLUTCH SETTINGS

ALTITUDE METERS (FEET)	DRIVE CLUTCH		DRIVEN CLUTCH		
	SHIFT WEIGHT	CLUTCH SPRING	CLUTCH SPRING	DRIVEN HELIX	1.3 GEARING 2.0 GEARING (1.75 INTL. MODELS)
0-600 (0-2000)	10-66	120-310 7043681	BLU/BLK 123-203 7043064	64/42-.36 5135401	1.3: 23:39-72 2.0: 20:42–72 (21:41–72)
600-1200 (2000-4000)	10-64				1.3: 23:39-72 2.0: 20:42–72 (21:41–72)
1200-1800 (4000-6000)	10-62				1.3: 23:39-72 2.0: 20:42–72 (21:41–72)
1800-2400 (6000-8000)	10-60		BLK/PUR 160-240 7043363		1.3: 23:39-72 2.0: 20:42–72 (21:41–72)
2400-3000 (8000-10,000)		140-330 7043342			1.3: 21:41–72 2.0: 20:42–72 (20:42–72)
3000-3600 (10,000-12,000)	10-58				1.3: 21:41–72 2.0: 20:42–72 (20:42–72)

Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2015 600 INDY Voyageur

S15CS6GSL
INTERNATIONAL: S15CS6GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4948–6044–0I6G
Displacement / # Cylinders	599 cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.51 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.005 / 0.085-0.124
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204816
Throttle Body Bore	46 mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	144 (365.76)
Pitch Plies	2.52 2
Lug Height-Inches (cm) INTL 1.75	2.0 (5.08) (Series 4) 1.75 (4.445) (BackCountry)
Track Tension	7/8"-1 1/8"(2.2 – 2.9 cm)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1
Length (in/cm)	129 / 327.5
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	498 / 225
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	6.0/5.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211122 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	RydeFX MPV
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length-Inches (cm)	10.5 (26.6)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	 39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	VALUE
Suspension Type	144 Tipped
Front Track Shock (FTS)	RydeFX MPV
FTS Spring Rate lbs/in (N/mm)	190 (33.3)
FTS Spring Installed Length Inches (cm)	1 Retainer

REAR SUSPENSION	
ITEM	VALUE
Rear Track Shock (RTS)	RydeFX MPV
Torsion Springs	.375/77° LH=7041942-329 RH=7041943-329
Rear Travel Inches (cm)	13 (33)

CLUTCH SETTINGS					
ALTITUDE METERS (FEET)	DRIVE CLUTCH		DRIVEN CLUTCH		
	SHIFT WEIGHT	CLUTCH SPRING	CLUTCH SPRING	DRIVEN HELIX	GEARING
0-450 (0-1500)	10-64	BLK/GRN 7042083	BLK/PUR 7043363	56/42–.36 5135403	20:42–72
450-900 (1500-3000)	10-62				
900-1500 (3000-5000)	10-60				
1500-2100 (5000-7000)	10-58				
2100-2700 (70000-9,000)	10-56				
2700-3350 (9000-11,000)	10-54				

Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2015 600 RMK 144

600 RMK 144
S15CK6GSA / S15CK6GSL
INTERNATIONAL: S15CK6GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4948–6044–0I6G
Displacement / # Cylinders	599 cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.51 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.005 / 0.085-0.124
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204816
Throttle Body Bore	46 mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	144 (365.7)
Pitch Plies	2.52 2
Lug Height-Inches (cm)	2.0 (5.08) Series 4
Track Tension	3/8"-1/2"(1.0 - 1.3 cm)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1
Length (in/cm)	144 = 125 / 318
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	440 / 199.6
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.0 / 2.8
Cooling System Capacity(Qts/ L)	144 = 6.0 / 5.7
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	RydeFX Twin Tube
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length-Inches (cm)	10.5 (26.7)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
Suspension Type	RMK144 Tipped
Front Track Shock (FTS)	RydeFX Twin Tube
FTS Spring Rate lbs/in (N/mm)	170 (21-54.25)
FTS Spring Installed Length Inches (cm)	7.25 (18.4)

REAR SUSPENSION	
Rear Track Shock (RTS)	RydeAFX Twin Tube
Torsion Springs	.359/77° LH=7041629-329 RH=7041630-329
Rear Travel Inches (cm)	13 (33)

CLUTCH SETTINGS

ALTITUDE METERS (FEET)	DRIVE CLUTCH		DRIVEN CLUTCH		
	SHIFT WEIGHT	CLUTCH SPRING	CLUTCH SPRING	DRIVEN HELIX	GEARING
0-450 (0-1500)	10-64*	BLK/GRN 7042083	BLK/PUR 7043363	56/42–.36 5135403	20:42–72
450-900 (1500-3000)	10-62				
900-1500 (3000-5000)	10-60				
1500-2100 (5000-7000)	10-58**				
2100-2700 (70000-9,000)	10-56				
2700-3350 (9000-11,000)	10-54				

* = STOCK INTERNATIONAL
** = STOCK DOMESTIC
Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2015 600 RMK 155

600 RMK 155
S15CM6GSA / S15CM6GSL / S15CM6GS
INTERNATIONAL: S15CM6GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4948–6044–0I6G
Displacement / # Cylinders	599 cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.51 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.005 / 0.085-0.124
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204816
Throttle Body Bore	46 mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7)
Pitch Plies	2.86 1
Lug Height-Inches (cm)	2.4 (6.1) Series 5.1
Track Tension	3/8"-1/2"(1.0 - 1.3 cm)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1
Length (in/cm)	155 = 129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	440 / 199.6
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.4 / 3.3
Cooling System Capacity(Qts/ L)	155 = 6.3 / 6.0
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	RydeFX Twin Tube
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length-Inches (cm)	10.5 (26.7)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	RMK Coil-Over 155
Front Track Shock (FTS)	RydeFX Twin Tube
FTS Spring Rate lbs/in (N/mm)	150 (26.25)
Rear Track Shock (RTS)	RydeAFX Twin Tube
Standard RTS Spring Rate lbs/in (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* <160lbs./72kg 160-220lbs./72-99kg 220-280lbs./99-127kg 280-340lbs./127-154kg	PN: 7043680-133 210 (36.75) 10-3/4" (27.3) 10-1/4" (26) 10-1/8" (25.7) 9-3/4" (24.8)

REAR SUSPENSION	
ITEM	**VALUE**
	CAUTION: Do not adjust STD spring length greater than 10-3/4" or less than 9-5/8".
HD RTS Spring Rate lbs/in. (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* 250-300lbs./113-136kg 300-350lbs./136-159kg	PN: 7043741-067 250 (43.75) 10-1/8" (25.7) 10" (25.4) **CAUTION: Do not adjust HD spring length greater than 10-7/8" or less than 9-7/8".**
Rear Travel Inches (cm)	16 (40.6)
* = Rider weight with gear.	

CLUTCH SETTINGS					
ALTITUDE METERS (FEET)	**DRIVE CLUTCH**		**DRIVEN CLUTCH**		
	SHIFT WEIGHT	**CLUTCH SPRING**	**CLUTCH SPRING**	**DRIVEN HELIX**	**GEARING**
0-450 (0-1500)	10-64*	BLK/GRN 7042083	BLK/PUR 7043363	56/42-.36 5135403	20:42-72
450-900 (1500-3000)	10-62				
900-1500 (3000-5000)	10-60				
1500-2100 (5000-7000)	10-58**				
2100-2700 (70000-9,000)	10-56				
2700-3350 (9000-11,000)	10-54				

* = STOCK INTERNATIONAL
** = STOCK DOMESTIC
Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2015 600 PRO RMK 155

S15CG6GSA / S15CG6GSL / S15CG6GS
INTERNATIONAL: S15CG6GEA

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4949–6044–0I6G
Displacement / # Cylinders	599 cc / 2
Bore (inches/mm)	3.04 / 77.25
Stroke (inches/mm)	2.52 / 64
Piston to Cylinder Clearance (inches/mm)	.0033-.005 / 0.085-0.127
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Purple
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204816
Throttle Body Bore	46 mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.95 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7)
Pitch Plies	2.86 1
Lug Height-Inches (cm)	2.4 (6.1) Series 5.1
Track Tension	3/8"-1/2"(1.0 - 1.3 cm)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1

GENERAL	
ITEM	**VALUE**
Length (in/cm)	129/327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	431/195.5
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.0 / 2.8
Cooling System Capacity(Qts/ L)	5.3/5.0
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
QuickDrive System Center Distance (inches) Top Sprocket Bottom Sprocket Belt Pitch Reverse System	 7.53 21 44 68 PERC

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	Walker Evans HPG w/IFP
IFS Spring Rate lbs/in (N/mm)	100 (17.4)
IFS Spring Installed Length-Inches (cm)	10.25 (26)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.85 (93.6) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
Suspension Type	RMK Coil-Over 155
Front Track Shock (FTS)	Walker Evans HPG w/IFP

REAR SUSPENSION	
FTS Spring Rate lbs/in (N/mm)	150 (26.25)
FTS Spring Installed Length Inches (cm)	8.50 (21.6)
Rear Track Shock (RTS)	Walker Evans HPG w/IFP
Standard RTS Spring Rate lbs/in (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* <160lbs./72kg 160-220lbs./72-99kg 220-280lbs./99-127kg 280-340lbs./127-154kg	PN: 7043714-133 210 (36.75) 10-3/4" (27.3) 10-3/8" (26.3) 10-1/8" (25.7) 9-3/4" (24.8)

REAR SUSPENSION	
	CAUTION: Do not adjust STD spring length greater than 11.0" or less than 9-3/4".
HD RTS Spring Rate lbs/in. (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* 250-300lbs./113-136kg 300-350lbs./136-159kg	PN: 7043740-067 250 (43.75) 10-1/8" (25.7) 10" (25.4) **CAUTION: Do not adjust HD spring length greater than 10-7/8" or less than 9-7/8".**
Rear Travel Inches (cm)	16 (40.6)
* = Rider weight with gear.	

CLUTCH SETTINGS

ALTITUDE METERS (FEET)	DRIVE CLUTCH		DRIVEN CLUTCH		
	SHIFT WEIGHT	CLUTCH SPRING	CLUTCH SPRING	DRIVEN HELIX	BELT GEARING
0-450 (0-1500)	10-64*	120-340 7042083	BLK/PUR 160-240 7043363	56/42-.36 5135403	21:44-68
450-900 (1500-3000)	10-62				
900-1500 (3000-5000)	10-60				
1500-2100 (5000-7000)	10-58**				
2100-2700 (7000-9000)	10-56				
2700+ (9000+)	10-54				

* = STOCK INTERNATIONAL
** = STOCK DOMESTIC
Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2015 800 RMK 155

S15CM8GSA / S15CM8GSL / S15CC8GS
INTERNATIONAL: S15CM8GEL / S15CC8GEA

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4953–8044–0I8G
Displacement / # Cylinders	794 cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0041-.0053 / 0.105-0.131
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204815
Throttle Body Bore	48 mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	440 / 199.6
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.0 / 2.8
Cooling System Capacity(Qts/ L)	6.3/6.0
Brake Fluid	DOT 4

GENERAL	
ITEM	**VALUE**
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7)
Pitch Plies	2.86 1
Lug Height-Inches (cm)	2.4 (6.1) Series 5.1
Track Tension	3/8"-1/2"(1.0 - 1.3 cm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	RydeFX Twin Tube
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length-Inches (cm)	10.5 (26.7)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	RMK Coil-Over 155
Front Track Shock (FTS)	RydeFX Twin Tube
FTS Spring Rate lbs/in (N/mm)	150 (26.25)
Rear Track Shock (RTS)	RydeAFX Twin Tube
Standard RTS Spring Rate lbs/in (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* <160lbs./72kg 160-220lbs./72-99kg 220-280lbs./99-127kg 280-340lbs./127-154kg	PN: 7043680-133 210 (36.75) 10-3/4" (27.3) 10-1/4" (26) 10-1/8" (25.7) 9-3/4" (24.8)

REAR SUSPENSION	
ITEM	**VALUE**
	CAUTION: Do not adjust STD spring length greater than 10-3/4" or less than 9-5/8".
HD RTS Spring Rate lbs/in. (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* 250-300lbs./113-136kg 300-350lbs./136-159kg	PN: 7043741-067 250 (43.75) 10-1/8" (25.7) 10" (25.4) **CAUTION: Do not adjust HD spring length greater than 10-7/8" or less than 9-7/8".**
Rear Travel Inches (cm)	16 (40.6)
* = Rider weight with gear.	

CLUTCH SETTINGS					
ALTITUDE METERS (FEET)	**DRIVE CLUTCH**		**DRIVEN CLUTCH**		
	SHIFT WEIGHT	**CLUTCH SPRING**	**CLUTCH SPRING**	**DRIVEN HELIX**	**GEARING**
0-600 (0-2000)	10-68*	140-330 7043829	BLACK 155-222 7043063	56/42-.36 5135403	20:42-72
600-1200 (2000-4000)	10-66				
1200-1800 (4000-6000)	10-64				
1800-2400 (6000-8000)	10-62**				
2400-3000 (8000-10,000)	10-60		BLK/PUR 160-240 7043363		
3000-3600 (10,000-12,000)	10-58				

* = STOCK INTERNATIONAL
** = STOCK DOMESTIC
Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2015 800 RMK 163

S15CD8GS

ENGINE SPECIFICATIONS	
ITEM	VALUE
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4953–8044–0I8G
Displacement / # Cylinders	794 cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0041-.0053 / 0.105-0.131
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	VALUE
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204815
Throttle Body Bore	48 mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated)
Premium Mode	91+ (Non-Oxygenated)

GENERAL	
ITEM	VALUE
Width (in/cm)	46.5 / 118.1
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	440 / 199.6
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.0 / 2.8
Cooling System Capacity(Qts/ L)	6.3/6.0
Brake Fluid	DOT 4

GENERAL	
ITEM	VALUE
Drive Belt	
Part Number	3211115
Width (inches / cm)	1.460 / 3.7
Side Angle	26°
Circumference (inches / cm)	46.77 / 118.8
Center Distance (inches / cm)	11.5 / 29.2
Chaincase	
Center Distance (inches)	7.53
Top Gear (Stock)	20
Bottom Gear (Stock)	42
Chain (Stock)	72
Gear Lube	Polaris Synthetic (80W)
Capacity (oz / ml)	9 / 266
Reverse System	PERC

TRACK	
ITEM	VALUE
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7)
Pitch	2.86
Plies	1
Lug Height-Inches (cm)	2.4 (6.1) Series 5.1
Track Tension	3/8"-1/2"(1.0 - 1.3 cm)

ELECTRICAL	
ITEM	VALUE
Alternator Output	
Operating Voltage	13.5-14.5 VDC
Watts @ 13.5 VDC (Total)	400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	VALUE
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	RydeFX Twin Tube
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length-Inches (cm)	10.5 (26.7)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.26 (92) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	RMK Coil-Over 155
Front Track Shock (FTS)	RydeFX Twin Tube
FTS Spring Rate lbs/in (N/mm)	150 (26.25)
Rear Track Shock (RTS)	RydeAFX Twin Tube
Standard RTS Spring Rate lbs/in (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* <160lbs./72kg 160-220lbs./72-99kg 220-280lbs./99-127kg 280-340lbs./127-154kg	PN: 7043680-133 210 (36.75) 10-3/4" (27.3) 10-1/4" (26) 10-1/8" (25.7) 9-3/4" (24.8)

REAR SUSPENSION	
ITEM	**VALUE**
	CAUTION: Do not adjust STD spring length greater than 10-3/4" or less than 9-5/8".
HD RTS Spring Rate lbs/in. (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* 250-300lbs./113-136kg 300-350lbs./136-159kg	PN: 7043741-067 250 (43.75) 10-1/8" (25.7) 10" (25.4) **CAUTION: Do not adjust HD spring length greater than 10-7/8" or less than 9-7/8".**
Rear Travel Inches (cm)	16 (40.6)
* = Rider weight with gear.	

CLUTCH SETTINGS					
ALTITUDE METERS (FEET)	**DRIVE CLUTCH**		**DRIVEN CLUTCH**		
	SHIFT WEIGHT	**CLUTCH SPRING**	**CLUTCH SPRING**	**DRIVEN HELIX**	**GEARING**
0-600 (0-2000)	10-68	140-330 7043829	BLACK 155-222 7043063	56/42-.36 5135403	20:42-72
600-1200 (2000-4000)	10-66				
1200-1800 (4000-6000)	10-64				
1800-2400 (6000-8000)	10-62				
2400-3000 (8000-10,000)	10-60		BLK/PUR 160-240 7043363		
3000-3600 (10,000-12,000)	10-58				
Drive Clutch Bolt Torque: 80 ft-lbs (108Nm) Re-torque after running engine. **OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.**					

2015 800 PRO RMK 155/163

800 PRO RMK 155
S15CG8GSA / S15CG8GSL / S15CG8GS
INTERNATIONAL: S15CG8GEA / S15CG8GEB

800 PRO RMK 163
S15CH8GSA / S15CH8GSL / S15CH8GS
INTERNATIONAL: S15CH8GEL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4952–8044–OI8G
Displacement / # Cylinders	794 cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0041-.0053 / 0.105-0.131
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204815
Throttle Body Bore	48 mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode Premium Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated) 91+ (Non-Oxygenated)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1
Length (in/cm)	155 = 129/327.7 163 = 134/340.4
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	155 = 431/195.5 163 = 437/198.7

GENERAL	
ITEM	**VALUE**
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.0 / 2.8
Cooling System Capacity(Qts/ L)	155=5.3/5.0 163=5.5/5.2
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
QuickDrive System Center Distance (inches) Top Sprocket Bottom Sprocket Belt Pitch Reverse System	 7.53 21 44 68 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7) 163 (414)
Pitch Plies	2.86 1
Lug Height-Inches (cm)	2.4 (6.1) Series 5.1
Track Tension	3/8"-1/2"(1.0 - 1.3 cm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	Walker Evans HPG w/IFP
IFS Spring Rate lbs/in (N/mm)	100 (17.4)
IFS Spring Installed Length-Inches (cm)	10.25 (26)
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.85 (93.6) Measured inside of spindles.

FRONT SUSPENSION	
ITEM	**VALUE**
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	RMK Coil-Over 155/163
Front Track Shock (FTS)	Walker Evans HPG w/IFP
FTS Spring Rate lbs/in (N/mm)	150 (26.25)
FTS Spring Installed Length Inches (cm)	8.50 (21.6)
Rear Track Shock (RTS)	Walker Evans HPG w/IFP
Standard RTS Spring Rate lbs/in (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight*	PN: 7043714-133 210 (36.75)

REAR SUSPENSION	
ITEM	**VALUE**
<160lbs./72kg 160-220lbs./72-99kg 220-280lbs./99-127kg 280-340lbs./127-154kg	10-3/4" (27.3) 10-3/8" (26.3) 10-1/8" (25.7) 9-3/4" (24.8) **CAUTION: Do not adjust STD spring length greater than 11.0" or less than 9-3/4".**
HD RTS Spring Rate lbs/in. (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* 250-300lbs./113-136kg 300-350lbs./136-159kg	PN: 7043740-067 250 (43.75) 10-1/8" (25.7) 10" (25.4) **CAUTION: Do not adjust HD spring length greater than 10-7/8" or less than 9-7/8".**
Rear Travel Inches (cm)	16 (40.6)
* = Rider weight with gear.	

CLUTCH SETTINGS					
ALTITUDE METERS (FEET)	**DRIVE CLUTCH**		**DRIVEN CLUTCH**		
	SHIFT WEIGHT	**CLUTCH SPRING**	**CLUTCH SPRING**	**DRIVEN HELIX**	**BELT GEARING**
0-600 (0-2000)	10-68*	140-330 7043829	BLACK 155-222 7043063	56/42-.36 5135403	21:44-68
600-1200 (2000-4000)	10-66				
1200-1800 (4000-6000)	10-64				
1800-2400 (6000-8000)	10-62**				
2400-3000 (8000-10,000)	10-60		BLK/PUR 160-240 7043363		
3000-3600 (10,000-12,000)	10-58				

* = STOCK INTERNATIONAL
** = STOCK DOMESTIC
Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2015 800 PRO RMK 155/163 Terrain Dominator

800 PRO RMK 155 TD
S15CG8GSC
INTERNATIONAL: S15CG8GEC

800 PRO RMK 163 TD
S15CH8GSC
INTERNATIONAL: S15CH8GEC

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4952–8044–0I8G
Displacement / # Cylinders	794 cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0041-.0053 / 0.105-0.131
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204815
Throttle Body Bore	48 mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated)
Premium Mode	91+ (Non-Oxygenated)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	46.5 / 118.1
Length (in/cm)	155 = 129/327.7 163 = 134/340.4
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	155 = 431/195.5 163 = 437/198.7

GENERAL	
ITEM	**VALUE**
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.0 / 2.8
Cooling System Capacity(Qts/ L)	155=5.3/5.0 163=5.5/5.2
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
QuickDrive System Center Distance (inches) Top Sprocket Bottom Sprocket Belt Pitch Reverse System	 7.53 21 44 68 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7) 163 (414)
Pitch Plies	2.86 1
Lug Height-Inches (cm)	2.4 (6.1) Series 5.1
Track Tension	3/8"-1/2"(1.0 - 1.3 cm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Adjustable
Shocks	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	100 (17.5)
IFS Spring Installed Length-Inches (cm)	10.25 (26)
Front Vertical Travel Inches (cm)	9 (22.9)

FRONT SUSPENSION	
ITEM	**VALUE**
Ski Center Distance Inches (cm) Setup Width	39-40-41 (99.1-101.6-104.1) 36.85 (93.6) Measured inside of spindles.
Camber Inches (cm)	1.95 ± 0.31 (4.3 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	RMK Coil-Over 155 / 163
Front Track Shock (FTS)	Walker Evans HPG w/IFP
FTS Spring Rate lbs/in (N/mm)	150 (26.2)
FTS Spring Installed Length- Inches (cm)	8.50 (21.6)
Rear Track Shock (RTS)	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
Standard RTS Spring Rate lbs/in (N/mm)	PN: 7043714-133 210 (36.75)

REAR SUSPENSION	
ITEM	**VALUE**
Installed Length In. (cm) (Track off ground) Rider Weight* <160lbs./72kg 160-220lbs./72-99kg 220-280lbs./99-127kg 280-340lbs./127-154kg	 10-3/4" (27.3) 10-3/8" (26.3) 10-1/8" (25.7) 9-3/4" (24.8) **CAUTION: Do not adjust STD spring length greater than 11.0" or less than 9-3/4".**
HD RTS Spring Rate lbs/in. (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* 250-300lbs./113-136kg 300-350lbs./136-159kg	PN: 7043740-067 250 (43.75) 10-1/8" (25.7) 10" (25.4) **CAUTION: Do not adjust HD spring length greater than 10-7/8" or less than 9-7/8".**
Rear Travel Inches (cm)	16 (40.6)
* = Rider weight with gear.	

CLUTCH SETTINGS					
ALTITUDE METERS (FEET)	**DRIVE CLUTCH**		**DRIVEN CLUTCH**		
	SHIFT WEIGHT	**CLUTCH SPRING**	**CLUTCH SPRING**	**DRIVEN HELIX**	**BELT GEARING**
0-600 (0-2000)	10-68*	140-330 7043829	BLACK 155-222 7043063	56/42-.36 5135403	21:44-68
600-1200 (2000-4000)	10-66				
1200-1800 (4000-6000)	10-64				
1800-2400 (6000-8000)	10-62**				
2400-3000 (8000-10,000)	10-60		BLK/PUR 160-240 7043363		
3000-3600 (10,000-12,000)	10-58				

* = STOCK INTERNATIONAL
** = STOCK DOMESTIC
Drive Clutch Bolt Torque: 80 ft-lbs (108Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

2015 800 RMK Assault

800 RMK Assault
S15CN8GSA / S15CN8GSL / S15CN8GS
INTERNATIONAL: S15CN8GEA / S15CN8GEB

800 RMK Assault Powder
S15CY8GSA / S15CY8GSL

ENGINE SPECIFICATIONS	
ITEM	**VALUE**
Engine Type	Liberty Liquid-Cooled / Case Reed Induction
Model Number	S4952–8044–0I8G
Displacement / # Cylinders	794 cc / 2
Bore (inches/mm)	3.34 / 85
Stroke (inches/mm)	2.75 / 70
Piston to Cylinder Clearance (inches/mm)	.0041-.0053 / 0.105-0.131
Installed Ring Gap (inches / mm)	.017-.025 / 0.450-0.650
Operating RPM +0-250	8250
Idle RPM ±200	1700
Engagement RPM ±200	3800
Exhaust Valve Spring	Orange
Thermostat Opening Temperature (° F/ ° C)	120 / 49

FUEL DELIVERY	
ITEM	**VALUE**
Type-Number of Fuel Injectors	DC-CFI-2
Throttle Body Marking	1204815
Throttle Body Bore	48 mm
TPS Voltage @ Idle (5 VDC +/- .01 Input)	0.94 +/- 0.01 VDC
Fuel Pressure-PSI (bar)	58-60 (4.0-4.1)
Fuel Octane (R+M/2) 10% Ethanol Mode	<91 Octane (Non-Oxygenated) OR 87/89/91+ (Up to 10% Oxygenated)
Premium Mode	91+ (Non-Oxygenated)

GENERAL	
ITEM	**VALUE**
Width (in/cm)	48 / 121.9
Length (in/cm)	129 / 327.7
Height (in/cm)	51 / 129.5
Estimated Dry Weight (lb/kg)	446 / 202.3
Fuel (Gallons / Liters)	11.5 / 43.5
Oil (Quarts / Liters)	3.0 / 2.8

GENERAL	
ITEM	**VALUE**
Cooling System Capacity(Qts/ L)	5.3/5.0
Brake Fluid	DOT 4
Drive Belt Part Number Width (inches / cm) Side Angle Circumference (inches / cm) Center Distance (inches / cm)	 3211115 1.460 / 3.7 26° 46.77 / 118.8 11.5 / 29.2
Chaincase Center Distance (inches) Top Gear (Stock) Bottom Gear (Stock) Chain (Stock) Gear Lube Capacity (oz / ml) Reverse System	 7.53 20 42 72 Polaris Synthetic (80W) 9 / 266 PERC

TRACK	
ITEM	**VALUE**
Width-Inches (cm)	15 (38)
Length-Inches (cm)	155 (393.7)
Pitch Plies	2.86 2 (Competition) 1 (Series 5.1)
Lug Height-Inches (cm) Base Powder	 2.125 (5.4) (Competition) 2.4 (6.1) Series 5.1
Track Tension	3/8"-1/2" (1.0 - 1.3 cm)

ELECTRICAL	
ITEM	**VALUE**
Alternator Output Operating Voltage Watts @ 13.5 VDC (Total)	 13.5-14.5 VDC 400
Ignition Timing	18° @1700 RPM Coolant Temp = 120° F (49° C)
Spark Plug Gap in.(mm)	.027 (.70)
Spark Plug	NGK BPR9ES

FRONT SUSPENSION	
ITEM	**VALUE**
Suspension Type	PRO-RIDE RMK Wide Adjustable
Shocks	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6
IFS Spring Rate lbs/in (N/mm)	130 (22.75)
IFS Spring Installed Length-Inches (cm)	10.75 (27.3)

FRONT SUSPENSION	
ITEM	**VALUE**
Front Vertical Travel Inches (cm)	9 (22.9)
Ski Center Distance Inches (cm)	41.5-42.5-43.5 (105.4-108-110.5)
Setup Width	38.58 (98) Measured inside of spindles.
Camber Inches (cm)	2.25 ± 0.31 (5.7 ± .8)
Toe Out-Inches (mm)	0 -1/8" (0-3)

REAR SUSPENSION	
ITEM	**VALUE**
Suspension Type	RMK Coil-Over 155
Front Track Shock (FTS)	Walker Evans HPG w/IFP
FTS Spring Rate lbs/in (N/mm)	180 (31.5)
FTS Spring Installed Length-Inches (cm)	8.50 (21.6)
Rear Track Shock (RTS)	Walker Evans Needle Piggyback 16 Click Compression Adjustable Factory Setting** = 6

REAR SUSPENSION	
ITEM	**VALUE**
Standard RTS Spring Rate lbs/in (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* <160lbs./72kg 160-220lbs./72-99kg 220-280lbs./99-127kg 280-340lbs./127-154kg	PN: 7043572-133 190 (33.25) 10-7/8" (27.6) 10-1/4" (26) 10" (25.4) 9-1/2" (24.1) **CAUTION: Do not adjust STD spring length greater than 11.0" or less than 9-3/8".**
HD RTS Spring Rate lbs/in. (N/mm) Installed Length In. (cm) (Track off ground) Rider Weight* 250-300lbs./113-136kg 300-350lbs./136-159kg	PN: 7043740-067 250 (43.75) 10-1/8" (25.7) 10" (25.4) **CAUTION: Do not adjust HD spring length greater than 10-7/8" or less than 9-7/8".**
Rear Travel Inches (cm)	16 (40.6)
* = Rider weight with gear.	

CLUTCH SETTINGS					
ALTITUDE METERS (FEET)	**DRIVE CLUTCH**		**DRIVEN CLUTCH**		
	SHIFT WEIGHT	**CLUTCH SPRING**	**CLUTCH SPRING**	**DRIVEN HELIX**	**GEARING**
0-600 (0-2000)	10-68*	140-330 7043829	BLACK 155-222 7043063	56/42-.36 5135403	20:42-72
600-1200 (2000-4000)	10-66				
1200-1800 (4000-6000)	10-64				
1800-2400 (6000-8000)	10-62**				
2400-3000 (8000-10,000)	10-60		BLK/PUR 160-240 7043363		
3000-3600 (10,000-12,000)	10-58				

* = STOCK INTERNATIONAL
** = STOCK DOMESTIC
Drive Clutch Bolt Torque: 80 ft-lbs (108 Nm)
Re-torque after running engine.
OPTIONAL-USE 2 GRAM LIGHTER CLUTCH WEIGHTS WHEN OPERATING IN PROLONGED WARM TEMPERATURES (LATE FALL/SPRING SEASON) TO MAINTAIN PEAK OPERATING RPM.

GENERAL SPECIFICATIONTS / CHARTS

2010 Publications

MODEL	OWNER'S MANUAL	SUPPLEMENT	PARTS BOOK
600 RUSH	9922276	9922279 9922648 (S10BF6KSL)	9922280

2011 Publications

MODEL	OWNER'S MANUAL	SUPPLEMENT	PARTS BOOK
600 RUSH	9922829	9922839 (RUSH) 9922830 (RUSH LX) 9922835 (PRO-R Retro LX) 9922841 (PRO-R)	9922831 (RUSH/LX) 9922836 (PRO-R)
800 RUSH		9922840 (RUSH) 9922833 (Retro LX) 9922837 (PRO-R Retro LX) 9922842 (PRO-R)	9922834 (RUSH/LX) 9922838 (PRO-R)
800 Switchback Assault	9922844	9922852	9922853
800 RMK 155		9922848	9922849
800 RMK Assault		9922850	9922851
800 PRO RMK 155/163		9922845 (155) 9922847 (163)	9922846

2012 Publications

MODEL	OWNER'S MANUAL	SUPPLEMENT	PARTS BOOK
600/800 RUSH Models	9923316	600 RUSH-9923330 600 RUSH Electric Start-9923326 800 RUSH Electric Start-9923328 800 RUSH-9923332	600 RUSH PRO-R-9923327 800 RUSH PRO-R-9923329 600 RUSH-9923331 800 RUSH-9923333
600/800 Switchback Models	9923308	600 Switchback Electric Start-9923309 800 Switchback-9923336 600 Switchback-9923338 800 Switchback Electric Start-9923340	600 Switchback-9923335 600 Adventure-9923310 800 Switchback-9923337 600 Switchback PRO-R-9923339 800 Switchback PRO-R-9923341 800 Adventure INTL.-9923483
800 Switchback Assault 1.3/2.0	9923351	1.3-9923359 2.0-9923352	1.3-9923360 2.0-9923353
600/800 RMK Models	9923345	600 PRO RMK-9923343 800 PRO RMK 155-9923346 800 PRO RMK 163-9923348 600 RMK 144-9923349 600 RMK 155-9923354 800 RMK 155-9923355 RMK Assault-9923357	600 RMK 144/155-9923350 600 PRO RMK-9923484 800 PRO RMK 155/163-9923347 800 RMK 155-9923356 RMK Assault-9923358

2013 Publications

MODEL	OWNER'S MANUAL	PARTS BOOK
600 INDY Models	9923868	9923865
600/800 RUSH Models	9923844	600 RUSH-9923846 800 RUSH-9923850 600 RUSH PRO-R-9923851 800 RUSH PRO-R-9923852
600/800 Switchback Models	9923836	600 Switchback-9923857 800 Switchback-9923858 600 Switchback PRO-R-9923859 800 Switchback PRO-R-9923838 600 Switchback Adventure-9923842
800 Switchback Assault Models	9923867	9923889
600/800 RMK Models	9923866	600 PRO RMK-9923874 800 PRO RMK-9923875 600 RMK-9923877 800 RMK-9923886 800 RMK Assault-9923887

2014 Publications

MODEL	OWNER'S MANUAL	PARTS BOOK
600 / 800 INDY SP Models	9924256	600 INDY / INDY SP– 9924258 800 INDY SP — 9924262
600/800 RUSH PRO-R Models	9924260	600 RUSH PRO-R-9924261 800 RUSH PRO-R-9924263 800 RUSH PRO-R LE-9924263
600 INDY Voyager	9924268	9924418
600 / 800 Switchback Models	9924269	600 Switchback-9924270 800 Switchback-9924275 600 Switchback PRO-R-9924272 800 Switchback PRO-R-9924277 600 Switchback Adventure-9924271 800 Switchback Adventure-9924276
600 / 800 Switchback Assault Models	9924273	600 Switchback Assault–9924274 600 Switchback Assault-9924278
600/800 RMK Models	9924268	600 PRO RMK-9924280 800 PRO RMK-9924282 600 RMK-9924279 800 RMK-9924281 800 RMK Assault-9924283

2015 Publications

MODEL	OWNER'S MANUAL	PARTS BOOK
600 / 800 INDY SP Models	9925069	600 INDY / SP - 9925070 800 INDY SP - 9925072
600 INDY Voyager	9925103	9925104
600 / 800 Switchback Assault Models	9925088	600 Switchback Assault - 9925089 800 Switchback Assault - 9925090
600/800 RMK Models	9925091	600 RMK - 9925092 800 RMK - 9925094 600 PRO RMK - 9925093 800 PRO RMK - 9925095 Assault RMK - 9925096

Special Tools

Special tools may be required while servicing this vehicle. Some of the tools listed or depicted are mandatory, while other tools may be substituted with a similar tool, if available. Polaris recommends the use of Polaris Special Tools when servicing any Polaris product.

Dealers may order special tools through the Polaris official tool supplier.

Bosch Automotive Service Solutions 1-800-345–2233 or https://polaris.service-solutions.com

Conversion Table

UNIT OF MEASURE	MULTIPLIED BY	CONVERTS TO
ft-lbs	x 12	= in-lbs
in-lbs	x 0.0833	= ft-lbs
ft-lbs	x 1.356	= Nm
in-lbs	x 0.0115	= kg-m
Nm	x 0.7376	= ft-lbs
kg-m	x 7.233	= ft-lbs
kg-m	x 86.796	= in-lbs
kg-m	x 10	= Nm
inch	x 25.4	= mm
mm	x 0.03937	= inch
inch	x 2.54	= cm
mile (mi)	x 1.6	= km
km	x 0.6214	= mile
ounces (oz)	x 28.35	= grams (g)
fluid ounces (fl oz)	x 29.57	= cubic centimeters (cc)
cubic centimeters (cc)	x .03381	= fluid ounces
grams (g)	x 0.035	= ounces
pounds (lb)	x 0.454	= kg
kilogram (kg)	x 2.2046	= lbs
cubic inches (cu in)	x 16.387	= cc
cubic centimeters (cc)	x 0.061	= cubic inches
US quarts	x 0.946	= liters (L)
liters (L)	x 1.057	= US quarts
US gallons	x 3.785	= liters (L)
liters (L)	x 0.264	= US gallons
PSI	x 6.895	= kilopascals (kPa)
kilopascals (kPa)	x 0.145	PSI
π (3.14) x Radius^2 x Height =		= cylinder volume
°C to °F:	9/5 (°C + 32)	= °F
°F to °C:	5/9 (°F − 32)	= °C

Standard Bolt Torque Specification

BOLT SIZE	GRADE 2 FT. LBS. (NM)	GRADE 5 FT. LBS. (NM)	GRADE 8 FT. LBS. (NM)
1/4-20	5 (7)	8 (11)	12 (16)
1/4-28	6 (8)	10 (14)	14 (19)
5/16-18	11 (15)	17 (23)	25 (35)
5/16-24	12 (16)	19 (26)	29 (40)
3/8-16	20 (27)	30 (40)	45 (62)
3/8-24	23 (32)	35 (48)	50 (69)
7/16-14	30 (40)	50 (69)	70 (97)
7/16-20	35 (48)	55 (76)	80 (110)
1/2-13	50 (69)	75 (104)	110 (152)
1/2-20	55 (76)	90 (124)	120 (166)

Metric Bolt Torque Specification

BOLT SIZE	GRADE				
	4.6	4.8	8.8 / 8.9	10.9	12.9
	FT.— LBS. (NM) DRY THREADS				
M3	0.3 (0.5)	0.5 (0.7)	1 (1.3)	1.5 (2)	1.5 (2)
M4	0.8 (1.1)	1 (1.5)	2 (3)	3 (4.5)	4 (5)
M5	1.5 (2.5)	2 (3)	4.5 (6)	6.5 (9)	7.5 (10)
M6	3 (4)	4 (5.5)	7.5 (10)	11 (15)	13 (18)
M8	7 (9.5)	10 (13)	18 (25)	26 (35)	33 (45)
M10	14 (19)	18 (25)	37 (50)	55 (75)	63 (85)
M12	26 (35)	33 (45)	63 (85)	97 (130)	11 (150)
M14	37 (50)	55 (75)	103 (140)	151 (205)	177 (240)
M16	59 (80)	85 (115)	159 (215)	232 (315)	273 (370)
M18	81 (110)	118 (160)	225 (305)	321 (435)	376 (510)

SAE Tap / Drill Sizes

THREAD SIZE	DRILL SIZE	THREAD SIZE	DRILL SIZE
#0–80	3/64	1/2–13	27/64
#1–64	53	1/2–20	29/64
#1–72	53	9/16–12	31/64
#2–56	51	9/16–18	33/64
#2–64	50	5/8–11	17/32
#3–48	5/64	5/8–18	37/64
#3–56	45	3/4–10	21/32
#4–40	43	3/4–16	11/16
#4–48	42	7/8–9	49/64
#5–40	38	7/8–14	13/16
#5–44	37	1–8	7/8
#6–32	36	1–12	59/64
#6–40	33	1 1/8–7	63/64
#8–32	29	1 1/8–12	1 3/64
#8–36	29	1 1/4–7	1 7/64
#10–24	24	1 1/4–12	1 11/64
#10–32	21	1 1/2–6	1 11/32
#12–24	17	1 1/2–12	1 27/64
#12–28	4.6 mm	1 3/4–5	1 9/16
1/4–20	7	1 3/4–12	1 43/64
1/4–28	3	2–4 1/2	1 25/32
5/16–18	F	2–12	1 59/64
5/16–24	I	2 1/4–4 1/2	2 1/32
3/8–16	O	2 1/2–4	2 1/4
3/8–24	Q	2 3/4–4	2 1/2
7/16–14	U	3–4	2 3/4
7/16–20	25/64		

Metric Tap / Drill Sizes

TAP SIZE	DRILL SIZE	DECIMAL EQUIVALENT	NEAREST FRACTION
3 x .50	#39	0.0995	3/32
3 x .60	3/32	0.0937	3/32
4 x .70	#30	0.1285	1/8
4 x .75	1/8	0.125	1/8
5 x .80	#19	0.166	11/64
5 x .90	#20	0.161	5/32
6 x 1.00	#9	0.196	13/64
7 x 1.00	16/64	0.234	15/64
8 x 1.00	J	0.277	9/32
8 x 1.25	17/64	0.265	17/64
9 x 1.00	5/16	0.3125	5/16
9 x 1.25	5/16	0.3125	5/16
10 x 1.25	11/32	0.3437	11/32
10 x 1.50	R	0.339	11/32
11 x 1.50	3/8	0.375	3/8
12 x 1.50	13/32	0.406	13/32
12 x 1.75	13/32	0.406	13/32

Decimal Equivalents

FRACTION	DECIMAL	MM TO INCHES
1/64	0.0156"	
1/32	0.0312"	1 mm = 0.0394"
3/64	0.0469"	
1/16	0.0625"	
5/64	0.0781"	2 mm = 0.0787"
3/32	0.0938"	
7/64	0.1094"	3 mm = 0.1181"
1/8	0.1250"	
9/64	0.1406"	
5/32	0.1563"	4 mm = 0.1575"
11/64	0.1719"	
3/16	0.1875"	5 mm = 0.1969"
13/64	0.2031"	
7/32	0.2188"	
15/64	0.2344"	6 mm = 0.2362"
1/4	0.25"	
17/64	0.2656"	7 mm = 0.2756"
9/32	0.2813"	
19/64	0.2969"	
5/16	0.3125"	8 mm = 0.3150"
21/64	0.3281"	
11/32	0.3438"	9 mm = 0.3543"
23/64	0.3594"	
3/8	0.375"	
25/64	0.3906"	10 mm = 0.3937"
13/32	0.4063"	
27/64	0.4219"	11 mm = 0.4331"
7/16	0.4375"	
29/64	0.4531"	
15/32	0.4688"	12 mm = 0.4724"
31/64	0.4844"	
1/2	0.500"	13 mm = 0.5118"
33/64	0.5156"	
17/32	0.5313"	
35/64	0.5469"	14 mm = 0.5512"
9/16	0.5625"	
37/64	0.5781"	15 mm = 0.5906"
19/32	0.5938"	
39/64	0.6094"	
5/8	0.625"	16 mm = 0.6299"
41/64	0.6406"	
21/32	0.6563"	17 mm = 0.6693"
43/64	0.6719"	
11/16	0.6875"	
45/64	0.7031"	18 mm = 0.7087"
23/32	0.7188"	

FRACTION	DECIMAL	MM TO INCHES
47/64	0.7344"	19 mm = 0.7480"
3/4	0.750"	
49/64	0.7656"	
25/32	0.7813"	20 mm = 0.7874"
51/64	0.7969"	
13/16	0.8125"	21 mm = 0.8268"
53/64	0.8281"	
27/32	0.8438"	
55/64	0.8594"	22 mm = 0.8661"
7/8	0.875"	
57/64	0.8906"	23 mm = 0.9055"
29/32	0.9063"	
59/64	0.9219"	
15/16	0.9375"	24 mm = 0.9449"
61/64	0.9531"	
31/32	0.9688"	25 mm = 0.9843"
63/64	0.9844"	
1	1.000"	

Polaris Mobile Digital Wrench (PMDW)

Polaris Mobile Digital Wrench (PMDW) is a diagnostic software application (app) designed specifically for Android™ devices. When paired with the Wireless Vehicle Link (WVL), part number PU-51435, PMDW provides Polaris service technicians with many of the features and functions found in Digital Wrench.

PMDW Main Page:

Wireless Vehicle Link (WVL) – Part Number PU-51435:

To download the PMDW app, navigate your Android device to www. polarisdealers. com. Locate the Service and Warranty drop-down menu. Select: "Mobile Digital Wrench App Download". Tap on the link to download the app.

Android Device Minimum Specifications:

- Minimum operating system: Android 3.1 "Honeycomb" or higher (Android 4.0 or higher preferred)
- Dual core processor / 2 GB internal memory / external microSD (32 or 64 GB) slot / 500 MB RAM
- Rear facing camera with minimum 3.0 mega pixel resolution with auto/continuous focus
- Video, Microphone and Voice-to-text capable
- Internet and Bluetooth wireless technology capable

PMDW App Notes:

- PMDW will not work on Microsoft Windows 8™ or Apple IOS™ products
- Device must be set to allow the installation of non-market applications
- An electronic user's guide is provided within the app. To access the user's guide, launch the app, and then click on the "Help" button in the Settings/ Preferences menu.
- Only CAN-based vehicles are compatible with PMDW and the WVL. A complete list of compatible vehicles can be found in the user's guide.

Fuel / Oil Premix Ratios

GALLONS OF FUEL	OZ OF OIL NEEDED TO ACHIEVE A 20:1 RATIO	OZ OF OIL NEEDED TO ACHIEVE A 32:1 RATIO
5	32	20

Example: 1 gallon contains 128oz. / 20 = 6.4 oz. of oil needed to mix to each 1 gallon of gasoline. For a 5 gallon mixture, you would need add 32 oz. of oil to the gasoline.

Fuel Recommendations

For maximum performance, Polaris recommends the use of 91 octane or higher non-oxygenated fuel. Although lower octane and/or oxygenated fuel is usable, some engine performance will be lost and fuel economy will decrease.

Do not use lower than 87 octane fuel. Do not use oxygenated fuel containing more than 10% ethanol. Never use E85 fuel in your snowmobile.

NOTE: Operating with an obstructed fuel system will result in serious engine damage. Perform maintenance as recommended.

Prolonged exposure to petroleum based products may damage paint. Always protect painted surfaces when handling fuel.

Fuel System Deicers

If you use non-ethanol fuel (sometimes labeled "non-oxygenated"), Polaris recommends the regular use of a isopropyl-based fuel system deicer. Add one to two ounces per gallon (8-16 ml per liter) of gasoline to prevent damage resulting from fuel system icing. Never use deicers or additives containing methanol. Polaris recommends the use of Carbon Clean Plus.

If you use fuel with up to 10% ethanol (sometimes labeled "oxygenated") do not add deicers or additives that contain any form of alcohol.

Service Precautions

In order to perform service work efficiently and to prevent costly errors, the technician should read the text in this manual, thoroughly familiarizing him/herself with procedures before beginning. Photographs and illustrations have been included with the text as an aid. Notes, cautions and warnings have also been included for clarification of text and safety concerns. However, a knowledge of mechanical theory, tool use and shop procedures is necessary to perform the service work safely and satisfactorily. Use only genuine Polaris service parts.

⚠ CAUTION

Watch for sharp edges which can cause personal injury, particularly in the area of the tunnel. Protect hands with gloves when working with sharp components.

IMPORTANT: Cleanliness of parts and tools as well as the work area is of primary importance. Dirt and foreign matter will act as an abrasive and cause damage to precision parts. Clean the snowmobile before beginning service. Clean new parts before installing.

CAUTION

If difficulty is encountered in removing or installing a component, look to see if a cause for the difficulty can be found. If it is necessary to tap the part into place, use a soft face hammer and tap lightly.

CAUTION

Some of the fasteners in the snowmobile were installed with locking agents. Use of impact drivers or wrenches will help avoid damage to fasteners.

⚠ CAUTION

Always follow torque specifications as outlined throughout this manual. Incorrect torquing may lead to serious machine damage or, as in the case of steering components, can result in injury or death for the rider (s).

⚠ WARNING

If a torquing sequence is indicated for nuts, bolts or screws, start all fasteners in their holes and hand tighten. Then, following the method and sequence indicated in this manual, tighten evenly to the specified torque value. When removing nuts, bolts or screws from a part with several fasteners, loosen them all about 1/4 turn before removing them.

IMPORTANT: If the condition of any gasket or O-Ring is in question, replace it with a new one. Be sure the mating surfaces around the gasket are clean and smooth in order to avoid leaks.

IMPORTANT: Some procedures will require removal of retaining rings or clips. Because removal weakens and deforms these parts, they should always be replaced with new parts. When installing new retaining rings and clips use care not to expand or compress them beyond what is required for installation.

IMPORTANT: Because removal damages seals, replace any oil or grease seals removed with new parts.

IMPORTANT: Polaris recommends the use of Polaris lubricants and greases, which have been specially formulated for the top performance and best protection of our machines. In some applications, such as the engine, warranty coverage may become void if other brands are substituted.

IMPORTANT: Grease should be cleaned from parts and fresh grease applied before reassembly of components. Deteriorating grease loses lubricity and may contain abrasive foreign matter.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

CHAPTER 2
MAINTENANCE

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

MAINTENANCE INFORMATION

Periodic Maintenance

PERIODIC MAINTENANCE SCHEDULE					
ITEM	FREQUENCY / INTERVALS				
	150 MI. (240 KM)	500 MI. (800 KM)	1000 MI. (1600 KM)	2000 MI. (3200 KM)	PRE-SEASON
L = LUBRICATE / I = INSPECT OR ADJUST / R = REPLACE / C = CLEAN					
Drive / Driven Clutch					
Clutch Alignment / Offset			I		I
Drive Belt Condition / Ride Out	Pre-Ride Inspection				I
Drive / Driven Clutch Condition	I	C	I	I	C
Drive Belt Tension			I		I
QuickDrive Low Inertia System					
Belt Inspection/Replacement	I	I	I	R	I
Engine					
Engine Mounts		I	I	I	I
Engine Mount Screws 2010-2011 Models with 14 mm Head Diameter Bolts 2012-Current /All with 16 mm Head Diameter Bolts	Re-torque engine mount screws every 1,000 miles (1,600 km). Inspect every 1,000 miles (1,600 km).				
Recoil Handle / Rope / Function		I	I	I	I
Engine Torque Link	I			I	I
Cylinder Head Bolts	I	I	I	I	I
Cylinder Base Nuts		I	I	I	
Ignition Timing				I	I
Spark Plugs	I	I	I	R	I
Exhaust System / Retaining Springs		I	I	I	I
VES Valves / Solenoid / Hoses		I / C	I / C	I / C	I / C
Cooling System / Hoses / Coolant Level / Heat Exchangers	Pre-Ride Inspection				I
Oil Filter				I	I
Brake System					
Hose Condition / Routing		I	I	I	I
Fluid Level / Leaks / Fluid Condition		I	I	I	I
Brake Pads / Brake Disc		I	I	I	I
Parking Brake		I	I	I	I
Brake Fluid				R	
Fuel System					
Idle RPM		I	I	I	I
Fuel Filter	Replace every 2,000 miles (3,200 km) or every 2 years.				
Throttle Lever / Throttle Cable	I	L	L	L	L
Fuel / Vent Hoses	I	I	I	I	I
Oil Pump Adjustment				I	I
Oil Hoses	I	I	I	I	I
Air Box	I		I		I
Electrical System					

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

PERIODIC MAINTENANCE SCHEDULE					
ITEM	FREQUENCY / INTERVALS				
	150 MI. (240 KM)	500 MI. (800 KM)	1000 MI. (1600 KM)	2000 MI. (3200 KM)	PRE-SEASON
L = LUBRICATE / I = INSPECT OR ADJUST / R = REPLACE / C = CLEAN					
Auxiliary Shut-Off	Pre-Ride Inspection				I
Throttle Safety Switch	Pre-Ride Inspection				I
Ignition Switch	Pre-Ride Inspection				I
Headlights / Brake light / Taillights	Pre-Ride Inspection				I
Hand / Thumbwarmers	Pre-Ride Inspection				I
PERC Reverse System	Pre-Ride Inspection				I
Chassis / Suspension					
Ski Toe Alignment		I	I	I	
Suspension Mounting Bolts	Pre-Ride Inspection				I
Rear Chain Case Fasteners 2010-2011 Pro-Ride Models 2012- Current (Bonded Chaincase)	Re-torque three lower fasteners every 1,000 miles (1,600 km). Visually Inspect				
Steering Fasteners / Linkage / Handlebars	Pre-Ride Inspection				I
Driveshaft / Jackshaft Bearings		L	L	L	L
Ski Fasteners		I	I	I	I
Drive Chain Tension	I	I	I	I	I
Chaincase / Gearcase Oil	I	R	I	R	I
Track Alignment / Track Tension	I	I	I	I	I
Rebuildable IFP Shocks	High performance shocks should have oil changed and recharged at the end of every riding season.				
Rail Slide Condition	I	I	I	I	I
Bogie / Wheel Condition / Fastener Bolts	I	I	I	I	I
Hood / Seat / Chassis / Engine Compartment		C			C

Maintenance Products

DESCRIPTION	PART NUMBER
VES Gold 2-Cycle Oil (All Variable Exhaust Engines) Quart Gallon 2.5 Gallon 16 Gallon 55 Gallon 330 Gallon Liter 4 Liter 25 Liter 208 Liter	 2877882 2877883 2877884 2877885 2877886 2877892 2877887 2877888 2877889 2877890
Synthetic Chaincase Lubricant Quart Gallon 2.5 Gallon	 2873105 2873106 2872952
50/50 Extended Life Antifreeze Quart Gallon 55 Gallon Drum	 2880514 2880513 2880512
Antifreeze 60/40 Premix Quart Gallon 55 Gallon	 2871534 2871323 2872278
Shock Oil - 5W - Walker Evans	2874522
Shock Oil - 5W - Fox Quart Gallon	 2870995 2872279
Shock Oil - 5W - RydeFX / Arvin	2873716
Brake Fluid - DOT 4	2872189
Fogging Oil Aerosol Quart	 2870791 2871517
Premium All Season Grease 3 oz. Grease Gun Kit 14 oz. Tube	 2871312 2871423
Starter Grease	2871460
Carbon Clean	2871326
Isopropyl	2870505
Fuel Stabilizer Quart 2.5 Gallon	 2870652 2872280
Three Bond Sealant 5 oz.	2871557
Loctite® 242™	2871950
Shock Thread Spray Lubricant Use only on Rush rear track shocks without thrust bearing. Do not use lubricant on any other shock.	2878018

50/50 Extended-Life Engine Antifreeze

Beginning in the later part of 2014, Polaris began using 50/50 Extended Life antifreeze in some vehicles. All model-year 2015 and newer vehicles will use 50/50 Extended Life antifreeze.

Using the 50/50 Extended-life antifreeze extends the service interval from two to five years.

It is important to note that 60/40 antifreeze can be mixed with 50/50 Extended Life antifreeze, however, mixing the two will not extend the service interval. To receive the full five year service interval benefit, the vehicles's entire cooling system must be drained and replenished with the new 50/50 Extended Life antifreeze.

To quickly determine if a vehicle is using 60/40 or 50/50 Extended Life antifreeze, simply note the color of the coolant. 60/40 antifreeze will be green, while 50/50 Extended Life antifreeze will be yellow.

50/50 EXTENDED- LIFE ANTIFREEZE PART NUMBERS	
PART NUMBERS	**DESCRIPTION**
2880514	1 US Quart (0.9 L) / 12 per case
2880513	1 US Gallon (3.8 L) / 6 per case
2880512	55 US Gallon Drum (208 L)

CURRENT	THE NEW
> 60/40 Formulation	> 50/50 Formulation
> 2 year service interval	> Extended 5 year service interval
> Silicate Based Formula	> New Organic Acid Technology
> Not Hard Water Compatible	> Hard Water Compatible
> Prone to scaling over time	> No scaling = Better Heat Transfer
> Green Coloration	> New Yellow Coloration

Engine Break-In Procedure

The first tank of fuel is considered the break-in period for the engine. During this time it is critical to not operate the engine at full throttle for more than a few seconds. Vary the throttle speed as much as possible. Monitor engine temperatures and fluid levels often during the break-in period.

NOTE: During the engine break-in period, verify the oil injection system is functioning by monitoring the oil level in the oil tank. If the oil level does not drop, inspect the oil injection system.

Premix the first tank of fuel and fill the oil reservoir as outlined below. Oil added to the fuel and oil injection systems will provide the necessary engine lubrication.

OIL RECOMMENDATIONS	
Break-In Period	Polaris VES Oil
After Break-In Period	

CAUTION

Never mix brands of oil. Serious chemical reactions can cause injection system blockage, resulting in serious engine damage. Oils may also be incompatible and the result could be sludge formation, filter blockage, and reduced cold weather flow rates. All POLARIS oils are compatible with each other.

Always premix fuel in 5 gallon (19 liter) increments in a separate fuel container. Never add oil directly to the fuel tank.

BREAK-IN FUEL PREMIX RATIO		
Fuel	VES Oil	Ratio
Each 5 gallon (19 l)	16 oz. (473 ml)	40:1

Drive Belt Break-In Procedure

The break-in period for a new drive belt is 30 miles. During this time, vary the throttle position under 50% and limit full throttle use.

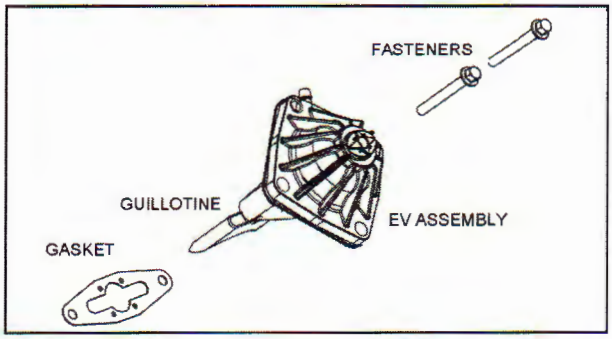
New drive belts that feature a sanded finish should be first washed with warm, soapy water and allowed to air dry prior to use.

Always take time to warm up the belt and driveline prior to operating the snowmobile. Free track and skis from the ground before engaging throttle.

ENGINE MAINTENANCE

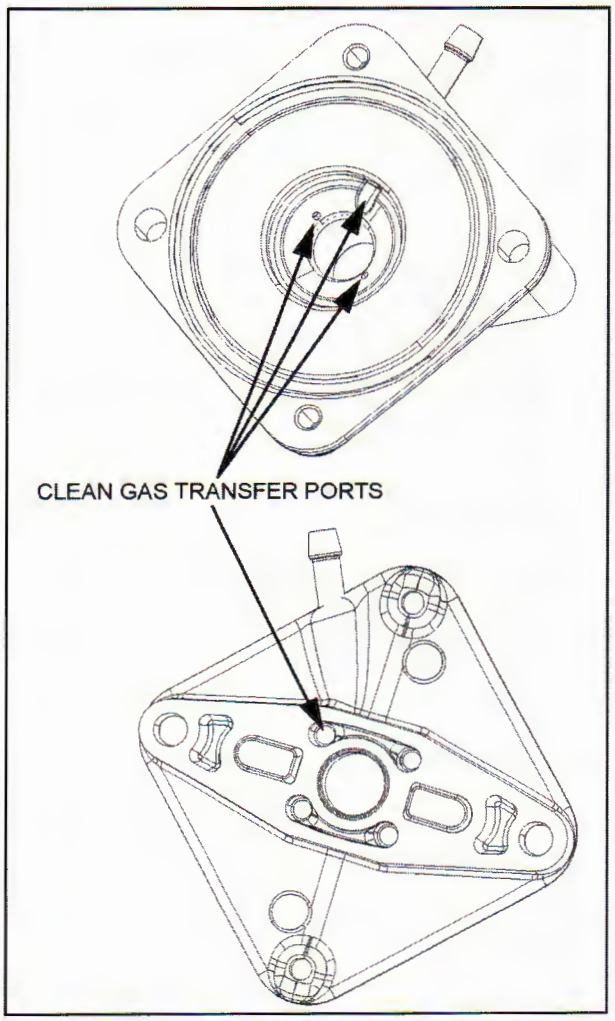
Variable Exhaust Valve Cleaning

The exhaust valve guillotines must be cleaned to ensure maximum engine performance and throttle response.



1. Remove the vent hose from the EV base fitting.
2. On the MAG VES assembly, remove the two fasteners that secure the valve assembly to the cylinder. Remove the cover after the assembly is removed from the engine.
3. On the PTO VES assembly, remove all four screws. Remove the cover and spring from the EV base.
4. Remove the two screws that secure the lower steering shaft clamp to the over structure. Doing this will provide clearance to remove the EV valve assembly.

5. Carefully extract the guillotine out of the cylinder. Discard the gasket. Do not excessively push on the lower steering shaft when removing the EV assembly.
6. Using a clean rag or shop towel, remove the oil residue from the cylinder, guillotine, and EV base.
7. Inspection:
   - Inspect the guillotine for signs of damage. Replace guillotine if damage is found. Inspect the cylinder and piston for damage if guillotine is damaged.
   - Inspect the spring. Replace if rusted, damaged, or bent.
   - Inspect bellows. Replace if damaged or excessively worn.
   - Submerse the assembly in parts cleaner. Thoroughly flush the EV housing base, bellows, and mating surfaces. Verify no carbon is in the gas transfer ports.



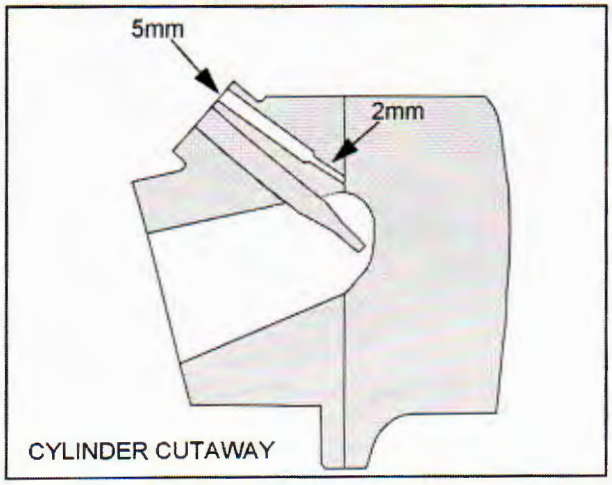
   - Clean the guillotine with brake cleaner and a piece of fine steel wool. Clean only to remove hardened carbon deposits.
8. Once clean, rinse blade with mild detergent and water. Dry completely.

9. Inspect the VES gas ports on the cylinder (s) for blockage. Remove the spark plugs and use a piston inspection light to illuminate the port(s).

10. Light must be seen through the VES gas port(s). If a port appears to be blocked, use compressed air or a long .075" drill bit to clean the port.

NOTE: Do not drill hole marked: "X".

CAUTION
Rotate the crankshaft to move piston(s) below VES gas ports. Do not damage pistons when using drill bit to clean ports.



NOTE: The transfer port diameter starts at 5 mm and then tapers to 2 mm as it approaches the cylinder wall. Do not damage taper and/or 2 mm bore with a larger drill bit.

11. Install a new gasket, then reinstall the EV assembly. Apply Loctite® 242™ to the fastener threads, and torque to specification.

NOTE: Always install a new EV base gasket. Never re-use the gasket, or modify a new gasket.

= T
Exhaust Valve Housing Fasteners: **10-13 ft-lbs (14-18 Nm) - Apply Loctite® 242™**

12. Reconnect the vent hoses.
13. Torque lower steering post clamp fasteners to specification.

= T
Lower Steering Post Clamp Fasteners: **15 ft-lbs (20 Nm)**

NOTE: To obtain maximum exhaust valve performance, Polaris recommends using Polaris VES Synthetic Two-Stroke engine oil.

Never mix different brands of engine oil.

Spark Plugs

Inspect/replace the spark plugs as outlined in the periodic maintenance table.

The spark plugs can be serviced by opening the left and right door panels.

Replace a spark plug when the following occurs:

- Spark plug is damaged/insulator is cracked or missing
- Plug electrode/insulator is fouled
- Replace at interval in maintenance table

When inspecting a spark plug, take note of the electrode and insulator color. A light brown/dark tan color indicates the engine is running properly.

If the spark plug electrode/insulator is white, the engine may be running lean. Inspect the engine, throttle body boots, etc. for air leaks.

If the spark plug electrode/insulator is black, oily, or shows heavy soot, the engine may be running rich. Inspect the engine, fuel system, and lubrication system for problems.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

Set the electrode gap to specification before installing a new spark plug.

= In. / mm.
Spark Plug Gap: **.027" (0.70 mm)**

= T
Spark Plug Torque: **18-21.6 ft-lbs (24-30 Nm)** **Apply anti-seize to threads.**

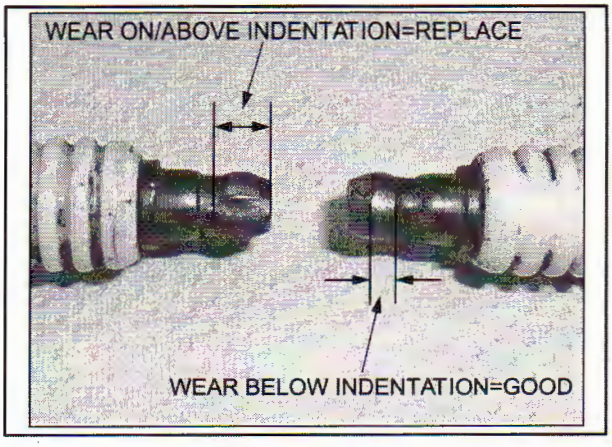
Spark Plug Caps/Spark Plug Terminals

Inspect the spark plug caps when performing spark plug maintenance.

Visually inspect the terminal ring inside the cap and the spark plug tip for oblonging or uneven wear. Replace the spark plug and corresponding cap if the wear patterns on the cap terminal ring and spark plug terminal resemble the photos below.

Spark Plug Cap Terminal Ring Wear:

Spark Plug Cap Terminal Wear:

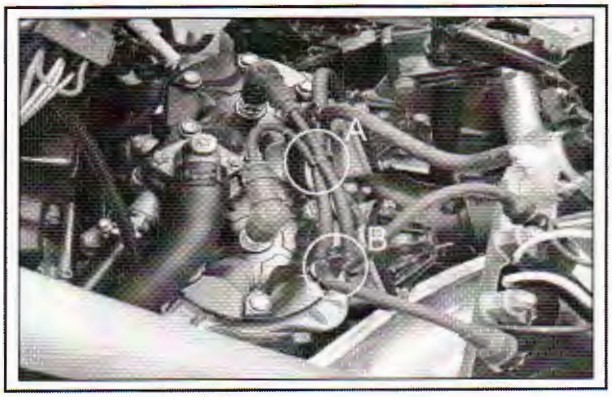


Use gentle force and a slight twisting motion when installing plug caps. An audible "click" should be heard when the terminal ring is properly seated below terminal tip indentation.

Spark Plug Wire Maintenance/Routing

Inspect each spark plug wire and the routing of both high tension wires when performing spark plug maintenance.

Replace damaged wires/ignition coils if found. Verify the spark plug wires are routed as shown in the corresponding photo below. Proper spark plug wire routing is critical in preventing spark plug cap/wire wear.



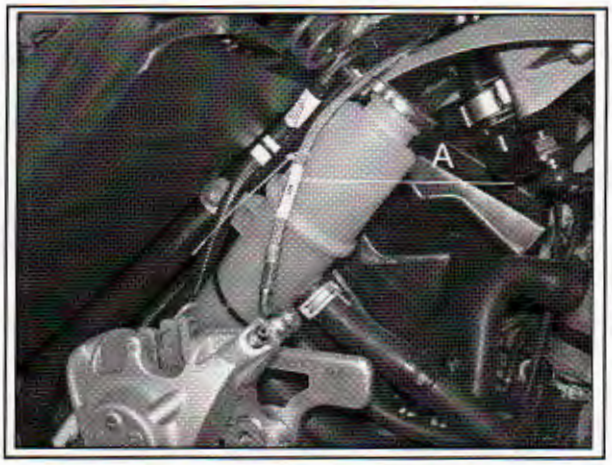
A = Panduit strap securing both high tension wires to EV vent hose.

B = T-Clip

Surge Tank

Keep the level of the coolant inside the surge tank at the FULL COLD level mark (A) when the coolant is at room temperature.

Always add coolant when the cooling system is COLD.



⚠ CAUTION

Never remove the surge tank pressure cap when the cooling system is warm. Severe burns to skin may occur from escaping coolant or steam.

Recommended Coolant

Use Polaris Premium 60/40 pre-mixed antifreeze. This premium antifreeze is rated for temperatures down to -62°F (-52°C).

Cooling System Bleeding

1. Position the snowmobile in a well-ventilated area.
2. Raise the front-right ski/suspension off the ground.
3. Allow the cooling system to cool completely. Open the engine compartment door panels. Remove the hood.
4. Verify the coolant level in the surge tank is at the COLD mark. Fill the surge tank with coolant if required. Loosely install the pressure cap.
5. Open the thermostat housing bleed screw. Wrap a clean shop towel around the housing to absorb any coolant that may flow out of the bleed screw.
6. Apply the parking brake and start the engine.
7. Immediately add coolant to the surge tank if the coolant level drops significantly after the engine is started. Watch the level and add more coolant until the level stops dropping.

   NOTE: Squeeze the coolant hoses to purge air from the cooling system.

8. Continue to run the engine until the engine temperature is at least 130° F (54° C). Secure the bleed screw after the thermostat begins to open and coolant begins to flow out of the bleed screw.
9. Verify the tunnel coolers and front heat exchanger (if equipped) begin to warm as the engine continues to run.
10. The thermostat outlet bleed screw may need to be opened slightly to allow any residual air trapped in the outlet to escape.
11. Verify that all of the coolers are warm, including the tunnel-length cooling system. Shut off the engine once all of the tunnel coolers are warm. Release the parking brake.

CAUTION

Always verify all tunnel coolers / heat exchangers are warm to the touch. A cooler or return hose that is significantly "colder" than another cooler or hose is an indication of trapped air within the cooling system.

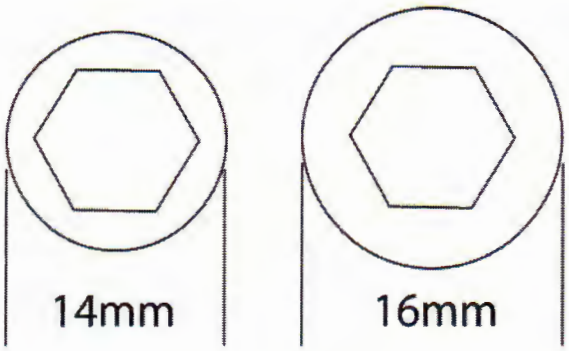
12. Allow time for the coolant temperature to cool. Re-check the coolant level in the surge tank. Add more coolant if required.
13. Reinstall the surge tank cap, hood, and engine compartment door panels.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

Engine Mount Bolt Re-Torque

NOTE: The engine mount bolt maintenance procedure only applies to 2010-2011 Pro-Ride vehicles using the original 14 mm head diameter bolts.

2012 — current models and 2010-2011 engine mount bolt service parts use 16 mm head diameter bolts and only require periodic visual inspection.



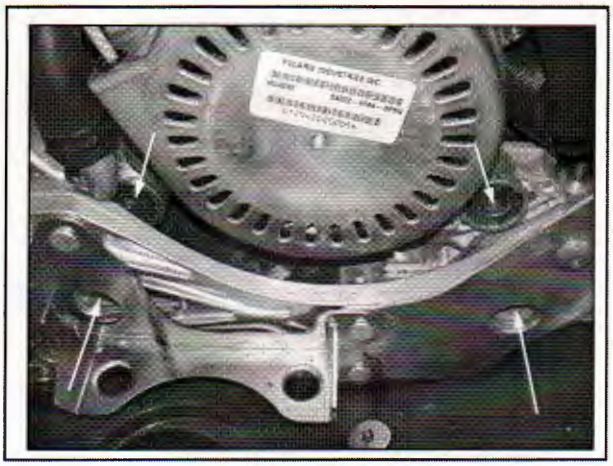
Verify and re-torque the four engine mount bolts as outlined in the periodic maintenance table.

The drive clutch and exhaust silencer will require removal to gain access to all four engine mount bolts.

NOTE: Original 14 mm head bolts on 2010 Pro-Ride models were GREEN. Original 14 mm head bolts on 2011 models were SILVER. Bolt color must be noted to properly torque fasteners.

PTO Engine Mount Bolts

MAG Engine Mount Bolts



= T

14 mm Head Diameter Engine Mount Bolts:
Green M10x1.5x45-14mm Head (8.8)
30 ft-lbs (41 Nm)

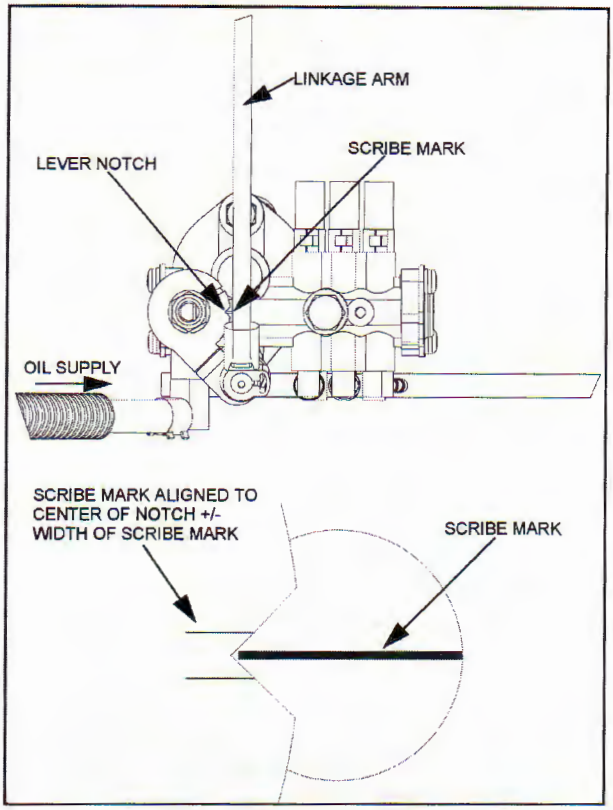
Silver M10x1.5x50-14mm Head (12.9)
35 ft-lbs (48 Nm)

Note two torque values for Bolts. Always clean engine mount threads with compressed air or M10x1.5 tap before installing bolt(s). Apply Loctite® Primer N and Loctite® 242™ when using original bolts.

Detailed information regarding engine mount bolts can be found in Chapter 3. See ""Engine Mount Bolt Service Replacement Kit"., page 3.19

Oil Pump Adjustment

1. Verify the throttle cable free play is set to specification (.010" - .030") and the throttle lever is synchronized to the throttle plates.



PART NUMBER	ARM MARKING	LEVER SETTING
2521000 1204439	600B	Set lever notch in-line with oil pump scribe mark.
1204695	600C	
1204363 1204438	800B	

CAUTION

Failure to properly set the oil pump lever arm may cause severe engine damage.

2. Remove the following components:
   - Left side compartment door panel

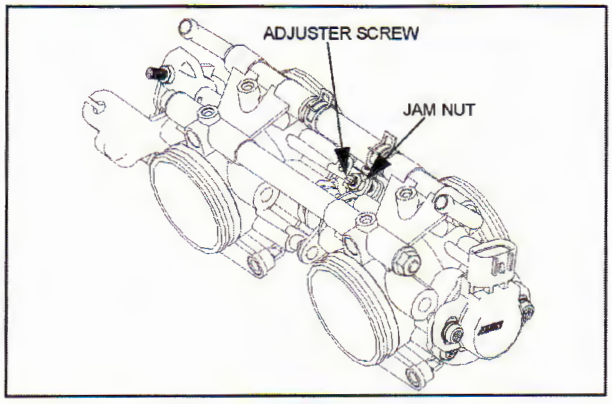
3. Access to the oil pump for inspection is between the drive and driven clutches.

4. Using a mirror and a flash light, visually inspect the current oil pump setting. The scribe mark should be aligned with the point of the lever notch when the throttle plates are closed.

CAUTION

The oil pump lever and pump boss marks must be observed straight-on to yield accurate results.

5. If adjustment is required, locate the oil pump linkage adjuster on the throttle body. Open and release the throttle several times to verify throttle plates are closed.



6. Loosen the adjuster jam nut. Using an Allen wrench, turn the adjuster screw clockwise to raise the oil pump lever arm. Turn the screw counter-clockwise to lower the oil pump lever arm.

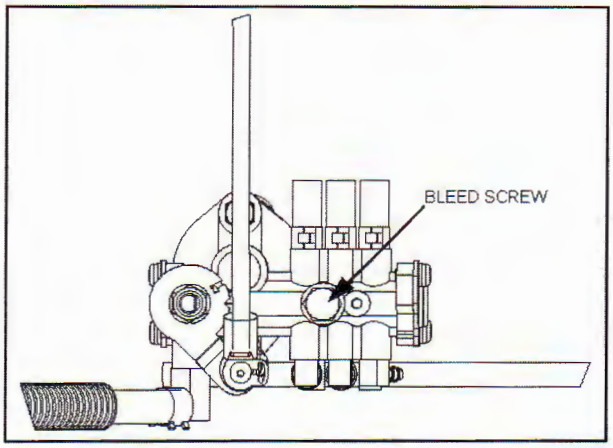
7. Visually inspect the lever notch/scribe mark alignment. When in alignment, tighten the jam nut without moving the adjuster screw.

   NOTE: If the linkage arm comes off of the lever or adjuster arm, verify the oil pump lever arm has not rotated over-center prior to reinstalling the linkage.

Oil Pump Bleeding

CAUTION

FAILURE TO PROPERLY BLEED THE OIL PUMP MAY CAUSE SEVERE ENGINE DAMAGE.



1. The oil supply hose must be filled with oil to bleed the pump.
2. Remove the following components:
   - Drive belt
   - Oil tank/clutch cover assembly
   - Air box assembly
   - Throttle body assembly from the intake adapter plate
3. Loosen the bleed screw (A). Verify a stream of oil flows from the bleed screw.
4. After bleeding oil pump, secure bleed screw and wipe up oil residue.

   NOTE: Any time the engine is disassembled or repaired, it is important to purge air within the oil supply hose and oil pump.

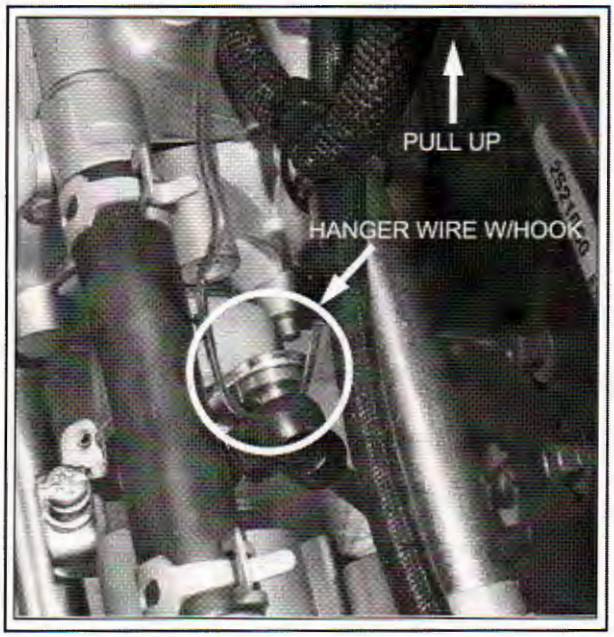
Oil Injection Hose Priming

CAUTION

FAILURE TO PROPERLY PRIME THE OIL PUMP MAY CAUSE SEVERE ENGINE DAMAGE.

To prime the oil injection hoses follow these steps:

1. Locate the oil pump linkage rod end on the top of the throttle body.
2. Obtain a length of wire (coat hanger) with a small hook on one end.
3. Hook the oil pump linkage rod on the throttle body as shown in the photo.
4. With the engine compartment doors closed, have an assistant start the engine. Pull the linkage upwards to set the oil pump to maximum flow. Continue doing this for a few minutes.
5. Stop the engine. Inspect the oil injection hoses for air bubbles. If there are air bubbles greater than one inch in length, repeat step 4 until they are pushed out of the hoses. Air bubbles less than one inch in length are permissible, but you must verify they are moving towards each oil injector when the engine is running. The fact that the air bubbles are moving through the hoses indicates that the pump is properly bled.

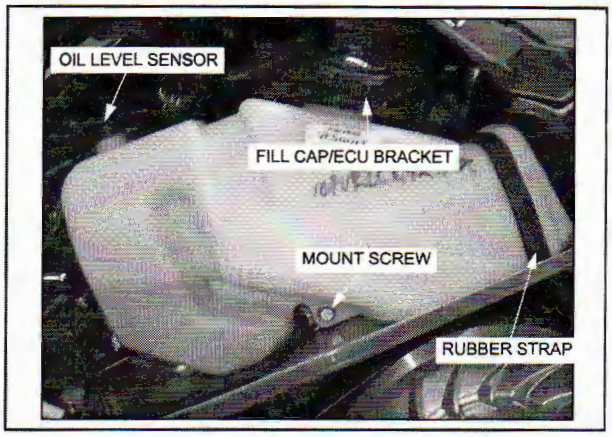


Oil Tank/Clutch Cover Service

The oil tank is mounted to the clutch cover assembly. The oil tank/clutch cover assembly can be removed from the vehicle to access components within the engine compartment.

NOTE: Because of the relative ease of removing both the oil tank and clutch cover at the same time, both processes have been combined although not all service procedures will require the removal of the clutch cover.

1. Open the engine compartment door panels, and remove the hood.
2. Remove the hood assembly.



3. Disengage the rubber strap from the cover at the back of the oil tank.
4. Remove the screw securing the bottom of the tank to the clutch cover.
5. Remove cap. Remove the ECU bracket from the oil tank. Reinstall the fill cap. Disconnect the oil level sensor.
6. Disconnect the two wire harness connectors from the ECU.
7. Disconnect the wire harness connections at the regulator/rectifier, and capacitor. Release the wire conduits from the rosebud connectors.
8. Remove the four nuts securing the clutch cover from the chassis.
9. Carefully pull up and release the cover from the mounting studs.
10. Using a needle nose pliers, slide the clamp back and remove the oil supply hose at the filter location. Use the pliers to pinch the supply hose to prevent oil loss.
11. Installation is the reverse of removal. After installing the supply hose on to the filter and installing the clamp, hold the oil tank high in the engine compartment with the supply hose pointed down to allow the trapped air to bleed upwards into the tank.

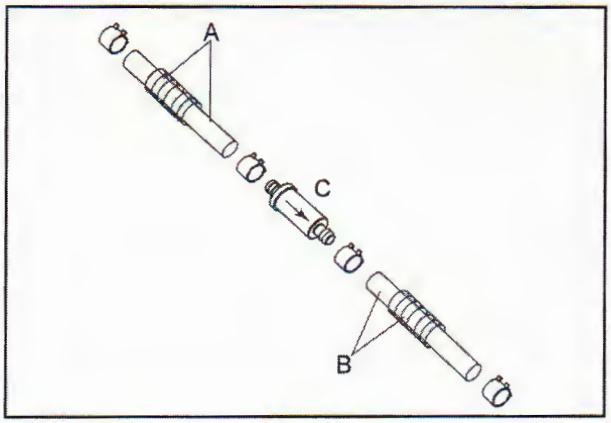
CAUTION
Verify the oil supply hose is not kinked after installing the oil tank/oil supply hose.

12. Install the ECU bracket, and fill cap.
13. Torque the lower tank screw to specification. Install the rubber strap.

= T
Oil Tank Mount Screw 10 ft-lbs (12 Nm)

Oil Filter Service

The oil filter is located near the oil tank on 600 models, and between the reed tracks on 800 models. The illustration below shows the individual hose lengths depending on model.

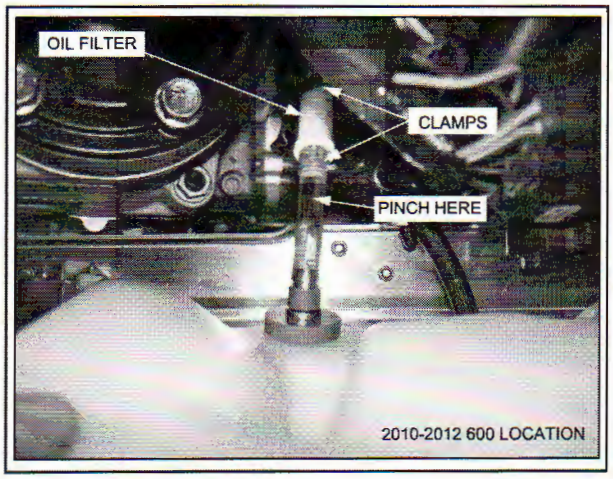


OIL HOSE / CONVOLUTED TUBING LENGTH CHART				
Years	Tank-to-Filter Hose (A)	Tank-to-Filter Tubing (A)	Filter-to-Oil Pump Hose (B)	Filter-to-Oil Pump Tubing (B)
2010 – 2012 600	6 cm	N/A	42 cm	33 cm

OIL HOSE / CONVOLUTED TUBING LENGTH CHART				
2011 — Current 800 2013 — Current 600	21 cm	18 cm	25 cm	22 cm
C = Oil Filter / Arrow in direction of flow.				

2010-2012 600 Models:

1. Remove oil tank mounting screw and the rubber strap securing the tank to the clutch cover.
2. Slide the clamp off of the filter. Pinch off the oil supply hose using a soft-jawed pliers. Remove the supply hose from the filter.
3. Remove the oil filter from the oil pump oil supply hose. Have a clean shop rag available to wipe up any residual oil.
4. Install a new filter with the arrow pointing in the direction of flow (towards oil pump/away from tank).



2010-2012 600 LOCATION

5. Install oil tank/supply hose with clamp. Hold the tank high in the engine compartment with the supply hose pointed down to allow the trapped air to bleed upwards into the tank.

   NOTE: Squeezing the hose with a pliers will push the air out towards the tank.

CAUTION

Severe engine damage will occur if the oil supply hose is not properly bled of trapped air.
Verify the oil supply hose is not kinked after installing the oil tank/oil supply hose.

6. Install the ECU bracket, and then fill cap.
7. Torque the lower tank screw to specification. Install the rubber strap.

= T

Oil Tank Mount Screw: 10 ft-lbs (12 Nm)

2013 – Current 600 / All 800 Models:

1. Remove the drive belt and driven clutch assembly.
2. Remove oil tank mounting screw and the rubber strap securing the tank to the clutch cover.
3. Remove the oil cap, and then slide the ECU bracket up and off of the oil tank. Reinstall the oil cap.
4. Disconnect all of the ECU and assorted wiring harnesses from the electrical center components.
5. Remove the clutch cover nuts, and then remove the clutch cover from the vehicle.

   NOTE: Position the oil tank on top of the drive clutch. Do not allow the oil tank to hang from the oil hose.

6. Remove the fuel supply and return hoses from the air box.
7. Reference Chapter 4 and remove the fuel hoses from the fuel pump.
8. Remove the air box assembly.
9. Carefully disconnect the oil pump linkage arm from the cam on the throttle body assembly. Note that the oil pump lever will rotate over-center to the full open position after it is disconnected, and will need to be installed correctly during reinstallation.
10. Loosen the two throttle body gear clamps and remove the throttle body from the adapter plate and secure it to the steering drag link.
11. Remove the throttle body adapter plate from the crankcase. The reed cages can remain in the crankcase.
12. Position the oil tank so that air in the oil hose bleeds up to the tank. Squeeze the hose with a pliers to force the air upwards.

CAUTION

Severe engine damage will occur if the oil supply hose is not properly bled of trapped air.

13. Replace the oil filter making sure the arrow on the filter points towards the oil pump.

14. If the reed cages were removed, clean each cage assembly and reinstall.
15. Reinstall the throttle body adapter plate. Install screws and torque to 9 ft-lbs (12 Nm) in a crisscross pattern.
16. Untie throttle body assembly that is secured to steering drag link.
17. Locate the oil pump lever arm linkage. Pull up on the linkage making sure the oil pump lever rotates counter-clockwise.
18. Reconnect the oil pump lever linkage to the throttle body.

    NOTE: If the oil pump linkage is installed incorrectly, the oil pump will be set to the full-rich setting.

19. Reinstall the throttle body assembly into the adapter plate boots. Tighten gear clamps. Prior to going to the next step, verify the oil pump notch and index marks are set properly.
20. Reinstall the air box assembly and tighten gear clamps.

    NOTE: Air box divider plate may have to be removed to ensure the air box boots are correctly installed on to the throttle body.

21. Reinstall the clutch guard/oil tank/electrical center assembly. Verify the oil supply hose is lying flat across the intake track and not kinked. Reassemble all electrical connections.
22. Reconnect the fuel supply/return hoses to the fuel pump flange. Verify an audible "click" is heard when installing the hoses.
23. Reinstall the driven clutch and drive belt. Tighten drive clutch fastener to 17ft-lbs (23 Nm).

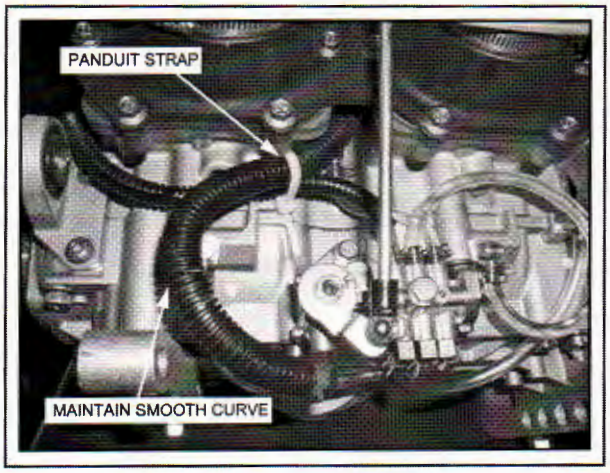
Oil Supply Hose Routing/Panduit Strap

To prevent disruptions in oil flow and premature oil hose wear, verify the oil supply hose is free from kinks and/or sharp bends.

Whenever servicing the oil supply hoses, oil pump, etc. verify the hose (s) are not coming into the contact with components that may prematurely wear the hose.

Some models feature a panduit strap to prevent the oil hose from coming into contact with the front tunnel bulkhead plate. While not on all models, the strap can be installed on any vehicle.

NOTE: All 2013 600/800 models and any 2011-2012 800 model with front tunnel closeoff panels must have the panduit strap installed to prevent the oil hose from making contact with the panel.



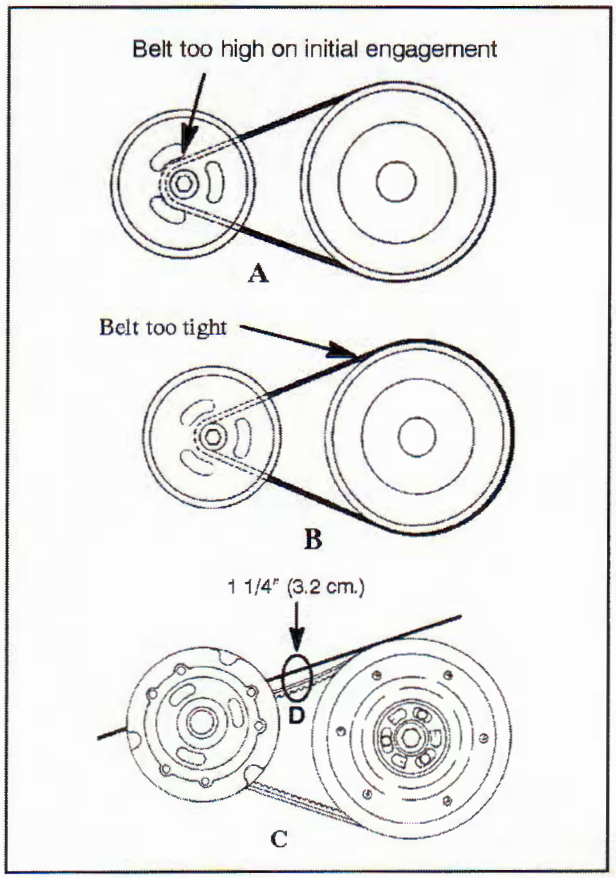
Secure the main oil supply hose to the PTO bearing oil injector hose while maintaining a smooth curve in the hose leading to the oil pump.

PVT SYSTEM

Belt Deflection Inspection

Excessive belt deflection is when the belt is too long or the center distance is too short. The initial starting ratio will be too high, resulting in performance loss. This is due to the belt rising too high in the drive clutch sheaves upon engagement (A).

Insufficient belt deflection (B) is when the belt is too short or the center distance is too long. The initial starting ratio will be too low. In addition, the machine may creep when the engine idles, causing damage to the internal face of the drive belt.



1. Measure the belt deflection with both clutches at rest and in their full neutral position.
2. Place a straight edge across the tow clutches, on top the belt.
3. Apply downward pressure to the belt and measure the distance at point (D). Compare to specification.
4. The measurement should be 1-1/4" (3.2 cm).

= In. / mm.
Belt Deflection: 1.25" (3.2 cm)

5. If the measurement is not correct, adjust driven clutch.

Team/P2 Deflection Adjustment

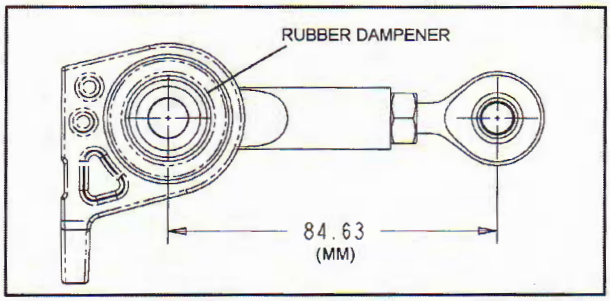
CAUTION
The driven clutch can be damaged if the clutch is in reverse drive.

1. Verify the drive system is in forward drive.
2. While holding the set screw with an Allen wrench, loosen the jam nut.
3. Turn the set screw clockwise while holding the jam nut stationary to increase the distance between the clutch sheaves (increase belt deflection).
4. Turn the set screw counter-clockwise while holding the jam nut stationary to decrease the distance between the clutch sheaves (decrease belt deflection).
5. Secure the jam nut while holding the set screw stationary.
6. Raise the rear of the snowmobile using a track stand to allow the track to spin.
7. Start the engine and apply enough throttle to spin the track.
8. Turn off then engine, and repeat belt deflection inspection.

Torque Limiter

NOTE: 2010 Models Only

Inspect the rubber dampener for signs of abnormal wear and tear. Adjust the linkage length to specification.



Clutch Alignment/Offset

The drive and driven clutches are offset from each other. This offset is controlled by the number and thickness of washers installed on the jackshaft behind the driven clutch.

1. Remove drive belt.
2. Push the driven clutch towards the bulkhead. Install the alignment tool into the drive clutch and on top of the driven clutch hub.

TOOL PART NUMBER	APPLICATION
PS-47477	Light Weight (LWT) Team Driven / P2

NOTE: The PS-47477 offset tool is calibrated with the correct alignment angle for the respective driven clutch.

Inspect for broken motor mounts, engine straps or bulkhead damage if the offset tool reveals major misalignment.

3. The optimum setup is when the front and rear of the tool touch the driven clutch. No gap should be present in the front, and the rear clearance should not exceed .060" (1.5 mm).

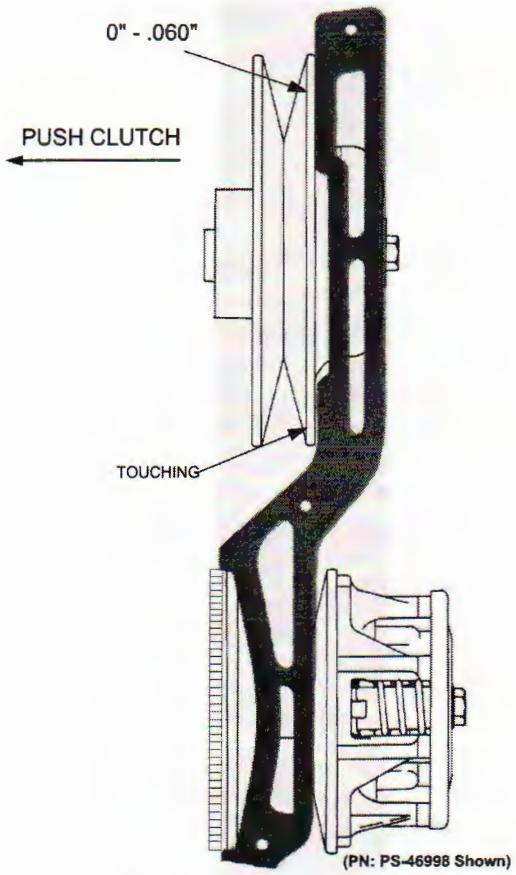
NOTE: If the front of the alignment bar does not touch the driven sheave, the maximum clearance cannot exceed .025" (0.64 mm).

Offset/Float Adjustment

1. Determine direction driven clutch needs to be adjusted.
2. Remove driven clutch retaining bolt, and remove driven clutch.
3. With one 16 GA. bushing installed, add or remove offset washers from behind the driven clutch to set the proper offset.
4. After adjusting the offset, add or remove shim washers from behind the driven clutch bolt and washer to provide a .060" (1.5 mm) driven clutch float on the jackshaft.

OFFSET / FLOAT ADJUSTMENT WASHERS
Offset Washers 16 Gauge Bushing = 7556509 (QTY.1) .023" = 7555917 (AR) .120" = 7555864 (AR) Float Washers .065" = 7555806 (AR) .105" = 7555832 (AR)
AR = As Required

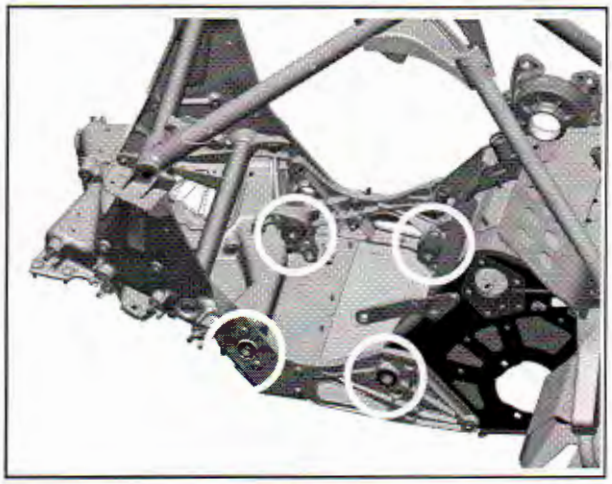
CAUTION
Always verify the driven clutch floats on the jackshaft. The jackshaft bearing will fail from side-loading if the driven clutch is not allowed to float.



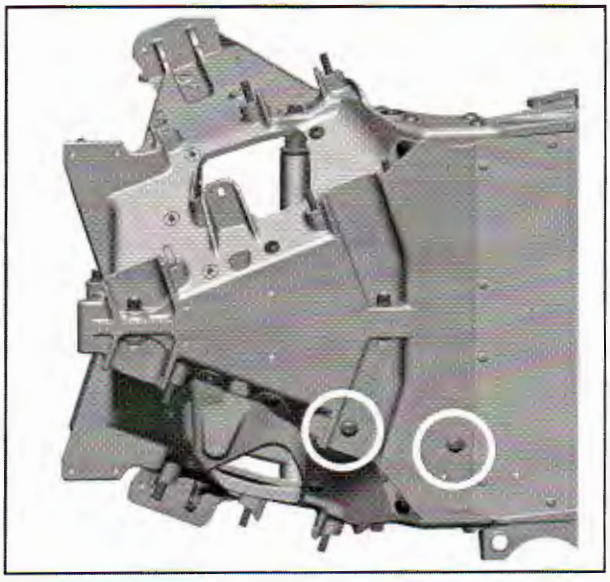
Adjusting Engine Mount Bolts/Engine Alignment

Minor adjustments to the engine mount bolts and MAG-front engine mount can be performed if the alignment tool indicates major clutch misalignment.

1. Loosen, but do not remove, the four engine mount bolts.

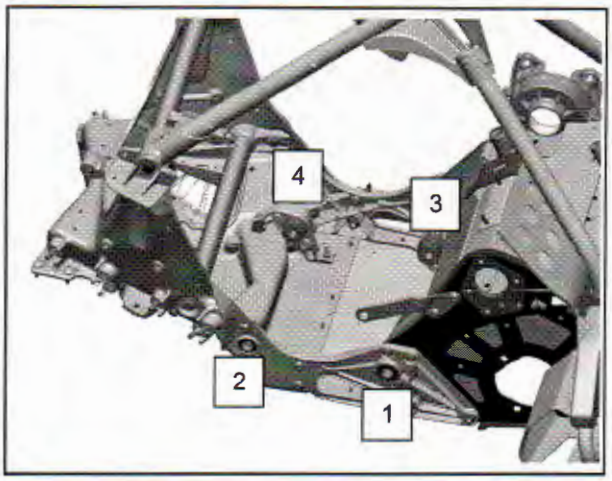


2. Loosen, but do not remove, the two Torx screws securing the MAG-front engine mount to the bulkhead.



3. Verify clutch alignment has changed using the Clutch Alignment Tool part number: PS-47477. The engine can be moved slightly with the screws loosened at the MAG-front location.

4. Once clutch alignment is set, tighten the engine mount bolts to specification in the sequence shown in the illustration.



= T

2010 - 14 mm Head Diameter - DK.Green Color:
DK. GREEN-M10x1.5x45 (8.8) = 30 ft-lbs (41 Nm)

2011 - 14 mm Head Diameter - Silver/Gray Color:
SILVER/GRY-M10x1.5x50 (12.9) = 35 ft-lbs (48 Nm)

2012 — Later/Replacement Kit - 16 mm Head Diameter:
Silver/Gray Color
SILVER/GRY-M10x1.50 (12.9) = 40 ft-lbs (54 Nm)

5. Torque the two Torx screws only after all four engine mount bolts are torqued to specification.

= T

Front-MAG Engine Mount Screws-to-Bulkhead Screws:
22 ft-lbs (30 Nm)

6. Re-check clutch alignment. If clutch alignment is still incorrect, inspect the engine mounts, motor straps, radial inserts, and chassis for broken or twisted components.

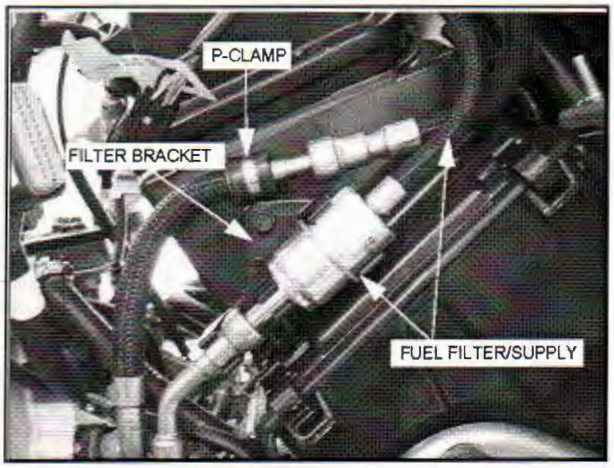
FUEL / INTAKE SYSTEM

Fuel Filter - DC-CFI-4 Models

⚠ WARNING

When removing the fuel filter fuel spillage will occur. Be sure to work in a well-ventilated area away from anything which may cause the fuel to ignite such as an open flame, heaters, trouble lights or cigarettes.

1. The fuel filter should be replaced as outlined in the periodic maintenance table.
2. Open the left and right door panels. Remove the hood and drive belt.
3. Disengage the rubber strap securing the oil tank to the clutch cover. Remove the oil tank mount screw.
4. Remove the two harness connectors from the ECU. Remove the oil tank fill cap, and then the ECU bracket.
5. Remove the four nuts that mount the clutch cover to the chassis. Slide the oil tank down to open access to the two rear nuts.
6. Carefully release the clutch cover from the studs and then pull it away from the airbox.
7. De-pressurize the fuel system. Remove the filter from the airbox bracket. Disconnect the fuel filter from the pump flange and supply fuel hose using a 3/8" fuel line disconnect tool.



8. Drain any fuel in the hoses/filter into an appropriate container, and then discard filter in accordance with local rules and regulations.
9. When re-connecting the fuel hoses, verify an audible "click" is heard and the connections are secure by firmly pulling on the two hose connections. Push the filter cartridge back into the bracket.
10. If the filter bracket was removed for any reason, note that the fuel return hose p-clamp is installed behind the filter bracket.
11. Inspect the hoses making sure none are worn or damaged.
12. Reinstall the clutch cover. Torque cover nuts to specification.
13. Reconnect the ECU wiring harness connectors.
14. Install the ECU bracket onto the oil tank. Reinstall the oil tank. Torque mount screw to specification.
15. Reinstall the drive belt. Replace the hood and door panels.

Fuel Filter - DC-CFI-2 Models

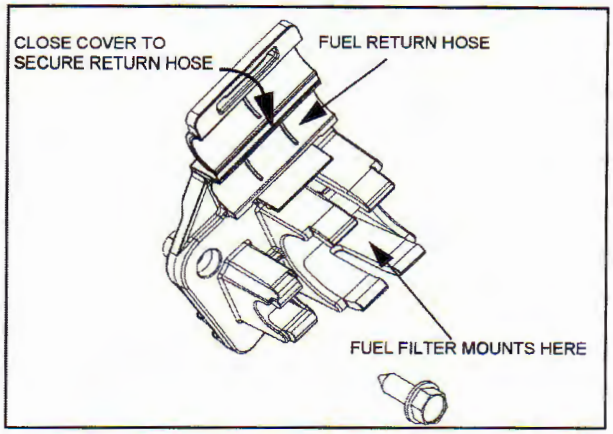
⚠ WARNING

When removing the fuel filter fuel spillage will occur. Be sure to work in a well-ventilated area away from anything which may cause the fuel to ignite such as an open flame, heaters, trouble lights or cigarettes.

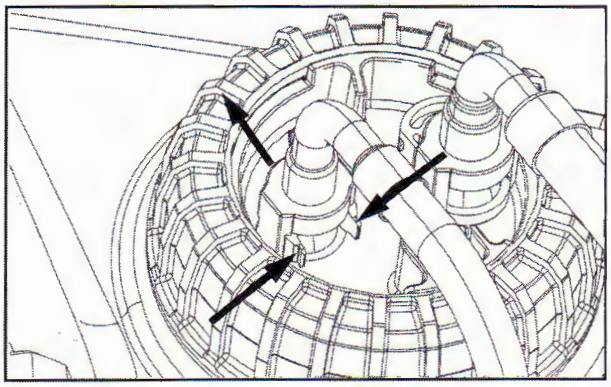
1. The fuel filter should be replaced as outlined in the periodic maintenance table.
2. Open the left and right door panels. Remove the hood and drive belt.
3. Disengage the rubber strap securing the oil tank to the clutch cover. Remove the oil tank mount screw.
4. Remove the two harness connectors from the ECU. Remove the oil tank fill cap, and then the ECU bracket.
5. Remove the four nuts that mount the clutch cover to the chassis. Slide the oil tank down to open access to the two rear nuts.
6. Carefully release the clutch cover from the studs and then pull it away from the airbox.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

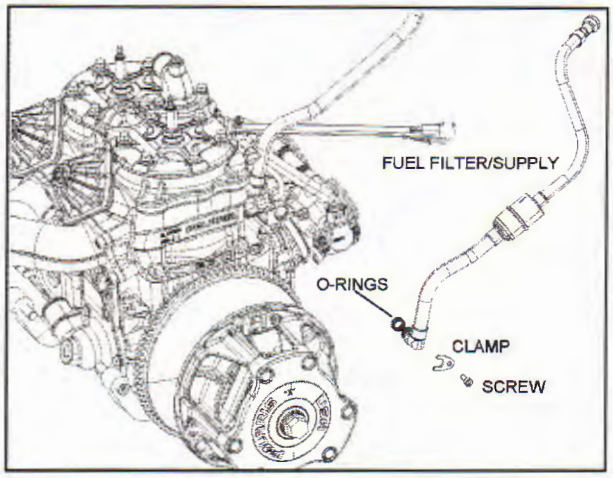
7. Depressurize the fuel system. Remove the filter from the airbox bracket.



8. On 2012 models, disconnect the fuel supply hose from the fuel pump flange using a fuel line disconnect tool.
9. On 2013 – current models, disconnect the fuel supply hose from the fuel pump flange by depressing the lock tabs inwards and then pushing the lock out of the connector. Pull the connector up off of the fitting.



10. Remove the bottom fuel fitting clamp on the fuel rail.
11. Carefully remove the fuel hose fitting from the fuel rail. Have a clean shop rag at hand to absorb any fuel that leaks from the fitting. Dispose of rag properly when finished.

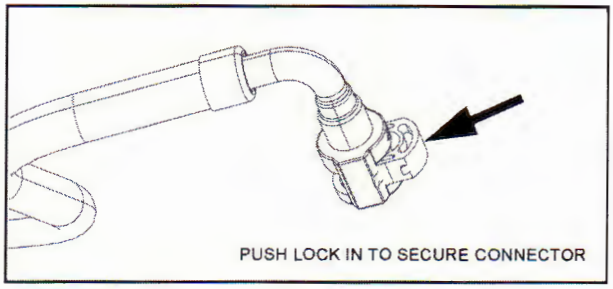


12. Drain any fuel in the hoses/filter into an appropriate container, and then discard filter in accordance with local rules and regulations.
13. Apply a light film of two stroke engine oil to the new fuel supply hose fitting. Carefully install the fitting back into the fuel rail. Torque screw to specification.

= T
Fuel Hose Fittings-to-Fuel Rail Clamp Screws: **3.3 ft-lbs (4.5 Nm)** **Apply Loctite® 243 to screw threads.**

14. On 2012 models, reconnect the supply hose to the fuel pump flange. Verify an audible "click" is heard and the connections are secure by firmly pulling on the two hose connections.
15. Push the filter cartridge back into the bracket.

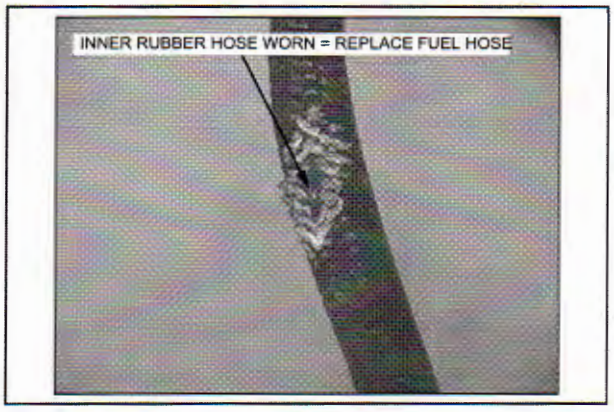
16. On 2013 — current models, install the supply hose connector onto the fuel pump flange fitting. Once seated, push lock in to secure the connector. Verify an audible "click" is heard when the lock tabs snap into place. Pull up firmly on the connector to verify it is secured to the fuel pump flange fitting.



17. Inspect the hoses making sure none are worn or damaged.
18. Reinstall the clutch cover. Torque cover nuts to specification.
19. Reconnect the ECU wiring harness connectors.
20. Install the ECU bracket onto the oil tank. Reinstall the oil tank. Torque mount screw to specification.
21. Reinstall the drive belt. Replace the hood and door panels.

Fuel Hose Inspection

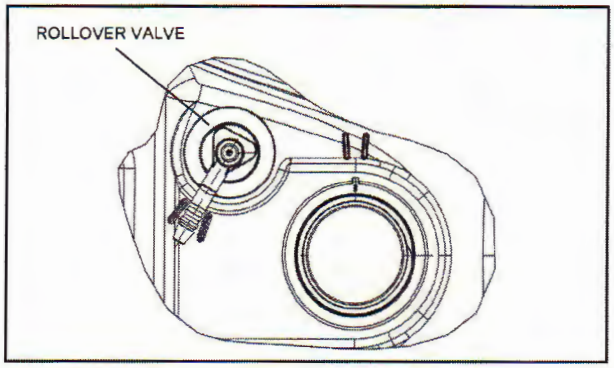
Inspect all fuel hoses as part of periodic maintenance. Replace any fuel hose if the inner rubber core show signs of wear.



Fuel Tank Vent System

All models feature a fuel tank vent / vacuum check valve system.

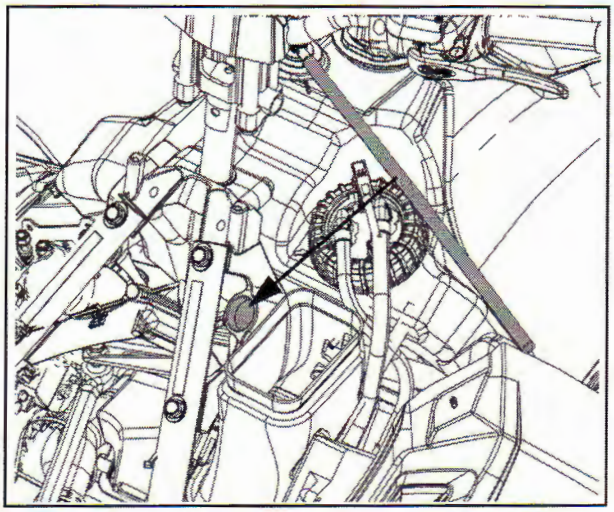
The rollover check valve prevents fuel from escaping the tank in the event of a vehicle rollover.



The rollover check valve is not serviceable. When inspecting the system, verify the hose is not kinked.

Fuel Tank Vent Hose Routing

Route the vent hose into the left-rear over structure tube. Verify the hose is not kinked.

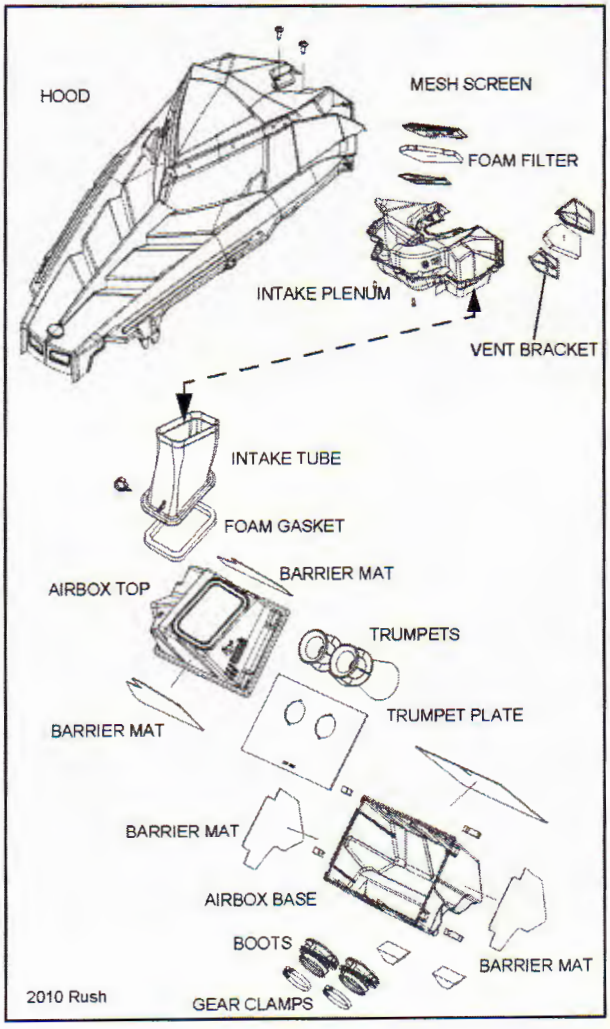


Air Box/Pre-Filters

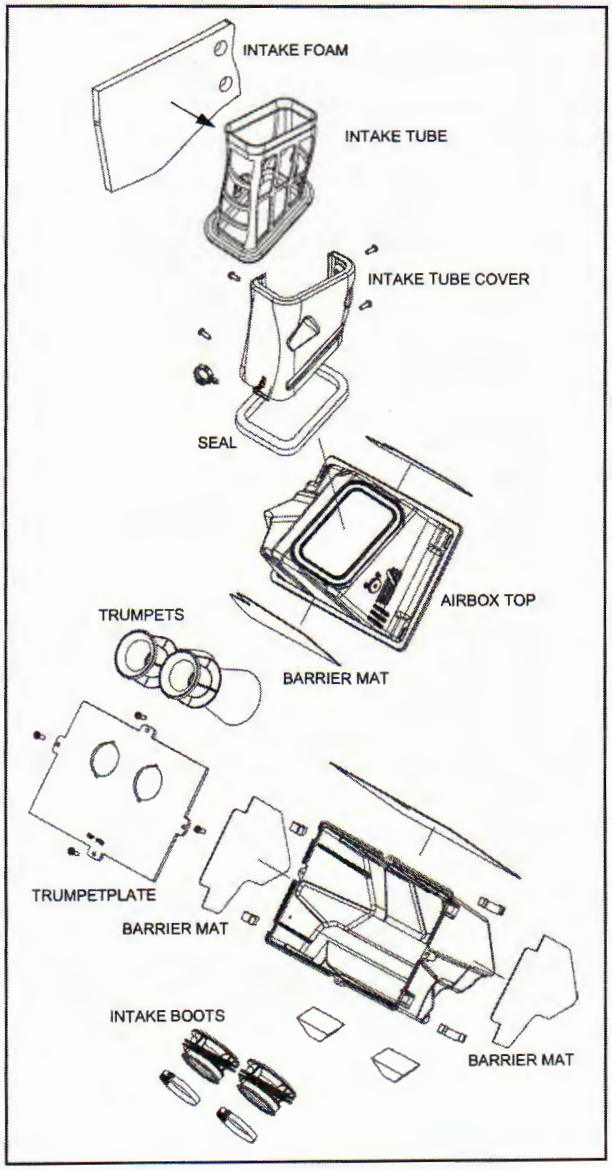
Inspect the air intake system as outlined in the periodic maintenance table. Replace cracked, broken, or missing parts.

Verify the hood intake screens are not torn or missing. An intake tube connects the hood plenum to the air box inside the engine compartment.

Always verify the intake tube is installed properly in both the air box and hood plenum when installing the hood assembly.



2011 and later models feature an air box with a revised intake tube to reduce noise and a trumpet plate that is screwed to the air box base.



Air Box Servicing

The air box can be removed from the engine compartment by disassembling the individual components.

1. Remove the left and right door panels.
2. Remove the hood assembly.
3. Remove the oil tank/clutch cover assembly.
4. Remove the intake tube from the airbox.
5. Unhook the four air box top clamps. Remove the air box top piece from the engine compartment.
6. Remove the trumpet plate. On 2011 — current models, remove the screws securing the plate to the air box base. Note the "TOP FWD" plate orientation marking on the plate.
7. Loosen the two gear clamps securing the intake boots to the throttle body.
8. Carefully pull up on the rear of the air box base to release the intake boots from the throttle body. Remove the air box base from the engine compartment.
9. Note the gear clamp stops on the intake boots. Ensure the worm gear housings on each gear clamp are positioned against the stops during assembly. (The stops prevent the gear clamps from rotating while tightening.)
10. Air box installation is the reverse of removal. Verify the intake boots are installed tight and flush against the throttle body.
11. Install the trumpet plate with the "TOP FWD" call out orientated correctly.
12. Verify the intake tube foam is not damaged or torn. If it is, it must be replaced with new foam.
13. After installing the hood assembly, verify the intake tube is installed in both the air box and hood intake plenum.

CHASSIS

Door/Hood Removal and Installation

To remove the door panels, follow these steps:

1. Turn the two 1/4 turn fasteners counter-clockwise.
2. Unhook the rubber strap. Carefully pull the door(s) away from the hood/chassis.

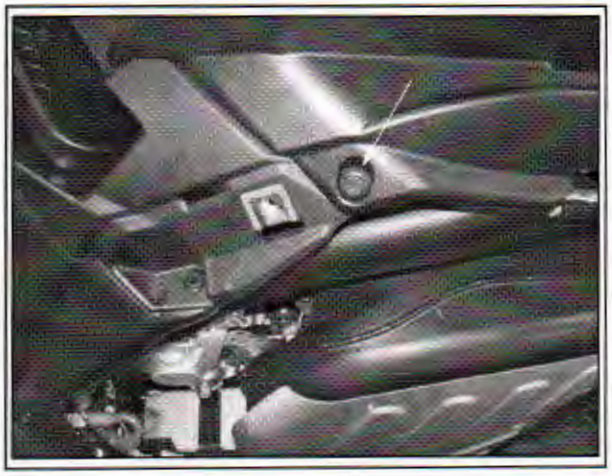
3. Pull up on the door to disengage the locking tabs at the bottom of each door.

To remove the hood, follow these steps:

4. Remove both door panels.

5. Using a T40 Torx driver, remove the two screws securing the hood to the steering post.

6. Using a flat blade screwdriver, remove the left and right side nylon rivets securing the hood to the console.

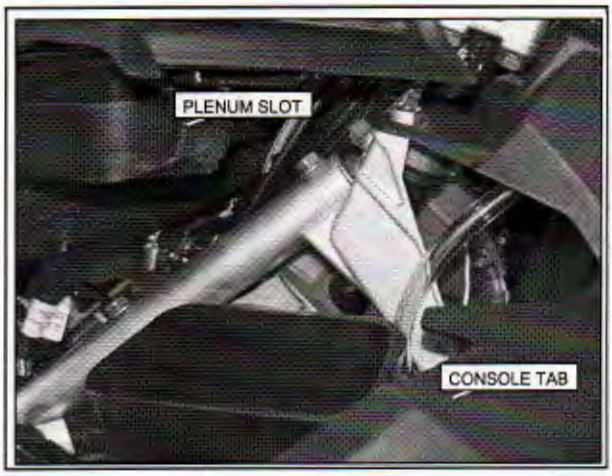


7. Disconnect the hood wiring harness from the chassis harness. On 2010-2012 models, note the routing of the harness under the over structure tube. The hood harness connector on 2013 - current models is located on the right side of the handlebar over structure and accessed from the right-side engine compartment door.
8. Lift the back of the hood up making sure the brake duct clears the console. Push the hood forward to disengage the nose tabs from the nose cone.
9. Remove the hood from the vehicle.
10. When installing the hood on 2010-2012 models, verify the hood harness connector is routed under the over structure tube.

NOTE: The hood harness connector must be routed under the over structure tube to prevent the wires from coming into contact with the other components.

11. On 2013 — current models, the hood harness connector is located on the right-side of the handlebar over structure.

12. Engage the two console tabs with the hood plenum slots at the rear of the hood.



NOTE: Failure to properly install the console tabs into the hood plenum may not allow the hood to seat correctly.

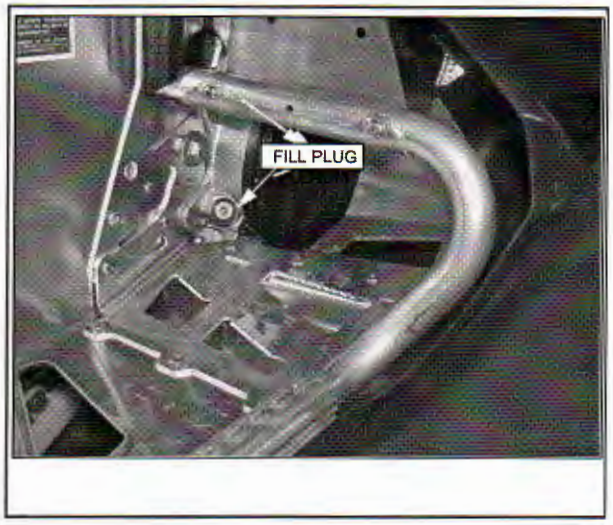
13. Prior to closing the left side door panel, verify the air box intake tube is installed in both the air box and hood intake plenum.

NOTE: Failure to properly install the intake tube may cause snow or under hood hot air ingestion into the intake system.

Chain Case Oil Level Check

Maintain the oil level at the bottom of the fill port hole.

1. Position the vehicle on a flat and level surface.
2. Remove the fill plug. Verify the oil level is at the base of the plug hole.
3. Add the recommended oil as needed at the fill plug.



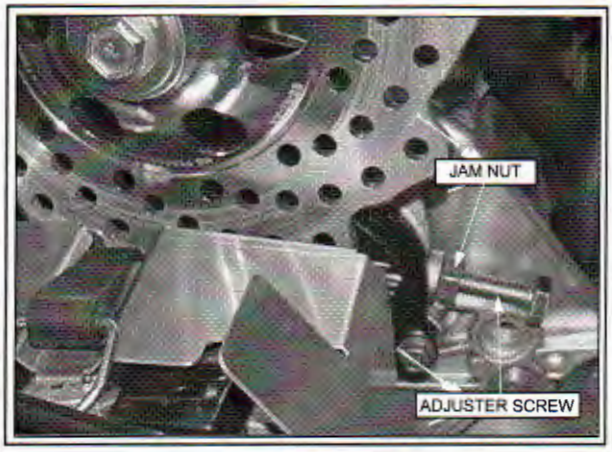
Chain Case Oil Replacement

1. Locate the chaincase drain plug on the bottom of the nosepan.
2. Place an oil catch pan under the drain plug. Clean the drain plug socket.
3. Remove the drain plug and drain the oil into the catch pan.
4. Clean the magnetic plug to remove metal shavings.
5. Install drain plug and hand-tighten. Do not over-tighten the drain plug.
6. Remove the fill plug. Clean the magnetic end to remove metal shavings. Fill chaincase with 80W synthetic chaincase lubricant at the fill plug location until the oil level is at the base of the threads.

Chaincase Oil Capacity = 9 oz. (266 ml)
Recommended Lubricant:
Chaincase = Polaris 80W Synthetic Chaincase Lubricant

Drive Chain Tension Adjustment

1. Open the left and right side door panels. Remove the hood.
2. Remove the exhaust silencer.
3. Rotate the driven clutch counter-clockwise to move all of the slack in the chain to the tensioner side. Set the parking brake, or have an assistant hold the brake lever.
4. Loosen the jam nut.



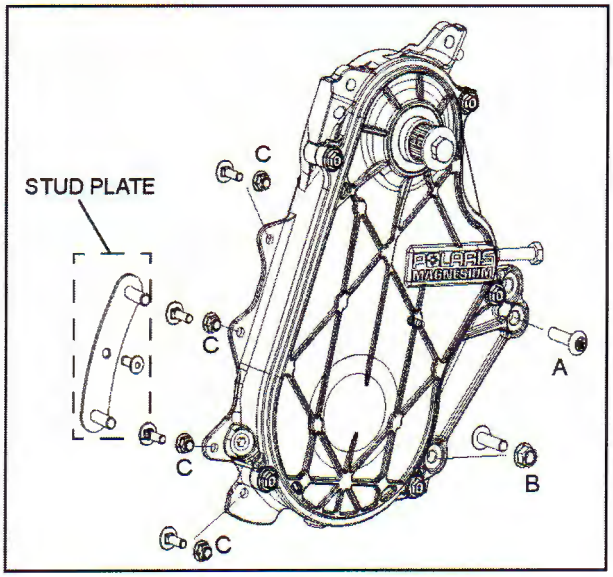
5. Finger tighten the adjuster screw until it can no longer be adjusted by hand, then back off 1/4 turn.
6. Tighten the jam nut while holding the adjuster bolt. torque to 21 ft-lbs (28 Nm).
7. Release the brake lever lock.
8. Reinstall the exhaust silencer.

Chain Case Fastener Re-Torque

NOTE: This maintenance procedure only applies to 2010-2011 models. 2012-later models feature chain cases that are bonded to the chassis.

Verify and re-torque the chain case mount screws as outlined in the periodic maintenance table.

The exhaust silencer will require removal to gain access to two front chaincase mount screws.



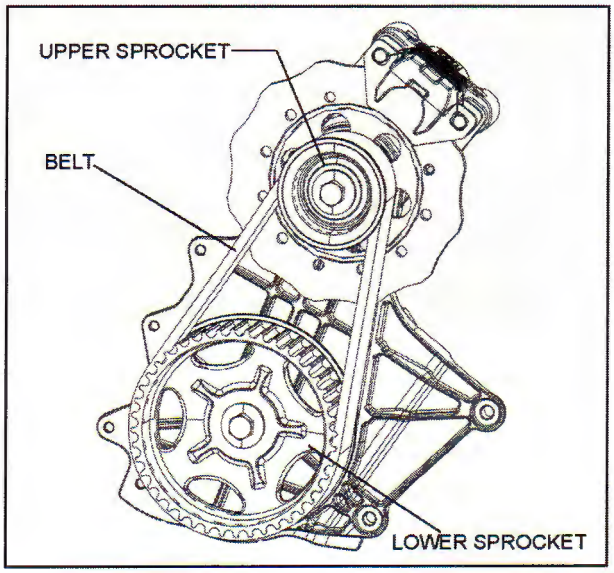
= T
A = 26 ft-lbs (35 Nm) DO NOT OVER-TORQUE B = 26 ft-lbs (35 Nm) C = 2010 - 14 ft-lbs (19 Nm) 2011 - 12 ft-lbs (16 Nm)

QuickDrive Low Inertia System

Inspect as outlined in the periodic maintenance table. Belt replacement is required every 2,000 miles (3,200 km).

Inspect the drive system for the following items:

- Verify there are no missing drive cogs on the inside circumference of the belt
- Verify there is no damage to the belt outer cover
- Inspect the upper and lower sprockets for damage to the sprocket teeth

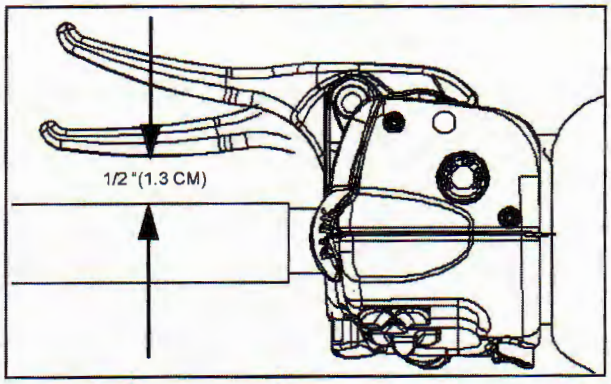


QuickDrive Low Inertia System Notes:

- The break-in period for a new drive belt is 100 miles (160 km). During this period, the belt will shed a mold release compound. As the compound sheds, it is normal to see some amount of fiber-like material in and around the drive system. Use a dry rag to clean.
- An audible sound may be heard during break-in. After the break-in period, the drive system will sound similar to a traditional chaincase.
- Do not crimp belt
- Do not back bend belt
- Do not twist belt
- Do not pry on belt to remove
- Store belt in original package - do not hang
- Avoid contact with solvents, oils, or chemical cleaners

BRAKE SYSTEM MAINTENANCE

Brake Lever Travel



The gap between the brake lever and handlebar grip should be equal to or more than 1/2" (1.3 cm) when depressing the brake lever.

If the gap is less than 1/2" (1.3 cm), the brake system should be inspected and bled of any air within the fluid.

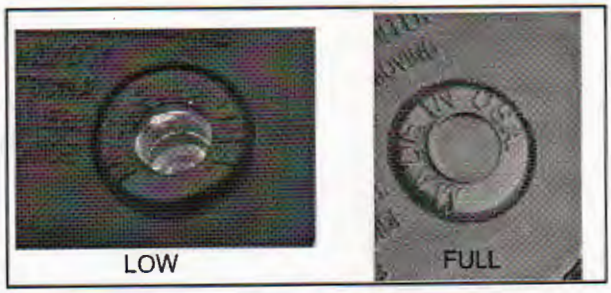
Brake Fluid

⚠ WARNING

Do not over fill the master cylinder. Fluid expansion could cause brakes to lock, resulting in serious injury or death. Once a bottle of brake fluid is opened, use what is necessary and discard the rest. Do not store or use a partial bottle of brake fluid. Brake fluid is hygroscopic, meaning it rapidly absorbs moisture from the air. This causes the boiling temperature of the brake fluid to drop, leading to early brake fade and the possibility of serious injury

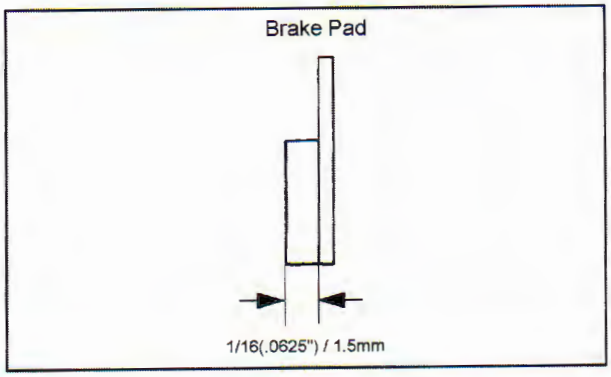
Inspect the reservoir to be sure it contains the correct amount of fluid. Use only Polaris DOT 4 high temperature brake fluid. Change fluid every 2 years or whenever the fluid is dark or contamination is suspected.

NOTE: A low brake fluid level can be indicated through the sight glass on the cover. If the fluid is low this sight glass will glow a brighter. color.



Brake Pad Replacement

Brake pads need to be replaced if the thickness of the friction material is less than 1/16" (.0625") / 1.5 mm.



THROTTLE CABLE ADJUSTMENT

Throttle Lever Free-Play

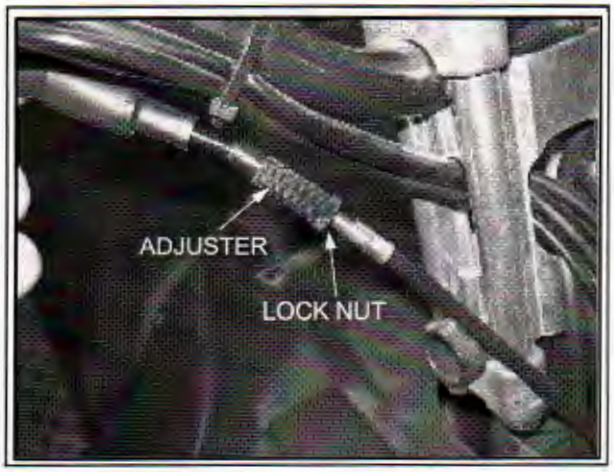
CAUTION

When adjusting throttle lever free-play, always verify the engine RPM does not change while turning the handlebars to the full left and full right positions.

= In. / mm.

Throttle Lever Free Play: .010"-.030" (0.25-0.8 mm)

The inline adjuster should only be used to set free play and to remove cable slack that occurs if the cable has stretched over time.



NOTE: Never use the in-line adjuster to adjust engine idle speed. Never adjust the cable so that the throttle plate cam on the throttle body no longer rests against the idle air gap screw.

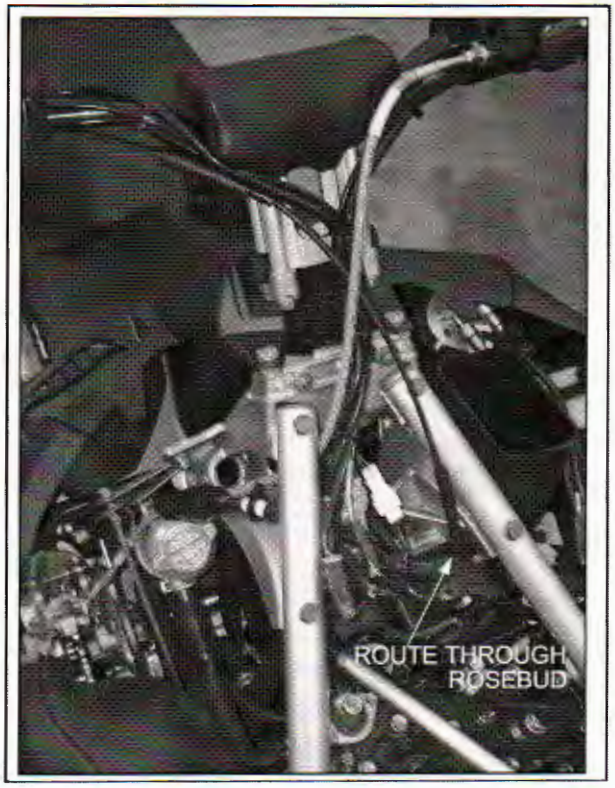
Turning the in-line adjuster inwards (clockwise) will increase throttle lever free-play.

Turning the in-line adjuster outwards (counter-clockwise) will decrease throttle lever free-play.

After setting the throttle lever free play, always verify the oil pump adjustment is set correctly.

Throttle Cable Routing

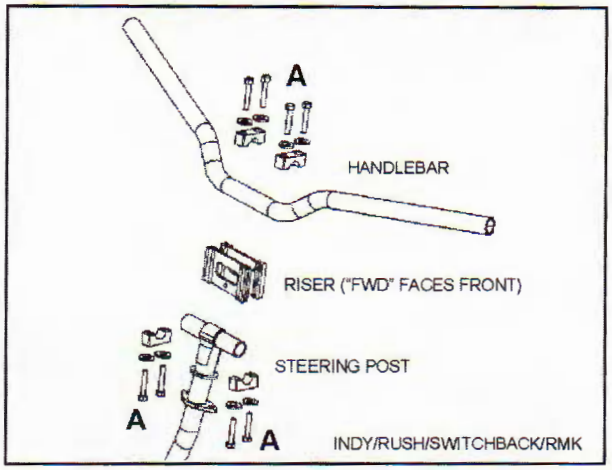
Route the throttle cable as shown in the photo. Turn the handle bars to the full left and right positions with the engine running to verify the engine RPM does not increase as the bars are turned.

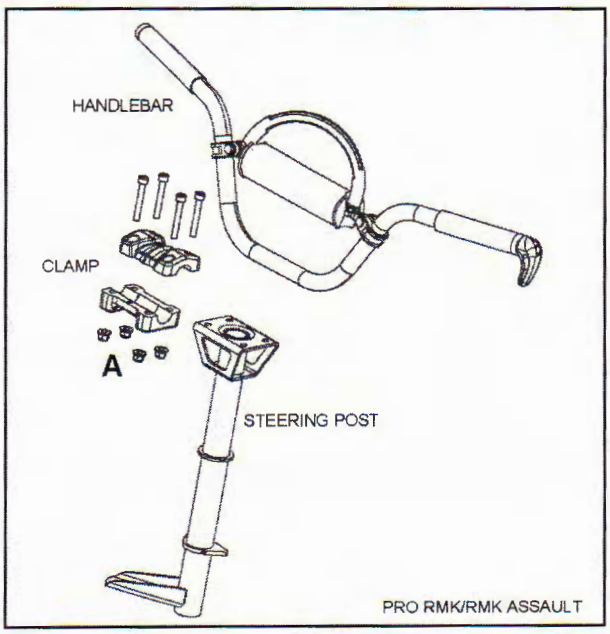


STEERING / SUSPENSION MAINTENANCE

Handlebars

Periodically inspect the torque of the handlebar clamp fasteners.





1. To adjust the handlebar angle, remove the handlebar cover, if equipped, to expose the upper clamp.
2. Loosen the four clamp fasteners. Slightly pry the upper clamp up with a flat blade screwdriver.
3. Adjust handlebars to desired position. Verify the wiring harness, brake hose, and throttle cable do not kink.

   NOTE: Verify "FWD" printed on riser faces front of snowmobile

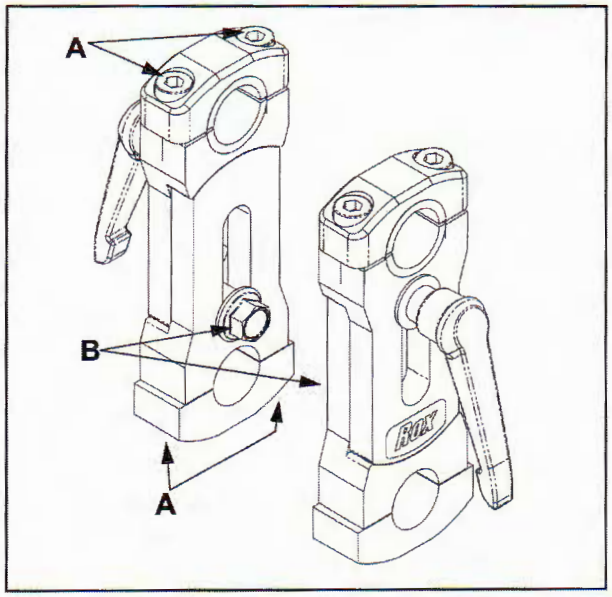
4. Secure the front clamp fasteners first to specification. Finish by securing the two rear clamp fasteners to the same torque setting.

= T
Handlebar Clamp Fastener Torque: **A = 14.7 ft-lbs (20 Nm)**

5. Reinstall the handlebar cover if equipped.

Adjustable Riser

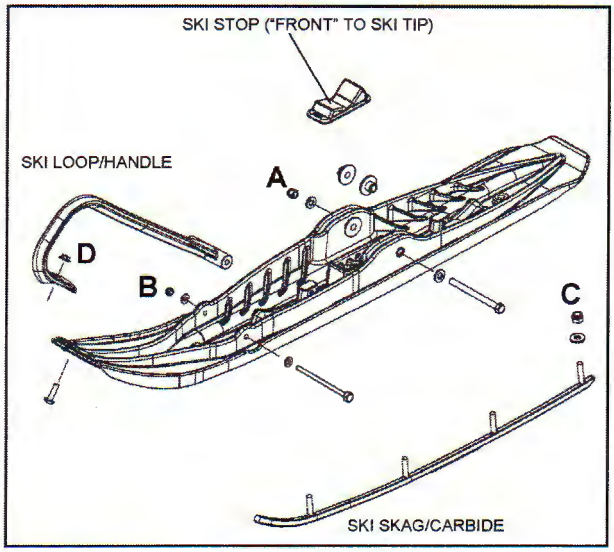
Periodically inspect the torque of the upper/lower handlebar clamp fasteners, and slide fasteners.



= T
Handlebar Clamp Fastener Torque: **A = 15.4 ft-lbs (21 Nm) Apply Loctite® 243** ROX Slide Fastener Torque: **B = 15 ft-lbs (20 Nm)** Adjuster Cranks: Hand Tight

Ski/Ski Skag Fasteners

Periodically inspect the ski-to-spindle fasteners for proper torque.



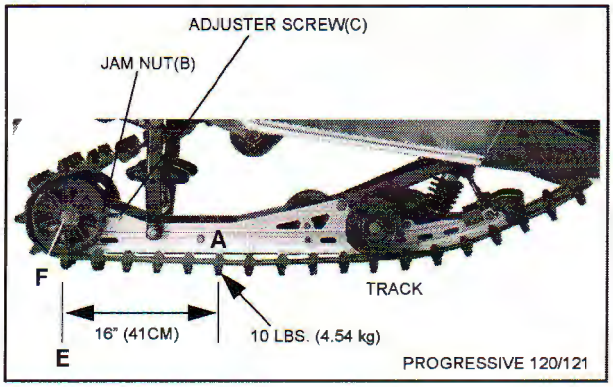
= T
A = 36 ft-lbs (50 Nm) B = 6 ft-lbs (8 Nm) C = 7 ft-lbs (10 Nm) D = 9 ft-lbs (12 Nm)

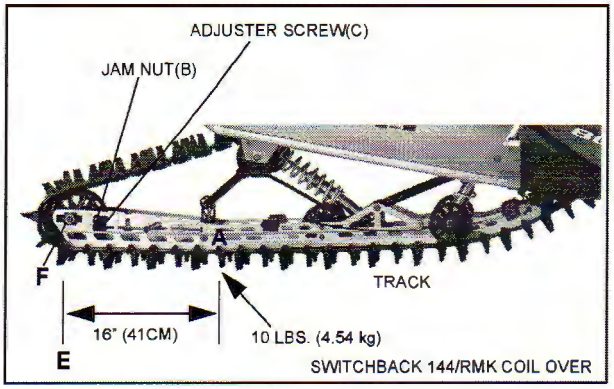
Inspect ski skags and skag fasteners for abnormal wear and tear. Replace skags when carbide edge is worn away or when skag is bent/damaged.

Always use new lock nuts when replacing parts.

Track Tension

Track tension is critical for maintaining correct suspension operation. If the track tension is too loose, the track may bunch-up at the rail tips, or slip (ratchet). If the track is too tight, premature rail slide wear, reduced top speed, rear suspension vibration can occur.





1. Lift the rear of the machine using a dedicated sled lift.

   NOTE: A conventional track stand will not work for adjusting track tension on PRO-RIDE Progressive suspensions as lifting the sled at the bumper will compress the rear crank and tighten the track.

2. Start the engine and slowly let the engine turn the track over.
3. Shut off the engine.
4. Place a 10 lb. (4.54 kg) weight at point (A). Point (A) is 16" (41 cm) ahead of the rear idler shaft (E).

5. Measure the distance between the rail slider and the track. The measurement should fall within the measurement range for the appropriate vehicle.

SUSPENSION	MEASUREMENT INCHES (CM)
Conventional 121 (600 / 800 INDY/SP)	7/8-1-1/8 (2.2 - 2.9 cm)
INDY 144	7/8-1-1/8 (2.2 - 2.9 cm)
Progressive 120 (2010 Rush)	7/8-1-1/8 (2.2 - 2.9 cm)
Progressive 121 (2011 Rush)	1/2 - 1.0 (1.3 - 2.54 cm)
Progressive 121/136 (2012-later Rush/ Switchback)	1/4-3/8 (6.3-9.5 mm)
RMK/Switchback 144 RMK Coil Over 155/163	3/8 - 1/2 (1 - 1.3 cm)

6. If adjustment is needed, loosen the jam nuts (B) on each rail.
7. Loosen the idler shaft bolts (F).
8. Turn each adjuster screw equally (C) clockwise to tighten track. Turn the adjuster screw equally counterclockwise to loosen track tension.
9. Torque the jam nuts (B) and idler shaft bolts on each side to specification.

= T
Jam Nut **35 ft-lbs (47.5 Nm)**

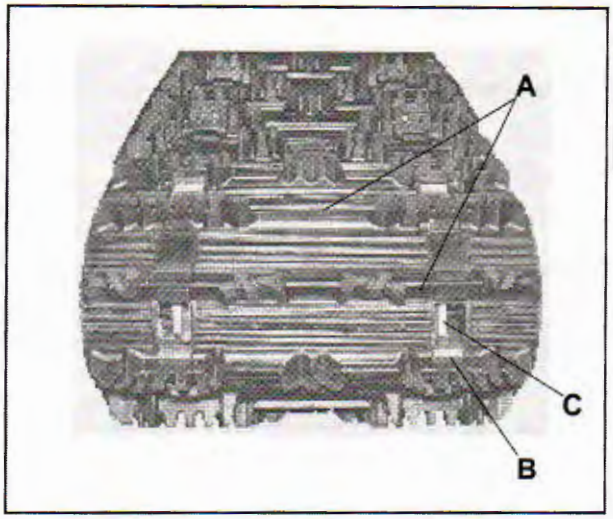
Track Alignment

NOTE: ***Track alignment affects track tension. Misalignment of the track will cause excessive wear to the track, rail slides, and rail.***

Excessive rail slide wear occurs due to running in inadequate snow conditions.

Periodically check that the track is centered and running evenly on the rails. Misalignment will cause excessive wear to the track and slide rails.

1. Safely lift and support the rear of the snowmobile off the ground.
2. Rotate the track by hand to check for any possible damage.



3. Inspect the track rods (A) carefully and examine the track along the entire length of each rod, bending the track edge and inspecting it for breakage. If any rod damage is found, the track should be replaced.
4. Warm up the track by starting the engine and apply a small amount of throttle so the track runs slowly at least five complete revolutions.
5. Stop the engine and turn the ignition off.
6. Inspect track alignment by carefully looking through the track window (B) to make sure the rails (C) are evenly spaced on each side.
7. If the track runs to the left, loosen the left locknut and tighten the left adjusting bolt. If the track runs to the right, loosen the right locknut and tighten the right adjusting bolt. It may be necessary to check this with the engine rotating the track. Be sure to SHUT THE MACHINE OFF before making any further adjustments.
8. Loosen up the rear idler shaft.
9. After any adjustments are complete, be sure to torque the locknuts to specification.

= T
Adjuster Lock Nuts: **33 ft-lbs (45 Nm)**

10. Torque both idler shaft bolts to specification.

= T
Idler Shaft Bolt: **33 ft-lbs (45 Nm)**

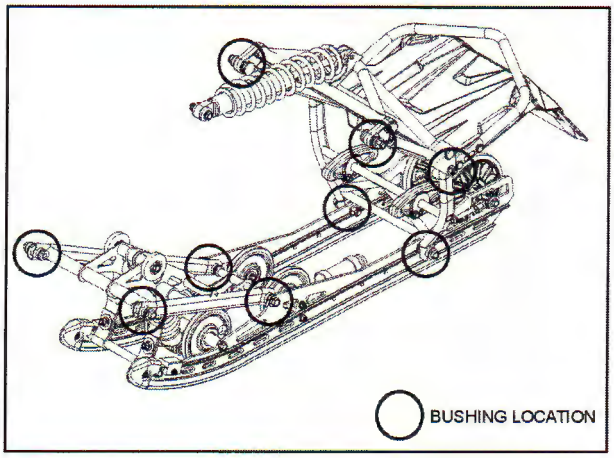
⚠ WARNING

Broken track rods can cause a rotating track to come off the machine. Never operate or rotate a damaged track under power with broken rod(s). Serious injury or death may occur.
Stay clear of all moving parts to avoid personal injury. Never make any adjustments with the engine running, as serious personal injury can result.

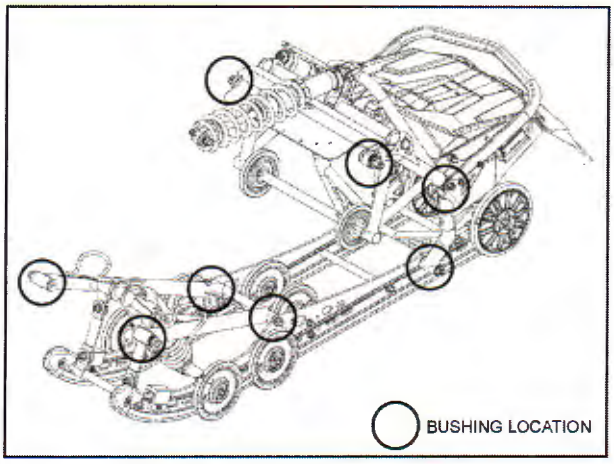
Suspension Pivots/Lubrication

Inspect suspension pivot bushings as outlined in the periodic maintenance table. Replace worn or damaged bushings.

Progressive 120



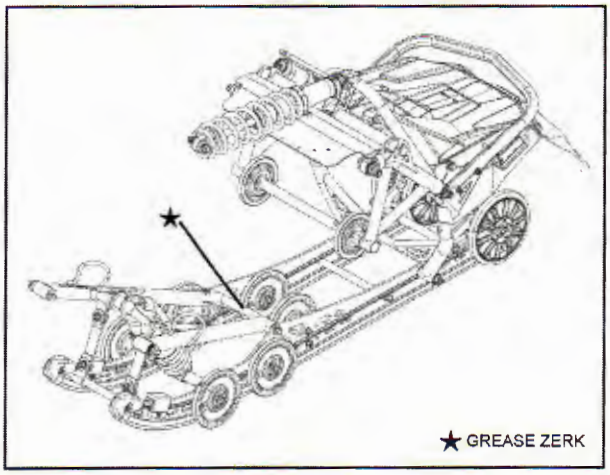
Progressive 121



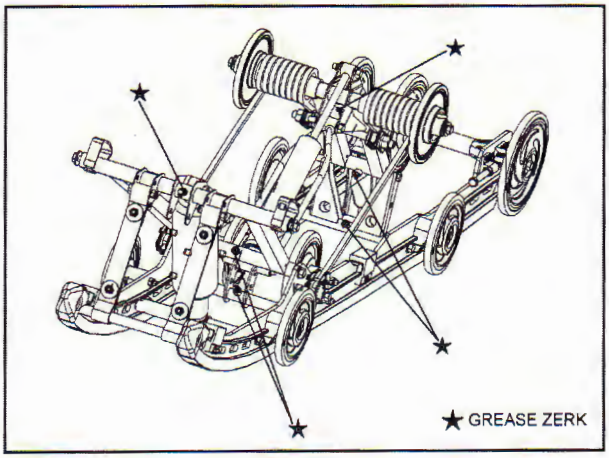
Suspension Lubrication

Lubricate the rear suspension pivot shafts with Polaris Premium All Season Grease as outlined in the periodic maintenance table.

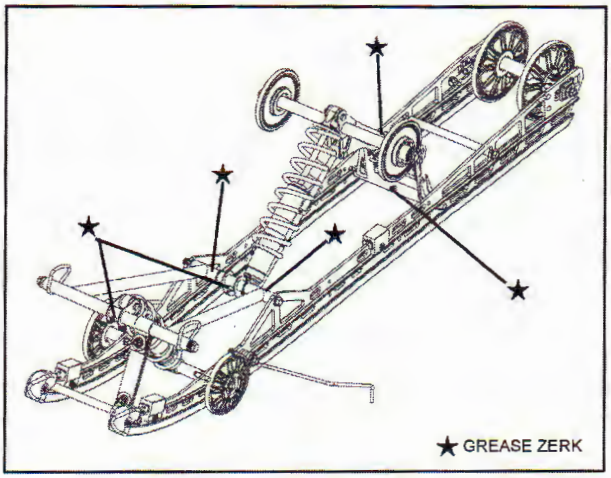
Progressive 121/136



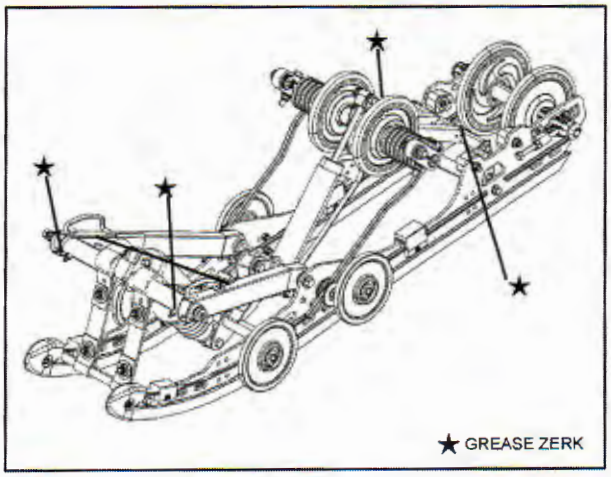
INDY / Switchback / RMK 144



RMK Coil Over 155/163



Conventional 121



ELECTRICAL SYSTEMS

Headlight Bulb Replacement

NOTE: Do not touch the bulb with your fingers. The grease from body oil will cause a hot spot on the bulb and cause bulb failure. If you do touch the bulb clean the bulb with isopropyl alcohol.

1. Remove the hood assembly.
2. Locate the bulb connectors on the head lamp assembly.
3. Rotate the connector counter-clockwise to remove the bulb.
4. Install a new bulb by holding it in a clean shop rag or napkin.
5. Install the connector into the head lamp and turn clockwise.
6. Reinstall the hood assembly.

Tail Lamp Replacement

The rear tail lamp assembly uses light emitting diodes (LEDs). LEDs cannot be replaced. The tail lamp assembly must be replaced if an LED is not functioning.

OFF-SEASON STORAGE

Chassis And Hood

Proper storage starts by cleaning, washing and waxing the hood, chassis, upholstery and plastic parts. Clean and touch up with paint any rusted or bare metal surfaces. Ensure that all corrosive salt and acids are removed from surfaces before beginning preservation with waxes and rust inhibitors (grease, oil, or paint).

If the machine is equipped with a battery, disconnect the battery cables and clean the cables and battery posts. Fill battery to proper level with distilled water and charge to full capacity. Remove and store the battery in a cool dry place.

The machine should be stored in a dry garage or shed out of the sunlight and covered with a fabric snowmobile cover. Do not use plastic to cover the machine; moisture will be trapped inside causing rust and corrosion problems.

Clutch And Drive System

Remove drive belt and store in a cool dry location. Lubricate sheave faces and ramps of drive and driven clutches with light oil or rust inhibitor. All lubrication applied as a rust preventative measure must be cleaned off before installing belt for service and operating machine.

Controls And Linkage

All bushings, spindle shafts and tie rod ends should be coated with a light coat of oil or grease. Throttle controls and cables should be lubricated. Force a small amount of lubricant down cables.

Electrical Connections

Separate electrical connector blocks and clean corrosive build-up from connectors. Lubricate or pack connector blocks with Nyogel grease and reconnect. Replace worn or frayed electrical wire and connectors.

Carburetor/Throttle Body

Fog engine with Polaris Fogging Oil (aerosol type) according to directions on can.

Fuel System

Treat the fuel system with Polaris Carbon Clean. If Polaris Carbon Clean is not used, fuel tank, fuel lines, and carburetor should be completely drained of gasoline.

Corrosion

Lubricate the rear suspension torque arms and pivots with premium grease. Clean ski spindle bushings and pivots, but leave dry.

Shocks

Use T-9 Metal Protectant (or equivalent) on shock absorber shafts to prevent corrosion.

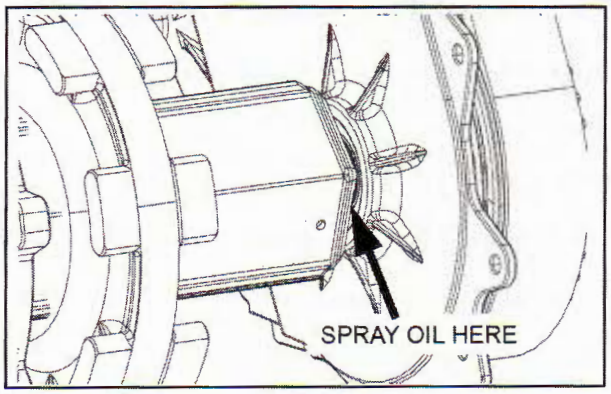
Battery

Disconnect and remove the battery. Clean the terminals and cables. Apply dielectric grease to the terminals. Store in a cool dry place for storage.

QuickDrive Low Inertia Drive System

Spray penetrating oil around the driveshaft where it mates with the bearing in the backer plate.

To service, tip the snowmobile on to the exhaust side. Spray penetrating oil where shown in the illustration. Allow the oil to soak into the parts for an hour before tipping the vehicle back on to its skis.



NOTES

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

CHAPTER 3
ENGINE/COOLING/LUBRICATION

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

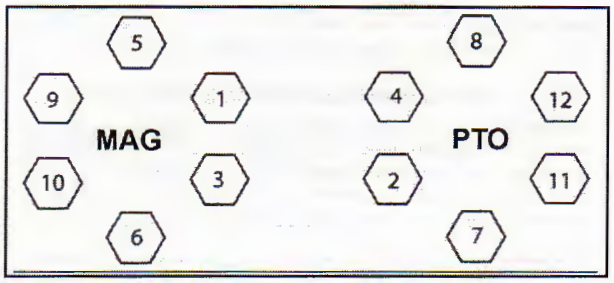
ENGINE SPECIFICATIONS

Fastener Torque Guide

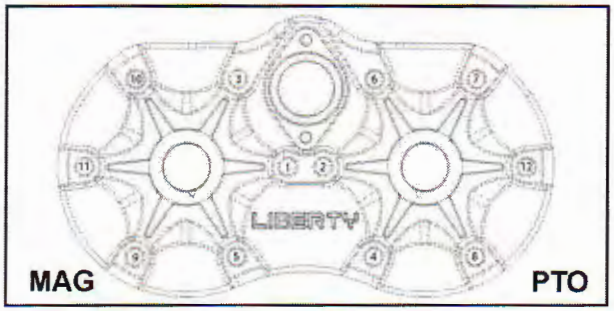
COMPONENT	600 DC—CFI 2/4 FT-LBS (NM)	800 DC—CFI 2 FT-LBS (NM)	ASSEMBLY NOTES
Spark Plug	18-21.6 (24-30)		Apply anti-seize to threads.
Head Cover	23-27 (31.2-36.6)		
Throttle Body Hose	7 (9.5)		Apply pipe sealant to threads.
Plug-OR- Bypass Nozzle	N/A	15.5-20 (21-27.8) 18 (24)	Apply pipe sealant to threads.
Bleed Screw	70 in-lbs (8)		
Knock Sensor	144-192 in-lbs (16.3-21.7)		Do not under/over torque. Clean/dry threads.
Temp. Sensor	18 (24)		
EV Housing Base / Cover	10.5-13.5 ft-lbs (14.3-18.3)		Apply Loctite® 242™ to cylinder screws.
EV Bellows -Cap Nut -Threaded Cap/Stud	14-18 ft-lbs (19.1-24.5) 18-22 ft-lbs(24.5-29.9)		Apply Loctite® 242™ to guillotine threads. Apply Loctite® 242™ to stud threads.
Cylinder Base Nuts	38-46 (51-62)	N/A	
Cylinder Bolts	N/A	38-46 (51.6-62.4)	
Intake Boots	9 (12)		
Exhaust Manifold	22 (30)		
Oil Pump Bleed Screw	9 (12) 2.2 (3)		
Water Pump Cover	9 (12)		
Water Pump Cover Nozzle	18 (24)		Apply pipe sealant to threads.
Recoil Housing	9 (12)		
Recoil Reel Screw 1204173 Assembly 1204331 Assembly	9 (12) 14 (20)		Apply Loctite® 242™ to threads.
Recoil Hub Screws	9 (12)		
Flywheel Nut	90 (122)		
Stator Plate	12 (16)		
Crankcase M6/M8	22 (30)		
Torque Stop Bracket	18 (24)		
Engine Strap Screws	30 (41)		Apply Loctite® 242™ to threads.
Water Pump Impeller	10 (13)		
Fuel Rail Screws	9 (12)		
Crankcase Drain Plugs	60 in-lbs (7)		Apply pipe sealant to threads.
Air Intake Gear Clamps	11 in-lbs (1.2)		

Component Torque Sequences

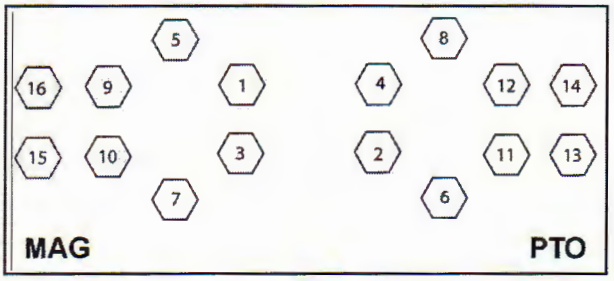
Cylinder Head Torque Pattern



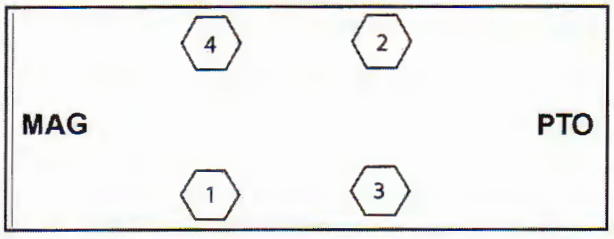
Cylinder Head Torque Pattern (Monoblock)



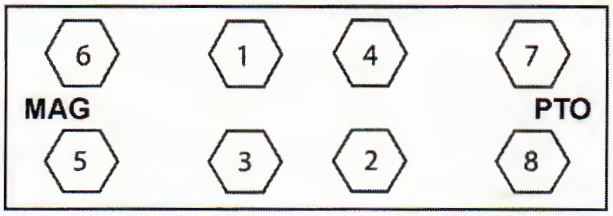
CFI Crankcase Torque Pattern



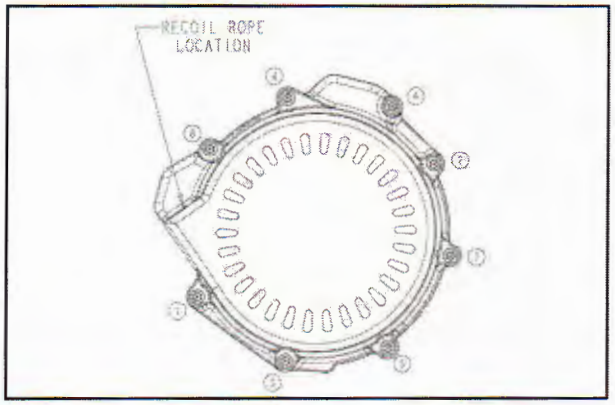
Cylinder Torque Pattern



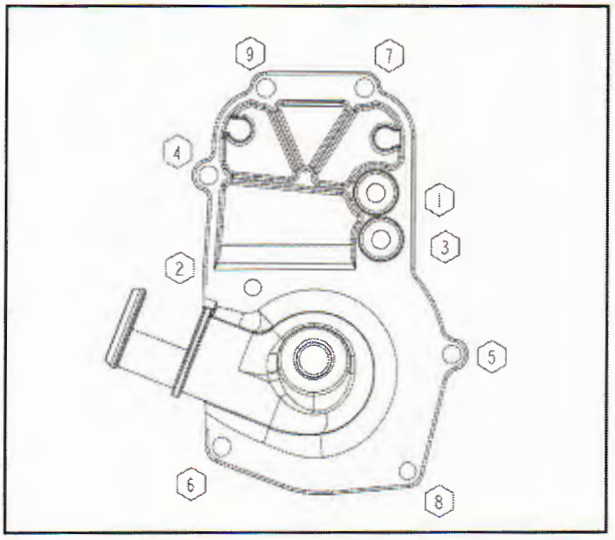
Cylinder Torque Pattern (Monoblock)



CFI Recoil Cover



CFI Water Pump Cover



DC-CFI Engine Specifications

ENGINE MODEL NUMBER	INSTALLED HEAD VOLUME (CC)	SQUISH IN. (MM)	PISTON-TO-CYLINDER CLEARANCE IN. (MM)	RING END GAP IN. (MM)	TRIGGER-TO-FLYWHEEL GAP IN. (MM)
S4202-6044-OP6N	25.65 - 27.15	.045-.058 (1.143-1.482)	.0033-.0054 (0.085-0.137) SVC. Limit =.009"	.014-.020 (0.356-0.508)	.014-.052 (0.36-1.34)
S4357-6044-OL6N				.017-.025 (0.450-0.650)	
S4215-6044-OO6N					
S4316-6044-OL6G					
S4452-6044-OL6G					
S4139-8044-OO8G	36.2 - 37.8	.054-.066 (1.382-1.666)	.004-.0055 (0.103-0.141) SVC. Limit =.009"		
S4229-8044-OO8G					
S4092-8044-OO8G					
S4359-8044-OL8G					
S4360-8044-OL8G					
S4361-8044-OL8G					
S4504-6044-OA6G	28.21 - 29.71	.049 - .060 (1.24 - 1.524)	.0033 - .005 (0.085 - 0.124) SVC. Limi t=.009"		
S4505-6044-0A6G					
S4506-6044-0A6G					
S4769-6044-0R6G					
S4770-6044-0R6G					
S4771-6044-0R6G					
S4948-6044-OI6G					
S4949-6044-OI6G					
S4950-6044-OI6G					
S4509-8044-0A8G	36.2 - 37.8	.054-.066 (1.382-1.666)	.0041 - .0053 (0.105 - 0.131) SVC. Limit =.009"		
S4510-8044-0A8G					
S4508-8044-0A8G					
S4773-8044-0R8G					
S4774-8044-0R8G					
S4775-8044-0R8G					
S4952-8044-OI8G					
S4953-8044-OI8G					

Engine Service Specifications - All Engines

- Cylinder Head Warp Limit = .006" (0.015 mm)
- Cylinder Taper Limit = .002" (0.051 mm)
- Cylinder Out-of-Round Limit = .002" (0.051 mm)
- Main Bearing Interference Fit:
- CFI = .0014 - .0024 (0.036 - 0.061 mm)
- Connecting Rod Side Clearance = .0114" - .0295" (0.289 - 0.749 mm)
- Crankshaft Runout Deflection Limit = .0025" (0.07 mm)
- Water Pump / Oil Pump Crossshaft Axial Play = .009" - .027" (0.254 - 0.708 mm)

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

600 / 800 PRO-RIDE Engine Matrix

MODEL YEAR	VEHICLE	ENGINE MODEL NUMBER
2010	600 Rush	S4202-6044-OP6N
2011	600 Rush/Rush LX / Rush Pro-R	S4215-6044-OO6N
	800 Rush/Rush LX / Rush Pro-R	S4139-8044-OO8G
	800 Switchback 1.3/2.0 800 RMK 155	S4229-8044-OO8G
	800 RMK Assault 800 PRO RMK 155/163	S4092-8044-OO8G
2012	600 Rush/Rush Pro-R / 600 Switchback/Adventure/Switchback Pro-R	S4357-6044-OL6N
	800 Rush/Rush Pro-R / Pro-R LE / 800 Switchback/Switchback Pro-R	S4360-8044-OL8G
	Switchback Assault 1.3/2.0800 RMK 155	S4361-8044-OL8G
	600 RMK 144/155	S4316-6044-OL6G
	600 PRO RMK 155	S4452-6044-OL6G
	800 RMK Assault 800 PRO RMK 155/163	S4359-8044-OL8G
2013	600 INDY / 600 RMK	S4504-6044-OA6G
	600 PRO RMK	S4505-6044-0A6G
	600 Rush/Switchback	S4506-6044-0A6G
	800 Rush/Switchback	S4509-8044-0A8G
	800 Switchback Assault / 800 RMK	S4510-8044-0A8G
	800 PRO RMK / Assault RMK	S4508-8044-0A8G
2014	600 INDY / RMK	S4769-6044-0R6G
	600 PRO RMK	S4770-6044-0R6G
	600 Rush / Switchback	S4771-6044-0R6G
	800 Assault RMK / PRO RMK	S4773-8044-0R8G
	800 Rush / Switchback	S4774-8044-0R8G
	800 INDY / Assault Switchback / 800 RMK	S4775-8044-0R8G
2015	600 INDY / RMK	S4948-6044-OI6G
	600 PRO RMK	S4949-6044-OI6G
	600 Short Track / Switchback Assault	S4950-6044-OI6G
	800 Assault RMK / PRO RMK	S4952-8044-OI8G
	800 INDY / Assault Switchback / 800 RMK	S4953-8044-OI8G

SPECIAL TOOLS

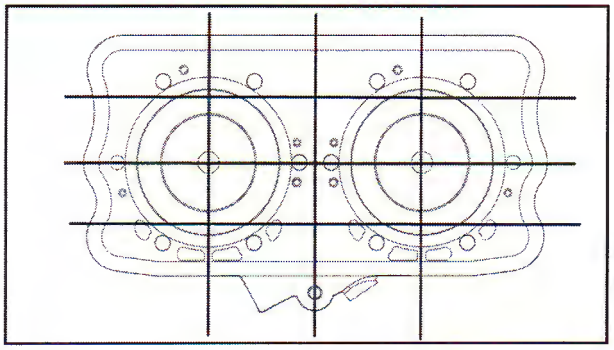
Special Tools - Engine

SPECIAL TOOLS — ENGINE		
PART NUMBER	DESCRIPTION	NOTE
2870303-A	Ammco Hone Kit	Use to re-surface cylinder walls when installing new piston and/or rings.
2870588	Hone Oil	Provides better crosshatch pattern when honing cylinders.
PU-49876	Ammco 320 Grit Stone	Use to re-surface plated big bore cylinders.
2870390	Piston Support Block	Supports piston when installing pin and c-clips.
2871043-A	Flywheel Puller	
PU-45255	22 mm Piston Pin Puller	800 CFI Engines
PS-47055	Offset Piston Pin Puller Adapter	800 CFI Engines
2870386	Piston Pin Puller	
2871445	Pin Puller Adapter	Use with 2870386.
2871989	Engine Mount Socket	Removes tabbed rubber engine mounts.
2872389	Water Pump Seal Installation Tool	Used to install water pump seal on all 600/700/ 800 engines.
2872401-A	20 mm C-Clip Tool	Install c-clips on all 600 / 700 engines.
2872622A	22 mm C-Clip Tool	Install c-clips on all 800 engines.
PS-49001	Oil Cable Wrenches	Use to loosen or tighten oil pump cable jam nuts.
2870630	Battery Powered Timing Light	Check ignition timing.
2870852	14 mm Compression Gauge	
PU-45149	Hose Pincher	
PU-45419	Strap Wrench	Secure drive clutch or flywheel.
PU-45423	Telescoping Gauge Set	Use to inspect cylinder bore diameter.
PU-45424	Dial Indicator Set	Use to measure run-out, piston degrees-to-TDC, etc.
PV-39776	Electronic Digital Caliper	
PU-45433	Seal Pick Set	
PU-45431	Depth Micrometer Set	
PV-34673	Precision Straight Edge	
PV-43554	V-Block Set	
PV-3009	75 - 100 mm Micrometer	Use to measure piston diameter, etc.
PS-50753	VES threaded stud/cap tool.	Use to clamp VES threaded stud/cap in bench vise.

Bosch Automotive Service Solutions 1-800-345–2233
or https://polaris.service-solutions.com

ENGINE INSPECTIONS

Cylinder Head Inspection



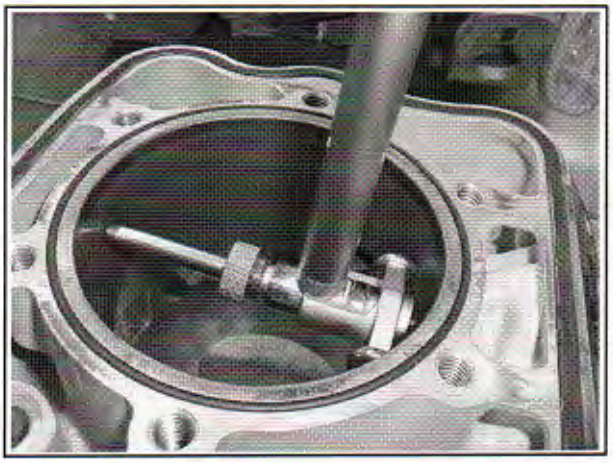
Using a precision straight edge and a feeler gauge, to inspect cylinder head for warping. Replace head if warping exceeds .006" (.015mm).

= In. / mm.
Cylinder Head Warp Limit .006" (.015mm)

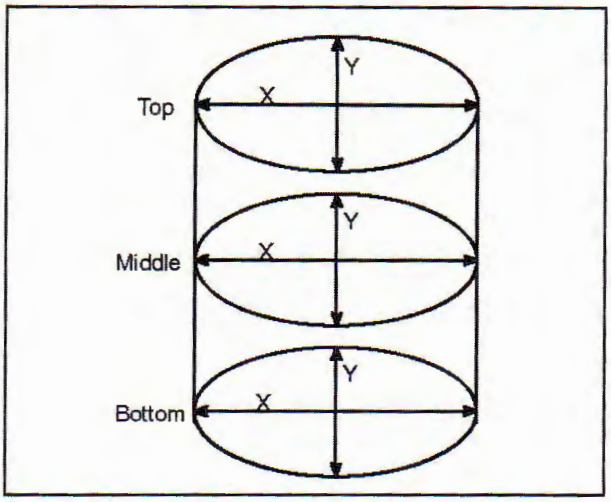
Cylinder Measurement

Inspect cylinder for wear, scratches, or damage. If no damage is evident, measure the cylinder for taper and out of round with a dial bore gauge. Measure the bore 20mm from the top of the cylinder; in line with the piston pin and 90° to the pin to determine if the bore is out of round. Repeat the measurements at a point just above the exhaust port and at a point below the transfer port. Use the chart below and record all measurements.

NOTE: A dial bore gauge is the only recommended tool to accurately measure cylinder bore diameter.



CYLINDER MEASUREMENT WORKSHEET	
TOP (Measured 20 mm from top of cylinder)	
X	Y
MIDDLE (Measured above exhaust port)	
X	Y
BOTTOM (Measured below transfer port)	
X	Y
Out-of-Round = Top X - Top Y and Bottom Y - Bottom X	
Taper = Top Y - Bottom Y and Top X - Bottom X	



= In. / mm.

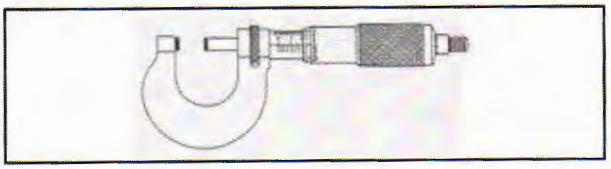
Taper Limit: .002" (0.051mm)
Out-of-Round Limit: .002" (0.051mm)

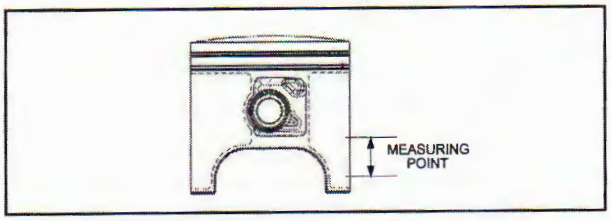
Piston Inspection

Check piston for scoring or cracks in piston crown or pin area. Excessive carbon buildup below the ring lands is an indication of piston, ring or cylinder wear.

Using only a micrometer, measure the piston outside diameter at a 90° angle to the direction of the piston pin and at the specified measuring point.

NOTE: A micrometer is the only recommended tool to accurately measure piston diameter.



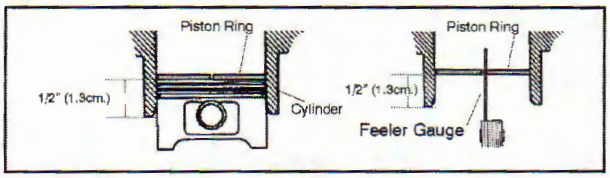


= In. / mm.

Measuring Point
600/800 Pistons: 10-20mm

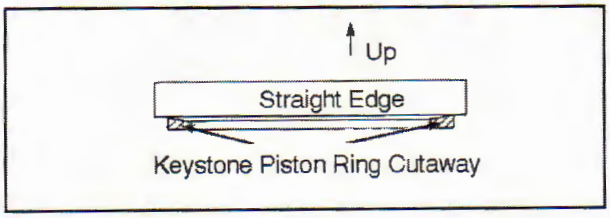
Subtract this measurement from the minimum cylinder measurement (90° to the pin). If clearance exceeds the service limit piston/cylinder overhaul may be required.

Piston Ring Installed Gap



Position the ring 20mm from the top of the cylinder using the piston to push it squarely into place. Measure installed gap with a feeler gauge at both the top and bottom of the cylinder.

NOTE: A difference in end gap indicates cylinder taper. The cylinder should be measured for excessive taper and out-of-round. Replace rings if the installed end gap exceeds the service limit. Always check piston ring installed gap after re-boring a cylinder or when installing new rings.



Piston rings are installed with marking or beveled side up.

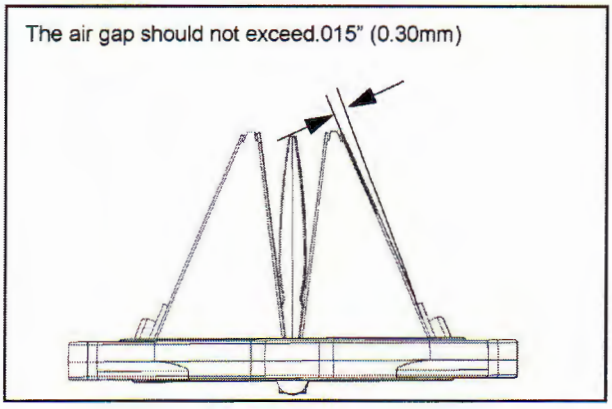
Reed Valve Inspection

1. Loosen the hose clamps.
2. Remove the throttle body from the intake boots.
3. Remove the intake boot fasteners.
4. Remove the intake assembly.
5. Separate the intake boot from the reed cages.

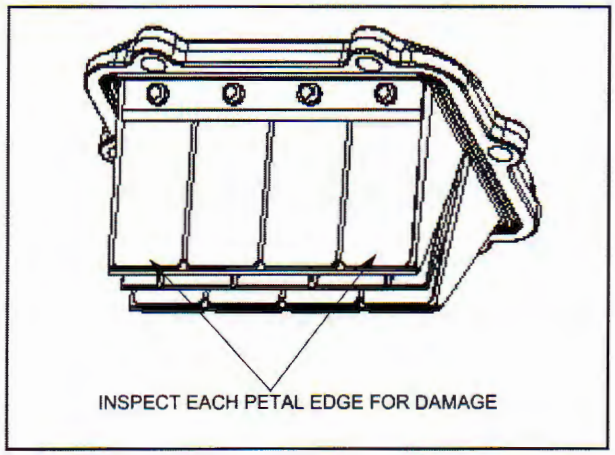
9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

6. Separate the reed stuffer(s) from the reed cage and inspect the reeds before they are removed from the reed cage.

   NOTE: Measure the air gap between the fiber reed and the reed block. The air gap should not exceed .015" (.38mm). If clearance is excessive DO NOT attempt to reverse the reeds to reduce the air gap. Always replace them if damaged or worn. Check each fiber reed for white stress marks or missing material.



7. Inspect the leading edges of each reed petal. If edges are chipped, or excessively worn, replace the reed assembly.



Bearing Fit

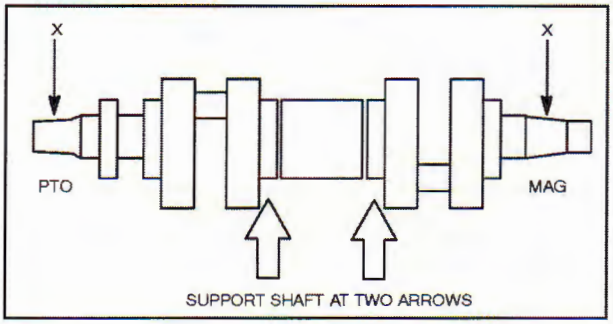
Any time crankshaft bearing failure occurs and the case is reused, check the bearing fit into the case halves using the following procedure.

With case halves cleaned, reinstall the main bearings with a piece of Plastigage between the bearing race and crankcase.

Install and torque the crankcase fasteners to specification. Take the crankcase apart, and then measure the Plastigage. Compare Plastigage width to interference fit specification.

= In. / mm.
Bearing Interference Fit: .0014" - .0024" (0.035-0.061mm)

Crankshaft Runout Inspection



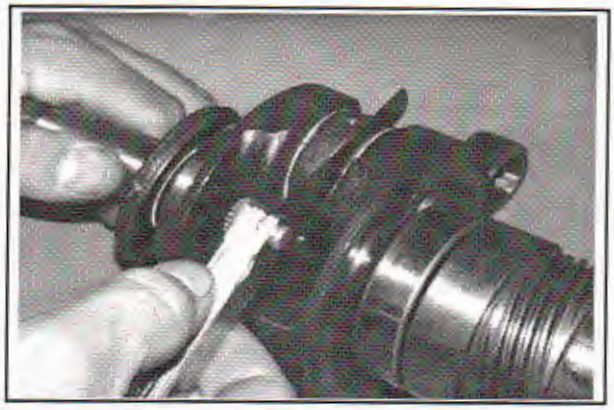
1. Support the crankshaft in a set of "V" blocks as shown.
2. Use a dial indicator to measure the runout at the following locations:
   - PTO end = First taper after bearing flat.
   - MAG end = 1/2" from bearing flat.
3. Runout deflection cannot exceed .0025" (.07mm).
4. If the runout deflection exceeds the maximum specification, crankshaft trueing may correct the deflection.

Main Bearing

Clean crankshaft thoroughly and oil main and connecting rod bearings with Polaris engine oil. Carefully check each main bearing on the crankshaft.

Due to extremely close tolerances, the bearings must be inspected visually and by feel. Look for signs of discoloration, scoring or galling. Turn the outer race of each bearing. The bearings should turn smoothly and quietly. The inner race of each bearing should fit tightly on the crankshaft. The outer race should be firm with minimal side to side movement and no detectable up and down movement. Replace any loose or rough bearings.

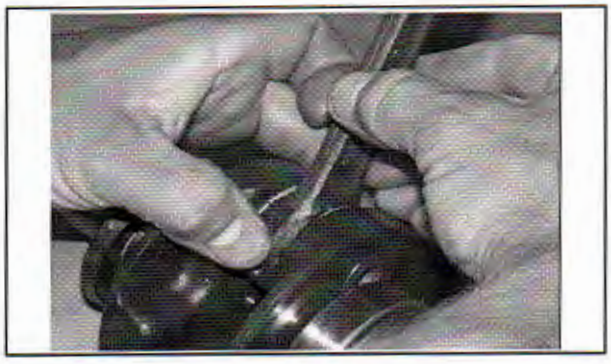
Connecting Rod Lower Bearing



Measure connecting rod big end side clearance with a feeler gauge on both sides of the connecting rod. The side clearance on either side of the connecting rod cannot exceed the connecting rod side clearance specification. The difference between the two clearance measurements cannot exceed the maximum clearance differential specification.

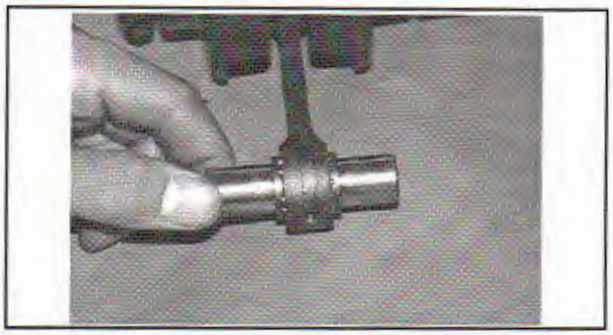
= In. / mm.
Connecting Rod Side Clearance: .0114"-.0295" (0.289-0.749mm) Maximum Clearance Differential .002" (0.051mm)

Rotate the connecting rod on the crankshaft and feel for any rough spots. Check radial end play in rod by supporting rod against one thrust washer and alternately applying up and down pressure. Replace bearing, pin, and thrust washers if side clearance is excessive or if there is any up and down movement detectable in the big end bearing.



Piston Needle Bearing

1. Clean the end of the connecting rod and inspect inner bore with a magnifying glass. Look for any surface irregularities including pitting, wear, or dents.
2. Run a fingernail around the inside of the rod and check for rough spots, galling, or wear.
3. Oil and install needle bearing and pin in connecting rod.
4. Rotate pin slowly and check for rough spots or any resistance to movement.
5. Slide pin back and forth through bearing while rotating and check for rough spots.



6. With pin and bearing centered in rod, twist ends back and forth in all directions to check for excessive axial play.
7. Pull up and down evenly on both ends of pin to check for radial play.
8. Replace pin and bearing if there is any resistance to rotation or excessive axial or radial movement. If play or roughness is evident with a new pin and bearing, replace the connecting rod.

Crankshaft Index

Polaris crankshafts are pressed together. The connecting rod journal center lines are indexed 180° apart from each other.

It is sometimes necessary to check multi-cylinder crankshafts to verify that one cylinder has not been forced out of position relative to the other cylinder. Some causes for a "out of index" crankshaft include but are not limited to the following:

- Hydrolock from water or fuel
- Impact to drive clutch from object or accident
- Abrupt piston or other mechanical failure
- Engine lock-up due to drive belt failure

Symptoms of an out of index crankshaft can include but are not limited to the following:

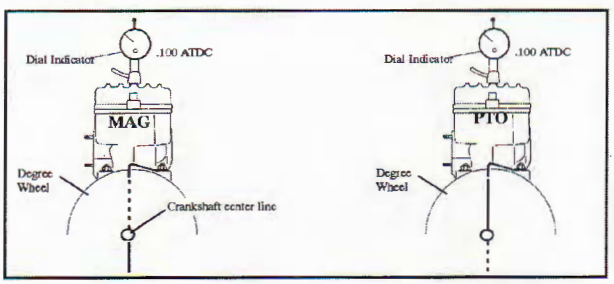
- Unexplained piston failure on one cylinder (i. e. severe detonation, broken ring lands, etc.)
- Excessive vibration of engine, back-firing, etc.
- Rough idle, poor top speed.

Checking Crankshaft Index

1. Remove the drive belt and drive clutch.
2. Securely fasten a large degree wheel on the flywheel or PTO end of the crankshaft. Make sure that it is mounted concentrically with the crankshaft center line.
3. With a section of wire (wire coat hanger), anchor it to a convenient spot. Bend one end at the outer perimeter of the degree wheel as shown below.
4. Install a dial indicator into the magneto end cylinder spark plug hole. The ignition timing is referenced by the magneto end.
5. Locate TDC as accurately as possible by finding the center of the point where there is no piston movement note the "Zero" the dial indicator at this point.
6. Continue to rotate the crankshaft in the normal direction of rotation until the dial indicator reads .100" (2.54mm) after top dead center (ATDC).
7. Bend the pointer or move the degree wheel until the pointer aligns with a 180° mark on the degree wheel.
8. With the pointer aligned, make sure the degree wheel and pointer are secured and will not move out of position. Re-check accuracy of this location a few times. The pointer should align with the 180° mark when the dial indicator reads .100" (2.54mm) ATDC.

   NOTE: Do not move the crankshaft, degree wheel or pointer after the initial setting on the MAG end cylinder - simply read the wheel and dial indicator.

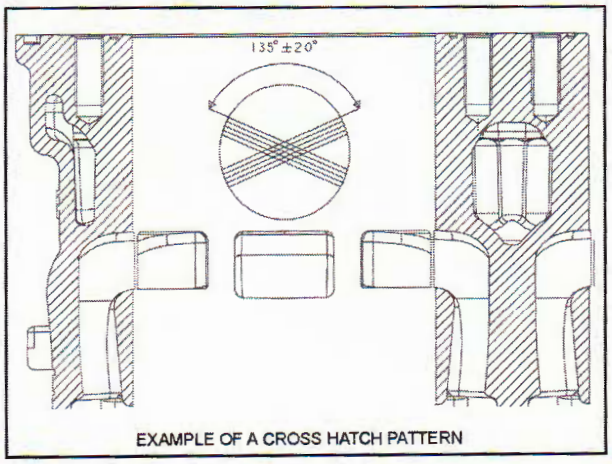
9. Remove the dial indicator and install in PTO cylinder. Repeat finding TDC process. Note the degree wheel indication when the dial indicator reads .100" ATDC. It should be 180° (+/-2°) from the MAG cylinder mark.



Cylinder Honing

The cylinder bore must be de-glazed whenever new piston rings are installed. A light honing with fine stones removes only a very small amount of material. A proper crosshatch pattern is important to provide a surface that will hold oil, and allow the rings to seat properly. If the crosshatch is too steep, oil retention will be reduced. A crosshatch angle which is too shallow will cause ring vibration, poor sealing, and overheating of the rings due to blow-by and reduced contact with the cylinder wall. Service life of the pistons and rings will be greatly reduced.

NOTE: A Nicasil cylinder can be lightly honed with a 320 grit stone hone but cannot be oversized.



EXAMPLE OF A CROSS HATCH PATTERN

Honing Tools

The following tools are recommended:

- Ammco 3950 Hone Kit - SPX PN 2870303 / commercially available
- Ammco 3956 Honing Stones (320 grit / Oversize)
- Honing Oil - Commercially Available

Honing Procedure

1. Wash the cylinder with cleaning solvent.
2. Clamp the cylinder in a soft jawed vise by the cylinder studs.
3. Place hone in cylinder and tighten stone adjusting knob until stone contacts the cylinder walls (DO NOT OVERTIGHTEN).
4. Apply honing oil to the stones and cylinder walls. Wet honing removes more material faster and leaves a more distinct pattern in the bore.
5. Using a 1/2" (13 mm) drill motor rotating at a speed of 300-500 RPM, run the hone in and out of the cylinder rapidly until cutting tension decreases. Remember to keep the hone drive shaft centered to prevent edge loading and always bring the stone approximately 1/2" (1.2 cm) beyond the bore at the end of each stroke.
6. Release the hone at regular intervals to inspect bore size and finish.

Cleaning The Cylinder After Honing

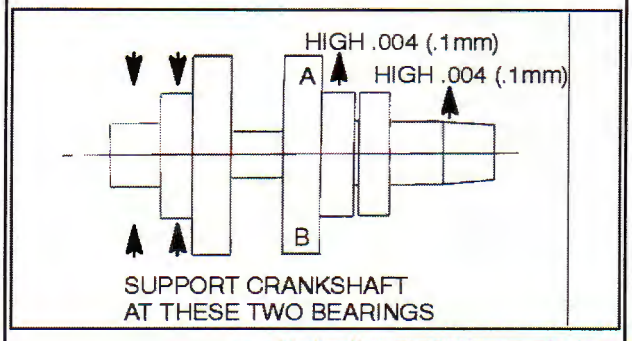
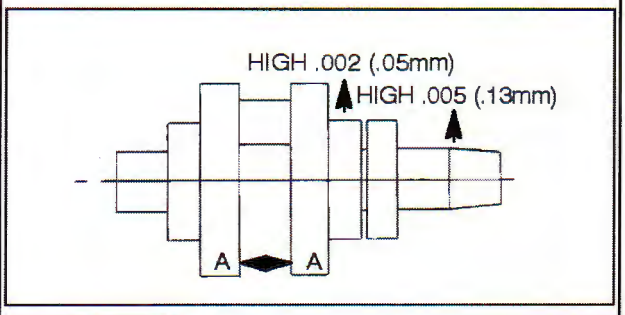
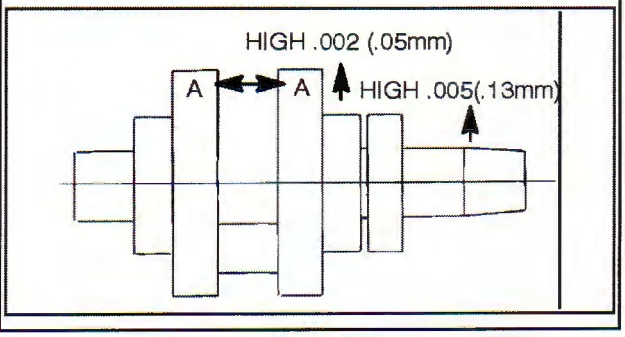
It is very important that the cylinder be thoroughly cleaned after honing to remove all grit material. Wash the cylinder in a solvent, then in hot soapy water. Pay close attention to areas where the cylinder sleeve meets the aluminum casting (transfer port area). Use electrical contact cleaner if necessary to clean these areas. Rinse thoroughly, dry with compressed air, and oil the bore immediately with Polaris Premium 2 Cycle Lubricant.

NOTE: Always check piston to cylinder clearance and piston ring installed gap after honing is complete.

Crankshaft Truing

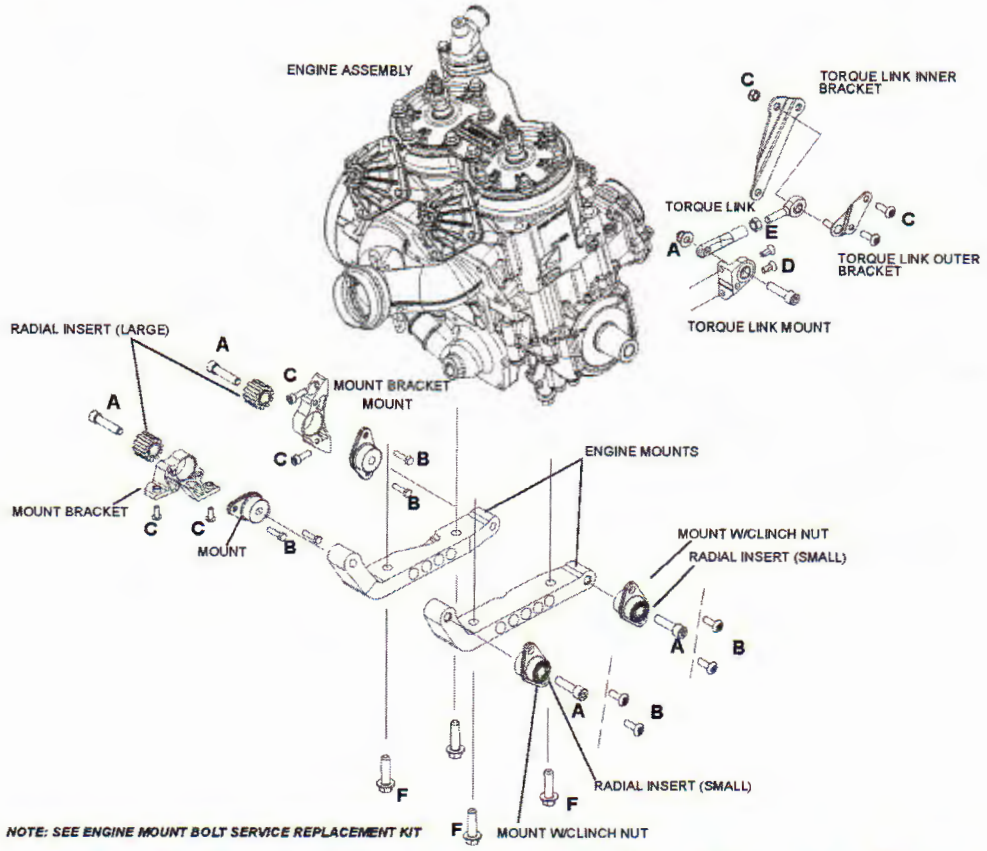
Lubricate the bearings and clamp the crankshaft securely in the holding fixture. If truing the crankshaft requires striking with a hammer, always be sure to re-check previously straightened areas to verify truing. Refer to the illustrations below. Use Crankshaft alignment kit PN 2870569.

NOTE: The rod pin position in relation to the dial indicator tells you what action is required to straighten the shaft.

CRANKSHAFT TRUING EXAMPLES	
To correct a situation like this, strike the shaft at point A with a brass hammer.	
To correct a situation like the one shown here, squeeze the crankshaft at point A. You will use the tool from the alignment kit PN 2870569.	
If the crank rod pin location is 180° from the dial indicator (opposite of above), it will be necessary to spread the crankshaft at the A position as shown in illustration 3. When rebuilding and straightening a crankshaft, straightness is of utmost importance. Runout must be as close to zero as possible.	

ENGINE MOUNTING SYSTEMS

2010 600 Engine Mounting

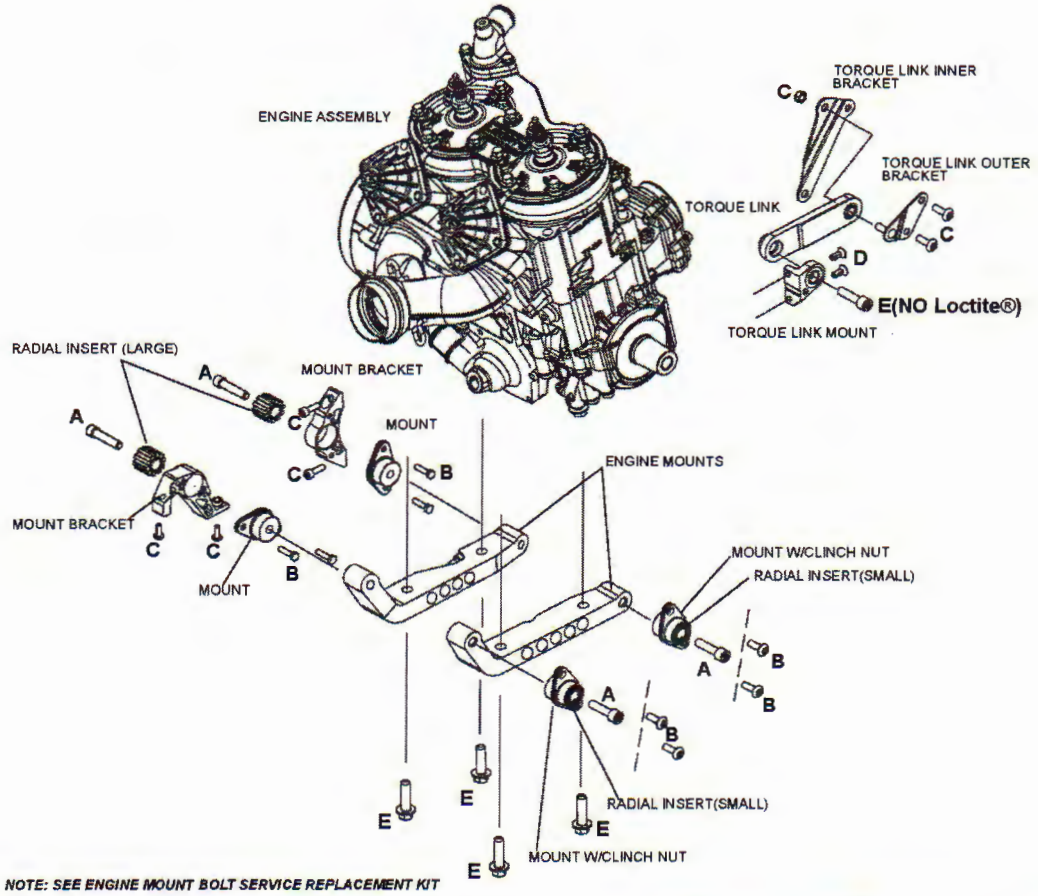


= T
A =DK. GREEN-M10x1.5x45 (8.8) = 30 ft-lbs (41 Nm) / SILVER/GRY-M10x1.5x50 (12.9) = 35 ft-lbs (48 Nm) B = 9 ft-lbs (12 Nm) C = 26 ft-lbs (35 Nm) D = 18 ft-lbs (24 Nm) E = 12.5 ft-lbs (17 Nm) F = 30 ft-lbs (41 Nm) Apply Loctite® 242™ to threads.

Assembly Notes:

- ENGINE MOUNT BOLTS-Note two torque values for screws. Always clean engine mount threads with compressed air or M10x1.5 tap before installing screw(s). Apply Loctite® 242™ when using original screw.
- To prevent the engine mount screws from catching on the radial inserts, spray the inserts with rubber lubricant or isopropyl before installing engine mount fasteners.
- Replace lock nuts with new parts when removed.
- Torque link length (center-to-center) = 3.33" (84.63mm)

2011 600 Engine Mounting

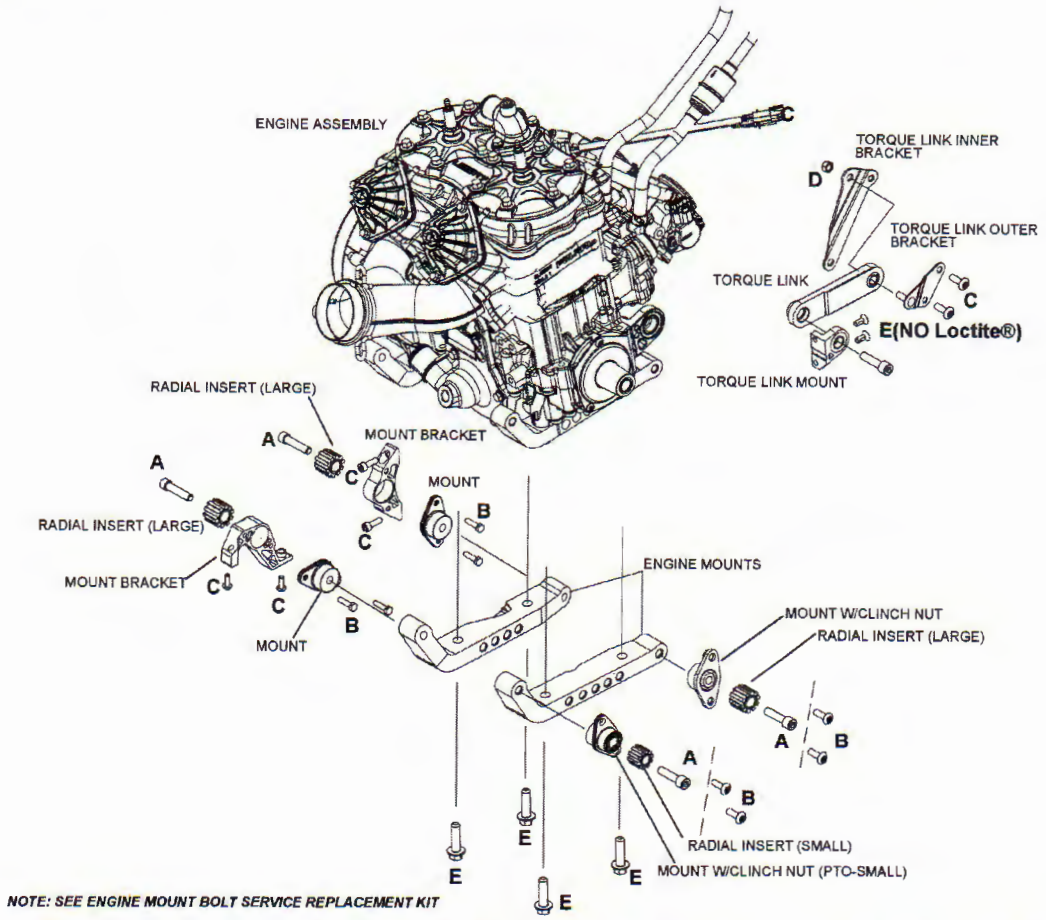


= T
A = 35 ft-lbs (48 Nm) Apply Loctite® 242™ to threads. B = 9 ft-lbs (12 Nm) C = 26 ft-lbs (35 Nm) D = 18 ft-lbs (24 Nm) E = 30 ft-lbs (41 Nm) Apply Loctite® 242™ to threads.

Assembly Notes:

- ENGINE MOUNT SCREWS-Always clean engine mount threads with compressed air or M10x1.5 tap before installing screw(s). Apply Loctite® 242™ when using original screw.
- To prevent the engine mount screws from catching on the radial inserts, spray the inserts with rubber lubricant or isopropyl before installing engine mount fasteners.
- Replace lock nuts with new parts when removed.

2011 800 Engine Mounting

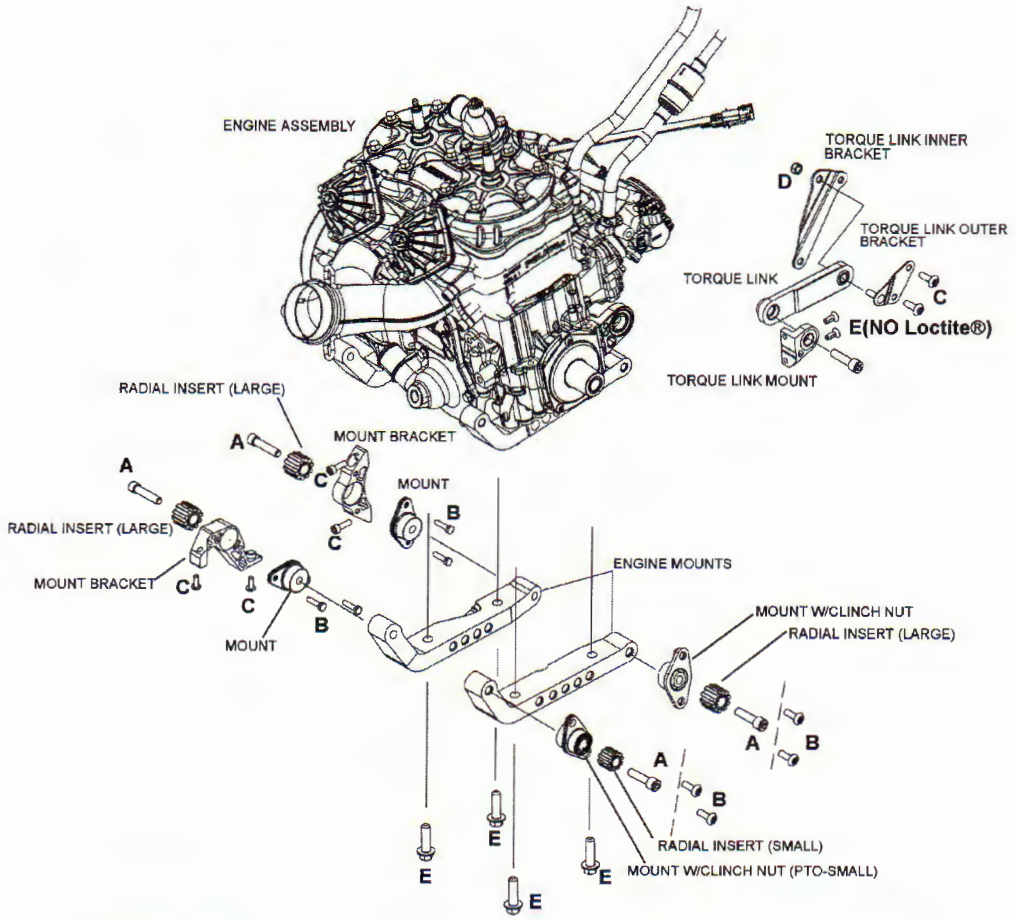


= T
A = 35 ft-lbs (48 Nm) Apply Loctite® 242™ to threads. B = 9 ft-lbs (12 Nm) C = 26 ft-lbs (35 Nm) D = 18 ft-lbs (24 Nm) E = 30 ft-lbs (41 Nm) Apply Loctite® 242™ to threads.

Assembly Notes:

- ENGINE MOUNT BOLTS-Always clean engine mount strap threads with compressed air or M10x1.5 tap before installing screw(s). Apply Loctite® 243™ when using original bolt.
- To prevent the engine mount bolts from catching on the radial inserts, spray the inserts with rubber lubricant or isopropyl before installing engine mount fasteners.
- Replace lock nuts with new parts when removed.

2012 - Current 600 / 800 Engine Mounting



= T
A = 40 ft-lbs (54 Nm) Apply Loctite® 243™ to threads. B = 9 ft-lbs (12 Nm) C = 26 ft-lbs (35 Nm) D = 18 ft-lbs (24 Nm) E = 30 ft-lbs (41 Nm) Apply Loctite® 242™ to threads.

Assembly Notes:

- ENGINE MOUNT BOLTS-Always clean engine mount strap threads with compressed air or M10x1.5 tap before installing screw(s). Apply Loctite® 243™ when using original bolt.
- To prevent the engine mount bolts from catching on the radial inserts, spray the inserts with rubber lubricant or isopropyl before installing engine mount fasteners.
- Replace lock nuts with new parts when removed.

Engine Mount Bolt Service Replacement Kit

A service kit has been developed to replace the original engine mount fastener bolts used on 2010-2011 600/800 Pro-Ride vehicles to the 2012-2013 fastener specification.

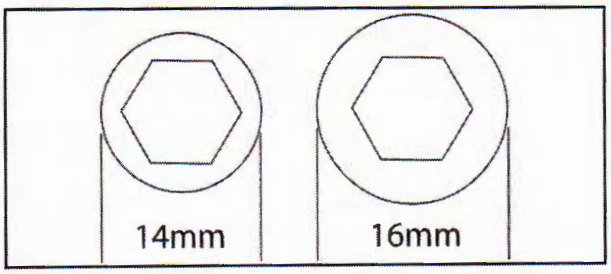
Engine Mount Bolt Replacement Kit
PN 2204633

The engine mount bolt replacement kit includes the following parts:

- PN 7519334 - 4QTY. - Bolts-M10X1.5X50 12.9
- PN 3022426 - 2QTY. - Radial Inserts (Small)
- (600/800s - Front PTO / 2010-2011 600s Rear PTO ONLY)
- PN 3022409 - 3 QTY. - Radial Inserts (Large)
- (600/800s - MAG Front and Rear / 2011 800 Rear PTO)

The engine mount bolt replacement kit will replace all four engine mount bolts along with their associated radial inserts. The original bolts (part numbers: 7519009 and 7519282) will sub to the 2204633 kit part number.

Bolt identification can be quickly made by measuring the head diameter of the bolt. Bolts used on 2010-2011 Pro-Ride vehicles have 14mm head diameters, while the replacement bolts have 16mm heads and feature a knurled edge.



A selection of radial inserts is included with the kit. All 2010-2011Pro-Ride MAG-side engine mounts use large radial inserts.

On the PTO side, all 2010-2011 600 Pro-Ride models use small radial inserts in both the front and back locations.

All 2011 800 Pro-ride models feature a small PTO-front and large PTO-rear radial insert.

NOTE: It is recommended that all engine mount bolts be replaced if removed. If bolt replacement is not possible, the bolt(s) must be replaced after TWO installation cycles. It is recommended that the technician marks the bulkhead to count the number of installations at each bolt(s) location.

Engine Mount Screw Installation

1. Determine which bolt(s) is going to be installed.

   NOTE: Polaris recommends installing the Engine Mount Bolt Replacement Kit (PN 2204633) if original 2010-2011 bolts are installed.

2. Clean the engine mount strap threads with compressed air and/or M10x1.5 tap.
3. Apply Loctite® 243™ or Loctite® 242™ w/Primer N™ to 5-6 bolt threads.
4. Reference torque specifications and install bolt(s).
5. Apply final torque to bolt(s) using the following order:

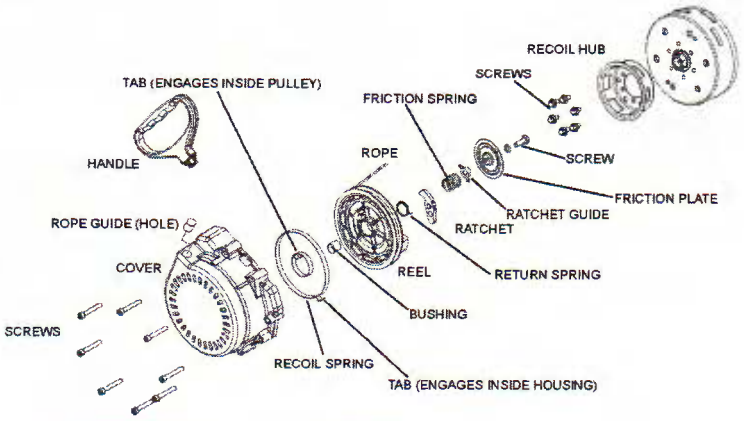
   Loosen already-installed bolts 1 full turn to accommodate torque pattern if required.

   - PTO-REAR
   - PTO-FRONT
   - MAG-REAR
   - MAG-FRONT

= T
2010 - 14mm Head Diameter - DK.Green Color DK. GREEN-M10x1.5x45 (8.8) = 30 ft-lbs (41 Nm) 2011 - 14mm Head Diameter - Silver/Gray Color SILVER/GRY-M10x1.5x50 (12.9) = 35 ft-lbs (48 Nm) 2012-later/Replacement Kit - 16mm Head Diameter Silver/Gray Color SILVER/GRY-M10x1.50 (12.9) = 40 ft-lbs (54 Nm)

RECOIL ASSEMBLY

Rope Removal and Installation



= T
Cover/Hub Screws: 9 ft-lbs (12 Nm) Friction Plate Screw: 1204173 Recoil Assembly: 9 ft-lbs (12 Nm) 1204331 Recoil Assembly: 14 ft-lbs (19 Nm)

⚠ CAUTION

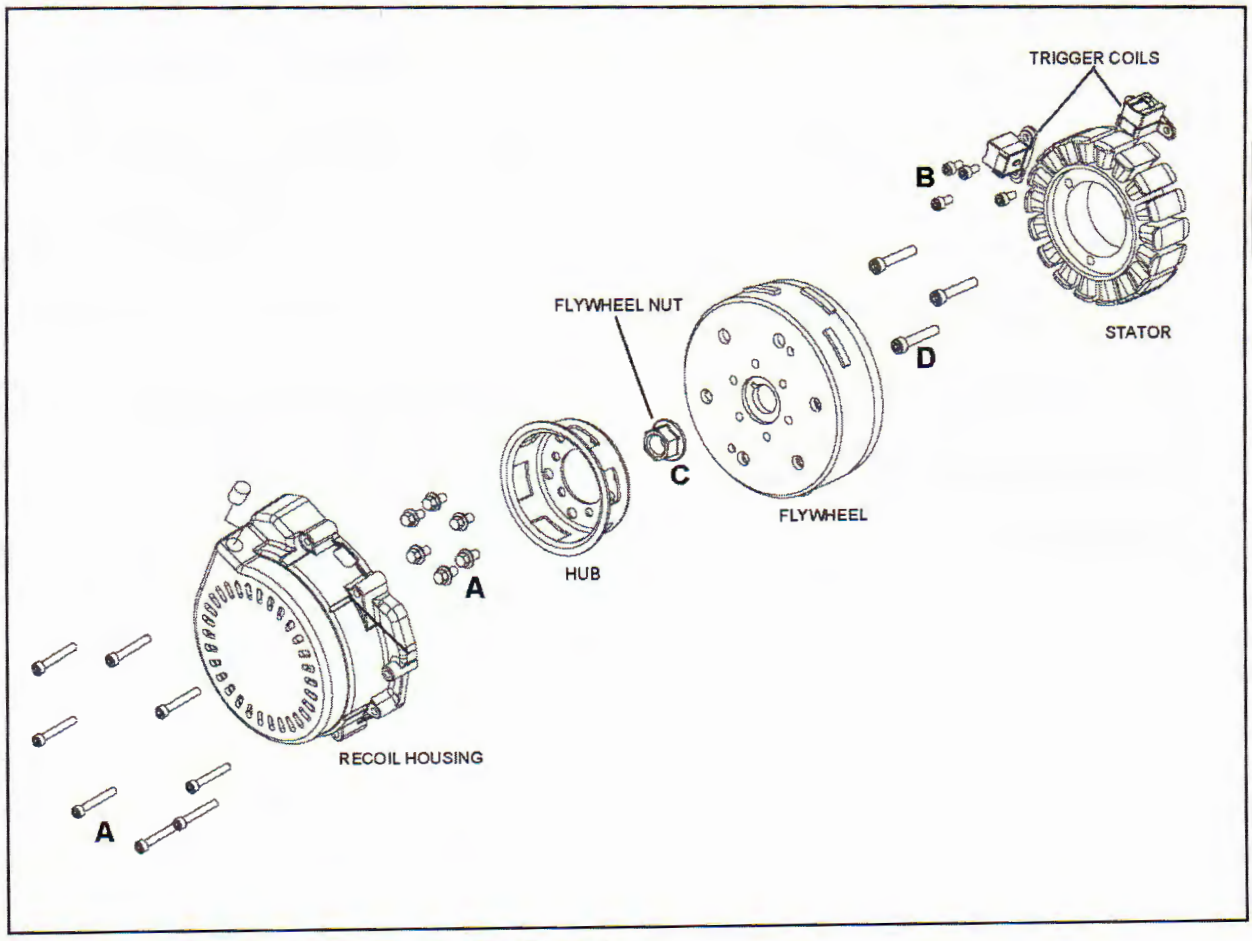
Recoil spring under high tension. Wear eye protection.

1. Remove recoil housing from the engine. Untie knot in the recoil rope and allow the reel to slowly unwind.
2. Remove the screw, washer, friction plate, ratchet guide, friction spring, ratchet and return spring from the reel.
3. Lift the reel straight out of the housing making sure the spring is no longer connected to the backside of the reel.

   NOTE: If the recoil spring tension is removed, the spring should stay inside the housing.
4. Inspect all components for signs of abnormal wear. Replace components as required. If replacing the rope, tie a small square knot at one end. Push the knot firmly into the pocket on the reel.
5. If the reel recoil spring was removed during disassembly, install the spring by spiraling the spring counterclockwise toward the center of the housing.
6. Lubricate the center shaft and spring with Premium grease.
7. Wind the rope counterclockwise around the pulley as viewed from the ratchet-side of the reel.
8. Pass the end of the rope through the hole in the housing. If the rope guide was removed from the housing, reinstall it before attaching the rope handle.
9. Slide the reel down the center shaft and into the housing making sure the recoil spring re-engages the reel tab.
10. Install the return spring and ratchet into the reel face. The return spring leg fits in the notch on the ratchet and holds the ratchet in (retracted).
11. Install friction spring with one leg inserted in the bottom hole on the ratchet.
12. Apply Loctite® 242™ and install screw and washer and torque to specification.
13. Pull rope out to its full extension and align pulley notch with rope hole in housing.
14. Using a needle nose pliers or hooked wire, pull a loop of rope through the notch in the reel.
15. Prevent the rope from being retracted by tying a knot in the rope on the outside of the housing at the rope guide hole.
16. Wind the recoil pulley counterclockwise until the spring begins to bind. Unwind the pulley clockwise two revolutions.
17. Pull on the rope to disengage it from the notch in the pulley. Un-tie the knot in the rope and allow it to retract into the housing.
18. Pull on the handle to verify proper operation.

ENGINE COMPONENT ASSEMBLIES

600/800 Recoil/Stator Assembly



= T
A: 9 ft-lbs (12 Nm) B: 5 ft-lbs (7 Nm) (Trigger coil fasteners) C: 90 ft-lbs (122 Nm) - Apply Loctite® 242™ (Do not use an impact wrench to remove or install flywheel nut.) D: 12 ft-lbs (16 Nm) - Apply Loctite® 242™

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

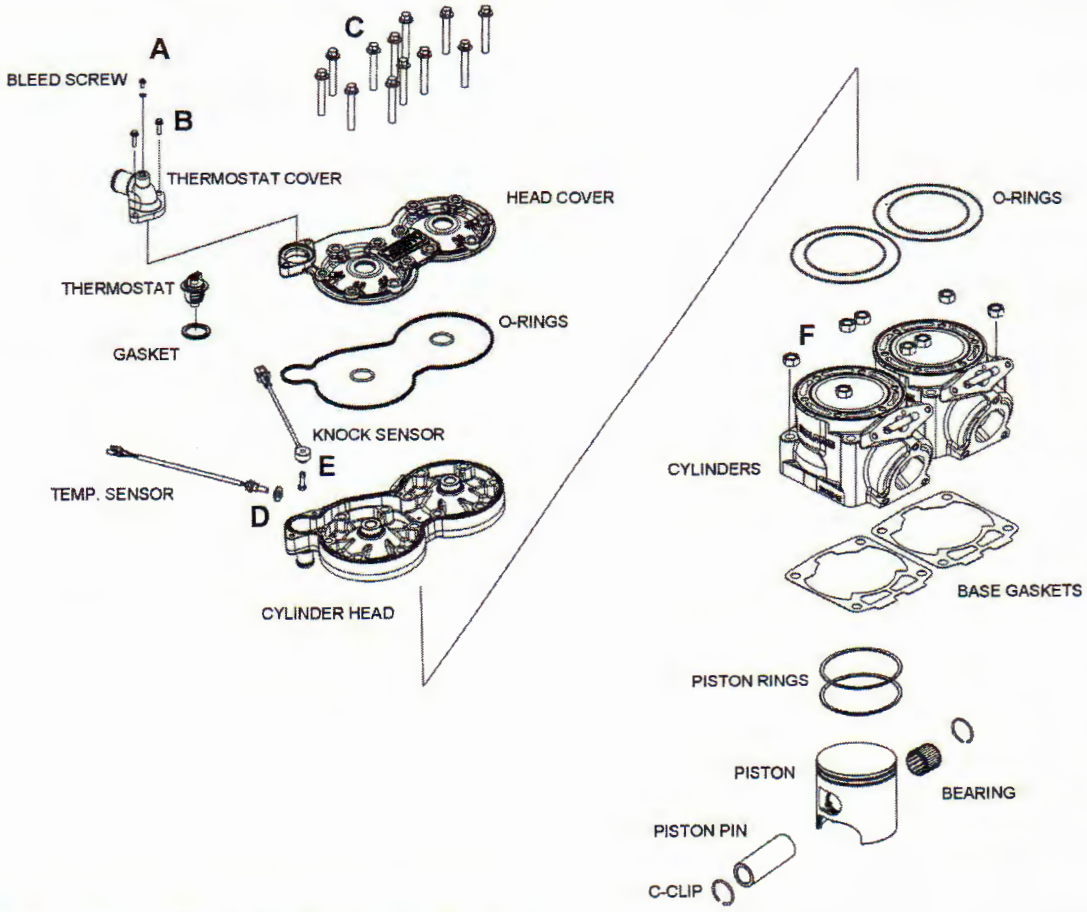
Disassembly / Assembly Process

1. Remove the exhaust pipe and silencer.
2. If the recoil assembly does not require attention, the recoil rope can remain attached to the handle. If recoil component work is desired, reference the Recoil Assembly section.
3. Remove the two mag-side engine mounting bolts. Carefully lift the mag-side of the engine to access the housing cover.
4. Remove the recoil/magneto housing cover. The recoil assembly is located inside the housing.
5. Remove the recoil hub from the flywheel. Secure the flywheel with a strap wrench, PN PU-45419. Remove the flywheel nut and washer.
6. Using the flywheel puller tool, PN 2871043, insert the puller's three screws into the flywheel.

   NOTE: Do not thread the puller screws into the magneto/stator located behind the flywheel.

7. Turn the puller center bolt in until the flywheel "pops" off of the crankshaft.
8. Mark the location of the magneto/stator plate in several places using a scribe.
9. Remove the two plastic rivets that prevent the trigger coil wires from contacting the flywheel.
10. Remove the magneto/stator from the crankcase.
11. During assembly, route the trigger coil wires in their designated channels. Install the two plastic rivets into the housing to prevent the wires from accidently coming into contact with the flywheel.
12. Assembly is reverse of disassembly. Reference the fastener torque specifications at the beginning of the chapter.
13. Do not use an impact wrench to install the flywheel nut.
14. Align the mag-side engine mount with the two chassis mounts. Install the engine mount screws and torque to specification.
15. Reinstall the exhaust silencer and pipe.

600 Cylinder Head/Cylinders/Pistons



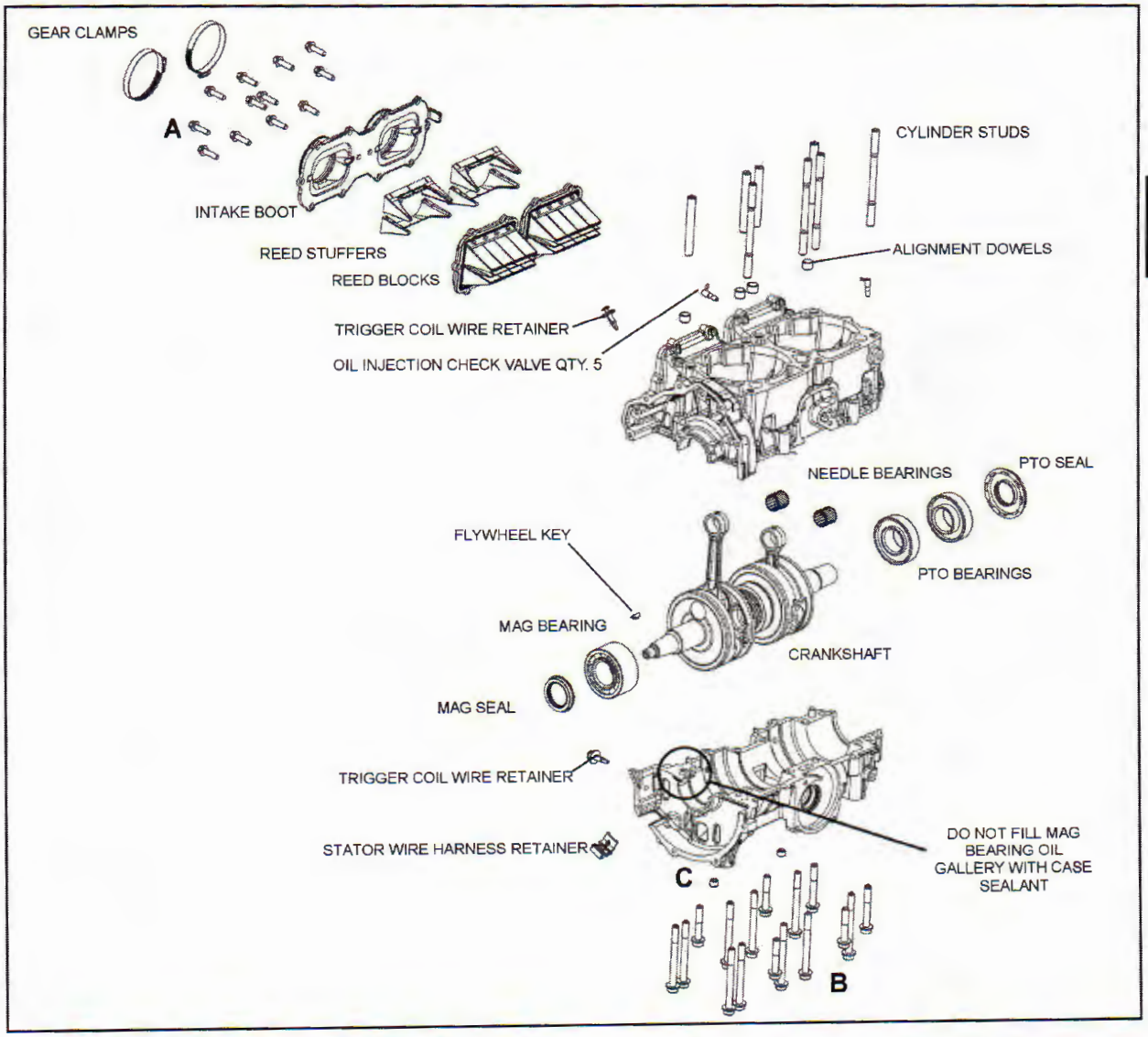
= T
A: 70 in-lbs (8 Nm) B: 9 ft-lbs (12 Nm) - Apply Loctite® 242™ C: 25 ft-lbs (34 Nm) - Apply Loctite® 242™ D: 18 ft-lbs (24 Nm) - Apply Pipe Sealant E: 168 in-lbs (19 Nm) - Clean and Dry (DO NOT UNDER/OVER TORQUE SCREW.) F: 37 ft-lbs (50 Nm)

PISTON MATRIX		
ENGINE MODEL	PISTON PN	PISTON ID
S4202-6044-OP6N S4215-6044-OO6N S4357-6044-OL6N	2204152	3222
S4316-6044-OL6G S4452-6044-OL6G	2204659	3226
S4504-6044-OA6G S4505-6044-0A6G S4506-6044-0A6G S4769-6044-0R6G S4770-6044-0R6G S4771-6044-0R6G S4948-6044-OI6G S4949-6044-OI6G S4950-6044-OI6G	2204900	3508

Disassembly / Assembly Process

1. Remove the coolant from the engine using a siphon, wet/dry vac, or drain pan.
2. Remove the oil tank/clutch cover, air box assembly, and exhaust pipe from the engine compartment.
3. Remove the high tension wires and spark plugs from the cylinder head.
4. Remove the thermostat housing outlet cooling hose from the housing.
5. Loosen all, then remove all head cover fasteners. Clean the fastener threads to remove any thread locking residue.
6. Discard the head cover and cylinder head o-rings. Always use new o-rings during assembly.
7. Inspect the cylinder head / combustion domes for any damage. Measure cylinder head flatness. Replace cylinder head if required.
8. If only the cylinder (s) are going to be removed, remove the fuel rail from the upper fuel injectors.
9. Loosen all, then remove the cylinder base nuts.
10. Carefully pull each cylinder upwards taking care not to drop the piston and rod abruptly against the crankcase.
11. Remove the cylinder base gaskets. Use a gasket scraper to clean the gasket residue from the crankcase and cylinder bases.
12. Inspect the cylinder walls. Nicasil cylinders can only be lightly honed. Damage that cannot be removed with a light hone requires cylinder replacement or re-chroming.
13. The assembly process is the reverse of disassembly.
14. Always use new gaskets and o-rings during assembly. Liberally coat the inside of each cylinder and the outside of each piston with Polaris two-stroke engine oil.
15. Always refresh the cylinder crosshatch pattern using a 320 grit stone. See "Cylinder Honing"See "Cylinder Honing" on page 3.14., page 3.13
16. When installing a piston into a cylinder, verify each piston ring opening is located at each piston ring locating pin. Squeeze the top ring, then carefully slide the cylinder over the compressed ring. Do the same with the bottom ring.
17. Follow the torque specifications and torque sequences located at beginning of chapter when tightening fasteners.

600 Crankcase/Crankshaft Assembly



= In. / mm.
Long Stud Height (Exhaust side): 4.13" (105mm) Small Stud Height (Intake side): 2.16" (55mm)

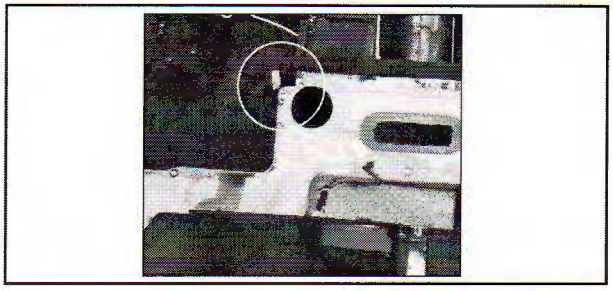
= T
A: 9 ft-lbs (12 Nm) B: 22 ft-lbs (30 Nm) C: 10 ft-lbs (13 Nm) - Apply Pipe Sealant

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

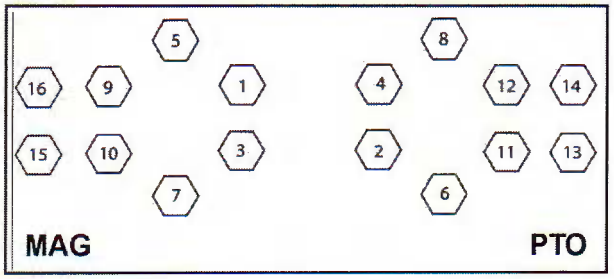
Disassembly / Assembly Process

1. Remove the engine from the engine compartment.
2. Follow the process for removing the cylinder head, cylinders, pistons, flywheel / recoil housing, and the water / oil pump.
3. Remove the intake boots, reed stuffers, and reed assemblies from the intake tracks. Discard any seals or gaskets.

   NOTE: The crankcase ring land damage shown in the corresponding photo is caused by improper crankcase separation or crankshaft removal.

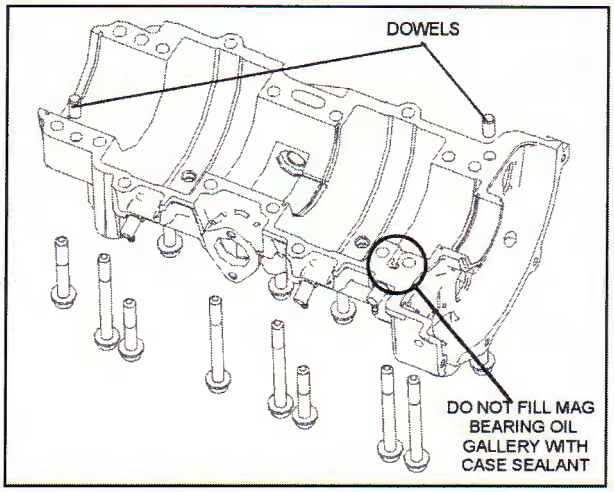


4. Remove all crankcase fasteners except ones marked 5-6-7-8 indicated below. Loosen these 4 bolts to reveal about a 1/6"-1/8" bolt gap.



5. Once loosened, carefully and lightly tap on the bolts to separate the crankcase halves.
6. Discard the PTO and MAG crankshaft seals.
7. Remove the crankshaft by pulling it straight up and out. Inspect as required.
8. Thoroughly clean the two crankcase mating surfaces with carburetor cleaner and a gasket remover. Flush out the crankcase galleries.
9. Reinstall the crankshaft back into the lower crankcase using two new crankcase seals. Verify the two crankcase dowels are installed in the lower crankcase.
10. Apply a thin bead of Three Bond 1217H to the lower crankcase mating surface. Install the upper crankcase.

    NOTE: Do not over-apply sealant in oil injector area. Doing so may block the oil passage.

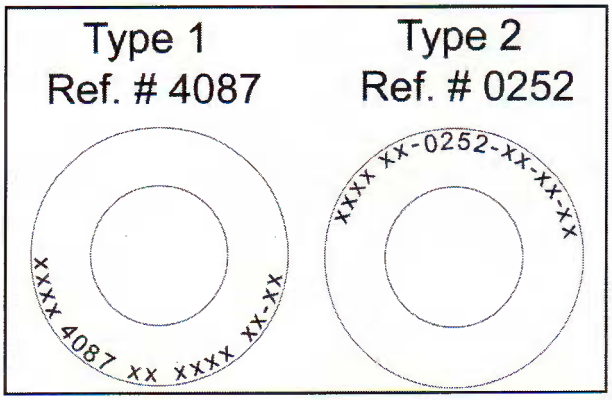


11. Loosely install the crankcase fasteners, then torque to the specifications at the beginning of the chapter. Use the correct torque sequence when tightening the screws.
12. Liberally coat the crankshaft bearings and components with Polaris two-stroke engine oil.

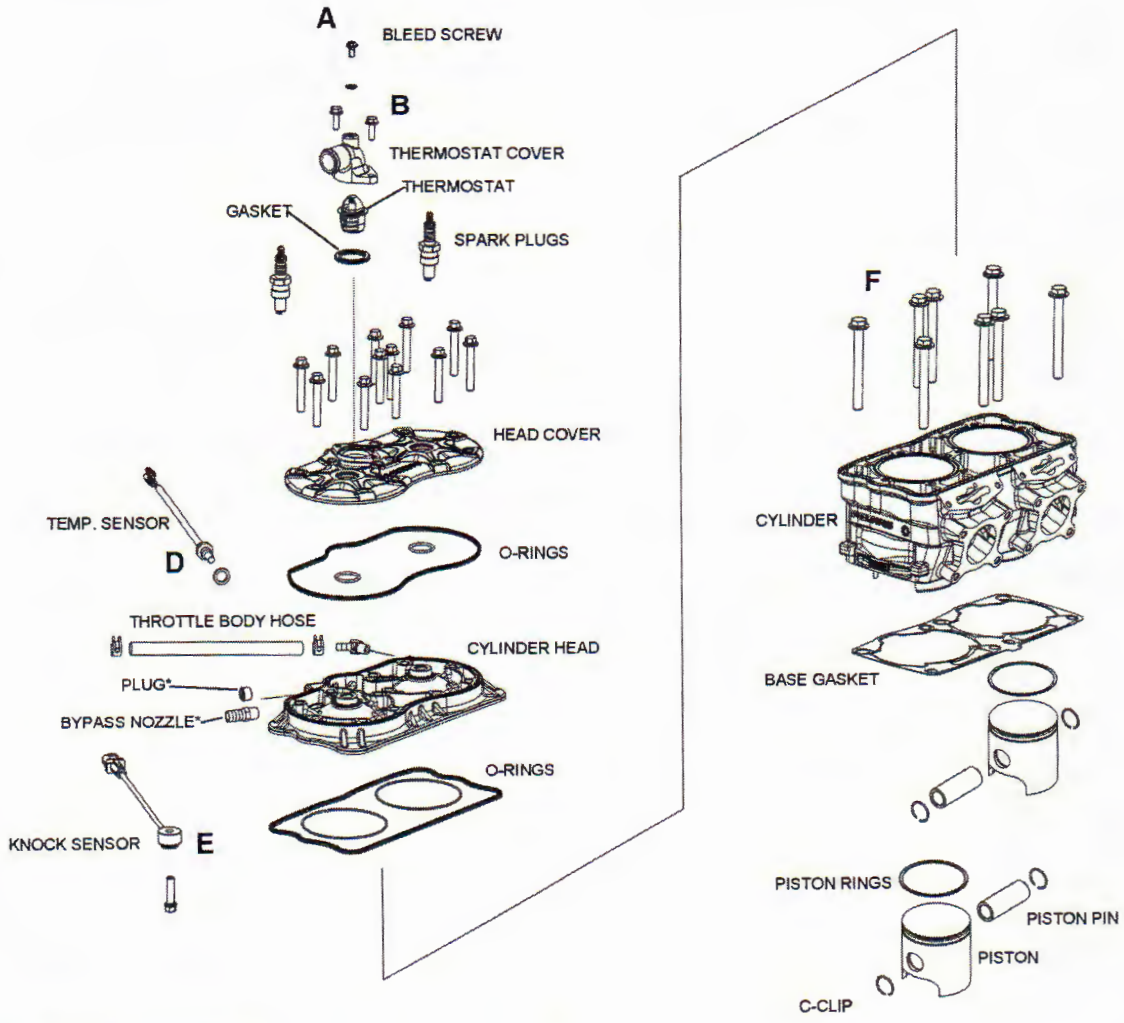
600 DC-CFI-2 Crankshaft Identification

Two different crankshaft assemblies (Type 1 and Type 2) are used for production and service parts. Use the codes etched into the nose of the PTO end to determine crankshaft type when ordering service parts.

In the image, two codes (4087 / 0252) are shown as an example. Other model years may use different codes.



800 DC-CFI-2 Cylinder Head/Cylinder/ Pistons



* = SEE PLUG / BYPASS MATRIX

= T
A: 70 in-lbs (8 Nm) B: 9 ft-lbs (12 Nm) - Apply Loctite® 242™ C: 25 ft-lbs (34 Nm) - Apply Loctite® 242™ D: 18 ft-lbs (24 Nm) - Apply Pipe Sealant E: 168 in-lbs (19 Nm) - Clean and Dry (DO NOT OVER/UNDER TORQUE SCREW.) F: 42 ft-lbs (57 Nm)

Cylinder Head/Cylinder/Piston Notes

PISTON MATRIX		
ENGINE MODEL	**PISTON PN**	**PISTON ID**
S4139-8044-OO8G S4229-8044-OO8G S4092-8044-OO8G S4360-8044-OL8G S4361-8044-OL8G S4359-8044-OL8G S4509-8044-0A8G S4510-8044-0A8G S4508-8044-0A8G	2204322	3305 or 3335
S4773-8044-0R8G S4774-8044-0R8G S4775-8044-0R8G S4952-8044-OI8G S4953-8044-OI8G	2205176	5210

800 pistons feature two different rings thicknesses. The upper ring is 1.8mm thick, while the lower ring is 1.5mm thick.

Some 800 DC-CFI-2 engines feature a coolant bypass nozzle on the cylinder head. Reference table below.

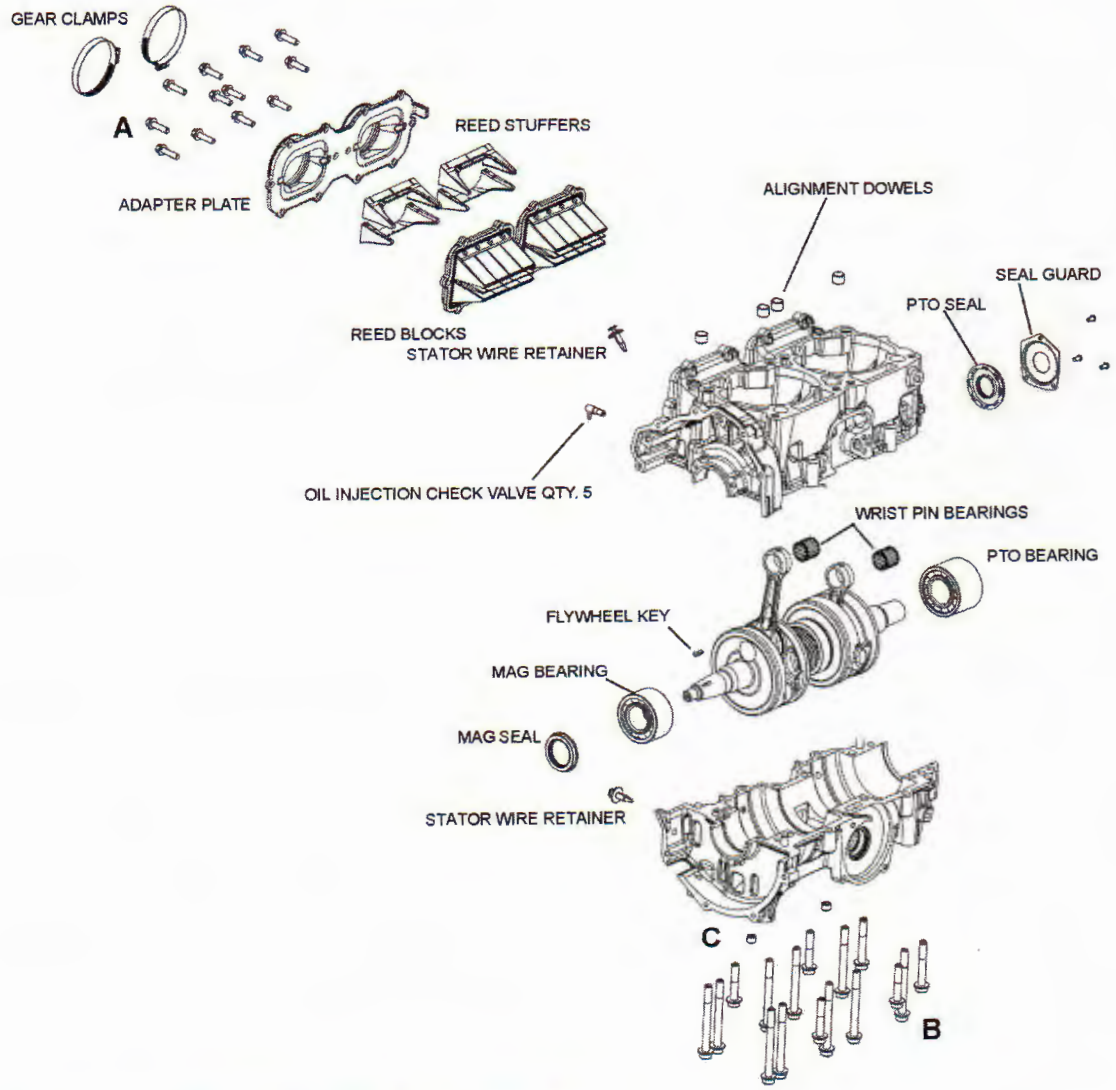
PLUG / BYPASS MATRIX		
ENGINE MODEL	**CYLINDER HEAD PLUG**	**CYLINDER HEAD BYPASS NOZZLE**
S4139-8044-OO8G S4229-8044-OO8G S4360-8044-OL8G S4361-8044-OL8G S4509-8044-0A8G S4510-8044-0A8G S4774-8044-0R8G S4775-8044-0R8G S4952-8044-OI8G		X
S4092-8044-OO8G S4359-8044-OL8G S4508-8044-0A8G S4773-8044-0R8G S4953-8044-OI8G	X	

800 DC-CFI-2 Cylinder Head/Cylinder/ Pistons Disassembly/Assembly

1. Remove the coolant from the engine using a siphon, wet/dry vac, or drain pan.
2. Remove the air box, exhaust pipe and resonator from the engine compartment.
3. Remove the high tension wires and spark plugs from the cylinder head.
4. Remove the thermostat housing outlet cooling hose from the housing.
5. Loosen all, then remove all head cover fasteners. Clean the fastener threads to remove any thread locking residue.
6. Discard the head cover and cylinder head o-rings. Always use new o-rings during assembly.
7. Inspect the cylinder head / combustion domes for any damage. Measure cylinder head flatness. Replace cylinder head if required.
8. Remove the fuel rail and fuel injectors from cylinder. Fuel Rail/Injector Removal and Installation, page 4.31

   NOTE: Leave the exhaust Y-pipe attached to the cylinder assembly. Remove Y-pipe after removing cylinder from crankcase.
9. Loosen all, then remove the cylinder bolts. Clean the bolt threads to remove any thread locking residue.
10. Carefully pull the cylinder upwards taking care not to drop the pistons and rods abruptly against the crankcase.
11. Remove the cylinder base gasket. Use a gasket scraper to clean the gasket residue from the crankcase and cylinder base.
12. Inspect the cylinder walls. Nicasil cylinders can only be lightly honed using a 320 grit stone. Damage that cannot be removed with a light hone requires cylinder replacement or re-chroming.
13. Inspect the crankcase and cylinder mating surfaces for warping.
14. The assembly process is the reverse of disassembly.
15. Always use new gaskets and o-rings during assembly. Liberally coat the inside of each cylinder bore and the outside of each piston with Polaris two-stroke engine oil.
16. Always refresh the cylinder crosshatch pattern using a 320 grit stone. See "Cylinder Honing"See "Cylinder Honing" on page 3.14., page 3.13
17. When installing a piston into a cylinder, verify each piston ring opening is located at each piston ring locating pin. Squeeze the top ring, then carefully slide the cylinder over the compressed ring. Do the same with the bottom ring.
18. Follow the torque specifications and torque sequences located at beginning of chapter when tightening fasteners.

800 DC-CFI-2 Crankcase/Crankshaft

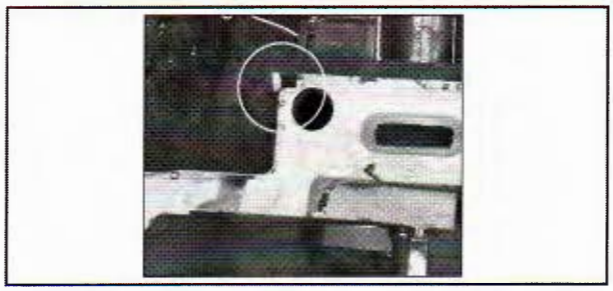


= T
A: 9 ft-lbs (12 Nm) B: 22 ft-lbs (30 Nm) - Apply Loctite® 242™ C: 10 ft-lbs (13 Nm) - Apply Pipe Sealant

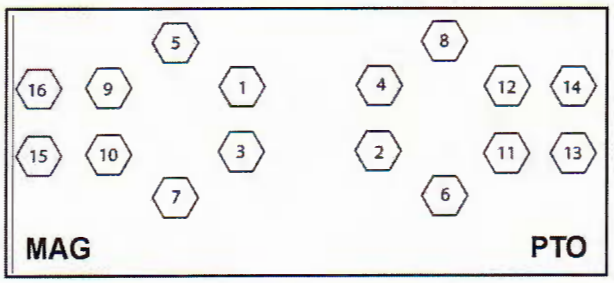
Disassembly and Assembly Process - Crankcase/ Crankshaft

1. Remove the engine from the engine compartment.
2. Follow the process for removing the cylinder head, cylinders, pistons, flywheel/recoil housing, and the water/oil pump.

   NOTE: The crankcase ring land damage shown in the corresponding photo is caused by improper crankcase separation or crankshaft removal.

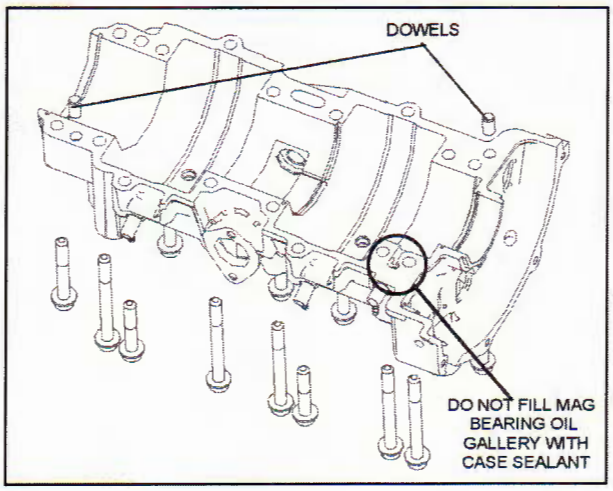


3. Remove all crankcase fasteners except ones marked 5-6-7-8 indicated below. Loosen these 4 bolts to reveal about a 1/6"-1/8" bolt gap.



4. Once loosened, carefully and lightly tap on the bolts to separate the crankcase halves.
5. Discard the PTO and MAG crankshaft seals.
6. Remove the crankshaft by pulling it straight up and out. Inspect as required.
7. Thoroughly clean the two crankcase mating surfaces with carburetor cleaner and a gasket remover. Flush out the crankcase galleries.
8. Reinstall the crankshaft back into the lower crankcase using two new crankcase seals.
9. Apply a thin bead of Three Bond 1217H to the lower crankcase mating surface. Install the upper crankcase.

   NOTE: Do not over-apply sealant in oil injector area. Doing so may block the oil passage.

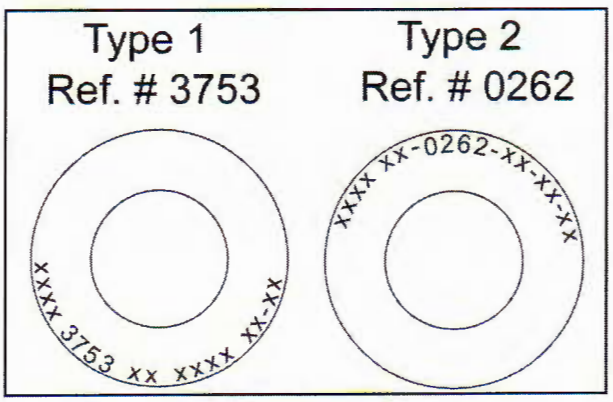


10. Loosely install the crankcase fasteners, then torque to the specifications at the beginning of the chapter. Use the correct torque sequence when tightening the screws.
11. Liberally coat the crankshaft bearings and components with Polaris two-stroke engine oil.

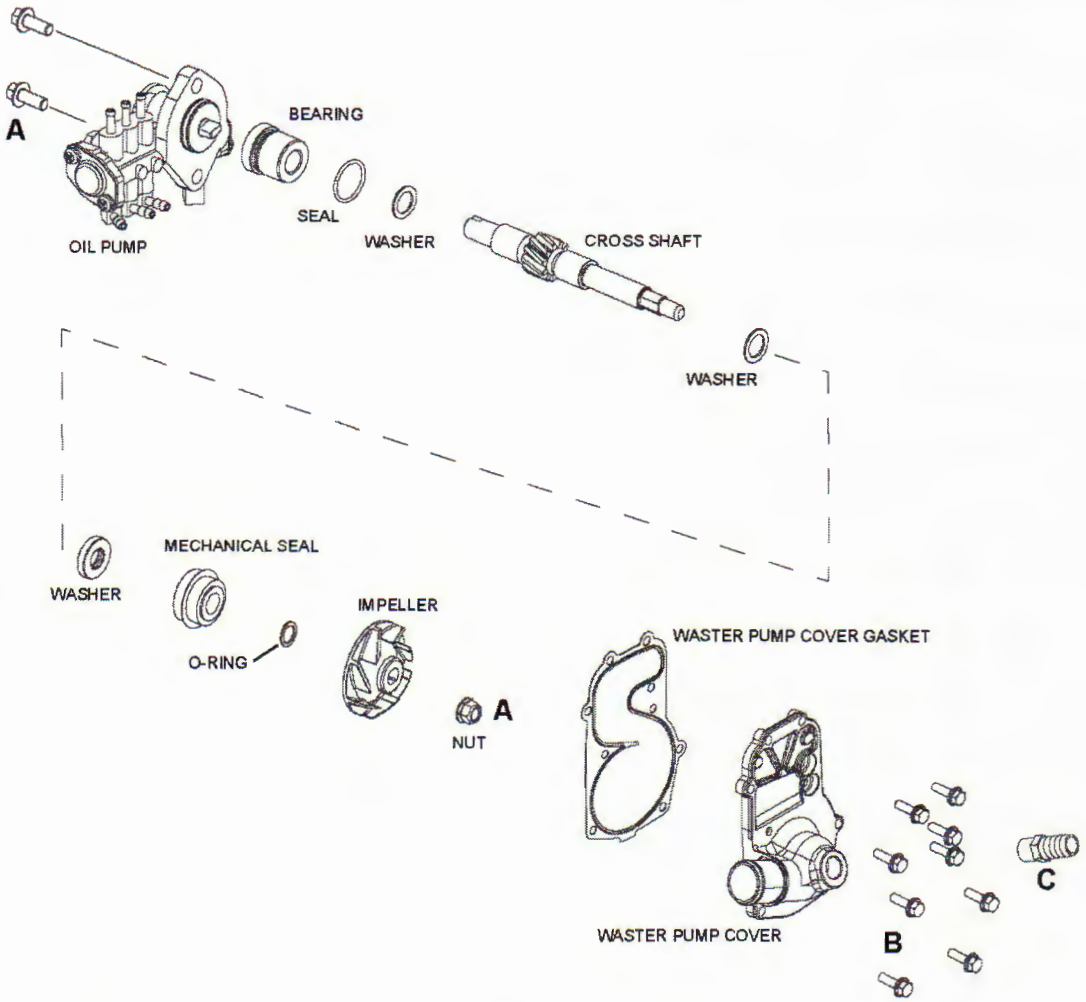
800 DC-CFI-2 Crankshaft Identification

Two different crankshaft assemblies (Type 1 and Type 2) are used for production and service parts. Use the codes etched into the nose of the PTO end to determine crankshaft type when ordering service parts.

In the image, two codes (3753 / 0262) are shown as an example. Other model years may use different codes.



600/800 DC-CFI Water and Oil Pump Assembly



= T
A: 9 ft-lbs (12 Nm) B: 9 ft-lbs (12 Nm) C: 18 ft-lbs (Nm) Apply pipe sealant. Oil Pump Bleed Screw: 2.2 ft-lbs (3 Nm)

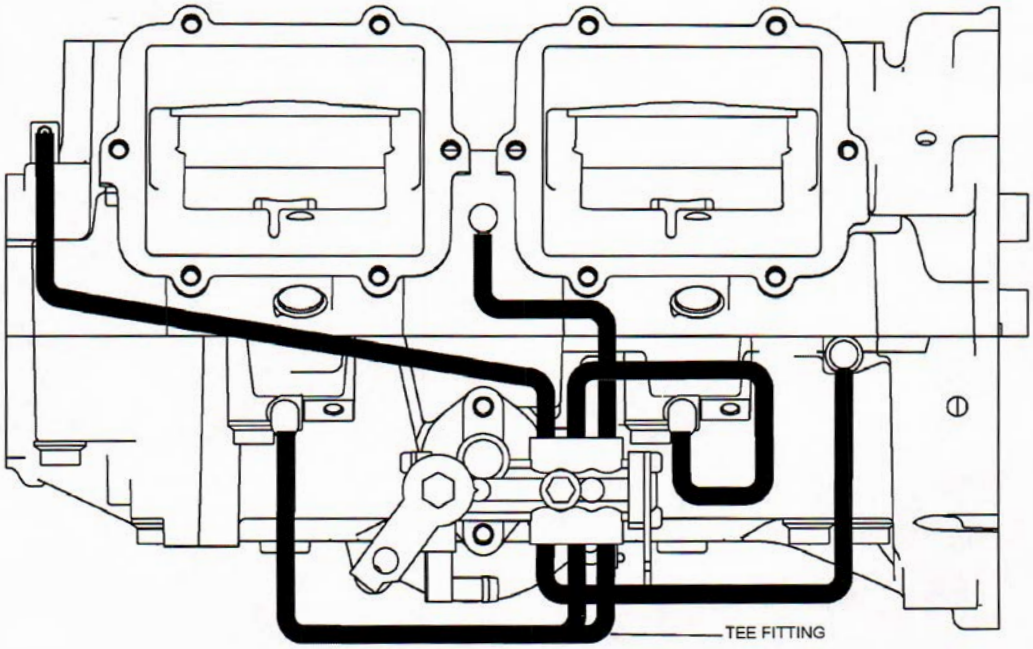
Water / Oil Pump Crossshaft Axial End Play .009" - .027" (0.254 - 0.708 mm)

Disassembly / Assembly Process

NOTE: Use the mechanical seal installation tool to install the water pump seal, PN: 2872010.

1. Remove the coolant from the engine using a siphon, wet/dry vac. or a drain pan.
2. Remove the oil tank/clutch cover assembly, airbox, exhaust pipe and resonator. Remove the hoses connected to the water pump cover.
3. To access the impeller and mechanical seal, remove the water pump cover. Discard the water pump cover gasket.
4. Remove the impeller nut, impeller and washers from the cross shaft.
5. Carefully pry the mechanical seal and seal out of the crankcase.
6. Water pump assembly is the reverse of disassembly. Always use new seals and gaskets during assembly.
7. To remove the oil pump, the engine must be removed from the engine compartment. Remove the two fasteners then pull the pump out of the crankcase bore. Discard the o-ring.
8. The cross shaft can be extracted from the water pump side of the crankcase.
9. Assembly is the reverse of disassembly. Always use new o-rings, seals and gaskets during assembly.
10. Install a new seal onto the shaft from the water pump side.
11. To install a new water pump seal, use the seal installation tool, PN 2872010. Verify the seal lips are facing the cross shaft gear.

Oil Hose Routing

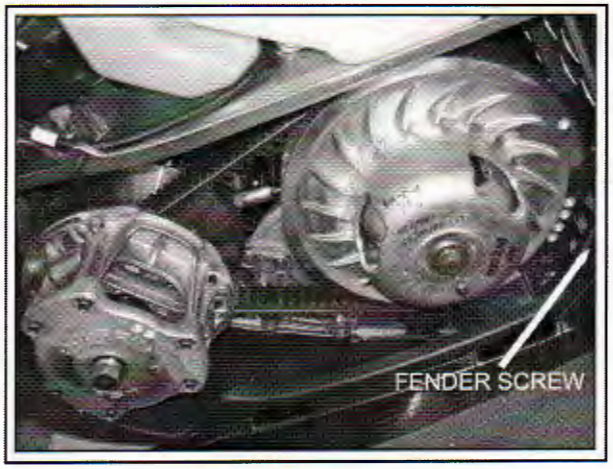


Engine Removal

NOTE: Inspect all parts for wear or damage during disassembly. Replace all seals, o-rings, and gaskets with Genuine Pure Polaris parts during assembly.

Torx screws are used throughout the engine compartment. Always use good-quality Torx wrenches when removing or installing these screws. Do not use worn or damaged tools.

1. Remove the left and right door panels. Remove the hood assembly.
2. Remove the drive belt, fender screw, drive clutch, and driven clutch.



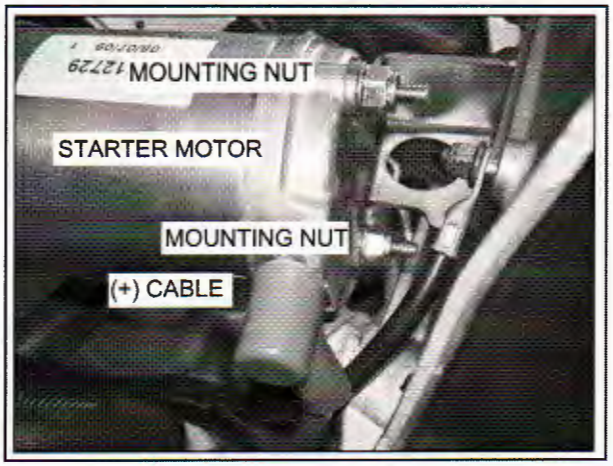
3. Remove the oil tank/clutch cover assembly. Oil Tank/ Clutch Cover Service, page 2.15
4. Remove the exhaust pipe, and exhaust silencer.

   NOTE: Disconnect the exhaust temperature sensor probe wiring harness. Do not remove probe from pipe unless service is required.

5. If the snowmobile is equipped with electric start, disconnect the battery. Remove the starter motor from the motor bracket. Remove the worm drive shaft from the case-mounted drive gear.

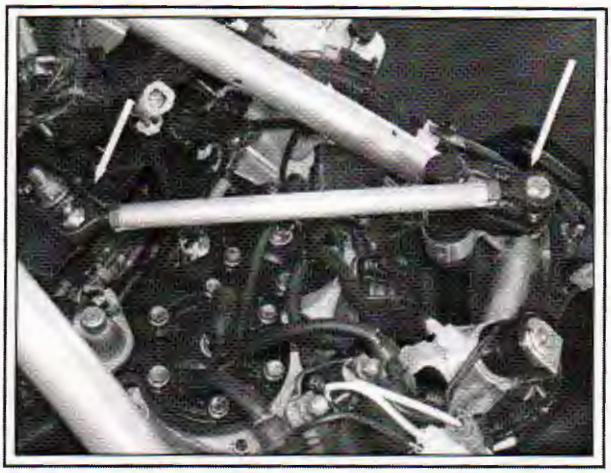
CAUTION
Remove the BLACK (-) battery cable first, and then the RED (+) cable last. Reverse order when attaching cables to battery.

6.

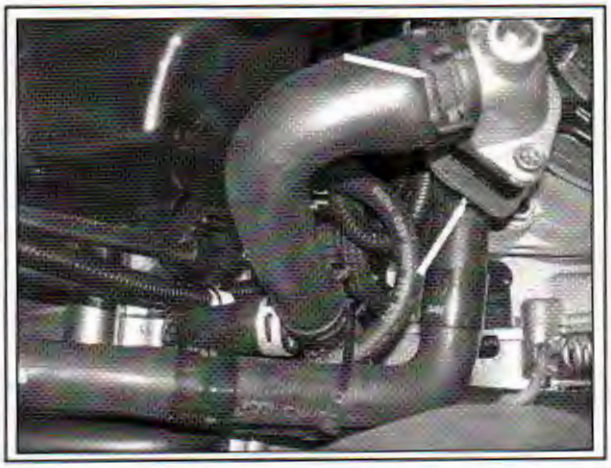


7. Remove the two screws securing the lower steering shaft bushing clamp shaft to the over structure.

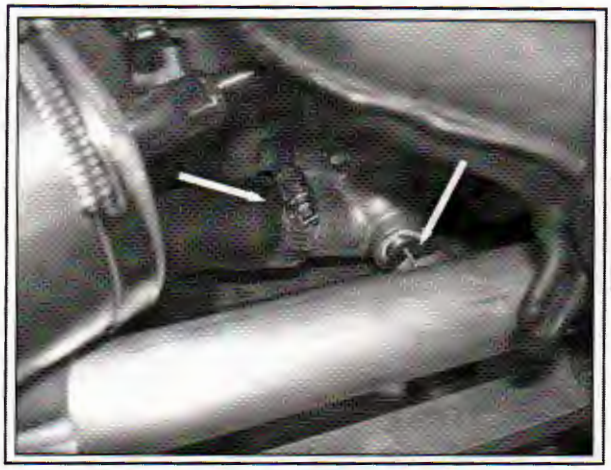
8. Remove the upper steering drag link from the lower steering shaft.



9. Remove the airbox assembly. Air Box Servicing, page 2.26
10. Remove the fuel supply and return hoses between the fuel tank and fuel rail mounted to the engine.
11. Remove the surge tank cap. Extract the engine coolant with a siphon or wet/dry vacuum.
12. Remove the thermostat bypass and main outlet hoses from the thermostat housing.



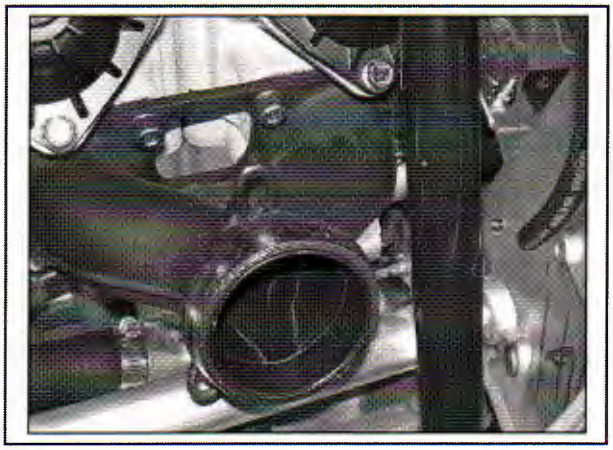
13. Remove the coolant return hoses from the water pump cover.



14. Disconnect the throttle cable from the throttle body.
15. Cut the knot at the end of the recoil rope to remove the handle. Pass the recoil rope through the console and guide. Tie the recoil rope in a knot to prevent it from retracting into the recoil housing.
16. Disconnect the engine torque link by removing the two screws securing the bracket to the bulk, and then the torque link lock nut.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

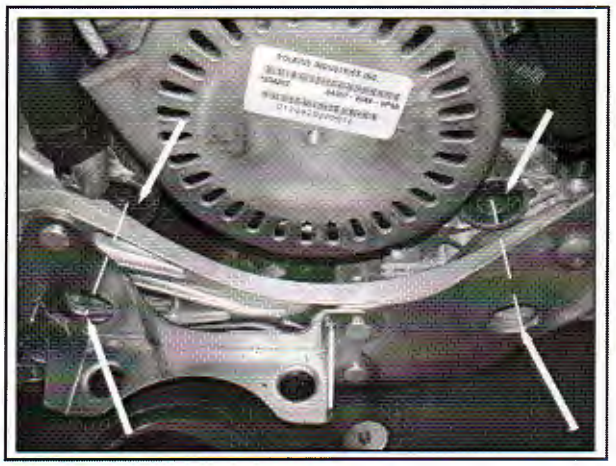
17. Remove the exhaust y-pipe from the engine using a ball-end Allen wrench. Remove the exhaust gaskets. If undamaged, they can be re-used during assembly.



18. Remove the PTO and MAG exhaust valve assemblies from the cylinder. Doing this will provide clearance between the engine and bulkhead so the engine can be removed from the PTO-side of the engine compartment.
19. Remove the two engine mounting screws from the PTO-side of the engine.

20. Remove the two engine mount screws from the MAG-side of the engine.

    NOTE: Use a six to eight inch extended Allen wrench to access the MAG-side engine mounting bolts.



21. With the help of an assistant carefully remove the engine from the PTO-side of the engine compartment.
22. Use care when lifting the engine up and over the tunnel and side support plate. Do not damage the oil pump when pulling the engine out.

Engine Installation

1. Clean the engine compartment.
2. Inspect engine mounts for damage. Replace mounts or radial inserts at this time. If any mount bracket was removed, reinstall and torque screws to specification.

= T
Engine Mount Bracket: 22 ft-lbs (30 Nm)

3. Verify cooling hose and starter motor power cable (electric start models) are secured to the bulkhead floor with a p-clamp.

   NOTE: White tape on wire harnesses and hoses designates clamp/harness retainer location.

4. Visually inspect the oil pump setting. If adjustment is required, adjust the oil pump before installing the engine.
5. With the help of an assistant of engine hoist, lower the engine into the bulkhead.

6. Spray the radial inserts on each of the four engine mounts with rubber lubricant or isopropyl alcohol. Lubricating the radial inserts will prevent the engine fasteners from catching on the rubber when they are torqued.
7. Install all four engine mount screws by hand. Once all four are installed, torque screws to specification.

= T
Engine Mount Screws: Engine Mount Bolt Service Replacement Kit, page 3.19

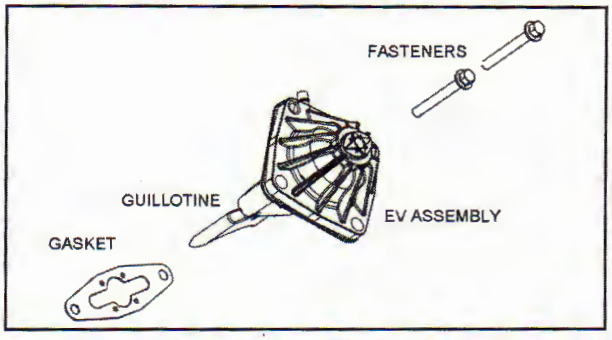
8. Install the torque link adjuster using a new lock nut. Torque lock nut and screws to specification.

= T
Torque Link Nut/Screws: 26 ft-lbs (35 Nm)

9. Reinstall the surge tank-to-water pump and heat exchanger-to-water pump hoses on to the water pump cover.
10. Reinstall the coolant outlet and bypass outlet hoses at the thermostat housing. Open the bleed slightly to allow air to escape when the engine is filled with coolant.
11. If the snowmobile is equipped with electric start, reinstall the starter worm drive shaft, and the starter motor.
12. Reinstall the exhaust gaskets and y-pipe. Torque y-pipe fasteners to specification.

= T
Exhaust Y-Pipe Screws: 22 ft-lbs (30 Nm)

13. Reinstall the throttle cable. Verify the throttle cable freeplay is set to specification.
14. Install the MAG and PTO exhaust valve assemblies using new gaskets. Torque fasteners to specification. Reconnect vent hoses and secure clamps.



= T
Exhaust Valve Mounting Screws: 12 ft-lbs (16 Nm) Apply Loctite® 242™

15. Reinstall the lower steering shaft bushing bracket on to the over structure by loosely installing the two screws. Torque fasteners to specification.

= T
Lower Steering Shaft Bushing Bracket: 15 ft-lbs (20 Nm)

16. Reinstall the steering drag link with the rod ends parallel to each mating surface. Torque nuts to specification.

= T
Steering Drag Link Rod End Nuts: 37 ft-lbs (50 Nm)

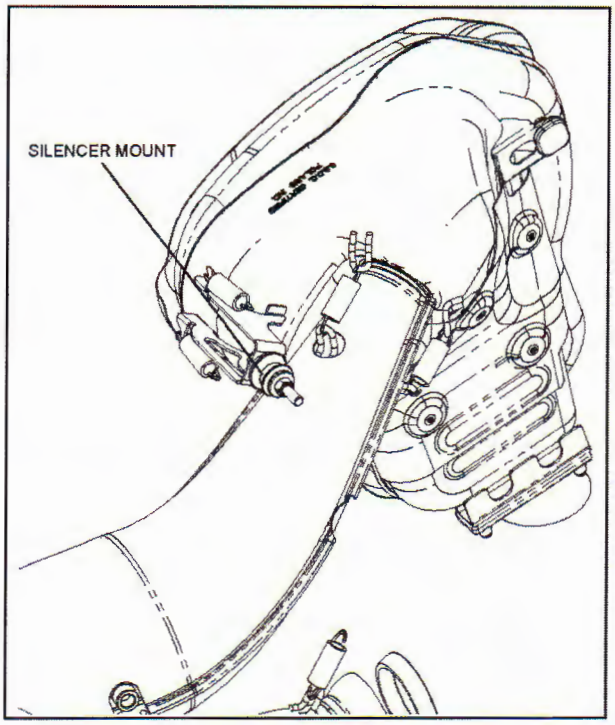
17. If the snowmobile is equipped with electric start, reinstall the battery and reconnect the battery cables. Connect BLACK negative (-) cable first, and then RED positive (+) cable last.

CAUTION
Attach the RED (+) battery cable first, and then the BLACK (-) cable last.

18. Reinstall the exhaust silencer. Verify the silencer outlet tube is installed in the fender boot and that the boot has not been pushed out of the fender.

19. Torque the silencer rubber mount fastener to specification.

NOTE: Install the silencer mount rubber dampener with the fat end facing outwards.



= T
Silencer Mount: 17 ft-lbs (23 Nm)

20. Reinstall the exhaust pipe. Verify the gray springs are installed at the pipe-to-manifold locations.

21. Reconnect the over structure electrical component wire harness connections. Verify the white harness bands are routed so they can be fitted into each respective harness retainers.

22. Clean the PTO clutch taper with emery cloth. Reinstall the drive clutch. Torque fastener to specification.

= T
Drive Clutch Bolt Torque: 80 ft-lbs (108 Nm) Re-torque after running engine.

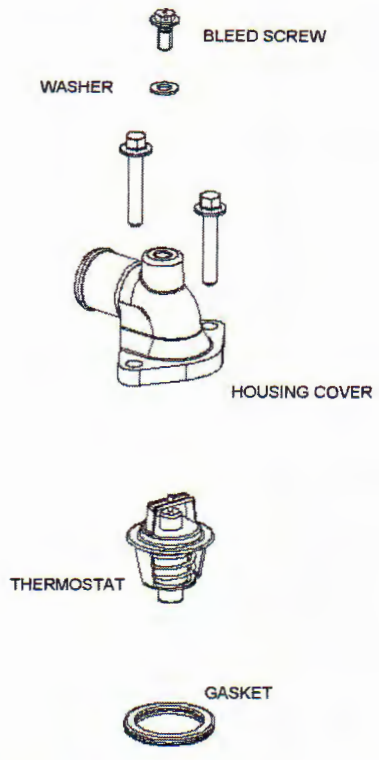
23. Reinstall the driven clutch assembly. Torque fastener to specification.

= T
Driven Clutch Bolt Torque: 18 ft-lbs (25 Nm)

24. Reinstall the drive belt.
25. Reinstall the airbox assembly. Air Box Servicing, page 2.26
26. Reinstall the clutch cover/oil tank assembly. Oil Tank/Clutch Cover Service, page 2.15
27. Fill the coolant surge tank with 60/40 Polaris engine coolant. Follow the Cooling System Fill/Bleed Procedure outlined in Chapter Two. Cooling System Bleeding, page 2.11
28. Reinstall the hood assembly. Door/Hood Removal and Installation, page 2.26
29. Reinstall the left and right door panels.
30. If the engine was rebuilt, follow the engine break-in procedure. Engine Break-In Procedure, page 2.7

COOLING SYSTEM

Thermostat Replacement



CAUTION
Allow engine to cool completely before working with the engine cooling system. Engine coolant can be under pressure and hot. Escaping steam and/or coolant may cause severe burns to exposed skin.

1. Remove the housing cover, by removing the cover bolts.
2. Check the gasket condition and replace if damaged.
3. Replace the thermostat. Make sure that the spring side is facing downward or toward the engine.
4. Replace cover. Torque the cover fasteners to specification.

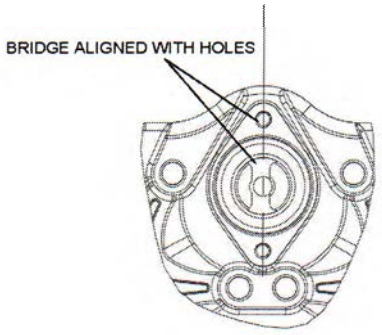
= T
Cover Fasteners: 9 ft-lbs (12 Nm)

5. Verify the bleed screw and washer are installed.

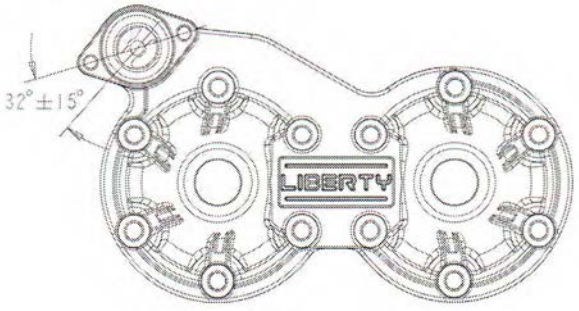
Thermostat Orientation

The thermostat must be installed in the cylinder head as shown in the illustrations.

Center Thermostat Location



Offset Thermostat Location

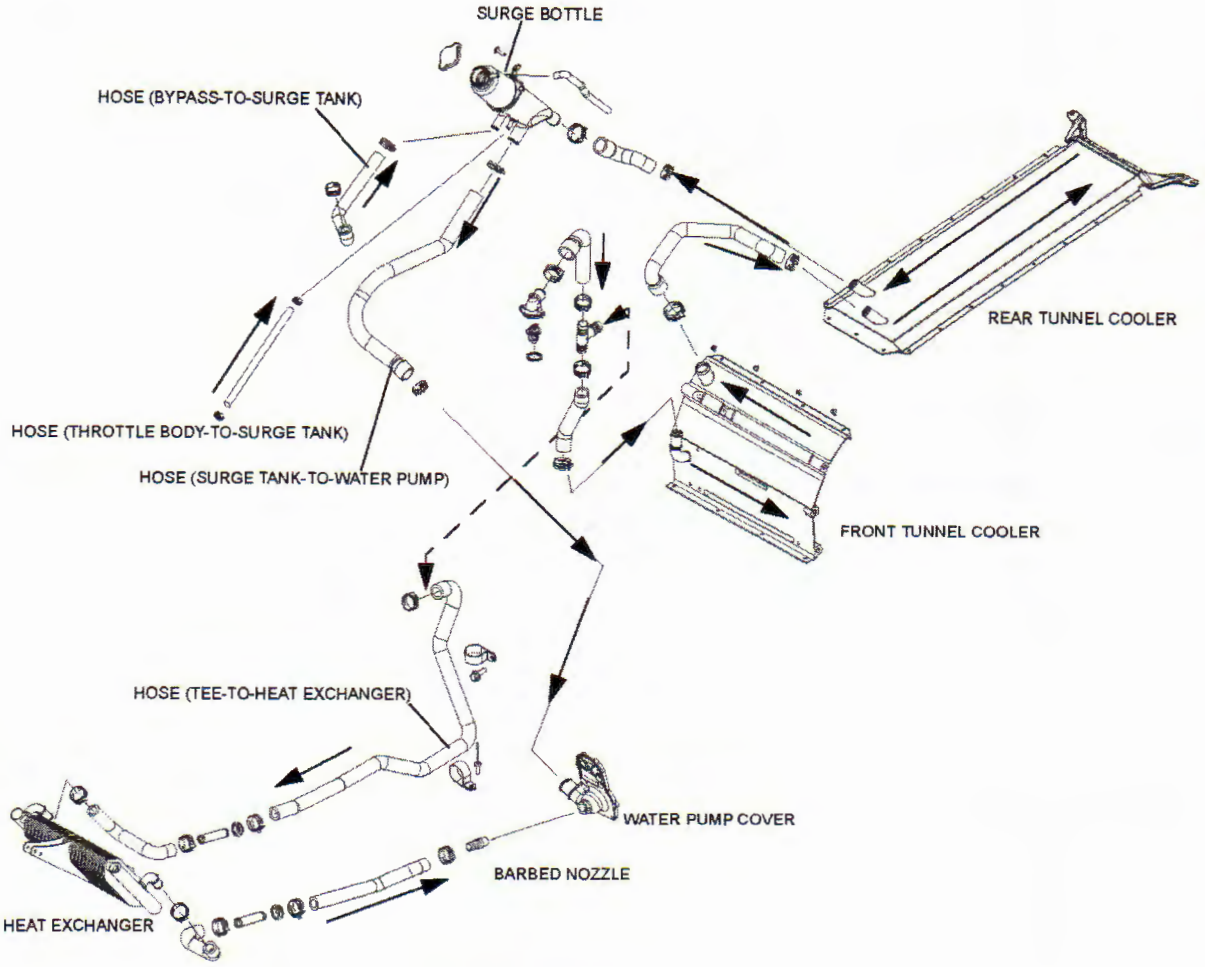


800 Thermostats

There are two different thermostats used depending on what model the engine is installed in.

800 THERMOSTATS		
COOLING SYSTEM TYPE	**THERMOSTAT PN**	**BLEED HOLE ID**
RUSH/Switchback/ INDY	7052433	2 mm
SB Assault/RMK PRO RMK/ RMK Assault	7052452	3.5 mm
Both thermostats are full open at 120°F (49°C).		

2010 600 RUSH Cooling System



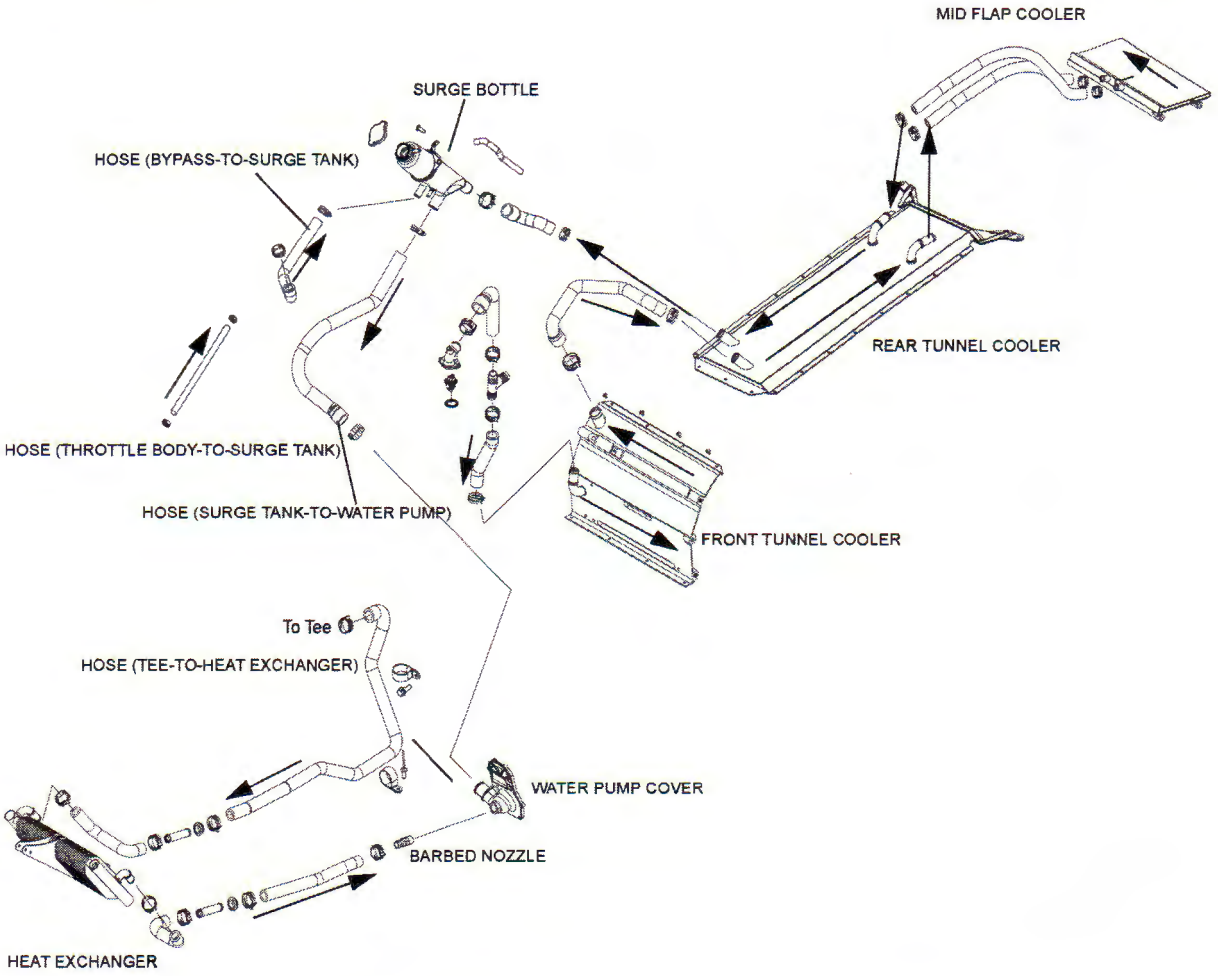
BYPASS CIRCUIT ONLY ACTIVE WHEN THERMOSTAT IS CLOSED
FRONT EXCHANGER, FRONT TUNNEL COOLER, AND REAR TUNNEL COOLER CIRCUITS ACTIVE WHEN THERMOSTAT IS OPEN

NOTE: When the thermostat is closed, engine coolant is bypassed back to the surge bottle.

When the thermostat is open, the bypass circuit is closed. Engine coolant is routed to the front heat exchanger, front tunnel cooler, and rear tunnel cooler.

Thermostat opening temperature is 120° F (49° C).

2011 600 RUSH Cooling System



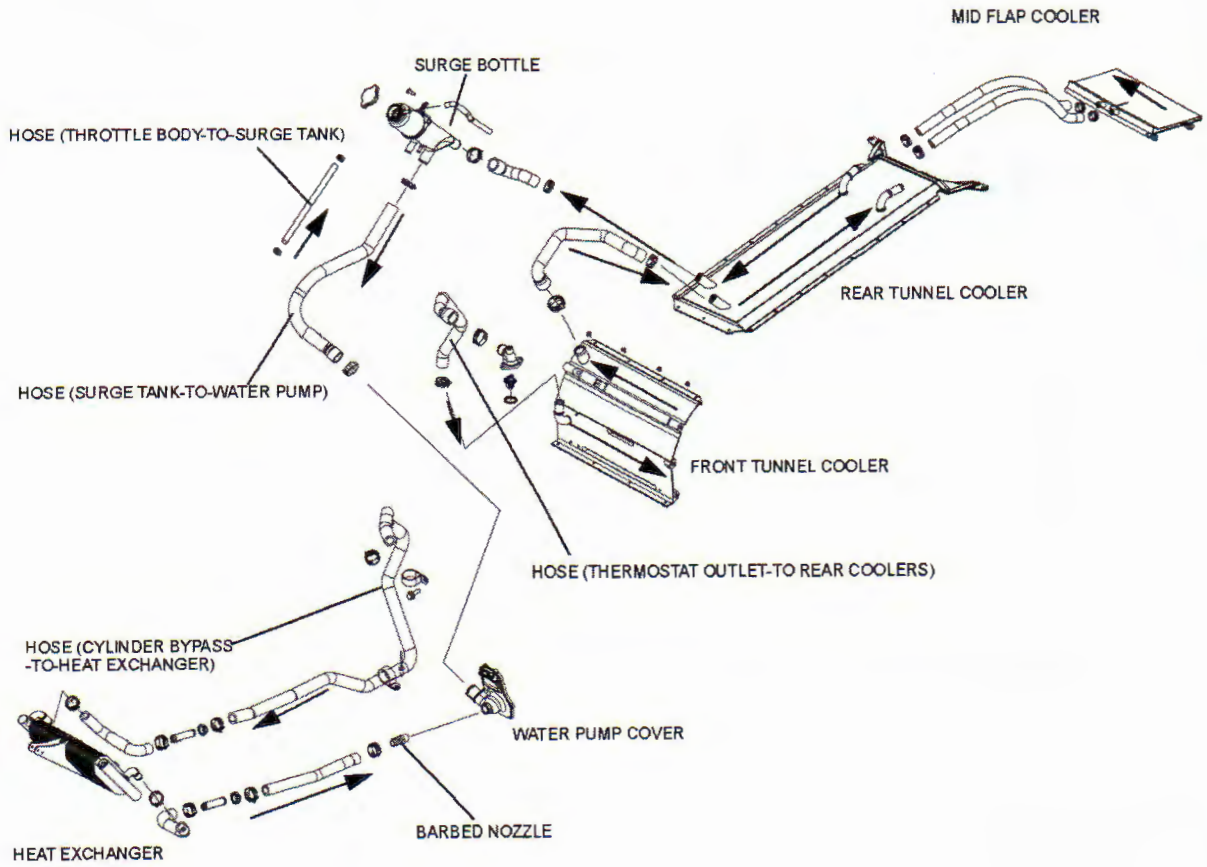
BYPASS CIRCUIT ONLY ACTIVE WHEN THERMOSTAT IS CLOSED
FRONT EXCHANGER, FRONT TUNNEL COOLER, AND REAR TUNNEL COOLER CIRCUITS ACTIVE WHEN THERMOSTAT IS OPEN

NOTE: When the thermostat is closed, engine coolant is bypassed back to the surge bottle.

When the thermostat is open, the bypass circuit is closed. Engine coolant is routed to the front heat exchanger, front tunnel cooler, tunnel cooler, and mid-flap coolers.

Thermostat opening temperature is 120° F (49° C).

2011 800 RUSH Cooling System



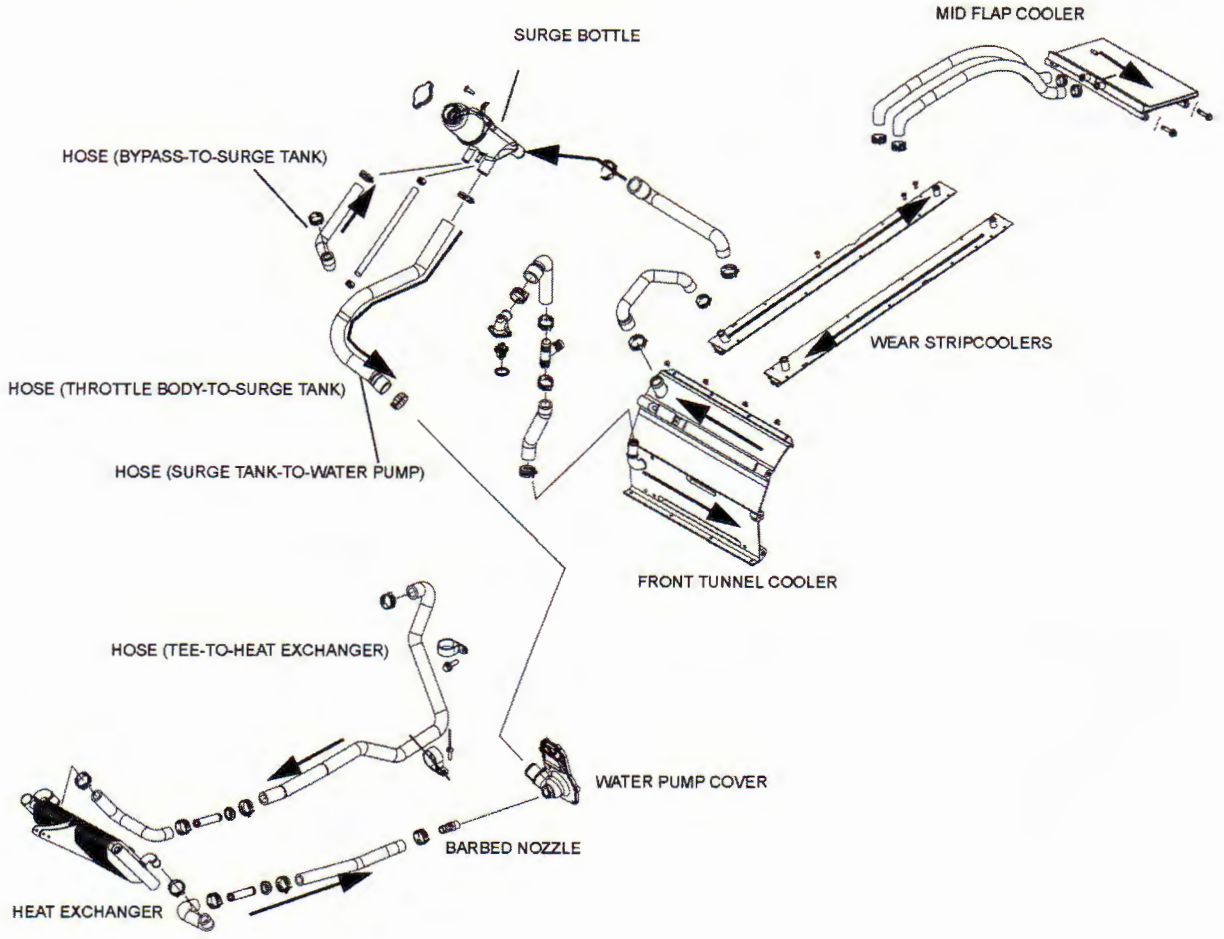
NOTE: Front heat exchanger circuit always active. Front tunnel cooler, tunnel cooler, and mid-flap cooler only active when thermostat is open.

Models feature 2 mm thermostat bleed hole.

Thermostat opening temperature is 120° F (49° C).

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

2012 - Current 600 RUSH / Switchback
Cooling System



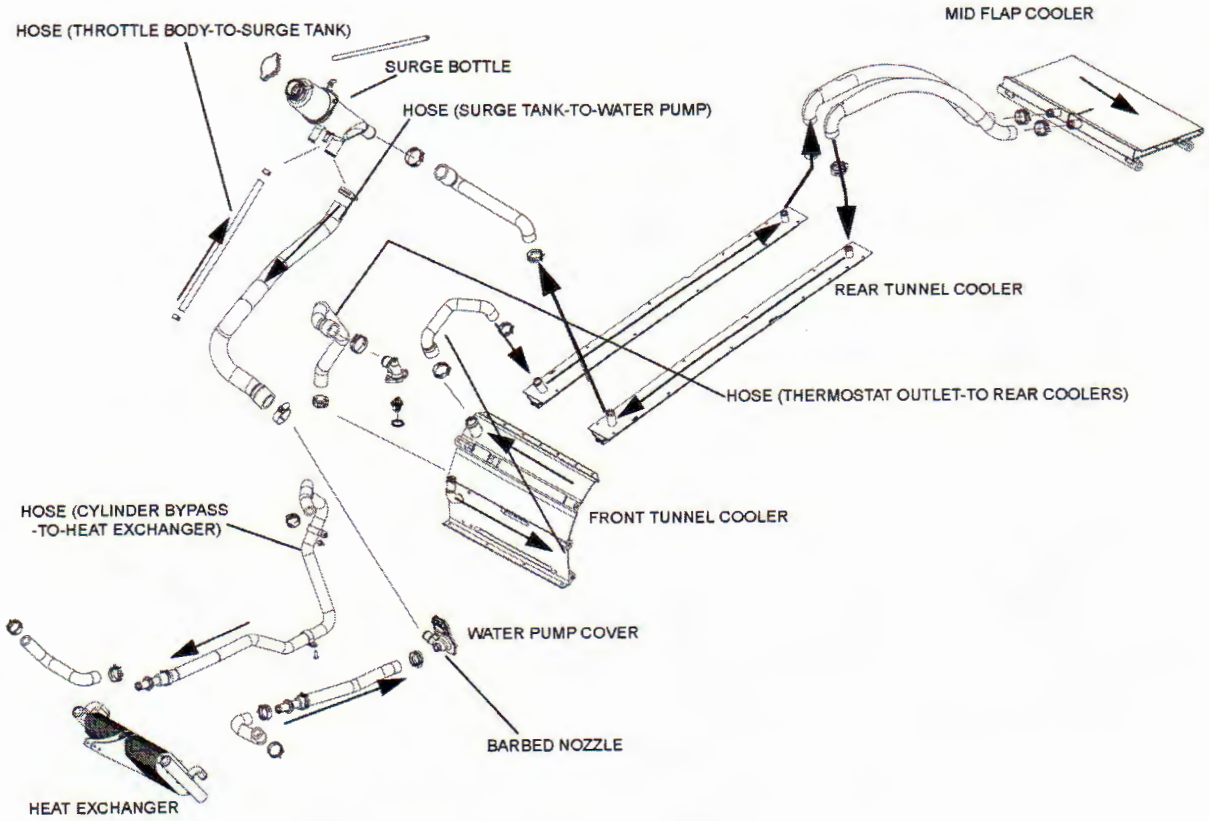
BYPASS CIRCUIT ONLY ACTIVE WHEN THERMOSTAT IS CLOSED
FRONT EXCHANGER, FRONT TUNNEL COOLER, AND REAR TUNNEL COOLER CIRCUITS ACTIVE WHEN THERMOSTAT IS OPEN

NOTE: When the thermostat is closed, engine coolant is bypassed back to the surge bottle.

When the thermostat is open, the bypass circuit is closed. Engine coolant is routed to the front heat exchanger, front tunnel cooler, tunnel coolers, and mid-flap coolers.

Thermostat opening temperature is 120° F (49° C).

2012-Current 800 RUSH / Switchback
Cooling System

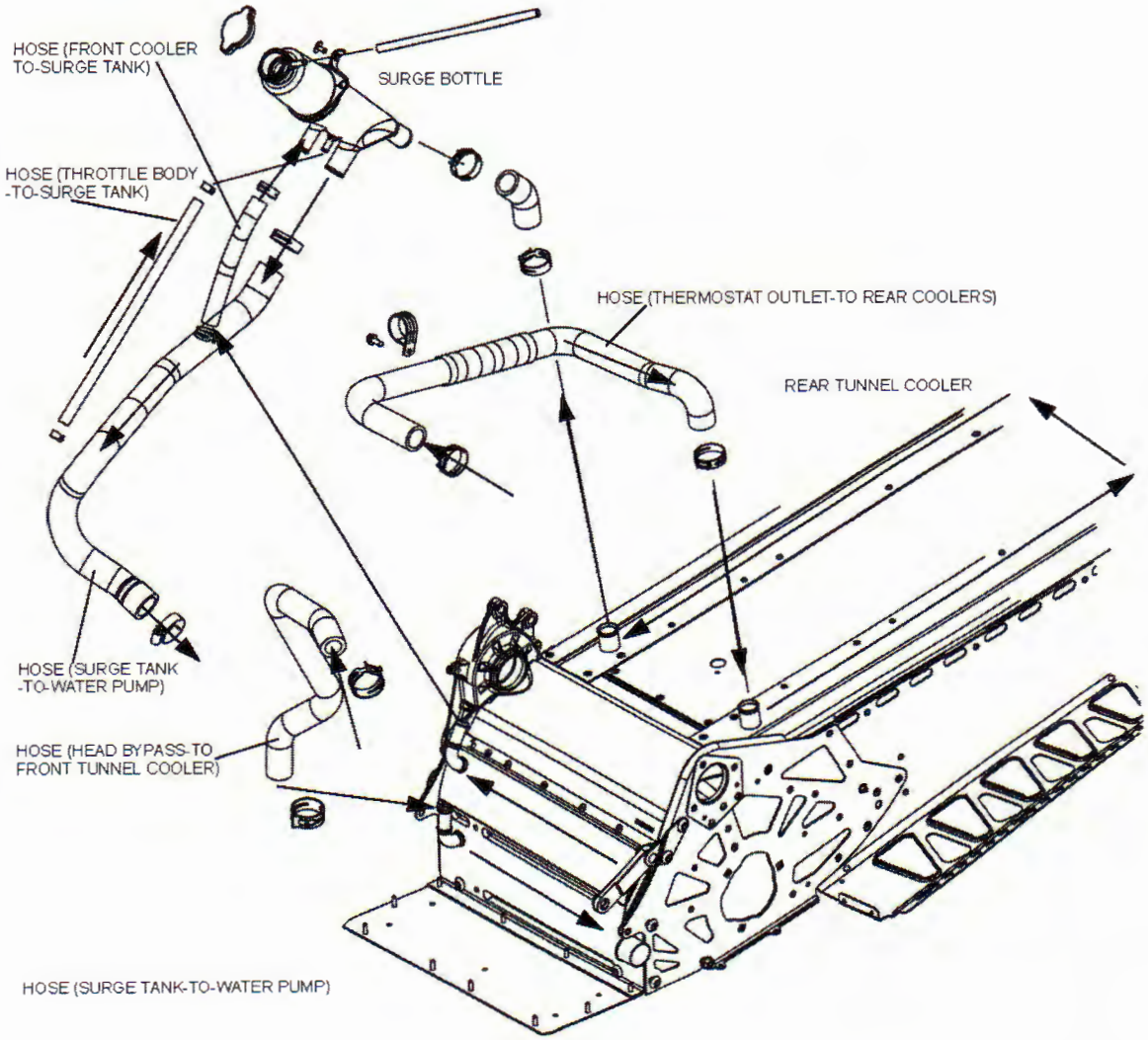


NOTE: Front heat exchanger circuit always active. Front tunnel cooler, tunnel cooler, and mid-flap cooler only active when thermostat is open.

Models feature 2mm thermostat bleed hole.

Thermostat opening temperature is 120° F (49° C).

800 Switchback Assault / Base RMK
Cooling System

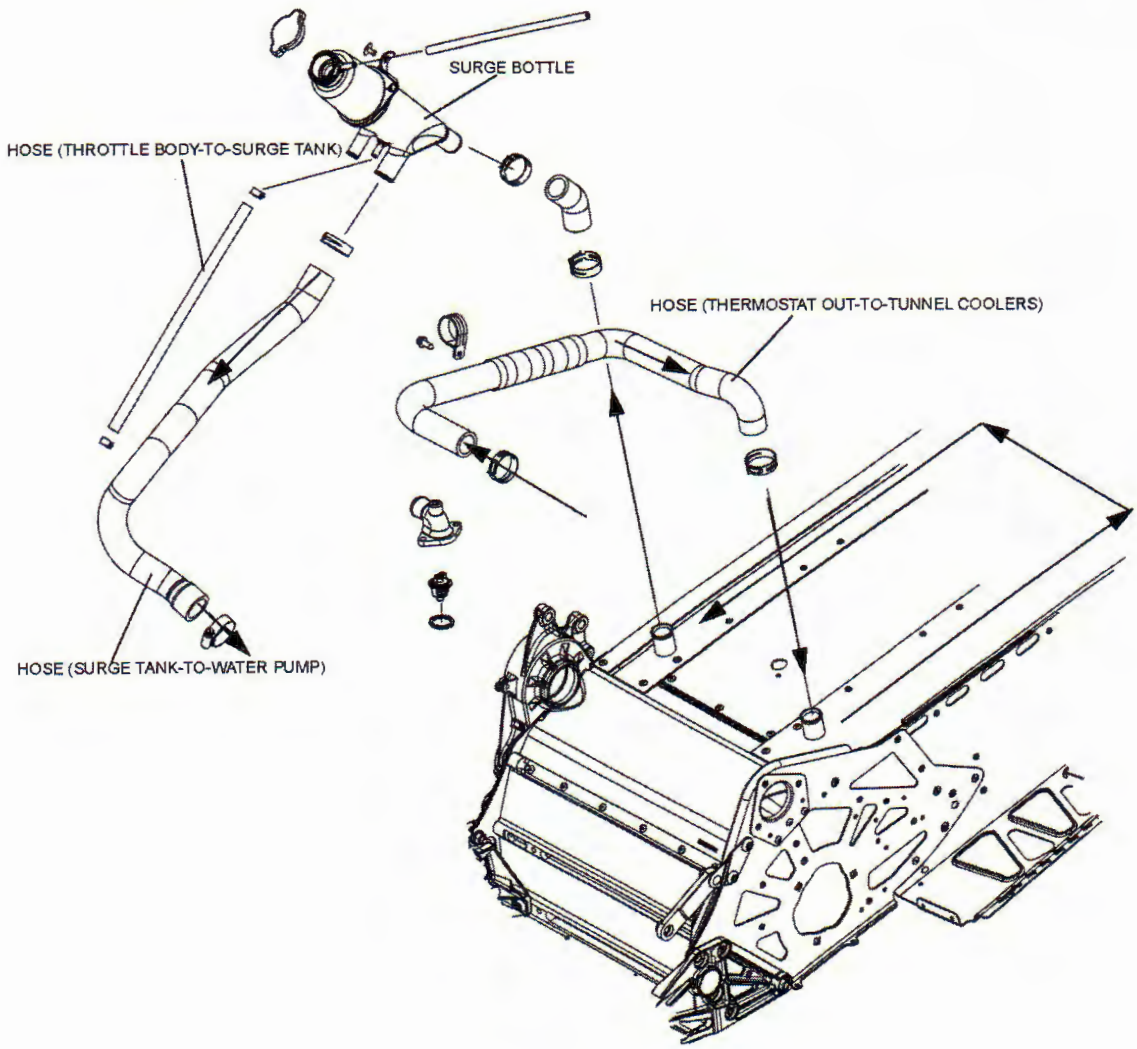


NOTE: Front tunnel cooler circuit always active. Rear tunnel coolers only active when thermostat is open.

Models feature 3.5 mm thermostat bleed hole.

Thermostat opening temperature is 120° F (49° C).

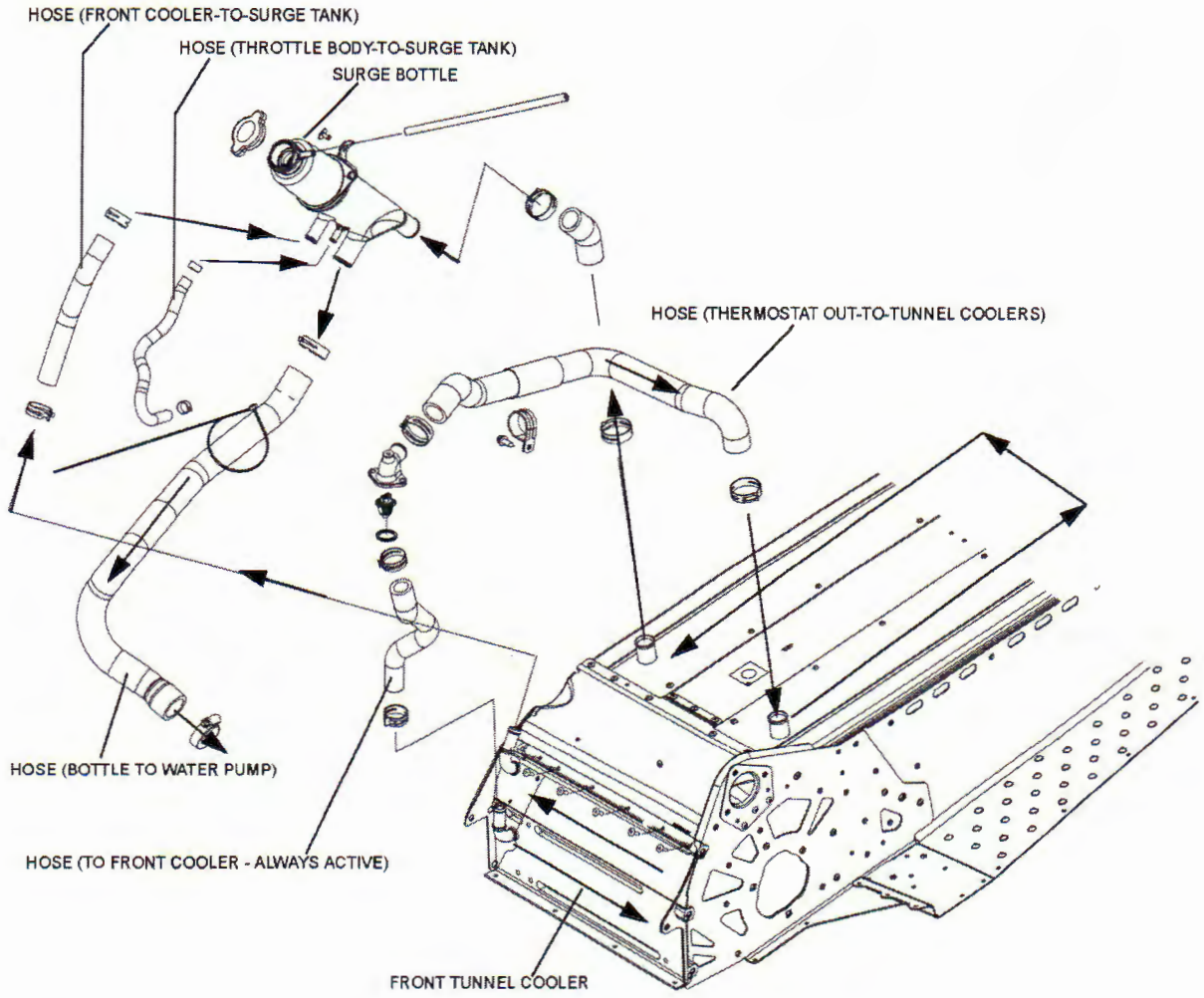
PRO RMK / RMK Assault Cooling System



NOTE: Models feature 3.5 mm thermostat bleed hole. Cylinder head outlet plugged.

Thermostat opening temperature is 120° F (49° C).

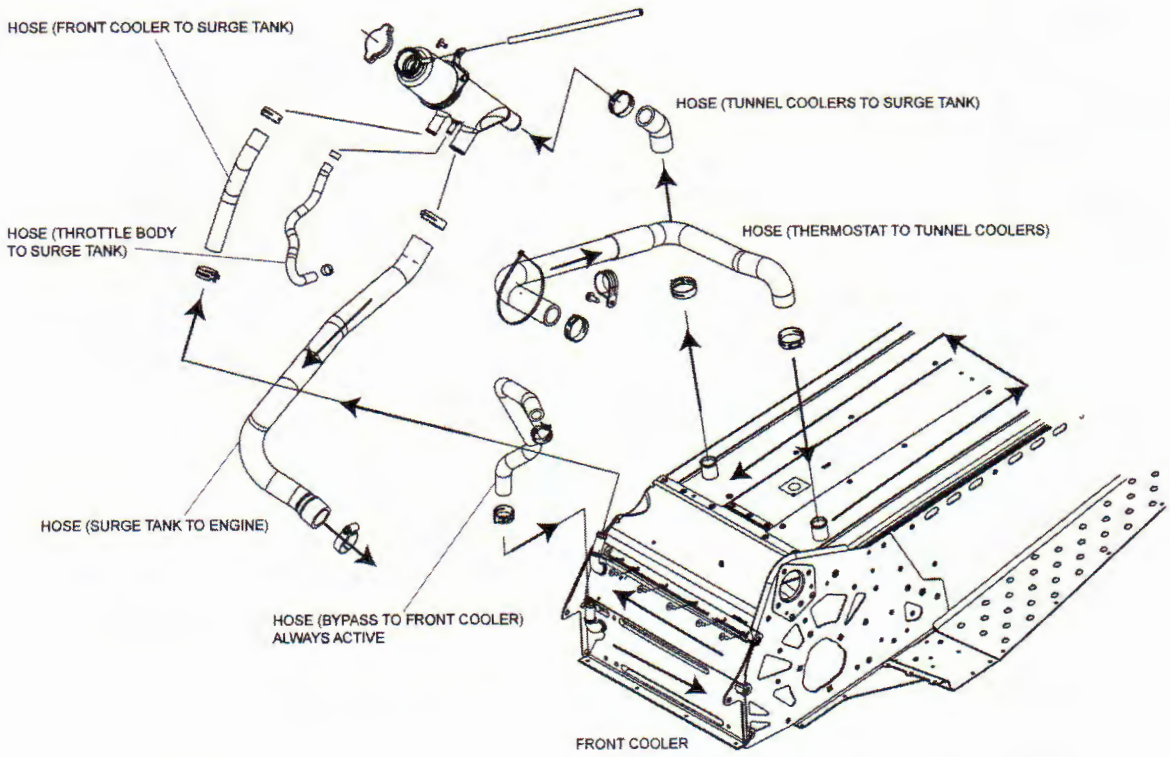
600 INDY / Base RMK / Switchback Assault
Cooling System



NOTE: Models feature 2 mm thermostat bleed hole.
Front tunnel cooler always active.

Thermostat opening temperature is 120° F (49° C).

800 INDY Cooling System

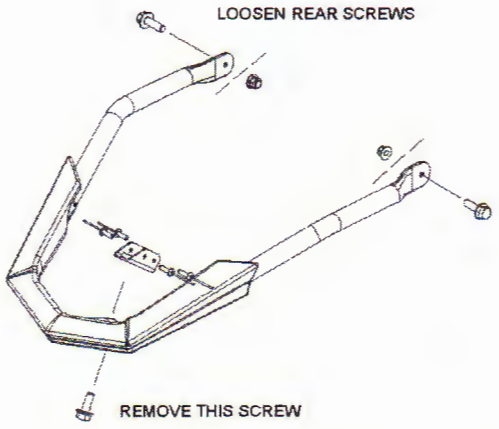


NOTE: Models feature 2 mm thermostat bleed hole.
Front tunnel cooler always active.

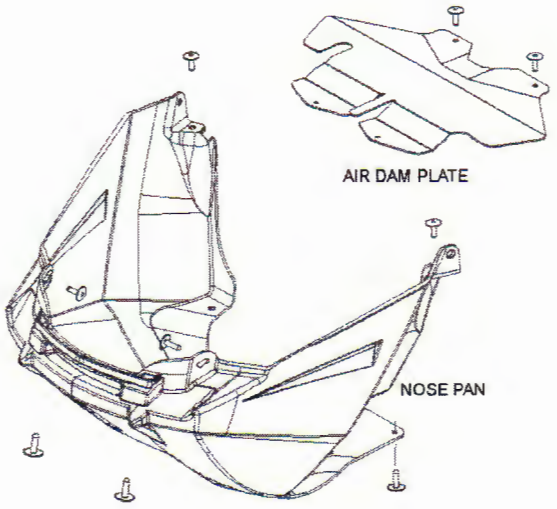
Thermostat opening temperature is 120° F (49° C).

Front Heat Exchanger Service

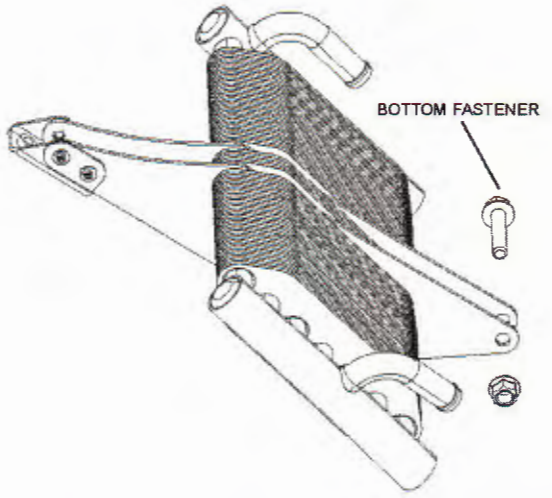
1. Remove the left and right door panels. Remove the hood assembly.
2. Remove the exhaust pipe.
3. Drill out and remove the rivets that attach the air dam plate to the bulkhead, and the two rivets that attach the nosepan to the plate.
4. Remove the screw attaching the bumper to the heat exchanger. Loosen the two rear bumper screws.



5. Drill out the rivets that attach the bumper to the nosepan.
6. Rotate the bumper up and away from the nosepan.
7. Locate the lower exchanger fastener.



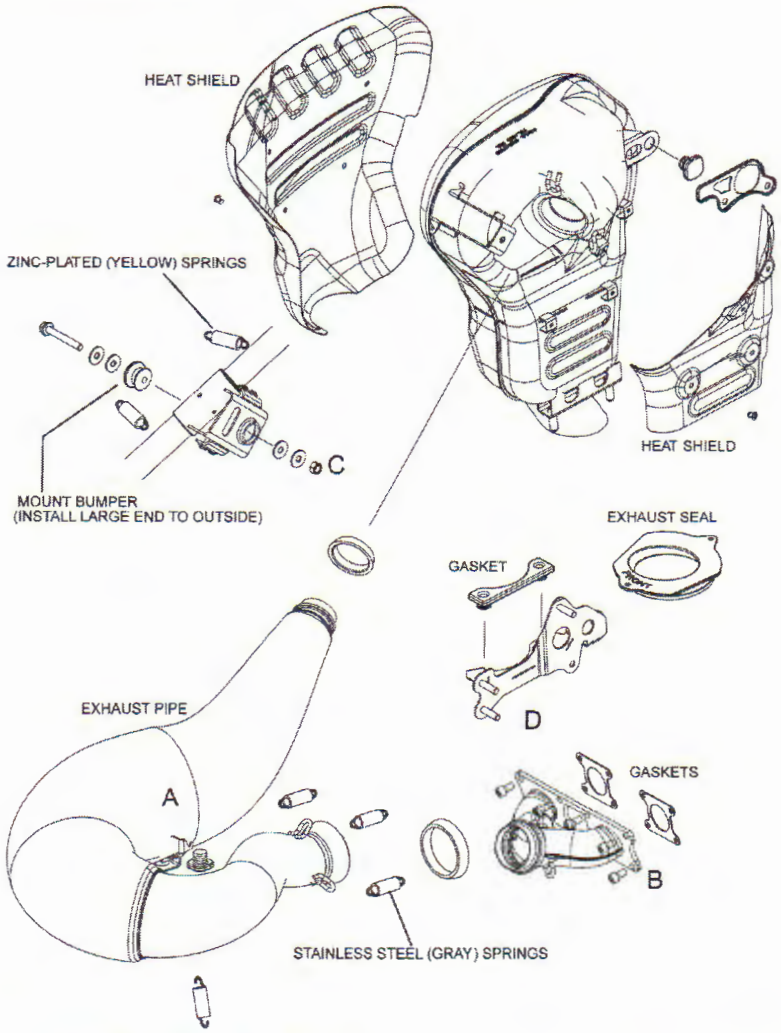
8. Remove the bottom heat exchanger fastener.



9. Pinch-off the coolant in and out hoses using dedicated hose pinchers or soft-jawed pliers.
10. Remove the two heat exchanger hose clamps. Remove the heat exchanger from the bulkhead.
11. Reverse the disassembly process to install the heat exchanger and bumper.
12. Add engine coolant to the surge bottle. Bleed the cooling system. Cooling System Bleeding, page 2.11

EXHAUST SYSTEMS

PRO-RIDE DC-CFI-4 Exhaust System

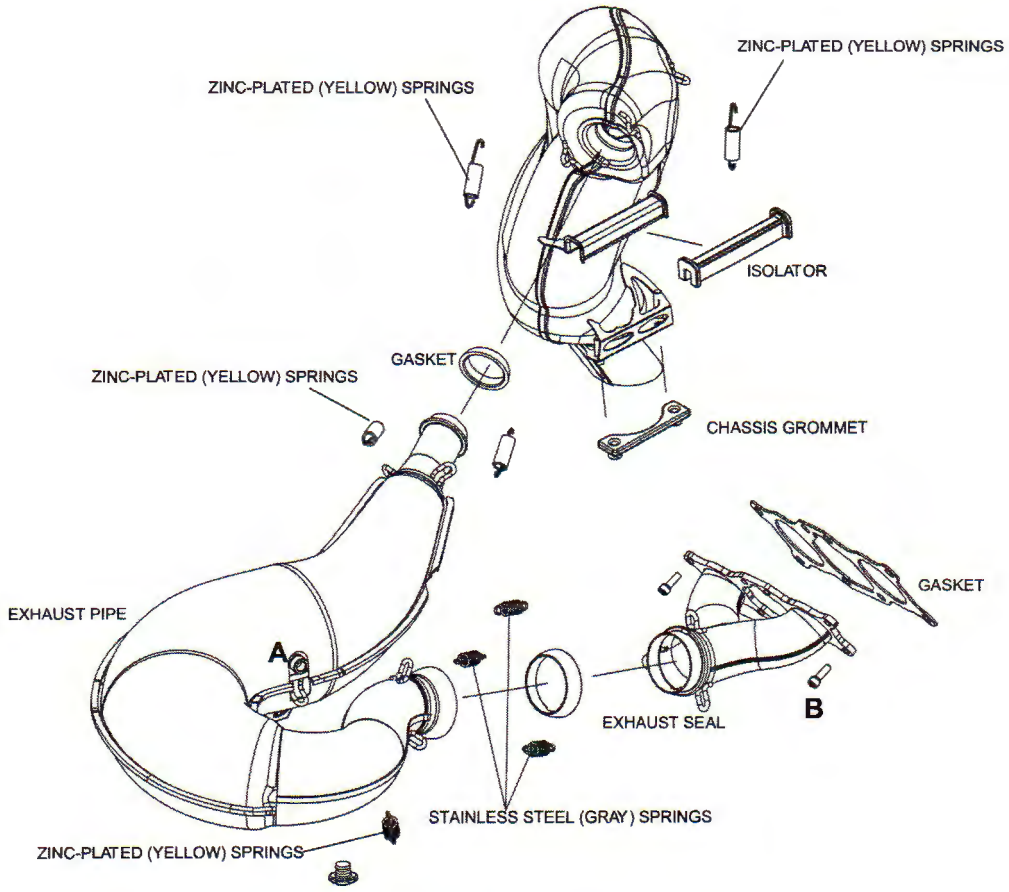


= T
A: EGT Sensor: 32 ft-lbs (44 Nm) Apply anti-seize to threads. B: Exhaust Manifold Fasteners: 22 ft-lbs (30 Nm) C: Silencer Rubber Mount Fastener = 17 ft-lbs (23 Nm) D: Silencer Bracket Fasteners = 26 ft-lbs (35 Nm)

NOTE: Always use the stainless steel (gray) springs to connect the exhaust pipe to the exhaust manifold.

When removing the exhaust pipe, disconnect the EGT probe wire harness. Do not remove the EGT probe from the pipe if not necessary.

PRO-RIDE DC-CFI-2 Exhaust System

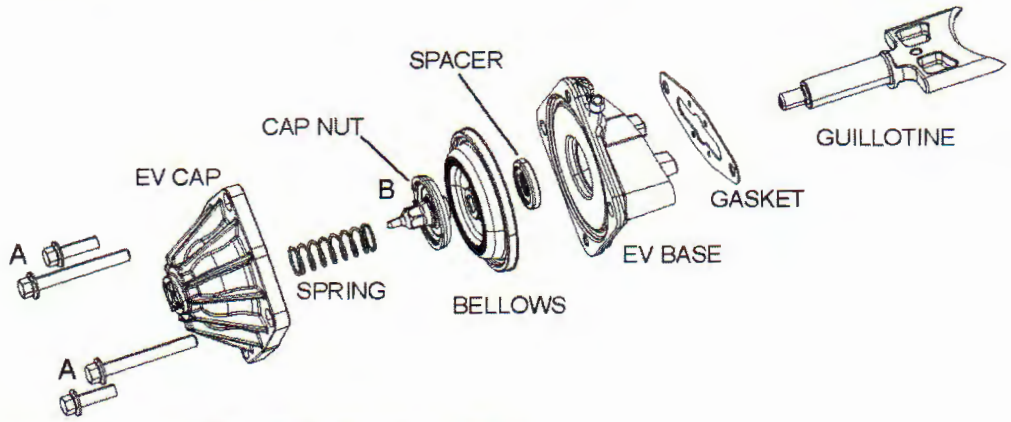


= T
A: EGT Sensor: 32 ft-lbs (44 Nm) Apply anti-seize to threads. B: Exhaust Manifold Fasteners: 22 ft-lbs (30 Nm)

NOTE: Always use the stainless steel (gray) springs to connect the exhaust pipe to the exhaust manifold.

When removing the exhaust pipe, disconnect the EGT probe wire harness. Do not remove the EGT probe from the pipe if not necessary.

Variable Exhaust System (VES)-Threaded Valve

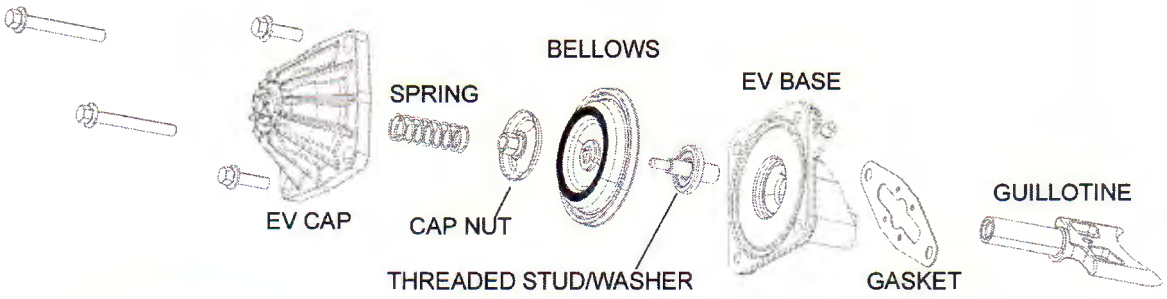


= T
EV Cap Screws (A): 10.5-13.5 ft-lbs (14.3-18.3 Nm) Apply Loctite® 242™ to cylinder screws. Cap Nut (B): 14-18 ft-lbs (19.1-24.5 Nm) Apply Loctite® 242™ to threads.

Assembly Notes:

- Replace spring if rusted, bent, or distorted
- Inspect bellows for tears.
- Inspect guillotine threads and cap nut threads for wear/galling. Replace parts as required.
- Discard gasket. Replace with new parts during assembly.
- Clean components as outlined in Chapter 2-Maintenance.

Variable Exhaust System (VES)-Threaded Stud

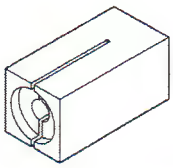


= T
EV Cap Screws(A): 10.5-13.5 ft-lbs (14.3-18.3 Nm) Apply Loctite® 242™ to cylinder screws. Cap Nut/Threaded Stud Asm.(B): 18-22 ft-lbs (24.5-29.9 Nm) Apply Loctite® 242™ to threaded stud threads.

Assembly Notes:

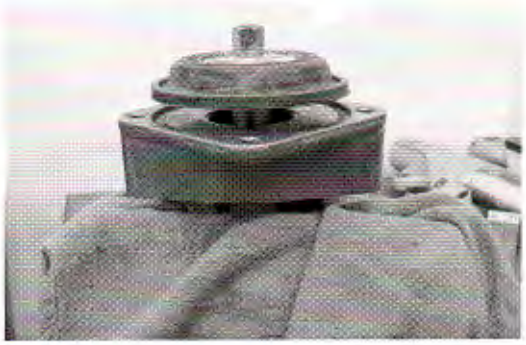
- Replace spring if rusted, bent, or distorted
- Inspect bellows for tears.
- Inspect threaded stud, cap, guillotine threads and cap nut threads for wear/galling. Replace parts as required.
- Discard gasket. Replace with new parts during assembly.
- Clean components.

Special Tool:



Use special tool: PS-50753 to disassemble the cap nut, bellows and threaded stud/washer assembly.

To disassemble guillotine components, clamp blade in soft-faced bench vise. Loosen cap nut.



If the complete assembly un-screws from the guillotine, use special tool PS-50753 to clamp the threaded stud/ washer in the bench vise.

During reassembly, apply Loctite® 242™ to the threaded stud/washer guillotine and cap nut threads. Loosely install the threaded stud/washer, bellows, and cap nut. Torque only cap nut to specification to fasten all components.

NOTE: A new threaded stud/washer has pre-applied thread lock. No Loctite® is required.

CHAPTER 4
CFI FUEL INJECTION

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

SERVICE WARNINGS AND PRECAUTIONS

Service Warnings

When servicing the fuel system, it is important to heed the following warnings.

⚠ WARNING

PROPOSITION 65 WARNING
Snowmobile engines discharge fuel and exhaust which contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm, onto the snow on which they operate. Keep this engine properly tuned and avoid unnecessary idling and spillage during fueling.

Do not smoke or allow open flames or sparks in or near the area where refueling is performed or where gasoline is stored or used.

Do not overfill the tank past the bottom of the filler neck.

If you get gasoline in your eyes or if you swallow gasoline, see your doctor immediately.

Never start the engine or let it run in an enclosed area.

Gasoline powered engine exhaust fumes are poisonous and can cause loss of consciousness and death in a short time.

If you spill gasoline on your skin or clothing, immediately wash it off with soap and water and change clothing.

⚠ WARNING

* Gasoline is extremely flammable and explosive under certain conditions.
* EFI components are under high pressure. Verify system pressure has been relieved before disassembly.
* Never drain the fuel system when the engine is hot. Severe burns may result.
* Do not overfill the tank. The tank is at full capacity when the fuel reaches the bottom of the filler neck. Leave room for expansion of fuel.
* Never start the engine or let it run in an enclosed area. Gasoline powered engine exhaust fumes are poisonous and can cause loss of consciousness and death in a short time.
* Do not smoke or allow open flames or sparks in or near the area where refueling is performed or where gasoline is stored.
* If you get gasoline in your eyes or if you should swallow gasoline, seek medical attention immediately.
* If you spill gasoline on your skin or clothing, immediately wash with soap and water and change clothing. * Always stop the engine and refuel outdoors or in a well-ventilated area.

CAUTION

Never use fuel containing more than 10% ethanol or E85 fuels.

All fuel injectors must share the same color code (Yellow, Blue, or Red).

Always verify the fuel injector part number prior to installation.

ENGINE PROTECTION FEATURES

DC-CFI Engine Temperature Protection Modes

The ECU will illuminate the instrument cluster engine hot LED when it determines the engine is overheating. The ECU will flash the TEMP. LED and either enable a RPM misfire or shut-off the engine if it determines continued engine operation will cause serious engine damage. The ECU makes this determination based on current engine coolant temp, engine RPM, and throttle position.

2010 – 2014 ENGINE TEMPERATURE LIMIT MODES		
MODEL	**HOT LAMP**	**THRESHOLD***
600/800 DC-CFI 2/4	Hot Lamp ON	Hot Lamp Illuminates: Idle = 230° F / 110° C WOT = 185° F / 85° C
	Hot Lamp FLASH	Hot Lamp Flashes RPM Misfire at: Idle = 239° F / 115° C WOT = 208° F / 98° C
* = Only minimum (idle) and maximum (WOT) parameters listed.		

2015 – CURRENT ENGINE TEMPERATURE LIMIT MODES		
MODEL	**HOT LAMP**	**THRESHOLD***
600/800 DC-CFI 2/4	Hot Lamp ON	Hot Lamp Illuminates: Idle = 201° F / 94° C WOT = 185° F/ 85° C
	Hot Lamp FLASH	Hot Lamp Flashes Engine Shut-Off: Idle = 215° F / 102° C WOT = 201° F / 94° C
* = Only minimum (idle) and maximum (WOT) parameters listed.		

The driver must take immediate action to cool the engine once the hot LED is illuminated. Drive the snowmobile in loose, unpacked snow to cool the engine. If trail conditions are poor, turn the engine off and allow it to cool.

When the engine is cool, check the coolant level in the surge bottle (reservoir). Only add coolant when the engine is sufficiently cooled. Never add coolant when engine is hot.

If the snowmobile must be operated while the indicator LED is illuminated, drive slowly and stop the engine frequently to allow it to cool down.

Continued engine operation with the engine hot LED illuminated may cause serious engine damage. If the ECU determines serious engine damage may occur, the hot lamp will flash and an engine RPM misfire or engine shut-down will be enabled.

The ECU will also register and accumulate (count the number of occurrences) DTCs (110/0 or 110/16) if the engine overheats or goes into the overheat misfire mode.

Engine Overheating Troubleshooting

If the hot lamp is illuminated or flashing with the engine overheat RPM misfire enabled, reference the table below.

ENGINE OVERHEATING TROUBLESHOOTING	
CAUSE OF OVERHEAT	**SOLUTION**
Riding in poor conditions	Ride snowmobile on good snow (loose, fresh, unpacked snow)
Low coolant level	Allow engine to cool. Refill coolant surge bottle to COLD line
Incorrect coolant/mix ratio	Verify correct coolant mixture is used.
Air in cooling system	Bleed cooling system
Heat exchangers/hoses damaged or plugged	Inspect components for damage, hose kinks, etc.
Thermostat malfunctioning	Inspect thermostat for proper operation
Water pump malfunctioning	Inspect coolant flow
Cylinder base gaskets / O-rings damaged.	Pressure test cooling system. Verify system holds pressure/pressure does not leak into cylinders
Snow flap damaged or removed	Inspect rear snow flap assembly. Verify flap(s) are not damaged or missing
Vehicle use	Verify vehicle is not overloaded during operation (high load/high engine RPM and low ground speed)
Track condition/tension	Verify track is not missing lugs. Set correct track tension

DC-CFI Detonation (DET) Protection Modes

When DET is sensing and taking action to reduce detonation, the driver may notice a drop in engine RPM and/or reduced performance.

The ECU will illuminate the instrument cluster check engine LED and display "dET" on the LCD screen whenever the DET system is active.

If the ECU determines the detonation cannot be controlled by normal means and further operation may cause engine damage, the check engine LED will flash, the instrument cluster will display "dET", and the ECU will either limit the maximum engine speed to 6,500 RPM or shut-off the engine. If the ECU limits RPM, the limit will remain active until the driver turns off and restarts the engine.

If the detonation RPM limit occurs, a diagnostic trouble code (DTC) will be registered. Digital Wrench® will display one of the following codes: 1352/0 (P1336), 1352/16 (P2336), 1353/0 (P1337), or 1353/16 (P2337).

2010 – 2014 DET PROTECTION RPM LIMIT MODES		
MODEL	**CHECK ENGINE LED / INSTRUMENT CLUSTER MODE**	**RPM LIMIT**
600/800 DC-CFI-2/4	Check engine LED illuminated/ "dET" displayed on LCD	Driver may notice slight drop in engine RPM/power
	Check engine LED flashing/ "dET" displayed on LCD	6,500 RPM Misfire Turn off engine to reset.

2015 – CURRENT DET PROTECTION RPM LIMIT MODES		
MODEL	**CHECK ENGINE LED / INSTRUMENT CLUSTER MODE**	**RPM LIMIT**
600/800 DC-CFI-2/4	Check engine LED illuminated/ "dET" displayed on LCD	Driver may notice slight drop in engine RPM/power

2015 – CURRENT DET PROTECTION RPM LIMIT MODES		
MODEL	**CHECK ENGINE LED / INSTRUMENT CLUSTER MODE**	**RPM LIMIT**
	Check engine LED flashing/ "dET" displayed on LCD	Engine Shut-Off Engine restart resets mode.

DET Troubleshooting

If the check engine LED is illuminated and/or flashing with "dET" displayed on the instrument cluster, reference the following table.

NOTE: A DET Troubleshooting flowchart is located at the end of the chapter.

CAUSE OF DET ACTIVATION	SOLUTION
Low fuel/no fuel in tank	Refill tank with recommended fuel
Incorrect ethanol/non-ethanol fuel resistor installed	Verify correct fuel selector resistor installed for fuel type in tank
Poor quality fuel/water in fuel	Replace with higher quality fuel. Recommended 91 octane minimum
Alcohol-based fuel additives used with ethanol fuel	Do not use deicers or additives that contain any form of alcohol when using ethanol-blended fuel
Restricted fuel filter	Replace fuel filter
Low fuel pressure	Verify fuel pressure is 58 psi (4 BAR) at idle and while riding
Low fuel injector voltage	Verify fuel injection circuit is at 16 VDC when engine is running
Faulty/plugged fuel injector	Use Digital Wrench® to troubleshoot
VES system malfunctioning	Verify valves are not stuck open, vent hoses are not frozen or plugged
Knock sensor malfunctioning	Verify knock sensor screw torque is set to specification
Air leaks	Verify air intake system is sealed. Check throttle body boots for cracks/ tears/loose parts. Remove after-market air intake system.
Engine/exhaust modifications	Remove modifications
Engine coolant temperature high	Check cooling system. Ride snowmobile on loose, un-packed snow
Mechanical failure	Verify crankcase seals are good (not leaking). Verify engine in good condition. Check spark plugs.

CLEANFIRE FUEL INJECTION

System Overview

System components include:

- **ECU:** The ECU controls the ignition / fuel injection angle, chassis/battery relays, and supplies the MFD gauge with tachometer, water temperature, PERC, HOT, DET, and diagnostic information.

CAUTION

CFI and DC-CFI ECUs cannot be interchanged. Serious engine damage may occur.

- **Stator**: Stator lighting charge coil split into two independent circuits; one for DC power (Chassis) and one for AC power (Lighting).
- **Flywheel**: Flywheel is forged. Fan cover is removed from flywheel.
- **CFI Regulator / Rectifier**: Supplies power to the ECU, fuel pump "boost power", MFD, LED tail lamp, and accessory DC power points.
- **Capacitor**: The capacitor suppresses voltage spikes and ensures consistent voltage throughout the DC-CFI (RED-RED/WHT) circuits.
- **Chassis Relay**: The chassis relay on DC-CFI models supplies power to the MFD gauge, accessory plug and DC power test plug.
- **Ignition Coils**: Provide ignition energy to each spark plug. Both coils are fired at the same time.
- **Fuel Injectors (4 Injector)**: This system features a set of fuel injectors mounted to the crankcase, and a set of fuel injectors mounted to the cylinders (ports).
- **Fuel Injectors (2 Injector)**: This system features a set of fuel injectors mounted to the cylinders (ports).
- **Detonation Sensor:** Located on the cylinder head, the detonation sensor transforms internal acoustic information into a signal the ECU uses to determine the amount of engine knock.
- **Exhaust Valve Solenoid**: Activated by the ECU, the solenoid controls the VES venting. When powered, the solenoid is open allowing cylinder pressure to vent, and the exhaust valves remain closed (down). When power is removed, the solenoid closes and the exhaust valves will lift.
- **Throttle Position Sensor (TPS)**: The TPS relays the position of the throttle plates (operator throttle input) to the ECU.
- **Coolant Temperature Sensor**: Relays the engine temperature to the ECU.
- **Exhaust Temperature Sensor**: Relays the temperature of the exhaust pipe to the ECU.
- **Temperature / Manifold Air Pressure**
- **(T-MAP) Sensor**: Relays the current intake air temperature and ambient air pressure to the ECU. The sensor is located on the airbox.
- **Vehicle Speed Input**: The ECU monitors the vehicle speed supplied by the vehicle speed sensor.
- **Fuel Pump**: Supplies fuel to the fuel injectors. Power to the fuel pump is supplied by the regulator / rectifier.
- **Diagnostic Connector**: The ECU can communicate with the Polaris Digital Wrench® software and can be re-flashed, monitored and will display trouble codes.
- **AC Regulator/Battery Charge Rectifier:** The head lamps and hand/thumb warmers are powered by AC voltage. If snowmobile is equipped with electric start, the regulator/rectifier supplies DCV to charge the battery.

Special Tools

Special tools may be required to perform some fuel system test and repair procedures. Tools can be obtained through Polaris's official tool supplier.

Bosch Automotive Service Solutions 1-800-345–2233 or https://polaris.service-solutions.com

Fuel Select Feature

CAUTION

Always verify the ETHANOL resistor plug is installed in the selector plug if unsure of fuel type. Severe engine damage may occur if the PREMIUM resistor plug is installed when using ethanol-blended fuel.

Never use fuels containing more than a 10% ethanol blend.

DC-CFI - 2 / 4 models allow the operator to select between 91+ octane non-oxygenated fuels or <91 octane or oxygenated fuels.

The fuel selector resistor plug is located on the main wiring harness attached to the over structure behind the left-side door panel

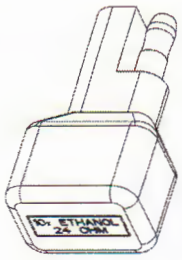
When using <91 octane, oxygenated, or when unsure of the fuel type inside the fuel tank, plug the 10% ETHANOL / 24 OHM resistor into the fuel selector plug.

When using 91+ non-oxygenated fuels, install the NON-ETHANOL / 160 OHM resistor into the fuel selector plug.

2010 - 2011 Fuel Selector Plugs

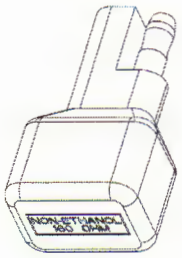
<91/10% ETHANOL / 24 OHM Resistor Plug

Part Number =2411280 (Installed at the factory.)



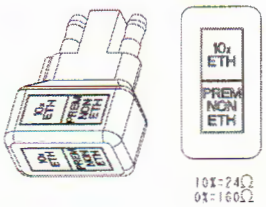
91+ NON-ETHANOL / 160 OHM Resistor Plug

Part Number =2411282 (Included in tool kit.)



2012 Dual Fuel Selector Plug

2012 - current models are equipped with one fuel selector plug featuring dual resistors. The part number for the plug is 2411631 and it can be used on all DC-CFI models.



9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

Instrument Cluster Fuel Selector

CAUTION

Always verify ETHANOL is selected on the instrument cluster if unsure of fuel type. Severe engine damage may occur if PREMIUM mode is selected when using ethanol-blended fuel.

Never use fuels containing more than a 10% ethanol blend.

The fuel selector feature is built into the instrument clusters on all 2013 – Current PRO-RIDE models.

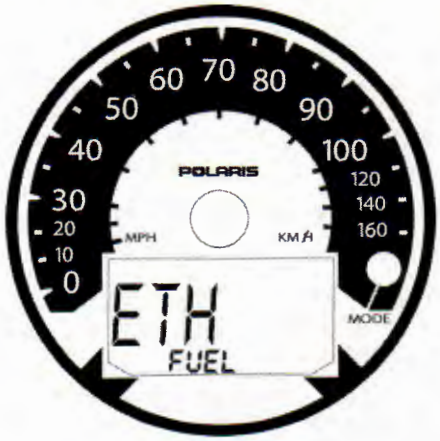
When using <91 octane, oxygenated, or when unsure of the fuel type inside the fuel tank, set gauge to "ETH" mode.

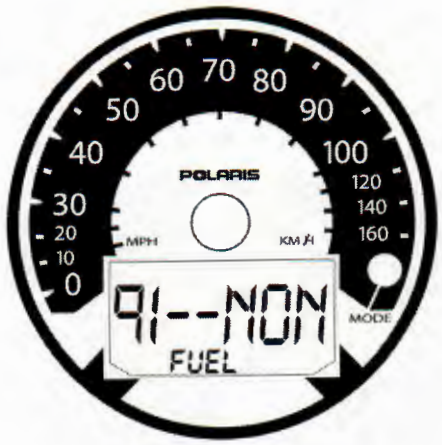
When using 91+ non-oxygenated fuels, set gauge to

"91–NON mode".

Analog/Digital Instrument Cluster:

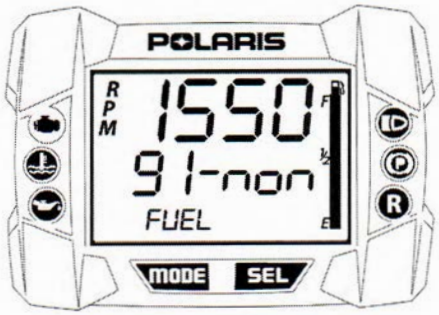
1. Start the engine.
2. Lock the parking brake.
3. Press and release the MODE button on the left handlebar control until either "ETH" or "91–NON" is displayed on the instrument cluster.
4. Press and hold the MODE button on the left handlebar control to change between fuel settings.

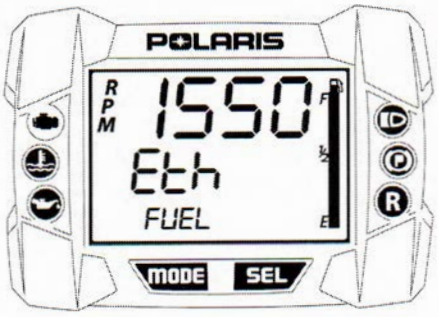




Digital Instrument Cluster:

1. Start the engine.
2. Lock the parking brake.
3. Press and release the "SEL" button on the gauge or the "SET" button on the left hand control until either "Eth" or "91–non" is displayed in the lower section of the instrument cluster.
4. Press and hold the "SEL" button on the gauge or the "SET" button on the left hand control until the desired fuel type is displayed on the screen.





Diagnostic Trouble Codes (DTCs)

TROUBLE CODE	SPN	FMI	P-CODE	MIL	DESCRIPTION
Throttle Position Sensor Abnormal Rate of Change	51	10	P0120	ON	TPS signal changes too rapidly to be correct.
Throttle Position Sensor Voltage High		3	P0123		TPS signal is above 4.39 VDC.
Throttle Position Sensor Voltage Low		4	P0122		TPS signal is below 0.7 VDC.
Vehicle Speed Sensor	84	2	P0503	2010-ON	Data erratic or intermittent (missing).
Oil Level Switch	98	17	P250F	ON	Oil level is low. Sensor disconnected or oil level fell below switch level.
Intake Air Temperature Circuit Voltage High	105	3	P0113		Sensor signal is above 4.9 VDC.
Intake Air Temperature Circuit Voltage Low		4	P0112		Sensor signal is below 0.19 VDC.
Barometric Pressure Sensor Voltage High	108	3	P2229		Sensor signal is above 3.23 VDC.
Barometric Pressure Sensor Voltage Low		4	P2228		Sensor signal is below 1.25 VDC.
Engine Coolant Temperature Sensor Voltage High	110	3	P0118		Sensor signal is above 4.8 VDC.
Engine Coolant Temperature Sensor Voltage Low		4	P0117		Sensor signal is below 0.1 VDC.
Coolant Temperature Too High		16	P0217		Code is set and occurrences accumulated (counted) in ECU whenever engine temperature hot lamp is illuminated.
Engine Overheat Shutdown (Misfire)		0	P1217		Code is set and occurrences accumulated (counted) in ECU whenever ECU enables engine overheat misfire mode.
Engine Temp. Above Normal		15	P1116		Code is set and occurrences accumulated (counted) in ECU whenever ECU enables hot lamp.
Alternator Power Supply	167	3	P1569		Chassis voltage too high.
		4	P1568		Chassis voltage too low.
EGT Sensor Circuit Voltage High	173	3	P0546		Sensor signal is above 4.9 VDC for at least 2 minutes and the engine has been running at or above 3000 RPM.
EGT Sensor Circuit Voltage Low		4	P0545		Sensor signal is below 0.06 VDC for at least 2 minutes and the engine has been running at or above 3000 RPM.
ECU Memory	628	13	P0601		Checksum / CRC Error
Crankshaft Position Sensor	636	8	P0336	2010-ON	Circuit fault.
		2	P0335		Plausibility fault.
Port MAG Injector Circuit	651	5	P0261	ON	OPEN circuit or short to ground. Can be caused by faulty wiring, injector, stator or ECU.
		3	P0262		Circuit shorted to battery voltage.
Port PTO Injector Circuit	652	5	P0264	ON	OPEN circuit or short to ground. Can be caused by faulty wiring, injector, stator or ECU.
		3	P0265		Circuit shorted to battery voltage.
Detonation Sensor Circuit Voltage Low	731	4	P0327		Engine speed is above 6000 RPM and the sensor signal is above 4.3 VDC for at least 2 seconds.
Ignition Coil Circuit Malfunction	1268	5	P1351		Failure within the primary circuit. Can be caused by faulty wiring, ignition coil, or ECU.
Fuel Pump Driver Circuit	1347	5	P0230		Drive circuit open or shorted to ground.

TROUBLE CODE	SPN	FMI	P-CODE	MIL	DESCRIPTION
Knock Level (MAG)	1352	0	P1336		Maximum Detonation Correction Limit Reached
		16	P2336	2010-OFF	Knock above critical level-Latch Mode
Knock Level (PTO)	1353	0	P1337	ON	Maximum Detonation Correction Limit Reached
		16	P2337	2010-OFF	Knock above critical level-Latch Mode
TPS/TMAP Sensor Supply Voltage (5VDC)	3509	4	P06B1	ON	Voltage too low.
Ground Speed Sensor Supply Voltage (5VDC)	3510		P06B4	2010-ON	
Fuel Injector ECU Output Supply Voltage (16 VDC)	3598	3	P16A9	ON	Voltage too high.
		4	P16A8		Voltage too low.
Throttle Switch Signal	520194	3	P1555		Voltage too high.
		4	P1554		Voltage too low.
		7	P1552		Throttle is stuck.
Chassis Relay Circuit Open/Grounded	520208	5	P1611	2010-ON	Chassis relay driver circuit is OL or shorted to ground.
Chassis Relay Driver Shorted to Battery Voltage		3	P1614		Chassis relay drive circuit is shorted to battery voltage.
Exhaust Valve Solenoid	520215	5	P1477	ON	Solenoid control circuit is OPEN. Can be caused by faulty wiring, solenoid, or ECU.
		3	P1479		Circuit shorted to battery voltage.
Crankcase MAG Injector Circuit (600 DC-CFI-4 ONLY)	520216	5	P1261		OPEN circuit or short to ground. Can be caused by faulty wiring, injector, stator or ECU.
		3	P1263		Circuit shorted to battery voltage.
Crankcase PTO Injector Circuit (600 DC-CFI-4 ONLY)	520217	5	P1264		OPEN circuit or short to ground. Can be caused by faulty wiring, injector, stator or ECU.
		3	P1267		Circuit shorted to battery voltage.
Fuel Type Selected	524007	3	P0179		Voltage too high.
		4	P0178		Voltage too low.
		2	P0177		Signal Out of Range
Ground Speed Pulses per Mile Not Programmed	520242	13	P1279	ON	This Trouble Code Sets if the Vehicle Speed Sensor Setting is Not Properly Programmed in the ECU. Reflash ECU.

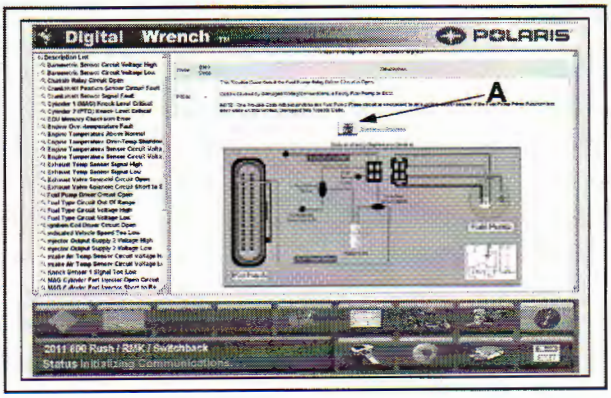
Diagnostic Trouble Code (DTC) Troubleshooting

Always use the Digital Wrench® diagnostic software program to troubleshoot DTCs, and overall performance problems.

Digital Wrench® can be used to display trouble codes and offers guided diagnostics. Guided diagnostics allows the technician to perform diagnostic checks to isolate the root problem.

1. To access trouble codes, click on the "!" button. If code(s) are listed, select a code to proceed.

2. Select a code or system in the 'SYSTEM CHARTS" menu. A description of the DTC or system will be displayed.



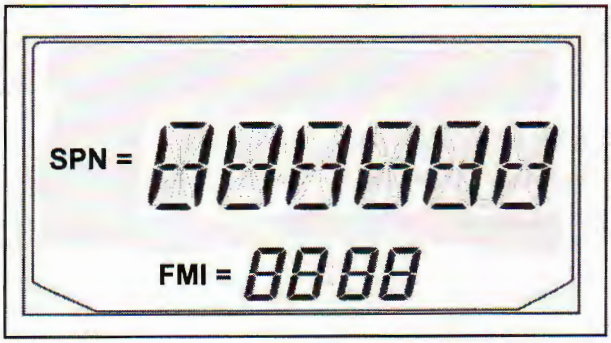
3. Click on (A) to activate guided diagnostics.
4. Click on "X" to exit the current screen.

Analog/Digital IC Error Code Display

Active diagnostic trouble codes can be reviewed by accessing the instrument cluster's diagnostic display mode.

The diagnostic display mode is accessible when a trouble code is active (MIL illuminated) and when the engine is running.

1. Keep the engine running, and set the parking brake.
2. With the engine running and the MIL illuminated, press and release the MODE button to toggle to the diagnostic display mode. If an error code exists, two numbers will appear in the display and the MIL will flash.
3. A set of two numbers will appear in the display.
   - The 2-6 digit suspect parameter number (SPN) in the information display area indicates which component is generating the fault code.
   - The 1-2 digit failure mode indicator (FMI) number in the odometer area indicate the fault mode, such as open or short circuit.



4. More than one fault may be active. Press and hold the MODE button or MODE switch for two seconds to toggle to the next active code. Repeat until all codes are retrieved.
5. Press and release the MODE button to exit this mode.

   NOTE: "SPN=" and "FMI=" are not displayed on screen.

Digital IC Error Code Display

Active diagnostic trouble codes can be reviewed by accessing the instrument cluster's diagnostic display mode.

The diagnostic display mode is accessible when a trouble code is active (MIL illuminated) and when the engine is running.

1. Keep the engine running, and set the parking brake.

2. With the engine running and the MIL illuminated, press and release the SELECT button or SET switch to toggle to the diagnostic display mode. When a code is active, the diagnostic display mode will appear immediately following the engine hour display.

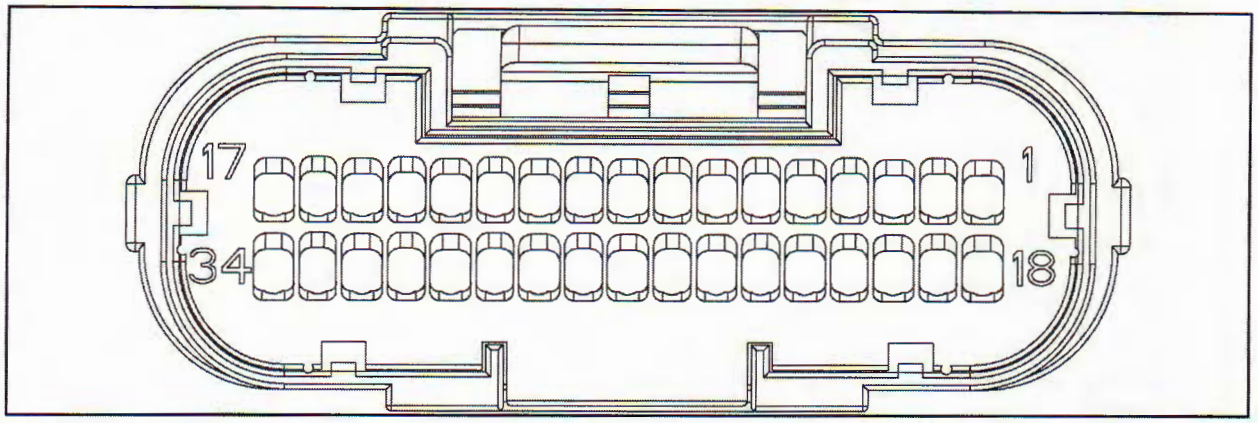
   NOTE: When the diagnostic mode is displayed, the check engine MIL will flash and Err will be shown.

3. A set of two numbers will appear in the display.
   - The 2-6 digit suspect parameter number (SPN) in the information display area indicates which component is generating the fault code.
   - The 1-2 digit failure mode indicator (FMI) number in the odometer area indicate the fault mode, such as open or short circuit.

4. More than one fault may be active. Press and hold the MODE button or MODE switch for two seconds to toggle to the next active code. Repeat until all codes are retrieved.

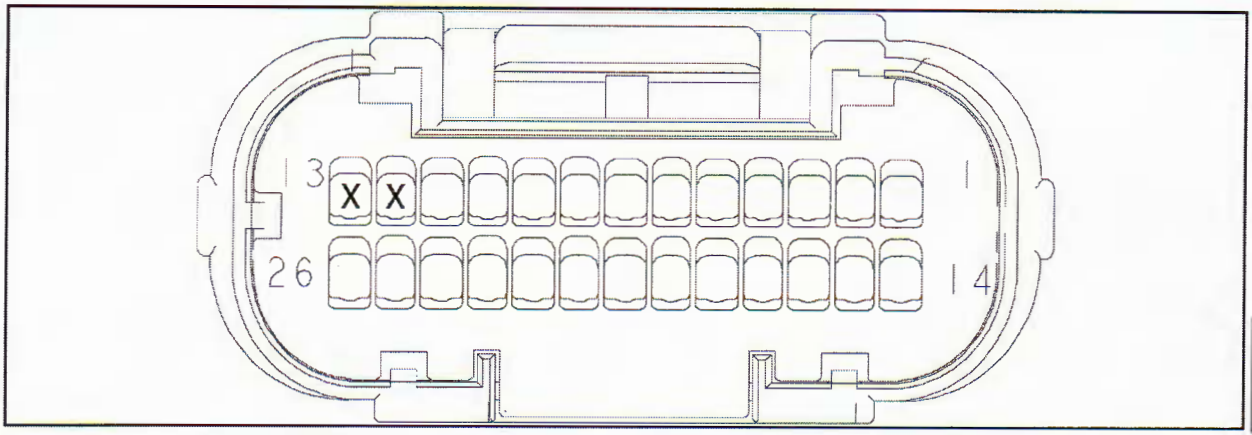
   NOTE: "SPN=" and "FMI=" are not displayed on screen.

ECU 34 Pin Connector (Chassis)



ECU 34 PIN CONNECTOR (WIRE ENTRY VIEW)			
PIN	**COLOR**	**GOES TO CONNECTOR**	**FUNCTION**
1	DG/WHT	IGNITION SWITCH	STARTER LOCKOUT
3	RD/BLK	ELECTRIC START	BATTERY VOLTAGE
7	BLK/DB	SENSOR GROUND SPLICE	SENSOR GROUND
8	DG/RD	GROUND SPEED SPLICE	GROUND SPEED SIGNAL
9	BLACK	IGNITION SWITCH	HARD STOP SWITCH
10	GRAY	LH CONTROL SIGNAL PLUG	PERC SWITCH
11	OG/BLK	BRAKE SWITCH	BRAKE SWITCH SIGNAL
12	VIOLET	OIL LEVEL SWITCH	LOW OIL SWITCH
14	PK/BLK	FUEL MODE PLUG	FUEL QUALITY SWITCH
15	BROWN	ECU GROUND SPLICE	ECU GROUND
16	BROWN		
17	ORANGE	EXTERNAL POWER SPLICE	EXTERNAL POWER
19	BN/YEL	FUEL PUMP PRIME GROUND SPLICE	FUEL PUMP ON/OFF CONTROL
20	ORANGE	VOLTAGE BOOST	FUEL INJECTION VOLTAGE BOOST
21	ORANGE		
25	BK/RED	THROTTLE SAFETY SWITCH	THROTTLE SOFT STOP
26	OG/WHT	SPEED SENSOR CAPACITOR	SPEED SENSOR POWER
27	DARK GREEN	CAN LOW	CAN LOW SIGNAL
28	YELLOW	CAN HIGH	CAN HIGH SIGNAL
30	WHT/YEL	EV SOLENOID	SOLENOID ON/OFF CONTROL
33	WHT/DB	CHASSIS POWER RELAY	RELAY COIL ON/OFF CONTROL
34	RED	REGULATOR POWER SPLICE	DC REGULATED VOLTAGE

ECU 26 Pin Connector (Engine)



ECU 26 PIN CONNECTOR (WIRE ENTRY VIEW)			
PIN	**COLOR**	**GOES TO CONNECTOR**	**FUNCTION**
1	DARK BLUE	FUEL INJECTOR HARNESS PLUG	PTO CRANKCASE INJECTOR DRIVER (DC-CFI-4)
2	DARK BLUE/WHT		PTO CYLINDER INJECTOR DRIVER
3	RED/DARK BLUE		FUEL INJECTOR POWER SUPPLY (16 VDC)
4	DARK GREEN	5 TOOTH CPS SENSOR	SENSOR SIGNAL
5	WHT/GRN (2011=BRN/WHT)	STATOR CPS HARNESS CONNECTOR	SENSOR GROUND
6	BLK/BLU	TPS CONNECTOR EXHAUST TEMP. SENSOR COOLANT TEMP. SENSOR TMAP SENSOR CONNECTOR COMMUNICATION CONNECTOR	SENSOR GROUND
7	AQUA	TPS CONNECTOR	TPS SIGNAL RETURN
8	YEL/RED	COOLANT TEMP. SENSOR	COOLANT TEMP. SIGNAL
9	BLK/WHT	DETONATION SENSOR	SIGNAL GROUND
10	YEL/WHT	COMMUNICATION CONNECTOR	TxD SIGNAL (TRANSMIT)
11	WHT/BLK		RxD SIGNAL (RECEIVE)
14	YELLOW	FUEL INJECTOR HARNESS PLUG	MAG CRANKCASE INJECTOR DRIVER (DC-CFI-4)
15	YEL/WHT		MAG CYLINDER INJECTOR DRIVER
16	RED/BLU		FUEL INJECTOR POWER (16 VDC)
17	WHITE	2 TOOTH CPS SENSOR	SENSOR SIGNAL
18	RED	IGNITION COIL CONNECTOR	COIL POWER
19	BLACK		COIL GROUND
20	GRAY	TMAP SENSOR CONNECTOR	INTAKE PRESSURE SIGNAL
21	ORANGE	STATOR SYSTEM POWER CONNECTOR	FUEL INJECTOR BOOST POWER
22	WHT/BLK	EXHAUST TEMP. SENSOR	EXHAUST TEMP. SIGNAL
23	PINK	TMAP SENSOR CONNECTOR	INTAKE AIR TEMP. SIGNAL
24	RED/WHT	TPS CONNECTOR TMAP SENSOR CONENCTOR COMMUNICATION CONECTOR	5VDC SENSOR VOLTAGE
25	PURPLE	DETONATION SENSOR	SENSOR SIGNAL
26	ORANGE	STATOR SYSTEM POWER CONNECTOR	FUEL INJECTOR POWER

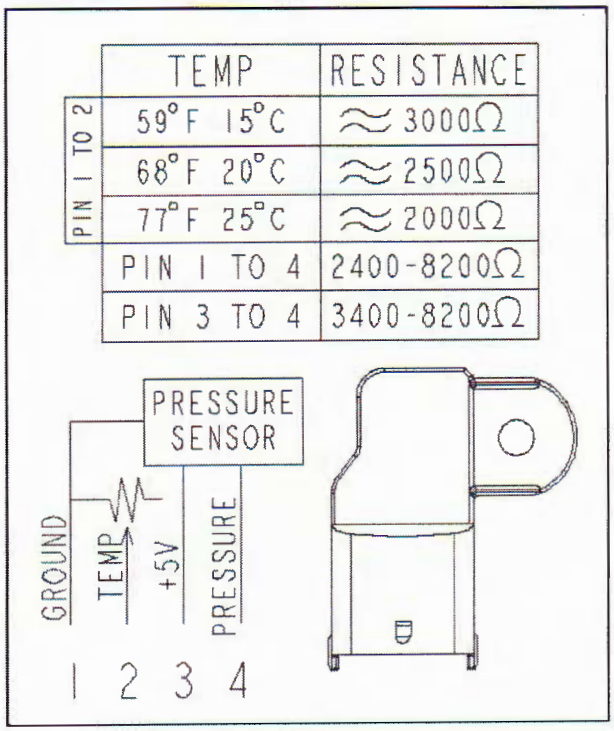
Exhaust Temperature Sensor

EXHAUST TEMPERATURE SENSOR	
Resistance Values	2.3MΩ @ 392° F (200° C) 76Ω @ 1652° F (900° C)

= T

Exhaust Temperature Sensor Torque:
32 ft-lbs (44 Nm)

Temperature / Air Pressure Sensor (TMAP)



AIR TEMPERATURE / AIR PRESSURE SENSOR	
Pins 1 to 2 (Temperature)	59° F (15° C) ≈ 3000Ω 68° F (20° C) ≈ 2500Ω 77° F (25° C) ≈ 2000Ω
Pins 1 to 4 (Pressure) Pins 3 to 4 (Pressure)	2400 - 8200Ω 3400 - 8200Ω

Crankshaft Position Sensors (CPS)

The 5 tooth crank position sensor picks up all 5 flywheel teeth and determines the following:

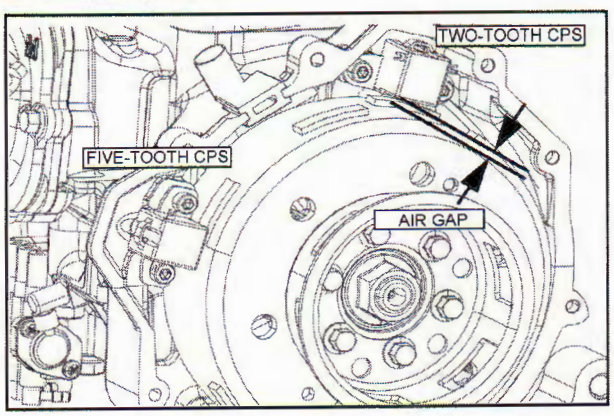
- Judge direction of rotation (forward and backward)
- Ignition advance angle control
- Injector drive angle control
- Excess advance ignition control at reverse
- MAG / PTO cylinder detection

The 2 tooth crank position sensor picks up 2 flywheel teeth. It detects the crank angle and obtains minimal information of the crank angle when control enters into limp home mode

The sensors must be in the correct position or the engine will not run. A sheared flywheel key will cause the engine to not start or to shut off (misfire).

Crankshaft Position Sensor Air Gaps

Hard engine starting, erratic reverse operation, and poor engine performance can occur if the CPS air gap(s) are outside specification.



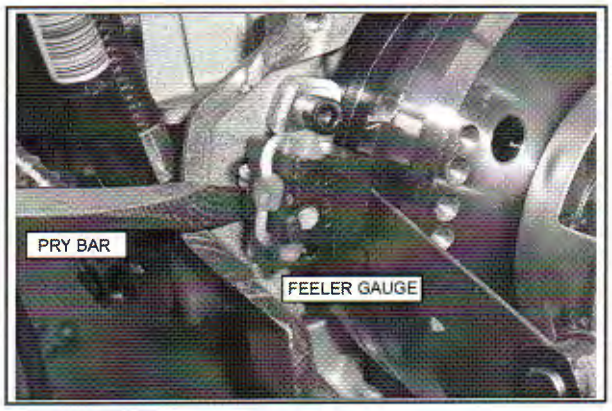
NOTE: The sensor bases are not slotted. Only minor deflection adjustments can be made.

= In. / mm.
Crankshaft Position Sensor Air Gap: **.020"-.030" (0.5 - 0.8 mm)**

Air Gap Inspection/Adjustment

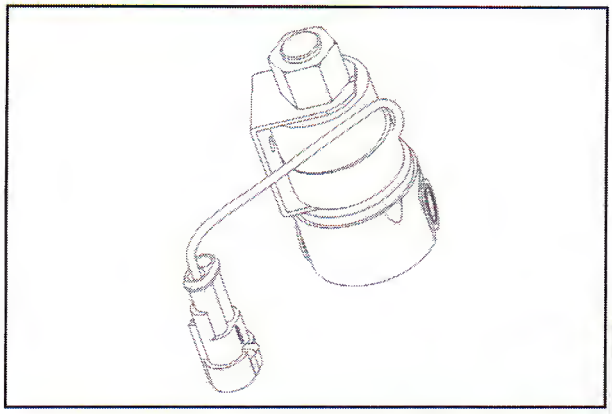
1. Rotate the crankshaft/flywheel so that an encoder rib is positioned directly underneath the sensor being measured.
2. Insert the blade of a .030" feeler gauge between the rib and sensor face. If there is no drag felt on the feeler gauge, the CPS must be adjusted.
3. To adjust a CPS, use an 8 inch pry bar to carefully deflect the sensor.
4. Place the tip of the small pry bar between the back of the sensor and crankcase. insert a .012" feeler gauge between the sensor face and encoder rib.

   NOTE: Do not pry on the individual sensor wires.



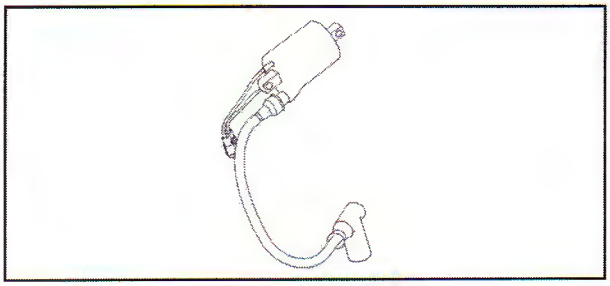
5. Gently pry the sensor towards the encoder rip until the gauge begins to bind between the components.
6. Re-measure the air gap. The gap should be between .020"-.030" (0.5 - 0.8 mm).

Exhaust Valve Solenoid



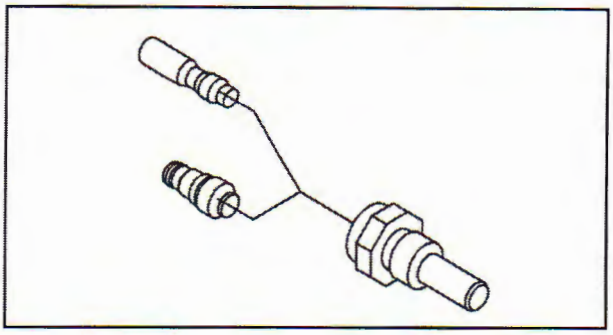
EXHAUST VALVE SOLENOID	
Coil Resistance (WHT/YEL to RED)	15Ω +/- 15% @ 68°F (20° C)

Ignition Coils



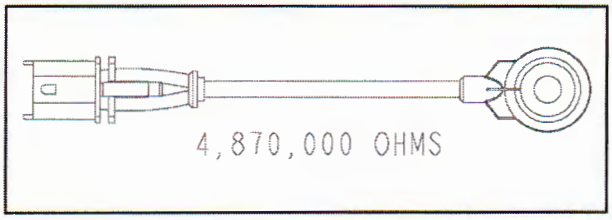
IGNITION COILS	DC-CFI 4	DC-CFI 2
Primary Coil Resistance (Black to White)	0.20Ω +/- 15% @ 68°F (20°C)	0.45Ω +/- 15% @ 68°F (20°C)
Secondary Coil Resistance (Without Plug Cap/ Black to High Tension Lead)	6.3kΩ +/- 15% @ 68°F (20°C)	18kΩ +/- 15% @ 68°F (20°C)
Plug Cap Resistance	5kΩ +/- 15% @ 68°F (20°C)	

Engine Coolant Temperature Sensor



OPERATING TEMPERATURE RANGE	-22°F - +248 °F (-30°C - 120°C)
Resistance	2.4 - 2.6KΩ@ 68°F (20°C) (Measure in stirred water)
Installation Torque	29 ft-lbs (39.2Nm)

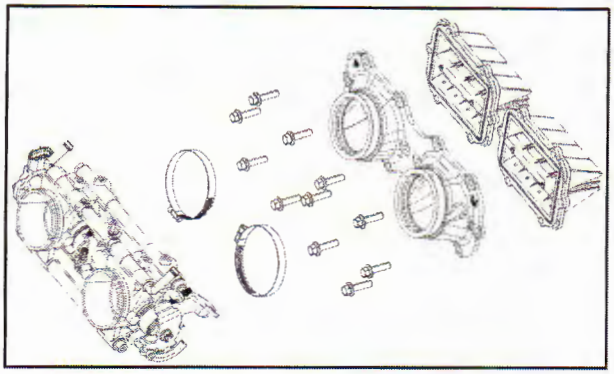
Knock (DET) Sensor



 = T

Knock Sensor Screw Torque:
168 in-lbs (19 Nm) Install screw clean and dry.

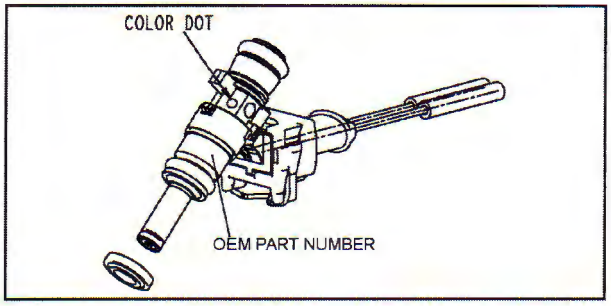
Throttle Body Removal



1. Remove the oil tank/clutch cover assembly.
2. Remove the airbox assembly.
3. Pinch off the coolant lines with the hose pincher tool PN PU-45149.
4. Remove the coolant hoses from the throttle body. Disconnect the TPS harness connector.
5. Loosen the intake boot clamps and pull the throttle body upward. Locate the oil pump linkage arm. Pop the rod end off the throttle body cam.
6. Loosen the throttle cable lock nut and remove the cable from the throttle body.
7. Remove throttle body.
8. During installation, verify the oil pump lever is not rotated over-center before installing the linkage arm on to the throttle body.

DC-CFI-4 FUEL INJECTORS / FUEL RAIL

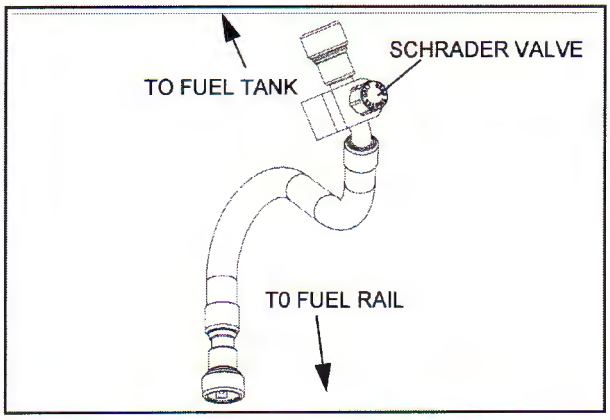
Fuel Injectors



FUEL INJECTORS	
Resistance	12Ω @ 68°F (20°C)

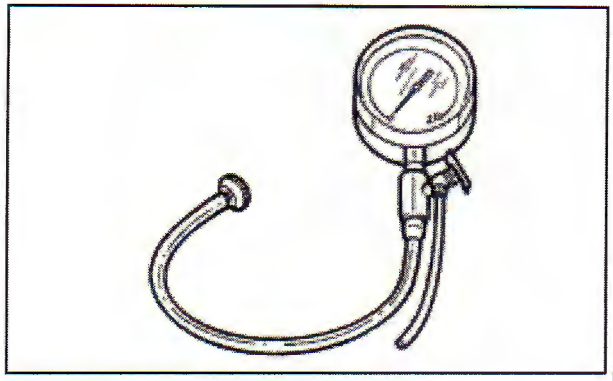
Fuel Rail Bleeding / Pressure Testing

All CFI engine fuel return hoses feature an inline Schrader valve that can be used to bleed the fuel system pressure and observe fuel system pressure when using the fuel pressure gauge and specified adapter.

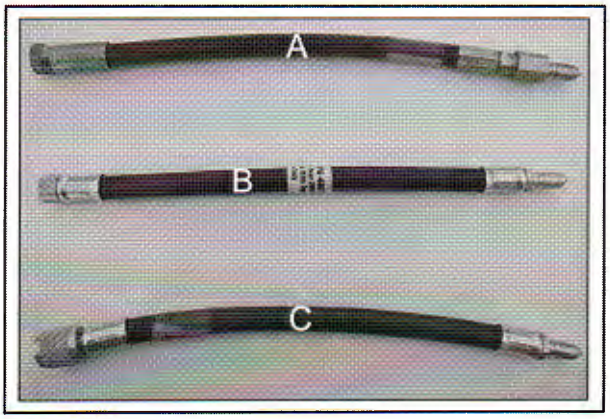


FUEL PRESSURE GAUGE / ADAPTERS		
YEAR / MODEL	ADAPTERS	GAUGE / BLEED TOOL
600 DC-CFI-4 PRO-RIDE Shallow Core	314249 (.305-32 Shallow Core fitting supplied with PU-43506-A)	PU-43506-A

Fuel Pressure Gauge (PU-43506-A)



Fuel Pressure Gauge Adapters



- A = 314249 (.305-32 shallow core fitting/adapter supplied with PU-43506-A Fuel Pressure Gauge)
- B = PS-48617 (.305-32 deep core fitting)
- C = PS-48762 (7/16-20 fitting)

1. Select the appropriate adapter.
2. Connect the adaptor to the fuel return hose Schrader valve.
3. Connect the adapter to the fuel pressure/bleed tool gauge.
4. To observe running fuel system pressure, start the engine and compare reading to the specification.

   NOTE: Observe pressure reading at idle and while operating the vehicle.

= In. / mm.
Fuel System Pressure: 58-60 (4.0-4.1)

5. To bleed the fuel system pressure after the engine is stopped, place the tool's bleed hose into an appropriate fuel handling container. Open the valve to release the pressure and drain residual fuel.
6. Close the valve, then remove the gauge and adapter from the fuel hose Schrader valve. Replace the Schrader valve dust cap.

Disconnect Fittings

The fuel hoses feature disconnect fittings that require special tools to remove.

The fuel line disconnect tool kit, PS-47152, supplies one 5/16" and one 3/8" quick disconnect tool. These tools are also commercially available at local auto parts stores.

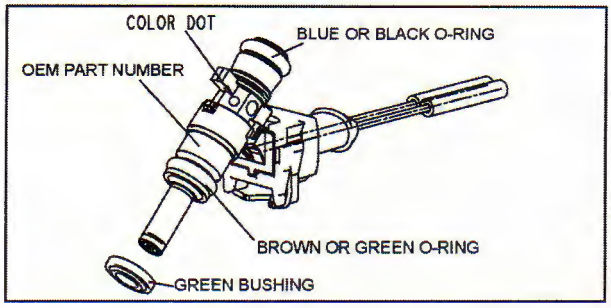
PS-47152

1. To disconnect a fuel hose from the fuel pump, or fuel rail, insert the tapered end of either the 5/16² or 3/8² tool into the female housing.
2. Push the tool into the housing to release the spring clamps. Carefully separate the hose from the connection.

3. Reconnect the fuel hoses by coating each hose end with a light film of two stroke engine oil.
4. Carefully install the male end of the hose into the center of the female housing. Firmly push the hoses together until the male nozzle fully seats behind the spring tabs and an audible "click" is heard.
5. Grasp both hoses and gently pull to verify positive engagement.

Fuel Rail/Injector Removal/Installation

NOTE: Leave protective caps installed until instructed to remove. Avoid touching the tip of the injector.



600 FUEL INJECTOR KITS	
INJECTOR KITS	**COLOR**
2203894-053	Yellow
2203894-027	Blue
2203894-015	Red

A fuel injector, regardless of color code, can be accurately identified by the OEM part number stamped on plastic injector housing.

- 600 = OEM PN 1203491

When replacing a faulty fuel injector, always verify the part number of the injector for the engine application and use the same color code. If replacing an injector with a different color code, all of the fuel injectors must be replaced with the new color so all four injectors are the same color.

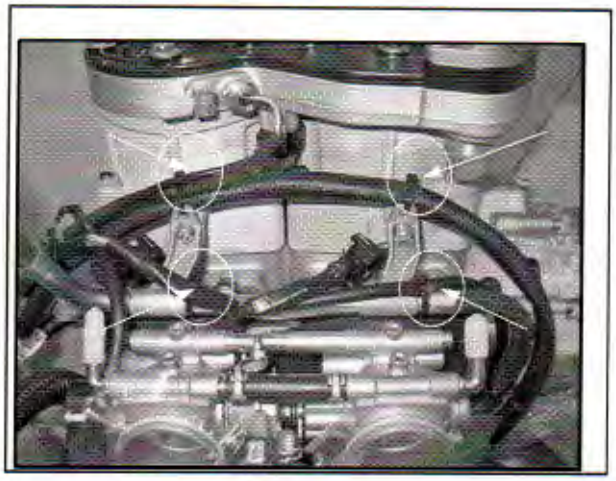
After replacing the injectors, the ECU must be re-flashed so the fuel calibration map matches the new color coded fuel injectors.

CAUTION

ALWAYS CHECK THE INJECTOR PART NUMBER TO VERIFY ENGINE APPLICATION REGARDLESS OF COLOR CODE.
NEVER RUN THE ENGINE WITH DIFFERENT COLOR-CODED FUEL INJECTORS. SEVERE ENGINE DAMAGE WILL OCCUR.
ALWAYS VERIFY THE ECU CALIBRATION FILE MATCHES THE FUEL INJECTOR COLOR CODE.

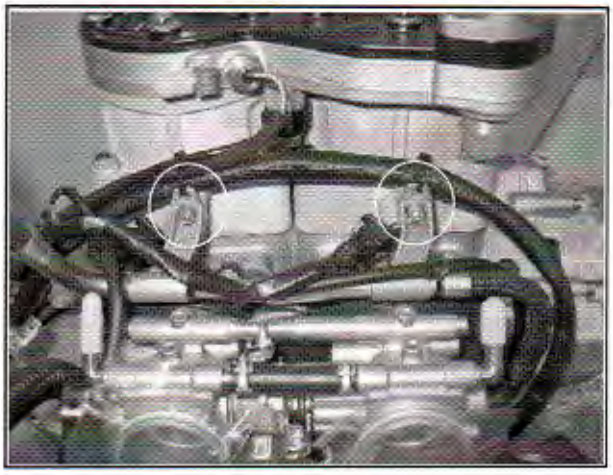
1. Depressurize the fuel rail. Fuel Rail Bleeding / Pressure Testing, page 4.21

2. Remove the panduit straps as shown.



NOTE: The engine must be removed from the engine compartment to access the lower two fuel injectors.

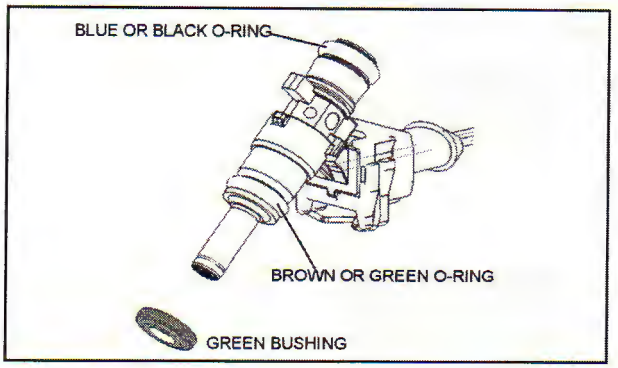
3. Remove the hex screws securing the fuel rail to the cylinders.



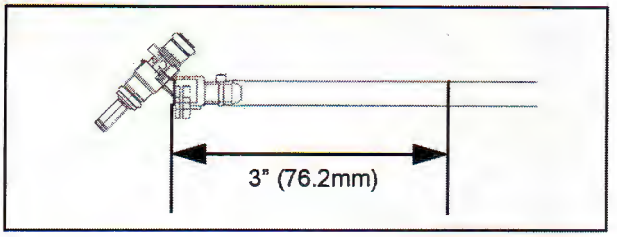
4. If replacing a lower injector, remove the two bottom screws bolts from the lower fuel rail.

5. Remove the failed injector(s).

NOTE: Make sure that the green bushing comes out with the injector. If it does not, look inside the injector bore.

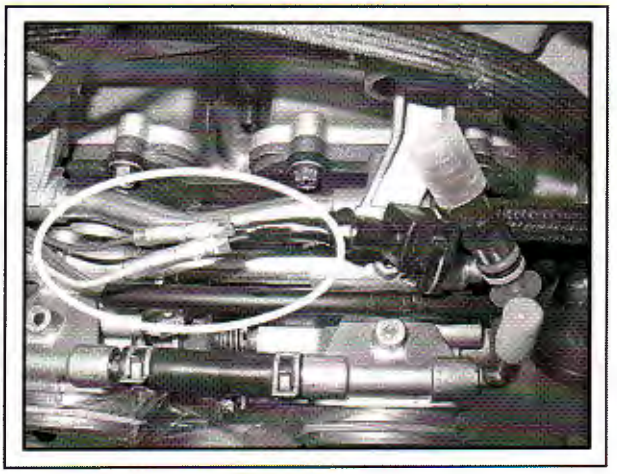


6. Measure from the end of the injector 3" (76.2 mm) and cut the injector off.

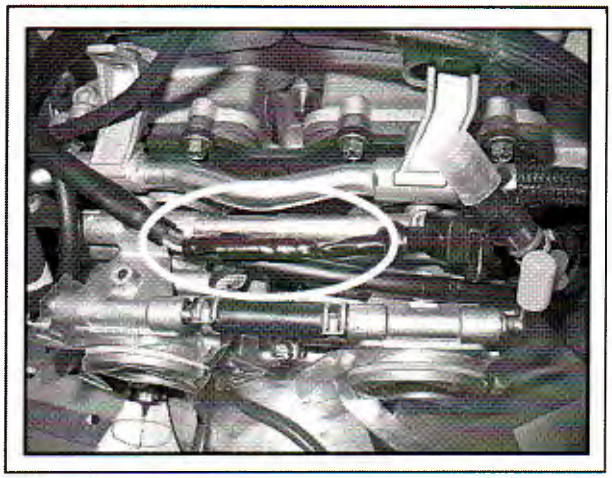


7. Strip the harness end injector wire covering .25" - .375" (6.35 - 9.525 mm).

8. Crimp the ends of the new injector firmly on to the wire harness.



9. Tape exposed wire and splices.



10. Apply oil to the fuel injector o-rings.
11. Remove the protective caps. Install the injector (s) into the fuel rail. Verify the injector(s) are fully seated.
12. Insert the fuel rail, with injectors into the engine.
13. Apply a light amount of 262 Loctite® to the fuel rail fasteners and torque to specification.

= T
Fuel Rail Hex Screw Torque: 9 ft-lbs (12Nm)

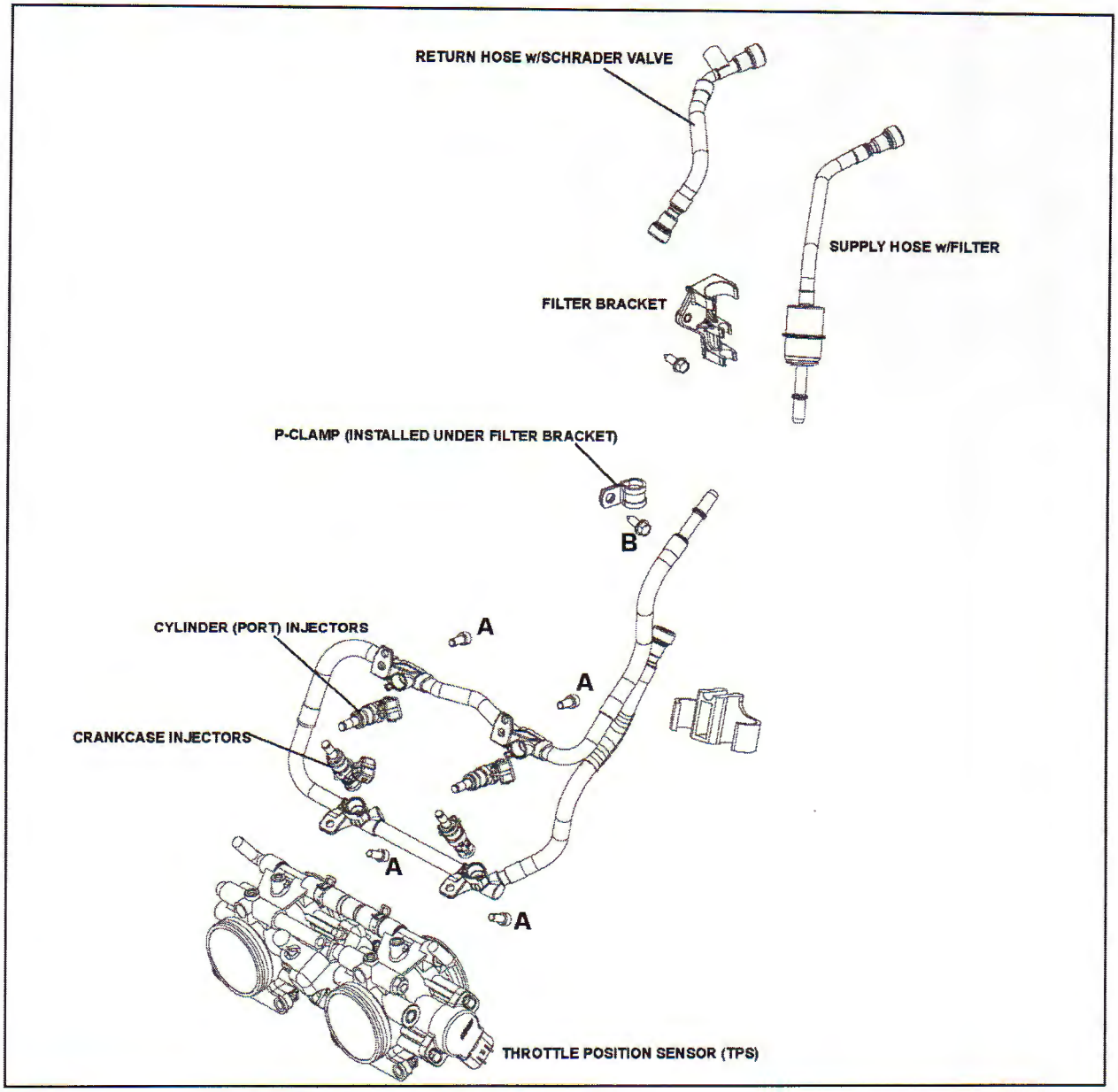
14. Replace the harness to the original routing and apply panduit straps back to the original locations.

    NOTE: Refer to Step 2 for proper routing and strap location.

15. Install the engine if it was removed.
16. If different color injectors were installed, re-flash the ECU to the new color code.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

Fuel System Assembly



= T
A: 9 ft-lbs (12 Nm) B: 1.5 ft-lbs (2 Nm) Position p-clamp behind bracket.

DC-CFI-2 FUEL INJECTORS / FUEL RAIL

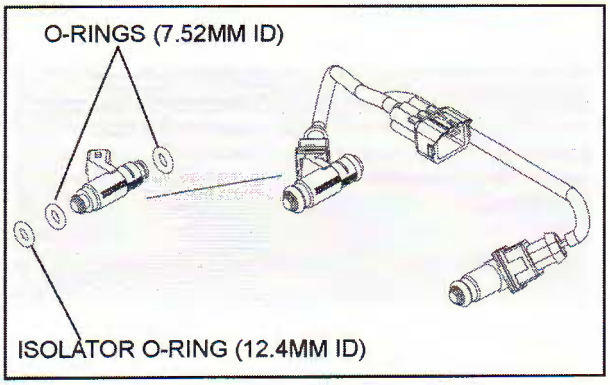
Fuel Injectors/Assembly

DC-CFI-2 engines feature a dual fuel injector/wiring harness assembly. Fuel injector replacement requires removing both fuel injectors/harness and installing a new assembly. Fuel injectors are not supplied individually. Harness cutting and splicing is not required.

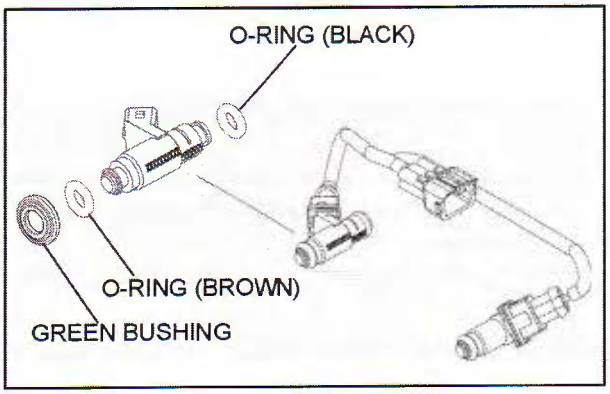
CAUTION

2011 fuel injectors are different and not interchangeable with other model years. Severe engine damage will occur if the incorrect fuel injectors are installed.

2011 Fuel Injectors



2012 – Current Fuel Injectors



NOTE: In addition to the fuel injector o-rings, an isolator o-ring (2011) or green bushing (2012 – current) is installed inside each cylinder fuel injector bore.

To obtain the correct fuel injector set for the vehicle, always reference the model-specific parts manual when ordering a new fuel injector set. Note that fuel injector color code may not match the fuel injector set original installed on the engine.

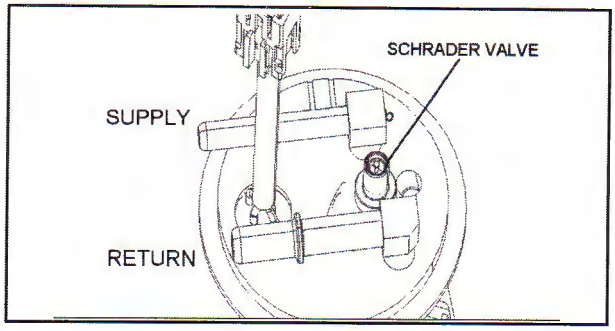
CAUTION

Always verify the fuel injector color code with the fuel calibration map loaded on the ECU.
Severe engine damage may occur if the incorrect fuel injector calibration is loaded on the ECU.

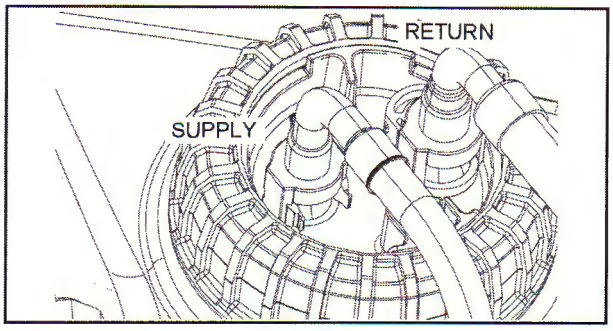
4

Fuel Rail Bleeding / Pressure Testing

Some models feature a Schrader valve located on the pump flange assembly (PFA) that can be used to bleed or test the fuel system pressure when using the fuel pressure gauge and specified adapter.

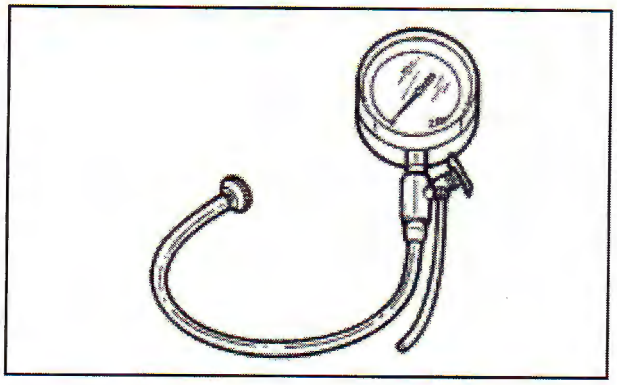


2013 models do not feature a Schrader valve on the pump flange assembly (PFA). Install the Fuel Line Adapter to bleed and test fuel pressure.

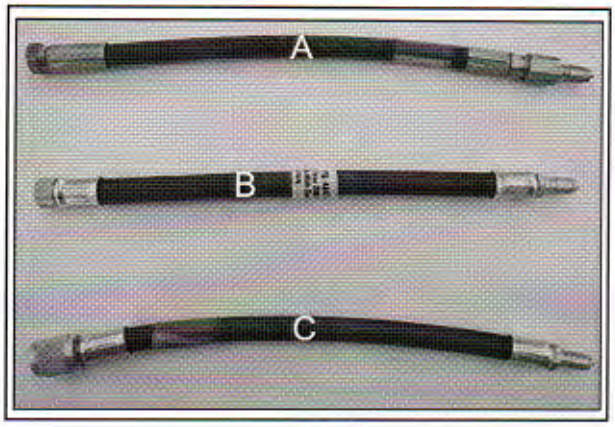


FUEL PRESSURE GAUGE / ADAPTERS		
MODEL	**ADPATERS**	**GAUGE / BLEED TOOLS**
Schrader Valve on PFA	PS-48762 (7/16-20 fitting)	PU-43506-A
No Schrader Valve	PA-48838	

Fuel Pressure Gauge (PU-43506-A)

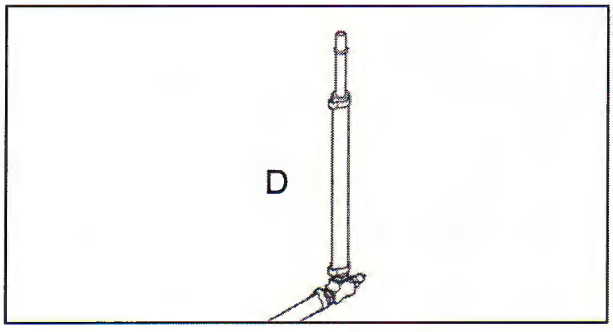


Fuel Pressure Gauge Adapters (PFA with Schrader Valve)



- A = 314249 (.305-32 shallow core fitting/adapter supplied with PU-43506-A Fuel Pressure Gauge)
- B = PS-48617 (.305-32 deep core fitting)
- C = PS-48762 (7/16-20 fitting)

Fuel Line Adapter (PFA without Schrader Valve)



- D = PA-48838 (Fuel Line Adapter)

1. Select the appropriate adapter.
2. Connect the adaptor to the Schrader valve.

3. On models that require the Fuel Line Adapter tool, remove the RETURN fuel hose from the pump flange.
4. Install the Fuel Line adapter tool on to the fitting. Connect the other end of the tool to the fuel hose.
5. Connect the adapter to the fuel pressure/bleed tool gauge.
6. To observe running fuel system pressure, start the engine and compare reading to the specification.

   NOTE: Observe pressure reading at idle and while operating the vehicle.

= In. / mm.
Fuel System Pressure: 58-60 (4.0-4.1)

7. To bleed the fuel system pressure after the engine is stopped, place the tool's bleed hose into an appropriate fuel handling container. Open the valve to release the pressure and drain residual fuel.
8. Close the valve, then remove the gauge and adapter from the fuel hose Schrader valve. Replace the Schrader valve dust cap.

Disconnect Fittings

Some fuel hoses feature disconnect fittings that require special tools to remove.

The fuel line disconnect tool kit, PS-47152, supplies one 5/16" and one 3/8" quick disconnect tool. These tools are also commercially available.

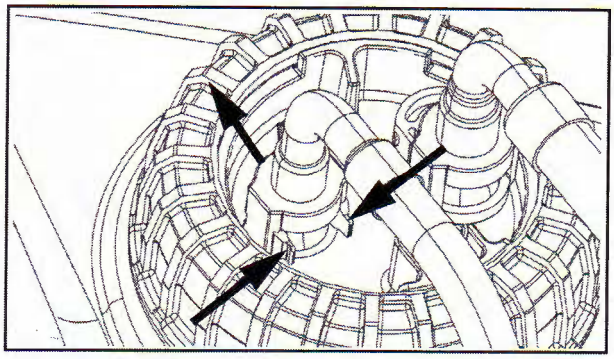
PS-47152

1. To disconnect a fuel hose from the fuel pump, or fuel rail, insert the tapered end of either the 5/16" or 3/8" tool into the female housing.
2. Push the tool into the housing to release the spring clamps. Carefully separate the hose from the connection.

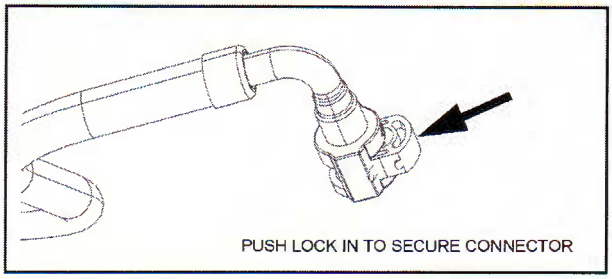
3. Reconnect the fuel hoses by coating each hose end with a light film of two stroke engine oil.
4. Carefully install the male end of the hose into the center of the female housing. Firmly push the hoses together until the male nozzle fully seats behind the spring tabs and an audible "click" is heard.
5. Grasp both hoses and gently pull to verify positive engagement.

Quick Disconnect Fittings

On 2013 — current models, disconnect the fuel hoses from the pump flange assembly (PFA) by pressing the lock tabs inwards and then pushing the lock out of the connector. Pull the connector up and off of the fitting.



Install the fuel hose onto the fuel pump flange fitting by pushing the connector down onto the fitting. Once seated, push lock in to secure the connector. Verify an audible "click" is heard when the lock tabs snap into place. Pull up firmly on the connector to verify it is secured to the fuel pump flange fitting.

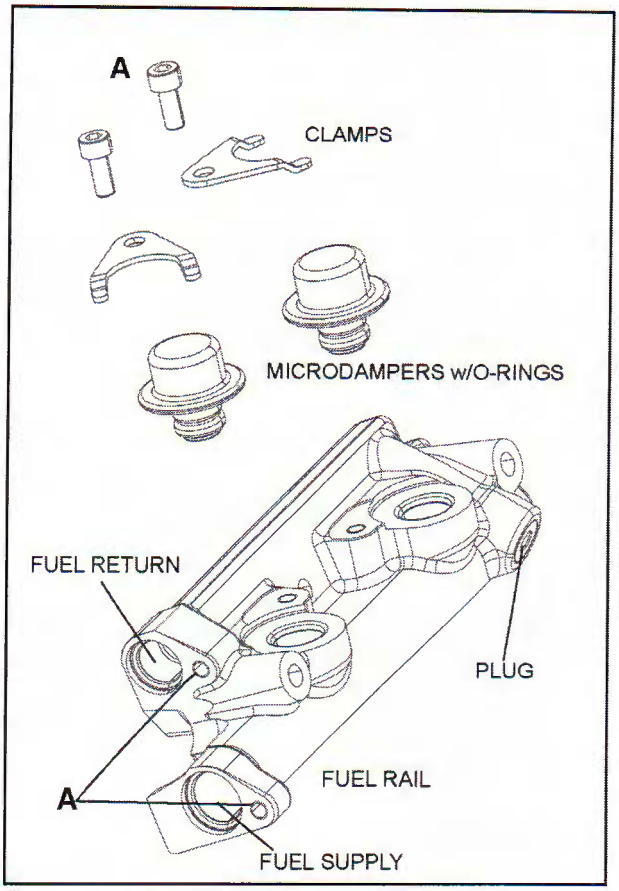


Fuel Rail Microdampers

The DC-CFI-2 fuel rail assembly contains two fuel pressure microdampers. The microdampers suppress fuel pressure pulses that occur when each fuel injector is activated.

The microdampers are considered "life of vehicle" components and servicing is not recommended. If a microdamper is removed, apply a light film of two-stroke engine oil to the O-ring during installation.

Torque clamp fasteners to specification.

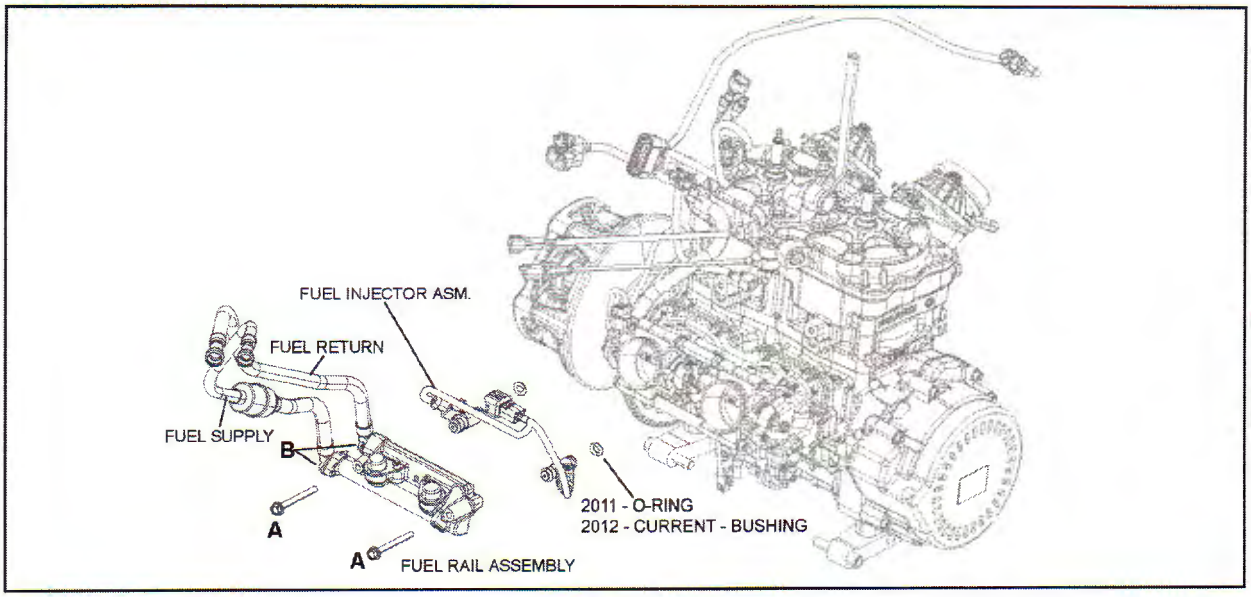


= T

A: 3.3 ft-lbs (4.5 Nm) Apply Loctite 243® to threads.

NOTE: A threaded plug is located on the MAG end of rail. Do not remove plug.

Fuel Rail/Injector Removal and Installation



= T
A: 9 ft-lbs (12 Nm) B: 3.3 ft-lbs (4.5 Nm) Apply Loctite® 243.

Removal/Installation Process

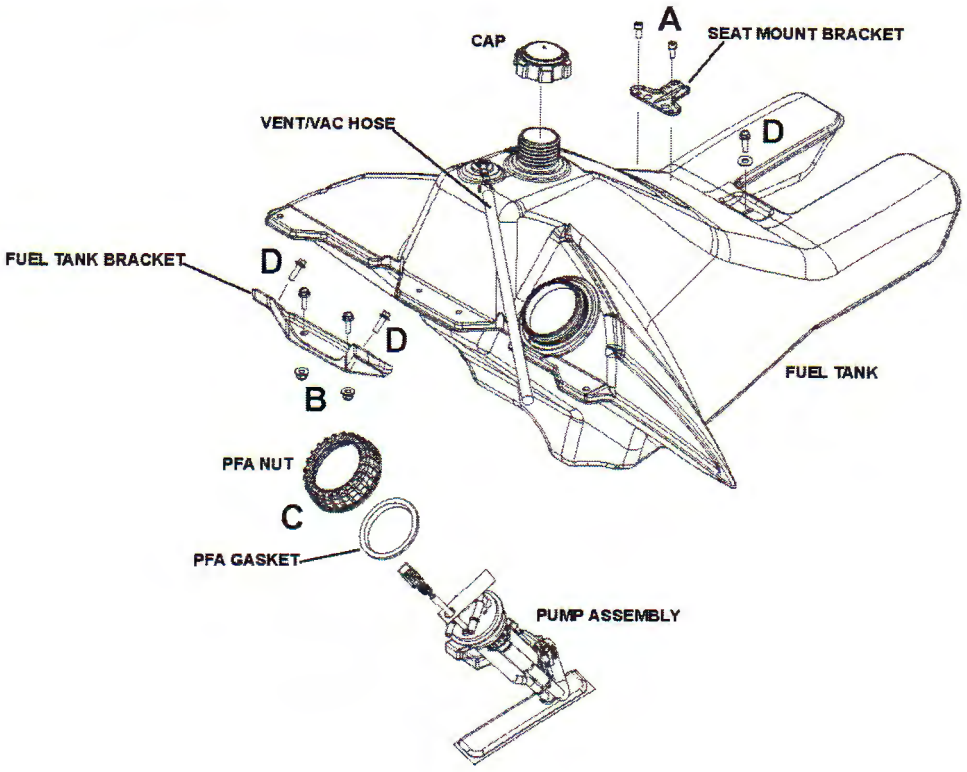
NOTE: Do not touch fuel injector inlet/outlet. Leave protective caps in place while handling.

1. Open the door panels and remove the hood assembly.
2. Relieve fuel system pressure.
3. Disconnect the fuel supply and return hoses from the fuel pump.
4. Remove the ECU, ECU bracket, and oil tank from the clutch cover assembly.
5. Remove the air box intake tube and top to gain access to the fuel rail.
6. Disconnect the fuel injector assembly wiring harness connector.
7. Remove the two screws that mount the fuel rail to the cylinder.
8. Carefully pull the rail away from the engine and injectors. Remove the injectors from the cylinder.

   NOTE: Always use new o-rings/isolators after fuel injectors have been removed.
9. Using a pick, remove the two fuel injector isolators or bushings from the injector ports in the cylinder. Discard the isolators/bushings.
10. Remove the fuel injector o-rings from fuel injectors. Discard the fuel injector o-rings.
11. To reinstall the fuel rail assembly, lightly coat two new fuel injector isolators with two-stroke engine oil. Install the new isolators or bushings into the cylinder injector ports.
12. Install four new oil-coated fuel injector o-rings.
13. Install both fuel injectors into the cylinder. Carefully install the fuel rail assembly.
14. Tighten fuel rail screws evenly. Once both screws are seated, torque to specification.
15. Reconnect the fuel injector harness wiring connector.
16. Reinstall the air box components.
17. Install the oil tank, ECU bracket, and ECU.
18. Reconnect the fuel supply and return fuel hoses on the fuel pump.

FUEL TANK / PUMP SERVICE

2010 Fuel Tank / Pump Assembly



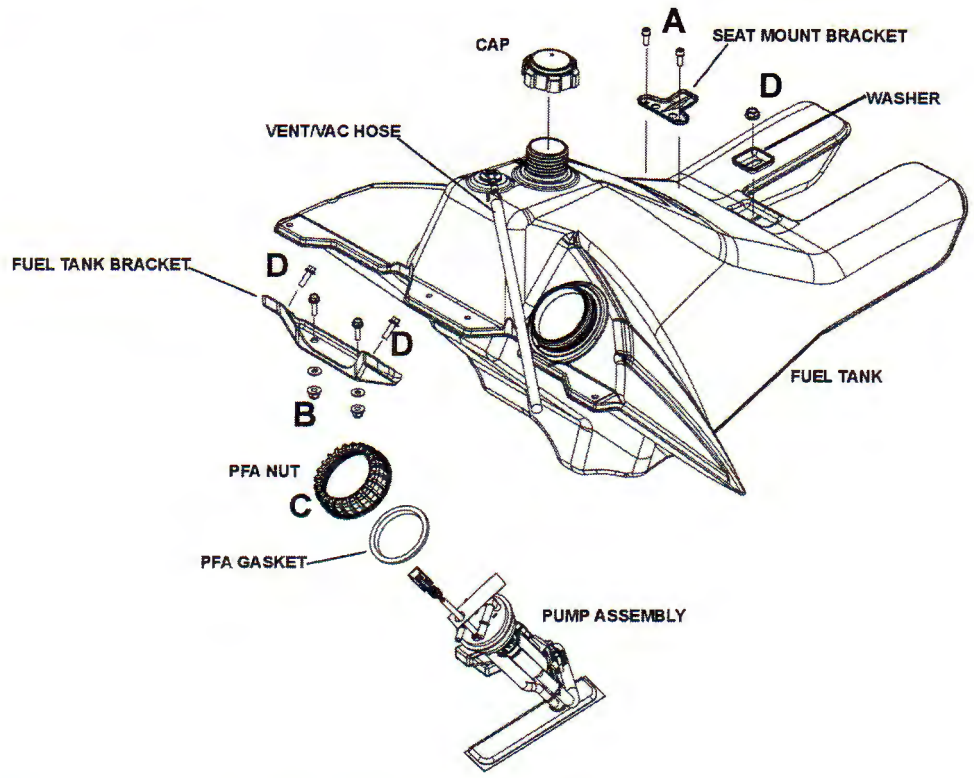
= T
A: 10 ft-lbs (14 Nm) B: 6 ft-lbs (8 Nm) C: 28 ft-lbs (38 Nm) D: 7 ft-lbs (10 Nm)

SERVICE PARTS:

- Fuel Pump Assembly - 2520951
- Pickup/Sock Assembly (w/clamps and cable ties) - 2204376
- PFA Gasket - 5413063

CAUTION
ALWAYS REPLACE PFA GASKET WITH NEW GASKET AFTER REMOVING FUEL PUMP.

2011 - Current RUSH / Switchback Fuel Tank / Pump Assembly



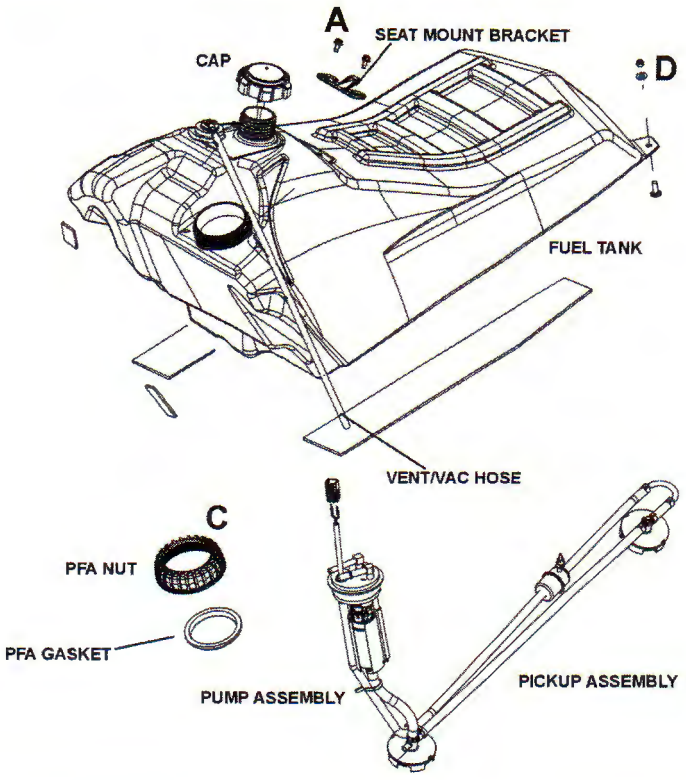
= T
A: 10 ft-lbs (14 Nm) B: 6 ft-lbs (8 Nm) C: 28 ft-lbs (38 Nm) D: 7 ft-lbs (10 Nm)

SERVICE PARTS:

- 2010-2012 Fuel Pump Assembly - (600) 2520951
- (800) 2521107
- 2013 – Current Fuel Pump Assembly - (600/800) 2204726
- 2010-2012 Pickup/Sock Assembly (w/clamps and cable ties) - 2204376
- 2013 – Current Pickup/Sock Assembly (w/clamps and cable ties - 2204607
- PFA Gasket - 5413063

CAUTION
ALWAYS REPLACE PFA GASKET WITH NEW GASKET AFTER REMOVING FUEL PUMP.

2011 – Current INDY / Switchback Assault / RMK Fuel Tank / Pump Assembly



= T
A: 10 ft-lbs (14 Nm) B: 6 ft-lbs (8 Nm) C: 28 ft-lbs (38 Nm) D: 7 ft-lbs (10 Nm)

CAUTION
ALWAYS REPLACE PFA GASKET WITH NEW GASKET AFTER REMOVING FUEL PUMP.

SERVICE PARTS:

- 2011-2012 Fuel Pump Assembly (w/gasket) - 2521142
- 2013 – Current Fuel Pump Assembly (w/gasket) - 2204727
- 2011-2012 Pickup Assembly (w/clamps-gasket) - 2520873
- 2013 – Current Pickup Assembly (w/clamps-gasket) - 2204609
- PFA Gasket - 5413063

Fuel Tank Service

1. Remove the tank cap and siphon the fuel in the tank into a suitable container.
2. Remove the seat assembly
3. Remove the door panels and hood.
4. Remove the console.
5. Remove the two screws attaching the fuel tank bracket to the steering post assembly (if applicable).
6. Disconnect the fuel supply and return hoses from the fuel pump. Disconnect the fuel pump power/level sender wire harness connector.
7. Remove the fuel tank assembly from the snowmobile.
8. Inspect the tank for signs of damage/excessive wear. Inspect the foam pads that the tank rests on. Replace pads if torn, missing, or damaged.
9. Installation is the reverse of removal.

Fuel Pump Service

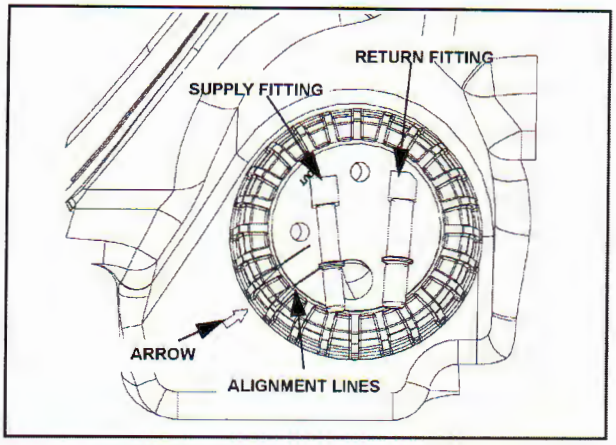
1. Siphon the fuel out of the fuel tank into a suitable container.
2. Remove the door panels, hood, and console.
3. Disconnect the ground (-) battery cable from the battery if applicable.
4. Bleed the pressure from the fuel rail. Fuel Rail Bleeding / Pressure Testing, page 4.21
5. Disconnect the fuel supply and return hoses from the pump flange. Disconnect Fittings, page 4.23
6. Disconnect the wiring harness.
7. Using the PFA spanner wrench and nut socket (PS-48459), carefully remove the PFA nut.

8. Carefully extract the PFA out of the tank making sure the float and fuel hoses do not become kinked or bent.
9. Remove the old gasket and discard.

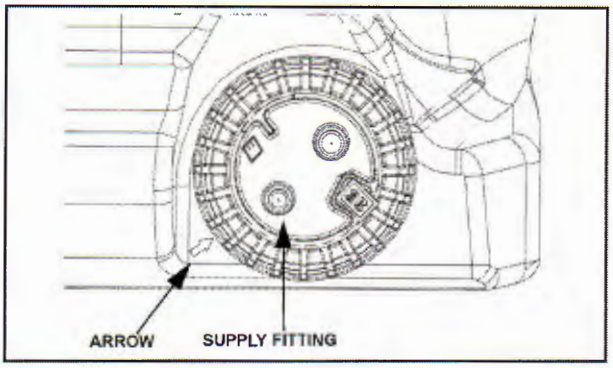
CAUTION

ALWAYS REPLACE PFA GASKET WITH NEW GASKET AFTER REMOVING FUEL PUMP.

10. Clean the tank's gasket mating surface with isopropyl alcohol. Allow the surface to dry completely.
11. Install a new gasket ensuring the inside portion of the gasket hooks onto the bead on the inside diameter of the neck.
12. Remove containments from the gasket with isopropyl alcohol.
13. Carefully place the PFA back into the tank. Push the float assembly against the hoses to fit it into the hole.
14. Hand tighten the PFA nut keeping the arrow between the PFA alignment marks.



NOTE: The pump flange assemblies on 2013 – current models do not feature alignment marks. Align the supply fitting with the arrow on the fuel tank during pump installation.



15. Using the PFA spanner wrench and nut socket (PS48459), tighten the PFA to specification.

= T

PFA Nut Torque: 28 ft-lbs (38 Nm)

CAUTION

Verify the PFA nut does not make contact with the fuel tank after applying torque.

16. Fuel tank installation is the reverse of removal. Always test the PFA gasket seal before tank installation by performing a pressure check.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

Fuel Pump/Level Sender Test Specifications

The fuel level sender resistance can be checked using a multimeter set to read resistance (OHMS).

Measure resistance at the fuel pump harness connector between pin 2 (WHITE/BLACK) and pin 4 (PINK/BLACK).

ARM UP/GAUGE READING FULL = <8Ω

FLOAT HEIGHT FROM BOTTOM OF TANK = 345.3 mm +/-16.4

ARM MIDDLE/GAUGE READING 1/2 = 40.7+/- 1.5Ω

FLOAT HEIGHT FROM BOTTOM OF TANK = 213.2 mm +/- 23.2

ARM DOWN/GAUGE READING EMPTY = 91.5 +/- 1.5Ω

FLOAT HEIGHT FROM BOTTOM OF TANK = 89.6 mm +/- 20.8

Fuel Tank Pressure Test

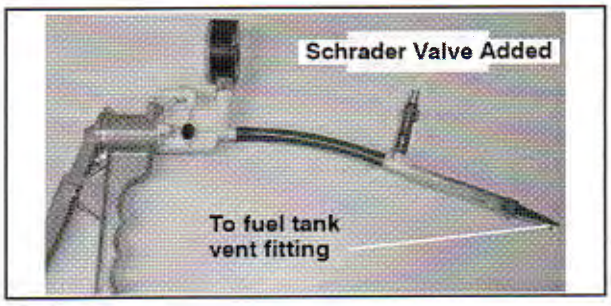
1. Connect a Mity Vac hand pump to the fuel tank vent fitting.
2. Connect an eight-inch piece of 5/16² fuel hose and two gear clamps across the fuel supply and return fittings at the fuel pump flange.
3. Pressurize the tank to 5 PSI (34 Kpa).

   NOTE: Fuel tank deformation will occur when the tank is pressurized.

⚠ WARNING

Do not over-pressurize the fuel tank past 6 PSI (41 Kpa).

NOTE: Using a hand pump to pressurize the fuel tank may take a very long time. The installation of an in-line Schrader Valve (PN: 2872602) and the use of a low pressure pump (bicycle tire pump) is recommended.



4. Once the tank is pressurized, saturate the area around the PFA gasket with a mixture of water and mild detergent.
5. If any bubbles form, re-check the PFA nut torque. If bubble formation continues, the PFA gasket will have to be replaced, or tank replacement is required.

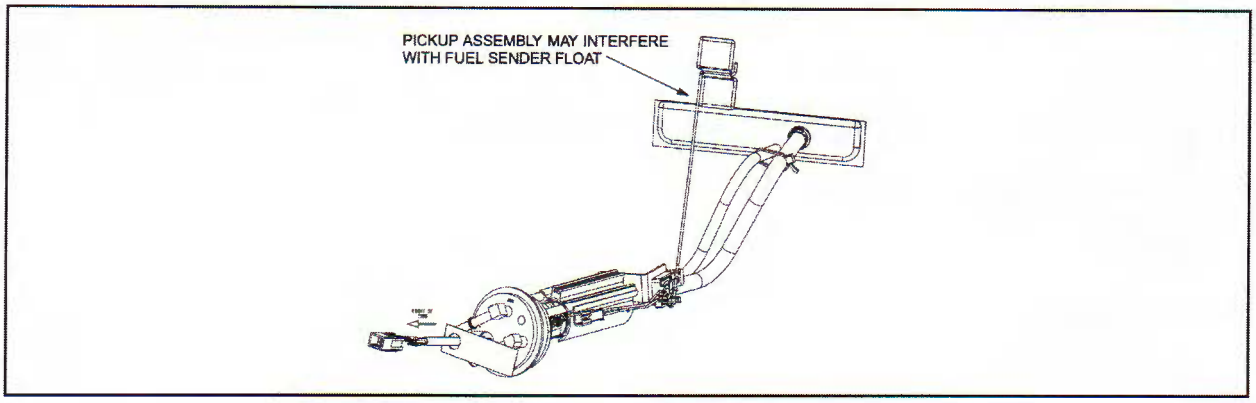
   NOTE: There may be bubbles present from the initial application of leak detector. Blow on the bubbles to pop them. Watch for new bubble formation. New bubble formation may be very small so look closely. Apply additional water/detergent solution if required.

Rush/Switchback Fuel Pump Pickup Orientation

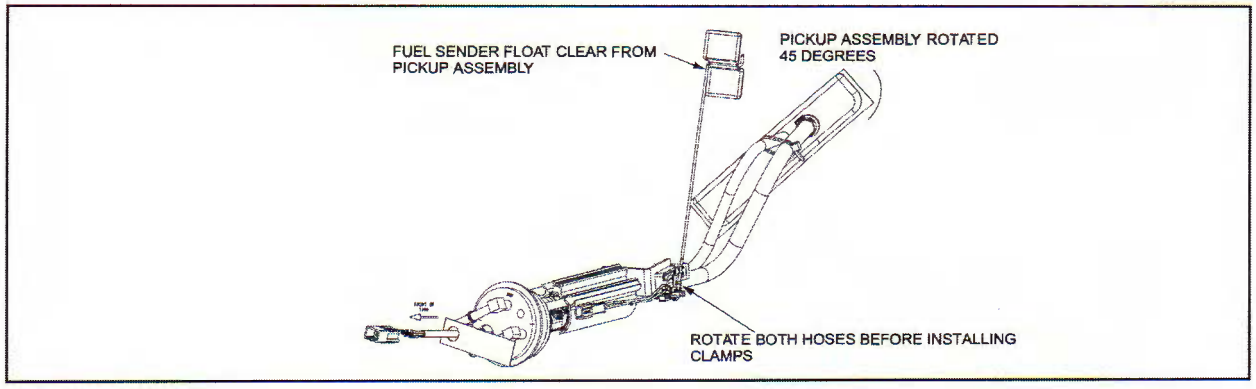
When servicing the Rush fuel pump pickup assembly or troubleshooting an issue with a stuck low fuel gauge display on the MFD gauge, verify the pickup assembly is orientated as shown in the MY11-current Pickup Assembly illustration below.

NOTE: Model year 2010 Rush fuel pump assembly service parts feature the rotated fuel pickup assembly.

MY10 Rush Pickup Assembly:



MY11-Current Rush Pickup Assembly:



DIGITAL WRENCH DIAGNOSTIC SOFTWARE

Digital Wrench Diagnostic Software Overview – PRO-RIDE

NOTE: Refer to Section 2, 3 and 4 in the Instruction Manual provided in the Digital Wrench® Diagnostic Kit to install the Polaris Digital Wrench® diagnostic software on your computer.

On 600 / 800 PRO– RIDE snowmobiles, Digital Wrench allows the technician to perform the following tests and diagnostic procedures:

- View / clear diagnostic trouble codes
- Analyze real-time / vehicle data
- Replace ECU
- Reflash ECU
- Perform guided diagnostics
- Perform output state control testing
- Replace fuel injectors
- Enable / disable / reset security
- Replace / reset Throttle Position Sensor (TPS)

NOTE: If the snowmobile is equipped with a fully-charged battery, it can be used to supply power to the test connectors. If using a stand-alone service battery, do not place the battery in the tunnel footwells. Place the battery on the floor next to the engine compartment.

Digital Wrench Special Tools – SNOW

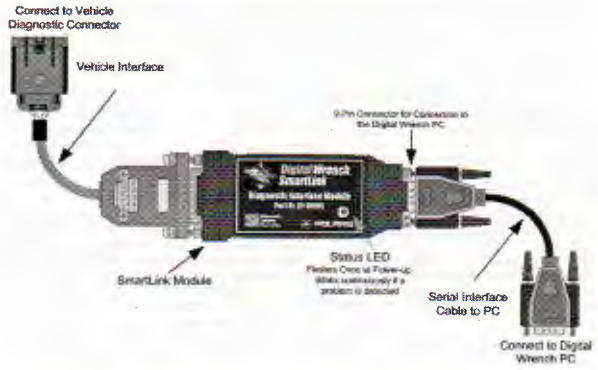
DIGITAL WRENCH SPECIAL TOOLS – SNOW	
TOOL	**PART NUMBER**
PC / Laptop with Microsoft Windows 98 / XP SP2 / Vista / 7 / 8	N/A
Digital Wrench Diagnostic Kit	PU-47063–C
PU-47063–C Includes:	Digital Wrench Software: PU-48731–A
	Interface Cable: PU-47151
	Serial Adapter Cable: PU-50621
	SmartLink Module / Cable Kit: PU-47471 PU-47471 Includes: SmartLink Module: PU-47468 SmartLink Serial Cable: PU-47470 SmartLink CAN Interface Cable: PU-47469
Chassis Power-Up Harness	PS-47296–B
Dual Power-Up Adapter Cable (Used to update the PS-47296–A Chassis Power-Up Harness)	PS-50805
Fully Charged 12V Battery	N/A

To obtain Digital Wrench or replacement cables or modules, contact: **Bosch Automotive Service Solutions** 1-800-345– 2233 or https://polaris. service-solutions.com

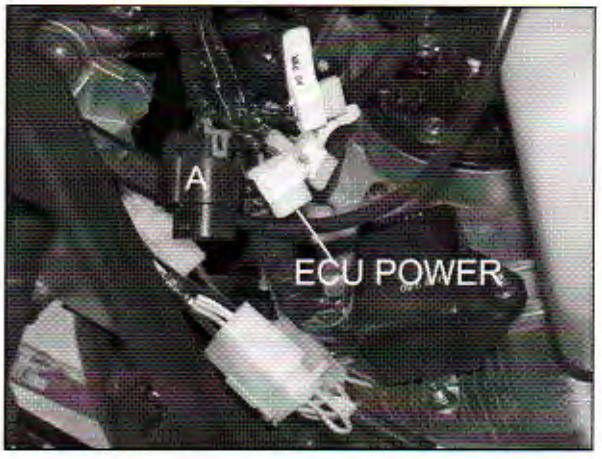
Digital Wrench - Diagnostic / Power Connectors

The diagnostic / power connectors are located behind the left engine compartment door.

1. Assemble the SmartLink Module and attach the PC Interface Cable to your PC / laptop.



2. Remove the cap from the Digital Wrench communications connector (A) and then connect the SmartLink cable to the communications connector.



3. Connect the alligator clamps of the Chassis Power-Up Harness (PS-47296– B) to a fully-charged 12V battery. Connect the chassis power-up harness to the ECU (EXTERNAL) PWR test connector.

NOTE: If the snowmobile is equipped with a fully-charged battery, it can be used to supply power to the test connectors.

CAUTION

If using a stand-alone service battery, place the battery on the ground next to the vehicle. Do not place the battery in the tunnel footwells. Doing so may allow the positive battery terminal or power-up harness alligator clamp to short circuit if they come into contact with the chassis.

CAUTION

If equipped, do not connect DC battery power to the AC PWR test plug. Severe electrical system damage will occur. This plug is for testing the AC power circuit with a digital multimeter .

NOTE: An internal relay within the harness prevents reverse polarity damage in the event the alligator clamps are connected to the battery incorrectly.

Chassis Power-Up Harness PS-47296–A did not feature integrated dual power test and fuel pump prime connectors. The Dual PWR / Fuel Pump Prime harness, PS-50805, must be installed on these harnesses to enable security and other functions.

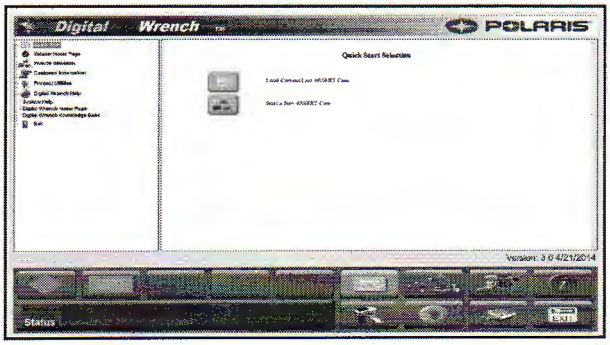
Digital Wrench Software Version / Update ID

Always use the most current version of the Digital Wrench software to ensure you have the latest updates or enhancements. New reprogramming files and guided diagnostic procedures are added to these updates as they become available.

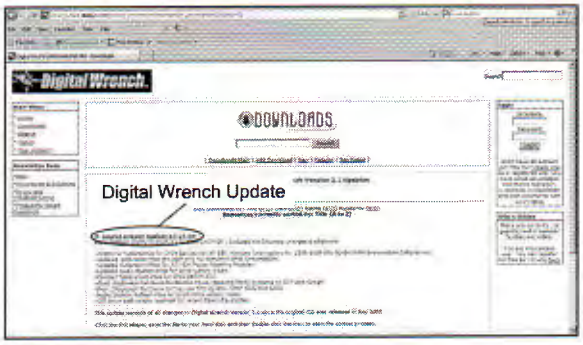
Knowing what Digital Wrench version and update is installed will help determine which updates are required.

NOTE: Versions and updates are subject to change.

1. Open the Digital Wrench software. Locate the version ID shown on the lower right side of the Digital Wrench® start-up screen.



2. Proceed to *http://polaris. diagsys. com* to see if a newer update is available.



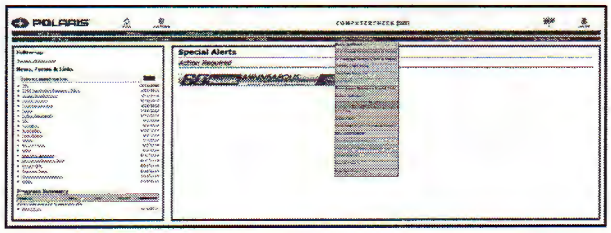
3. If a newer update is available, it should be downloaded before using Digital Wrench.

Digital Wrench – Updating Software

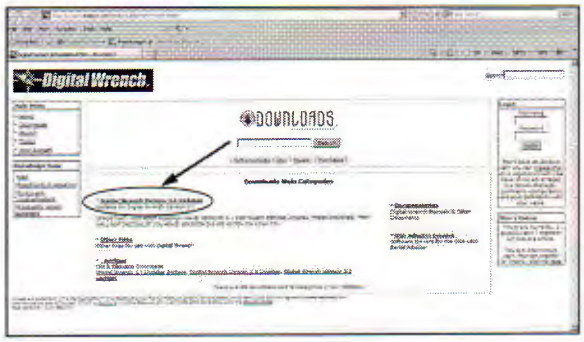
Updates are released for Digital Wrench via the Internet at: *http://polaris. diagsys. com.* The Digital Wrench website can also be accessed through the dealer website at: *www.polarisdealers.com.*

NOTE: Only authorized Polaris dealers and distributors can access the dealer website.

1. Log on to *www.polarisdealers.com.*
2. Locate the "**Service and Warranty**" drop-down menu.
3. Click on "**Digital Wrench Updates**".



4. The Digital Wrench portal website should appear in a new web browser.
5. Click on "**Digital Wrench Version Updates**".



NOTE: You must already have the current version installed before adding an update. Updates will not install if you are using an older version loaded on your PC.

6. If the update file date listed is newer than your current version and update (see Chapter 4 to download the file.
7. Click on the link shown above, save the file to your hard disk and then double-click the icon to start the update process.

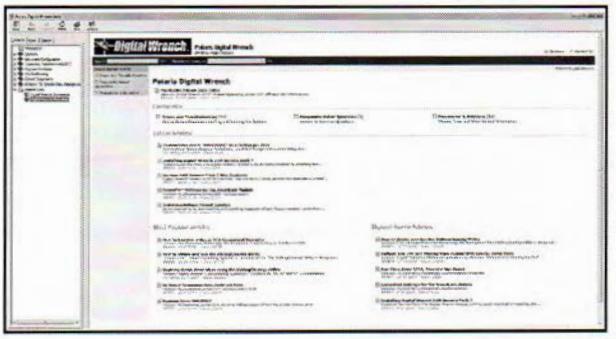
NOTE: Do not "run" or "open" the file from where they are. Select "save" and download them to your PC before running the install.

8. When the update is complete, the version shown on the right side of the Digital Wrench start-up screen should match the update you just downloaded.

NOTE: Versions and updates are subject to change.

Digital Wrench® Communication Errors

If you experience problems connecting to a vehicle or any Digital Wrench® related problem, visit the Digital Wrench® Knowledge Base for the most current troubleshooting information, FAQs, downloads and software updates at: *http://polaris.diagsys.com/.*



Digital Wrench® Feature Map

	View, or clear trouble codes in the Engine Controller Memory.		Enter / Edit / Change Vehicle Information
	This is the most viewed screen. View sensor and ECU information in a grid, meter, or chart format.		Enter customer and vehicle information and view ECU Identification.
	View information from the main ECU sensors.		Load the Vehicle Home Page.
	Set up data capture and record functions.		Open the Software Configuration Screen.
	Perform specialized testing and adjustment functions service reports.		Run the Help System.
	Open the ASSERT ASK form.		Prints the current screen as a formatted printout.

Polaris Mobile Digital Wrench (PMDW)

Polaris Mobile Digital Wrench (PMDW) is a diagnostic software application (app) designed specifically for Android™ devices. When paired with the Wireless Vehicle Link (WVL), part number PU-51435, PMDW provides Polaris service technicians with many of the features and functions found in Digital Wrench.

PMDW Main Page:

Wireless Vehicle Link (WVL) – Part Number PU-51435:

To download the PMDW app, navigate your Android device to www. polarisdealers. com. Locate the Service and Warranty drop-down menu. Select: "Mobile Digital Wrench App Download". Tap on the link to download the app.

Android Device Minimum Specifications:

- Minimum operating system: Android 3.1 "Honeycomb" or higher (Android 4.0 or higher preferred)
- Dual core processor / 2 GB internal memory / external microSD (32 or 64 GB) slot / 500 MB RAM
- Rear facing camera with minimum 3.0 mega pixel resolution with auto/continuous focus
- Video, Microphone and Voice-to-text capable
- Internet and Bluetooth wireless technology capable

PMDW App Notes:

- PMDW will not work on Microsoft Windows 8™ or Apple IOS™ products
- Device must be set to allow the installation of non-market applications
- An electronic user's guide is provided within the app. To access the user's guide, launch the app, and then click on the "Help" button in the Settings/ Preferences menu.
- Only CAN-based vehicles are compatible with PMDW and the WVL. A complete list of compatible vehicles can be found in the user's guide.

Digital Wrench – System Configurations

The System Configurations menu allows the user to establish the base settings for Digital Wrench.

NOTE: Digital Wrench does not need to be connected to a vehicle to access this menu.

DIGITAL WRENCH SYSTEM CONFIGURATION	
REF.	**DESCRIPTION**
①	Dealer Information – Enter the Polaris dealer name, dealer number, and address. These fields must be filled in with accurate information to submit Service Reports.
②	Select preferred language.
③	Select displayed units of measurement (US or Metric).
④	Select PC / Laptop COM port. Use this drop-down menu if SmartLink cable is not recognized by PC / Laptop.
⑤	Debugging Mode – Use when instructed by Polaris Service to determine Digital Wrench / vehicle communication issues.
⑥	Help Balloons / Auto-Update – Turn these features on / off based on preference. If auto-updates is turned on, Digital Wrench will search for updated program files when started.
⑦	Program Configuration / SmartLink Module – Use these buttons to view configurations menu and SmartLink cable update menu.
⑧	Serial Number – Displays all current Digital Wrench serial numbers.

Digital Wrench – Diagnostic Trouble Codes (DTCs) Display

Clicking on the Diagnostic Trouble Code (DTC) button will display any historic (non-active) or current (active) trouble codes.

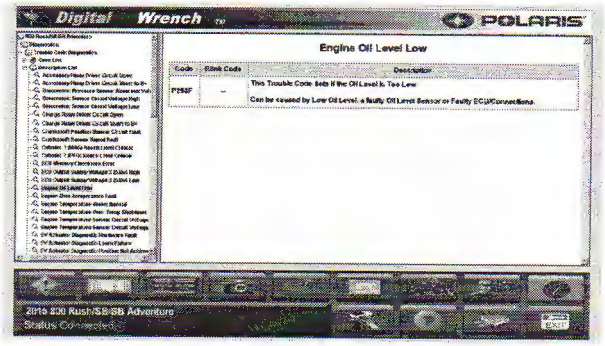
The DTC display screen is shown below.

NOTE: Some engine components will not trigger trouble codes and/or display the code as "Active" (i. e. EGT sensor) without the engine running. Run the engine on a test stand in a well-ventilated area as specified to attempt to set active code.

DIGITAL WRENCH DTC DISPLAY	
REF.	**DESCRIPTION**
①	DTC P-Code
②	Controller providing the code (ECU or Instrument Cluster)
③	Description of DTC
④	Status (Current or Historic)
⑤	Number of occurrences
⑥	Detailed DTC explanation / guided diagnostics (if available)
⑦	Clear DTC list

Clicking on the Detailed DTC explanation ⑥ will display a description of possible causes for the DTC. If guided diagnostic are available for the DTC, click on the icon to launch the feature.

Circuit diagrams will also appear on this screen.



Digital Wrench – Data List Display – PRO-RIDE

The Data List Display will display real time engine and vehicle information.

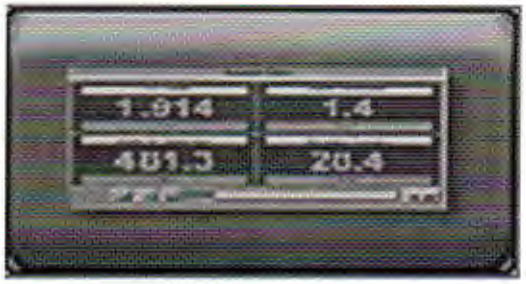
DIGITAL WRENCH DATA LIST DISPLAY	
REF.	DESCRIPTION
①	Active Display – When check mark is displayed, Digital Wrench will update the data. Click to disable monitoring. This can speed-up the data streams for the remaining items.
②	Components currently monitored by ECU
③	Component values and value units

DIGITAL WRENCH DATA LIST DISPLAY	
REF.	DESCRIPTION
④	Click to display either a large meter or real time chart for the component
⑤	Table formatting tools Click arrows to move data fields up or down in the list. Click + or — to add or subtract data fields. Up to 14 items can be displayed on the screen at one time. Click the save button to save the current view as a custom data map. Click the folder button to display more preset data lists or create a customized data list.

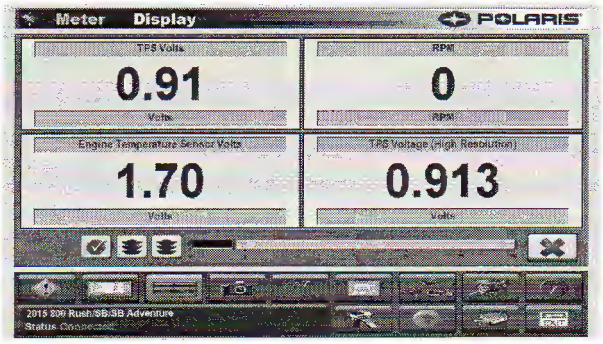
NOTE: Some components require the engine to be running or power supplied to the Gauge PWR test connector to display data.

For example, the EGT sensor data value will be inaccurate at room temperature. The EGT sensor will only return accurate signal information after the engine has been running over 3,000 RPM for several minutes.

Digital Wrench – Meters



Click on the Meters button to display 4 large data meters on the screen.



Digital Wrench – Data Trigger (Freeze Frame)

Clicking on the Data Trigger (Freeze Frame) button will allow the user to either a data item or trouble code (DTC) to activate a freeze frame recording.

DIGITAL WRENCH DATA TRIGGER DISPLAY	
REF.	**DESCRIPTION**
①	Select a data item to set the trigger
②	Select a trouble code (DTC) to set the trigger
③	List of either data items (if data item is selected as the trigger) or trouble codes (if trouble code is selected as the trigger)
④	Enable or reset trigger recording

In the example shown below, TPS Volts was selected as the Data Item Trigger.

Digital Wrench prompts the user to select the Comparison ⑤ and the Value 6. In this case, the Comparison was set to "Greater Than" and the Value was set to 3.50 volts.

After the values are selected, the user then clicks on Arm Trigger.

When the trigger is set, Digital Wrench will revert to the Data List display and freeze the data values when the TPS voltage is greater than 3.50 volts.

Digital Wrench – Vehicle Identification Information – PRO-RIDE

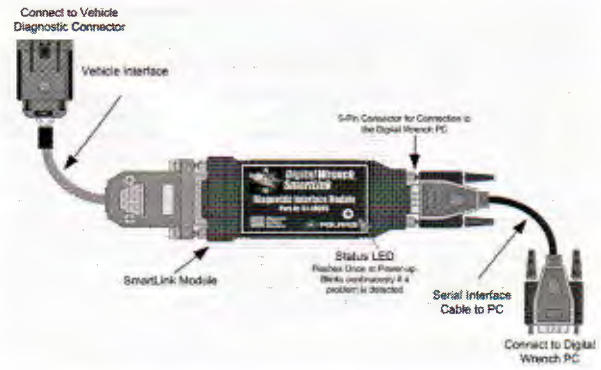
Digital Wrench can be used to verify the information for the ECU and instrument cluster. This information is important as it well tell the technician if the correct model number, ECU part number, VIN, calibration software and instrument cluster software are loaded onto the ECU.

To view the vehicle information, follow these steps.

1. Obtain a fully-charged 12 volt battery and the Chassis Power Up Harness, part number PS-47296–B.
2. Open the left engine compartment panel.
3. Connect one of the harness leads to the ECM PWR test diagnostic connector.
4. Connect the power up harness to the battery.

   NOTE: If the snowmobile is equipped with a fully-charged battery, it can be used to supply power to the test connectors. If using a stand-alone service battery, do not place the battery in the tunnel footwells. Place the battery on the floor next to the engine compartment.

5. Connect the SmartLink cable to the vehicle and PC / laptop.

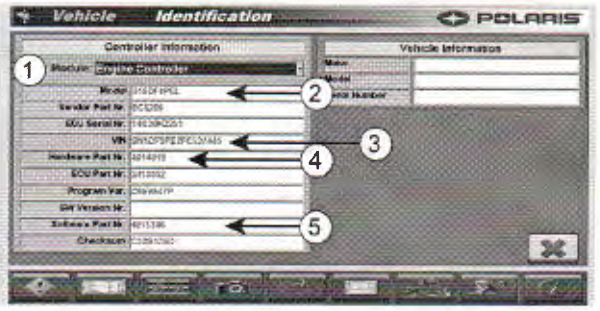


6. Start Digital Wrench, and select the correct vehicle.
7. Select the Special Tools (Tool Box) menu. On the Special Tools menu, select "Vehicle Information".

8. The vehicle information screen will appear. The base screen will show the ECU information. To view information for the instrument cluster, connect the free power-up plug on the chassis power-cable to the connector labeled: "DC PWR Test".

   NOTE: On snowmobile equipped with the IDD and a 12V battery, the IDD can be powered by turning the key to the ON position.

ECU INFORMATION:



The drop-down menu ① will display what information is shown. Click to select "Engine Controller".

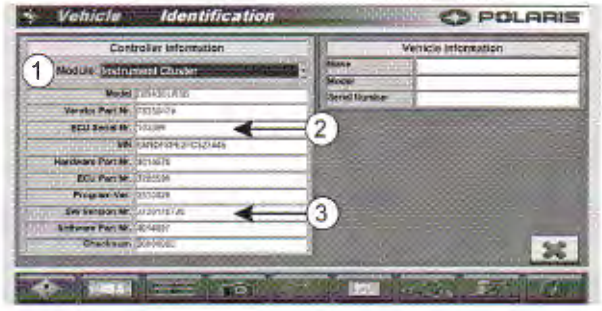
Item ② is the model number of the vehicle the ECU is installed on. This is the information transferred from the ECU when a service replacement ECU is installed.

Item ③ is the vehicle serial number.

Item ④ is the Polaris part number of the ECU and should match the number in the vehicle's parts catalog.

Item ⑤ is the ECU calibration software part number. This number must match the number provided by Digital Wrench when performing the ECU Reflash procedure and referenced if new ECU calibration files are released.

INSTRUMENT CLUSTER INFORMATION:



The drop-down menu ① will display what information is shown. Click to select ""Instrument Cluster".

Item ② is the serial number for the instrument cluster. When the cluster is an IDD, this is the number used when registering the cluster with RIDER-X.

Item ③ is the software program version number.

Special Tests Menu

The SPECIAL TESTS (Tool Box Icon) in Digital Wrench® gives the service technician the following options:

- Vehicle History Information
- Output State Control Testing
- TPS Set Procedure
- Service Report
- ECU Replacement
- Security Functions (2012 - Current Models Only)
- Engine Controller Reprogramming
- Vehicle Information
- Feature Configuration/Registration

NOTE: Special Tests menu selections will populate according to vehicle selected.

Digital Wrench – Vehicle Historical Information

Vehicle Historical Information is located under the Special Tests Menu.

The screen will show the user total engine run-time, number or engine overheat and shut-down events, and total TPS or engine RPM history in hours.

DIGITAL WRENCH VEHICLE HISTORICAL INFORMATION	
REF.	**DESCRIPTION**
①	Event Counter – This table logs the number of engine overheats, overheat shut-downs and shut-downs for DET protection.
②	TPS / RPM Bar Graph — Bar graph depicts values compared to total engine run-time.
③	TPS or Engine RPM display buttons.

Digital Wrench – Service Report

A Service Report is one-time snap shot of all the vehicle information, and data values the ECU monitors on the vehicle.

The Service Report will also capture any current / historic trouble codes and vehicle historical information.

NOTE: Instrument cluster information is included on the Service Report if it powered-on at the time the report is generated.

DIGITAL WRENCH SERVICE REPORT	
REF.	DESCRIPTION
①	Service Report Viewer – Scroll up and down to view entire report.
②	View Current – Click to submit request for a new Service Report
③	Save Current – Click to save the Service Report as a .txt file to the PC / Laptop.
④	View Saved – Click to open folder where saved reports are stored on the PC / Laptop.
⑤	Send Report – Click to submit the report to Polaris. Report will be included for the vehicle under Unit Inquiry. This feature only works when the PC / Laptop is connected to the Internet, and an accurate Polaris dealer number is entered on the Digital Wrench Configurations Screen.

After creating a Service Report, scroll up and down through the report to verify all of the data items are present.

NOTE: To obtain the most-accurate data information, run the engine on a test stand in a well ventilated area. Remember to supply power to the instrument cluster if you want instrument cluster information on the Service Report.

It is recommended that a Service Report be created for each vehicle at the time of Pre-Delivery Inspection (PDI) and saved on the service PC / Laptop and submitted to Polaris Unit Inquiry.

To submit a Service Report to Polaris, first create the report or open a report from the saved report location.

Click on Send Report.

The next screen will prompt the user to enter the report name, name of technician submitting report, and a comments section.

After filling the required fields, click on "OK" to submit the report to Polaris.

NOTE: If the PC / Laptop is not connected to the Internet or the dealer number is either not entered or incorrect on the configurations menu, Digital Wrench will prompt the user to resolve the issue.

If this occurs, a new Service Report will need to be created and re-submitted.

Digital Wrench – Output State Control Testing – PRO-RIDE

Output State Control is a menu item located under Special Tests. Output State Control a set of service tests that can be used to determine if the ECU can perform the selected operation when commanded by the user.

NOTE: Verify the stand-alone or vehicle battery is fully charged prior to performing tests.

⚠ CAUTION

Performing fuel pump, ignition coil, or fuel injector tests can present a potential fire or electrical shock hazard. Never handle ignition components when performing ignition coil tests. Verify fuel hoses are secured and fuel injectors are installed in the engine prior to performing fuel pump or fuel injector testing. Do not smoke or perform fuel system test around open flame.

DIGITAL WRENCH OUTPUT STATE CONTROL TESTING	
REF.	**DESCRIPTION**
①	List of components that can be tested. Select a test with the pointer and then push "Start" to initiate the test.
②	Test Display Field – When test is running, a countdown timer will display in this field along with an "Abort" button.
③	Start Button – Click on the "Start" button to initiate the test.

IMPORTANT: Verify there is a sufficient amount of fuel in the fuel tank to prevent fuel pump damage when performing fuel pump test.

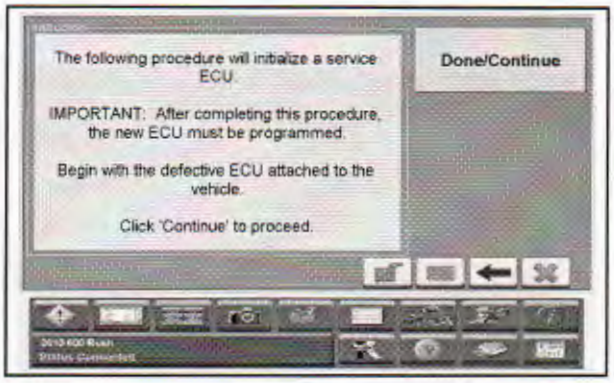
NOTE: Test items may appear different than what is shown and are vehicle-specific.

Some test items require battery power connected to the DC PWR Test connector.

ECU Replacement

Use the ECU replacement feature whenever installing a new service ECU on the vehicle. Follow the guided procedures in Digital Wrench to perform the ECU replacement procedure.

NOTE: The ECU replacement function initializes the new service ECU. Service ECUs cannot be reflashed without first performing this procedure.



The procedure copies the model ID number from the original ECU, and then copies it to the new service ECU.

NOTE: The procedure cannot be reversed once the model ID number is copied to the new service ECU. The service ECU will forever retain the model ID number copied on it using this procedure.

If communication with the original ECU cannot be established, Digital Wrench will guide the user through a manual model ID, and with some vehicles, all vehicle-specific settings, selection procedure. Pay careful attention to the model selected when using the manual procedure.

After completing the ECU replacement procedure on 2010 – 2012 600 / 800 PRO-RIDE vehicles, reflash the

ECU with the current ECU calibration file for the vehicle using the engine controller reprogramming procedure.

Digital Wrench – Fuel Injector Replacement – PRO-RIDE

NOTE: Some 600 / 800 PRO-RIDE snowmobiles allow the user to the select the fuel injector color code without having to perform the Engine Controller Reflash Procedure.

If Fuel Injector Replacement is not shown under the Special Tests Menu for the vehicle connected to Digital Wrench, then the following procedure does not apply and the technician can only change fuel injector replacement / injector color code changes by performing the Engine Controller Reflash Procedure.

CAUTION

Serious engine damage may occur if the incorrect fuel injector color is selected. Always verify the fuel injector color before programming.

The MAG and PTO fuel injectors are noted with labels. Install the fuel injectors in their correct locations.

RED, BLUE, or YELLOW color bands ② are located at the base of each fuel injector. When replacing fuel injectors, reference this color band to ensure the right fuel map is selected using Digital Wrench.

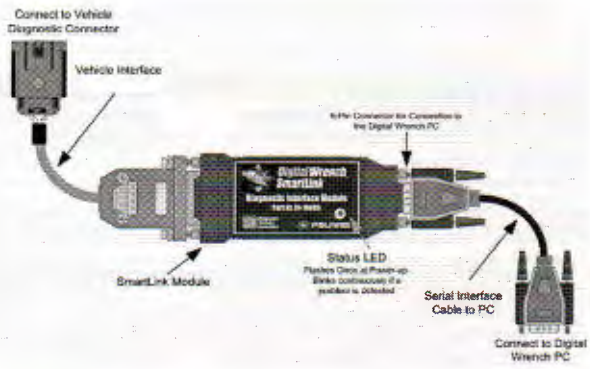
1. Obtain a fully-charged 12V battery.

   NOTE: If the snowmobile is equipped with a fully-charged battery, it can be used to supply power to the test connectors. If using a stand-alone service battery, do not place the battery in the tunnel footwells. Place the battery on the floor next to the engine compartment.

2. Open the left side engine compartment panel. Locate the Digital Wrench communications connector and ECM PWR connector.
3. Connect the Chassis Power-Up Harness to the ECM PWR test connector.

Chassis Power-Up Harness PS-47296-B

4. Connect the power-up harness to the battery.
5. Connect the SmartLink cable to the Digital Wrench communications connector on the vehicle and the laptop.

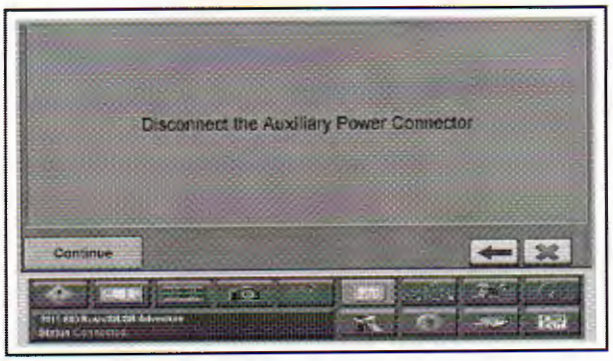


6. Select the model year, product line and vehicle description by selecting the "Change Vehicle Type" icon.

7. Select the "Special Tests" icon. Select "Fuel Injector Replacement".
8. The next screen will prompt the user to verify the Chassis Power-Up harness is connected to the vehicle. Click "Done / Continue" to proceed.

9. Digital Wrench will scan the ECU and display the current fuel injector color code on the screen. If the fuel injectors installed on the engine are a different color than what is shown, click on the correct color box on the right side of the screen. Click on "Continue".

10. Digital Wrench will set the fuel injector setting in the ECU. After this process is completed, disconnect the Chassis Power-Up harness from the ECM PWR test connector. Wait for 10 seconds and then reconnect the power connector.



11. Click "Continue". Repeat steps 7 – 10 to verify the correct fuel injector color is set in the ECU.

Engine Controller Reprogramming (Reflash)

Process Overview

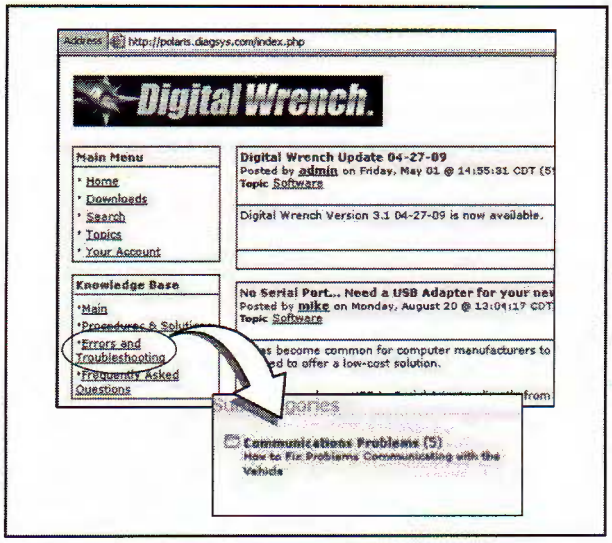
The reprogramming feature is in the Special Tests menu on the Digital Wrench screen. Start Digital Wrench and click on the Special Tests menu icon (Red Tool Box). The technician should be familiar with the process and with computer operation in general before attempting to reprogram an ECU.

The Digital Wrench Engine Controller Reprogramming (or "Reflash") feature allows reprogramming of the ECU fuel and ignition map. To successfully reprogram the ECU, an Authorization Key must be obtained by entering a Request Code in the box provided on the Reflash Authorization site. The Request Code is automatically generated by Digital Wrench® during the reprogramming process. The Reflash Authorization site is located under the "**Service and Warranty**" drop down menu on the dealer website at: *www.polarisdealers.com*.

NOTE: Failure to follow the reprogramming instructions completely and correctly can result in an engine that does not run! Replacement ECUs are programmed as "no-start" and require a reflash for them to work.

Reprogramming (Reflash) Tips

- BATTERY VOLTAGE: The majority of problems with reprogramming can be attributed to a low battery. Be sure the battery voltage (no load) is at least 13 volts and at least 12.5 volts with the key 'ON'. Connect a battery charger if necessary to bring voltage level above minimum. Fully charge the battery before you attempt to reprogram.
- DEDICATED LAPTOP: Best results are obtained using a laptop computer that is "dedicated to Digital Wrench®". A laptop that is used by a variety of people and in several applications around the dealership is more likely to cause a reprogramming problem than one dedicated to Digital Wrench diagnostics only.
- OBTAINING THE LATEST UPDATE: Reprogramming updates are provided periodically and contain the most recent calibrations (see "Digital Wrench Updates").
- CLOSE NON-ESSENTIAL PROGRAMS: Polaris recommends that you DO NOT install non-essential programs on a Service Department laptop. Camera detection software, Virus Scanners, Tool Bars, etc. may clog up memory if running in the background and make it harder for the diagnostic software to operate.
- KNOW THE PROCESS: If you are not familiar with the entire reprogramming process, review the HELP section of the diagnostic software before you attempt reprogramming. Click on the **?** on the tool bar or press F11. The information in the on-line help is the most current and complete information available. This should be your first step until you are familiar with the process.
- COMMUNICATION PROBLEMS: If you have had problems communicating with a vehicle while performing diagnostic functions, do not attempt reprogramming until the cause has been identified and fixed. Check all connections, and be sure battery voltage is as specified.
- Proceed to *http://polaris.diagsys.com* for specific information and FAQs on how to troubleshoot communication problems.



- DON'T DISTURB THE PC: While reprogramming is in progress, don't move the mouse and don't touch the keyboard. The process only takes a few minutes, and is best left alone until complete.

NOTE: New service replacement ECUs are programmed as "no-start" and must be reflashed for the engine and fuel injector code.

1. Verify the most current update is downloaded and loaded into Digital Wrench.
2. Connect the communication cables to the snowmobile connectors.
3. Start Digital Wrench. Select the model year and vehicle using the "CHANGE VEHICLE TYPE" button.
4. Click on the "SPECIAL TESTS" icon.
5. Click on "ENGINE CONTROLLER REPROGRAMMING".

6. Select the engine model and color of the injectors installed on the engine. Record the 7 digit injector part number. Click "CONTINUE".

   NOTE: If only one calibration map file is shown, and not three files based on fuel injector color, the fuel injector color setting in the ECU will not be changed by the reprogramming procedure.

   All fuel injectors on the engine must share the same color code.

   If applicable, the most-current reflash files will be located at the top of the list and will not have "SUPERSEDED" in the file name.

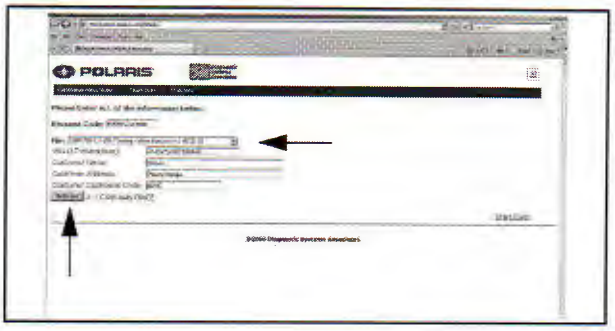
   Files with "SUPERSEDED" in the file name denote older calibrations.

7. A request code will be generated. Record the code.

8. Access www.polarisdealers.com. Locate "REFLASH AUTHORIZATION" under the "SERVICE AND WARRANTY" drop-down menu.

9. Enter the REQUEST CODE generated by Digital Wrench® into the information box.

10. After entering the REQUEST CODE, click "CONTINUE".

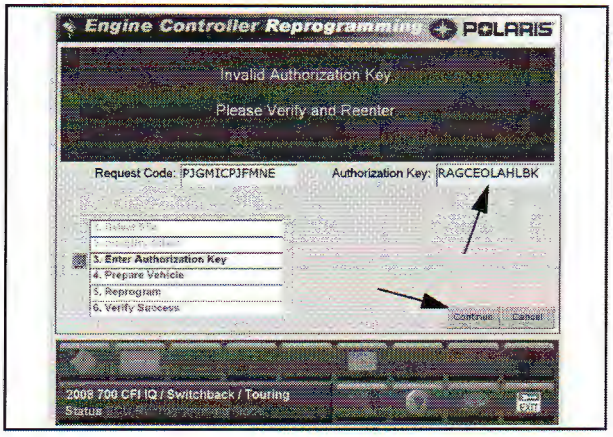


11. The next screen asks for the following information:
    - Desired Reflash File
    - Vehicle VIN
    - Customer Name, Address, Zip Code

12. After entering the required information, click "CONTINUE".

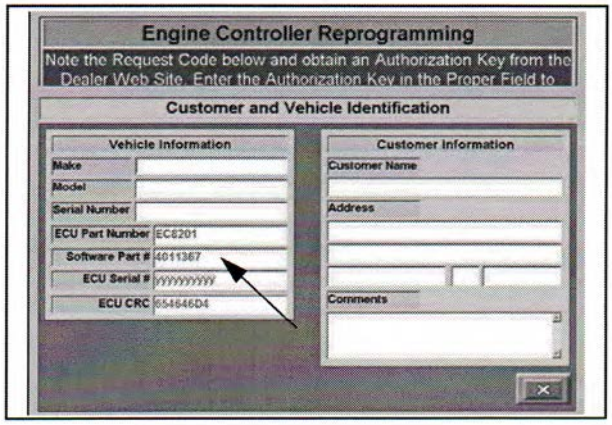
13. If all of the information was accurate, the website will generate and AUTHORIZATION CODE.

14. Copy the code, and then enter the code into the AUTHORIZATION box in Digital Wrench. Click "CONTINUE".



15. The reflash process will begin. Verify all connections are properly made. Do not touch anything during the process.

16. Verify the reflash was a success by comparing the software ID number listed under the "CUSTOMER AND VEHICLE IDENTIFICATION" button with the number recorded in step 6.



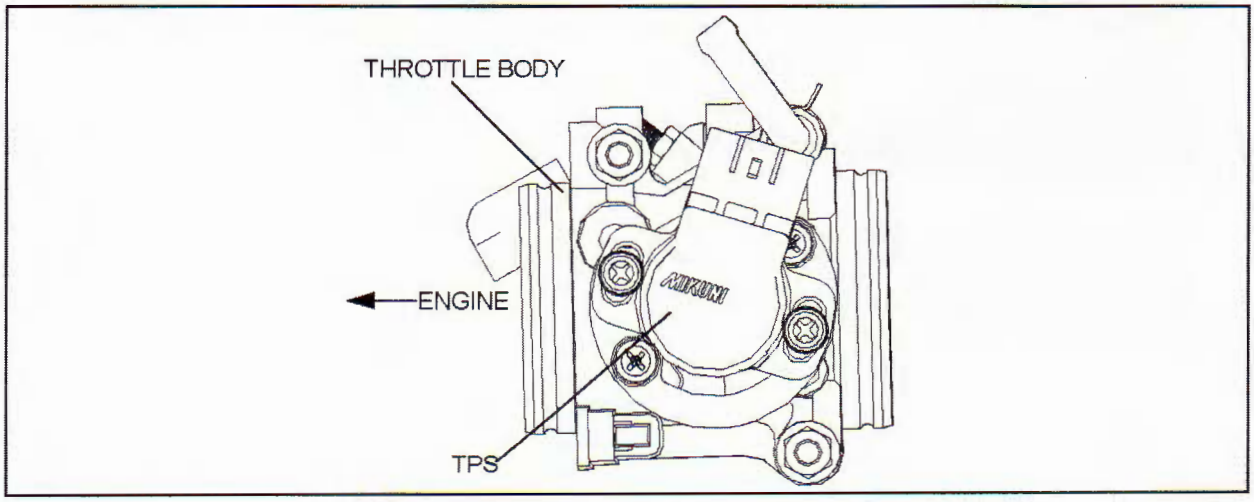
NOTE: If security function was enabled on vehicle prior to replacing the ECU and/or performing the engine controller reprogramming, the Security Enable procedure will have to be completed to activate security in the ECU.

THROTTLE POSITION SENSOR

Throttle Position Sensor (TPS) Overview

CAUTION

The throttle position sensor (TPS) is set at the time of throttle body manufacture. TPS adjustments should only be made if the TPS was loosened, repositioned, or replaced.
Any adjustments made to the idle air gap screw, TPS sensor, or throttle synchronization screw should only be performed when directed to so by the Digital Wrench® Diagnostic Software.



The Throttle Position Sensor (TPS) is a 5 VDC potentiometer (variable resistance) type sensor mounted to the PTO side of the throttle body. The internal components of the sensor are connected to the throttle shaft. The TPS output signal changes as the throttle plates are opened and closed by the operator. The ECU uses this signal to determine the position of the throttle plates.

The TPS is set at the factory based on a throttle body idle air gap flow specification. Adjustments should only be performed when:

- TPS is replaced
- TPS or throttle body is mis-adjusted
- Troubleshooting erratic or inconsistent engine idle, and/or engine performance

NOTE: Follow these guidelines whenever working with the TPS:

- Use Digital Wrench® when checking the TPS voltage. Do not use any other diagnostic tool.
- Disconnect throttle cable from the throttle lever. If the TPS idle voltage changes, the throttle cable is too tight. Readjust throttle cable.
- Verify the throttle cable is not pulling on the throttle plate cam. Turn the throttle cable in line adjuster clockwise to loosen the cable. If the cable continues to pull on the throttle plate cam, readjust the throttle cable threaded barrel on the throttle body.
- All engine management sensors/switches must be connected to obtain accurate TPS voltage readings.
- Use a fully charged 12VDC battery to power the engine management system

TPS Tests

Two tests can be performed to quickly determine if further testing is required.

TEST 1: TPS Idle Voltage

1. Connect Digital Wrench® to the vehicle. Confirm the throttle lever free play is set to specification, and the throttle cable is not pulling on the throttle plate cam.
2. Click on the DATA GRID ICON to view the current sensor readings.
3. Locate the TPS VOLTAGE reading and compare it to the specification for the vehicle. Verify SENSOR REFERENCE VOLTAGE is 4.9-5.0 VDC.

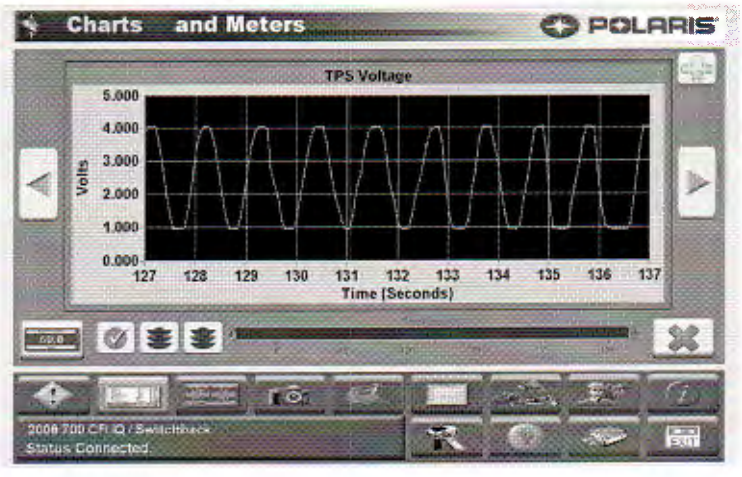
TPS Voltage	**0.947**	**Volts**
Exhaust Temperature	**32.0**	**Deg F.**
Intake Air Temperature	**72.7**	**Deg F.**
Engine Temperature	**70.5**	**Deg F.**
Barometric Pressure	**29.1**	**InHg**
Chassis Voltage	**0.00**	**Volts**
Vehicle Speed	**0**	**MPH**
Sensor Reference Voltage	**4.990**	**Volts**

TPS IDLE BASE SETTING VOLTAGE	
MODEL	**SPECIFICATION**
600 DC-CFI Engine	.94-.96 VDC
800 DC-CFI Engine	.93-.95 VDC

TEST 2: TPS Signal Sweep

Utilize the sensor graph function to view the TPS voltage return signal voltage as a line graph.

4. Slowly move the throttle lever in and out. The return signal line should change without any erratic jumps or gaps.



5. If erratic jumps or gaps are encountered, inspect the wiring, and connector pins at the sensor and ECU connector.
6. If no wiring problems are found, inspect the TPS to verify it is securely mounted to the throttle body. If loose, it will have to be readjusted.
7. Replace the TPS if steps 3 and 4 do not resolve the issue.

TPS Set Procedure Menu

The TPS Set Procedure Menu must be accessed to perform the following procedures:

- Idle Voltage Setting Adjustment
- Base and Idle Voltage Adjustments - TPS Replacement
- Throttle Body Synchronization-Full Adjustment Procedure

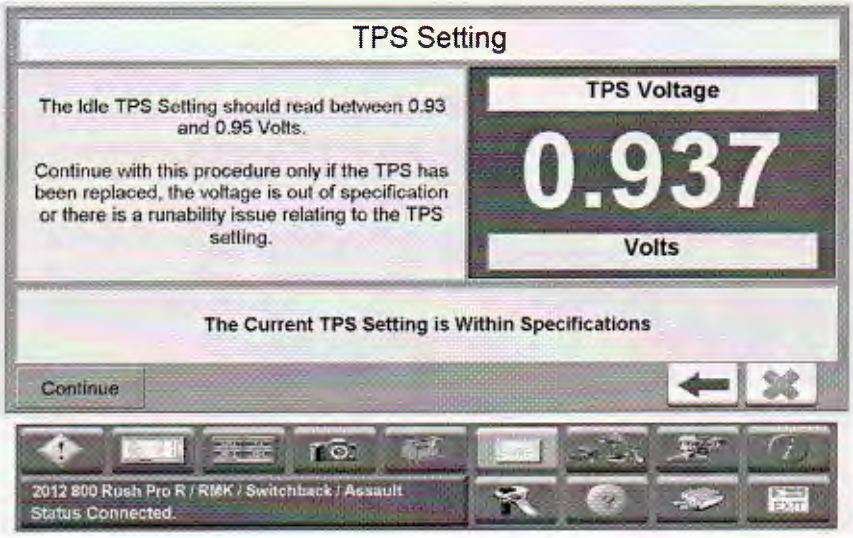
To access the TPS Set Procedure Menu, click on the Special Tests (Red Tool Box) button.

Select Menu Option 3 - TPS Set Procedure

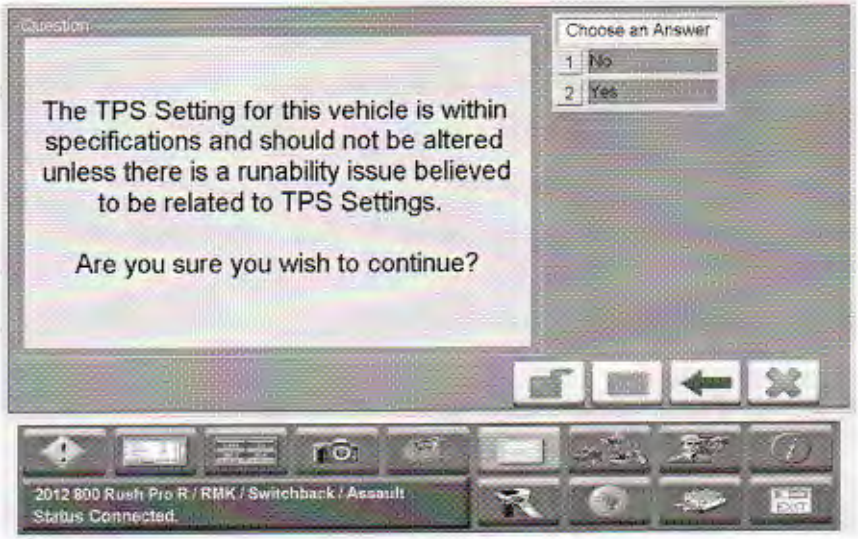
The next screen will display the current idle voltage setting. The text will match the voltage specification required by the vehicle.

If the voltage is within specification, the dialogue box will indicate the current TPS setting is within specifications, and the CONTINUE button will be RED.

If the voltage is outside specification, the dialogue box will indicate the current TPS setting is outside specifications, and the CONTINUE button will be GREEN.

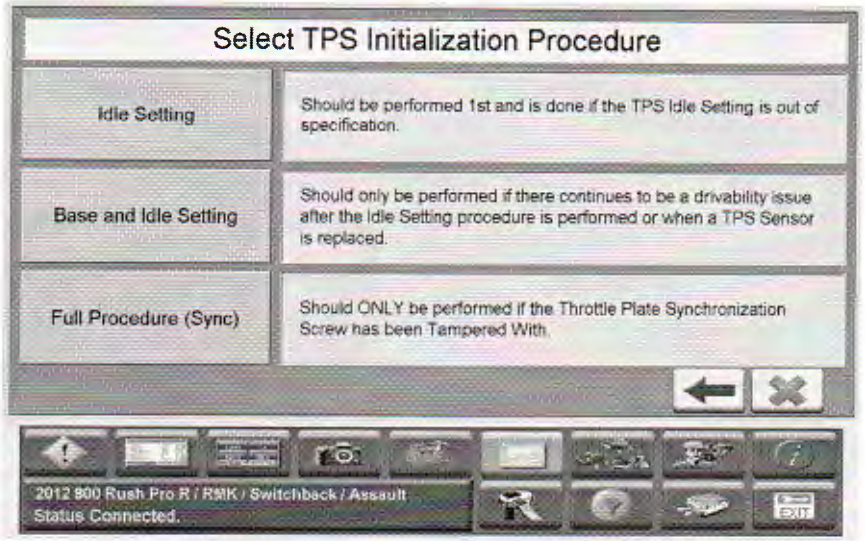


If the technician clicks on the RED CONTINUE button on the TPS Setting screen, the following screen will be displayed. This screen prompts the user to verify they want to make an adjustment to the TPS knowing the idle voltage setting is within specification.



Clicking NO will end the procedure and return the user to the Special Tests Menu. Clicking YES will display the TPS Initialization Procedure screen.

This is the TPS Initialization Procedure screen. A detailed description of each procedure is outlined below.



IDLE SETTING

Idle Setting	Should be performed 1st and is done if the TPS Idle Setting is out of specification.

Access the Idle Setting procedure to set the idle speed voltage. Digital Wrench® will guide the technician through the process for setting the TPS idle voltage. This procedure should only be performed if the TPS idle voltage setting is incorrect, or when minor adjustments to the engine idle speed are desired.

Minor adjustments to the engine idle speed may be desired if the engine idle is too low or too high due to extreme external environmental factors such as altitude. In addition to environmental factors, normal throttle body component wear and tear may cause changes in idle speed over the life of the vehicle. The idle speed screw can be adjusted to compensate for these changes.

NOTE: Never set the TPS idle voltage below or above the specified voltage range. Setting the idle voltage at the low end of the range will result in a lower idle speed. Setting the idle voltage at the upper end of the scale will result in a higher idle speed.

Always check engine idle speed when the engine is at operating temperature and the idle speed has stabilized.

Engine idle speed with the engine at operating temperature is 1700 +/- 200 RPM.

600/800 DC-CFI Engine Idle Speed (Engine at operating temperature) 1700 +/- 200 RPM

NOTE: Test vehicle after performing the idle setting procedure to verify proper vehicle operation.

BASE AND IDLE SETTING

Base and Idle Setting	Should only be performed if there continues to be a drivability issue after the Idle Setting procedure is performed or when a TPS Sensor is replaced.

CAUTION

The throttle position sensor (TPS) is set at the time of throttle body manufacture. TPS adjustments should only be made if the TPS was loosened, repositioned, or replaced.
Any adjustments made to the idle air gap screw, TPS sensor, or throttle synchronization screw should only be performed when directed to so by the Digital Wrench® Diagnostic Software.

Access the Base and Idle Setting procedure when repairing a loose TPS sensor, or when replacing the sensor with a new part.

NOTE: New throttle body service parts include the TPS sensor and are set at the time of manufacture. Do not perform the Base and Idle Setting procedure.

Digital Wrench® will guide the technician through the process of establishing the TPS baseline voltage and TPS idle voltage settings.

NOTE: Test vehicle after performing repairing/replacing TPS sensor and after completing base and idle setting procedure to verify proper vehicle operation.

FULL PROCEDURE (Synchronization)

Full Procedure (Sync)	Should ONLY be performed if the Throttle Plate Synchronization Screw has been Tampered With.

CAUTION

Severe engine damage may occur if the throttle plate synchronization is tampered with or set incorrectly. Read and understand the instructions outlined in Digital Wrench® when performing this procedure.

Access the Full Procedure (Sync) procedure only when it is known the throttle body plate synchronization screw has been tampered with and the throttle plates are out of synchronization.

Digital Wrench® will guide the technician through the process of establishing the correct synchronization between the MAG and PTO throttle plates, setting the TPS baseline voltage, and setting the TPS idle voltage.

NOTE: If the technician cannot confirm the throttle plate synchronization is set correctly, throttle body replacement is required.

Test vehicle after performing the full procedure (synchronization) procedure to verify proper vehicle operation.

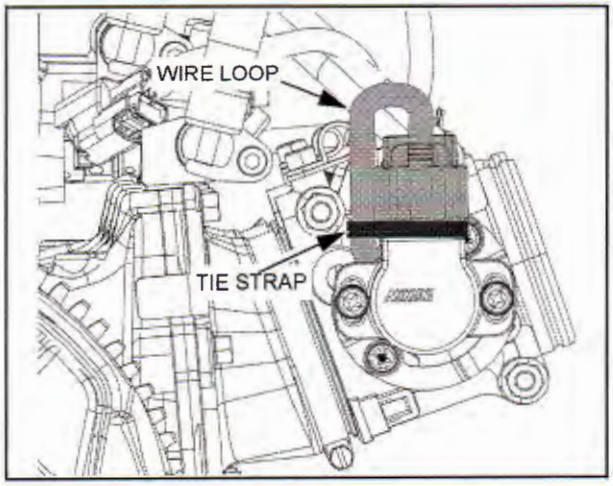
Throttle Position Sensor (TPS) Wire Harness Routing

To ensure foreign material and water do not enter the TPS connector, the wire harness must be pulled down in a loop and secured tightly to the TPS housing.

NOTE: All 2012 and early-build 2013 models use a TPS wire harness with a rubber boot.

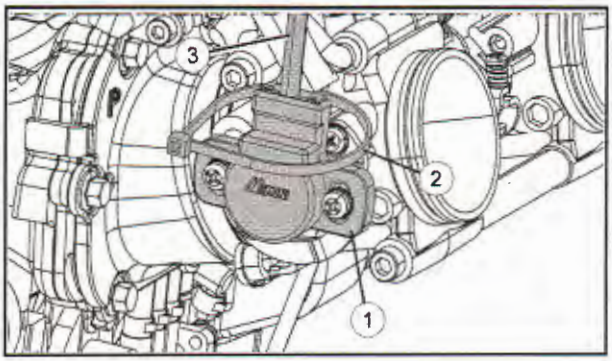
When removing the TPS, cut the tie strap before disconnecting the harness. After installing the TPS and wire connector, secure the harness with tie strap as shown.

NOTE: The TPS connectors must be clean and dry. Blow dry with compressed air. Do not apply dielectric grease to terminals.



Flying Lead TPS

2014 600 / 800 models feature throttle position sensors with flying lead wire harnesses.



When servicing the TPS, verify the wire harness (3) is looped downward, and secured to the TPS (1) using a panduit strap (2).

VARIABLE EXHAUST SYSTEM (VES)

Overview

The Polaris VES system uses exhaust valves

(1 valve per cylinder) to control the exhaust port height. The valves are actuated by controlling cylinder pressure with a solenoid, bellows, and a series of vent hoses.

The solenoid is powered by 12 VDC and turned on and off by the engine control unit (ECU).

When the solenoid is powered (ON), the VES vent paths are open allowing cylinder pressure to vent to atmosphere, and the guillotine valves remain in the closed (down) position.

When the solenoid is OFF, the vent path(s) are closed. Cylinder gas pressure builds within the exhaust valve housings beneath the bellows. Once the cylinder gas pressure pushing on the bellows overcomes the spring pressure, the bellows will inflate, lifting the guillotine valves from the closed (down) position.

The ECU uses engine RPM and throttle position (TPS) as the primary variable exhaust system solenoid control signals. In general, the ECU will close the solenoid at 100% wide open throttle (WOT) at approximately 6500-6900 RPM.

CAUTION
Do not plug the vent hoses or tamper with solenoid. Severe engine damage may occur.

When troubleshooting the variable exhaust system, follow these guidelines:

- Use the recommended oil. Polaris recommends VES engine oil for maximum VES performance.
- Never mix different brands of oil.
- Follow the recommended valve periodic maintenance schedule.
- Do not use harsh abrasives or sharp tools when cleaning the valves. Small abrasions and nicks can create pockets of carbon formation.
- Replace rusted/corroded springs.
- Inspect the bellows and replace if distorted, stretched, or torn.
- Replace the housing gasket each time the housing is removed from the cylinder. Do not modify the gasket in anyway.
- Inspect the vent hoses and fittings for leaks. Remove and apply thread sealant to fittings that appear to be leaking oil/exhaust gases.
- Verify all hose clamps are tight.
- Use a Mity Vac hand pump to test the solenoid function. The solenoid must hold pressure and not leak when not powered. The solenoid must vent when powered with 12VDC.

ELECTRONIC REVERSE (PERC)

Overview

The operation of the electronic reverse system is achieved by automatically reversing the engine rotation with a push of a button. When in reverse, an indicator light will flash, indicating the engine is in the reverse mode. The design of the clutches is matched to the specifications that will allow the backwards rotation of the engine to move the sled in reverse. Getting back to forward is as easy as pushing the button again.

Operation

⚠ WARNING

Reverse operation, even at low speeds, may cause loss of control, resulting in serious injury or death. To avoid loss of control, always:
LOOK BEHIND BEFORE AND WHILE BACKING.
AVOID SHARP TURNS.
SHIFT TO OR FROM REVERSE ONLY WHEN STOPPED.
APPLY THROTTLE SLOWLY.

CAUTION

To avoid personal injury and/or engine damage, do not operate the electric start or recoil while engine is running.

1. Ensure that the vehicle is stopped and the engine is warmed up and running at idle.

   NOTE: ***The system will only engage in reverse if the engine is below 4000 RPM. If engine is above 4000 RPM the system cannot be activated.***

2. Ensure that the path behind you is clear.
3. Push and hold the yellow reverse button on the left hand control for 1 second and then release the button. The reverse light on the instrument panel will flash when engine is in reverse motion.

   NOTE: ***The engine will automatically reduce RPM and it will reverse the rotation of the engine when the RPM is at the lowest RPM point.***

4. Ensure that the path behind you is clear.
5. Slowly apply throttle until the sled starts to move in reverse, and carefully direct the sled in the direction that you want.

   NOTE: ***Maximum RPM in reverse is 6000 RPM.***

   If the engine stops running or is shut off while in reverse. The engine will start in forward gear.

FORWARD OPERATION

1. If unit was operated in reverse, ensure that the path ahead is clear, and push and hold the reverse button for 1 second and then release the button. The engine will now automatically change direction form reverse to forward and the reverse light on the instrument panel will stop flashing.

   NOTE: ***When servicing clutches, ensure that the vehicle is in forward gear. If not damage to the driven clutch may occur when removing the belt.***

Altitude Setting

If your engine is carbureted, you can adjust the elevation setting of the Polaris electric reverse control (PERC). If your engine is a Cleanfire system, this is automatically done through the engine controller unit (ECU), and you do not need to do any setting.

At higher elevations over 6000 feet (1829m), the engine requires a different ignition RPM setting to improve the operation of the reverse system.

To set the altitude settings:

1. With the engine running, push and hold the reverse button for 5 - 6 seconds and then release the button.
2. The reverse light will flash rapidly on the instrument panel.
3. You have now set the PERC system to the higher elevation setting.
4. To go back to the low elevation setting repeat step 1. The reverse light will flash slowly indicating that the system is now in the lower elevation setting.

   NOTE: ***The elevation setting will be set in the memory (engine running or not) until it is changed.***

Important Notes

- Max RPM for shifting into reverse = 4000 RPM
- Max RPM for operating in reverse = 6000 RPM
- Engine must first reach 900 RPM at start up before the reverse system can be used. The system works between 900 and 4000 RPM.

- If the button is pushed above 4000 RPM the system is bypassed and nothing will happen.
- Flashing light on the instrument panel indicates that the system is in reverse. On carbureted units a slow flash indicates that the system is set for low elevation, and a fast flash indicates the system is set up for high elevation. Push and hold the reverse button for longer than 5 seconds to toggle back and forth from high and low elevation settings. On Cleanfire units this is automatically done through the engine controller unit (ECU).
- Elevation above 6000 ft (1829m) requires a different timing curve to eliminate a "kick-back" effect.
- If engine is shut off or dies in forward or reverse gear, the engine when started will automatically be in forward gear.
- When servicing clutches, ensure that the vehicle is in the forward gear.
- On DC-CFI models the PERC system will not operate if the TPS is out of adjustment or the 5 tooth CPS signal is interrupted or broken.

TROUBLESHOOTING

Engine Will Not Start

- Is the key inserted in key switch and turned to RUN?
- Is the safety slap switch pulled up?
- Is the throttle lever free play set to specification?
- Is there fuel in the fuel tank?
- Is the fuel tank vent/vac. hose plugged or malfunctioning? Remove fuel tank cap and try to start engine.
- Are the spark plugs fouled? Replace with new spark plugs.
- Is there spark at the spark plugs? Test with spark plug tester.
- Inspect wire harness connectors. Are connectors disconnected? Are there any broken wires?
- Is the throttle plate gap set to specification?
- Is there fuel pressure? Test using fuel pressure gauge. Determine if fuel filter requires replacement.
- Inspect the stator using multimeter and/or Digital Wrench®. Are the fuel injectors receiving 16 VDC? Is the fuel pump receiving VDC power when pulling recoil?
- Are there any diagnostic trouble codes? Use Digital Wrench® to view trouble codes and perform guided diagnostics.
- Is the engine mechanically sound? Check cylinder compression, piston condition, etc.

Engine Starts - Won't Idle/Stalls

- Is the throttle lever free play set to specification?
- is the fuel tank vent/vac. hose plugged or malfunctioning? Remove fuel tank cap and test.
- Are the spark plugs fouled? Replace with new spark plugs.
- Inspect wire harness connectors. Are connectors disconnected? Are there any broken wires?
- Is there fuel pressure? Test using fuel pressure gauge. Determine if fuel filter requires replacement.
- Are there any diagnostic trouble codes? Use Digital Wrench® to view trouble codes and perform guided diagnostics.
- Is the throttle plate gap/TPS set to specification?

Poor Performance

- Fuel quality. Use recommended fuel (91 octane minimum).
- Ethanol/Non-ethanol fuel resistor plug. Is the correct fuel selector plug connected for the type of fuel in the tank?
- Are the spark plugs fouled? Correct gap set?
- Is the fuel pressure correct at idle and during operation?
- Fuel filter. Has the fuel filter been serviced as part of periodic maintenance?
- VES system. Have the valves, and bases been serviced/cleaned as part of periodic maintenance?
- VES system. Are the hoses loose, damaged or plugged/frozen?
- Inspect fuel injector power. Are injectors receiving 16 VDC during operation?
- Is the engine mechanically sound? Perform a compression check on both cylinders. Are the results within 10% of each other?
- Inspect piston skirts through exhaust ports. Is there any scuffing, ring damage, etc.?
- Inspect the exhaust system. Are there any leaks, missing springs, or damaged exhaust seals?
- Driveline. Inspect the driveline for damage. Set the track tension to specification. Is the track too tight or missing lugs? Is the gear ratio correct for desired riding style?
- Inspect the drive, driven clutches, and drive belt. Replace worn or damaged parts. Clean clutch sheaves, and set belt deflection.
- Are there any diagnostic trouble codes (DTCs). Use Digital Wrench® to retrieve any codes.
- Reference CFI Troubleshooting Flowchart
- Is detonation occurring and/or detonation engine RPM limit occurring? Reference Detonation Troubleshooting Flowchart/checklist.

DC-CFI Troubleshooting Flowchart

Reference the following flowchart for general DC-CFI troubleshooting techniques.

STEP 1 Preliminary Checks	DOCUMENT THE BASICS 1. VIN 2. Vehicle Miles 3. Issue(s) 4. Vehicle / Engine Modifications (Non-approved modifications may cause performance/durability issues.) 5. Check unit against Unit Inquiry for any outstanding Service Bulletins or Team Tips 6. Type of fuel in the fuel tank / Fuel Selector Status The fuel selector jumper wires or resistor plug must be set as outlined below based off of the type of fuel in the tank. Fuel octane not known, < 91+ octane, or any 87+ octane oxygenated (ethanol, MTBE, etc, blended) fuel = 24 OHM Resistor 91+ octane non-oxygenated (non-ethanol) fuel = 160 OHM Resistor
STEP 2 Using Digital Wrench	DIGITAL WRENCH (DW) 1. Is DW the most current version? Check the DW update site (http://polaris.diagsys.com/modules.php?name=Downloads) to review and download any available updates. 2. Connect DW to the vehicle. Are there any trouble code(s)? Document all of the trouble code(s), both historic and current. Use guided diagnostics to troubleshoot current trouble code(s). Once repairs are made and trouble code(s) are cleared, do any return? Start the engine and confirm trouble code(s) to not re-appear. If trouble code(s) re-appear, continue to troubleshoot issue using guided diagnostics and Service Manual. 3. Review the ECU information for the vehicle. Does the ECU map match the vehicle's configuration / fuel injector color and part number? If not, reflash the ECU using the correct color-coded map / part number that matches the fuel injector color / part number installed on the engine. 4. Is the vehicle subject to any Service Bulletins, or Team Tips where revised ECU reflash files have been made available? If so, verify the Service Bulletin or Team Tip has been performed if required and the ECU information matches the revised reflash files.
STEP 3 Clutching	CLUTCHING 1. Do the drive clutch weights match what is specified for the elevation where the vehicle is operated? If not, install the specified drive clutch weights based model specifications for the vehicle located in the appropriate Service Manual or Owner's Manual Supplement. 2. Inspect drive belt deflection and adjust if required. Replace the belt if it is hour-glassed, shows heavy glazing or severely worn.
STEP 4 Throttle Lever	THROTTLE LEVER FREEPLAY 1. Check the throttle lever freeplay. Too much slack in the throttle cable can cause runability issues. 2. Is the throttle lever freeplay = .010 - .030 inches? If not, reset the freeplay to specification and retest vehicle.
STEP 5 Fuel System	FUEL SYSTEM 1. Using Digital Wrench, verify the fuel injector supply voltage is 16VDC when the engine is running. 2. Using the appropriate fuel pressure gauge (see Service Manual), verify the fuel pressure when the engine is running is 58 PSI (4BAR). 3. If the fuel pump voltage is good, but the fuel pressure low, replace the fuel filter and recheck fuel pressure.
STEP 6 EGT Sensor	EXHAUST GAS TEMPERATURE SENSOR 1. Using the data display tool in Digital Wrench, monitor the EGT sensor function while the engine is running (vehicle raised off the ground on a sled lift or track stand) at or above 3,000 RPM. 2. Does the exhaust gas temperature value change with changing throttle lever input after running the engine for 60 seconds at or above 3,000 RPM? 3. If the EGT value does not change, inspect the sensor wiring and connections. If the wiring and connections are good, replace the sensor and retest.
STEP 7 Exhaust System	EXHAUST SYSTEM 1. Check exhaust system for leaks, missing, over-stretched damaged springs, and worn out seals. Replace components as required. 2. Remove the resonator and shake. Replace resonator if shaking reveals loose internal baffle plates.
STEP 8 Ignition System	IGNITION SYSTEM 1. Insect the spark plug caps and spark plugs. Are the caps worn, oblong, or bent? Replace cap(s) as required. 2. Have the spark plug(s) worn into the top of the cap(s)? If so, replace both the affected spark plug and cap as required.
STEP 9 Exhaust Valves	EXHAUST VALVES 1. Inspect VES system. Clean valve blades as outlined in the periodic maintenance table. Inspect valve bellows for tears, damage. 2. Inspect the exhaust valve solenoid vent system (discharge hose) for leaks or plugged / kinked hoses. Repair or re-route hoses / connections as required. Verify outlet hoses is not freezing during operation. Inspect fittings at solenoid are not leaking. 3. Do the exhaust valves move as RPM increases? Test exhaust valve motion by installing a 1 inch piece of clear, fuel vent hose onto each EV cap nut through the hole in each EV housing. Start the engine and increase the engine speed past 6,000 RPM to check for proper valve operation. 4. Do both valves move at the same time / rate? If not, inspect one or both EV assemblies. Inspect for torn bellows, worn EV springs and loose bellows cap nuts. Verify the EV base vent and cylinder holes are clean and free from carbon or heavy residue.
STEP 10 Pistons	PISTONS 1. With the exhaust valve assemblies removed from the cylinders, insert a piston wash light or use a flashlight to inspect the exhaust-side of the pistons. Is heavy scoring, scratching or ring damage visible? 2. If piston skirt, or ring damage is visible through the exhaust valve slots, the pistons should be replaced and the cylinders inspected and lightly honed with an Ammco 320 grit (or equivalent) NiCaSil oversize honing stone.
STEP 11 Engine	ENGINE 1. Perform compression test. 2. Inspect crankshaft index. 3. Verify flywheel key has not sheared (flywheel out of index).

Detonation Limit Troubleshooting Flowchart

Reference the troubleshooting table at the beginning of the chapter and the following flowchart if the ECU consistently enables the detonation "dET" engine protection 6,500 RPM limiter.

STEP 1 Preliminary Checks	DOCUMENT THE BASICS 1. VIN 2. Vehicle Miles 3. Issue(s) 4. Vehicle / Engine Modifications (Non-approved engine/vehicle modifications may cause detonation.) 5. Check unit against Unit Inquiry for any outstanding Service Bulletins or Team Tips 6. Type of fuel in the fuel tank / Fuel Selector Status The fuel selector resistor plug must be set as outlined below based off of the type of fuel in the tank. Fuel octane not known, < 91+ octane, or any 87+ octane oxygenated (ethanol, MTBE, etc, blended) fuel = 24 OHM Resistor 91+ octane non-oxygenated (non-ethanol) fuel = 160 OHM Resistor
STEP 2 Using Digital Wrench	DIGITAL WRENCH (DW) 1. Is DW the most current version? Check the DW update site (http://polaris.diagsys.com/modules.php?name=Downloads) to review and download any available updates. 2. Connect DW to the vehicle. Are there any trouble code(s)? Document all of the trouble code(s), both historic and current. Use guided diagnostics to troubleshoot current trouble code(s). Once repairs are made and trouble code(s) are cleared, do any return? Start the engine and confirm trouble code(s) to not re-appear. If trouble code(s) re-appear, continue to troubleshoot issue using guided diagnostics and Service Manual. 3. Review the ECU information for the vehicle. Does the ECU map match the vehicle's configuration / fuel injector color and part number? If not, reflash the ECU using the correct color-coded map / part number that matches the fuel injector color / part number installed on the engine. 4. Is the vehicle subject to any Service Bulletins, or Team Tips where revised ECU reflash files have been made available? If so, verify the Service Bulletin or Team Tip has been performed if required and the ECU information matches the revised reflash files.
STEP 3 Fuel System	FUEL SYSTEM 1. Check the fuel level in the tank. 2. Using Digital Wrench, verify the fuel injector supply voltage is 16VDC when the engine is running and while operating the snowmobile. 3. Using the appropriate fuel pressure gauge (see Service Manual), verify the fuel pressure when the engine is running and while operating the snowmobile is 58 PSI (4BAR). 4. Verify fuel filter has been replaced as outlined in the periodic maintenance table. If it has not been replaced initially at 1,000 miles, and then at 2,000 mile intervals, replace the fuel filter. Re-check fuel pressure.
STEP 4 Exhaust Valves	EXHAUST VALVES 1. Inspect the exhaust valve solenoid vent system (discharge hoses) for leaks, plugged, kinked hoses, or icing. Repair or re-route hoses / connections as required. Verify the outlet hose is not freezing during operation. 2. Start the engine in a well-ventilated area. Raise the track off the ground with a track stand. Rev the engine to clutch engagement speed. Inspect the VES solenoid outlet hose for exhaust gas discharge. If no gas discharge is seen, the hoses may be plugged, restricted, or the solenoid circuit is damaged. 3. Do the exhaust valves move as RPM increases? Test exhaust valve motion by installing a 1 inch piece of clear, fuel vent hose onto each EV cap nut through the hole in each EV housing. Start the engine and increase the engine speed past 6,000 RPM to check for proper valve operation. 4. Do both valves move at the same time / rate? If not, inspect one or both EV assemblies. Inspect for torn bellows, worn EV springs and loose bellows cap nuts. Verify the EV base vent and cylinder holes are clean and free from carbon or heavy residue.
STEP 5 Detonation Sensor Fastener Torque	DETONATION SENSOR FASTENER TORQUE 1. The DET sensor fastener must be installed clean and dry and torqued to specification: (168 in.lbs./19 Nm).
STEP 6 Air Leaks	AIR LEAKS 1. Check air box seals, foam, mounting boots, air box-to-hood interface. Verify air box assembly is not cracked/damaged. 2. Inspect throttle body boots for delaminating rubber, or if boots are torn. Verify boots are seated correctly against air box and throttle body. 3. Does snowmobile have an aftermarket air intake kit installed? Remove the kit and reinstall original components. 4. Inspect engine crankcase seals/base gaskets, etc. for leaks.
STEP 7 EGT Sensor	EXHAUST GAS TEMPERATURE SENSOR 1. Using the data display tool in Digital Wrench, monitor the EGT sensor function while the engine is running (vehicle raised off the ground on a sled lift or track stand) at or above 3,000 RPM. 2. Does the exhaust gas temperature value change with changing throttle lever input after running the engine for 60 seconds at or above 3,000 RPM? 3. If the EGT value does not change, inspect the sensor wiring and connections. If the wiring and connections are good, replace the sensor and retest.
STEP 8 Exhaust System	EXHAUST SYSTEM 1. Remove aftermarket exhaust pipe(s) and/or non-Polaris tested silencer. 2. Check exhaust system for leaks, missing, over-stretched damaged springs, and worn out seals. Replace components as required. 3. Remove the resonator and shake. Replace resonator if shaking reveals loose internal baffle plates.

CHAPTER 5
FINAL DRIVE/BRAKE SYSTEMS

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

TRACK STUD SPECIFICATIONS

Track Studding

CAUTION

Do not install stud lengths that are not recommended in the guidelines. Severe track and/or tunnel damage may occur.

General Studding Guide Lines:

- Optimal stud penetration range is .250"-.375" (6.35-9.52 mm).
- DO NOT EXCEED .375" (9.52 mm) STUD PENETRATION ON ANY TRACK.
- 2010-2011 Rush Maximum Track Lug Height WITHOUT Studs = 1.5." DO NOT INSTALL STUDS ON A 1.5" TRACK.
- 2012 - Current Rush/Switchback Maximum Track Lug Height WITHOUT Studs = 2.0". DO NOT INSTALL STUDS ON A 2.0" TRACK.
- 2012 - Current Rush/Switchback Maximum Track Lug WITH STUDS = 1.75". DO NOT EXCEED .375" STUD PENETRATION ON A 1.75" TRACK.
- Switchback Assault 1.3 Maximum Stud Length = 1.325" when using Woody's Studs.
- DO NOT INSTALL STUDS ON A 2.0"+ TRACK.
- Studs can be installed on the inner and outer track rows. Studding the inside of the track is good for improving traction and vehicle braking. Adding studs to the outer rows is generally considered for drivers who desire a high degree of traction, but can sacrifice track durability. Studs placed on the outer rows are more susceptible to being ripped out of the track.
- Adding studs may require the use of longer, more aggressive ski wear bars/carbides.
- A wear strip kit must be installed to protect the tunnel and tunnel cooler when studs are installed.

2010-2011 Rush Wear Strip Kit PN: 2878532
Switchback Assault 1.3 PN: 2878161
2012- Current Rush 121 / Switchback 136: Integrated Coolers (See Note)
INDY 121 Wear Strip Kit PN: 2879212

NOTE: 2012 - Current Rush 121 / Switchback 136 models with Cobra track feature additional wear strips installed into integrated coolers. The wear strips must be installed on any 2012 - Current Rush 121 / Switchback 136 equipped with a Cobra track.

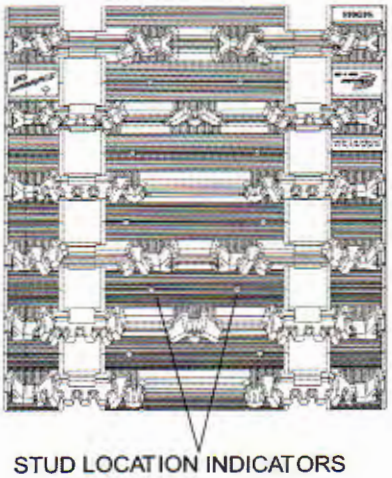
121 Integrated Cooler Wear Strip: 5137678 x 2 qty.
136 Integrated Cooler Wear Strip: 5137679 x 2 qty.
Pop Rivets: 7621220 x 2 qty.

- Consult stud manufacture for more information and recommendations.

Stud templates are guides designed to locate where to drill the track when installing studs depending on the track length, desired number of studs, and pattern.

2.86 Pitch Track Template: 2878247
2.52 Pitch Track Template: 2875157

The 1.25 Ripsaw track used on 2010 Rush snowmobiles feature stud location indicators molded into the outer cover of the track. The indicators mark the manufacture-recommended stud pattern for improved performance and maximum track durability.



STUD LOCATION INDICATORS

DRIVE GEARS / CHAINS

Drive Gears

PART NUMBER	DESCRIPTION
3221095	19T, 3/4W, 15 SPL, HYVO, PM
3221096	20T, 3/4W, 15 SPL, HYVO, PM
3221097	21T, 3/4W, 15 SPL, HYVO, PM
3221098	22T, 3/4W, 15 SPL, HYVO, PM
3221099	23T, 3/4W, 15 SPL, HYVO, PM
3221101	24T, 3/4W, 15 SPL, HYVO, PM
3221102	25T, 3/4W, 15 SPL, HYVO, PM
3222127	26T, 3/4W, 15 SPL, HYVO, PM
3222126	36T, 3/4W, 15 SPL, HYVO, PM
3222125	37T, 3/4W, 15 SPL, HYVO PM
3222108	39T, 3/4W, 15 SPL, HYVO, PM
3222099	40T, 3/4W, 15 SPL, HYVO, PM
3222101	41T, 3/4W, 15 SPL, HYVO, PM
3222192	42T, 3/4W, 15 SPL, HYVO, PM
3221188	43T, 3/4W, 15 SPL, HYVO, PM
3222146	45T, 3/4W, 15 SPL, HYVO, PM

Drive Chains

PART NUMBER	DESCRIPTION
3221112	68P, 3/4W, HYVO CHAIN
3221115	70P, 3/4W, HYVO CHAIN
3221110	72P, 3/4W, HYVO CHAIN
3221109	74P, 3/4W, HYVO CHAIN
3221108	76P, 3/4W, HYVO CHAIN

GEAR RATIO SPEED CHART

The following gear and chain combinations are acceptable for use with the 7.53 center distance chaincase. MPH speed is the theoretical speed when the drive and driven clutches are at a 1:1 ratio.

NOTE: Does not apply to QuickDrive™ System.

				ENGINE RPM									
				8250	8000	7750	7500	7250	7000	6750	6500	6250	6000
TOP GEAR	BOTTOM GEAR	CHAIN PITCH	RATIO	MPH AT 1:1 DRIVE RATIO									
26	36	72	1.38	129	125	121	117	113	110	106	102	98	94
26	37	72	1.42	126	122	118	114	110	107	103	99	95	91
25	37	72	1.48	121	117	113	110	106	102	99	95	91	88
25	38	72	1.52	118	114	110	107	103	100	96	93	89	86
26	40	74	1.54	116	113	109	106	102	99	95	92	88	85
23	36	70	1.57	114	111	107	104	100	97	93	90	87	83
26	41	74	1.58	113	110	106	103	100	96	93	89	86	82
24	38	72	1.58	113	109	106	103	99	96	92	89	86	82
25	40	74	1.60	112	108	105	102	98	95	91	88	85	81
25	40	74	1.60	112	108	105	102	98	95	91	88	85	81
24	39	72	1.63	110	107	103	100	97	93	90	87	83	80
22	36	70	1.64	109	106	103	99	96	93	89	86	83	79
25	41	74	1.64	109	106	102	99	96	92	89	86	83	79
25	41	74	1.64	109	106	102	99	96	92	89	86	83	79
23	38	72	1.65	108	105	102	98	95	92	89	85	82	79
26	43	76	1.65	108	105	102	98	95	92	88	85	82	79
26	43	76	1.65	108	105	102	98	95	92	88	85	82	79
25	42	74	1.68	106	103	100	97	94	90	87	84	81	77
22	37	70	1.68	106	103	100	97	93	90	87	84	81	77
26	44	76	1.69	106	102	99	96	93	90	86	83	80	77
23	39	72	1.70	105	102	99	96	93	89	86	83	80	77
24	41	74	1.71	105	101	98	95	92	89	86	82	79	76
24	41	74	1.71	105	101	98	95	92	89	86	82	79	76
21	36	70	1.71	104	101	98	95	92	88	85	82	79	76
23	40	72	1.74	103	100	97	93	90	87	84	81	78	75
24	42	74	1.75	102	99	96	93	90	87	84	80	77	74
24	42	74	1.75	102	99	96	93	90	87	84	80	77	74
25	44	76	1.76	102	98	95	92	89	86	83	80	77	74
25	44	76	1.76	102	98	95	92	89	86	83	80	77	74
21	37	70	1.76	101	98	95	92	89	86	83	80	77	74
22	39	72	1.77	101	98	95	92	89	86	83	79	76	73
22	39	72	1.77	101	98	95	92	89	86	83	79	76	73
25	45	76	1.80	99	96	93	90	87	84	81	78	75	72
21	38	70	1.81	99	96	93	90	87	84	81	78	75	72
22	40	72	1.82	98	95	92	89	86	83	80	77	74	72
23	42	74	1.83	98	95	92	89	86	83	80	77	74	71
23	42	74	1.83	98	95	92	89	86	83	80	77	74	71
19	35	68	1.84	97	94	91	88	85	82	79	76	74	71
20	37	70	1.85	97	94	91	88	85	82	79	76	73	70
23	43	74	1.87	96	93	90	87	84	81	78	75	72	70
24	45	76	1.88	95	92	90	87	84	81	78	75	72	69
20	38	70	1.90	94	91	88	86	83	80	77	74	71	68
21	40	72	1.90	94	91	88	85	82	80	77	74	71	68
24	46	76	1.92	93	90	88	85	82	79	76	73	71	68
21	41	72	1.95	92	89	86	83	80	78	75	72	69	67
22	43	74	1.95	91	89	86	83	80	78	75	72	69	67
19	38	70	2.00	89	87	84	81	79	76	73	70	68	65
22	44	74	2.00	89	87	84	81	79	76	73	70	68	65
23	46	76	2.00	89	87	84	81	79	76	73	70	68	65
20	41	72	2.05	87	85	82	79	77	74	71	69	66	63
20	41	72	2.05	87	85	82	79	77	74	71	69	66	63
19	39	70	2.05	87	84	82	79	77	74	71	69	66	63
21	44	74	2.10	85	83	80	78	75	72	70	67	65	62
20	42	72	2.10	85	83	80	77	75	72	70	67	64	62
21	45	74	2.14	83	81	78	76	73	71	68	66	63	61
19	42	72	2.21	81	78	76	74	71	69	66	64	61	59
20	45	74	2.25	79	77	75	72	70	67	65	63	60	58
19	43	72	2.26	79	77	74	72	69	67	65	62	60	57
19	45	74	2.37	75	73	71	69	66	64	62	59	57	55
19	46	74	2.42	74	72	69	67	65	63	60	58	56	54

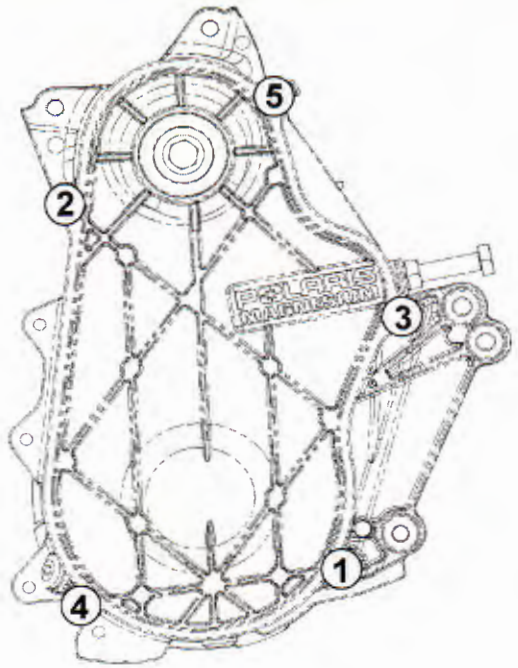
9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

CHAINCASE

Specifications/Torque Guide

COMPONENT	NOTE
Lubricant Capacity	Polaris 80W SCL 9oz. (266 ml)
Cover Fasteners (Follow Torque Pattern)	9.5 ft-lbs (13 Nm)
Chain Tensioner Jam Nut	21 ft-lbs (28 Nm)
Fill Plug	6 - 9.5 ft-lbs (8 - 13 Nm)
Drain Plug (Clean socket prior to inserting tool.)	6 - 9.5 ft-lbs (8 - 13 Nm)
Brake Disc Fastener 2010 2011-Current	 29 ft-lbs (40 Nm) 40 ft-lbs (54 Nm)
Lower Gear Fastener	29 ft-lbs (40 Nm)
Brake Caliper Mounting Fasteners Phantom Caliper Phantom Lite (2011–2013) Phantom Lite (Current) / QuickDrive (All)	 40 ft-lbs (54 Nm) 40 ft-lbs (54 Nm) 18.4 ft-lbs (25 Nm)
QuickDrive Upper / Lower Sprockets	42 - 45 ft-lbs (57 - 61 Nm)

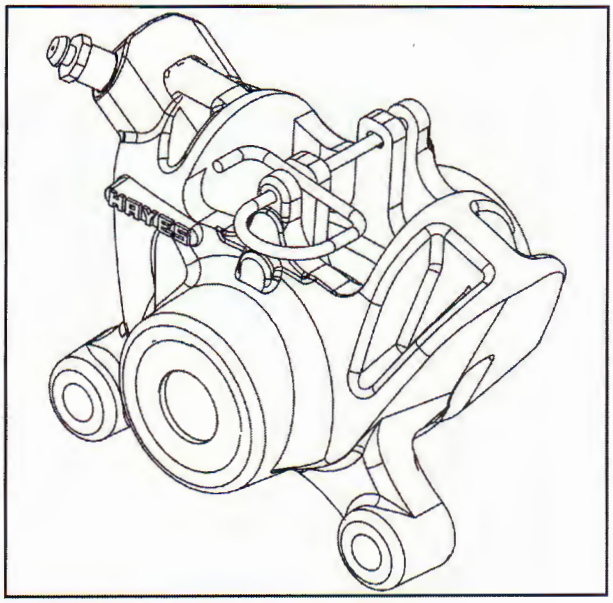
Chaincase Cover Torque Pattern



Brake Caliper Types

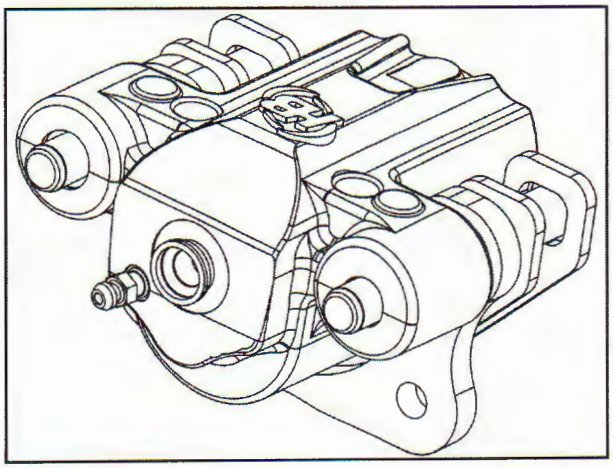
Phantom

-Fixed Caliper, Dual Floating Pistons

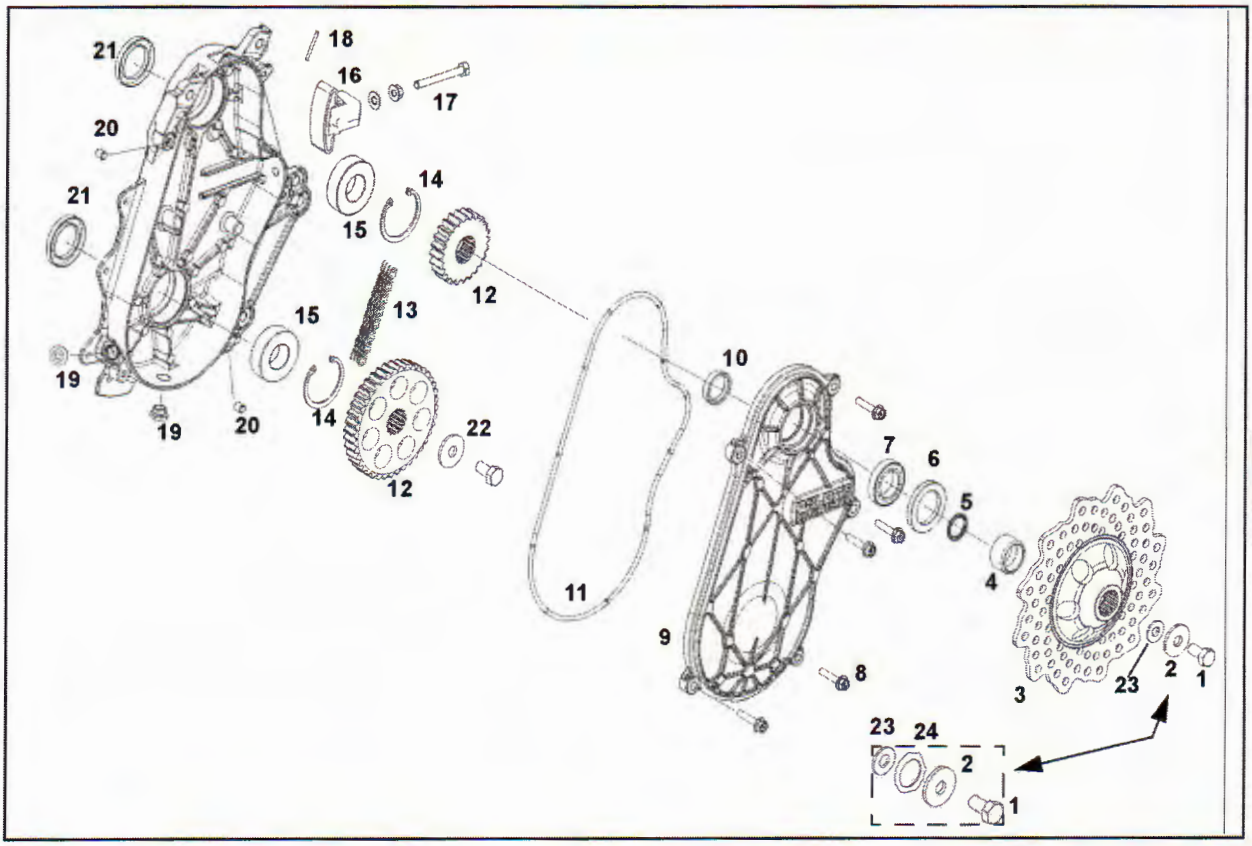


Phantom Lite

-Floating Caliper, Single Piston



Full Assembly View



REFERENCE #	DESCRIPTION
1	Brake Disc Fastener
2	Phantom Caliper Models = Flat Washer Phantom Lite Caliper Models = Domed (Beveled) Washer
3	Brake Disc
4	Seal Sleeve
5	Jackshaft O-Ring
6	Seal
7	Bearing
8	Cover Fasteners
9	Cover
10	Chaincase Sleeve
11	Cover Gasket
12	Top/Bottom Gears
13	Chain
14	Snap Rings
15	Bearings
16	Chain Tensioner/Wear Pad

REFERENCE #	DESCRIPTION
17	Tensioner Adjustment Screw/Jam Nut
18	Vent
19	Fill/Drain Plugs
20	Alignment Dowels
21	Seals
22	Dome (Beveled) Washer
23	Float Washer 2010 = (0.8mm disc float = 1-2 QTY.) Phantom 2011-Current= (1 QTY.) Phantom Lite Brake Caliper = (N/A)
24	Wave Washer Phantom 2011 - Current

Chaincase Disassembly

1. Remove the left and right door panels. Remove the screw securing the right lower fender to the chassis.
2. Remove the hood assembly.
3. Remove the exhaust silencer.
4. If equipped with electric start, remove the battery and battery box.

⚠ CAUTION

Remove the BLACK (-) battery cable first, and then the RED (+) cable last. Reverse order when attaching cables to battery.

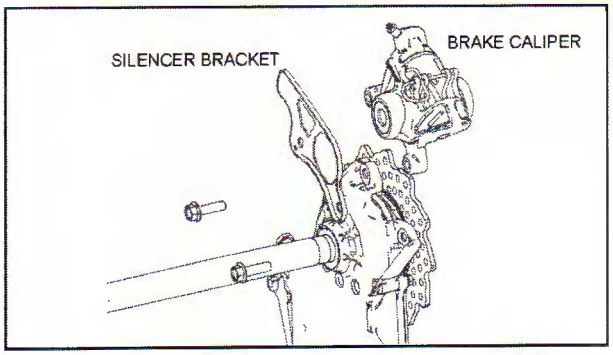
5. Place a drain pan under the chaincase. Remove the plug to drain the oil. Clean the plug threads. Verify the o-ring is not damaged.
6. Reinstall plug and torque to specification.

= T

Chaincase Drain Plug: 8-9.5 ft-lbs (8-13 Nm)

7. Apply the parking brake and then loosen the brake disc mounting fastener.
8. Release the parking brake. Remove the brake caliper mounting bolts. Tie the caliper to overstructure.

   NOTE: DC-CFI-2 models with Phantom brake calipers have washers in place of silencer bracket. Phantom Lite models do not use washers or bracket.

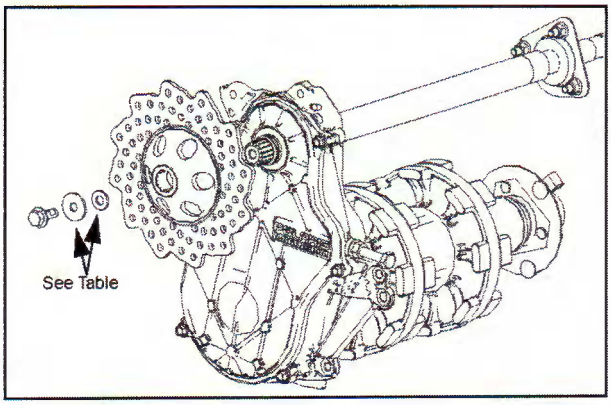


CAUTION

Do not allow the brake caliper to hang by the brake hose.

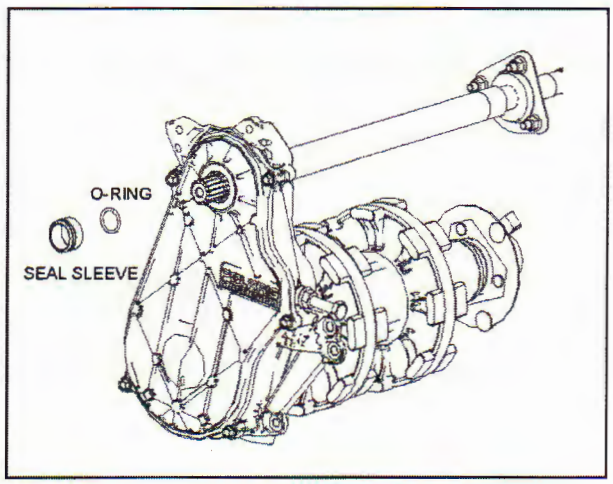
9. Remove the brake disc from the jackshaft. Reference table for brake disc hardware.

YEAR / CALIPER	FASTENER HARDWARE
2010/ Phantom	Fastener: 29 ft-lbs (40 Nm) Flat Washer 1-2 Float Washers (Install QTY. to achieve .8mm Disc Float)
2011-Current/ Phantom	Fastener: 40 ft-lbs (54 Nm) Flat Washer Wave Washer 1 Float Washer
2011-Current/ Phantom Lite	Fastener: 40 ft-lbs (54 Nm) Domed (Beveled) Washer (Dome facing out.)

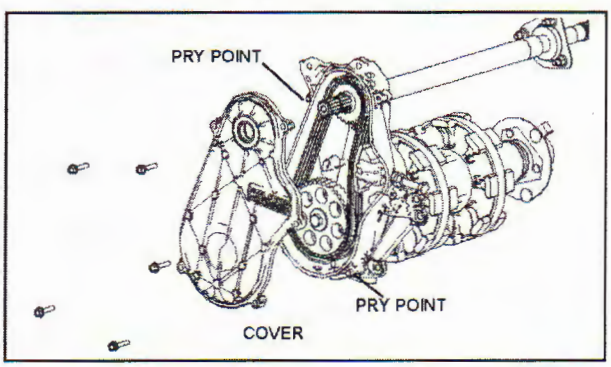


10. Note the groove on the seal sleeve. Use a pair of flat blade screwdrivers or soft-jawed pliers to carefully pry the sleeve out of the cover.

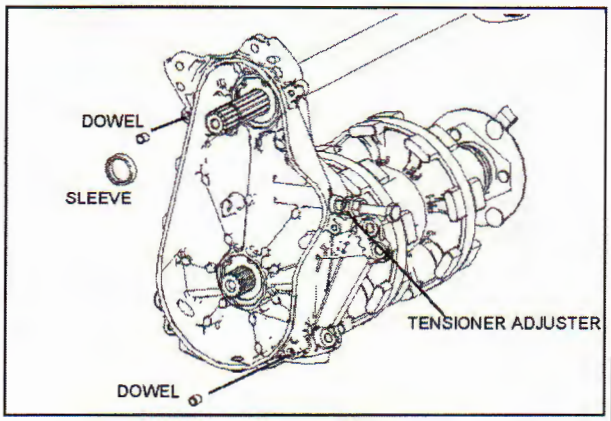
11. Locate the o-ring on the end of the jackshaft inside the cover. Use a pick and carefully remove the o-ring. Inspect o-ring and discard if damaged or torn.



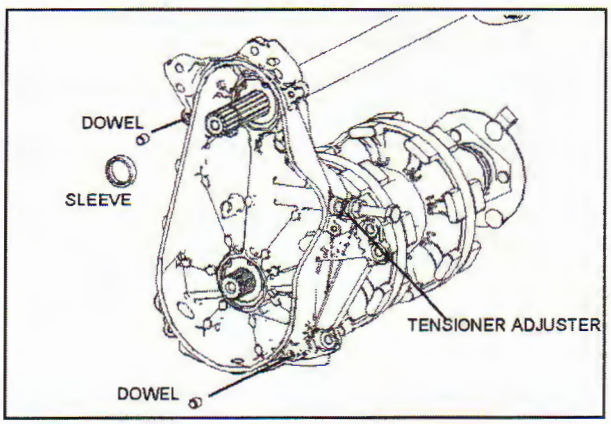
12. Remove the cover fasteners.
13. Carefully remove the cover. Use a flat blade screwdriver at the pry points to aid removal.



14. After removing the cover, note the two dowels in the chaincase.
15. Inspect the cover gasket for damage. Inspect the bearing and seal in the cover. Replace bearing if it no longer rolls smoothly. Replace the seal if damaged.
16. Remove the chaincase sleeve from the jackshaft.



17. Remove the lower gear screw. Note the beveled washer orientation.
18. Loosen the chain adjuster screw. Remove the tensioner pad, upper and lower gears, and chain.



Chaincase Assembly

1. Thoroughly clean the chaincase, gears, and chain.
2. Inspect the tensioner pad for damage. Replace if excessive wear is evident.
3. Install the gears and chain as a set.
4. Install the lower gear screw and beveled washer. Verify the beveled washer is installed dome side out.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

5. Torque screw to specification.

= T
Lower Gear Fastener: 29 ft-lbs (40 Nm)

6. Rotate the driven clutch forward to move all of the chain slack to the tensioner side.
7. Install the chain tensioner. Tighten the tensioner screw until there is 1/8" (3.175 mm) chain deflection on the backside of the drive chain.
8. Verify the tensioner screw washer is seated against the chaincase, and then torque the tensioner screw jam nut to specification.

= T
Tensioner Jam Nut: 21 ft-lbs (28 Nm)

9. Install the chaincase sleeve on to the jackshaft.
10. Inspect the cover gasket. Replace if cut or torn. Verify the gasket is installed flush in the cover.
11. Install the cover making sure the cover engages the two dowels evenly.
12. Lightly tap on the cover with a soft-faced hammer to seat the cover.
13. Install the cover screws. Torque screws to specification using the specified sequence. Chaincase Cover Torque Pattern, page 5.6

= T
Cover Fasteners: 9.5 ft-lbs (13 Nm)

14. Install the o-ring on to the jackshaft. Verify the o-ring is sitting in the groove. Install the seal sleeve with the groove facing out.
15. Clean the brake disc with brake cleaner and then install on to jackshaft.
16. Install the specified brake disc hardware as shown in the table.

YEAR / CALIPER	FASTENER HARDWARE
2010/ Phantom	Fastener: 29 ft-lbs (40 Nm) Flat Washer 1-2 Float Washers (Install QTY. to achieve .8mm Disc Float)
2011-Current / Phantom	Fastener: 40 ft-lbs (54 Nm) Flat Washer Wave Washer 1 Float Washer
2011-Current / Phantom Lite	Fastener: 40 ft-lbs (54 Nm) / Domed Washer (Dome facing out.)

17. Install the brake caliper and silencer bracket if equipped. Torque fasteners to specification.

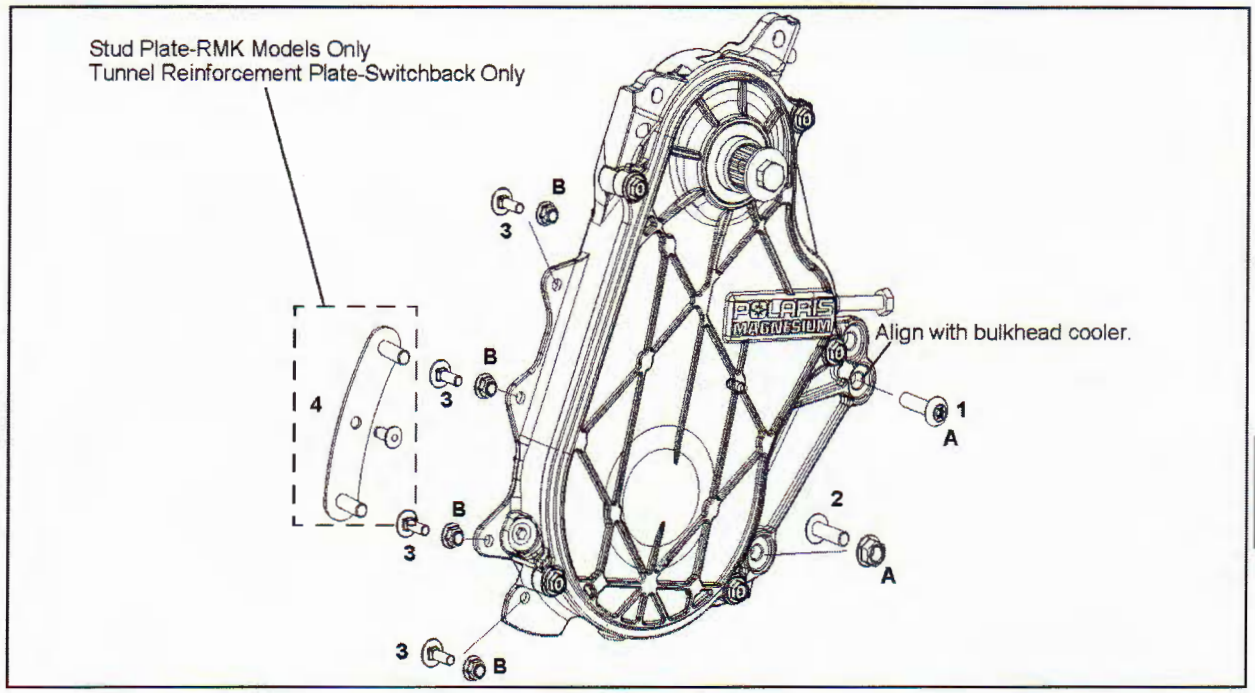
= T
Brake Caliper Fasteners: Phantom: 40 ft-lbs (54 Nm) Phantom Lite (2011-2013): 40 ft-lbs (54 Nm) Phantom Lite (Current): 18.4 ft-lbs (25 Nm)

18. Set the parking brake. Torque the brake disc screw to specification. Release the parking brake.

= T
Brake Disc Fastener: 2010: 29 ft-lbs (40 Nm) 2011-Current: 40 ft-lbs (54 Nm)

19. If equipped with electric start, reinstall the battery box, and battery. Connect the RED (+) first, and then the BLACK (-) battery cable.
20. Install the exhaust silencer. Verify the outlet boot is installed correctly around the silencer outlet tube.
21. Install the screw securing the right fender to the chassis. Reinstall the hood assembly and both door panels.
22. Refill the chaincase with synthetic 80W lubricant. Fill to specification or when lubricant reaches the fill plug bore opening.

Mounting Assembly View



NOTE: 2012-Current Pro-Ride models feature a bonded chaincase.

REFERENCE #	DESCRIPTION
1	Screw-M8x1.25x35.8
2	Screw - M8x1.25x30.8
3	Carriage Bolts-M6x1.0x20
4	Stud Plate (RMK models only) Reinforcement Plate (Switchback only-not shown.)

⚠ CAUTION

Do not re-use lock Nuts. Always replace with new parts after removal.

Non-Bonded Chaincase Removal/ Installation

1. Follow the procedures for chaincase disassembly.
2. Follow the procedures for removing the track and driveshaft.
3. Remove the fasteners securing the chaincase to the tunnel, front cooler/closeoff panel, and side support.
4. Inspect the seals for excessive wear or damage. Replace as required.
5. Verify bearings roll smoothly. Replace if they do not or if excessive play is evident. Use an arbor press to remove and install bearings.
6. To install the chaincase, loosely install all of the fasteners using new lock nuts where applicable.
7. Verify fastener (1) is installed in the lower chaincase mounting hole has shown in the illustration.
8. Torque fasteners to specifications.

= T
A: 26 ft-lbs (35 Nm) DO NOT OVER-TORQUE B: 2010 - 14 ft-lbs (19 Nm) 2011 12 ft-lbs (16 Nm) 2012-Current RUSH/Switchback 9 ft-lbs (12 Nm) 2012-Current INDY/RMK/SB Assault 12 ft-lbs (16 Nm)

9. Follow the procedures for reinstalling the driveshaft and track.
10. Follow the procedures for chaincase assembly.

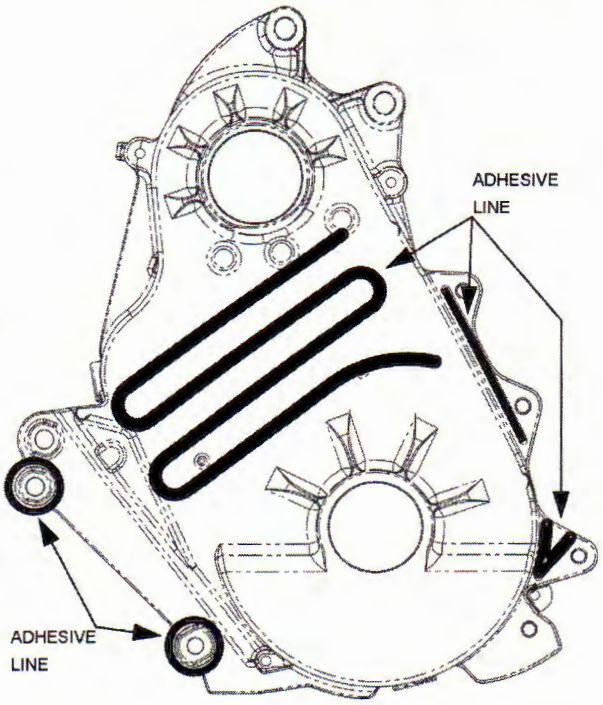
9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

Bonded Chaincase Removal/Installation

1. Follow the procedures for chaincase disassembly.
2. Follow the procedures for removing the track, rear suspension, and driveshaft.
3. Remove the fasteners securing the chaincase to the tunnel, front cooler / closeoff panel, and side support.
4. While wearing protective gloves and clothing, use a propane torch to evenly heat the backside and fastener points of the chaincase/tunnel.

> **⚠ CAUTION**
>
> Keep flame away from flammable materials. Use propane torch in well-ventilated area.
>
> Only apply heat to area that requires adhesive bond separation. Do not apply heat to areas of adhesive where bond line separation is not needed. Doing so will require removing the part, removing adhesive, and then re-applying new adhesive.

5. While applying heat, carefully and slowly pull the chaincase assembly away from the tunnel. Use extreme care as to not distort the tunnel.
6. Allow the chaincase to properly cool. Once cooled, inspect the seals for excessive wear or damage. Replace as required.
7. Verify bearings roll smoothly. Replace if they do not or if excessive play is evident. Use an arbor press to remove and install bearings.
8. Thoroughly clean the chaincase-to-tunnel mating surfaces. All residual bonding adhesive MUST be removed. Use a putty knife and wire brush to remove material.
9. After removing residual adhesive, wash parts in solution of warm, soapy water and allow to air dry.



10. Begin chaincase installation by verifying all fasteners are accounted for and staged for installation.
11. Verify the chaincase and tunnel mating surfaces are clean and free of dirt, and oil residue.
12. Reference Adhesive Applicator Kit and Adhesive Application sections in Chapter 9.

    NOTE: The Bonded Component Service section in Chapter 9 outlines the adhesive, applicator tools, and the adhesive application procedure required to properly install bonded components.

13. After the adhesive has been applied to the backside of the chaincase, quickly install all of the fasteners.
14. Verify fastener (1) is installed in the lower chaincase mounting hole has shown in the illustration. Mounting Assembly View, page 5.11
15. Torque fasteners to specifications.
16. Follow the procedures for reinstalling the driveshaft and track.
17. Follow the procedures for chaincase assembly.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

QUICKDRIVE LOW INERTIA DRIVE SYSTEM

Specifications/Torque Guide

COMPONENT	TORQUE
Upper/Lower Sprocket Fasteners	42 - 45 ft-lbs (57 - 61 Nm) Do not use original fasteners. Use new fasteners during assembly.

QuickDrive™ Service Parts

2014 – Current PRO RMK jackshafts and bonded driveshafts can be installed on 2013 PRO RMK snowmobiles when the guidelines below are followed.

A PRO RMK Jackshaft service kit is available to supply the following parts:

PRO RMK Jackshaft Kit - 2205476

- 1333219 - QTY.1 - Jackshaft (Counterbore)
- 7519912 - QTY.1 - Bolt- M10x1.25x40
- 7556800 - QTY 1 - Flat Washer

The PRO RMK Jackshaft Kit can be used with the original 2013 upper sprocket if the sprocket is free of damage. If the inner / outer sprocket splines show any damage or extreme wear and tear, replace the upper sprocket.

NOTE: Do not use the belleville (domed) washer used on 2013 vehicles when installing the kit. Use the flat washer included with the kit when installing the upper sprocket and bolt.

The 133219 jackshaft features a counter-sunk bore that requires a 40 mm sprocket bolt. The 2013 upper sprocket bolt is 20 mm long and will not catch the internal threads. The 40 mm bolt is included in the kit.

2014 – Current PRO RMK Driveshaft

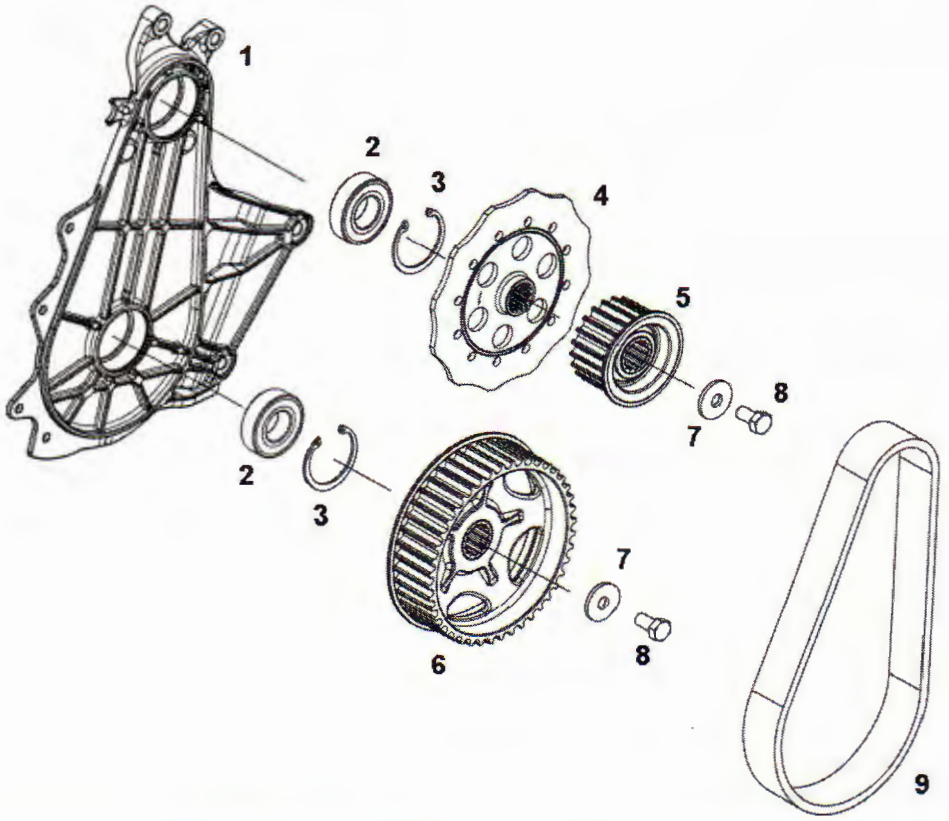
The 2014 – Current PRO RMK Driveshaft, part number 1590523, features revised splines when compared to the 2013 driveshaft. While the current bonded driveshaft can be installed on a 2013 vehicle, the lower sprocket must be the current part. Replace the belleville (domed) washer with a flat washer, part number 7556800.

CAUTION
Do not install the 2013 lower sprocket on a non-2013 driveshaft. Lower chaincase bearing failure may occur.

Bonded Driveshaft Collars

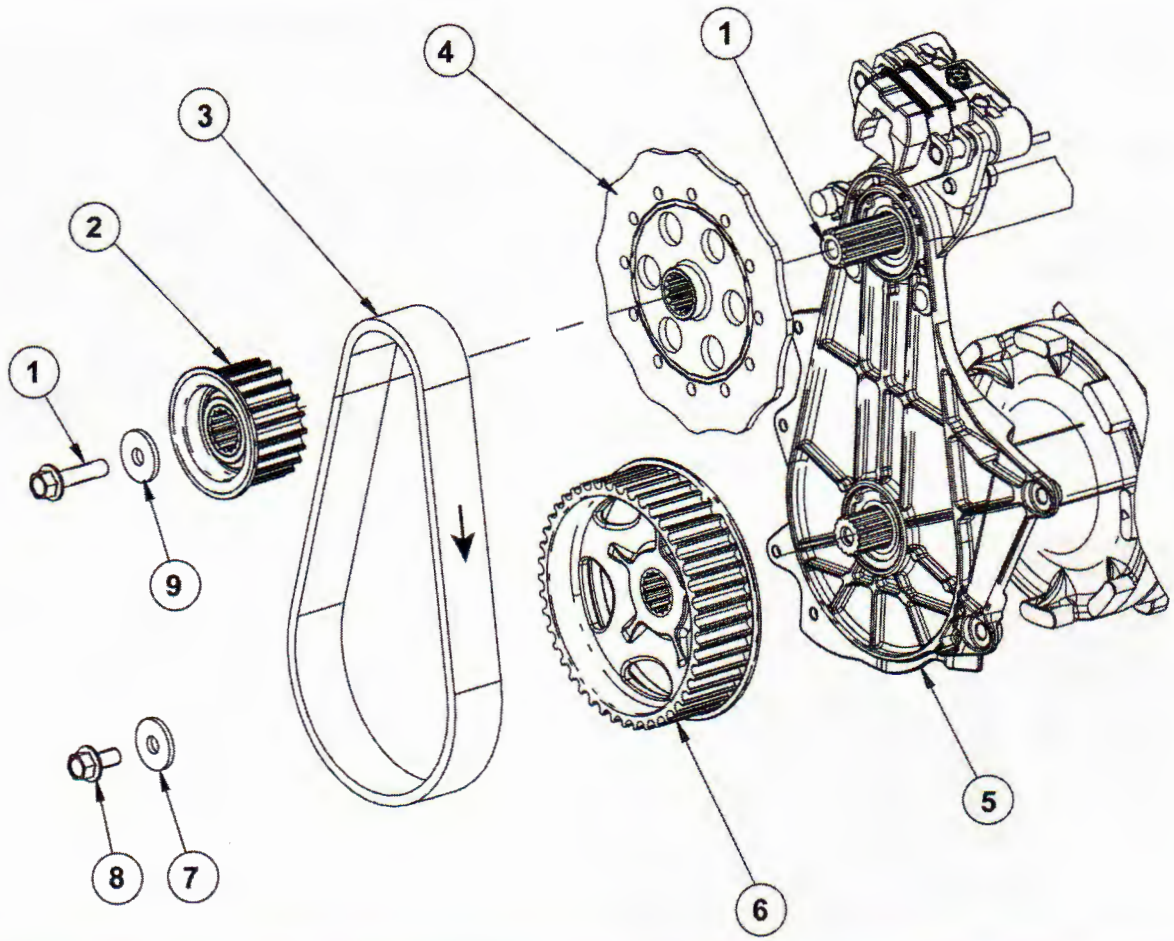
All 2013 (as directed by Service Bulletin S–12–05) and all current PRO RMK bonded driveshafts feature locking collars. The collars ARE NOT serviceable. Polaris will not recommend driveshaft collar service or replacement procedures. The direct replacement for a missing or damaged driveshaft collar is complete driveshaft assembly replacement.

2013 Assembly View



QUICKDRIVE LOW INERTIA DRIVE SYSTEM			
REF.	DESCRIPTION	REF.	DESCRIPTION
1.	Backer Plate - Bonded	6.	Lower Sprocket
2.	Sealed Bearings	7.	Domed (Beveled) Washers - Domed Side Out
3.	Snap Rings	8.	Bolts - M10x1.25x20 - Discard when Removed
4.	Brake Disc - Note: Arrow in FWD Direction	9.	Drive Belt - Note: Arrow in FWD Direction
5.	Upper Sprocket - Note: FLANGE - THIS SIDE OUT		

2014 – Current Assembly View



QUICKDRIVE LOW INERTIA DRIVE SYSTEM			
REF.	DESCRIPTION	REF.	DESCRIPTION
1.	Bolt - M10x1.25x40 - Discard when removed. Jackshaft - End countered-bored for 2014.	6.	Lower Sprocket
2.	Upper Sprocket - Note: FLANGE - THIS SIDE OUT	7.	Flat Washer
3.	QuickDrive Belt - Note: Arrow in FWD Direction	8.	Bolt - M10x1.25x20 - Discard when removed.
4.	Brake Disc - Note: Arrow in FWD Direction	9.	Flat Washer
5.	Backer Plate - Bonded Not Shown: Bearings / Snap Rings		

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

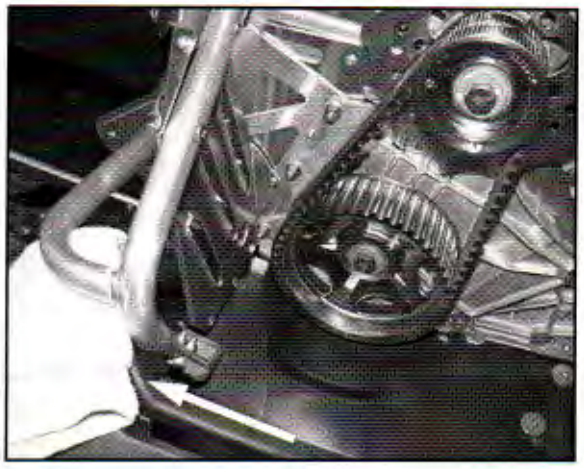
QuickDrive Drive Belt / Sprocket Removal

⚠ CAUTION

Exhaust components may be hot. Allow exhaust system to cool.
Avoid pinch points between sprockets and brake disc.

NOTE: The drive belt and both sprockets must be removed as an assembly. DO NOT pry the belt off of the sprockets.

1. Place a protective mat on the floor. Remove the right side engine compartment door. Tip snowmobile onto its left side.
2. Remove the screw securing the fender to the foot rest support. Bend the fender behind the foot rest support with a shop towel between the parts to prevent damage to fender.

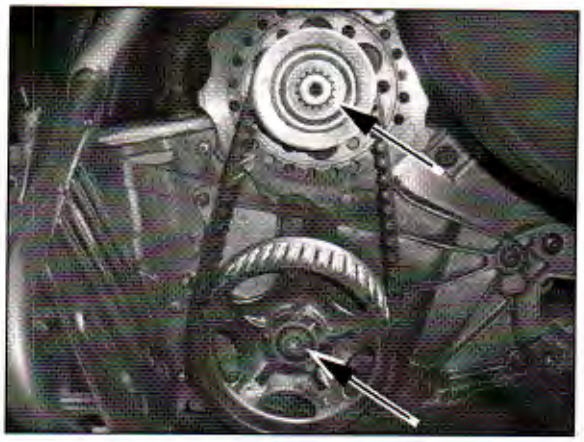


NOTE: If snowmobile is equipped with electric start, remove the battery and battery support brackets.

⚠ CAUTION

Disconnect BLACK (NEGATIVE) battery cable first, and then the RED (POSITIVE) cable.

3. Lock the parking brake. Remove the upper and lower sprocket fasteners. Discard both fasteners.



4. Remove both sprockets and the drive belt as an assembly. Work both sprockets off each shaft equally to prevent belt binding.

   NOTE: If a sprocket stops moving, it is likely the sprocket has been pulled out too far in relation to the other sprocket. Push the binding sprocket inwards, and extract the other sprocket.

5. Inspect the sprocket teeth and surfaces for damage. Replace sprocket(s) if damage is found.

QuickDrive Drive Belt / Sprocket Installation

⚠ CAUTION

Exhaust components may be hot. Allow exhaust system to cool.
Avoid pinch points between sprockets and brake disc.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

NOTE: The drive belt and both sprockets must be installed as an assembly.

1. Install the QuickDrive Sprocket Alignment tools onto the ends of the jackshaft and driveshaft. Thread the tools in lightly.

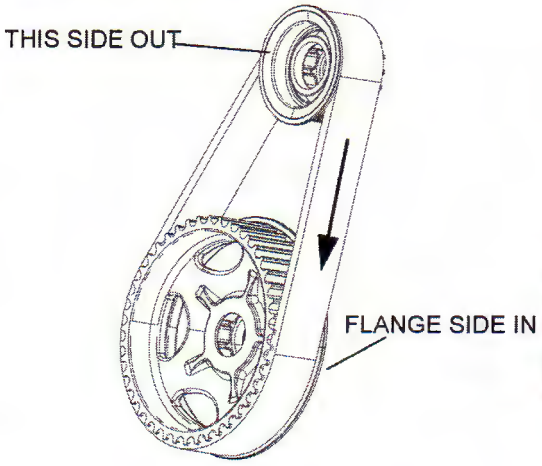
Sprocket Alignment Tools
2013 Jackshaft: PS-50826 / PS-50826–A
2014 Jackshaft: PS-50826–2

NOTE: PS-50826–A includes 1 long and 2 short alignment tools. PS-50826-2 includes 1 long alignment tool. The long alignment tool is used on jackshafts featuring the deeper counterbore.

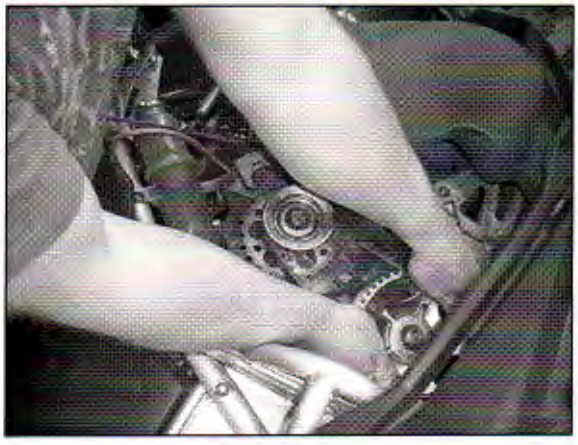
2. Release the parking brake.

3. Install belt and sprockets as an assembly with the arrow on belt pointing toward front of snowmobile. Note the installation orientation of the upper and lower sprockets.

NOTE: "THIS SIDE OUT" on the upper sprocket must face away from brake disc.



4. Working from the fuel tank side of the vehicle, install the upper sprocket onto the jackshaft. After the sprocket engages the jackshaft splines, install the lower sprocket onto the driveshaft.



5. Push the upper sprocket down slightly. Move the lower sprocket and push it down slightly. Continue to work between each sprocket until both sprockets are fully seated.

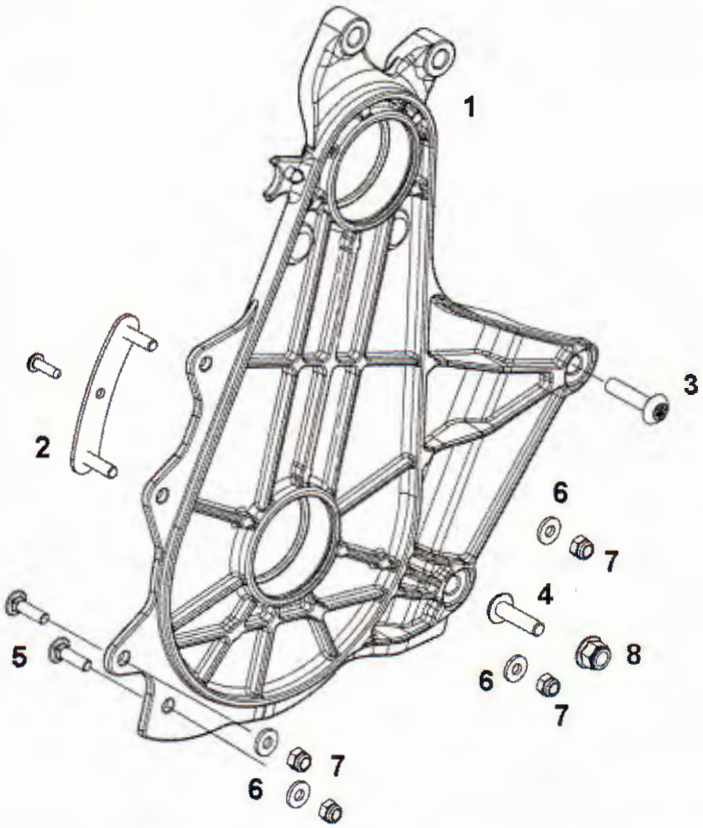
NOTE: If sprockets will not slide down the splines, the belt is binding. Pull up slightly on the sprockets to re-align belt.

6. Install new upper and lower sprocket fasteners with the original domed washers. Orientate the washer domes out. Torque fasteners to specification.

= T
Upper / Lower Sprocket Fasteners 42 - 45 ft-lbs (57 - 61 Nm) Do not use original fasteners. Use new fasteners during assembly.

7. On models with electric start, reinstall the battery brackets and battery. Verify the battery strap D-clip does not make contact with the drive belt.
8. Connect the RED (POSITIVE) battery cable first, and then the BLACK (NEGATIVE) cable.
9. Tip snowmobile back onto it skis. Reinstall the fender. Reinstall the right side engine compartment door.

QuickDrive Backer Plate Assembly View



QUICKDRIVE BACKER PLATE			
REF.	DESCRIPTION	REF.	DESCRIPTION
1.	Backer Plate	6.	Washers
2.	Stud Plate	7.	Nuts (M6) Discard when removed.
3.	Screw (M8 1.25x35) - 26 ft-lbs (35 Nm)	8.	Nut (M8) Discard when removed.
4.	Screw (M8 1.25x30) - 26 ft-lbs (35 Nm)		
5.	Screws (M6 1.0x22) - 9 ft-lbs (12 Nm)		

QuickDrive Backer Plate Removal

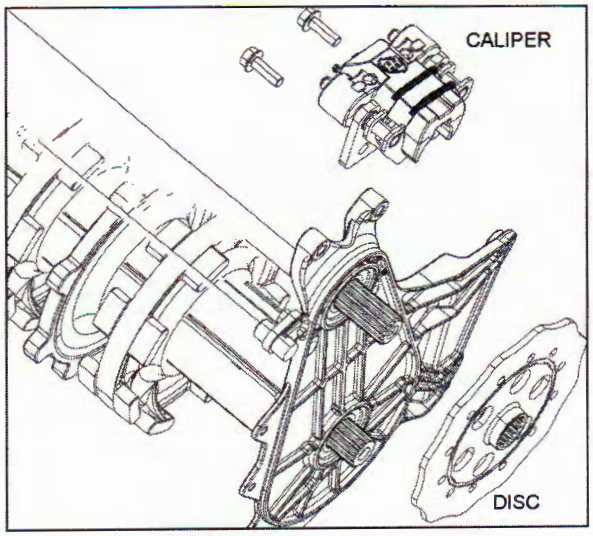
NOTE: The backer plate is a structural component of the chassis and bonded with adhesive to the tunnel. Heating the backer plate with a torch is required for removal.

⚠ CAUTION

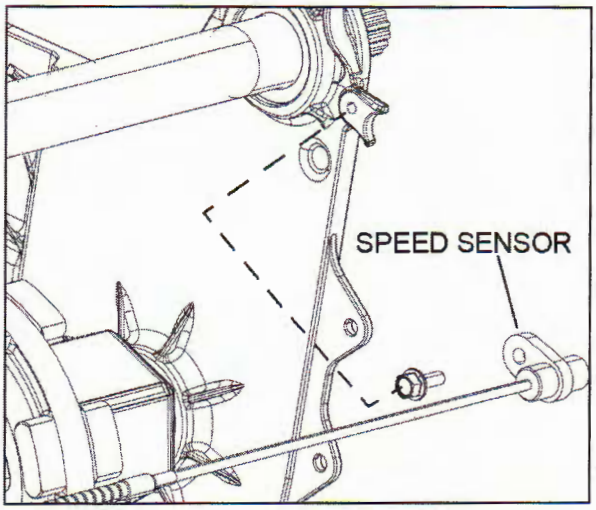
Keep flame away from flammable materials. Use propane torch in well-ventilated area.

Only apply heat to area that requires adhesive bond separation. Do not apply heat to areas of adhesive where bond line separation is not needed. Doing so will require removing the part, removing adhesive, and then re-applying new adhesive.

1. Follow the procedure for drive belt / sprocket removal.
2. Follow the procedures for removing the track, rear suspension, and driveshaft.
3. Remove the brake caliper from the backer plate. Secure caliper to over structure. Remove brake disc from jackshaft.



4. Remove speed sensor from backer plate.



5. Remove the fasteners securing the backer plate to the tunnel, front cooler / closeoff panel, and side support.
6. While wearing protective gloves and clothing, use a propane torch to evenly heat the backside and fastener points of the chaincase/tunnel.
7. While applying heat, carefully and slowly pull the backer plate away from the tunnel. Use extreme care as to not distort the tunnel.
8. Allow the backer plate to properly cool.
9. Verify bearings roll smoothly. Replace if they do not or if excessive play is evident. Use an arbor press to remove and install bearings.
10. Thoroughly clean the chaincase-to-tunnel mating surfaces. All residual bonding adhesive MUST be removed. Use a putty knife and wire brush to remove material.
11. After removing residual adhesive, wash parts in solution of warm, soapy water and allow to air dry.

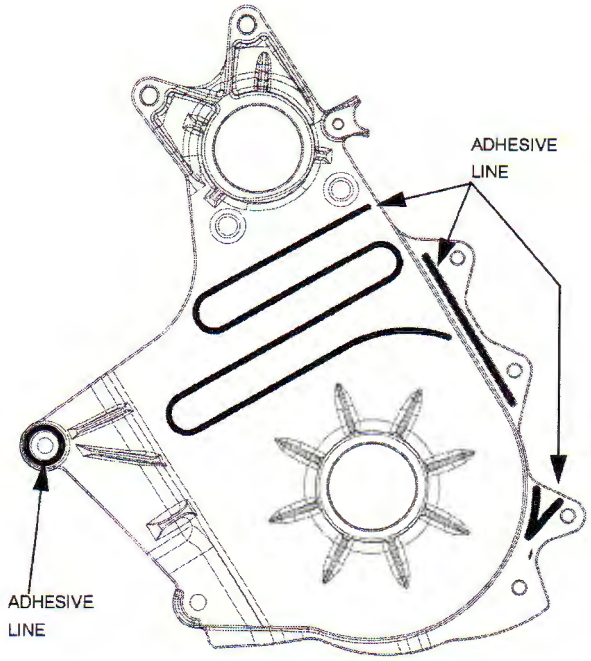
QuickDrive Backer Plate Installation

1. Begin backer plate installation by verifying all fasteners are accounted for and staged for installation.
2. Verify the backer plate and tunnel mating surfaces are clean and free of dirt, and oil residue.
3. Reference Adhesive Applicator Kit and Adhesive Application sections in Chapter 9.

   NOTE: The Bonded Component Service section in Chapter 9 outlines the adhesive, applicator tools, and the adhesive application procedure required to properly install bonded components.

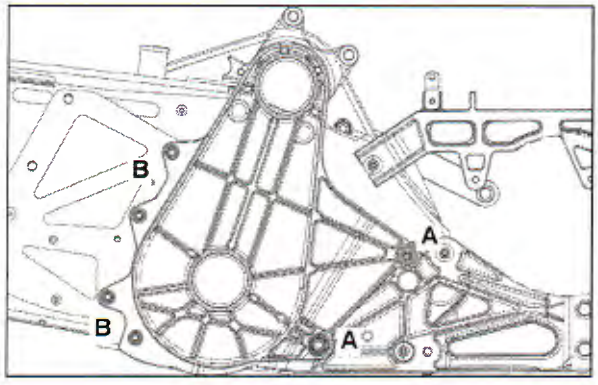
9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

4. Apply adhesive to the backside of the backer plate as shown.



5. After the adhesive has been applied to the backside of the backer plate, quickly install all of the fasteners.

QuickDrive Backer Plate Assembly View, page 5.19



6. Torque fasteners to specifications.

= T
A: 26 ft-lbs (35 Nm) DO NOT OVER-TORQUE B: 9 ft-lbs (12 Nm)

7. Follow the procedures for reinstalling the driveshaft and track.
8. Install the brake disc. Install the vehicle speed sensor. Torque screw to specification.

= T
Speed Sensor Screw **7 ft-lbs (10 Nm)**

9. Install the brake caliper assembly. Torque brake caliper screws to specification.

= T
Brake Caliper Fasteners: Phantom Lite / QuickDrive (Current): 18.4 ft-lbs (25 Nm)

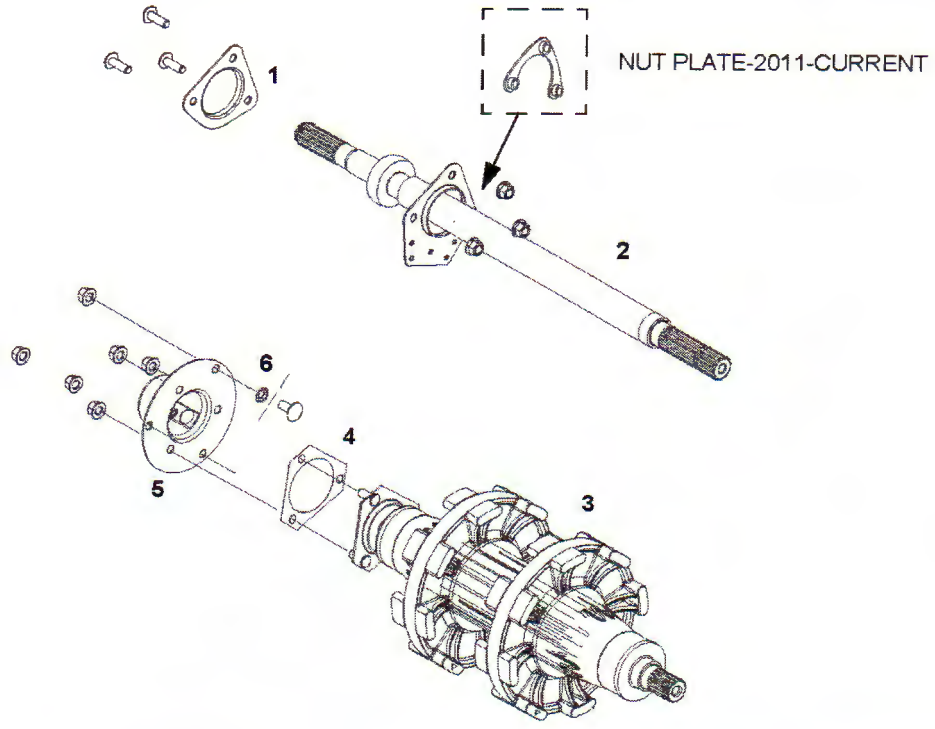
10. Follow the procedure for installing the drive belt and sprockets.

DRIVESHAFT / JACKSHAFT

Specifications/Torque Guide

COMPONENT	TORQUE
Jackshaft Flange Nuts	18 ft-lbs (25 Nm) - Discard when removed.
Speedometer Flange Nuts	18 ft-lbs (25 Nm) - Discard when removed.
Driveshaft Flange Nuts	18 ft-lbs (25 Nm) - Discard when removed.
Driven Clutch Fastener	18 ft-lbs (25 Nm)
Speed Sensor Screw	18 ft-lbs (25 Nm)

Assembly View



NOTE: The PTO ends of the jackshaft/driveshaft feature sealed bearings. No grease required.

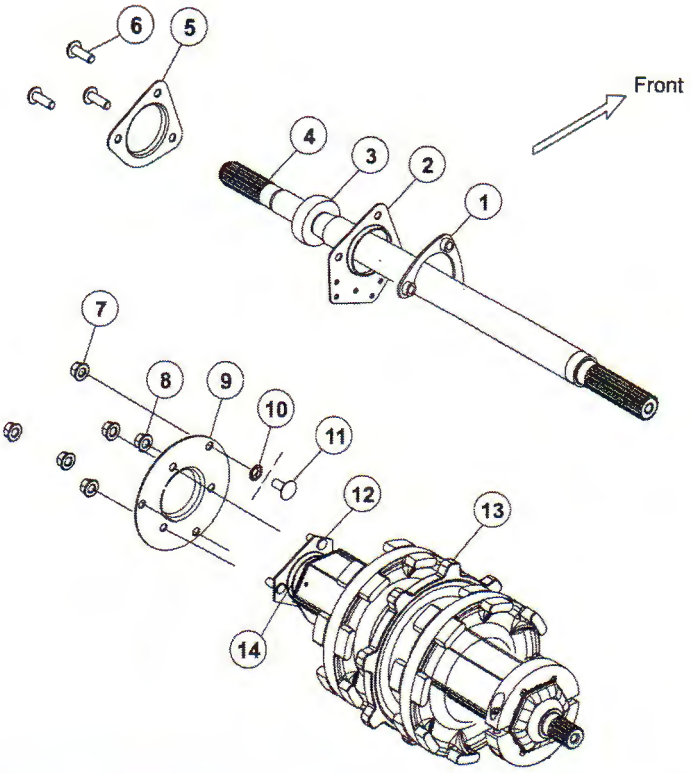
REFERENCE #	DESCRIPTION
1	Flangette
2	Jackshaft
3	Driveshaft
4	Gasket
5	Speedometer Housing
6	Nut Pals

⚠ CAUTION

Do not re-use lock Nuts. Always replace with new parts after removal.

COMPONENT	TORQUE
Jackshaft Flange Nuts	18 ft-lbs (25 Nm) - Discard when removed.
Speedometer Flange Nuts	18 ft-lbs (25 Nm) - Discard when removed.
Driveshaft Flange Nuts	18 ft-lbs (25 Nm) - Discard when removed.
Driven Clutch Fastener	18 ft-lbs (25 Nm)
Speed Sensor Screw	18 ft-lbs (25 Nm)

PRO-RMK Bonded Driveshaft / Jackshaft Assembly View



REF.	DESCRIPTION	NOTE
1	Nut Plate	
2	Flangette	
3	Bearing	
4	Jackshaft	
5	Flangette	
6	Screws	18 ft-lbs (25 Nm) M8x1.25x20
7	Nylok Nut	18 ft-lbs (25 Nm) M8x1.25 Replace with new when removed.
8	Nylok Nut	18 ft-lbs (25 Nm) M8x1.25 Replace with new when removed.
9	Flangette	
10	Pal Nut	
11	Screw	
12	Flangette Asm.	
13	Bonded Driveshaft with Collar	Replace driveshaft assembly if collar is damaged or loose. Do not repair or re-torque collar fasteners.
14	Bearing	

Jackshaft Removal

1. Follow the procedures for chaincase disassembly or drive belt/sprocket/backer plate disassembly.
2. Remove the driven clutch assembly.
3. Remove the oil tank/clutch cover assembly. Remove the airbox.
4. Remove the jackshaft flangette screws and nuts or nut plate. Discard the lock Nuts.
5. Carefully pull the jackshaft from the clutch-side of the vehicle out of the chaincase. Remove jackshaft from vehicle.

Jackshaft Installation

1. Carefully insert the jackshaft through the bulkhead and into the chaincase.
2. Using new lock Nuts, install the jackshaft flangette. Torque nuts to specification.

= T
Jackshaft Flange Nuts: 18 ft-lbs (25 Nm)

3. Reinstall the airbox assembly and driven clutch. torque driven clutch fastener to specification.

= T
Driven Clutch Fastener: 18 ft-lbs (25 Nm)

4. Follow the procedures for chaincase assembly.

NOTE: The jackshaft features a sealed bearing. No grease is required.

Driveshaft Removal

1. Follow the procedures for chaincase disassembly or drive belt/sprocket disassembly.
2. Remove the driven clutch assembly.
3. Remove the track/rear suspension from the vehicle.
4. Remove the nuts securing both the speedometer housing to the chassis and the nuts securing the driveshaft to the speedometer housing. Discard the lock Nuts.
5. Carefully pull the driveshaft from the clutch-side of the vehicle out of the chaincase/backer plate. When the driveshaft clears the chaincase/backer plate, drop it down through the tunnel and then remove the driveshaft from the vehicle.
6. Inspect the drive sprockets for damage and excessive wear. Complete driveshaft replacement is required if sprockets or bearing are damaged.
7. Inspect the gasket. Replace if worn or damaged.

Driveshaft Installation

1. From underneath the tunnel, insert the flangette-side of the driveshaft through the bulkhead.
2. Once aligned with the chaincase or backer plate, carefully insert the spline-end into the lower chaincase/backer plate hole.
3. Verify the gasket is not damaged or torn.
4. Using new lock nuts, loosely install both the driveshaft and speedometer flangettes.
5. Torque the speedometer housing and driveshaft nuts to specifications.

= T
Speedometer Housing/Driveshaft Nuts: 18 ft-lbs (25 Nm)

6. Install the driven clutch assembly. Torque driven clutch fastener to specification.

= T
Driven Clutch Fastener: 18 ft-lbs (25 Nm)

7. Reinstall the track/rear suspension.
8. Follow the procedures for chaincase assembly.

NOTE: The driveshaft features a sealed bearing. No grease is required.

The speedometer sensor pickup gear is not serviceable.

BRAKE SYSTEM

General Guidelines

⚠ WARNING

An unsafe condition exists when air is trapped in the hydraulic brake system. Air in the brake hydraulic system acts like a soft spring and absorbs a large percentage of the pressure developed by the master cylinder. Without this pressure, the braking system cannot develop full braking force to allow for safe, controlled stops. It is extremely important to bleed the brakes properly after any brake system work has been performed or when inspection reveals spongy brakes.

A soft, spongy feeling in the brake lever and/or brake pedal could indicate a hazardous condition in the brake system. Do not operate the vehicle until the failure in the brake system is corrected.

Keep brake fluid tightly sealed and out of reach of children. Brake fluid can accumulate moisture, reducing its effectiveness.

Contaminated brake discs or brake pads greatly reduce braking performance and increase stopping distance. Do not attempt to clean contaminated pads. Replace them. Clean the brake disc with brake cleaner.

This brake system requires ethylene-glycol based fluid (DOT 4). Do not use or mix different types of fluid such as silicone-based or petroleum-based.

Do not use brake fluid taken from old, used or unsealed containers. Never reuse brake fluid.

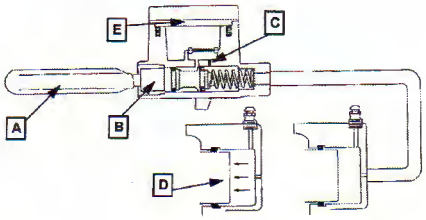
⚠ CAUTION

Pressure bleeding is not recommended. When fluid surges through the fittings, it is possible to cavitate the fluid and create air in the system. In addition, the fluid stored in a pressure bleeder may be contaminated. Always use fresh DOT 4 brake fluid from a sealed container.

Keep these points in mind when bleeding hydraulic brakes:

- The master cylinder reservoirs have limited capacities. It is easy to empty them during the bleeding procedure. This introduces air into the system which you are trying to purge. Watch the reservoir closely and add fluid when necessary to prevent air from entering the system.
- Apply only light to moderate pressure to the lever or pedal when bleeding the brake system. Extreme pressure will cause a surge of fluid through the small orifices of the brake system when the bleeder screw is opened and introduce air into the system by means of cavitation.
- Small amounts of air can become trapped in the banjo bolt fittings at the master cylinder (s) and junction points of brake lines. These fittings can be purged of air by following a standard bleeding procedure at these fittings (instead of the bleed screw on caliper) if necessary to speed the bleeding process. This is usually only needed if system was completely drained of fluid. Bleed each line connection, starting with the fitting closest to the master cylinder, working toward the caliper, and ending with the bleed screw.
- Always torque banjo bolts and other brake system fittings to specified torque.
- Change fluid every 2 years, or when fluid is dark or contamination is suspected.

Overview



The Polaris snowmobile hydraulic brake system consists of the following components or assemblies: brake lever, master cylinder, hydraulic hose, brake caliper (slave cylinder), brake pads, and a brake disc which is secured to the drive line.

When the hand activated brake lever (A) is applied, it contacts a piston (B) within the master cylinder. As the master cylinder piston moves inward it closes a small opening called a compensating port (C) within the cylinder and starts to build pressure within the brake system. As the pressure within the system is increased, the pistons (D) located in the brake caliper move toward the disc and applies pressure to the moveable brake pads. As the lever pressure is increased, the braking effect is increased.

The friction applied to the brake pads will cause the pads to wear. As the pads wear, the piston within the caliper self-adjusts and moves further outward.

Brake fluid level is critical to proper system operation. A low fluid level allows air to enter the system causing the brakes to feel spongy.

Compensating Port

Located within the master cylinder is a small compensating port (C) which is opened and closed by the master cylinder piston assembly. The port is open when the brake lever is released and the piston is outward. As the temperature within the hydraulic system changes, this port compensates for fluid expansion caused by heat, or contraction caused by cooling. During system service, be sure this port is open. Due to the high temperatures created within the system during heavy braking, it is very important that the master cylinder reservoir have adequate space to allow for the brake fluid to expand. Master cylinder reservoirs should be filled to the top of the fluid level mark on the inside of the reservoir, 1/4" - 5/16" (.6 -.8 cm) below lip of reservoir opening.

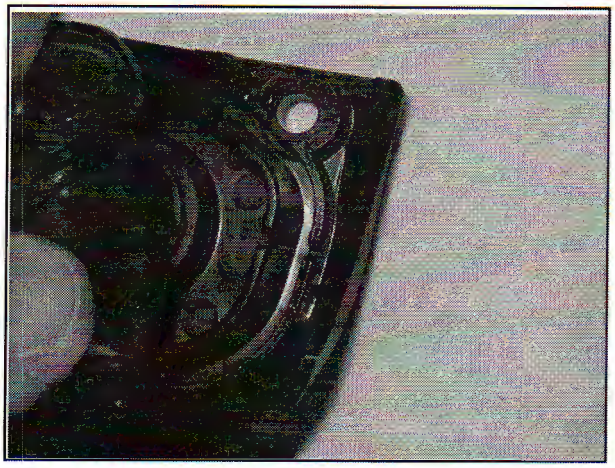
This system also incorporates a diaphragm (E) as part of the cover gasket and a vent port (on cover) located between the gasket and the cover. The combination diaphragm and vent allow for the air above the fluid to equalize pressure as the fluid expands or contracts. Be sure the vent is open and allowed to function. If the reservoir is overfilled or the diaphragm vent is plugged, the expanding fluid may build pressure in the brake system and lead to brake failure.

Brake Fluid Replacement & Bleeding

Each hydraulic brake is fitted with a bleeder valve and a banjo bolt. The bleeder valve is a special screw, which seals when tightened to the correct torque, but which allows air and/or fluid to pass out through a hole in the valve stem when loosened one turn.

NOTE: A second person is usually needed to assist in bleeding the brakes.

1. Clean the master cylinder cover and remove.



2. Attach one end of a flexible tube over the stem of the bleeder valve.

NOTE: A 'box end' wrench placed on the bleeder valve before attaching the flexible tubing is a convenient method for loosening and tightening the bleed valve.

3. Place the other end of flexible tube into a jar containing a small amount of clean fluid. See that the end of the tube is below the fluid surface to prevent breathing/sucking air back into the system.
4. Loosen bleeder valve one turn.
5. Fully apply the brake and hold, check for air bubbles rising in the fluid, indicating that air is being forced out of the system.
6. Continue actuating the brake until air bubbles stop. This indicates that the brake has been bled successfully.

   NOTE: Add new fluid to the master cylinder reservoir as needed.

7. Retighten the bleeder valve when the brake lever has reached the end of its stroke. Torque bleeder to specification.

= T
Brake Caliper Bleeder Screws: Phantom: 100-135 in-lbs (11-15 Nm) Phantom Lite: 36-46 in-lbs (4-5 Nm)

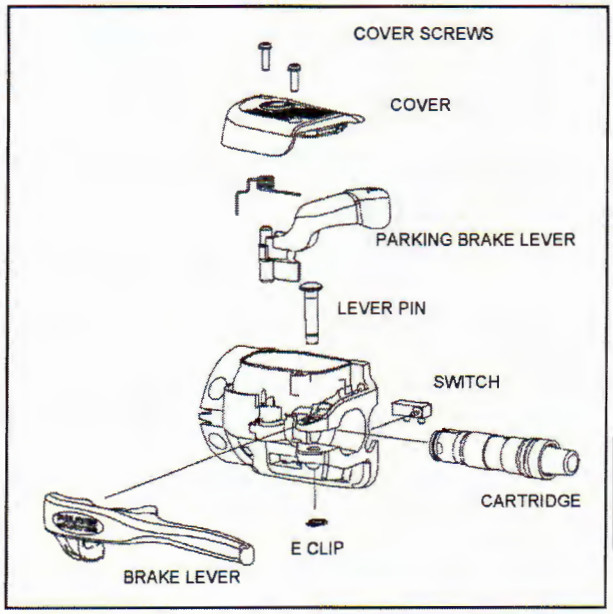
8. Evaluate the brake system for proper operation, and inspect for leaks. The brake lever should feel firm, without excessive travel and sponginess.
9. Add new fluid to the master cylinder reservoir to bring the fluid level back up to a level between the maximum and minimum fill lines. Replace master cylinder cover.

= T
Master Cylinder Cover Screws: Combined: 16-20 in-lbs (1.8-2.3Nm) Cyclone: 6-8 in-lbs (.7-.9Nm)

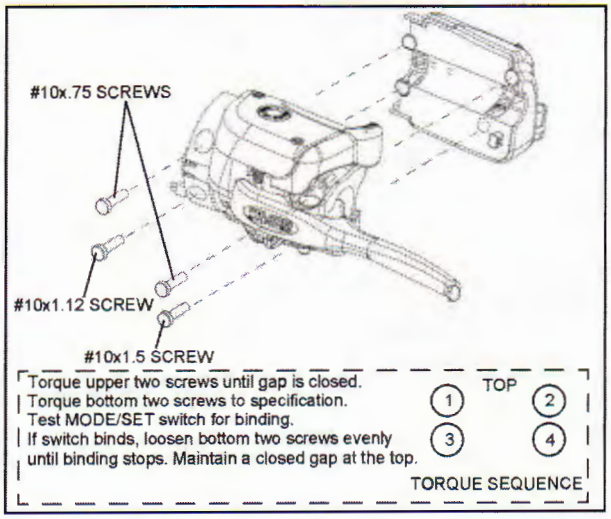
CAUTION
Caution: Take care not to get brake fluid on pads or disc. If brake fluid gets on disc, fully clean disc with alcohol.

10. Test brake system prior to returning vehicle to service.

Combined Master Cylinder/Lever Service



Switch Pack Screw Location/Torque Sequence:



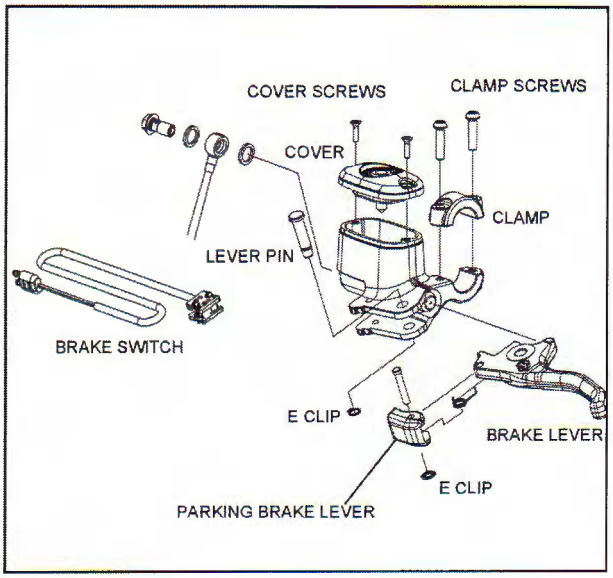
= T
Cover Screws: 16-20 in-lbs (1.8-2.3 Nm) Switch Pack Screws: 25-30 in-lbs (2.8-3.4 Nm) Brake Hose: 240-264 in-lbs (27-30 Nm)

1. To remove the brake lever, remove the e clip from the lever pin.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

2. Extract the pin from the housing, then remove the lever.
3. To remove the parking brake lever, the housing cover must be removed. Once removed, carefully extract the spring noting it its position inside the housing. Remove the parking brake lever.
4. To remove the cartridge, completely drain the brake fluid from the housing. Remove the brake and parking brake levers.
5. Disconnect the brake hose from the cartridge. Carefully pop the cartridge out of the housing.
6. To install the cartridge, lubricate the entire surface with DOT 4 brake fluid.
7. Align the cartridge with the housing tabs, then firmly press the cartridge back into the housing until the cartridge is engaged with the tabs.
8. Refill and bleed the brakes system as outlined in this chapter. Brake Fluid Replacement & Bleeding, page 5.28
9. Test brake system prior to returning vehicle to service.

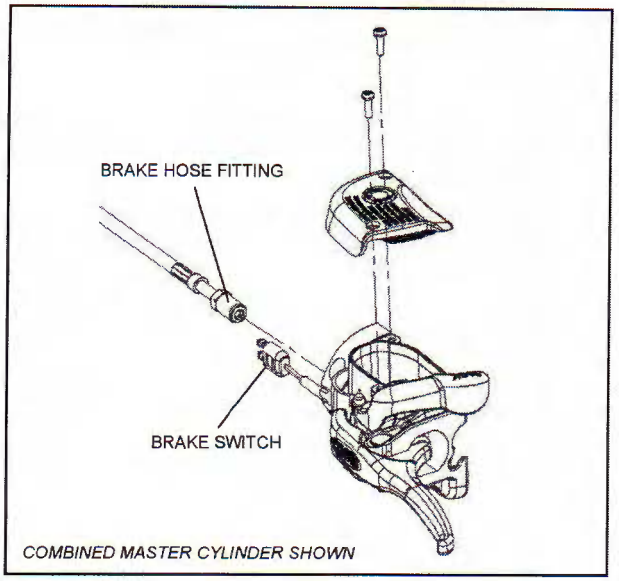
Cyclone Master Cylinder/Lever Service



= T

Cover Screws: 6-8 in-lbs (.7-.9 Nm)
Handlebar Clamp Screws: 60-80 in-lbs (6.8-9 Nm)
Brake Hose Banjo Screw: 240-264 in-lbs (27-30 Nm)

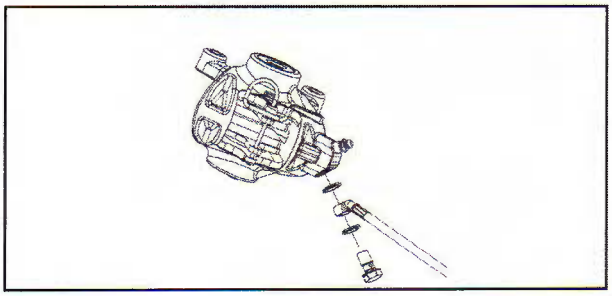
Brake Line Replacement



COMBINED MASTER CYLINDER SHOWN

Follow these steps if the brake line is to be replaced.

1. Drain the brake system by attaching a clear hose to the caliper bleed fitting.
2. Attach the other end to a Mity Vac or similar vacuum tool.
3. Bleed the system of brake fluid.
4. Note the orientation of the brake line. The brake line will need to be replaced in the same orientation. Remove the brake line from the caliper assembly. Use a shop towel to catch any remaining brake fluid in the hose.
5. On Cyclone master cylinders, remove the banjo bolt, washers and fitting from reservoir.
6. On combined master cylinder, loosen the brake line from the master cylinder 1/4 to 1/2 turn.
7. Remove the 4 screws that hold the master cylinder to the handlebar. This will separate the master cylinder from the switch pack.



9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

8. Unplug the brake light switch harness from the master cylinder.
9. Remove the brake line from the master cylinder.
10. Install new brake line on caliper and orientate it as noted in step 4.

= T
Brake Caliper Banjo Bolt: 240-264 in-lbs (27-30 Nm)

11. Insert the new brake line and install into the master cylinder. Torque the brake line to specification.

= T
Brake Line-to-Master Cylinder: 240-264 in-lbs (27-30Nm)

12. Tighten the brake line into the master cylinder in an orientation so that the line does not have any sharp bends when it is installed on the handlebar.
13. Route the brake light switch in the harness correctly.
14. On combined master cylinders, place the switch pack with the master cylinder onto the handle bar. Two smaller screws should be placed on the top and the longest screw is placed on the lower right.
15. Follow the bleeding procedure. Brake Fluid Replacement & Bleeding, page 5.28
16. Test brake system prior to returning vehicle to service.

Brake Hose Routing

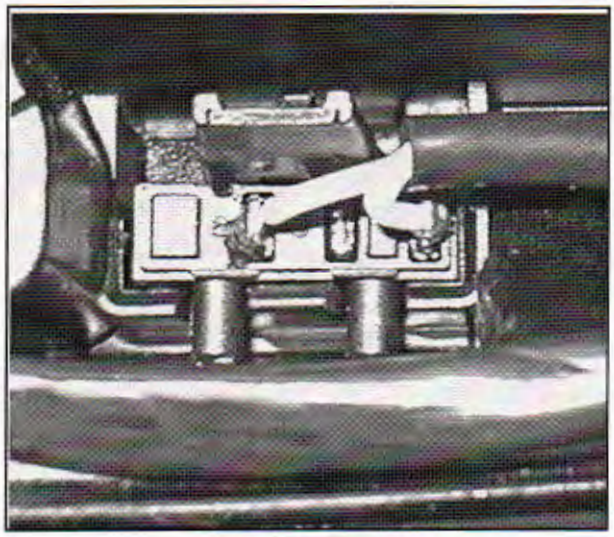
Route brake hose over steering block, under right over structure tube, and behind coolant surge tank.

CAUTION
Do not pinch brake hose between over structure tubes and steering block or between hood and hood mounts.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

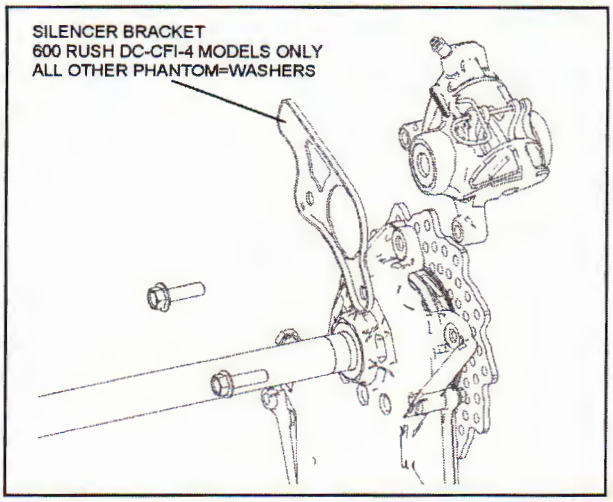
Combined MC Brake Light Switch Replacement

1. Remove the 4 screws that hold the master cylinder to the handlebar. This will separate the master cylinder from the switch pack.



2. Unplug the brake light switch harness from the master cylinder.
3. Replace faulty brake light switch into the master cylinder and route wires correctly.
4. Plug the brake switch back into the harness.
5. Replace the master cylinder to the switch pack and insert the smaller screws on the top, the longest one goes into the lower right side.

Phantom Brake Caliper Removal



1. Remove the two caliper bolts that hold the caliper and silencer bracket to the chaincase.

   NOTE: DC-CFI-2 models with Phantom calipers do not feature silencer bracket. Washers are installed in its place.

2. Remove the caliper from the chaincase. Tie the caliper to the overstructure. Do not allow the brake caliper to hang from the brake hose.

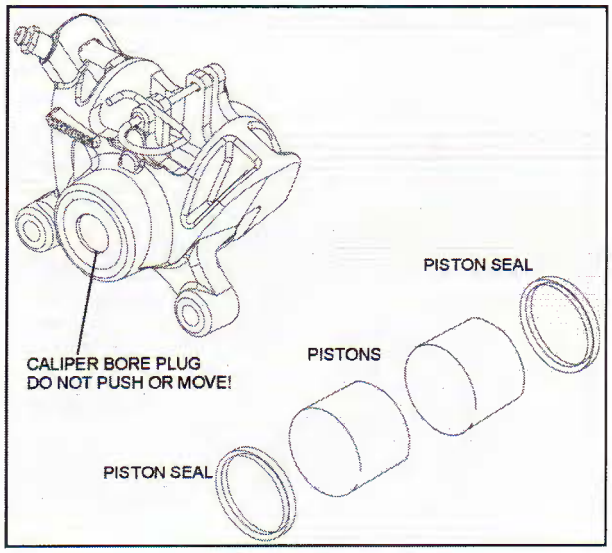
Phantom Brake Caliper Installation

1. Apply Loctite® 242™ and replace caliper bolts, and silencer bracket or washers if equipped. Torque bolts to specification.

= T
Brake Caliper Fasteners: Phantom: 40 ft-lbs (54 Nm)

2. Place the brake line on the caliper in the same orientation as it was before it was removed.
3. Clean the threads of the banjo bolt and the threads in the caliper.
4. Follow Brake Line Replacement. Brake Line Replacement, page 5.30
5. Install banjo bolt into the caliper and torque it to specification.
6. Bleed the brakes. Brake Fluid Replacement & Bleeding, page 5.28
7. Test brake system prior to returning vehicle to service.

Phantom Brake Caliper Piston / Seal Replacement



⚠ CAUTION

NEVER RE-USE PISTON SEALS. ALWAYS REPLACE WITH NEW PARTS.
DO NOT ATTEMPT TO SAND OR POLISH A CALIPER PISTON.

1. Remove the brake hose from the caliper. Drain the brake fluid into a jar or suitable container.
2. Rotate and remove the brake pad retaining pin and then remove the brake pads. Remove the caliper from the chaincase.
3. Hold the caliper over the brake fluid jar and then push the pistons back into the caliper. This will push the brake fluid in the caliper out of the brake hose banjo fitting hole.

⚠ CAUTION

NEVER RE-USE BRAKE FLUID. USED BRAKE FLUID MAY CONTAIN AIR BUBBLES. ALWAYS USE NEW BRAKE FLUID FROM AN UNOPENED CONTAINER.

4. Clamp the end of a 1/4" thick 2" x 10" piece of steel to the workbench. Allow the piece of steel to hang off of the bench by 4 - 5".
5. Position the caliper over the steel plate with the plate firmly against one of the retracted pistons.

CAUTION

DO NOT PUSH ON THE CALIBER BORE PLUG. DOING SO WILL BREAK THE PLUG SEAL AND REQUIRE CALIPER REPLACEMENT.

⚠ CAUTION

TO AVOID POSSIBLE INJURY, DO NOT PLACE FINGERS BETWEEN PISTONS TO ATTEMPT TO CATCH THEM WHEN APPLYING COMPRESSED AIR. WEAR EYE PROTECTION WHEN APPLYING COMPRESSED AIR TO CALIPER.

6. Insert a rubber-tipped air nozzle into the brake hose inlet port and apply compressed air to push out the piston.
7. To remove the second piston, lay a rubber sheet on the steel plate and position the caliper over the rubber sheet to seal the open piston bore. Repeat STEP 7.
8. Using a plastic or wood pick, remove both piston seals from the caliper bores. Discard the seals.
9. Clean the caliper and pistons with denatured alcohol and dry with either compressed air or a lint-free rag.
10. Inspect the caliper bores and pistons for pitting, heavy scoring or corrosion. Replace parts if heavily scored or pitted.
11. To assemble the caliper, lubricate two new piston seals with new brake fluid. Install each seal by inserting one point of the seal into the bore groove, and then work the seal around the groove with your index finger. Do not twist, or rip the seals.
12. Coat the piston thoroughly with new brake fluid. Evenly insert each piston into the bores, working each in by hand carefully and slowly. Push each piston down until bottomed out.
13. Reinstall the brake caliper on to the chaincase. Torque fasteners to specification.

= T

Brake Caliper Fasteners:
Phantom: 40 ft-lbs (54 Nm)

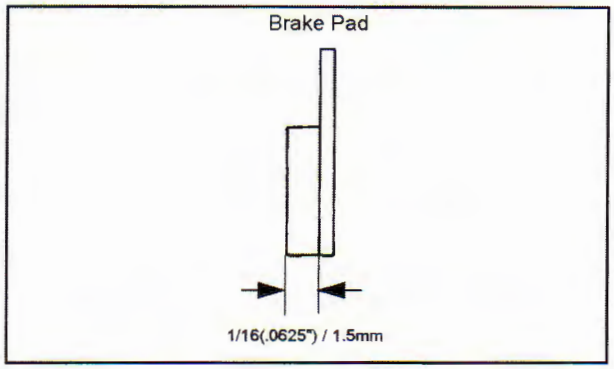
14. Inspect both brake pads prior to installation. If they are within the pad wear specification, reinstall into caliper.

15. Install the brake hose using the same routing and orientation noted during removal. Torque fitting to specification.

= T
Caliper Banjo Bolt: 240-264 in-lbs (27-30Nm)

16. Fill and bleed the brake system of air. Brake Fluid Replacement & Bleeding, page 5.28
17. Test brake system prior to returning vehicle to service.

Phantom Brake Pad Replacement



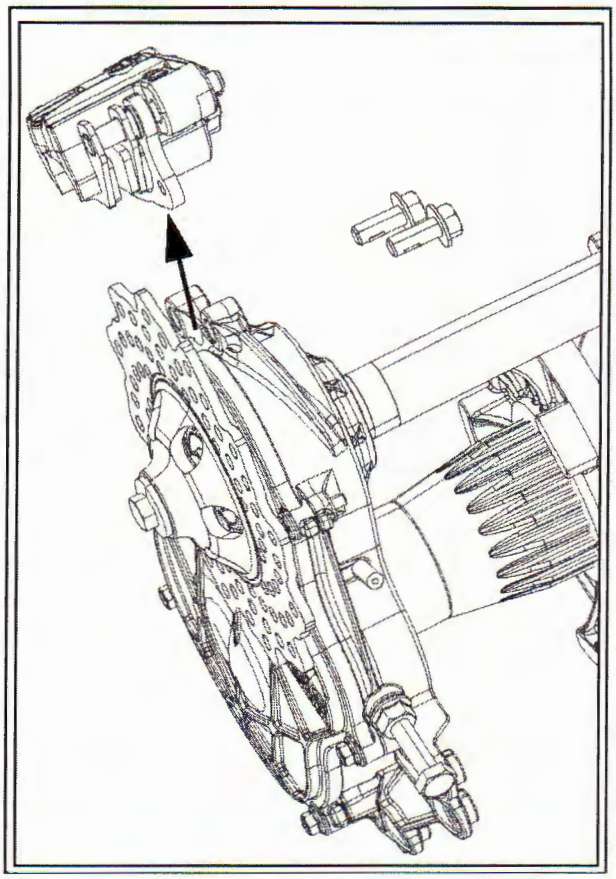
Brake pads need to be replaced if the thickness of the friction material is less than 1/16" (.0625") / 1.5mm.

1. Remove brake pad retaining pin.
2. Remove the brake pads.
3. Inspect the brake disc for any wear.
4. Replace brake pads in reverse order of removal.
5. Test brake system prior to returning vehicle to service.

Phantom Lite Brake Caliper Bracket/Seal/ Piston Service

⚠ CAUTION

NEVER RE-USE PISTON SEALS. ALWAYS REPLACE WITH NEW PARTS.
DO NOT ATTEMPT TO SAND OR POLISH A CALIPER PISTON.

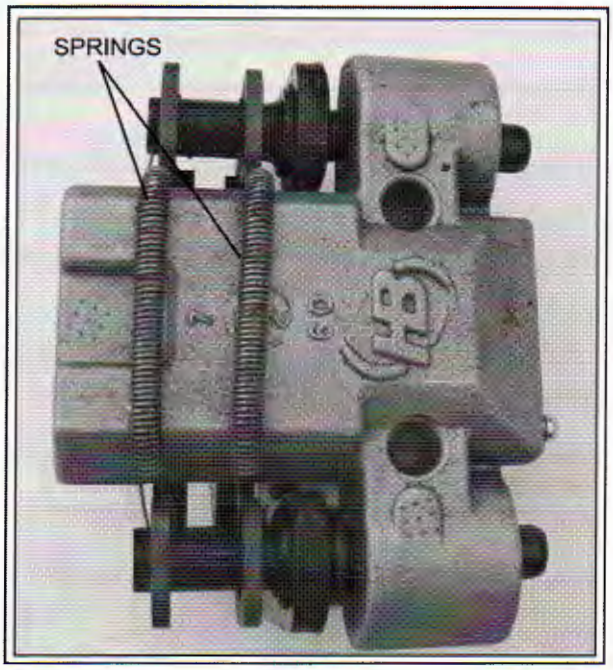


1. Clean the friction pad area.
2. Remove the brake caliper from the chain case. Slide the caliper off of the brake disc.
3. Remove the brake hose from the caliper. Drain the brake fluid from the master cylinder and caliper into a suitable jar or container.

⚠ CAUTION

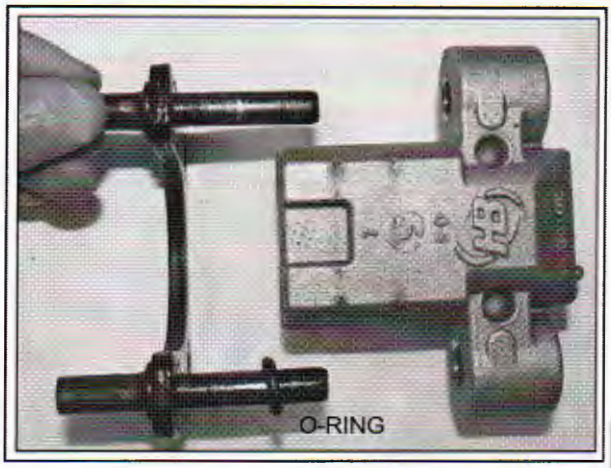
NEVER RE-USE BRAKE FLUID. USED BRAKE FLUID MAY CONTAIN AIR BUBBLES. ALWAYS USE NEW BRAKE FLUID FROM AN UNOPENED CONTAINER.

4. Remove the two anti-rattle springs. If springs are damaged or rusted, discard and replace with new springs.



5. Push the caliper mounting bracket against caliper.
6. Remove both friction pads.

7. Extract bracket by pulling it out of caliper. Note spacer o-ring on large diameter pin.



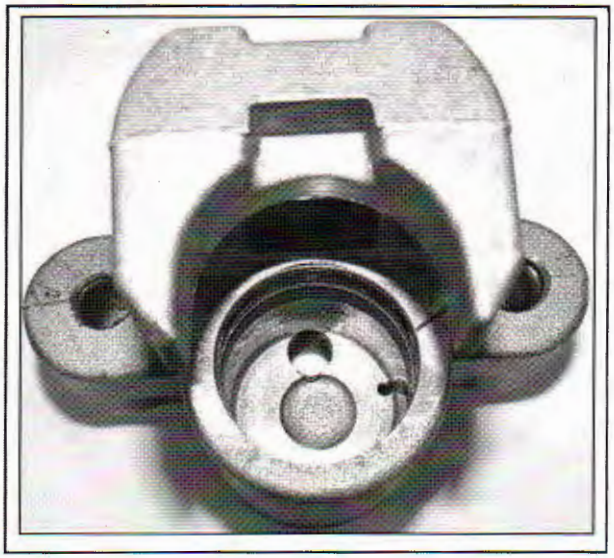
8. Remove the two small and two large o-rings from the inside of mounting ears on caliper. Discard the o-rings. Do not damage the shaft bores when removing o-rings.
9. Thoroughly clean the bracket pins and pin bores with brake cleaner.
10. To remove piston, insert a rubber-tipped air nozzle into the brake hose inlet port and apply compressed air to push out the piston.

⚠ CAUTION

TO AVOID POSSIBLE INJURY, DO NOT PLACE FINGERS BETWEEN PISTON AND CALIPER TO ATTEMPT TO CATCH IT WHEN APPLYING COMPRESSED AIR.
WEAR EYE PROTECTION WHEN APPLYING COMPRESSED AIR TO CALIPER.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

11. Using a plastic or wood pick, remove both piston seals from the piston bore. Discard both seals.



12. Clean the caliper bore and piston with denatured alcohol and dry with either compressed air or a lint-free rag.
13. Inspect the piston and piston bore for pitting, heavy scoring or corrosion. Replace parts if damaged.
14. To assemble the caliper, lubricate two new piston seals with new brake fluid. Install each seal by inserting one point of the seal into the bore groove, and then work the seal around the groove with your index finger. Do not twist, or rip the seals.
15. Coat the piston thoroughly with new brake fluid. Evenly insert piston into the bore, working it in by hand carefully and slowly. Push piston down until bottomed out.
16. Install two new small and two new large o-rings into the caliper for the bracket pins.
17. Apply a liberal amount of silicone-based grease to the bracket pins and pin bores. Install the bracket into the caliper.
18. Inspect both brake pads prior to installation. If they are within the pad wear specification, reinstall into caliper. Install two new anti-rattle springs.
19. Install the brake hose using the same routing and orientation noted during removal. Torque fitting to specification.

= T
Caliper Banjo Bolt: 240-264 in-lbs (27-30 Nm)

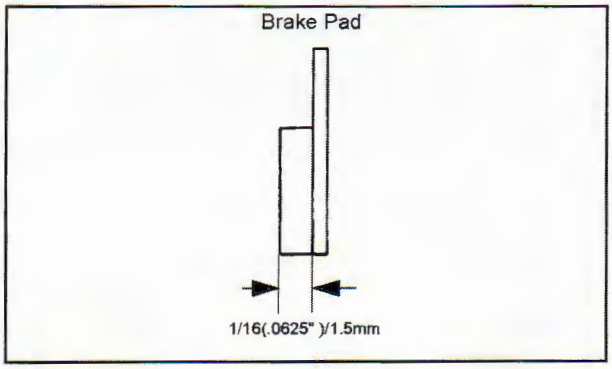
20. Reinstall brake caliper assembly on chain case. Torque fasteners to specification.

= T
Brake Caliper Fasteners: Phantom Lite (2011-2013): 40 ft-lbs (54 Nm) Phantom Lite (Current) / QuickDrive (All): 18.4 ft-lbs (25 Nm)

21. Fill and bleed the brake system of air. Brake Fluid Replacement & Bleeding, page 5.28
22. Test brake system prior to returning vehicle to service.

Phantom Lite Brake Pad Replacement

NOTE: Always replace both friction pads at the same time.



Brake pads need to be replaced if the thickness of the friction material is less than 1/16" (.0625") / 1.5mm.

1. Clean the friction pad area and master cylinder cover.
2. Remove the two caliper mounting mount bolts and slide the caliper assembly off the disc.
3. Remove master cylinder cover.
4. Prior to removing old pads from caliper, insert a large C-clamp placed on the head of the banjo bolt and the backing plate, tighten C-clamp carefully until piston is pushed back into the bore, do not over tighten, Piston should move easily. If no C-clamp is available insert a flat blade of large screwdriver between pads and pry apart. This action should press the caliper piston back into its bore, to make room for the new pads. Monitor the master cylinder during piston push back and remove any excess fluid that is forced back into the reservoir to prevent spillage.

5. Slide bracket tight to caliper and remove worn friction pads and install the new pads making sure that the friction material is facing inwards.
6. Insure slider bores are greased well with silicone-based grease.
7. Install bracket into slider bores.
8. Install new pads making sure that the friction material is facing inwards.
9. Reposition the caliper over the brake disc, insert and torque mounting bolts to specification.

= T
Brake Caliper Fasteners: Phantom Lite (2011-2013): 40 ft-lbs (54 Nm) Phantom Lite (Current) / QuickDrive (All): 18.4 ft-lbs (25 Nm)

10. With the unit reassembled, actuate the brake lever lightly and slowly several times to seat the new pads against the disc.
11. Check master cylinder reservoir for proper fluid level and replace cover. Torque screws to specification.

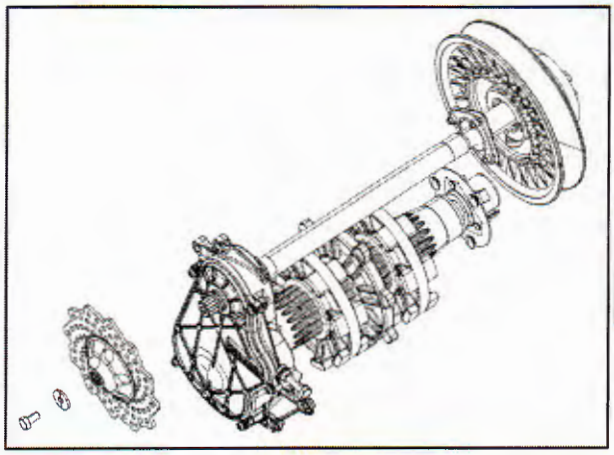
= T
Master Cylinder Reservoir Screws: 240-264 in-lbs (27-30Nm)

12. Test brake system prior to returning vehicle to service.

Brake Disc Replacement

NOTE: Reference Brake Disc Hardware table before reinstalling brake disc.

YEAR / CALIPER	FASTENER HARDWARE
2010/ Phantom	Fastener: 29 ft-lbs (40 Nm) Flat Washer 1-2 Float Washers (Install QTY. to achieve .8mm Disc Float)
2011-Current/ Phantom	Fastener: 40 ft-lbs (54 Nm) Flat Washer Wave Washer 1 Float Washer
2011-Current/ Phantom Lite	Fastener: 40 ft-lbs (54 Nm) Domed Washer (Dome facing out.)
QuickDrive Upper Sprocket	Fastener: 42–45 ft-lbs (57–61 Nm) Domed Washer (Dome facing out.)



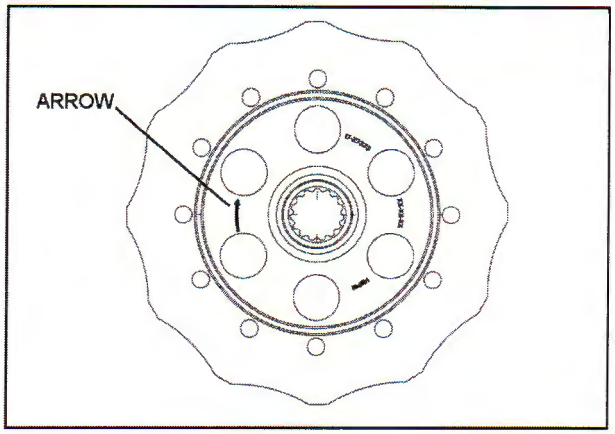
1. Engage the parking brake. Loosen the brake disc bolt.
2. On models equipped with the QuickDrive system, follow the procedure for removing the drive belt and sprockets.
3. Disengage the parking brake.
4. Remove the brake caliper from the chaincase or backer plate. Tie the caliper to the overstructure. Do not allow the brake caliper to hang from the brake hose.
5. On QuickDrive models, remove the brake disc.
6. Remove the brake disc bolt, beveled washer and shim washer (s) if model is equipped with the phantom brake caliper.
7. Remove the brake disc from the jackshaft.

   Brake Disc Service Specifications:

   - Lateral Run-Out Service Limit = .010" (.254 mm)
   - Service Limit Thickness = .030" (.762 mm) less than nominal
   - Nominal Thickness = .197"±.005" (5±.127mm)
8. Prior to installation, clean brake disc with brake cleaner, or denatured alcohol. Dry with compressed air or lint-free towel.

9. Install brake disc on to jackshaft. Reinstall correct brake disc hardware.

   NOTE: Brake discs on QuickDrive models feature a directional arrow that must be viewed from the outside of the vehicle. Arrow points in the direction of forward travel.



10. Reinstall the brake caliper assembly. Torque caliper bolts to specification.

= T
Brake Caliper Fasteners: Phantom: 40 ft-lbs (54 Nm) Phantom Lite (2011-2013): 40 ft-lbs (54 Nm) Phantom Lite (Current) / QuickDrive (All): 18.4 ft-lbs (25 Nm)

11. Lock the parking brake. Torque brake disc or upper sprocket bolt to specification.

= T
Brake Disc Bolt: 2010: 30 ft-lbs (40 Nm) 2011-CURRENT: 40 ft-lbs (54 Nm) QuickDrive Upper Sprocket Bolt: 42–45 ft-lbs (57–61 Nm)

12. Test brake system prior to returning vehicle to service.

CHAPTER 6
PVT SYSTEM

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

PVT SYSTEM

Overview

⚠ WARNING

Because of the critical nature and precision balance incorporated into the PVT system, it is absolutely essential that no attempt at clutch disassembly and/or repair be made without factory authorized special tools and service procedures. Polaris recommends that only authorized service technicians that have attended a Polaris-sponsored service training seminar and understand the proper procedures perform adjustments or repairs.

The Polaris drive system is a centrifugally actuated variable speed belt drive unit. The drive clutch, driven clutch, and belt make up the torque converter system. Each clutch comes from the factory with the proper internal components installed for its specific engine model. Therefore, modifications or variations of components at random are never recommended. Proper clutch setup and adjustments of existing components must be the primary objective in clutch operation diagnosis.

Drive Spring

The drive spring opposes the shift force generated by the clutch weights, and determines the neutral RPM, engagement RPM, and whether the engine RPM remains flat, rises, or falls during shift out. When changing only the drive spring, installing a spring with a lower pre-load rate will result in a lower engagement RPM speed, while installing a spring with a higher pre-load rate will result in a higher engagement RPM.

Clutch Weight

The clutch weights generate centrifugal force as the drive clutch rotates. The force generated changes in relation to the engine RPM and with specified weight of each clutch weight. When changing only the clutch weights, a lighter weight will result in a higher engagement RPM, lower shifting force, and higher shift out RPM. Installing heavier weights has the opposite effect

Neutral Speed

Engine RPM when the force generated by the clutch weights is less than the pre-load force generated by the drive spring. In this mode, the drive clutch is disengaged.

Engagement RPM

Engine RPM when the force generated by the clutch weights overcomes the drive spring pre-load force and the moveable sheave begins to close or "pinch" the drive belt. The engagement mode continues until no more belt slippage occurs in the drive clutch. Once 100% belt engagement is achieved, the sled will accelerate along the low ratio line until the drive clutch up shift force overcomes the opposing shift force generated by the driven clutch.

Shift Out Over-Rev

Engine RPM that spikes above the desired operating RPM speed. The shift out RPM should come down to the desired operating RPM, but never below, after the driven clutch begins to open.

Shift Out RPM

Engine RPM at which the up shift force generated by the drive clutch overcomes the shift force within the driven clutch. In this mode, the drive clutch will move the belt outwards, and the driven clutch will allow the drive belt to be pulled down into the sheaves.

During WOT operation, the shift out RPM can be seen as the maximum, sustained RPM displayed on the tachometer. *The shift out RPM should be the same RPM as the recommended engine operating RPM.* If the shift out RPM is above the recommended engine operating RPM, install heavier drive clutch weights. If the shift out RPM is below the recommended engine operating RPM, install lighter drive clutch weights.

The shift out RPM should remain constant during both the upshift and back shift modes.

Driven Spring

A compression spring (Team driven / P2) or torsional spring (Polaris P-85 driven clutch) works in conjunction with the helix, and controls the shift rate of the driven clutch. The spring must provide enough side pressure to grip the belt and prevent slippage during initial acceleration. A higher spring rate will provide more side pressure and quicker back shifting but decreases drive system efficiency. If too much spring tension exists, the driven clutch will exert too much force on the belt and can cause premature belt failure.

Back-Shifting

Back-shifting occurs when the track encounters an increased load (demand for more torque). Back-shifting is a function of a higher shift force within the driven clutch than within the drive clutch. Several factors, including riding style, snowmobile application, helix angles, and vehicle gearing determine how efficient the drive system back-shifts. The desired engine operating RPM should never fall below 200 RPM when the drive system back-shifts.

Final Gearing

The final drive gear ratio plays an important role in how much vehicle load is transmitted back to the helix. A tall gear ratio (lower numerical number) typically results in lower initial vehicle acceleration, but a higher top-end vehicle speed. A lower gear ratio (higher numerical number) typically results in a higher initial vehicle acceleration, but a lower top-end vehicle speed.

Choosing the proper gear ratio is important to overall drive system performance. When deciding on which gear ratio to use, the operator must factor in the decision where the snowmobile will be ridden, what type of riding will be encountered, and the level of performance the operator hopes to achieve.

Gearing a snowmobile too low for extended high-speed runs may cause damage to the drive belt and drive system, while gearing a snowmobile too high for deep-snow, mountain use may cause premature belt and clutch wear.

Typically, it is recommended to gear the snowmobile with a slightly higher ratio than the actual top speed the snowmobile will ever achieve.

1:1 Shift Ratio

A 1:1 shift ratio occurs when the drive clutch and the driven clutch are rotating at the same RPM.

The mathematical vehicle speed for a given gear ratio at a 1:1 shift ratio is represented in the chaincase gearing charts located in the Final Drive Chapter.

Low / High Ratio

Low ratio is the mechanical position when the drive belt is all the way down into the drive clutch, and all the way out on the driven clutch. High ratio represents when the drive belt is all the way out on the drive clutch, and all the way in on the driven clutch.

Driven Helix / Ramp

The helix cam is the primary torque feedback component within the driven clutch, regardless of driven clutch type. The beginning angle of the helix must transmit enough torque feedback to the moveable sheave in order to pinch the drive belt while minimizing belt slip. The flatter or lower the helix angle, the more side force will be exerted on the moveable sheave, while the steeper, or higher the helix angle, the less side force will be exerted on the moveable sheave.

PVT System Fastener Torques

FASTENER	TORQUE	NOTE
Drive Clutch Bolt (All Carbureted)	50 ft-lbs (68 Nm)	Re-torque after running engine.
Drive Clutch Bolt (All 2007 - Current CFI)	80 ft-lbs (108 Nm)	
Driven Clutch Bolt	17 ft-lbs (23 Nm)	
Team Helix Fasteners 3234381 T27 1/4–28 x .625	60 - 80 in-lbs (7 - 9 Nm)	
Team Helix Fasteners Patch Lock Applied 3235592 T27 1/4–28 x .625	8.3 - 10 ft-lbs (11.3 - 13.5 Nm)	Apply Loctite 243 OR Loctite 242 with Primer N
P2 Cover	12 ft-lbs (16 Nm)	
Team Deflection Jam Nut	110 in-lbs (12 Nm)	DO NOT OVER-TORQUE
P2 Deflection Cam	12 ft-lbs (16 Nm)	
P2 SPA Deflection Adjuster Screw Lock Nut	10 ft-lbs (12Nm)	
Spider	280-300 ft-lbs (380-406 Nm)	Apply Loctite 243 OR Loctite 242 with Primer N
Spider Jam Nut	290-330 ft-lbs (394-447 Nm)	
Drive Clutch Cover	100 in-lbs (11 Nm)	
Starter Ring gear	150-180 in-lbs (1-1.2 Nm)	Apply Loctite 271 Use cross pattern

GENERAL INFORMATION

Special Tools

TOOL	PART NUMBER
Team "12 Cooling Fin" Driven Clutch Offset Alignment Tool	PS-46998
Team "24 Cooling Fin" Driven Clutch / P2 Offset Alignment Tool	PS-47477
Drive Clutch Puller (3/4 - 16 x 7/16): 1999 - 2013 440 / 550 Fuji Fan Engines	2872084
Drive Clutch Puller: All models excluding models using clutch pullers: 2872084, 2872085, and 2871855	2870506
Drive Clutch Puller (3/4 - 16 x 14 mm): 2000 - Current Domestic Twins / 1999 - 2003 440 XCR / 1999 - 2003 700 - 800 XCR / All FS - FST	2872085
Drive Clutch Puller (M14 x 1.5 mm): 1997 - 1999 Domestic Twins (Excluding 1999 440 XCR)	2871855
Replacement Handle for ALL Clutch Pullers	5020326
Drive Clutch Holding Wrench	9314177-A
Strap Wrench	PU-45419
Replacement Strap	305085
Drive Clutch Spider Nut Socket	2870338
Drive Clutch Spider Removal/Installation Tool	2870341
Clutch Pin Punch	2870507
Tapered Reamer - 29 mm Short Drive-All Fuji Snow Engines (Excluding 700-800 XCR)	2870576
Tapered Reamer - 29 mm Long Drive - 755/866 w/original crankshaft / 700-800 XCR / All Domestic Carbureted (Excluding 600 IQ Racer)	PS-48587
Tapered Reamer - 31 mm- All 600/700/800 CFI / 755/866 w/large taper crankshaft / 600 IQ Racer	PS-48584
Roller Pin Installation Roller/Bushing Alignment Tool	2870910-A
Drive Clutch Button Removal Tool	2870985
Clutch Bushing Replacement Tool Kit	2871025
Clutch Holding Fixture	2871358-1
Universal Drive/Driven Clutch Compressor (Screw Down Type)	PU-50518
Spring-Loaded Roller Pin Installation Roller/Bushing Alignment Tool	8700221
Drive Clutch Compression Tool (Compresses drive clutch without removing clutch from engine.)	2871173

Bosch Automotive Service Solutions 1-800-345-2233 or https://polaris.service-solutions.com

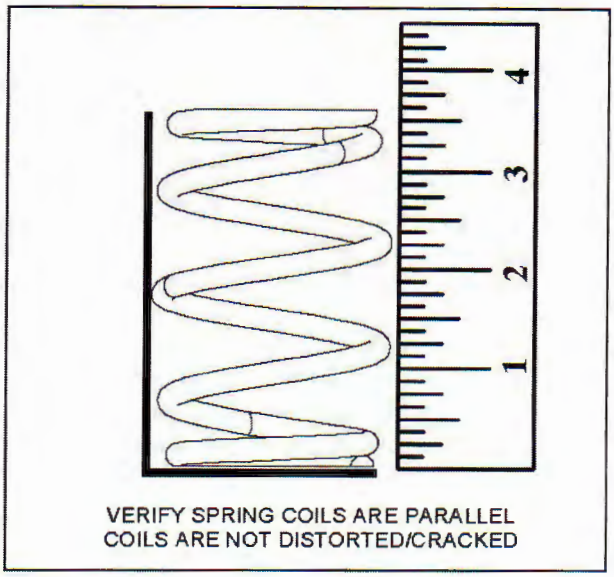
Drive Clutch Springs

PART NUMBER	COLOR	WIRE DIAMETER (INCHES)	FREE LENGTH +/-.125"	FORCE LBS. @ 2.50" - 1.19" (+/- 12 LBS.)	LOAD RATE (LBS./ INCH)
7041080	Blue	.207	3.55	120 - 300	137
7041945	Almond	.218	3.65	140 - 330	145
7041645	Almond/Gold	.207	4.00	150 - 290	107
7041818	Black/White	.218	3.52	140 - 320	137
7041816	Almond/Black	.200	3.75	165 - 310	111
7041922	Almond/Blue	.218	3.75	150 - 310	122
7041988	Almond/Red	.207	4.27	165 - 310	110
7042083	Black/Green	.218	3.38	120 - 340	168
7043681	Black - 3681	.225	3.327	120 - 310	145
7043829	Black - 3829	.218	3.48	140 - 330	145
7043076	Black - 3076	.225	2.67	40 - 340	229
7043120	Black - 3120	.225	2.78	60 - 340	213
7043121	Black - 3121	.255	3.05	100 - 340	183
7042287	Black - 2287	.207	3.40	110 - 290	137

NOTE: Springs listed as color - #### will have the last four digits of the part number painted on the spring coil. Tag each spring with the part number and spring force when not in use.

Spring Free Length

Measure the drive and driven spring free length with the spring resting on a flat surface. Replace spring if out of specification.



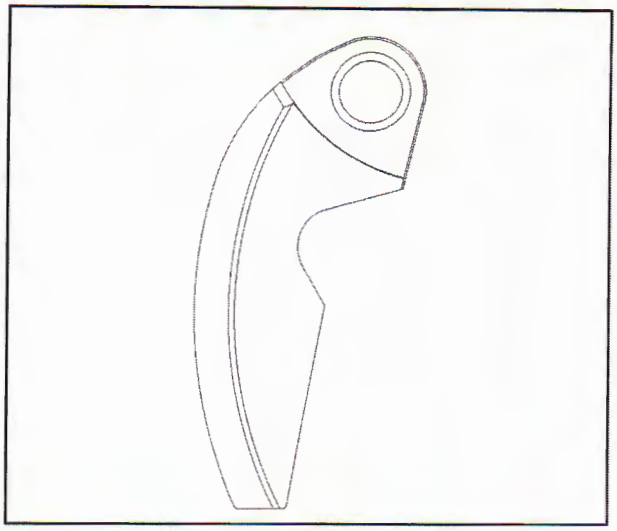
VERIFY SPRING COILS ARE PARALLEL
COILS ARE NOT DISTORTED/CRACKED

In addition to proper free length, the spring coils should be parallel to one another when placed on a flat surface. Distortion of the spring indicates stress fatigue. Replacement is required.

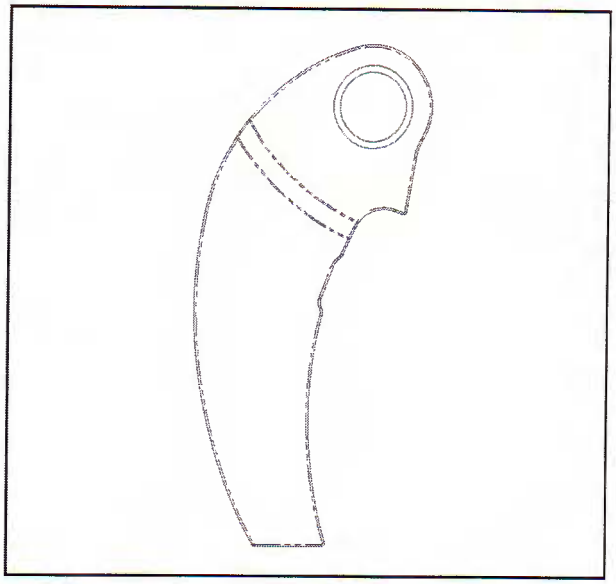
CAUTION

Never shim a drive clutch spring to increase its compression rate. This may result in complete stacking of the coils and subsequent clutch cover failure

Drive Clutch Weights



SERIES 10 WEIGHTS		
WEIGHT — GRAMS (+/- 1 GR.)	GRAMS(+/- 1GR.)	PART NUMBER
10M - R	44	1321530
10M - W	46	1321527
10M - B	47.5	1321529
10M	49.5	1321528
10	51	1321526
10A - L	52.3	1321531
10-54	54	1321685
10A	55	1321589
10-56	56	1321684
10-58	58	1321588
10-60	60	1321587
10-62	62	1321586
10-64	64	1321585
10-66	66	1321584
10-68	68	1322427
10-70	70	1322414
10-72	72	1322428
10-74	74	1322429
10-76	76	1322585
10-78	78	1322586



SERIES 11 WEIGHTS	
WEIGHT — GRAMS(+/- .8GR.)	PART NUMBER
11-40	1322593
11-42	1322592
11-44	1322591
11-46	1322596
11-48	1322590
11-50	1322589
11-52	1322595
11-54	1322866
11-56	1322865
11-58	1322864
11-60	1322863
11-62	1322862
11-64	1322604
11-66	1322559
11-68	1322558
11-70	1322523
11-72	1322524
11-74	1322525
11-76	1322526

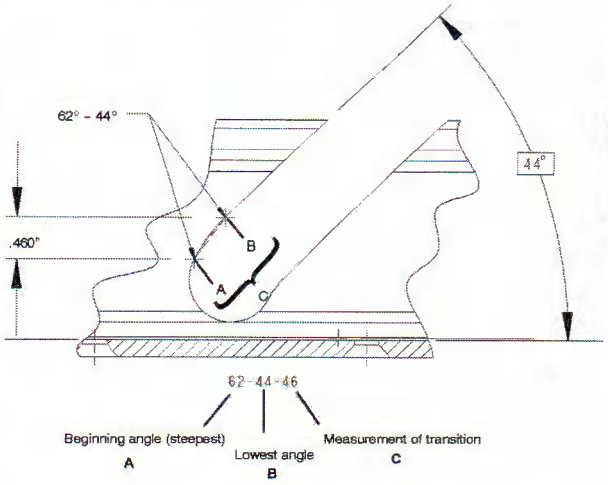
NOTE: When compared to 10 series weights, 11 series weights feature more weight distribution at the beginning of the shift curve, a more aggressive shift curve, and a larger heel angle. The belt-to-sheave clearance will require adjustment when changing to and from each series of weights.

When cross referencing 10 and 11 series weights, select a 2 gr. lighter 11 series weight (10-66 = 11-64).

PERC Team LWT Driven Helixes

PART NUMBER	DESCRIPTION
5135401	64 / 42 - .36
5135402	64 / 38 - .25
5135403	56 / 42 - .36
5135503	54 / 38 - .25
5135504	S36
5135772	66 / 44 - .46
5136327	60 / 42 - .36
5136255	S42
5139626	48 / 42 - .36
5139537	58 / 44 - .36

Team Ramp Angles



The angles and length of the transition between the first and final angle is stamped on the back of the helix. The first number (A) designates the starting angle of the ramp. The second number (B) designates the finish angle. The last number (C) is the transition distance (in inches) between the starting and finish angles.

CAUTION

Do not install a non-ER helix on a Perc-equipped snowmobile where the engine changes directions.

Team Driven Springs

PART NUMBER	COLOR	FREE LENGTH INCHES (CM)	LOAD @ 2.2"(LBS)	LOAD @ 1.1"(LBS)	RATE (LBS. PER INCH)
7042181	Black/Yellow	6.0 (15.24)	145	208	56
7043058	Red/Black	Subs to 7043149 - P2 Non-Tabbed			
7043059	Red/Green	4.767 (12.1)	120	220	90
7042066	Green/Black	5.60 (14.2)	135	198	56
7043061	Red/Silver	4.95 (12.5)	125	175	45
7043062	Red/Yellow	4.40 (11.2)	100	150	45
7043057	Red/Blue	4.767 (12.1)	140	200	54
7043063	Black	Subs to 7043150 - P2 Non-Tabbed			
7043064	Blue/Black	Subs to 7043152 - P2 Non-Tabbed			
7043060	Red/White	4.95 (12.5)	100	200	91
7043069	Red/Pink	3.50 (8.9)	140	260	110
7043363	Black/Purple	4.50 (11.4)	160	240	72
7043252	Black - 160 / 280	3.70 (9.4)	160	280	109
7043254	Black - 140 / 300	3.20 (8.1)	140	300	146
7043255	Black - 160 / 300	3.50 (8.9)	160	300	127
7043256	Black - 180 / 300	3.90 (9.9)	180	300	109

NOTE: Team driven springs listed with a color - ### / ### will have the beginning and ending spring rates painting on the spring coils. Tag each spring with the part number when not in use.

Polaris P2 Driven Non-Tabbed Springs

PART NUMBER	COLOR	FREE LENGTH INCHES (CM)	LOAD @ 2.2" (LBS)	LOAD @ 1.1" (LBS)	RATE (LBS./IN.)	TEAM EQUIVALENT COLOR
7043397	BLACK	4.4 (11.2)	100	150	45	RED/YELLOW
7043398		4.95 (12.6)	125	175	45	RED/SILVER
7043151		4.76 (12.1)	140	200	54	RED/BLUE
7043150		4.2 (10.6)	140	220	65	BLACK
7043430		4.4 (11.2)	160	240	72	BLACK/PURPLE
7043152		4.1 (10.4)	120	200	73	BLUE/BLACK
7043149		4.7 (11.9)	140	240	90	RED/BLACK

Polaris P2 Tabbed Driven Springs

PART NUM-BER	COLOR	FREE LENGTH* INCHES (CM)	LOAD @ 2.4" (LBS)	LOAD @ 1.4" (LBS)	RATE (LBS./IN.)
7043515	BLACK	4.77 (12.1)	130	180	54.5
7043495		4.74 (12)	140	200	60.9
7043496		4.4 (11.2)	145	220	73
7043512		3.74 (9.5)	120	210	91

NOTE: Tag each spring with the part number and spring force when not in use.

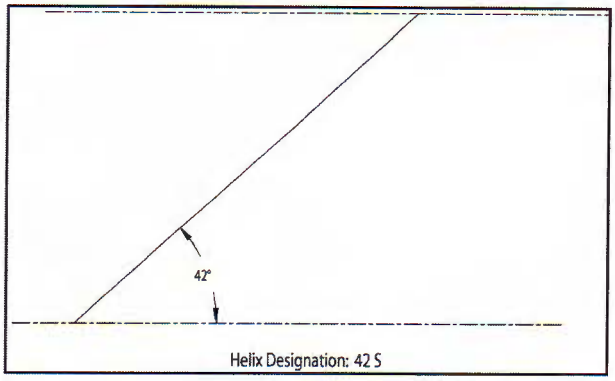
*** = Not including tab.**

Polaris P2 Driven Helixes

PART NUMBER	DESCRIPTION
5136975	38S
5137154	40S
5137155	42S
5137160	44S
5137142	58/40 - .35
5137150	40/38 - .45
5137157	44/38 - .45
5137176	58/42 - .45
5137153	60/40 - .45

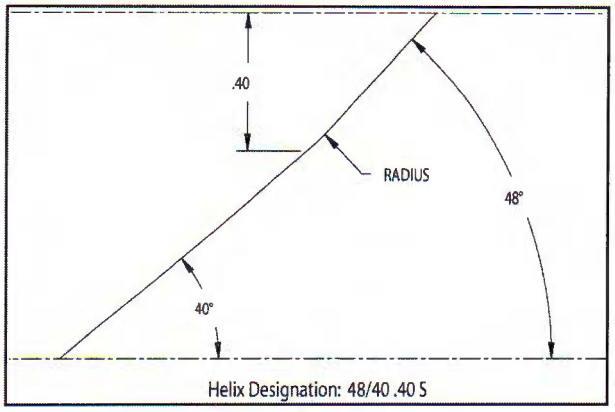
P2 Helix Angles

Straight Angle Helix: 42S Example



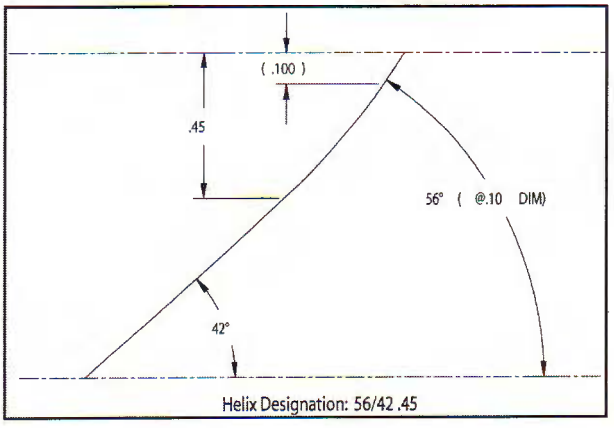
Dual Straight Angle Helix: 48/40 .40S Example

1st Angle / 2nd Angle - Vertical Distance to Transition



Arc to Straight Angle Helix: 56/42 .45 Example

1st Angle at .100" from Horizontal / 2nd Angle - Vertical Distance to Transition



Drive Belts

PART NUMBER	PROJECTED WIDTH (IN/CM)	OVERALL SIDE ANGLE	CENTER TO CENTER (IN/CM)	OUTER CIRCUMFERENCE (IN/CM)	RIDE OUT	NOTES
3211122	1.46 / 37.1	26°	11.5 / 29.2	46.77 / 118.8	Belt cord line should be flush with, or slightly above, the outer circumference of driven clutch sheaves.	MBL Kevlar Cords Performance replacement for the 3211080 Cut Finish
3211115						MBL High Performance / Mountain Belt PBO Fiber Cords Cut Finish

Belt dimensions are given in nominal dimensions. There is a +/- variance for all critical dimensions. Clutch set up must be inspected when a new belt is installed.

The drive belt is an important component of the converter system. In order to achieve maximum efficiency from the converter, drive belt tension (deflection), clutch offset, and alignment must be adjusted properly.

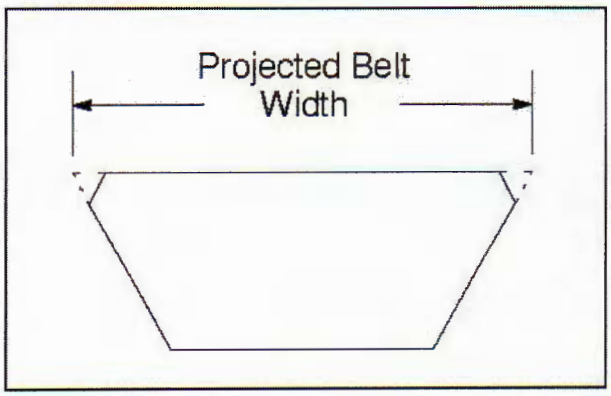
The belt cord line should be flush with, or slightly above, the outer circumference of the driven clutch sheaves. The belt will seat itself in the driven clutch during the break-in period. Adjust the belt ride out after the break-in period by re-adjusting belt deflection.

The break-in period for a new drive belt is 30 miles. During this time, vary the throttle position under 50% and limit full throttle use.

New drive belts that feature a sanded finish should be first washed with warm, soapy water and allowed to air dry prior to use.

Always take time to warm up the belt and driveline prior to operating the snowmobile. Free track and skis from the ground before engaging throttle.

Belt Inspection

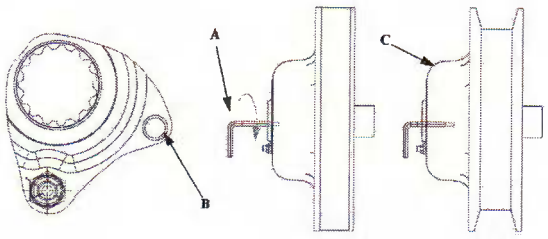


1. Measure the belt width and replace it if it is worn severely. Generally a belt should be replaced if the clutches can no longer be adjusted to provide the proper belt deflection.
   - Project the side profiles and measure from corner to corner.
   - Place a straight edge on each side of the drive belt and measure the distance where the straight edges intersect at the top.
2. Inspect the belt for loose cords, missing cogs, cracks, abrasions, thin spots or excessive wear spots. Replace if necessary.
3. Inspect the belt for hour glassing (extreme circular wear in at least one spot and on both sides of the belt). Hour glassing occurs when the drive train does not move and the drive clutch engages the belt.

Belt Wear / Burn Diagnostics

POSSIBLE CAUSE	SOLUTION
Driving at or about engagement RPM for extended periods of time in any type of snow condition.	Drive at higher RPM if possible. Gear the machine down. Make sure belt deflection is at 1 1/4" to achieve optimum starting ratio.
Cold weather startups	Be patient. Warm up engine at least 5 minutes or until it readily responds to throttle input. For the quickest most efficient drive away in extreme cold weather, take drive belt off machine and bring it in to a warm environment. Break skis and track loose from the snow. Engage throttle aggressively for short durations for initial cold drive away
Towing another machine at or about engagement RPM	When possible, do not go in deep snow when towing another machine. Use fast, effective throttle to engage the clutch. Not all machines are intended for pulling heavy loads or other machines.
Spinning track while vehicle is stuck (high RPM, low vehicle speed, high ambient temp. Example: 8000 RPM, 10 mph actual vehicle speed and 60 MPH indicated on speedometer.	Lower the gear ratio. Remove windage plates from driven clutch. If possible, move to better snow conditions and reduce RPM. Avoid riding in very high ambient temperatures
Ice and snow piled up between track and tunnel overnight or after stopping for a long period of time (enough to re-freeze the snow).	Break loose snow and ice under tunnel. Allow longer than normal warm-up. Allow belt to warm sufficiently and increase grip ability on clutch sheaves. Use fast, effective throttle when engaging clutch.
Poor running engine (Bog, Miss, Backfire, etc.)	Maintain good state of tune including throttle and choke synchronization. Check for fouled spark plug(s). Check for foreign material in carburetors. Make sure no water or ice is present in the fuel tank, lines, or carburetors.
Loading machine on trailer	Use caution when loading machine. Carbide skags may gouge into trailer and prevent drive train from spinning freely. Use enough speed to drive completely onto trailer. If machine cannot be driven completely onto trailer, it may need to be pulled or pushed to avoid belt wear / burning.
Clutch malfunction	Check for correct clutch components, or damage on the clutch
Slow, easy belt engagement - easing on the throttle	Use fast, effective throttle to engage the clutch.

Drive Belt Removal - Team Driven



NOTE: Turn the key to the "OFF" position and allow the engine to come to a complete stop.

1. Verify the driven clutch is not in reverse. Remove the LH compartment door panel.

CAUTION
Damage to the driven clutch or L wrench will occur when attempting to open the driven clutch when the driven clutch is in the reverse position.

2. Insert the L wrench, PN 2874857 (A), into the threaded hole (B) located on the driven clutch, and turn it clockwise until the clutch sheaves are in the open position (C).
3. Remove the drive belt.

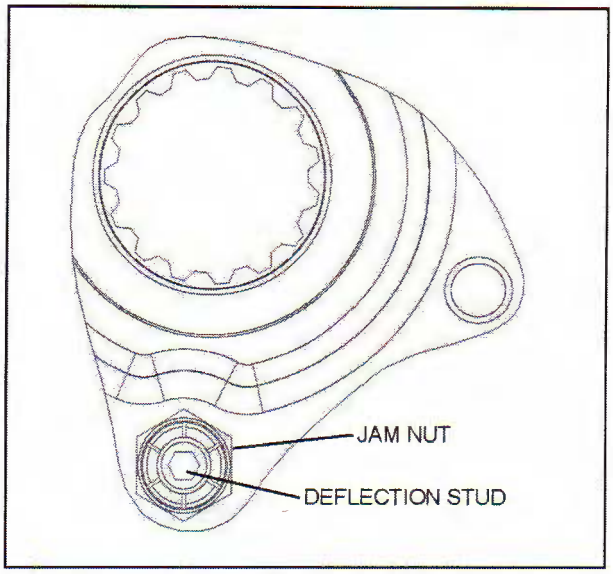
Drive Belt Installation - Team Driven

1. With the L wrench inserted into the threaded hole (B) and the sheaves in the open position, install the drive belt.

   NOTE: Install belt so that the numbers can be read correctly on the left side of the machine or in the direction in which the belt was originally installed.

2. Remove the wrench. "Wiggle" the belt to remove slack while removing the wrench.
3. Close the clutch guard.

Adjusting Belt Deflection - Team Driven Clutch

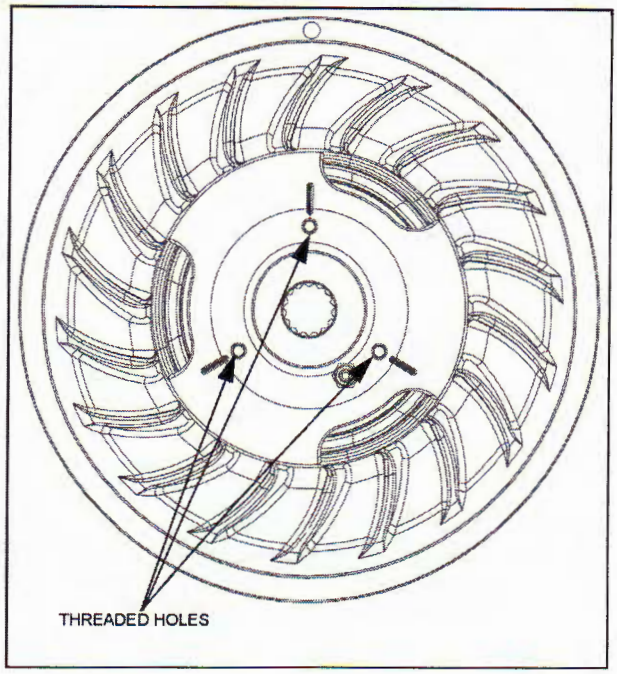


1. Loosen the jam nut.
2. Using a 1/8" Allen head wrench, turn the stud counter-clockwise to decrease belt deflection and clockwise to increase belt deflection.
3. When the proper belt deflection is achieved torque the lock nut to specification.

= T
Deflection Set Screw Lock Nut: 90-110 in-lbs (10-12 Nm)

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

Drive Belt Removal - SPA P2



NOTE: Turn the key to the "OFF" position and allow the engine to come to a complete stop.

1. Verify the driven clutch is not in reverse. Open the LH compartment door panel.

CAUTION
Damage to the driven clutch or L wrench will occur when attempting to open the driven clutch when the driven clutch is in the reverse position.

2. Insert the L wrench, PN 2874857, into one of the threaded holes located on the driven clutch. Turn it clockwise until the clutch sheaves are in the open position.
3. Remove the drive belt.

Drive Belt Installation - SPA P2

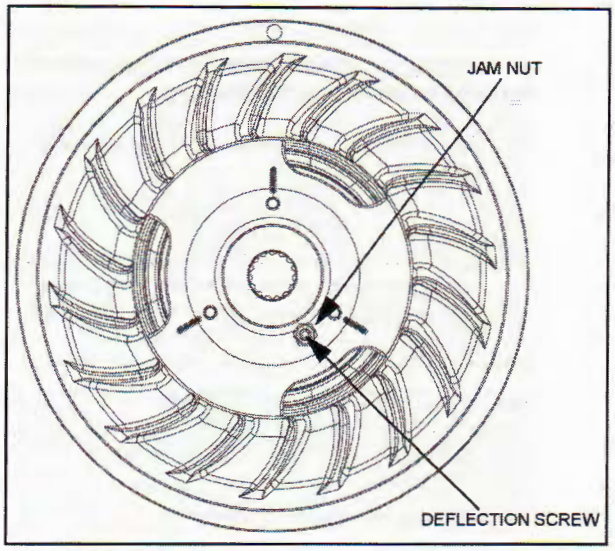
1. With the L wrench inserted into one of the threaded holes and the sheaves in the open position, install the drive belt.

   NOTE: Install belt so that the numbers can be read correctly on the left side of the machine or in the direction in which the belt was originally installed.

2. Remove the wrench. "Wiggle" the belt to remove slack while removing the wrench.

Adjusting Belt Deflection - SPA P2

1. Loosen the deflection screw jam nut.
2. Using a 1/8 Allen driver, turn the deflection screw in or out to adjust the distance between the driven clutch sheaves.
3. When the proper belt deflection is achieved torque the lock nut to specification.



= T
Deflection Screw Lock Nut: 110 in-lbs (12 Nm)

PVT SYSTEM ADJUSTMENTS

Clutch Alignment/Offset

The drive and driven clutches are offset from each other. This offset is controlled by the number and thickness of washers installed on the jackshaft behind the driven clutch.

1. Remove drive belt.
2. Push the driven clutch towards the bulkhead. Install the alignment tool into the drive clutch and on top of the driven clutch hub.

PART NUMBER	APPLICATION
PS-47477	Light Weight (LWT) Team Driven / P2

NOTE: The PS-47477 offset tool is calibrated with the correct alignment angle for the respective driven clutch.

Inspect for broken motor mounts, engine straps or bulkhead damage if the offset tool reveals major misalignment.

3. The optimum setup is when the front and rear of the tool touch the driven clutch. No gap should be present in the front, and the rear clearance should not exceed .060" (1.5mm).

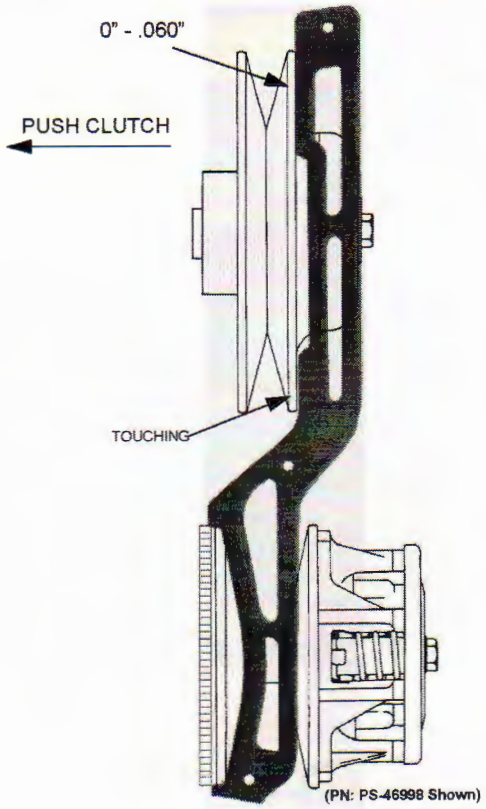
NOTE: If the front of the alignment bar does not touch the driven sheave, the maximum clearance cannot exceed .025" (.64mm).

Offset/Float Adjustment

1. Determine direction driven clutch needs to be adjusted.
2. Remove driven clutch retaining bolt, and remove driven clutch.
3. With one 16 GA. bushing installed, add or remove offset washers from behind the driven clutch to set the proper offset.
4. After adjusting the offset, add or remove shim washers from behind the driven clutch bolt and washer to provide a .060" (.1.5mm) driven clutch float on the jackshaft.

DRIVEN CLUTCH OFFSET / SHIM WASHERS
Offset Washers 16 Gauge Bushing=7556509 (QTY.1) .023" = 7555917 (AR) .120" = 7555864 (AR) Float Washers .065" = 7555806 (AR) .105" = 7555832 (AR)
AR = As Required

CAUTION
Always verify the driven clutch floats on the jackshaft. The jackshaft bearing will fail from side-loading if the driven clutch is not allowed to float.

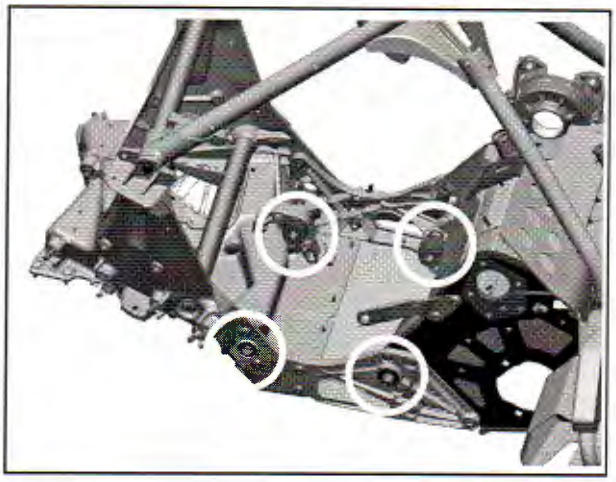


9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

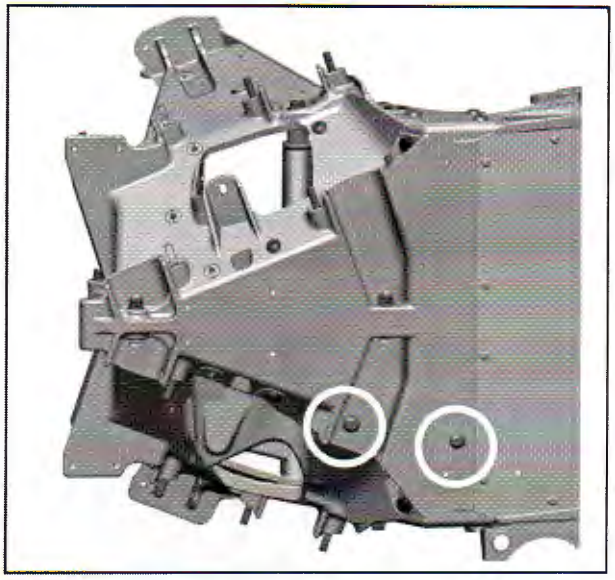
Adjusting Engine Mount Bolts/Engine Alignment

Minor adjustments to the engine mount bolts and MAG-front engine mount can be performed if the alignment tool indicates major clutch misalignment.

1. Loosen, but do not remove, the four engine mount bolts.



2. Loosen, but do not remove, the two Torx screws securing the MAG-front engine mount to the bulkhead.

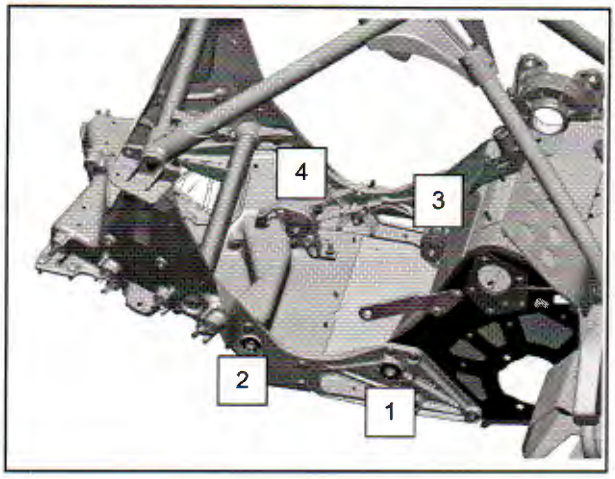


3. Verify clutch alignment has changed using the Clutch Alignment Tool part number: PS-47477. The engine can be moved slightly with the screws loosened at the MAG-front location.

4. Once clutch alignment is set, tighten the engine mount bolts to specification in the sequence shown in the illustration.

= T
2010 - 14mm Head Diameter - DK.Green Color DK. GREEN-M10x1.5x45 (8.8): 30 ft-lbs (41 Nm) 2011 - 14mm Head Diameter - Silver/Gray Color SILVER/GRY-M10x1.5x50 (12.9): 35 ft-lbs (48 Nm) 2012/Replacement Kit - 16mm Head Diameter Silver/Gray Color SILVER/GRY-M10x1.50 (12.9): 40 ft-lbs (54 Nm)

5.



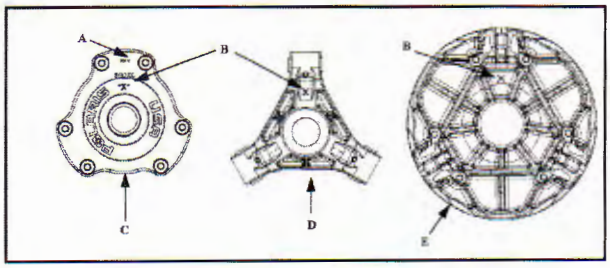
6. Torque the two Torx screws only after all four engine mount bolts are torqued to specification.

= T
Front-MAG Engine Mount Screws-to-Bulkhead Screws: 22 ft-lbs (30 Nm)

7. Re-check clutch alignment. If clutch alignment is still incorrect, inspect the engine mounts, motor straps, radial inserts, and chassis for broken or twisted components.

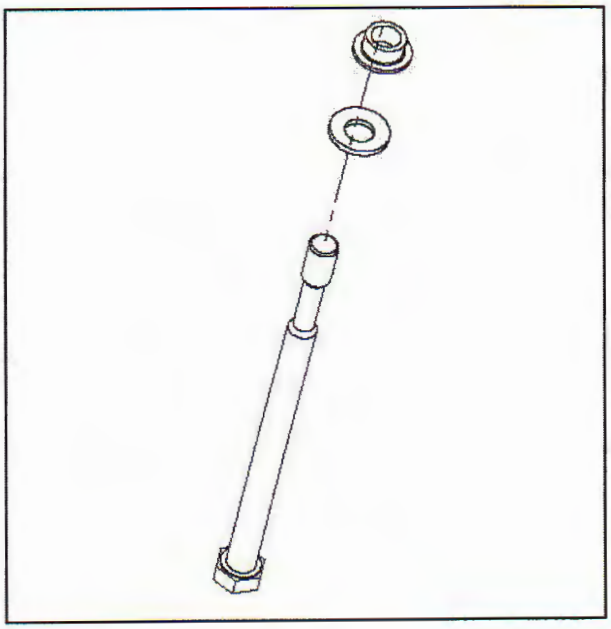
DRIVE CLUTCH

Identification



Every clutch will have the clutch part numbers etched on to the cover (A). The "X" (B) marking is an index mark where the clutch cover (C), clutch spider (D) and the stationary sheave (E) should line up when the clutch is assembled.

Drive Clutch Removal

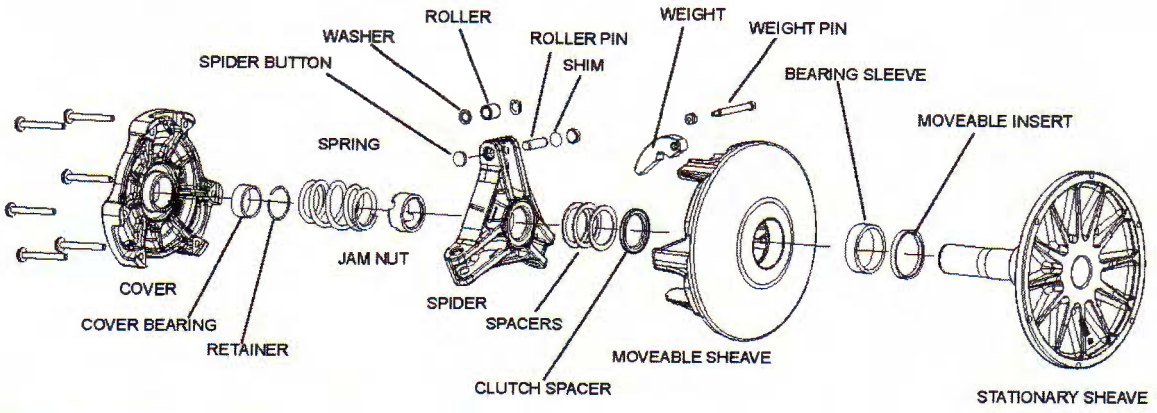


NOTE: All clutch tools can be found at the beginning of this chapter.

1. Remove the belt.
2. Place the clutch holding tool (PN 9314177-A) on the drive clutch.
3. Remove the drive clutch retaining bolt. Note the placement and number of washers on retaining bolt.
4. Insert the correct clutch puller into the retaining bolt hole.
5. Tighten the puller into the clutch. If the clutch does not come off, strike the clutch puller head with a hammer. If the clutch does not "pop" off, continue to tighten the clutch puller, and repeat this step.

CAUTION
Do not use an impact wrench to remove or install the clutch bolt or clutch puller. Damage to the clutch and/or crankshaft can occur.

Drive Clutch Disassembly



⚠ CAUTION

Wear eye protection when servicing the drive clutch. Sheaves must be marked to provide a reference point for clutch balance and spider indexing. If the sheaves are not marked and the spider washers are changed or misplaced, the clutch may be out of balance and damage to the clutch may result.

⚠ WARNING

Clutch spring is under extreme tension, use caution and wear eye protection when disassembling the clutch.

1. In a straight line, mark/etch the sheaves and the cover with a black marker or a scribe.
2. Place the drive clutch in the clutch compression tool (PN 8700220).
3. Compress the clutch in the compression tool, then secure the chain.
4. Evenly remove the cover fasteners. The cover bushing may be damaged if the cover is side-loaded or mis-aligned.
5. Carefully remove the tension from the compression tool.
6. Remove the cover and inspect the cover bushing. Replace if damaged or worn.

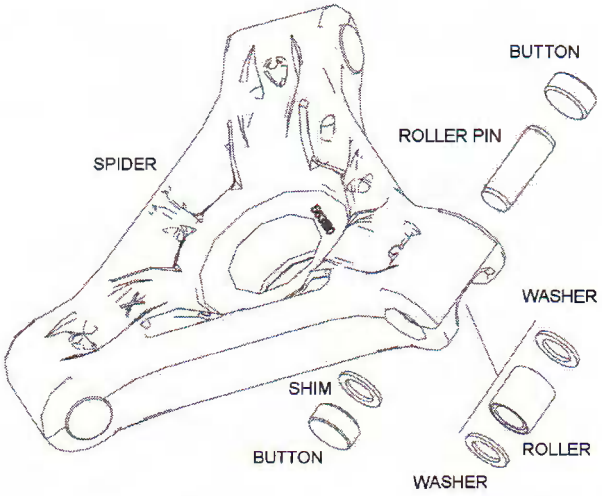
   NOTE: Replace the cover bushing if the inside diameter is over 1.40" (28.95mm)

7. Remove the spring.
8. Mount the drive clutch securely in a drive clutch holding fixture (PN 2871358).
9. Remove the jam nut in a counterclockwise direction (standard thread) using the drive clutch spider nut socket (PN 2871358).
10. Install the spider removal tool (PN 2870341), and remove the spider in a counterclockwise direction (standard thread).
11. Measure the total thickness of the spacer washers that are installed on top of the clutch spacer. Record the thickness of these spacer washers.
12. Inspect both sheave surfaces for wear or damage.
13. Inspect the moveable sheave bushing for wear or damage.
14. Remove all three drive clutch weights.
15. Inspect each weight. The surface should be smooth, with no waves or galling. Place pin inside weight to check flyweight bushing and pin surface for wear by rocking the weight back and forth.
16. Inspect all the rollers, bushings and roller pins by pulling a flat metal rod across the roller.
17. Roller can also be inspected by rolling with a finger to feel for flat spots, roughness, or loose bushing.

    NOTE: The flyweight bushing is not replaceable. If flyweight bushing is damaged, the flyweight, pin and nut will need to be replaced.

18. Inspect to see if the roller and bushing are separating.
19. Bushing must fit tightly in roller.
20. Replace roller and pin if roller fails to roll smoothly (no flat spots) or if the bushing is loose or worn.

Roller Removal



1. With the spider in a vise start removing the spider buttons by drilling a 0.18" hole in the center of a button on one side of the spider.
2. Place a pin punch through the drilled hole in the button and drive the opposing button and pin out.
3. Remove shims (if any are installed) and note their location.
4. Flip the spider over and tap out the holed button.
5. Perform steps on remaining spider legs.

   NOTE: When required, button shims are installed on the trailing (right) side of the spider leg as viewed from the front of spider.

Roller Installation

NOTE: Use care to start the pin straight. Aluminum burrs could pass through into the roller bushing causing it to bind and stick. Also use care to make sure the roller remains aligned when the pin is driven through. The roller busing could be damaged causing premature wear and roller failure.

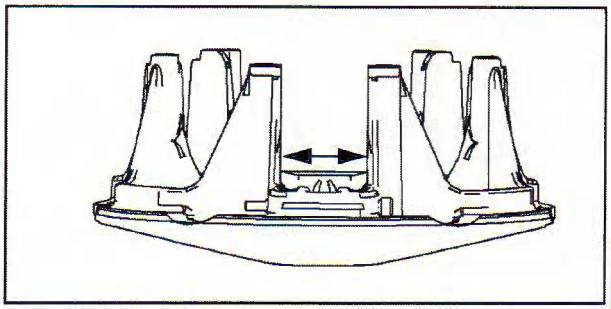
1. Drive pin into the spider leg .100" -.125" (0.25 - 0.32cm) beyond the first land of the spider leg.
2. Install one washer on the portion of the pin that is protruding from the spider leg.
3. Place roller in spider leg and center it on the pin.
4. Place a second washer on the other side of the roller.
5. Place the spider on a vise.
6. Install pin centering tool (PN 2870401).
7. Drive the roller pin through the second land of the spider.
8. Repeat process for the other two rollers.

Spider Button Installation

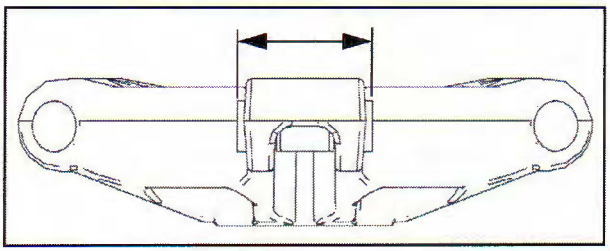
1. A shim kit is available which contains an assortment of shims.

DRIVE CLUTCH SHIM KIT
PN 2200387

2. Measure the width of the moveable sheave towers and record. Specification is 1.50"+/- .001" (38.1 mm).



3. Measure the width of each corresponding spider leg with the buttons installed and record. Specification is 1.496"+/- .001" (37.99 mm).



4. Subtract the spider measurement form the tower measurement. The clearance between the spider buttons and the moveable sheave towers is .001" - .002" (.025 - .05mm).
5. Add shims beneath each trailing side spider button to obtain the specified button-to-tower clearance when assembled at each spider leg.

= In. / mm.
Button-To-Tower Clearance .001" - .002" (.025 - .05mm)

Bushing/Insert Replacement

The drive clutch moveable sheave and cover bushings/ insert are replaceable. Bushing/insert removal and installation can be aided using Bushing Removal and Installation Kit.

The kit uses the Piston Pin Puller tool. Each of the adapters and/or tools is marked with an item number. The item number is referenced within the text for identification.

CLUTCH BUSHING REMOVAL / INSTALLATION KIT
PN 2871025 Individual Parts: P-85 Bushing / Insert Tool = 5020627 (Item 1) Cover Bushing Tool = 5020629 (Item 3) Main Puller Adapter = 5020632 (Item 8)

PISTON PIN PULLER TOOL
PN 2870386

Moveable Sheave Bushing/Insert Removal and Installation

NOTE: A torch may be required to release the bushing retaining compound.

1. Disassemble the clutch and remove the moveable sheave from the stationary shaft.
2. Install handle end of the piston pin puller securely into a bench vise.
3. Install the main adapter (Item 8) onto the puller.
4. Working from inside of moveable sheave, insert the moveable sheave removal tool (Item 1) into the center of the sheave. Slide sheave onto puller tool with towers facing upwards.
5. Secure puller nut. Turn puller barrel to increase tension on the sheave if required.
6. Turn sheave counterclockwise on puller rod until it comes free.
7. Remove the sheave from the puller tool rod.
8. Remove and discard the old bushing and insert.
9. To install a new bushing, place the main adapter (Item 8) onto the puller rod.
10. Apply a thin film of Loctite® 648 to the leading edge of the new bushing. Push a new bushing into center of sheave by hand.

    NOTE: Verify no retaining compound is deposited on the I.D. of the bushing.

11. Insert installation tool (Item 1) into center of sheave and with the towers pointing toward the vise (down), slide the sheave onto the puller rod.
12. Secure rod nut. turn barrel to apply additional tension against sheave if required.
13. Turn the sheave counterclockwise until bushing is fully seated.
14. Remove the rod nut and installation tool and repeat steps 11 to 13 and install the new insert.

Cover Bushing

NOTE: A torch may be required to release the bushing retaining compound.

1. On covers utilizing a retaining ring, remove the ring using a pick or scribe.
2. Install the main adapter (Item 8) onto the puller tool.
3. From outside of the cover, insert the removal tool (Item 3) into the cover bushing.
4. With the inside of the cover facing the vise, slide the cover onto the puller.
5. Secure the rod nut. Turn the puller barrel to apply tension if required.
6. Turn the clutch cover counterclockwise until the bushing is removed and the cover comes free.
7. Remove the tools and discard the bushing.
8. To install a new cover bushing, apply Loctite® 648 to the leading edge of the new bushing. Insert the new bushing and bushing installation tool (Item 3) from the inside of the cover.

   NOTE: Verify no retaining compound is deposited on the I.D. of the bushing.

9. With the main adapter (Item 8) installed on the puller, insert the cover onto the puller rod with the outside of the cover facing the vise.
10. Secure the rod nut and tighten the puller barrel to apply more tension if required.
11. Turn the clutch cover counterclockwise on the puller rod until the bushing is fully seated. Remove the tools from the rod and remove cover.
12. Squeeze the ends of the retaining ring and reinstall into the back of the cover.

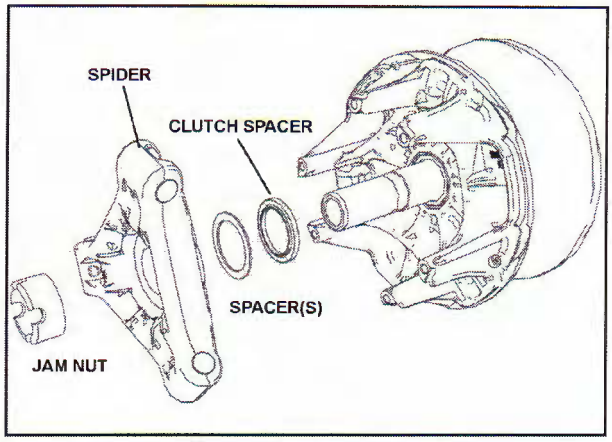
Clutch Assembly

1. Assemble the rollers, bushings and roller pins if they were removed.
2. Install the head of the weight pin so that it is on the leading side of rotation. This will orientate the nut on the trailing side of rotation.

3. Torque weight pin to specification.

= T
Weight Pin Torque: 20-30 in-lbs (2.2-3.4 Nm)

4. Place the moveable sheave onto the stationary sheave.
5. Place the same number of spacers on top of the stepped spacer onto the shaft of the stationary sheave.



6. Thread the spider onto the stationary sheave shaft.
7. Index the spider. Spider Indexing, page 6.24
8. Apply Loctite® 243™ to shaft threads. Do not get Loctite® on moveable bushing. Using the spider tool (PN 2870341) torque to specification.

= T
Spider Torque: 280-300 ft-lbs (380-406 Nm) Apply Loctite® 243™ to Threads

9. Apply Loctite® 243™ to shaft threads. Do not get Loctite® on moveable bushing. Install the jam nut onto the shaft and torque it to specification.

= T
Spider Jam Nut Torque: 290-330 ft-lbs (394-447 Nm) Apply Loctite® 243™ to Threads

10. Place the drive spring on the shaft.
11. Place the cover onto the clutch and torque the cover fasteners to specification.

= T
Cover Fastener Torque: 100 in-lbs (11 Nm) Use cross pattern.

NOTE: Do not allow side loading or misalignment of the cover or the bushing may become damaged.

Belt-to-Sheave Clearance Adjustment

Belt-to-sheave clearance is an important factor when evaluating drive clutch performance as it controls the starting drive ratio and the position of the drive clutch weights in relation to engine RPM.

If the clearance is too small, the drive belt will drag on the face of the sheaves when the engine is at idle speed.

If the clearance is too large, the belt will slip during initial engagement causing belt burning and engine bogging.

= In. / mm.
Belt-to-Sheave Clearance Nominal = .020" — .060". (0.508 — 1.524 mm)

NOTE: Technicians can fine tune belt-to-sheave clearance to accommodate individual rider preferences. When fine tuning belt-to-sheave clearance, it is recommended to have a minimum of .005" (0.127 mm) clearance when using a new drive belt.

Belt-to-sheave clearance can adjusted by installing a different drive belt, or by adding or removing shims washers located under the spider assembly.

To measure belt-to-sheave clearance, follow these steps:

1. Verify the drive clutch sheave faces are clean and the drive belt is in good condition.
2. Push the drive belt tight against one side of the drive clutch sheaves. Measure the opposite-side gap using a feeler gauge.
3. A slight drag should be felt when inserting the feeler gauge between the belt and sheave face.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

4. Compare measured gap to the specification.

   The distance between the moveable and stationary clutch sheaves and thus the belt-to-sheave clearance is determined by the number and thickness of the washer (s) installed between the spider and clutch spacer.

   To increase the clearance, add or install thicker washer (s). To decrease the clearance, remove or install thinner washer (s). Either way, the belt-to-sheave clearance adjustment most often requires the spider to be "re-indexed".

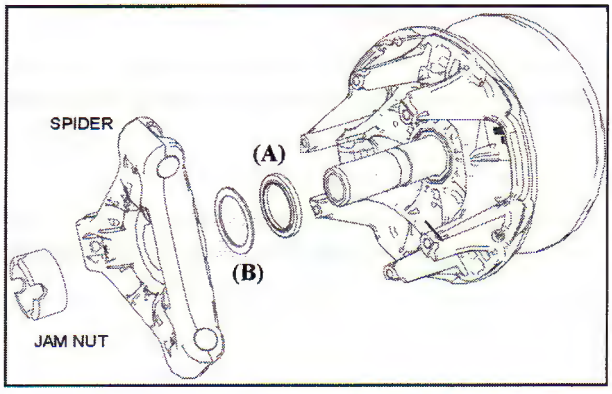
Spider Indexing

NOTE: Spider indexing effects belt to sheave clearance and clutch balance. Please read all procedures before proceeding.

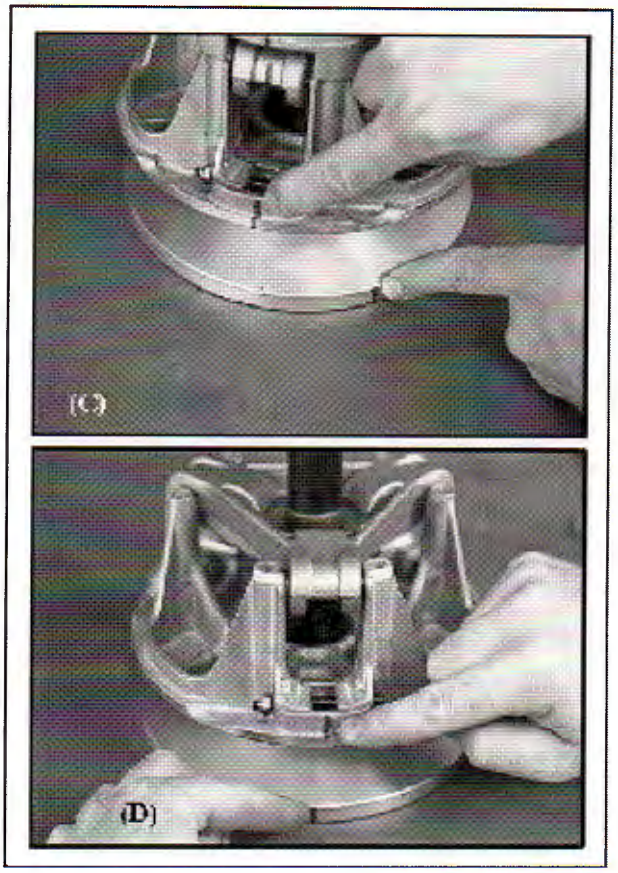
1. Remove and disassemble clutch
2. Add or remove spider washers as required to achieve desired belt-to-sheave clearance. Make sure that the stepped washer (A) is on the bottom of the spacer stack (B). For example: If belt to sheave clearance is .020" too large, removing one .020" shim will position the movable sheave closer to the fixed sheave reducing belt to sheave clearance by .020".

   NOTE: Install the clutch spacer (stepped washer) with the lip facing the spider.

3. Place the correct number of spacer washers (B) between the spider and clutch spacer (A) (stepped washer). The following washers are available for fine tuning:
   - 5210752 - .020" (.51 mm)
   - 5242981 - .025" (.63 mm)
   - 5210753 - .032" (.81 mm)
   - 5210754 - .050" (1.27 mm)



4. Install spider washer (s) and spider aligning the "X" with the moveable sheave's "X". Notice as the spider seat location is changed, the sheave marks made before disassembly no longer align (C). There are two ways to bring the sheave marks into alignment.



Vary the amount and thickness of spacer washers (washer thickness may vary slightly). Re-index marked spider leg to another tower. This can be done because spider has little effect on overall clutch balance.

Re-indexing the spider 1/3 turn clockwise, or 1 leg, will allow the realignment of the moveable and stationary sheaves as previously marked (D). For EXAMPLE: 0.020" or 0.032" (0.5 - 0.8mm) washer removed - re-index spider clockwise 1/3 turn.

NOTE: Alignment marks on the sheaves should be within 1" (25.4mm) after final assembly and torquing.

When assembling a new clutch with all of the same components, it is not uncommon for the marks not to line up.

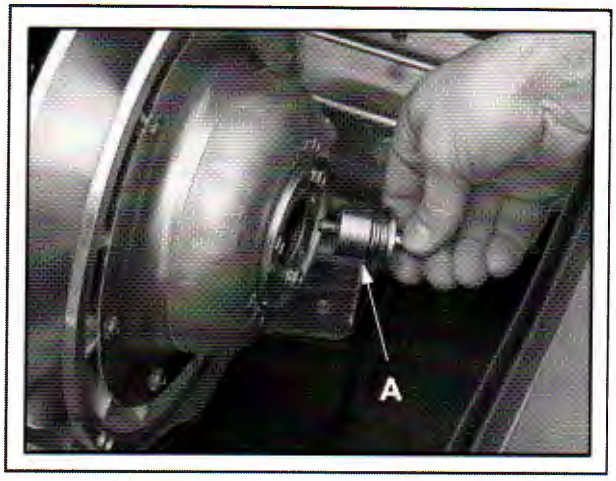
Drive Clutch Installation

NOTE: Always clean the clutch taper before re-installing clutch on engine.

1. Place the specified clutch taper reamer in a vise and lubricate the cutting edges with cutting oil. Clean the clutch taper by manually rotating the clutch clockwise on the reamer one or two revolutions. Only use the weight of the clutch and do not push down on the clutch while turning.
2. Check crankshaft taper for galling or scoring. If necessary clean the taper evenly with 200 grit emery cloth.
3. The clutch taper and the crankshaft taper should be clean and dry. Do not use harsh cleaners which may cause clutch taper to corrode, or damage the crank seal.
4. Clean clutch taper with lacquer thinner or isopropyl alcohol.
5. Slide clutch onto crankshaft taper.
6. Install the retaining bolt with all spacers and washers or o-rings that were on the bolt when it was removed.
7. Hold the clutch with the holding wrench PN 931417-A.
8. Torque bolt to specification.
9. Run engine then re-torque the retaining bolt to specification.

DRIVEN CLUTCH

Driven Clutch Removal

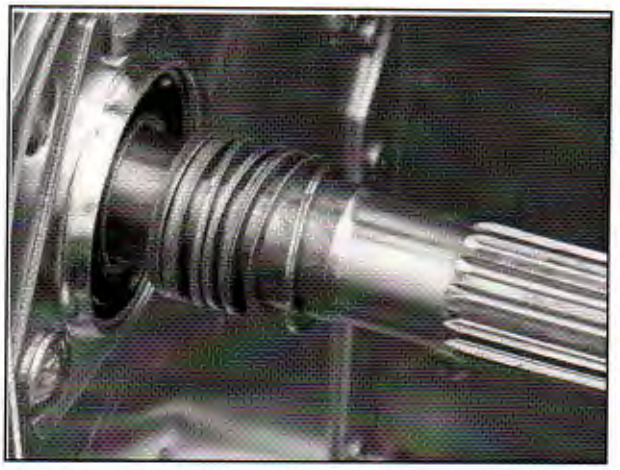


1. Remove the drive belt.
2. Apply and lock the parking brake.
3. Remove the driven clutch bolt and washers (A).

   NOTE: Count the number and location of the spacer washers located on the fastener and behind the clutch.

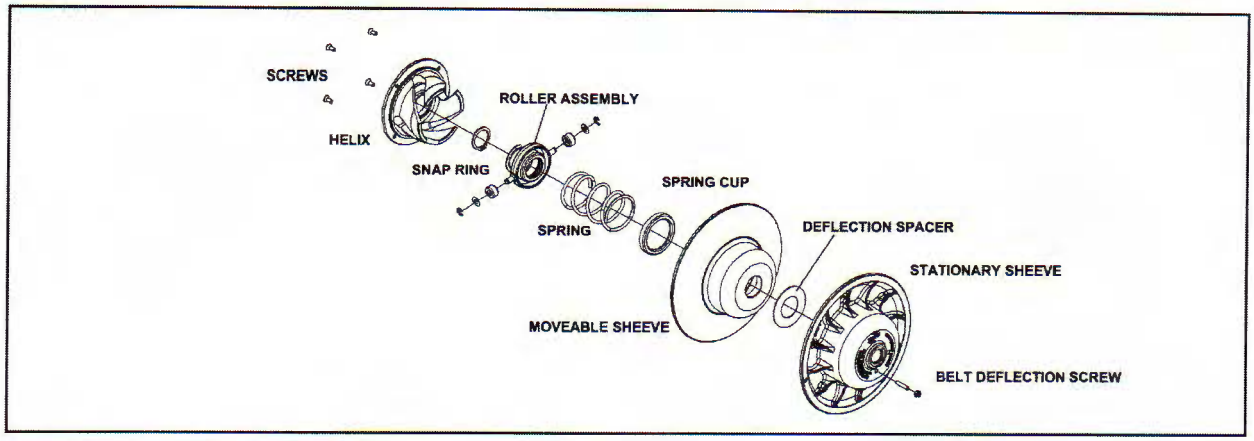
4. Slide the driven clutch off the jackshaft.
5. Inspect the splines and replace jackshaft if damage is found.

Driven Clutch Installation



1. Install the driven clutch bolt with the same amount of washers at removal.
2. Torque the bolt to specification.
3. Check for correct belt deflection, and the clutch floats on the shaft.

Team LWT Components



= T
Helix Fasteners: 3234381 T27 1/4–28 x .625 **60 - 80 in-lbs (7 - 9 Nm)** 3235592 Patch Lock Applied T27 1/4–28 x .625 **8.3 - 10 ft-lbs (11.3 - 13.5 Nm)**

Disassembly and Assembly Process

1. Remove the screws from the helix, then carefully pry the helix out of the moveable sheave.
2. Install the clutch in the clutch compressor fixture, PN PU-50518.

CAUTION
Driven spring under pressure. Wear eye protection when removing snap ring and helix.

3. Wearing eye protection, carefully compress the roller assembly to gain access to the snap ring. Remove the snap ring.
4. Slowly release the fixture arm to remove the roller assembly and spring. Disassembly the clutch sheaves.
5. Inspect the sheaves for abnormal wear. Clean sheave faces with a Scotch Brite pad and a solution of warm, soapy water.
6. Inspect spring, spring cup, spacer and rollers for wear and replace as required.
7. To assemble the clutch, slide the components back on to the stationary sheave shaft.
8. Align the notch in the roller assembly with row of double splines on the shaft. Slowly compress the spring and roller assembly down on to the shaft. Install the snap ring making sure it is fully seated in the groove.
9. Install the helix by aligning the rollers with the ramps. Push the helix down into the sheave while keeping the screws holes aligned.

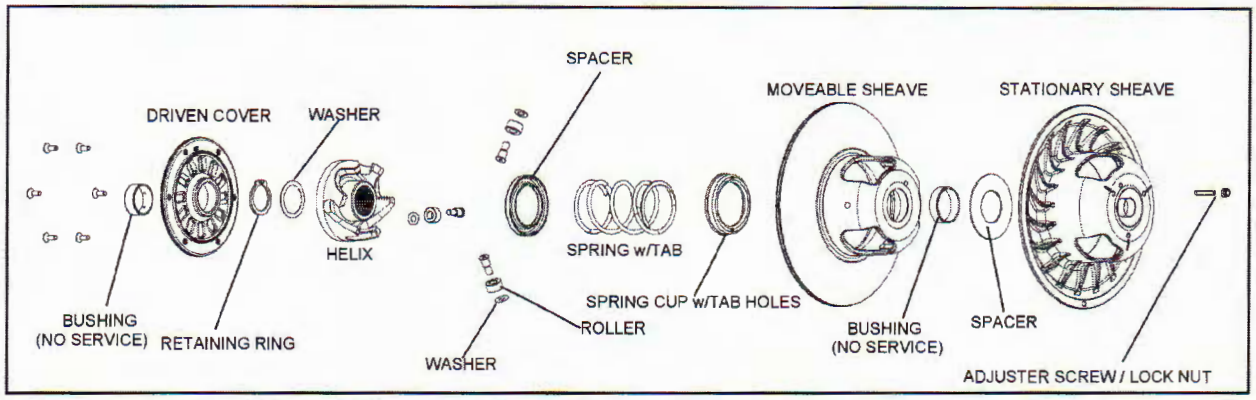
   NOTE: Apply Loctite 243 to 3235592 helix fasteners.

10. Install and torque helix fasteners to specification.

= T
Driven Clutch Retaining Fastener: **17 ft-lbs (23 Nm)**

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

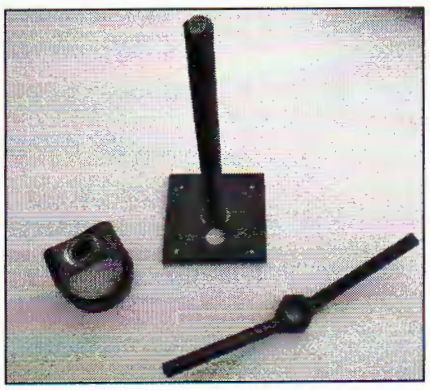
Polaris SPA-P2 Driven Clutch Components



= T
Driven Cover Screws: 12 ft-lbs (16Nm) Deflection Adjuster Screw Lock Nut: 10 ft-lbs (12Nm) Driven Clutch Retaining Fastener: 18 ft-lbs (25 Nm) Roller Fasteners: 110 in-lbs (12.5 Nm)

Disassembly and Assembly Process

1. Remove the driven cover screws and cover. Note the "X" in the cover and moveable sheave are in alignment.
2. Install the clutch into a screw-down clutch compression fixture. Screw-down clutch compressors are commercially available through after-market companies such as Team Industries Inc.



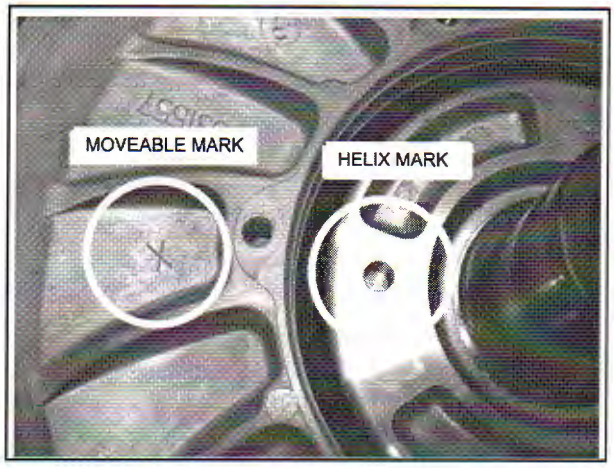
NOTE: The 8700220 clutch compressor and PS-45909 extensions will not work on a P2 driven clutch.

3. Remove the snap ring. Verify the washer is not lodged inside the snap ring groove.

CAUTION
Driven spring under pressure. Wear eye protection when removing snap ring and helix.

4. Unscrew the compressor to remove the helix, spring cups and spring. Note the orientation of the spring spacer, spring cup, and tabbed spring. Disassemble the clutch sheaves.
5. Inspect the helix, cup/spacer, spring, bushings, rollers, and clutch sheaves for damage.
6. The cover and sheave bushings are not serviceable. If bushings are severely worn or binding, clutch assembly replacement is required.
7. Clean the sheaves with a Scotch Brite pad and a solution of warm, soapy water.
8. Inspect the rollers for abnormal wear and replace as required. Install new rollers with the ejector pin marks on the rollers facing center of sheave (visible).
9. Install the sheave spacer, and then the moveable sheave.
10. Next, install the metal spring cup, spring, and then spring spacer. Make sure the spring tab is in one of the spring cup holes, and engaged in the moveable sheave hole.
11. Slide the helix down the stationary shaft.

12. Align the helix alignment hole with the "X" on the moveable sheave.



13. Align the wide gap in the helix splines with the skip tooth in the stationary sheave shaft.
14. Visually verify the rollers are positioned underneath each corresponding helix ramp.
15. Compress the helix down into the sheave. Install the washer and snap ring. Verify the snap ring is fully seated in the groove with the sharp edge upward.
16. Carefully release the clutch compressor.
17. Align the two "X" marks and install the cover. Torque fasteners to specification.

= T
P2 Cover Fastener Torque: 12 ft-lbs (16 Nm)

PVT SYSTEM TROUBLESHOOTING

Drive Belt

- Verify specified drive belt is installed on vehicle.
- Drive belts have different width, angle and length measurements. Reference: "Drive Belts" section for specifications.
- Installing a non-specified drive belt often requires drive clutch spacer adjustments to achieve correct belt-to-sheave clearance.
- Install drive belt so part number can be read from left-side of vehicle. Always install belt using the same orientation as it was before removal.
- **PREMATURE WEAR:** Ensure correct belt is installed. Inspect belt-to-sheave clearance, deflection, and clutch alignment.
- Adjust gearing for rider type. Verify correct clutch weight/spring package is installed.
- Change riding habits/style.
- **OPERATING RPM DROP:** Drive belts used on snowmobiles operated at high speeds/loads (mountain use) for extended periods of time should be inspected for glazing at 1,000 mile intervals.
- **CORD POP-OUT:** Inspect drive/driven clutch alignment, motor mounts, and deflection. Set driven clutch float.
- Remove belt during off-season storage period.

Drive Clutch

- **PREMATURE WEAR:**
- Verify correct clutch weight/spring package is installed.
- Inspect spider rollers/bushings for damage and uneven wear.
- Inspect sheave faces for premature wear. De-glaze faces with 1500-2000 grit sand paper.
- Verify jam nut/spider are torqued to specification.
- **OPERATING RPM DROP:**
- Replace drive clutch spring and retest.
- Inspect spider rollers/bushings.
- Inspect/adjust belt-to-sheave clearance.
- Inspect moveable/cover bushings.

Driven Clutch

- **PREMATURE WEAR:**
- Verify correct clutch helix/spring is installed.
- Inspect rollers/bushings for damage and uneven wear.
- Inspect sheave faces for premature wear. De-glaze faces with 1500-2000 grit sand paper.
- Verify driven clutch floats on jackshaft.
- **OPERATING RPM DROP:**
- Replace spring and retest.
- Inspect spider rollers/bushings.
- Inspect moveable/cover bushings.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

CHAPTER 7
SHOCKS

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

SPECIAL TOOLS

Shock Rebuilding Tools

SPECIAL TOOLS	
PART NUMBER	**DESCRIPTION**
2200421	Gas Shock Recharging Kit
PS-45259	Gas Fill Tool
PS-45259-1	Gas Fill Tool Replacement Needles (20 Pack)
2871351	IFP Depth Tool (FOX/Walker Evans)
PS-45629	Shock Body Holding Tool (1 3/4")
2871071	Shock Body Holding Tool (1 5/8")
PS-45281	Shock Body Holding Tool (2 1/8")
2871352	Shock Rod Holding Tool 1/2" Diameter Rod
2872429	Shock Rod Holding Tool 5/8" Diameter Rod
2201639	Shock Shaft Seal Protector 1/2" Diameter
2201640	Shock Shaft Seal Protector 5/8" Diameter
2870623	Shock Absorber Spring Compression Tool
2870803	Shock Spring Pre-Load Adjustment Tool
PS-45908	Walker Evans T-Handle Tool

RYDEFX SHOCK SPECIAL TOOLS	
PART NUMBER	**DESCRIPTION**
PS-45260	Ryde FX Lower Retainer Wrench
PS-45261	Ryde FX IFP Positioning / Extraction Tool
PS-45262	Ryde FX Cylinder Head Wrench
PS-45263	Ryde FX Wear Band Tool
PS-45280	Ryde FX Shock Collar Tool

FOX SHOCK SPECIAL TOOLS	
PART NUMBER	**DESCRIPTION**
2871232	FOX™ Shock Spanner
PS-44925	FOX™ Inner Tube Puller (Position Sensitive Shocks)
PU-51039	Top Fill Shock Fill Tool

Bosch Automotive Service Solutions 1-800-345–2233 or https://polaris.service-solutions.com

VALVE SHIMS

FOX™ Shock Valve Part Numbers

PART NUMBER	SIZE	THICKNESS
1500055	0.700	0.006
1500054	0.800	
1500053	0.900	
1500048	1.000	
1500049	1.100	
1500050	1.250	
1500052	1.300	
1500029	0.700	0.008
1500028	0.800	
1500033	0.900	
1500032	1.000	
1500031	1.100	
1500051	1.250	
1500030	1.300	
1500044	0.700	0.010
1500047	0.800	
1500046	0.900	
1500045	1.000	
1500027	1.100	
1500026	1.250	
1500062	1.300	
1500056	0.700	0.012
1500057	0.800	
1500058	0.900	
1500059	1.000	
1500060	1.100	
1500078	1.250	
1500079	1.300	
1500081	0.700	0.015
1500082	0.800	
1500083	0.900	
1500084	1.000	
1500085	1.100	
1500086	1.250	
1500087	1.300	

Walker Evans Shock Valve Part Numbers – 3/8" I.D.

PART NUMBER	SIZE	THICKNESS
1800051	.700	.006
1800075	.800	
1800076	.900	
1800077	1.000	
1800078	1.100	
1800079	1.200	
1800080	1.300	
1800081	.700	.008
1800082	.800	
1800083	.900	
1800084	1.000	
1800085	1.100	
1800086	1.200	
1800087	1.250	
1800088	1.300	
1800052	.700	.010
1800053	.800	
1800054	.900	
1800055	1.000	
1800056	1.100	
1800057	1.200	
1800379	1.250	
1800058	1.300	
1800059	.700	.012
1800060	.800	
1800061	.900	
1800062	1.000	
1800063	1.100	
1800064	1.200	
1800089	1.250	
1800072	1.300	
1800066	.700	.015
1800067	.800	
1800068	.900	
1800069	1.000	
1800070	1.100	
1800380	1.200	
1800071	1.250	
1800072	1.300	
1800090	1.000	.025
1800091	1.100	
1800092	1.200	
1800093	1.300	
1800050	.625	.065
1800204	.875	.090

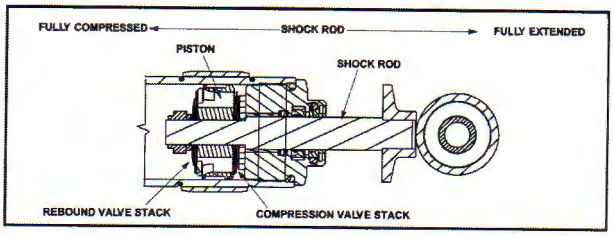
Walker Evans Shock Valve Part Numbers - 7/16" I.D.

PART NUMBER	SIZE	THICKNESS
1800244	.900	.010
1800245	1.000	
1800246	1.100	
1800247	1.200	
1800248	1.300	
1800249	1.450	
1800250	1.500	
1800251	1.550	
1800252	.900	.012
1800253	1.000	
1800254	1.100	
1800255	1.200	
1800256	1.300	
1800257	1.450	
1800258	1.500	
1800259	1.550	
1800260	.900	.015
1800261	1.000	
1800262	1.100	
1800263	1.200	
1800264	1.300	
1800265	1.450	
1800266	1.500	
1800267	1.550	
1800268	1.000	.090 (WASHERS)
1800269	1.100	
1800270	1.250	
1800271	1.300	.025

Valve Shim Arrangement

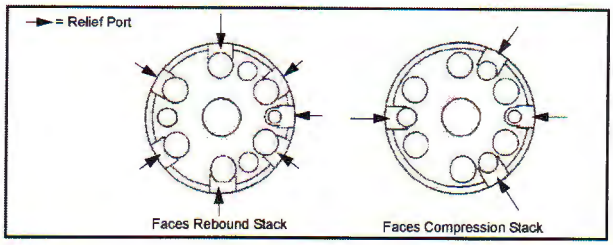
Shown below is an example of how valve stacks are arranged.

NOTE: The rebound and compression valve stacks will always be positioned as shown in the illustration, regardless of how the shock assembly is installed on the snowmobile.

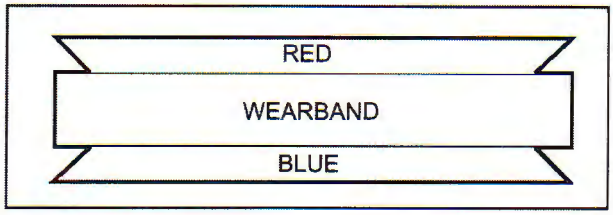


Piston Orientation

The face of the piston with the greater number of relief ports will always face the rebound valve stack



NOTE: On some Walker Evans shocks, the piston is convex and color-coded.
Blue = COMPRESSION SIDE
Red = REBOUND SIDE.



SHOCK SPECIFICATIONS

2010 Rush Shock Specifications

NOTE: All valve code measurements are in inches.
Valve shim stacks listed as they would appear on the shaft when shock rod is locked in a table vise (eyelet down, threaded end up).

2010 IFS SHOCKS								
SHOCK	MODEL	EXTENDED LENGTH IN	COLLAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7043436	Walker Evans	18.60	12.16	6.44	.625	2.00	Full	200

2010 IFS SHOCK SPECIFICATIONS	
SHOCK	7043436
REBOUND	.625 x .065 .700 x .010 .800 x .010 .900 x .010 .900 x .010 1.00 x .010 1.10 x .008 1.20 x .008
Piston Orifice	.052
Shaft Bleed	.082
COMPRESSION	1.30 x .006 .800 x .012 1.20 x .006 .900 x .015 1.100 x .006 1.000 x .006 .900 x .006 .800 x .006 .700 x .006 .625 x .065 .875 x .090
ADJUSTER	1.00 X .025 1.00 X .025 .625 X .065

SHOCKS

2010 FRONT TRACK SHOCKS								
SHOCK	MODEL	EX-TEND-ED LENGT-H IN	COL-LAPSED LENGTH IN	STR-OKE IN	SHO-CK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7043412	Walker Evans	11.75	7.98	3.77	.625	2.25	Full	200

2010 FTS SPECIFICATIONS	
SHOCK	7043412
REBOUND	.625 x .065 .700 x .008 .800 x .008 .900 x .008 1.00 x .008 1.10 x .008 1.25 x .010 1.25 x .010
Piston Orifice	.063
COMPRESSION	1.30 x .010 1.10 x .010 .900 x .010 1.30 x .010 1.25 x .010 1.10 x .008 1.00 x .008 .900 x .008 .800 x .008 .700 x .008 .625 x .065
ADJUSTER	Compression .800 x .006 Rebound 1.0 x .025 1.0 x .025 .900 x .015 .625 x .063

2010 REAR TRACK SHOCKS								
SHOCK	MODEL	EXTENDED LENGTH IN	COL-LAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7043417	Walker Evans	17.25	12.00	5.25	.625	2.00	Full	200

2010 RTS SPECIFICATIONS	
SHOCK	7043417
REBOUND	.625 x .065 .700 x .015 .800 x .015 .900 x .015 1.00 x .015 1.10 x .015 1.20 x .015 1.25 x .015 1.25 x .015 1.25 x .015
Shaft Bleed	.086
COMPRESSION	1.300 x .008 1.10 x .008 .900 x .010 1.30 x .008 1.20 x .008 1.10 x .008 1.00 x .008 .900 x .008 .800 x .008 .700 x .008 .875 x .090
ADJUSTER	1.00 x .025 1.00 x .025 .625 x .065

2011 PRO-RIDE Model Shock Specifications

NOTE: All valve code measurements are in inches.
Valve shim stacks listed as they would appear on the shaft when shock rod is locked in a table vise (eyelet down, threaded end up).

2011 IFS SHOCKS

SHOCK	MODEL	EXTENDED LENGTH IN	COLLAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7043631	FOX™	18.02	12.13	5.89	.498	1.75	Full	200
7043650	Walker Evans	18.0	12.16	5.84	.625	2.0		
7043636								
7043568		18.6		6.44				
7043429		17.5	11.5	6.0	.50	6.875		

2011 IFS SPECIFICATIONS

SHOCK	7043631	7043650	7043636	7043568	7043429
REBOUND	.620x.093 .700x.010 .800x.010 .900x.012 1.00x.012 1.10x.012 .800x.012 1.250x.006	.625x.065 .700x.010 .800x.010 .900x.010 1.00x.010 1.10x.008 1.20x.008	.625x.065 .700x.010 .800x.010 .900x.010 1.00x.010 1.10x.010 1.25x.010	.625x.065 .700x.012 .800x.012 .900x.012 1.00x.012 1.10x.012 1.20x.012 1.25x.015	.875x.090 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.20x.008 1.25x.008
Piston Orifice	.093	.052	.042	.040	.052
Shaft Bleed	N/A	.086	.082	.082	N/A
COMPRESSION	1.30x.008 .800x.010 1.250x.008 1.10x.008 1.00x.008 .900x.006 .800x.006 .700x.006 .620x.020 1.125x.093	1.30x.006 .800x.012 1.20x.006 .900x.012 1.10x.008 1.00x.008 .900x.010 .800x.010 .700x.010 .625x.065 .875x.090	1.30x.008 .900x.010 1.20x.008 .900x.008 1.25x.010 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.010 .875x.090	1.30x.010 1.00x.008 .900x.010 1.20x.008 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.015 .875x.090	1.30x.010 1.20x.008 1.00x.008 .800x.012 1.25x.010 1.20x.010 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.015 .875x.090
ADJUSTER	N/A	REBOUND .800x.012 COMPRESSION 1.00x.025 1.00x.025 .625x.065	REBOUND 1.00x.025 1.00x.025 .625x.065	1.00x.025 1.00x.025 .625x.065	N/A

2011 FRONT TRACK SHOCKS								
SHOCK	MODEL	EXTENDED LENGTH IN	COLLAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7043632	FOX™	11.67	8.33	3.34	.498	.69	Full	250
7043642	Walker Evans	11.67	8.33	3.34	.625	2.25		200
7043634		12.34	8.84	3.5		2.0		
7043628		11.75	8.21	3.54	.50	.75		
7043602						4.30		

2011 FTS SPECIFICATIONS					
SHOCK	7043632	7043642	7043634	7043628	7043602
REBOUND	.620x.093 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.250x.008	.625x.065 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.25x.012 .900x.006 1.25x.008	.625x.065 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.25x.010 1.25x.010	.625x.065 .700x.010 .800x.010 .900x.010 1.00x.010 1.10x.010 1.25x.012 1.25x.012	.625x.065 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.25x.010 1.25x.010
Piston Orifice	.078	.063	.086	.063	.063
COMPRESSION	1.30x.008 .900x.008 1.250x.012 1.10x.012 1.00x.012 .900x.012 .800x.012 .700x.012 1.125x.093	1.30x.008 .900x.010 1.30x.012 1.25x.010 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.008 .625x.065	1.30x.008 1.20x.008 .900x.010 1.30x.010 1.25x.010 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.008 .625x.065	1.30x.010 1.10x.010 .900x.008 1.30x.012 1.25x.012 1.10x.010 1.00x.010 .900x.010 .800x.010 .700x.008 .875x.090	1.30x.010 1.10x.010 .900x.010 1.30x.010 1.25x.010 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.008 .625x.065
ADJUSTER	N/A	REBOUND .800x.012 COMPRESSION 1.00x.025 1.00x.025 .900x.015 .625x.065	1.00x.025 1.00x.025 .900x.015 .625x.065	N/A	N/A

SHOCKS

2011 REAR TRACK SHOCKS								
SHOCKS	MODEL	EXTENDED LENGTH IN	COL-LAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7043633	FOX™	17.29	12.06	5.23	.498	2.26	Full	200
7043651	Walker Evans	17.25	12.0	5.25	.625	2.0		
7043635		16.71	10.96	5.75	.50	2.25		
7043629		16.8	11.35	5.45	.625	2.0		
7043603					.50	6.25		

2011 RTS SPECIFICATIONS					
SHOCK	7043633	7043651	7043635	7043629	7043603
REBOUND	.620x.093 .700x.015 .800x.015 .900x.015 1.00x.015 1.10x.015 1.250x.015 1.250x.015 1.250x.015	.625x.065 .700x.015 .800x.015 .900x.015 1.00x.015 1.10x.015 1.20x.015 1.25x.015 1.25x.015 1.25x.015	.625x.065 .700x.010 .800x.010 .900x.010 1.00x.012 1.10x.012 1.25x.015 1.25x.015 1.25x.015	.625x.065 .700x.015 .800x.015 .900x.015 1.00x.015 1.10x.015 1.20x.012 1.25x.015 1.25x.015	.875x.090 .700x.008 .800x.015 .900x.012 1.00x.010 1.10x.010 1.20x.010 1.25x.008
Piston Orifice	.093	N/A	.086	N/A	.069
Shaft Bleed	N/A	.086	N/A	.082	N/A
COMPRESSION	1.30x.006 .700x.012 1.250x.008 1.10x.008 1.00x.006 .900x.006 .800x.006 .700x.006 .620x.020 1.125x.093	1.30x.006 1.10x.006 .800x.012 1.20x.006 1.10x.006 1.00x.006 .900x.008 .800x.008 .700x.008 .625x.065 .875x.090	1.30x.008 1.25x.006 .800x.012 1.25x.010 1.10x.010 1.00x.010 .900x.010 .800x.010 .700x.010 .625x.065	1.30x.010 1.20x.008 1.00x.010 1.25x.012 1.20x.008 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.008 .875x.065	1.30x.008 1.10x.010 .900x.008 1.30x.010 1.20x.010 1.10x.010 1.00x.010 .900x.010 .800x.010 .700x.008 .875x.090
ADJUSTER	N/A	REBOUND .800x.012 COMPRESSION 1.00x.025 1.00x.025 .900x.015 .625x.065	1.10x.025 1.10x.025 1.00x.025 .875x.090	REBOUND 1.00x.025 1.00x.025 .625x.065	N/A

2012 PRO-RIDE Model Shock Specifications

NOTE: All valve code measurements are in inches.
Valve shim stacks listed as they would appear on the shaft when shock rod is locked in a table vise (eyelet down, threaded end up).

2012 IFS SHOCKS								
SHOCKS	MODEL	EXTENDED LENGTH (INCHES)	COLLAPSED LENGTH (INCHES)	STROKE (INCHES)	SHOCK ROD (INCHES)	IFP DEPTH (INCHES)	OIL VOLUME	PSI
7043725	FOX™	17.19	11.15	6.04	.498	1.07	Full	200
7043731	Walker Evans	17.3	11.45	5.85	.625	2.0		
7043749		17.7	11.63	6.07	.625			
7043757								
7043568		18.6	12.16	6.44	.625			
7043429		17.5	11.5	6.0	.50	6.875		

2012 IFS SPECIFICATIONS						
SHOCK	7043725	7043731	7043749	7043757	7043568	7043429
REBOUND	.620x.093 .700x.012 .800x.012 .900x.012 1.0x.012 1.10x.012 .800x.012 1.25x.006	.625x.065 .700x.008 .800x.008 .900x.008 1.0x.008 1.10x.008 .800x.010 1.20x.006	.625x.065 .700x.008 .800x.008 .900x.008 1.0x.008 1.10x.008 .800x.010 1.20x.006	.625x.065 .700x.010 .800x.010 .900x.010 1.0x.010 1.10x.010 1.20x.010	.625x.065 .700x.012 .800x.012 .900x.012 1.00x.012 1.10x.012 1.20x.012 1.25x.015	.875x.090 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.20x.008 1.25x.008
Piston Orifice	.093	.052	.052	.042	.040	.052
Shaft Bleed	N/A	.086	N/A	.082	.082	N/A
COMPRESSION	1.30x.008 .800x.010 1.25x.012 1.10x.012 1.0x.008 .900x.008 .800x.006 .700x.006 .620x.020 1.125x.093	1.30x.006 .800x.012 1.20x.006 .900x.012 1.10x.008 1.0x.008 .900x.010 .800x.010 .700x.010 .625x.065 .875x.090	1.30x.006 .800x.012 1.20x.006 .900x.012 1.10x.008 1.0x.008 .900x.010 .800x.010 .700x.010 .625x.065 .875x.090	1.30x.008 .900x.010 1.20x.010 .900x.008 1.25x.010 1.10x.010 1.0x.010 .900x.010 .800x.010 .700x.010 .875x.090	1.30x.010 1.00x.008 .900x.010 1.20x.008 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.015 .875x.090	1.30x.010 1.20x.008 1.00x.008 .800x.012 1.25x.010 1.20x.010 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.015 .875x.090
ADJUSTER	N/A	Rebound .800x.012 Compression 1.0x.025 1.0x.025 .625x.065	Rebound .800x.012 Compression 1.0x.025 1.0x.025 .625x.065	Rebound .800x.012 Compression 1.0x.025 1.0x.025 .625x.065	1.00x.025 1.00x.025 .625x.065	N/A

SHOCKS

2012 FRONT TRACK SHOCKS								
SHOCKS	MODEL	EXTENDED LENGTH IN	COLLAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7043634	Walker Evans	12.34	8.84	3.5	.625	2.0	Full	200
7043628		11.75	8.21	3.54	.50	.75		
7043602						4.3		
7043737	FOX™	12.27	8.63	3.64	.498	.73		250
7043738	Walker Evans	12.25	8.64	3.61	.625	2.25		200
7043720	FOX™	11.67	8.33	3.34	.498	.74		250
7043722	Walker Evans	11.67	8.33	3.34	.625	2.25		200

2012 FTS SPECIFICATIONS							
SHOCK	7043737	7043738	7043720	7043722	7043634	7043628	7043602
REBOUND	.620x.093 .700x.008 .800x.008 .900x.008 1.0x.008 1.10x.008 1.25x.008 .800x.008 1.25x.008	.625x.065 .700x.008 .800x.008 .900x.008 1.0x.008 1.10x.008 1.25x.012 .900x.008 1.25x.010	.620x.093 .700x.008 .800x.008 .900x.008 1.10x.008 1.25x.008 .800x.008 1.25x.008	.625x.065 .700x.008 .800x.008 .900x.008 1.0x.008 1.10x.008 1.25x.012 .900x.008 1.25x.010	.625x.065 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.25x.010 1.25x.010	.625x.065 .700x.010 .800x.010 .900x.010 1.00x.010 1.10x.010 1.25x.012 1.25x.012	.625x.065 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.25x.010 1.25x.010
Piston Orifice	.070	.063	.070	.063	.086	.063	.063
COMPRESSION	1.30x.010 1.25x.015 .900x.006 1.25x.015 1.25x.015 1.10x.012 1.0x.012 .900x.012 .800x.012 .700x.012 1.125x.093	1.30x.012 1.10x.012 1.0x.010 1.30x.010 1.25x.008 1.10x.008 1.0x.008 .900x.008 .800x.008 .700x.008 .625x.065 .875x.095	1.30x.015 1.10x.015 .900x.006 1.25x.015 1.10x.015 1.0x.012 .900x.012 .800x.012 .700x.012 1.125x.093	1.30x.012 1.10x.012 1.0x.010 1.30x.010 1.25x.008 1.10x.008 1.0x.008 .900x.008 .800x.008 .700x.008 .625x.065 .875x.095	1.30x.008 1.20x.008 .900x.010 1.30x.010 1.25x.010 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.008 .625x.065	1.30x.010 1.10x.010 .900x.008 1.30x.012 1.25x.012 1.10x.010 1.00x.010 .900x.010 .800x.010 .700x.008 .875x.090	1.30x.010 1.10x.010 .900x.010 1.30x.010 1.25x.010 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.008 .625x.065
ADJUSTER	N/A	Rebound .800x.012 Compression 1.0x.025 1.0x.025 .900x.015 .625x.065	N/A	Rebound .800x.012 Compression 1.0x.025 1.0x.025 .900x.015 .625x.065	1.00x.025 1.00x.025 .900x.015 .625x.065	N/A	N/A

2012 REAR TRACK SHOCKS								
SHOCKS	MODEL	EXTENDED LENGTH IN	COL-LAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7043721	FOX™	17.29	12.06	5.23	.498	2.26	Full	200
7043723	Walker Evans	17.25	12.0	5.25	.625	2.0		
7043635		16.71	10.96	5.75	.50	2.25		
7043629		16.80	11.35	5.45	.625	2.0		
7043603					.50	6.25		

2012 RTS SPECIFICATIONS					
SHOCK	7043721	7043723	7043635	7043629	7043603
REBOUND	.620x.093 .700x.012 .800x.012 .900x.012 1.0x.012 1.10x.015 1.25x.015 1.25x.015	.625x.065 .700x.012 .800x.012 .900x.012 1.0x.012 1.10x.012 1.20x.012 1.25x.015 1.25x.015	.625x.065 .700x.010 .800x.010 .900x.010 1.00x.012 1.10x.012 1.25x.015 1.25x.015 1.25x.015	.625x.065 .700x.015 .800x.015 .900x.015 1.00x.015 1.10x.015 1.20x.012 1.25x.015 1.25x.015	.875x.090 .700x.008 .800x.015 .900x.012 1.00x.010 1.10x.010 1.20x.010 1.25x.008
Piston Orifice	.093	.055	.086	N/A	.069
Shaft Bleed	N/A	.086	N/A	.082	N/A
COMPRESSION	1.30x.006 .700x.012 1.25x.008 1.10x.008 1.0x.006 .900x.006 .800x.006 .700x.006 .620x.020 1.125x.093	1.30x.006 1.25x.006 .900x.010 1.30x.008 1.20x.008 1.10x.008 .800x.008 1.20x.008 1.0x.006 .900x.006 .800x.006 .700x.006 .875.090	1.30x.008 1.25x.006 .800x.012 1.25x.010 1.10x.010 1.00x.010 .900x.010 .800x.010 .700x.010 .625x.065	1.30x.010 1.20x.008 1.00x.010 1.25x.012 1.20x.008 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.008 .875x.065	1.30x.008 1.10x.010 .900x.008 1.30x.010 1.20x.010 1.10x.010 1.00x.010 .900x.010 .800x.010 .700x.008 .875x.090
ADJUSTER	N/A	Rebound .800x.012 Compression 1.0x.025 1.0x.025 .900x.015 .625x.065	1.10x.025 1.10x.025 1.00x.025 .875x.090	Rebound 1.00x.025 1.00x.025 .625x.065	N/A

2013 PRO-RIDE Model Shock Specifications

NOTE: All valve code measurements are in inches.
Valve shim stacks listed as they would appear on the shaft when shock rod is locked in a table vise (eyelet down, threaded end up).

2013 IFS SHOCKS								
SHOCKS	MODEL	EXTENDED LENGTH (INCHES)	COLLAPSED LENGTH (INCHES)	STROKE (INCHES)	SHOCK ROD (INCHES)	IFP DEPTH (INCHES)	OIL VOLUME	PSI
7043725	FOX™	17.19	11.15	6.04	.498	1.07	Full	200
7043861		17.25	11.42	6.05	.498	6.65		
7043731	Walker Evans	17.3	11.45	5.85	.625	2.0		
7043757		17.7	11.63	6.07	.625			
7043568		18.6	12.16	6.44	.625			
7043835		16.63	10.86	5.77	.50	7.0		
7043827		17.30	11.45	5.85	.625	2.0		

2013 IFS SPECIFICATIONS							
SHOCK	7043725	7043861	7043731	7043757	7043568	7043835	7043827
REBOUND	.620x.093 .700x.012 .800x.012 .900x.012 1.0x.012 1.10x.012 .800x.012 1.25x.006	.620 x .093 .700 x .012 .800 x .012 .900 x .012 1.0 x .012 1.10 x .012 .800 x .012 1.250 x .006	.625x.065 .700x.008 .800x.008 .900x.008 1.0x.008 1.10x.008 .800x.010 1.20x.006	.625x.065 .700x.010 .800x.010 .900x.010 1.0x.010 1.10x.010 1.20x.010	.625x.065 .700x.012 .800x.012 .900x.012 1.00x.012 1.10x.012 1.20x.0+12 1.25x.015	.875x.090 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.20x.008 1.25x.008	.625 x .065 .700 x .088 .800 x .008 .900 x .008 1.0 x .008 1.10 x .008 .800 x .010 1.20 x .006
Piston Orifice	.093	.093	.052	.042	.040	.052	.052
Shaft Bleed	N/A	N/A	.086	.082	.082	N/A	N/A
COMPRESSION	1.30x.008 .800x.010 1.25x.012 1.10x.012 1.0x.008 .900x.008 .800x.006 .700x.006 .620x.020 1.125x.093	1.30 x .008 .800 x .010 1.25 x .012 1.10 x .012 1.0 x .008 .900 x .008 .800 x .006 .700 x .006 .620 x .020 1.125 x .093	1.30x.006 .800x.012 1.20x.006 .900x.012 1.10x.008 1.0x.008 .900x.010 .800x.010 .700x.010 .625x.065 .875x.090	1.30x.008 .900x.010 1.20x.010 .900x.008 1.25x.010 1.10x.010 1.0x.010 .900x.010 .800x.010 .700x.010 .875x.090	1.30x.010 1.00x.008 .900x.010 1.20x.008 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.015 .875x.090	1.30x.008 1.20x.008 1.00x.008 .800x.012 .800x.012 1.20x.008 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.015 .625x.065	1.30 x .006 .800 x .012 1.20 x .006 .900 x .012 1.10 x .008 1.0 x .008 .900 x .010 .800 x .010 .700 x .010 .625 x .065 .875 x .090
ADJUSTER	N/A	N/A	Rebound .800x.012 Compression 1.0x.025 1.0x.025 .625x.065	Rebound .800x.012 Compression 1.0x.025 1.0x.025 .625x.065	1.00x.025 1.00x.025 .625x.065	N/A	Rebound .800 x .012 Compression 1.00 x .025 1.00 x .025 .625 x .065

2013 FRONT TRACK SHOCKS								
SHOCKS	MODEL	EXTENDED LENGTH IN	COLLAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7043634	Walker Evans	12.34	8.84	3.5	.625	2.0	Full	200
7043628		11.75	8.21	3.54	.50	.75		
7043602						4.3		
7043737	FOX™	12.27	8.63	3.64	.498	.73		250
7043779	FOX™	12.05	8.62	3.43	.498	4.39		200
7043720	FOX™	11.67	8.33	3.34	.498	.74		250
7043826	Walker Evans	12.25	8.64	3.61	.625	2.25		200
7043828		11.67	8.33	3.34	.625			

2013 FTS SPECIFICATIONS								
SHOCK	7043737	7043779	7043720	7043826	7043634	7043628	7043602	7043828
REBOUND	.620x.093 .700x.008 .800x.008 .900x.008 1.0x.008 1.10x.008 1.25x.008 .800x.008 1.25x.008	.620 x .093 .700 x .015 .800 x .015 .800 x .015 .900 x .012 1.0 x .010 1.10 x .010 .800 x .006 1.250 x .008	.620x.093 .700x.008 .800x.008 .900x.008 1.10x.008 1.25x.008 .800x.008 1.25x.008	.625 x .065 .700 x .008 .800 x .008 .900 x .008 1.0 x .008 1.10 x .008 1.25 x .012 .900 x .008 1.25 x .010	.625x.065 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.25x.010 1.25x.010	.625x.065 .700x.010 .800x.010 .900x.010 1.00x.010 1.10x.010 1.25x.012 1.25x.012	.625x.065 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.25x.010 1.25x.010	.625x.065 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.25x.012 .900x.008 1.25x.010
Piston Orifice	.070	.070	.070	.063	.086	.063	.063	.063
COMPRESSION	1.30x.010 1.25x.015 .900x.006 1.25x.015 1.25x.015 1.10x.012 1.0x.012 .900x.012 .800x.012 .700x.012 1.125x.093	1.30 x .010 1.25 x .008 1.10 x .008 .900 x .008 .800 x .008 .700 x .008 .700 x .012 1.125 x .093	1.30x.015 1.10x.015 .900x.006 1.25x.015 1.10x.015 1.0x.012 .900x.012 .800x.012 .700x.012 1.125x.093	1.30 x .012 1.10 x .012 1.0 x .010 1.30 x .010 1.25 x .008 1.10 x .008 1.0 x .008 .900 x .008 .800 x .008 .700 x .008 .625 x .065 .875 x .095	1.30x.008 1.20x.008 .900x.010 1.30x.010 1.25x.010 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.008 .625x.065	1.30x.010 1.10x.010 .900x.008 1.30x.012 1.25x.012 1.10x.010 1.00x.010 .900x.010 .800x.010 .700x.008 .875x.090	1.30x.010 1.10x.010 .900x.010 1.30x.010 1.25x.010 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.008 .625x.065	1.30x.012 1.10x.012 1.00x.010 1.30x.010 1.25x.008 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.008 .625x.065 .875x.095
ADJUSTER	N/A		N/A	Rebound .700 x .010 Compression 1.10 x .008 1.0 x .025 .900 x .015 .625 x .065	1.00x.025 1.00x.025 .900x.015 .625x.065	N/A	N/A	Rebound .700 x .010 Compression 1.10 x .008 1.0 x .025 .900 x .015 .625 x .065

SHOCKS

2013 REAR TRACK SHOCKS								
SHOCKS	MODEL	EXTENDED LENGTH IN	COL-LAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7043177	FOX™	15.60	10.56	5.04	.50	1.22	Full	200
7043723	Walker Evans	17.25	12.0	5.25	.625	2.0		
7043635		16.71	10.96	5.75	.50	2.25		
7043629		16.80	11.35	5.45	.625	2.0		
7043862	FOX™	17.29	12.06	5.23	.498	2.26		
7043834	Walker Evans	16.80	11.35	5.45	.625	6.25		

2013 RTS SPECIFICATIONS						
SHOCK	7043177	7043723	7043635	7043629	7043862	7043834
RE-BOUND	.620 x .093 .800 x .012 .900 x .012 1.0 x .012 1.10 x .012 1.25 x .010 1.25 x .010	.625x.065 .700x.012 .800x.012 .900x.012 1.0x.012 1.10x.012 1.20x.012 1.25x.015 1.25x.015	.625x.065 .700x.010 .800x.010 .900x.010 1.00x.012 1.10x.012 1.25x.015 1.25x.015 1.25x.015	.625x.065 .700x.015 .800x.015 .900x.015 1.00x.015 1.10x.015 1.20x.012 1.25x.015 1.25x.015	.620 x .093 .700 x .012 .800 x .012 .900 x .012 1.0 x .012 1.10 x .015 1.250 x .015 1.250 x .015	.875 x .090 .700 x .008 .800 x .015 .900 x .012 1.0 x .010 1.10 x .010 1.20 x .010 1.25 x .008
Piston Orifice	.093	.055	.086	N/A	.093	.069
Shaft Bleed	N/A	.086	N/A	.082	N/A	N/A
COM-PRESS-ION	1.3 x .008 1.3 x .008 1.0 x .006 1.10 x .008 1.10 x .010 1.10 x .012 1.0 x .010 .900 x .010 1.125 x .093	1.30x.006 1.25x.006 .900x.010 1.30x.008 1.20x.008 1.10x.008 .800x.008 1.20x.008 1.0x.006 .900x.006 .800x.006 .700x.006 .875.090	1.30x.008 1.25x.006 .800x.012 1.25x.010 1.10x.010 1.00x.010 .900x.010 .800x.010 .700x.010 .625x.065	1.30x.010 1.20x.008 1.00x.010 1.25x.012 1.20x.008 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.008 .875x.065	1.30 x .006 .700 x .012 1.250 x .008 1.10 x .008 1.0 x .006 .900 x .006 .800 x .006 .700 x .006 .620 x .020 1.125 x .093	1.30 x .008 1.10 x .010 .900 x .008 1.30 x .010 1.20 x .010 1.10 x .010 1.0 x .010 .900 x .010 .800 x .010 .700 x .008 .875 x .090
ADJUST-ER	N/A	Rebound .800x.012 Compression 1.0x.025 1.0x.025 .900x.015 .625x.065	1.10x.025 1.10x.025 1.00x.025 .875x.090	Rebound 1.00x.025 1.00x.025 .625x.065	N/A	N/A

2014 PRO-RIDE Model Shock Specifications

NOTE: All valve code measurements are in inches.
Valve shim stacks listed as they would appear on the shaft when shock rod is locked in a table vise (eyelet down, threaded end up).

2014 IFS SHOCKS								
SHOCKS	MODEL	EXTENDED LENGTH (INCHES)	COLLAPSED LENGTH (INCHES)	STROKE (INCHES)	SHOCK ROD (INCHES)	IFP DEPTH (INCHES)	OIL VOLUME	PSI
7043725	FOX™	17.19	11.15	6.04	.498	1.07	Full	200
7043861		17.25	11.42	6.05	.498	6.65		
7043731	Walker Evans	17.3	11.45	5.85	.625	2.0		
7043757		17.7	11.63	6.07	.625			
7043568		18.6	12.16	6.44	.625			
7043835		16.63	10.86	5.77	.50	7.0		
7043827		17.30	11.45	5.85	.625	2.0		

2014 IFS SPECIFICATIONS							
SHOCK	7043725	7043861	7043731	7043757	7043568	7043835	7043827
REBOUND	.620x.093 .700x.012 .800x.012 .900x.012 1.0x.012 1.10x.012 .800x.012 1.25x.006	.620 x .093 .700 x .012 .800 x .012 .900 x .012 1.0 x .012 1.10 x .012 .800 x .012 1.250 x .006	.625x.065 .700x.008 .800x.008 .900x.008 1.0x.008 1.10x.008 .800x.010 1.20x.006	.625x.065 .700x.010 .800x.010 .900x.010 1.0x.010 1.10x.010 1.20x.010	.625x.065 .700x.012 .800x.012 .900x.012 1.00x.012 1.10x.012 1.20x.0+12 1.25x.015	.875x.090 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.20x.008 1.25x.008	.625 x .065 .700 x .088 .800 x .008 .900 x .008 1.0 x .008 1.10 x .008 .800 x .010 1.20 x .006
Piston Orifice	.093	.093	.052	.042	.040	.052	.052
Shaft Bleed	N/A	N/A	.086	.082	.082	N/A	N/A
COMPRESSION	1.30x.008 .800x.010 1.25x.012 1.10x.012 1.0x.008 .900x.008 .800x.006 .700x.006 .620x.020 1.125x.093	1.30 x .008 .800 x .010 1.25 x .012 1.10 x .012 1.0 x .008 .900 x .008 .800 x .006 .700 x .006 .620 x .020 1.125 x .093	1.30x.006 .800x.012 1.20x.006 .900x.012 1.10x.008 1.0x.008 .900x.010 .800x.010 .700x.010 .625x.065 .875x.090	1.30x.008 .900x.010 1.20x.010 .900x.008 1.25x.010 1.10x.010 1.0x.010 .900x.010 .800x.010 .700x.010 .875x.090	1.30x.010 1.00x.008 .900x.010 1.20x.008 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.015 .875x.090	1.30x.008 1.20x.008 1.00x.008 .800x.012 .800x.012 1.20x.008 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.015 .625x.065	1.30 x .006 .800 x .012 1.20 x .006 .900 x .012 1.10 x .008 1.0 x .008 .900 x .010 .800 x .010 .700 x .010 .625 x .065 .875 x .090
ADJUSTER	N/A	N/A	Rebound .800x.012 Compression 1.0x.025 1.0x.025 .625x.065	Rebound .800x.012 Compression 1.0x.025 1.0x.025 .625x.065	1.00x.025 1.00x.025 .625x.065	N/A	Rebound .800 x .012 Compression 1.00 x .025 1.00 x .025 .625 x .065

SHOCKS

2014 FRONT TRACK SHOCKS								
SHOCKS	MODEL	EXTENDED LENGTH IN	COLLAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7043634	Walker Evans	12.34	8.84	3.5	.625	2.0	Full	200
7043628		11.75	8.21	3.54	.50	.75		
7043602						4.3		
7043779	FOX™	12.05	8.62	3.43	.498	4.39		200
7043720	FOX™	11.67	8.33	3.34	.498	.74		250
7043826	Walker Evans	12.25	8.64	3.61	.625	2.25		200
7043828		11.67	8.33	3.34	.625			

2014 FTS SPECIFICATIONS							
SHOCK	7043779	7043720	7043826	7043634	7043628	7043602	7043828
RE-BOUND	.620 x .093 .700 x .015 .800 x .015 .800 x .015 .900 x .012 1.0 x .010 1.10 x .010 .800 x .006 1.250 x .008	.620x.093 .700x.008 .800x.008 .900x.008 1.10x.008 1.25x.008 .800x.008 1.25x.008	.625 x .065 .700 x .008 .800 x .008 .900 x .008 1.0 x .008 1.10 x .008 1.25 x .012 .900 x .008 1.25 x .010	.625x.065 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.25x.010 1.25x.010	.625x.065 .700x.010 .800x.010 .900x.010 1.00x.010 1.10x.010 1.25x.012 1.25x.012	.625x.065 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.25x.010 1.25x.010	.625x.065 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.25x.012 .900x.008 1.25x.010
Piston Orifice	.070	.070	.063	.086	.063	.063	.063
COM-PRESS-ION	1.30 x .010 1.25 x .008 1.10 x .008 .900 x .008 .800 x .008 .700 x .008 .700 x .012 1.125 x .093	1.30x.015 1.10x.015 .900x.006 1.25x.015 1.10x.015 1.0x.012 .900x.012 .800x.012 .700x.012 1.125x.093	1.30 x .012 1.10 x .012 1.0 x .010 1.30 x .010 1.25 x .008 1.10 x .008 1.0 x .008 .900 x .008 .800 x .008 .700 x .008 .625 x .065 .875 x .095	1.30x.008 1.20x.008 .900x.010 1.30x.010 1.25x.010 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.008 .625x.065	1.30x.010 1.10x.010 .900x.008 1.30x.012 1.25x.012 1.10x.010 1.00x.010 .900x.010 .800x.010 .700x.008 .875x.090	1.30x.010 1.10x.010 .900x.010 1.30x.010 1.25x.010 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.008 .625x.065	1.30x.012 1.10x.012 1.00x.010 1.30x.010 1.25x.008 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.008 .625x.065 .875x.095
ADJUST-ER		N/A	Rebound .700 x .010 Compression 1.10 x .008 1.0 x .025 .900 x .015 .625 x .065	1.00x.025 1.00x.025 .900x.015 .625x.065	N/A	N/A	Rebound .700 x .010 Compression 1.10 x .008 1.0 x .025 .900 x .015 .625 x .065

2014 REAR TRACK SHOCKS								
SHOCKS	MODEL	EXTENDED LENGTH IN	COL-LAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7043177	FOX™	15.60	10.56	5.04	.50	1.22	Full	200
7043723	Walker Evans	17.25	12.0	5.25	.625	2.0		
7043635		16.71	10.96	5.75	.50	2.25		
7043629		16.80	11.35	5.45	.625	2.0		
7043862	FOX™	17.29	12.06	5.23	.498	2.26		
7043834	Walker Evans	16.80	11.35	5.45	.625	6.25		

2014 RTS SPECIFICATIONS						
SHOCK	7043177	7043723	7043635	7043629	7043862	7043834
RE-BOUND	.620 x .093 .800 x .012 .900 x .012 1.0 x .012 1.10 x .012 1.25 x .010 1.25 x .010	.625x.065 .700x.012 .800x.012 .900x.012 1.0x.012 1.10x.012 1.20x.012 1.25x.015 1.25x.015	.625x.065 .700x.010 .800x.010 .900x.010 1.00x.012 1.10x.012 1.25x.015 1.25x.015 1.25x.015	.625x.065 .700x.015 .800x.015 .900x.015 1.00x.015 1.10x.015 1.20x.012 1.25x.015 1.25x.015	.620 x .093 .700 x .012 .800 x .012 .900 x .012 1.0 x .012 1.10 x .015 1.250 x .015 1.250 x .015	.875 x .090 .700 x .008 .800 x .015 .900 x .012 1.0 x .010 1.10 x .010 1.20 x .010 1.25 x .008
Piston Orifice	.093	.055	.086	N/A	.093	.069
Shaft Bleed	N/A	.086	N/A	.082	N/A	N/A
COM-PRESS-ION	1.3 x .008 1.3 x .008 1.0 x .006 1.10 x .008 1.10 x .010 1.10 x .012 1.0 x .010 .900 x .010 1.125 x .093	1.30x.006 1.25x.006 .900x.010 1.30x.008 1.20x.008 1.10x.008 .800x.008 1.20x.008 1.0x.006 .900x.006 .800x.006 .700x.006 .875.090	1.30x.008 1.25x.006 .800x.012 1.25x.010 1.10x.010 1.00x.010 .900x.010 .800x.010 .700x.010 .625x.065	1.30x.010 1.20x.008 1.00x.010 1.25x.012 1.20x.008 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.008 .875x.065	1.30 x .006 .700 x .012 1.250 x .008 1.10 x .008 1.0 x .006 .900 x .006 .800 x .006 .700 x .006 .620 x .020 1.125 x .093	1.30 x .008 1.10 x .010 .900 x .008 1.30 x .010 1.20 x .010 1.10 x .010 1.0 x .010 .900 x .010 .800 x .010 .700 x .008 .875 x .090
ADJUST-ER	N/A	Rebound .800x.012 Compression 1.0x.025 1.0x.025 .900x.015 .625x.065	1.10x.025 1.10x.025 1.00x.025 .875x.090	Rebound 1.00x.025 1.00x.025 .625x.065	N/A	N/A

2015 PRO-RIDE Model Shock Specifications

NOTE: All valve code measurements are in inches.
Valve shim stacks listed as they would appear on the shaft when shock rod is locked in a table vise (eyelet down, threaded end up).

2015 IFS SHOCKS								
SHOCKS	MODEL	EXTENDED LENGTH (INCHES)	COLLAPSED LENGTH (INCHES)	STROKE (INCHES)	SHOCK ROD (INCHES)	IFP DEPTH (INCHES)	OIL VOLUME	PSI
7043861	FOX™	17.25	11.42	6.05	.498	6.65	FULL	200
7043757	Walker Evans™	17.7	11.63	6.07	.625	2.0		
7043568		18.6	12.16	6.44	.625	2.0		
7043835		16.63	10.86	5.77	.50	7.0		
7044137		16.63	10.86	5.77	.625	2.0		

2015 IFS SHOCK SPECIFICATIONS					
SHOCK	7043861	7043757	7043568	7043835	7044137
REBOUND	.620 x .093 .700 x .012 .800 x .012 .900 x .012 1.0 x .012 1.10 x .012 .800 x .012 1.250 x .006	.625x.065 .700x.010 .800x.010 .900x.010 1.0x.010 1.10x.010 1.20x.010	.625x.065 .700x.012 .800x.012 .900x.012 1.00x.012 1.10x.012 1.20x.0+12 1.25x.015	.875x.090 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.20x.008 1.25x.008	.625 x .065 .700 x .012 .800 x .012 .900 x .012 1.00 x .012 1.10 x .012 1.20 x .012 1.25 x .015
Piston Orifice	.093	.042	.040	.052	.040
Shaft Bleed	N/A	.082	.082	N/A	.082
COMPRESSION	1.30 x .008 .800 x .010 1.25 x .012 1.10 x .012 1.0 x .008 .900 x .008 .800 x .006 .700 x .006 .620 x .020 1.125 x .093	1.30x.008 .900x.010 1.20x.010 .900x.008 1.25x.010 1.10x.010 1.0x.010 .900x.010 .800x.010 .700x.010 .875x.090	1.30x.010 1.00x.008 .900x.010 1.20x.008 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.015 .875x.090	1.30x.008 1.20x.008 1.00x.008 .800x.012 .800x.012 1.20x.008 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.015 .625x.065	1.30 x .010 1.00 x .008 .900 x .010 1.20 x .008 1.10 x .008 1.00 x .008 .900 x .008 .800 x .008 .700 x .015 .875 x .090
ADJUSTER	N/A	Rebound .800x.012 Compression 1.0x.025 1.0x.025 .625x.065	1.00x.025 1.00x.025 .625x.065	N/A	1.00 x .025 1.00 x .025 .625 x .065

2015 FRONT TRACK SHOCKS								
SHOCKS	MODEL	EXTENDED LENGTH IN	COLLAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7043634	Walker Evans™	12.34	8.84	3.5	.625	2.0	Full	200
7043628		11.75	8.21	3.54	.50	.75		
7043602						4.3		
7043779	FOX™	12.05	8.62	3.43	.498	4.39		
7044234	Walker Evans™	11.75	8.21	3.54	.500	.75		

2015 FTS SPECIFICATIONS					
SHOCK	7043779	7043634	7043628	7043602	7044234
REBOUND	.620 x .093 .700 x .015 .800 x .015 .800 x .015 .900 x .012 1.0 x .010 1.10 x .010 .800 x .006 1.250 x .008	.625x.065 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.25x.010 1.25x.010	.625x.065 .700x.010 .800x.010 .900x.010 1.00x.010 1.10x.010 1.25x.012 1.25x.012	.625x.065 .700x.008 .800x.008 .900x.008 1.00x.008 1.10x.008 1.25x.010 1.25x.010	.625 x .065 .700 x .008 .800 x .008 .900 x .008 1.00 x .008 1.10 x .008 1.25 x .010 1.25 x .010
Piston Orifice	.070	.086	.063	.063	.063
COMPRESSION	1.30 x .010 1.25 x .008 1.10 x .008 .900 x .008 .800 x .008 .700 x .008 .700 x .012 1.125 x .093	1.30x.008 1.20x.008 .900x.010 1.30x.010 1.25x.010 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.008 .625x.065	1.30x.010 1.10x.010 .900x.008 1.30x.012 1.25x.012 1.10x.010 1.00x.010 .900x.010 .800x.010 .700x.008 .875x.090	1.30x.010 1.10x.010 .900x.010 1.30x.010 1.25x.010 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.008 .625x.065	1.30 x .010 1.10 x .010 .900 x .010 1.30 x .010 1.25 x .010 1.10 x .008 1.00 x .008 .900 x .008 .800 x .008 .700 x .008 .625 x .065
ADJUSTER	N/A	1.00x.025 1.00x.025 .900x.015 .625x.065	N/A	N/A	N/A

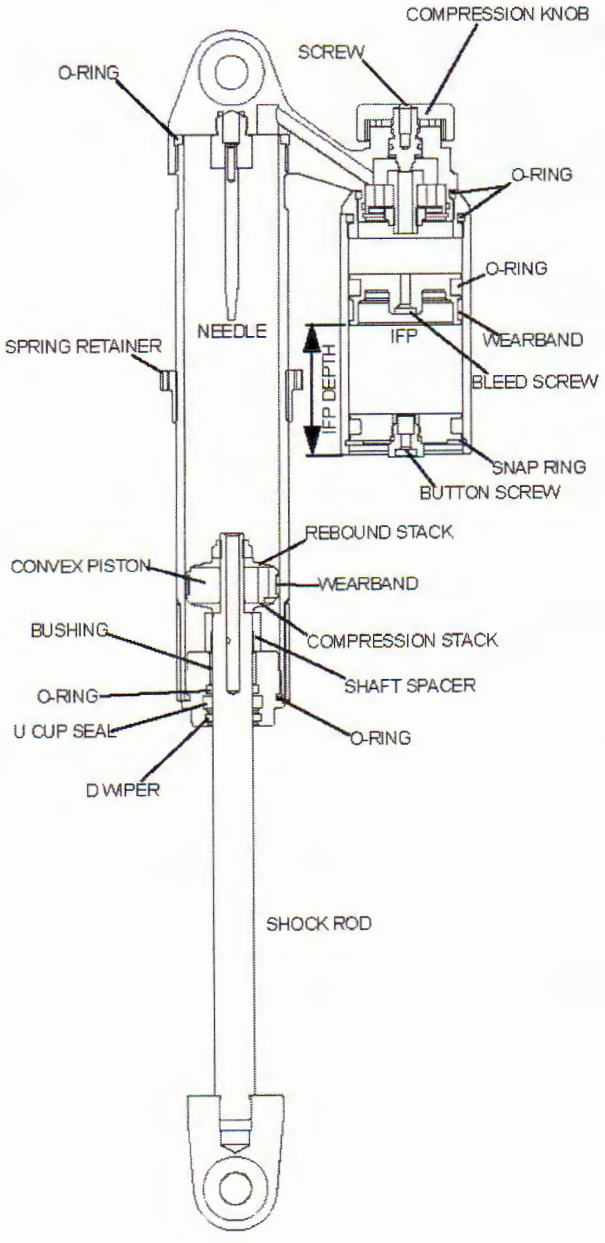
SHOCKS

2015 REAR TRACK SHOCKS								
SHOCKS	MODEL	EXTENDED LENGTH IN	COL-LAPSED LENGTH IN	STROKE IN	SHOCK ROD IN	IFP DEPTH IN	OIL VOLUME	PSI
7043177	FOX™	15.60	10.56	5.04	.50	1.22	Full	200
7043635	Walker Evans™	16.71	10.96	5.75	.50	2.25		
7043629		16.80	11.35	5.45	.625	2.0		
7043834		16.80	11.35	5.45	.625	6.25		

2015 RTS SPECIFICATIONS				
SHOCK	7043177	7043635	7043629	7043834
REBOUND	.620 x .093 .800 x .012 .900 x .012 1.0 x .012 1.10 x .012 1.25 x .010 1.25 x .010	.625x.065 .700x.010 .800x.010 .900x.010 1.00x.012 1.10x.012 1.25x.015 1.25x.015 1.25x.015	.625x.065 .700x.015 .800x.015 .900x.015 1.00x.015 1.10x.015 1.20x.012 1.25x.015 1.25x.015	.875 x .090 .700 x .008 .800 x .015 .900 x .012 1.0 x .010 1.10 x .010 1.20 x .010 1.25 x .008
Piston Orifice	.093	.086	N/A	.069
Shaft Bleed	N/A	N/A	.082	N/A
COMPRES-SION	1.3 x .008 1.3 x .008 1.0 x .006 1.10 x .008 1.10 x .010 1.10 x .012 1.0 x .010 .900 x .010 1.125 x .093	1.30x.008 1.25x.006 .800x.012 1.25x.010 1.10x.010 1.00x.010 .900x.010 .800x.010 .700x.010 .625x.065	1.30x.010 1.20x.008 1.00x.010 1.25x.012 1.20x.008 1.10x.008 1.00x.008 .900x.008 .800x.008 .700x.008 .875x.065	1.30 x .008 1.10 x .010 .900 x .008 1.30 x .010 1.20 x .010 1.10 x .010 1.0 x .010 .900 x .010 .800 x .010 .700 x .008 .875 x .090
ADJUSTER	N/A	1.10x.025 1.10x.025 1.00x.025 .875x.090	Rebound 1.00x.025 1.00x.025 .625x.065	N/A

SHOCK MAINTENANCE

Walker Evans Coil-Over Piggyback Shock



Walker Evans Piggyback Shock – Disassembly

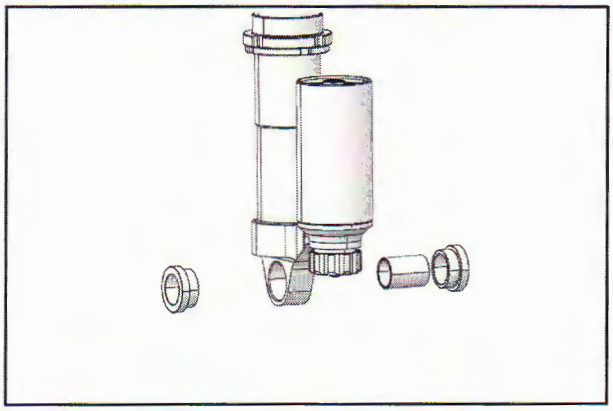
⚠ WARNING

Shocks contain high pressure nitrogen gas. Extreme caution must be used while handling and working with shocks and related high pressure service equipment. The pressure must be released from the shock before disassembly. Wear safety glasses and ear protection during these procedures.

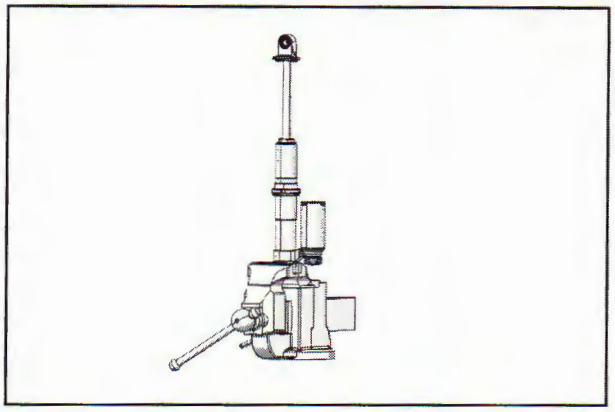
NOTE: To prevent damage or marks to the shock, the use of soft jaws on a vise is recommended. Perform work in clean environment. Always discard used O-rings and wear bands. discard used shock oil into appropriate container.

Gas / shock oil replacement does not require shock / reservoir body removal or clicker disassembly. Service these components only if required. Shock shaft bearing cap service is always recommended when changing shock oil.

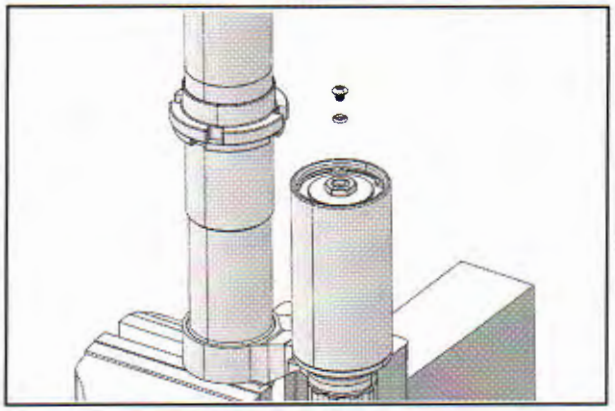
1. Remove the shock from the vehicle. Clean the shock to remove dirt and foreign material.
2. Remove the spring and spring retainers.
3. Remove the shock bushings and spacer.



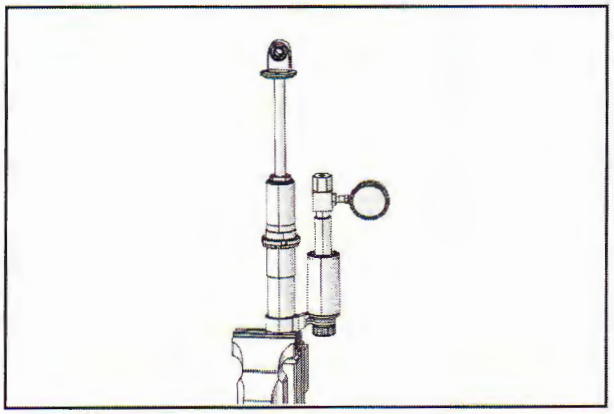
4. Mount the body cap in a soft-jawed bench vise.



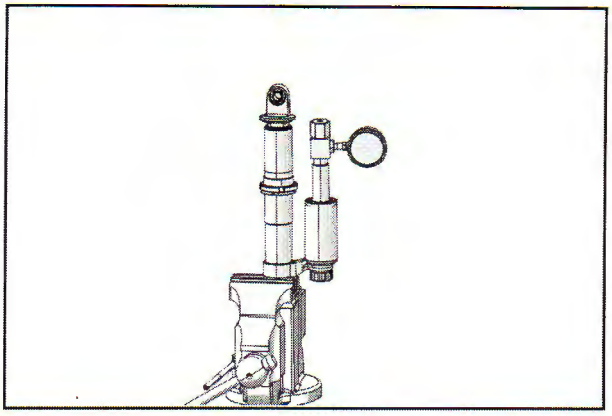
5. Remove the button head screw and O-ring from the reservoir body.



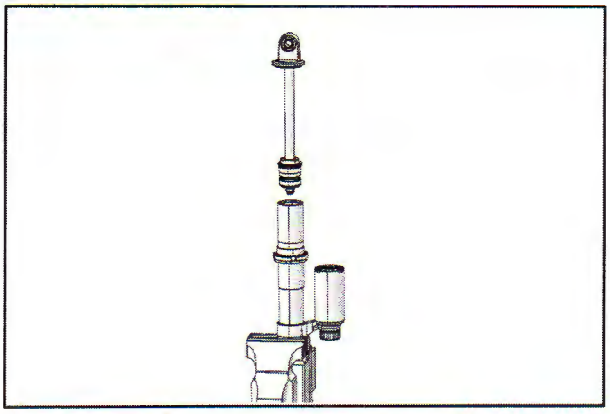
6. Depressurize the shock by installing the gas fill tool into the bleed port.



7. Push the shock rod down into the shock body to expel all of the nitrogen from the shock.



8. Remove the shock rod / bearing cap from the shock body.

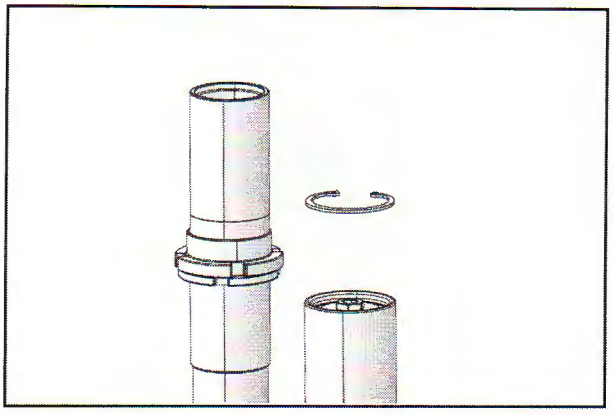


⚠ CAUTION

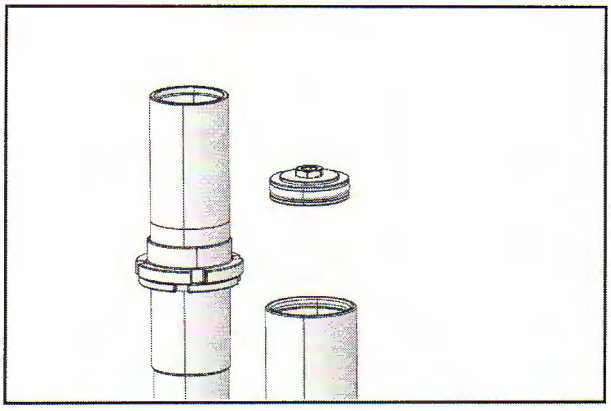
Residual nitrogen gas may exist inside shock. Wear eye protection and use caution when removing shock rod / bearing cap.

9. Remove the shock from the vise and pour shock oil into an approved container. Place shock back into vise.

10. Push the reservoir cap down, and remove the snap ring.

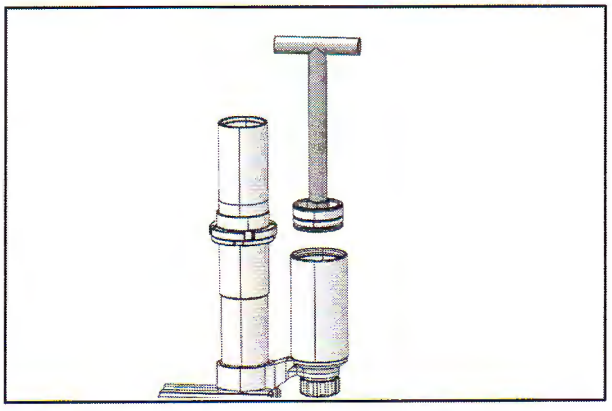


11. Remove the reservoir cap from the reservoir.



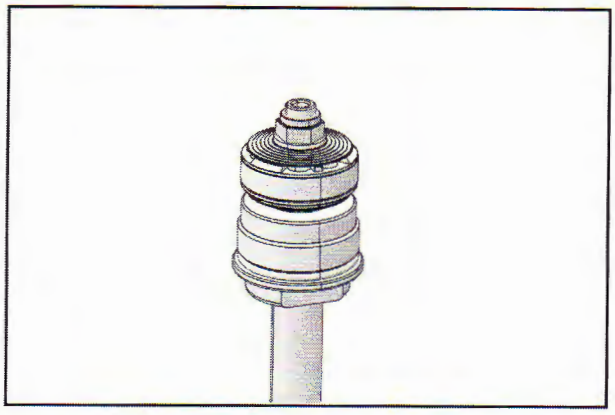
12. Remove the bleed screw and O-ring from the internal floating piston (IFP).

13. Use the T-handle tool to remove the IFP.

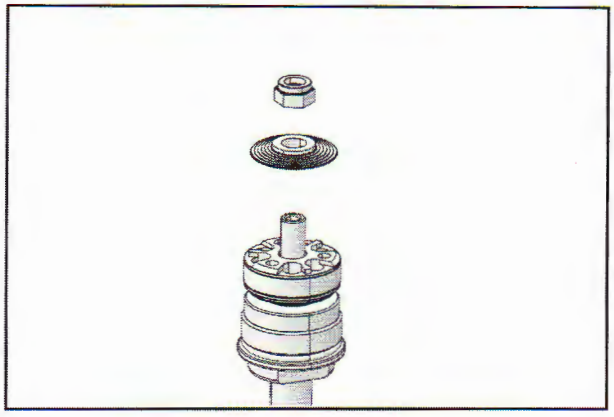


14. Remove the shock from the vise and pour residual shock oil into an approved container.

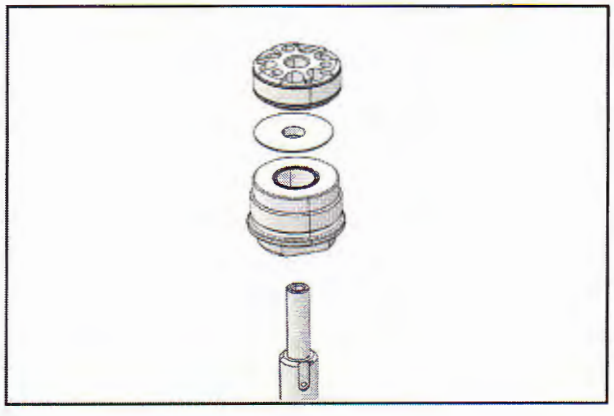
15. Place the eyelet end of the shock rod into the vise. Remove and discard the lock nut.



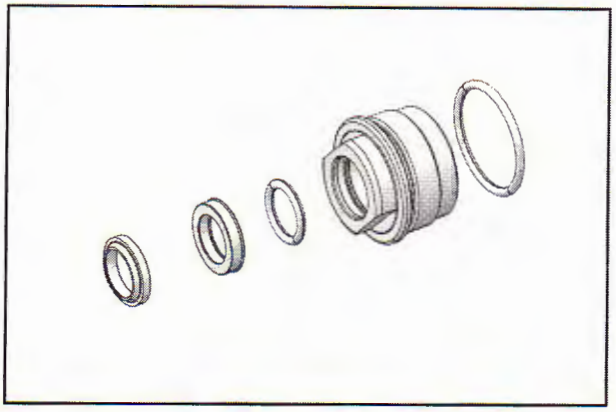
16. Remove the rebound valve stack from the shock rod.



17. Remove the piston valve and compression valve stack from the shock rod. Remove the bearing cap.

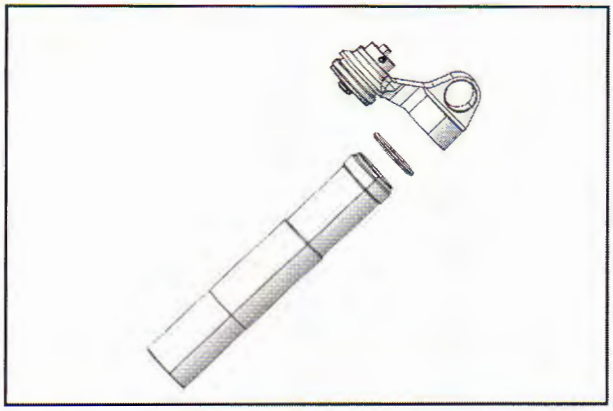


18. To service the bearing cap, remove and discard the bearing cap O-ring. Use a pick to remove the wiper seal, U-cup seal and inner O-ring.

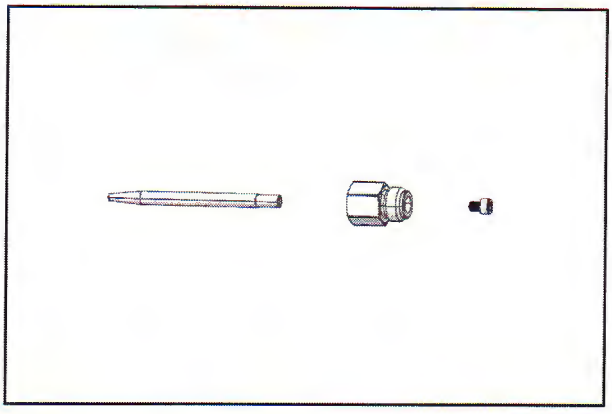


NOTE: The bearing cap shaft bushing is serviceable, but it is recommended to replace bearing cap assembly if bushing is worn or damaged.

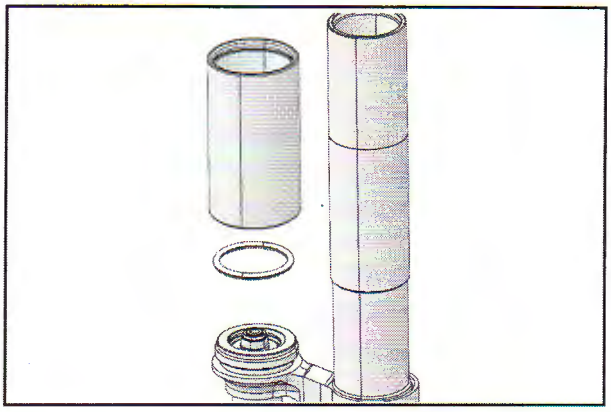
19. To service the shock body or needle (if equipped) , remove the shock body from the body cap. Discard the O-ring.



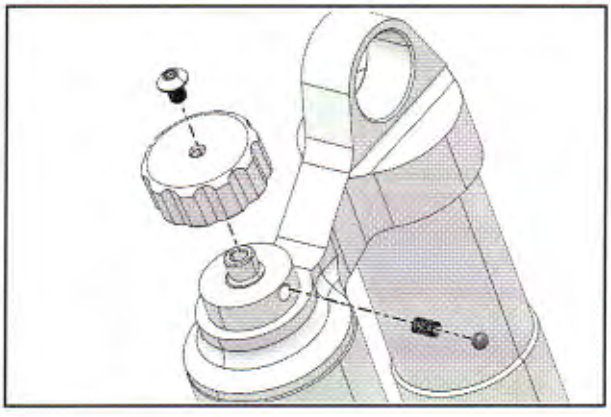
20. If the shock is equipped with a needle, the needle is screwed into a hollow needle bolt. Remove the assembly from the body cap, and then remove the needle screw securing the needle to the needle bolt.



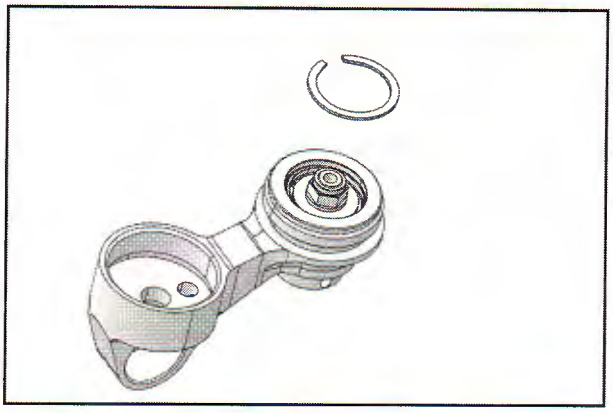
21. To service the reservoir, remove the tube from the body cap. Discard the O-ring.



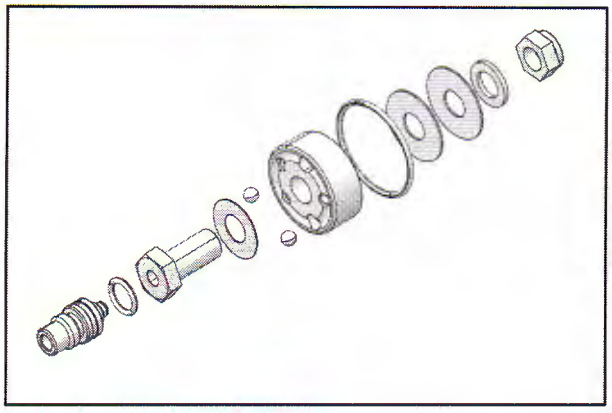
22. The clicker knob can be serviced by removing the screw. Note the detent ball and spring located under the cap.



23. The clicker assembly can be serviced after the reservoir tube is removed from the body cap. Remove the snap ring retaining the assembly in the cap.



24. Disassemble the clicker assembly as shown. Discard all O-rings and replace with new.



NOTE: Clicker compression washers may differ from shock to shock. See specification tables for washer settings.

25. Discard all O-rings and wear bands from removed components.

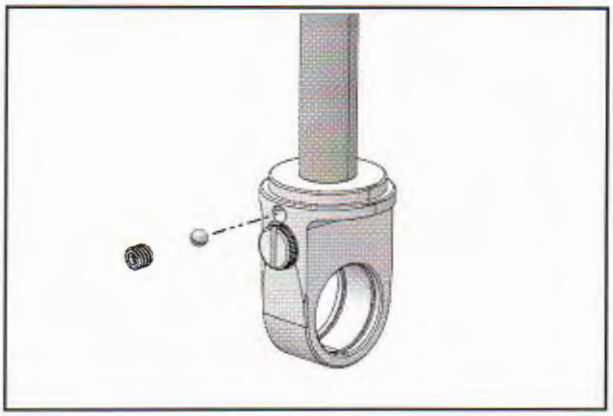
26. Clean the shock components with parts cleaner. Blow dry with compressed air.

Shock Rod / Rebound Adjuster Service

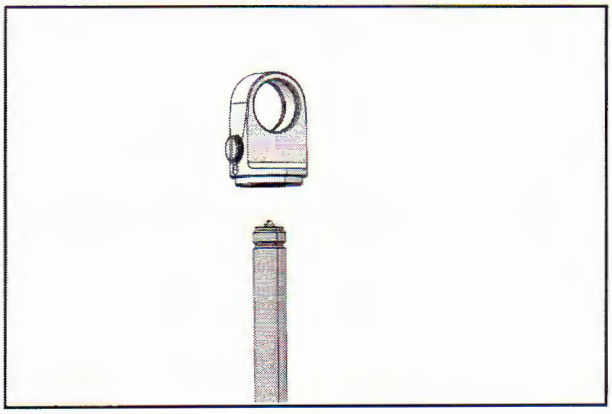
CAUTION

The rod eyelet must be removed to service the rebound adjuster components. Do not attempt to remove the rebound adjuster screw with the rod installed in the eyelet.

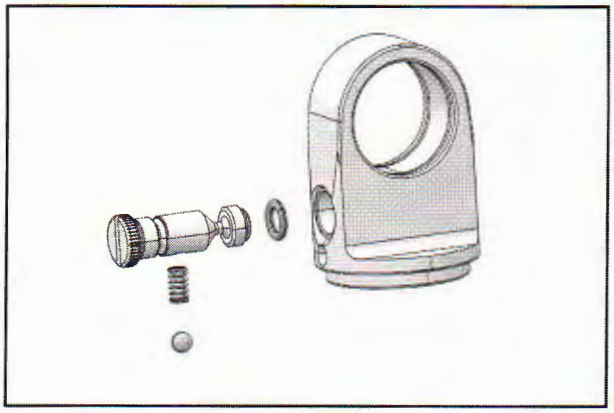
1. Mount the shock rod in a bench vise using the shock shaft holding blocks.
2. Remove the set screw and the brass ball from the eyelet. Discard the brass ball.



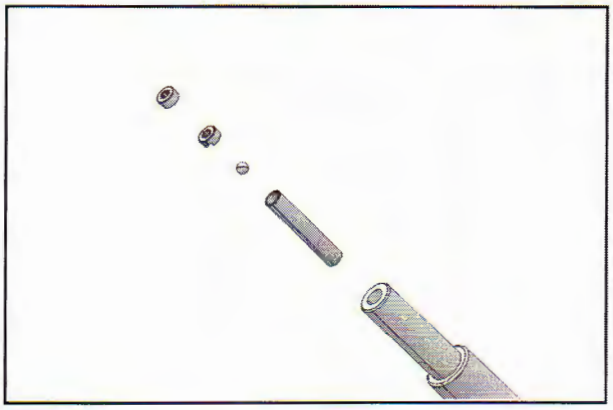
3. Apply heat to the area where the eyelet screws onto the rod. Remove the eyelet from the rod.



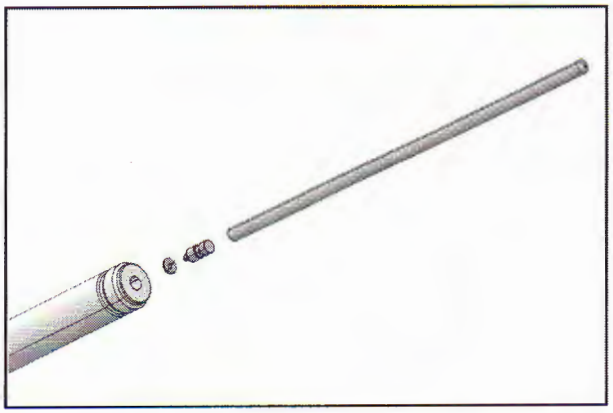
4. Remove the rebound adjuster screw. Note the detent ball and spring during removal. Discard the adjuster O-ring.



5. Remove the two set screws, check ball, and sleeve from the threaded end of the rod.



6. Push the rebound piston, adjuster rod, and O-ring out of the bottom of the rod. Discard the O-ring.



7. Inspect all components for wear and replace as required. Clean parts with parts cleaner and blow dry using compressed air or lint free towel.

Walker Evans Piggyback Shock – Assembly

⚠ WARNING

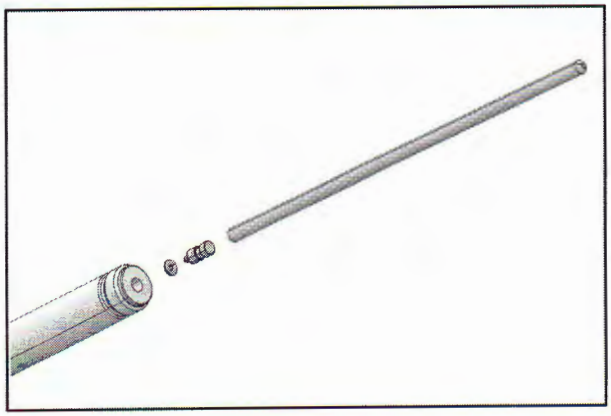
Shocks contain high pressure nitrogen gas. Extreme caution must be used while handling and working with shocks and related high pressure service equipment. Wear safety glasses and ear protection during these procedures.

NOTE: To prevent damage or marks to the shock, the use of soft jaws on a vise is recommended. Perform work in clean environment. Always discard used O-rings and wear bands. discard used shock oil into appropriate container.

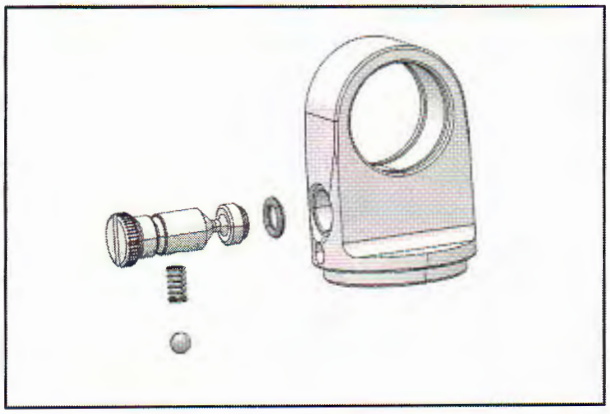
Shock Rod / Rebound Adjuster Assembly

NOTE: Only applies to shocks with rebound adjustment.

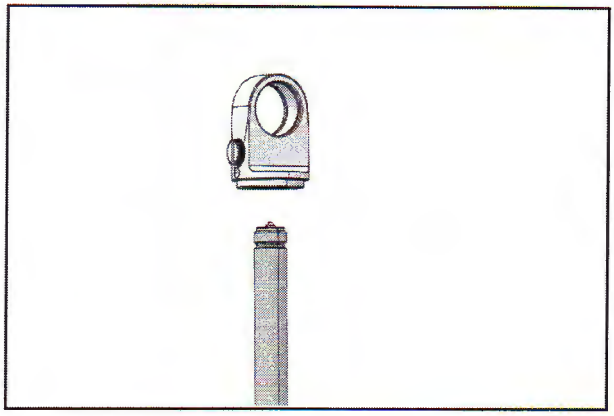
1. Verify the rebound rod bore in the shock rod is clean and dry. Obtain a new rebound piston O-ring and coat it with shock oil. Install the O-ring in the groove on the rebound piston. Install the rebound piston on rebound rod into the bottom of the shock rod.



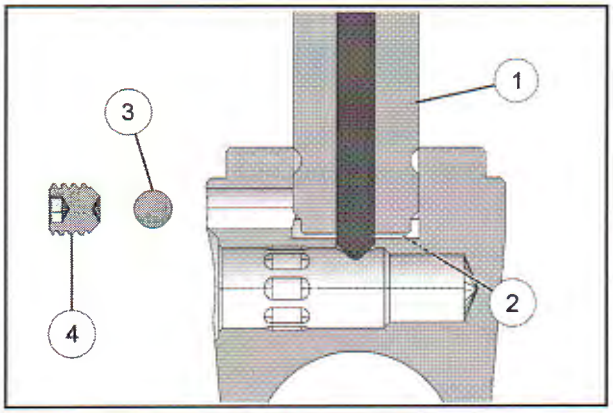
2. Obtain a new rebound adjuster screw O-ring and coat it with shock oil. Install the O-ring onto the adjuster screw groove. Install the detent ball spring and ball. Screw the assembly back into the eyelet.



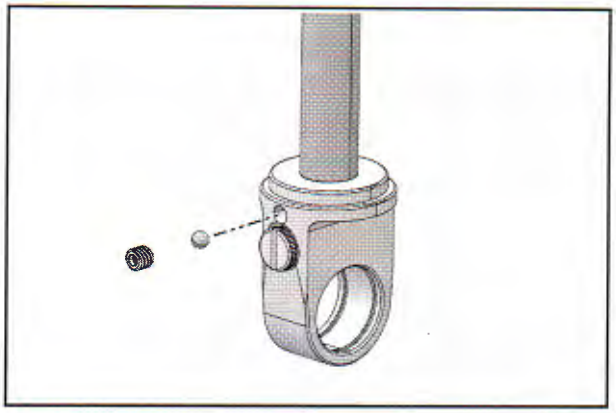
3. Secure the shock rod using the 5/8" shock rod holding tool, PN: 2872429, in a bench vise. Apply a very small amount of Loctite 263 to the rod threads. Screw the eyelet back onto the shock rod, but do not bottom-out the eyelet.



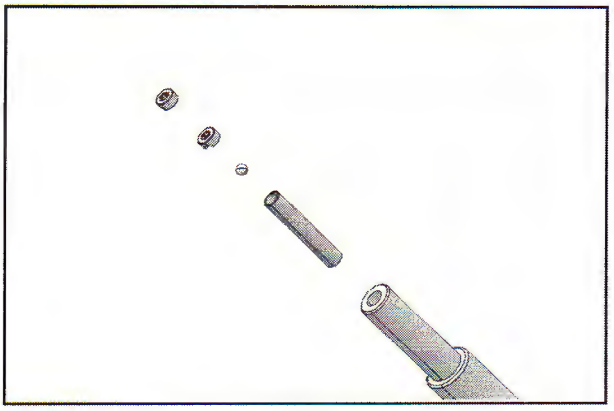
NOTE: If the eyelet ② is bottomed-out on the shock rod ①, the rebound adjuster screw will bind. Likewise, the application of too much Loctite may prevent the rebound rod and/or adjuster screw from working. The brass ball ③ and set screw ④ are designed to crush against the rod threads and prevent the rod from loosening.



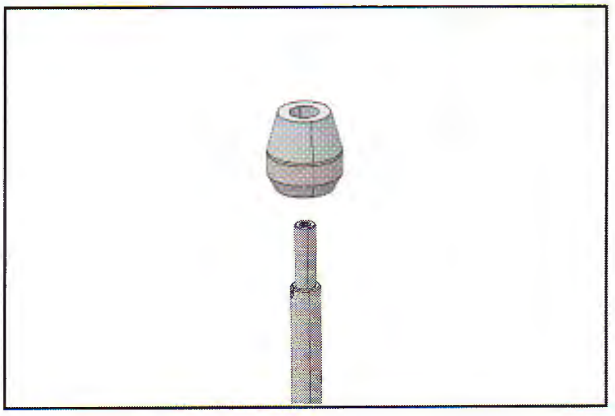
4. Install a new brass ball into the eyelet and crush it against the rod by turning the set screw into the ball.



5. Place the eyelet end of the shock rod into the vise. Reinstall the sleeve, check ball and two set screws.



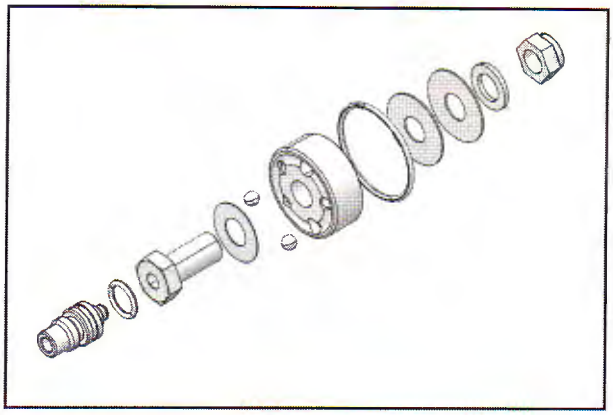
6. If the jounce bumper was removed from the rod, reinstall it.



Shock Assembly

1. Obtain new shock oil and new O-rings / wear bands for the components removed from the shock.

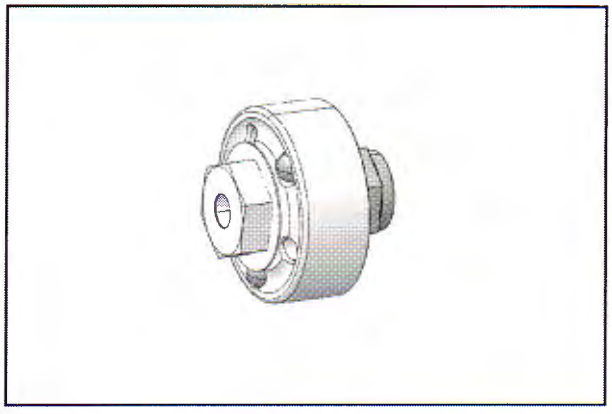
2. If the clicker assembly was removed from the body cap, reassemble the clicker components. Tighten nut to specification.



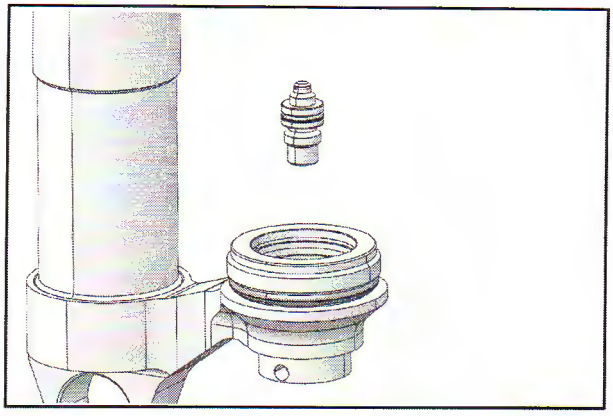
= T

Clicker Assembly Nut:
10 ft-lbs (14 Nm)

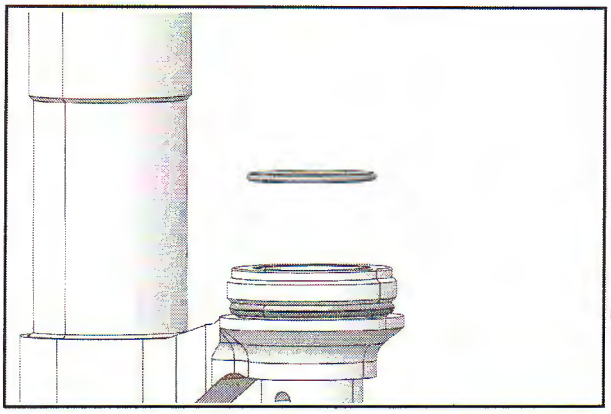
Clicker Adjuster Assembled:



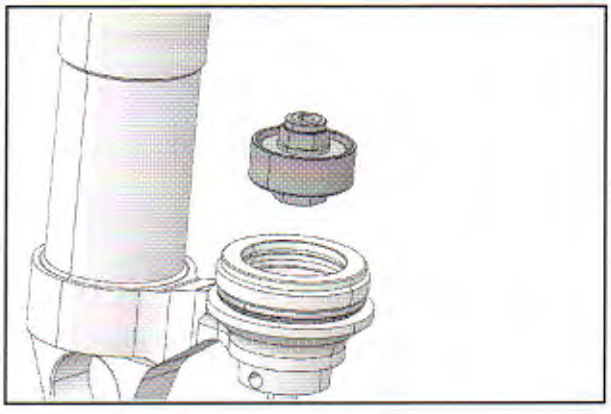
3. Install a new O-ring onto the clicker stud. Reinstall back into body cap.



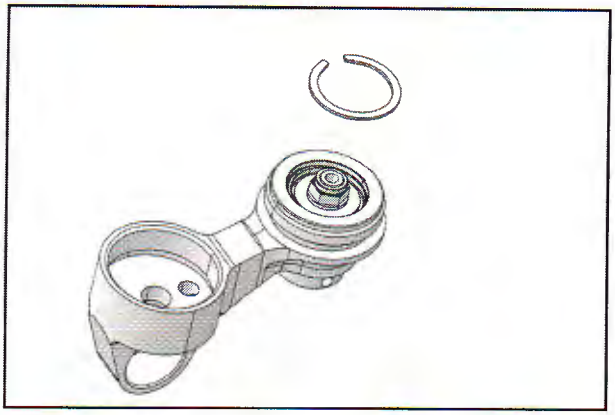
4. Install a new clicker O-ring into the bore.



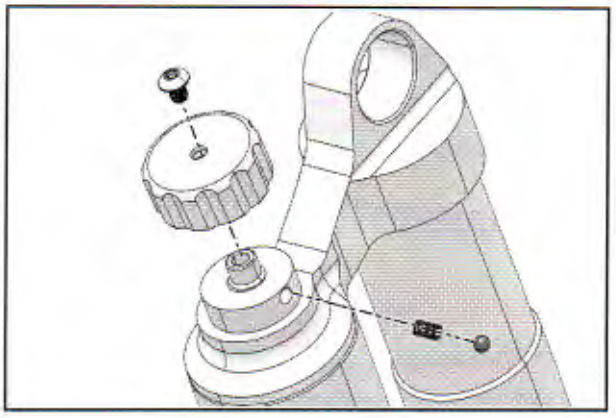
5. Reinstall the clicker assembly back into the body cap with the nut side facing the reservoir tube.



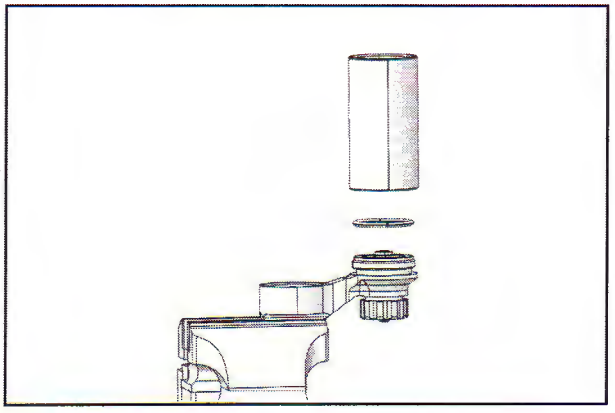
6. Reinstall the snap ring.



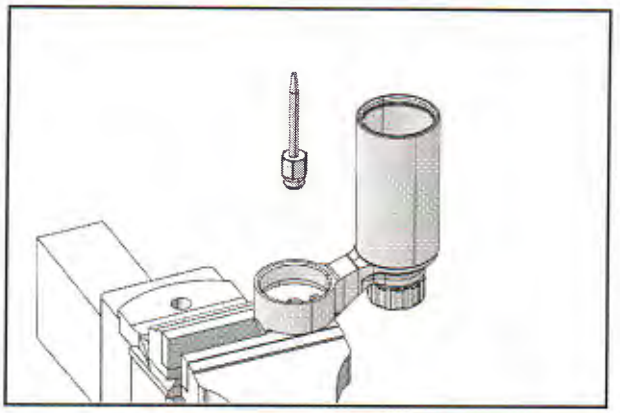
7. Reinstall the clicker knob, detent spring and detent ball.



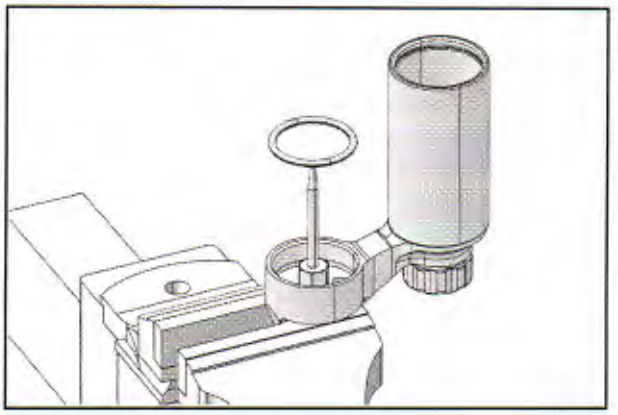
8. Obtain a new reservoir tube O-ring. Coat the O-ring with new shock oil. Reinstall reservoir tube and O-ring.



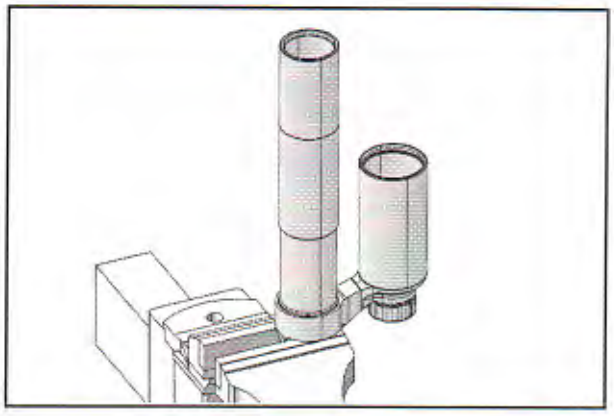
9. If the shock is equipped with a needle and it was removed, reinstall the needle assembly.



10. Obtain a new shock body O-ring. Coat the O-ring with new shock oil and install into cap.

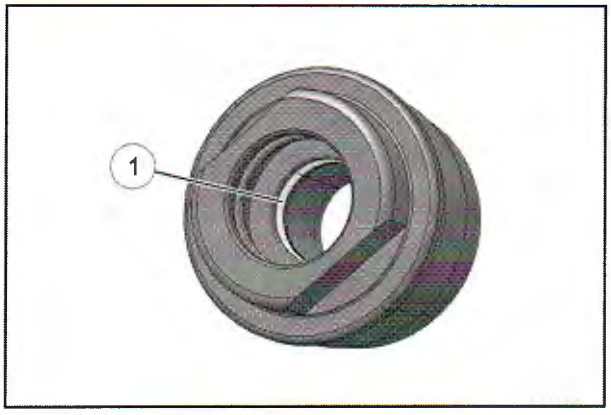


11. Reinstall the shock body tube. Torque the body cap / tube to specification.

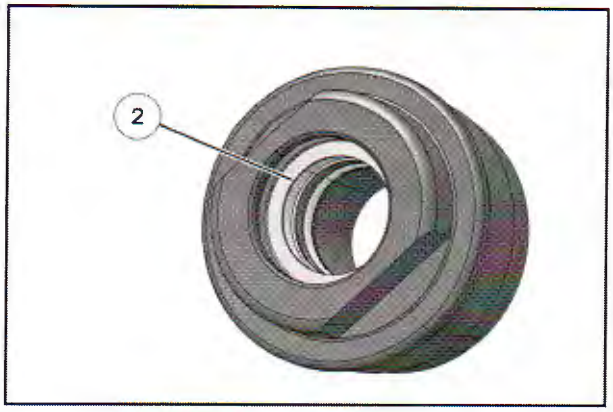


= T
Shock Body Cap / Tube: **30 ft-lbs (41 Nm)**

12. Assemble the bearing cap. Coat a new bearing cap O-ring ① with new shock oil. Install into bearing cap.

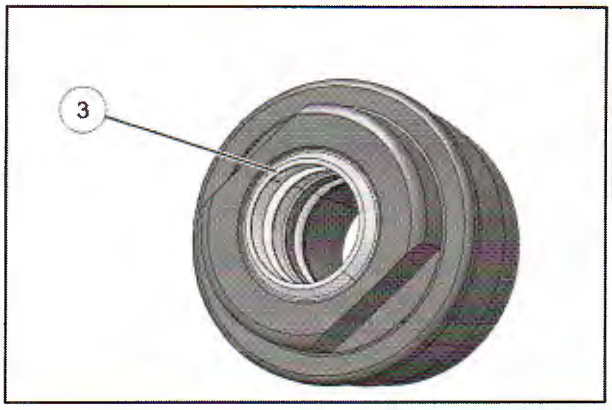


13. Apply shock oil to a new U-cup seal ②. Install the seal as shown. The flat side of the seal faces out.

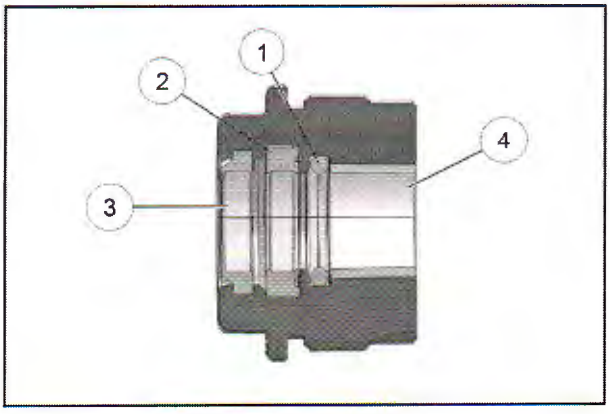


NOTE: Use the rounded end of a ball point pen or marker to push the U-cup seal into position.

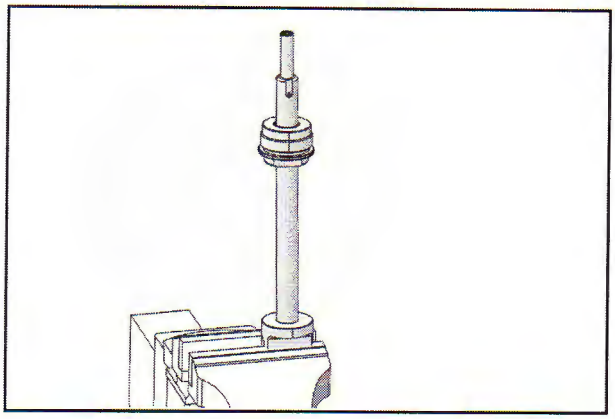
14. Apply shock oil to a new wiper seal ③. Install the wiper seal as shown.



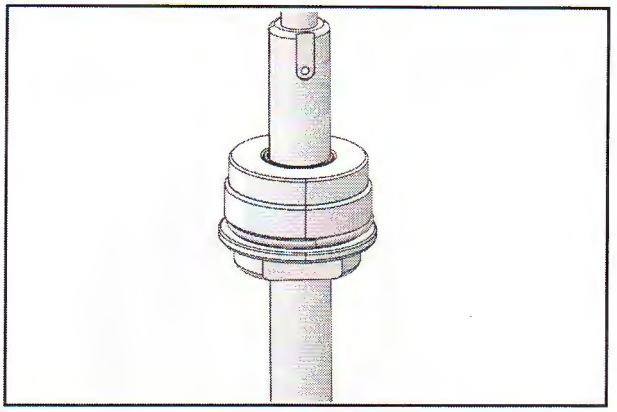
15. When assembled, the O-ring ①, U-cup seal ②, wiper seal ③ should be orientated as shown. Bushing ④ shown for reference.



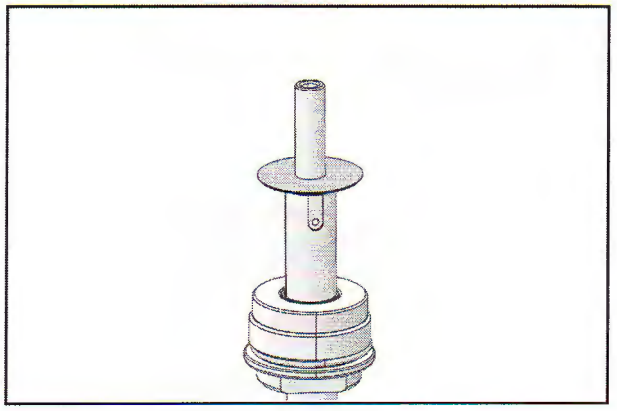
16. Coat the shock shaft and bearing assembly with shock oil. Install the bearing assembly onto the shock shaft with the wrench flats facing the rod end eyelet.



17. Install a new O-ring onto the bearing cap.

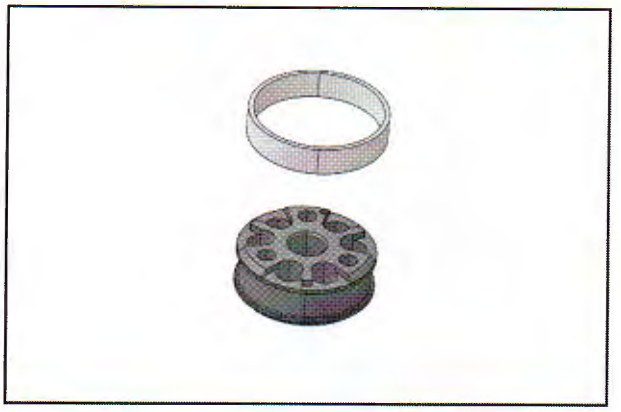


18. Install the compression valve stack onto the shock rod.



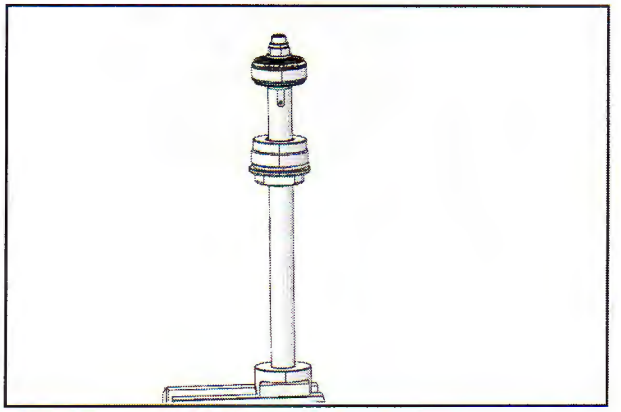
19. Coat a new piston valve wear band with shock oil and install onto valve. Install the assembly onto the shock shaft.

NOTE: The side of valve with the greater number of relief ports is the rebound side. Install with rebound side facing up.

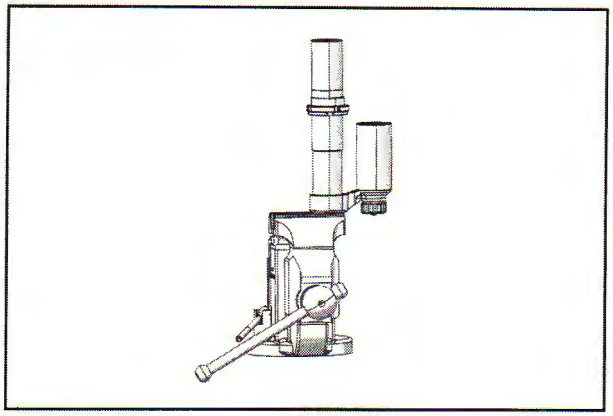


20. Install the rebound valve stack onto the shock rod. Install a new lock nut and torque to specification.

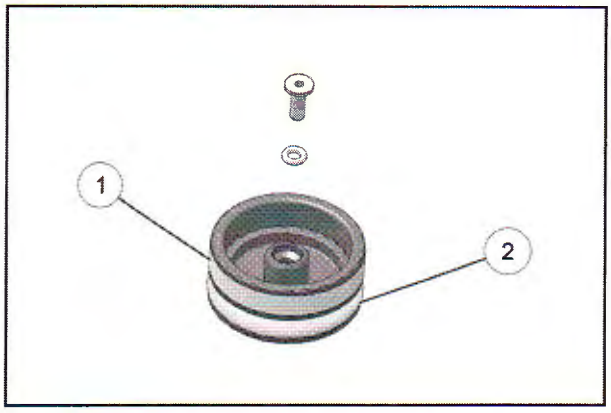
= T
Shock Rod Lock Nut: **35 ft-lbs (47 Nm)**



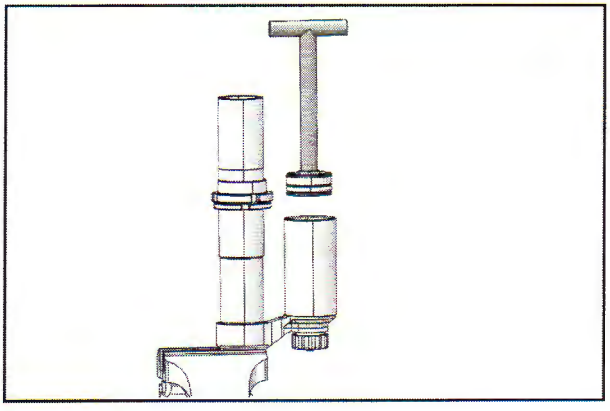
21. Remount the shock body assembly in the vise. Set the clicker to full soft. Fill the shock body with new shock oil until the level fills the reservoir about 1/2 full.



22. Install a new wear band ① and O-ring ② onto the IFP. Verify the bleed screw and O-ring are removed from the IFP. Coat the IFP with shock oil.



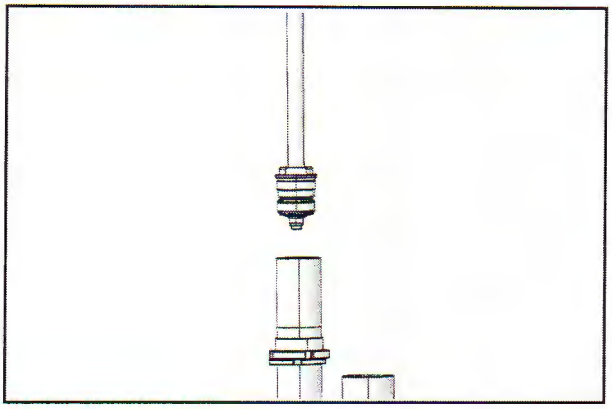
23. Slowly Insert the IFP into the reservoir using the T-handle tool. Allow as much air as possible to escape as the IFP is installed.



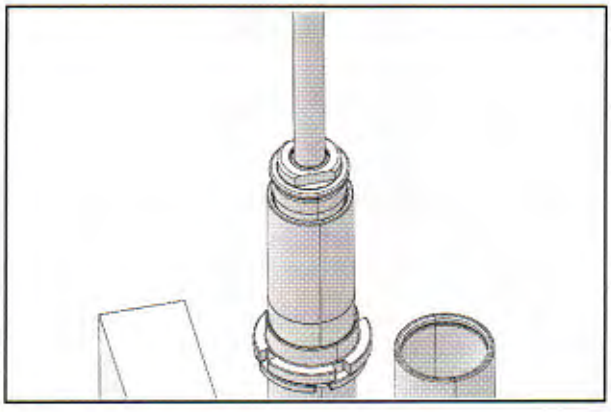
24. Slowly stroke the IFP up and down to bleed air from the shock. be sure to bottom-out the IFP in the reservoir. Allow sufficient time for all air bubbles to dissipate. Repeat this process until all air is removed.

25. After the air has been bled, set the IFP so it is approximately 1/8" from the bottom of the reservoir. Remove the T-handle tool and install the O-ring and bleed screw.

26. Push the bearing cap tight against the valve stack on the shock rod.



27. Fill the shock body with oil. Dip the piston valve stack into the oil. Fill the shock body with oil tot he bottom of the cap threads.



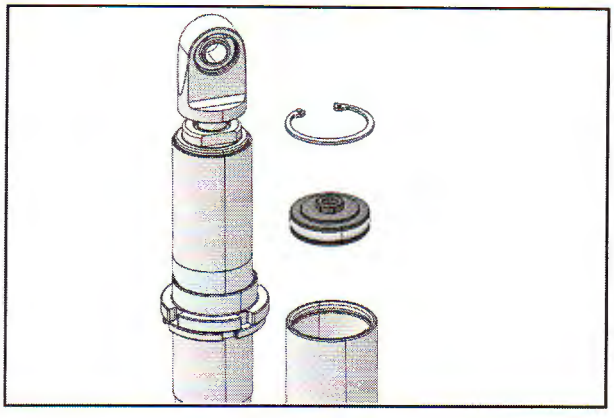
28. Slightly oscillate the piston rod to allow the piston to enter shock body bore as it purges the air out.

29. Slight up and down movement may be required to allow all of the air to pass through the piston / valve stack assembly.

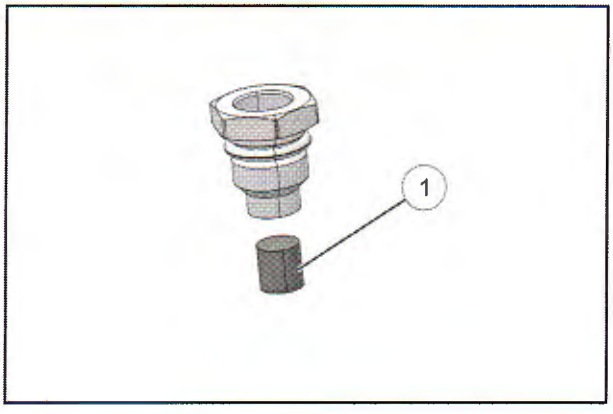
30. When all of the air is removed, push the assembly down until the threads engage the tube. Torque bearing cap to specification.

= T
Shock Rod Bearing Cap: **10 ft-lbs (14 Nm)**

31. Slowly push the shock rod all the way down into the shock body.
32. Verify there is shock oil above the IFP in the reservoir.
33. Remove the bleed screw and O-ring from the IFP.
34. Set the IFP depth to specification. Reinstall the O-ring and bleed screw.
35. Pour out any remaining shock oil in the reservoir.
36. Install a new O-ring onto the reservoir cap. Install the snap ring.



NOTE: The service port should be inspected and replaced if the rubber pellet ① is worn or the shock has been re-charged more than five times.



37. Charge the shock with nitrogen to the specified pressure. The shock rod should extend during charging.
38. Install the service port button screw and O-ring.

Walker Evans Remote Reservoir Shock – Disassembly

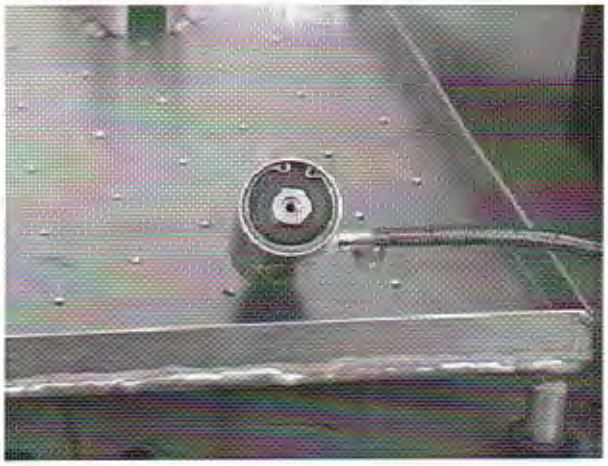
NOTE: Remote reservoir shock shown.

To prevent damage or marks to the shock, the use of soft jaws on a vise is recommended.

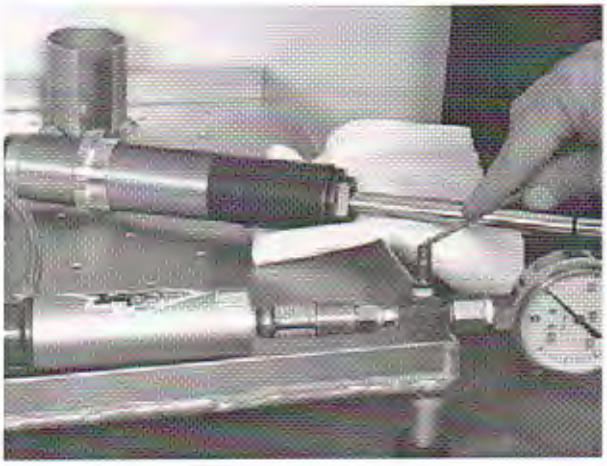
⚠ CAUTION

SHOCK CONTENTS UNDER HIGH PRESSURE. ALWAYS WEAR SAFETY GLASSES WHEN WORKING WITH SHOCKS.

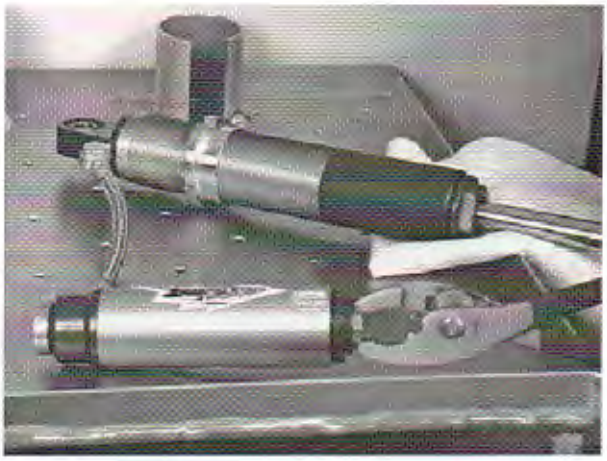
1. Clean and carefully remove shock from the suspension.
2. Remove button head screw from reservoir cap (if applicable).



3. Insert safety needle carefully and depressurize the shock.



4. Press the end cap into the reservoir to access the snap ring.
5. Remove the snap ring, then remove the cap from the body.



6. Place the shock lower eyelet in a vise.
7. Loosen and remove the bearing cap from the shock.
8. Remove the used oil from the shock body.

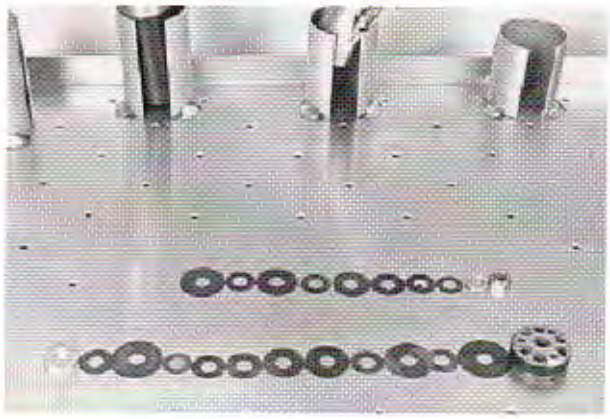
NOTE: Insert the IFP tool (PN PS-45908) and cycle the internal floating piston (IFP) a few times to purge the shock oil from the reservoir.

9. Remove the IFP from the reservoir with the IFP tool (PN PS-45908).
10. Clean and inspect ALL parts and replace worn out parts if needed.

NOTE: Seal kits are available and should be installed at this time if seals or o-rings are damaged or worn.

11. Place the shock rod in a vise so that the threaded part is facing upward.
12. Place the valve stack on a clean shop towel in order of removal.

NOTE: Place the valve stack on a clean shop towel in case you have to move them. This will also help when assembling them back onto the shock rod.

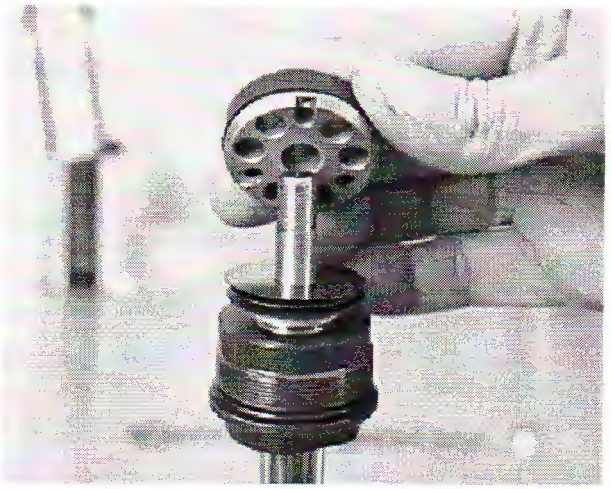


13. Inspect the valves for kinks, waves, pits or foreign material.
14. Inspect the piston wear band and replace if damaged or worn.

Walker Evans Remote Reservoir Shock – Assembly

⚠ CAUTION
SHOCK CONTENTS UNDER HIGH PRESSURE. ALWAYS WEAR SAFETY GLASSES WHEN WORKING WITH SHOCKS.

1. Secure the shock rod in a vise with the threads of the rod facing up.
2. Place the compression valve stack on the rod in the reverse order of disassembly.
3. Place the valve piston on top of the compression stack.



4. Place a new lock nut onto the shock rod. Torque the new lock nut to specification.

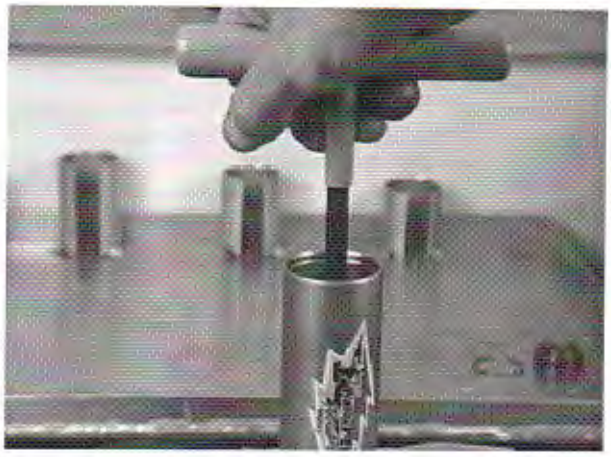
= T
Lock Nut Torque: 14 ft-lbs (19 Nm)

NOTE: Do not over torque or damage to the valve stack can occur.

5. Secure the shock body by its lower mount.
6. Set the compression damping adjustment selector to position "1".

7. Fill the shock body and remote reservoir 1/2 full of Walker Evans 5w shock oil (PN 2874522).
8. Apply a thin film of oil to the IFP o-ring and floating wear band located on the shock rod piston.
9. Compress the wear band and insert the IFP into the reservoir. Allow as much air as possible to escape as you install the piston.

10. Screw the IFP tool, PN PS-45908, into the IFP.
11. Hold or place the reservoir as low as possible on remote reservoir shocks so the air will travel upward as you slowly cycle the IFP up and down.
    - Be sure to bottom out the piston in the reservoir body.
    - Allow time for the bubbles to dissipate.
    - Repeat the process until all the air has been removed.
12. Set the IFP so it is approximately 1/8 from the bottom of the reservoir. Install the bleed screw.



13. With the cylinder head assembly pushed down against the valve piston, dip the piston assembly in shock oil.

14. Fill the shock body with oil to the bottom of the threads. Carefully insert the piston rod and valve assembly into the cylinder.
    - Slightly oscillate the piston rod to allow the piston to enter the shock body bore as it purges the air out
    - Slight up and down movement may be required to allow all the air to pass through the piston assembly.

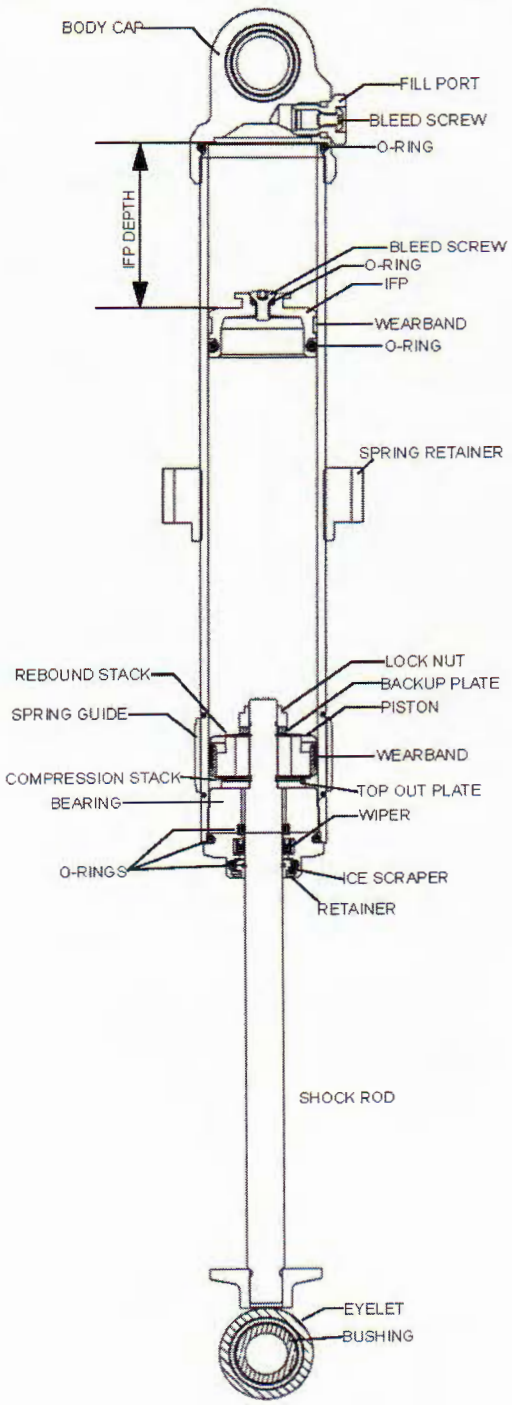
15. Slowly push the piston rod and assembly into the shock body until the threads can be engaged.

    NOTE: During installation, some shock oil will over flow. Wrap a shop cloth around the shock body to catch any oil overflow.
    Fast installation of the piston rod and assembly may displace the internal floating piston (IFP) from its original position. Performance issues will be a result if the IFP is not in its specified position.

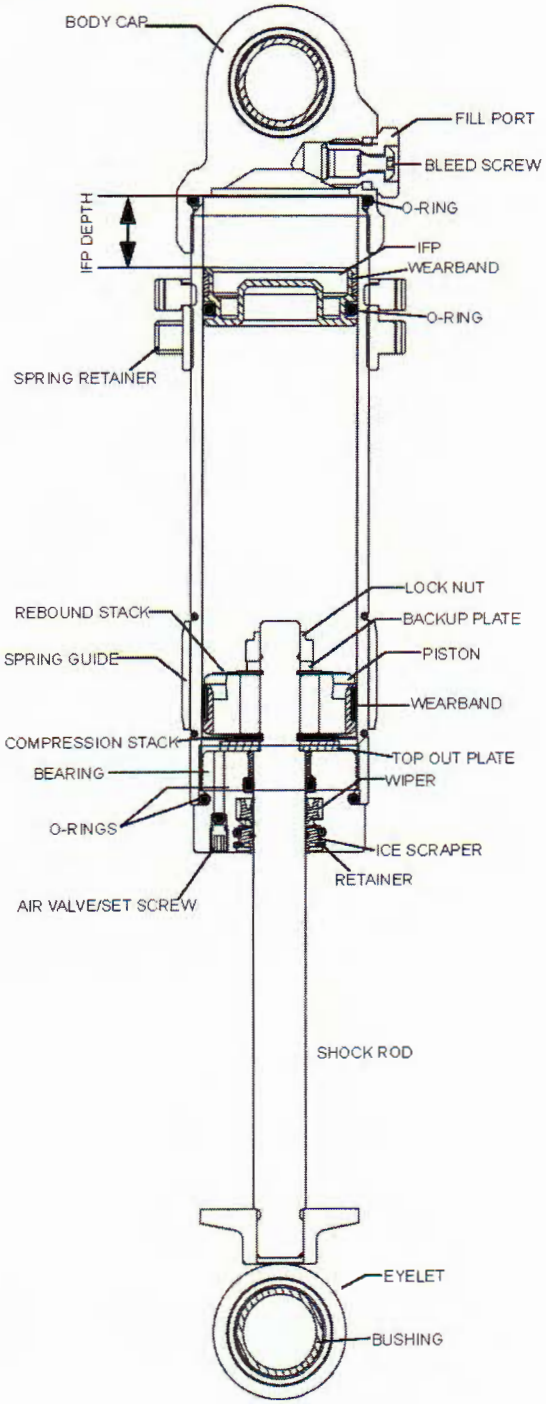
16. Tighten the cylinder head onto the shock body.
17. Verify the IFP is set at the specified depth. If not, verify there is oil on top of the IFP, then open the bleed screw.
18. Set the IFP to specification, then close the bleed screw.
19. Pour out any remaining shock oil from the reservoir.
20. Install the cap making sure the o-ring does not flip-over. Install the snap ring.
21. Charge the shock to the specified pressure.
22. Clean the shock of all oil reside and check for any leaks.
23. Install button screw onto the reservoir cap.

FOX™ IFP Monotube Shock Disassembly

Shock Components (IFP Air Bleed)



Shock Components (Bearing Air Bleed)



Shock Disassembly

⚠ CAUTION

SHOCK CONTENTS UNDER HIGH PRESSURE. ALWAYS WEAR SAFETY GLASSES WHEN WORKING WITH SHOCKS.

1. Remove the shock from the vehicle. Clean the shock assembly to remove all dirt and foreign material. Inspect the assembly for any noticeable signs of damage.
2. Clamp the body cap end of the shock in a soft-jawed bench vise.
3. Remove the bleed screw from the fill port. Insert the needle of the gas fill tool, PN PS-45259, into the fill port to depressurize the shock. Push the shock rod down to ensure all nitrogen is expelled. Remove the fill port from the body cap.
4. Remove the bearing assembly from the shock body. Remove the bearing assembly/shock rod from the shock body.
5. Release the bench vise and drain all of the oil out of the shock body into a suitable container. Discard the oil in accordance with local rules and regulations.
6. Position the bearing cap end of the shock over a clean shop towel on the bench. Use compressed air applied to the fill port bore to push the IFP out of the shock body.
7. Using the shock body holding tool, PN 2871071, clamp the shock body with the body cap pointed up in a bench vise. Remove the body cap from the tube.
8. Remove the lock nut from the shock rod. Remove the backup plate, rebound stack, piston, compression stack, and top-out plates as one assembly. Orientate these components on a clean shop towel as they are assembled on the shock rod.
9. Remove the shock rod from the bearing.
10. With the shock disassembled, inspect all o-rings, wiper, wearbands, and the ice scraper. It is recommended that all be replaced with new parts.
11. Inspect the shock rod and shock body tube for damage and/or pitting.
12. Inspect the rebound and compression stack valve shims. Shims that are damaged, bent, chipped, or wavy in appearance must be replaced.
13. Thoroughly clean all parts and dry with compressed air.

FOX™ IFP Monotube Shock Assembly

Shock Assembly - IFP Air Bleed Shocks

⚠ CAUTION

SHOCK CONTENTS UNDER HIGH PRESSURE. ALWAYS WEAR SAFETY GLASSES WHEN WORKING WITH SHOCKS.

1. Place the shock rod eyelet in the bench vise. Apply a liberal amount of shock oil to the surface of the shock rod and internal bore of the bearing.

   NOTE: Install jounce bumper if equipped.

2. Place the seal protector, PN 2201639, over the threaded end of the shock rod. Carefully install the bearing onto the shock rod.
3. Install the topout plate, and compression valve stack. Use a Vernier Caliper and reference the valve stack specifications in this chapter if unsure of the shim order of assembly.
4. Install a new wearband on the piston valve. Lubricate the piston with shock oil. Install the piston with the greater number of relief ports facing up away from the compression stack.
5. Install the rebound valve stack. Again, if unsure of order of shims, use a Vernier Caliper and reference the valve stack specifications for the shock in this chapter.
6. Install the backup plate. Remove the seal protector and install a new lock nut. Torque lock nut to 15-20 ft-lbs (20-27 Nm).
7. Remove the shock rod from the bench vise. Secure the shock body with shock body holding tool in the vise.
8. Install the bearing/shock rod assembly into the body tube. Tighten securely. Remove shock body from vise. Secure shock rod eyelet in bench vise.
9. With the shock rod eyelet mounted in the vise, and the body cap end of the shock pointed up, slowly fill 3/4 of the body tube with new shock oil.

FOX™ 5W Shock Oil 2870995(Quart)

10. Allow the oil to sit for several minutes to allow air bubbles to escape. Gently tap on the shock body to assist in removing any trapped air.
11. After a few minutes, slowly and carefully pump the shock body up and down to force the oil through the valves stacks and piston orifices. Continue until air bubbles no longer rise to the surface of the oil.
12. After removing all of the air from the shock oil, collapse the shock rod into the shock body.
13. Remove the bleed screw from the IFP. Install a new o-ring and wearband onto the IFP. Lubricate the assembly with shock oil.
14. Set the depth of the IFP locator tool, PN 2871351, with a Vernier Caliper. The IFP depth specifications are noted for all rebuildable shocks in this chapter.
15. Slowly push the IFP down into the shock body until the IFP locator tool bottoms-out on the tube. Tap on the shock body to remove any air trapped under the IFP.

    NOTE: The IFP must be completely submerged in shock oil to ensure air does not become trapped under the IFP.

16. With the IFP correctly set inside the tube, install the IFP bleed screw. Make sure not to move the shock rod after installing the screw as doing so will move the IFP.
17. Remove the shock from the bench vise and pour out the remaining shock oil into a suitable container.
18. Install the body cap onto the shock body. Tighten securely.
19. Reinstall the fill port. Charge the shock with nitrogen to the specified pressure using the gas fill tool, PN PS-45259. The shock rod should be pushed outwards as the IFP compresses the shock oil.
20. Remove the fill tool from the fill port and reinstall the bleed screw.
21. Test shock by pushing down on the shock rod. The rod should extend slowly after pushing it into the tube with no sound of trapped air inside the oil. If the sound of air is present or the rate of shock rod compression or extension dramatically changes, the shock should be disassembled and the oil replaced.

FOX™ IFP Monotube Shock Assembly

Shock Assembly - Bearing Air Bleed Shocks

⚠ CAUTION

SHOCK CONTENTS UNDER HIGH PRESSURE. ALWAYS WEAR SAFETY GLASSES WHEN WORKING WITH SHOCKS.

1. Place the shock rod eyelet in the bench vise. Apply a liberal amount of shock oil to the surface of the shock rod and internal bore of the bearing.

   NOTE: Install jounce bumper if equipped.

2. Place the seal protector, PN 2201639, over the threaded end of the shock rod. Carefully install the bearing onto the shock rod.

3. Install the topout plate, and compression valve stack. Use a Vernier Caliper and reference the valve stack specifications in this chapter if unsure of the shim order of assembly.
4. Install a new wearband on the piston valve. Lubricate the piston with shock oil. Install the piston with the greater number of relief ports facing up away from the compression stack.
5. Install the rebound valve stack. Again, if unsure of order of shims, use a Vernier Caliper and reference the valve stack specifications for the shock in this chapter.
6. Install the backup plate. Remove the seal protector and install a new lock nut. Torque lock nut to 15-20 ft-lbs (20-27 Nm).
7. Remove the shock rod from the bench vise. Secure the shock body with shock body holding tool in the vise.
8. With the body cap removed from the shock body, the IFP must be installed as shown in the illustration. Install a new o-ring and wearband onto the IFP. Lubricate the assembly with shock oil.
9. Set the depth of the IFP locator tool, PN 2871351, with a Vernier Caliper. The IFP depth specifications are noted for all rebuildable shocks in this chapter.
10. Slowly push the IFP down into the shock body until the IFP locator tool bottoms-out on the tube.
11. Install the gas fill port bleed screw into the body cap. Install a new body cap o-ring, and then reinstall the body cap. Tighten securely.

    NOTE: The IFP should now be set in the correct position inside the shock body.

12. Mount the body cap end of the shock in bench vise. Slowly fill 3/4 of the body tube with new shock oil.

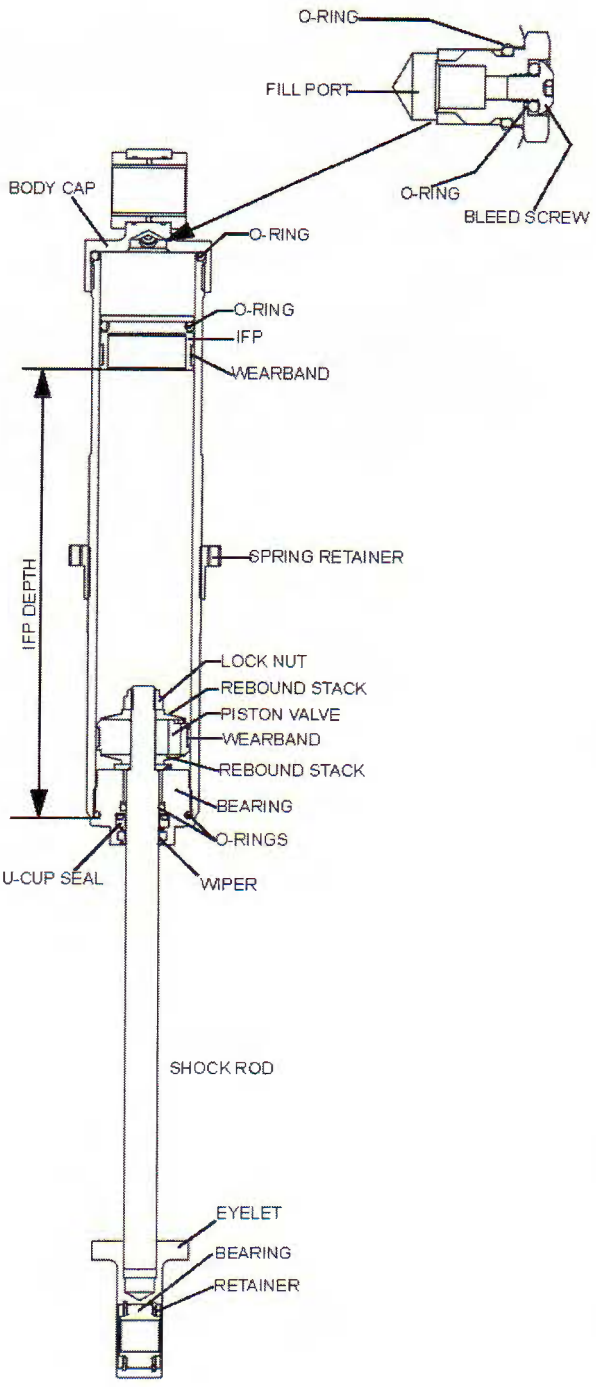
FOX™ 5W Shock Oil 2870995(Quart)

13. Allow the oil to sit for several minutes to allow air bubbles to escape. Gently tap on the shock body to assist in removing any trapped air.
14. Install the shock rod/bearing cap assembly into the shock body. Submerge the piston assembly in the shock oil.
15. Slowly and carefully pump the piston up and down to force the oil through the valves stacks and piston orifices. Gently tap on the shock body to dislodge trapped air. Continue until air bubbles no longer rise to the surface of the oil.

    NOTE: Pump the valve assembly slowly. Harsh and abrupt movements may move the IFP.

16. After removing all of the air from the shock oil, fill the shock body with oil. Again, remove any air bubbles that may have formed.
17. Wrap a clean shop towel around the shock body to catch oil that overflows. Carefully install the bearing cap. Tighten the cap securely.
18. Charge the shock with nitrogen to the specified pressure using the gas fill tool, PN PS-45259. The shock rod should be pushed outwards as the IFP compresses the shock oil.
19. Remove the fill tool from the fill port and reinstall the bleed screw.
20. Test shock by pushing down on the shock rod. The rod should extend slowly after pushing it into the tube with no sound of trapped air inside the oil. If the sound of air is present or the rate of shock rod compression or extension dramatically changes, the shock should be disassembled and the oil replaced.

Walker Evans IFP Monotube Shock



Shock Disassembly

⚠ CAUTION

SHOCK CONTENTS UNDER HIGH PRESSURE. ALWAYS WEAR SAFETY GLASSES WHEN WORKING WITH SHOCKS.

1. Remove the shock from the vehicle. Clean the shock assembly to remove all dirt and foreign material. Inspect the assembly for any noticeable signs of damage.
2. Clamp the body cap end of the shock in a soft-jawed bench vise.
3. Remove the bleed screw from the fill port. Insert the needle of the gas fill tool, PN PS-45259, into the fill port to depressurize the shock. Push the shock rod down to ensure all nitrogen is expelled. Remove the fill port from the body cap.
4. Remove the bearing assembly from the shock body. Remove the bearing assembly/shock rod from the shock body.
5. Release the bench vise and drain all of the oil out of the shock body into a suitable container. Discard the oil in accordance with local rules and regulations.
6. Position the bearing cap end of the shock over a clean shop towel on the bench. Use compressed air applied to the fill port bore to push the IFP out of the shock body.

   NOTE: Body cap removal is only required if the sealing o-ring is believed to be damaged. Final assembly IFP depth is measured from the bearing end of shock.

7. Remove the lock nut from the shock rod. Remove the backup plate, rebound stack, piston, compression stack, and top-out plates as one assembly. Orientate these components on a clean shop towel as they are assembled on the shock rod.
8. Remove the shock rod from the bearing.
9. With the shock disassembled, inspect all o-rings, the U-cup seal, wearbands, and the wiper seal. It is recommended that all be replaced with new parts.
10. Inspect the shock rod and shock body tube for damage and/or pitting.
11. Inspect the rebound and compression stack valve shims. Shims that are damaged, bent, chipped, or wavy in appearance must be replaced.
12. Thoroughly clean all parts and dry with compressed air.

Walker Evans IFP Monotube Shock Assembly

Shock Assembly

⚠ CAUTION

SHOCK CONTENTS UNDER HIGH PRESSURE. ALWAYS WEAR SAFETY GLASSES WHEN WORKING WITH SHOCKS.

1. Place the shock rod eyelet in the bench vise. Apply a liberal amount of shock oil to the surface of the shock rod and internal bore of the bearing.
2. Place the seal protector, PN 2201639, over the threaded end of the shock rod. Carefully install the bearing onto the shock rod.
3. Install the topout plate, and compression valve stack. Use a Vernier Caliper and reference the valve stack specifications in this chapter if unsure of the shim order of assembly.
4. Install a new wearband on the piston valve. Lubricate the piston with shock oil. Install the piston with the greater number of relief ports facing away from the compression stack.
5. Install the rebound valve stack. Again, if unsure of order of shims, use a Vernier Caliper and reference the valve stack specifications for the shock in this chapter.
6. Install the backup plate. Remove the seal protector and install a new lock nut. Torque lock nut to 15-20 ft-lbs (20-27 Nm).
7. Remove the shock rod from the bench vise. Secure the body cap with the open end of the tube facing up into the bench vise.
8. Install a new o-ring and wearband onto the IFP. Lubricate the assembly with new shock oil.
9. Install the IFP into the shock with the flat side facing the body cap.
10. Set the depth of the IFP using a Vernier Caliper. Reference the IFP depth specification for the shock in this chapter.
11. With the IFP set, verify the fill port bleed screw is installed. Doing so will prevent the IFP from moving when stroking the shock rod in later steps.
12. Slowly fill 3/4 of the shock body with new shock oil.

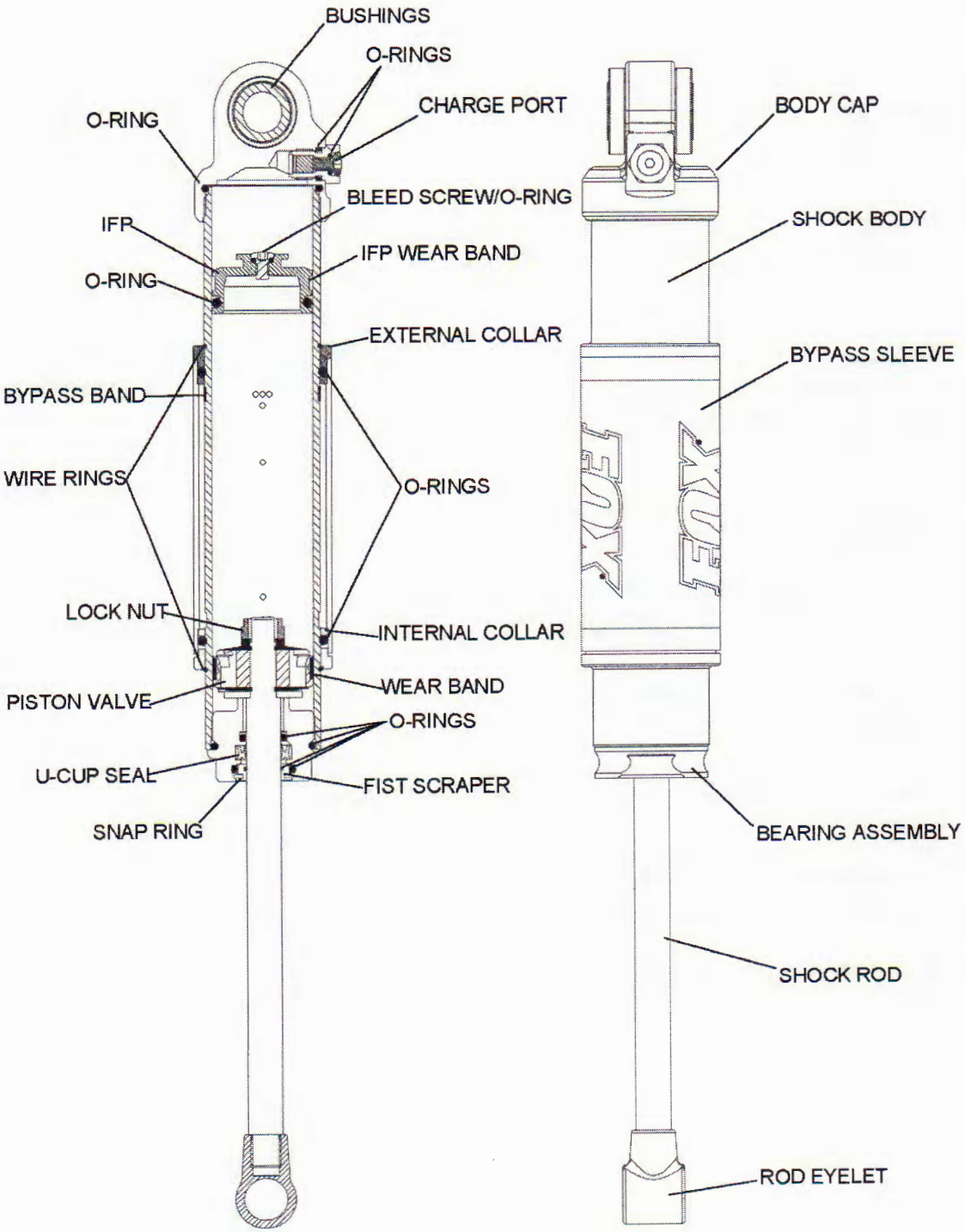
Walker Evans 5W Shock Oil 2874522(Quart)

13. Allow the oil to sit for several minutes to allow air bubbles to escape. Gently tap on the shock body to assist with removing any trapped air.
14. Carefully install the shock rod piston/bearing into the shock body as an assembly. Have a clean shop towel in hand to wipe up any oil that spills out of the shock. Submerge the piston valve assembly in the shock oil.

    NOTE: From this point on, do not remove the piston valve assembly from the shock oil.

15. Slowly and carefully stroke the shock rod up and down to force the oil through the valve stacks and piston orifices. Continue until air bubbles no longer rise to the surface of the oil. Tap on the shock body/rod to assist with the removal of any trapped air.
16. Completely fill the shock body with shock oil. Wrap the bearing and open end of shock with a clean shop towel.
17. Slide the bearing down the rod shaft. Install the bearing into the shock body and securely tighten. Oil must spill out during installation to ensure air does not remain in the oil.
18. Remove the fill port bleed screw. Charge the shock with nitrogen to 200 PSI using the gas fill tool, PN PS-45259. The shock rod should be pushed outwards as the IFP is compresses the shock oil.
19. Remove the fill tool from the fill port and reinstall the bleed screw.
20. Test shock by pushing down on the shock rod. The rod should extend slowly after pushing it into the tube with no sound of trapped air inside the oil. If the sound of air is present or the rate of shock rod compression or extension dramatically changes, the shock should be disassembled and the oil replaced.

FOX™ PS-5 Assembly View



FOX™ PS-5 DISASSEMBLY

⚠ WARNING

Shocks contain high pressure nitrogen gas. Extreme caution must be used while handling and working with shocks and related high pressure service equipment. The pressure must be released from the shock before disassembly. It is strongly recommended you wear safety glasses and ear protection during these procedures.

TIP: Extreme cleanliness is very important during all disassembly and reassembly operations. This prevents dirt or foreign particles from entering the shock, which causes premature failure.

1. Remove the shock from the vehicle. Clean the shock assembly thoroughly with warm, soapy water.
2. Remove eyelet bushings and sleeves from body cap and shock rod eyelet.
3. Remove the button head screw from the charge port.

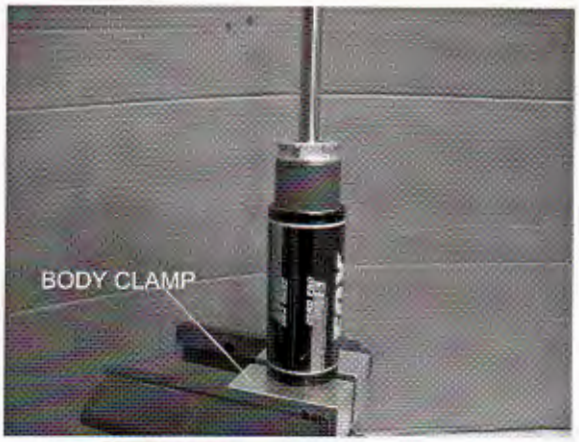
4. Secure the shock body cap in bench vise with the charge port accessible.

⚠ CAUTION

Point air valve away from face and body when charging or discharging any shock.

5. Insert the needle of the gas fill tool into the charge port. Depress the fill tool and discharge the nitrogen gas. Push the shock rod down to expel all of the gas.
6. When the shock is completely discharged, remove the gas fill tool needle in a straight, smooth motion.
7. Using the 1 3/8" wrench, loosen and unscrew the bearing assembly from the shock body. If the body cap unscrews instead of the bearing, that is OK. You will need to remove both for this rebuild procedure.

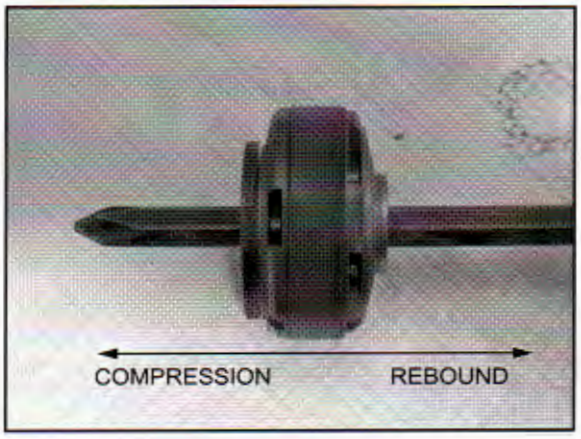
8. Clamp the shock in the vice using the body clamp blocks (2871071). If the bearing is still in the body, use wrench to remove the bearing. If the body cap is what needs removal, use a large crescent wrench to loosen and un-thread the body cap.



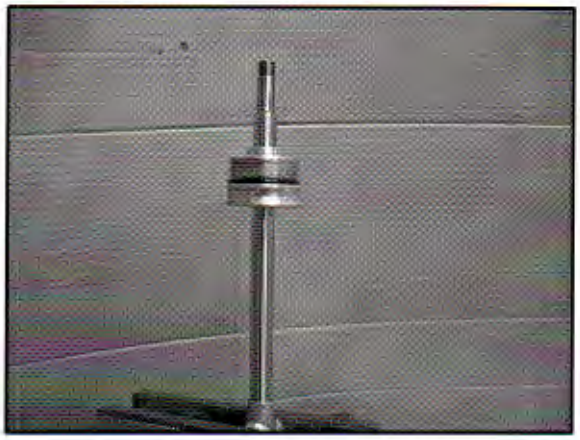
OR

9. Remove the shaft assembly from the body tube, and place on a clean, lint free paper towel. Remove the shock from the vice and pour shock oil into a proper disposal container. Do not re-use old shock oil.
10. Using the handle of the mallet, push the IFP out of the shock body on to a folded shop towel.
11. Clean the IFP with solvent. Dry with compressed air in a well-ventilated area. If compressed air is not available, dry parts using clean, lint free paper towels and let sit in a well-ventilated area to allow the solvents to evaporate.
12. Set body assembly aside on a clean, lint free towel.
13. Clamp the shaft eyelet securely in vice with the piston end up.

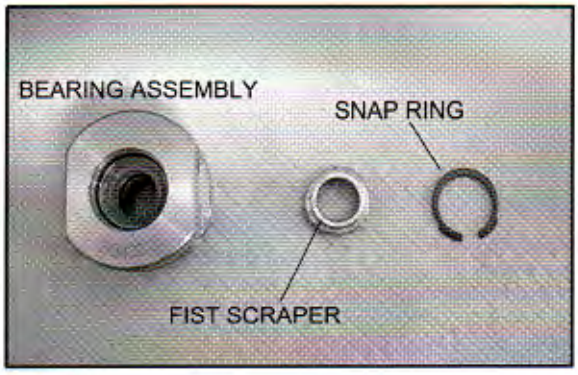
14. Using a 9/16" wrench, remove the piston lock nut from the end of the shaft.
15. Hold the tip of a screwdriver against the end of shaft. Hold the piston assembly under the top-out plate and lift upwards. Slide the piston assembly onto the shaft of the screwdriver. Pull the Screwdriver away from shock shaft while supporting the piston assembly. Set this on a clean, lint free towel. There are many pieces to the piston assembly, and the assembly order of these pieces is critical to the proper performance of your shock. This step ensures that the proper order is kept.



16. Slide bearing assembly off of shaft. Use extreme caution not to scratch inside of the bearing assembly when passing it over the threads at end of shaft and set it on a clean, lint free towel.



17. Remove the FIST scraper from the bearing assembly by removing the snap ring. The FIST scraper will fall out of the bearing.



18. Inspect the bearing assembly for damage. At minimum, the u-cup seal, FIST scraper and all of the o-rings must be replaced.

    NOTE: The bearing assembly DU bushing is not serviceable.

19. Use a scribe or a dental pick to remove the o-ring from the inside of the FIST scraper by "spearing" the seal with the point of the scribe and pulling it out. Use extreme caution when using a scribe to remove seals. Always spear the seal with the point of the scribe. Do not wedge the point of the scribe in behind the seal. This can scratch the surface of the seal groove which will compromise the performance and reliability of the shock absorber.

20. Use the scribe to remove the u-cup seal and o-rings from the bearing housing. Note the orientation of the u-cup seal. Be careful not to scratch the seal grooves or the DU bushing that is pressed into the bearing.

21. To service the o-rings and bypass wear band inside of the bypass sleeve, position the shock body with the external threaded end down. Push the bypass sleeve down to expose the wire ring. Use a pick to remove the wire ring.

22. Once the wire ring is removed, flip the shock body around and push the bypass sleeve off of the shock body.

23. Shown below are the collars, o-rings, and the bypass wear band located underneath the bypass sleeve. Replace the o-rings and bypass wear band. Inspect the collars for wear and replace as required.

NOTE: Note the orientation of the external/ internal collars and o-rings.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

24. With the shock completely disassembled, inspect all parts for damage, pitting, and corrosion. Replace piston valve washers that are wavy or pitted.
25. When inspecting piston valve, keep the valve washers in the orientation they are installed in on the shock shaft.

    NOTE: The piston face with the greater number of relief ports is the rebound side and faces the lock nut.

26. Clean all parts with solvent and dry with compressed air.

FOX™ PS-5 ASSEMBLY

1. Thoroughly clean all of the components with solvent and allow to air dry. Discard all used wear bands and o-rings.

   NOTE: The PS-5 rebuild kit (PN: 1500611) will supply all of the required o-rings, wear bands and a u-cup seal.

   Lubricate all components with new shock oil prior to assembly.

2. Thoroughly clean the FIST scraper, bearing assembly, and piston assembly with solvent. Dry with compressed air. If compressed air is not available, dry parts using clean, lint free paper towels and let sit in a well-ventilated area, to allow the remaining solvent to evaporate.
3. Install the new, well lubricated, o-ring into the FIST scraper. Check to make sure the seal is properly seated, and is not twisted. If a tool is required to aid in proper seating of o-ring, use the non-writing end of a pen, or a similar soft, blunt object, to push it in.
4. Install new, well lubricated, o-rings into the bearing housing. Correct placement of the shaft seal o-ring is in the groove next to the DU bushing. Check to make sure the seals are properly seated, and are not twisted. If a tool is required to aid in proper seating of o-ring, use the non-writing end of a pen, or a similar soft, blunt object, to push it in.
5. Install the new u-cup seal into bearing. The u-cup seal should be installed so the cupped end is facing the DU bushing inside of bearing. Check to make sure seal is properly seated. If a tool is required to aid in proper seating of U-cup seal, use the non-writing end of a pen, or a similar soft, blunt object, to push it in.
6. Install FIST scraper into housing. The stepped side of the FIST scraper should be visible.
7. Using a small pair of snap-ring pliers, install the snap-ring into the bearing housing. Check for proper orientation of the snap ring. The flat side of the snap-ring should be visible. Check to make sure the snap-ring is properly seated.
8. Place the shock rod eyelet in a bench vise with the threaded end up.

   NOTE: If shock rod eyelet was serviced, install eyelet on shock rod and torque to specification. Use shock rod holding tool (2871352) to secure rod.

= T
Shock Body Eyelet 50 ft-lbs (68 Nm)

9. Install shock rod seal protector onto shock rod (2201639). Lubricate the shock rod with shock oil.
10. Install the bearing assembly onto the shock shaft.

11. Remove the shock rod seal protector. Install the piston valve assembly onto the shock rod.
12. Install washer and new lock nut. Torque lock nut to specification.

= T
Piston Valve Lock Nut **18 ft-lbs (24 Nm)**

13. Remove shock rod assembly from vise.

14. Assemble the bypass sleeve using a new bypass wear band and new o-rings. Install components as shown. Note that the bypass wear band covers the set of 3 bypass holes in the tube.

15. Clamp shock body in bench vise with internal threaded end up. Use shock body holding tool (2871071) to secure the shock.

16. Install shock rod assembly into shock body. Tighten bearing assembly to specification.

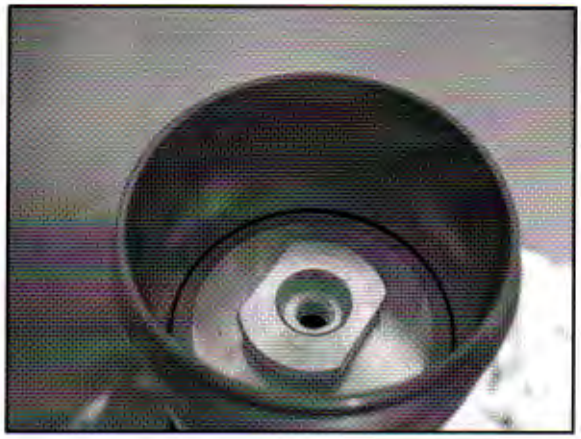
= T
PS-5 Bearing Assembly **35 ft-lbs (47 Nm)**

17. Remove shock and turn around so external threaded end is up. Clamp the eyelet in the vise.

18. Fill the shock body 3/4 full with new shock oil. Slowly stroke the shock rod/body up and down to force oil through the piston valve.
19. Pass a small flame quickly over the surface of the oil to disperse any air bubbles.
20. Continue stroking the shock until air bubbles are no longer present in the oil.

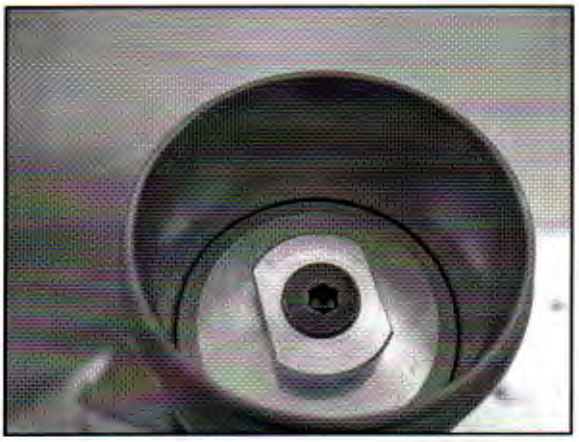
    NOTE: Do not allow the piston valve to break the surface of the oil.

21. Fully compress the shock rod into the shock body.
22. Install the new, well lubricated o-ring and wear band onto the IFP.
23. Install the IFP without the bleed screw into the shock body. Set the IFP depth to the specifications noted at beginning of this chapter.



NOTE: Keep enough shock oil on top of the IFP to prevent air from getting in under the IFP.

24. Stroke the shock rod several times as before to purge any trapped air under the IFP.
25. After all of the air has been removed and the IFP location is verified, push the shock rod back into the shock, and install the bleed screw and o-ring.



26. Pour out any residual shock oil above the IFP into a suitable container, but note the tube doesn't need to be completely cleaned of shock oil.
27. Install a new o-ring into the body cap.

28. Apply Red thread lock to the first two threads of the body cap. Do not allow thread lock to come into contact with the o-ring. Install the body cap onto the shock body and torque to specification.

= T
PS-5 Body Cap **75 ft-lbs (101 Nm)**

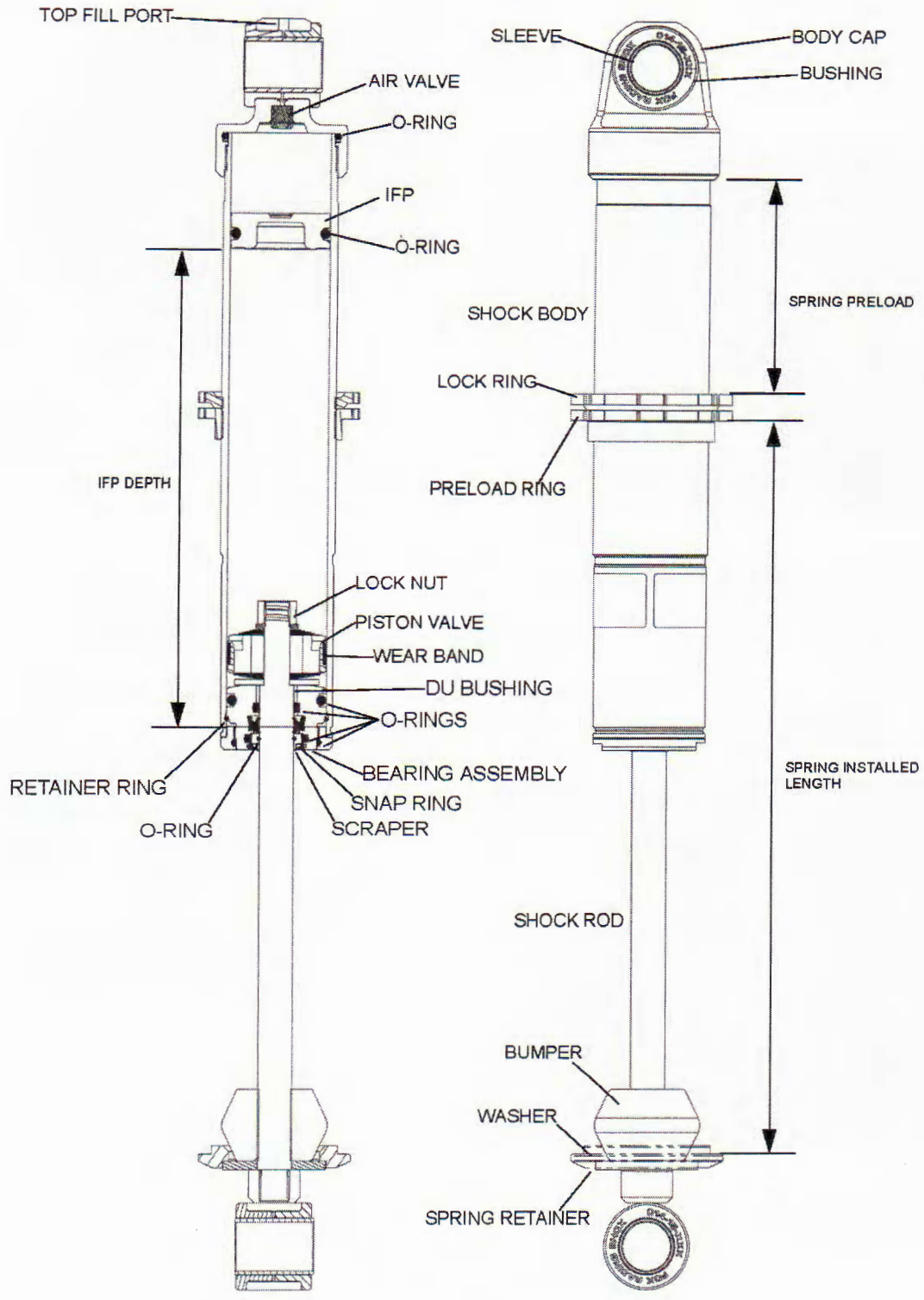
29. Set the nitrogen pressure on the fill tank valves to specification.

Nitrogen Pressure **200 psi (1379 kPa)**

30. Install the gas fill tool into the charge port and insert the fill needle. Charge the shock. Hold the fill tool in place for at least 30 seconds.
31. During this time, the shock rod must fully extend.
32. After charging the shock, inspect the body to verify there are no leaks. Compress the shock rod several times to verify function and that air is not present in the shock oil.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

FOX™ Zero PRO Assembly View



FOX™ Zero PRO Shock Disassembly

NOTE: Read through all of these instructions first to familiarize yourself with the rebuild procedure. Make sure you have a clean work area, and all of the necessary tools are available. Always use proper safety equipment when working on shock absorbers.

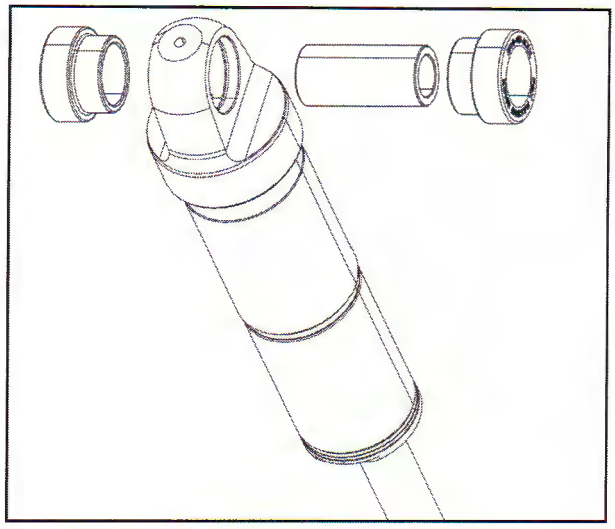
⚠ WARNING

Shocks contain high pressure nitrogen gas. Extreme caution must be used while handling and working with shocks and related high pressure service equipment. The pressure must be released from the shock before disassembly. It is strongly recommended you wear safety glasses and ear protection during these procedures.

TIP: Extreme cleanliness is very important during all disassembly and reassembly operations. This prevents dirt or foreign particles from entering the shock, which causes premature failure.

FOX™ Zero Pro Top Fill Special Tools:
The following list of tools is required in addition to the standard shop tool list:
1. Low Temperature Grease
2. Loctite™ Primer N
3. Loctite™ 638 Green
4. Shock Body Holding Tool - SPX: 2871071
5. Shock Seal Protector Sleeve - SPX: 2201639
6. Top Fill Shock Fill Tool - SPX: PU-51039
7. Shock Shaft Holding Tool - SPX: 2871352

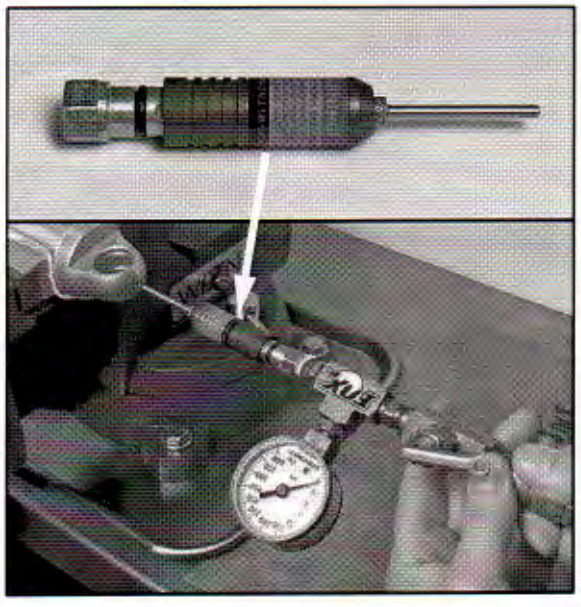
1. Remove the shock from the vehicle. Clean the shock assembly thoroughly with warm, soapy water.
2. Remove eyelet bushings and sleeves from body cap and shock rod eyelet.



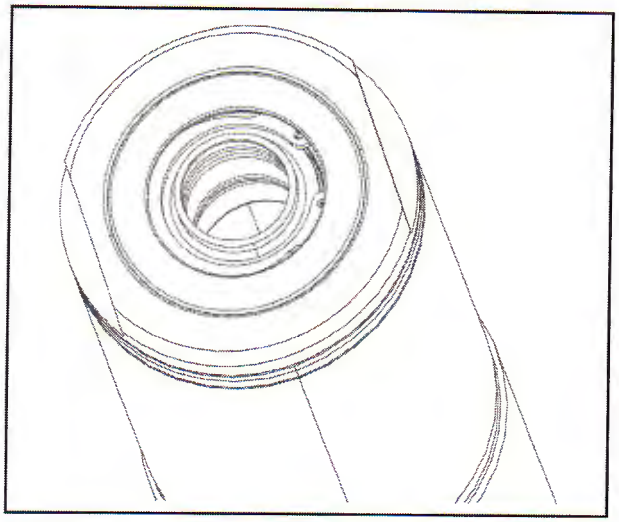
3. Secure shock in a bench vise as shown below. Insert the Top Fill Shock Fill Tool (PU-51039) into the hole in the body. Depress the needle into the body cap to release the nitrogen gas pressure.

⚠ CAUTION

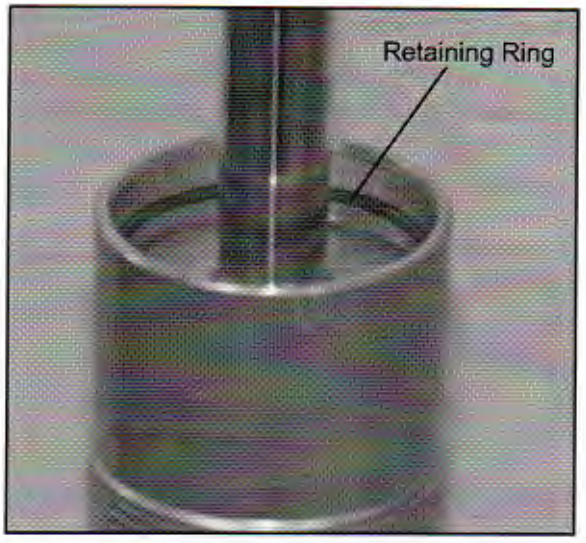
Point air valve away from face and body when charging or discharging any shock.



4. With shock discharged, mount the shock in the vise with the shock rod up. Use a wrench to unscrew the bearing assembly cap.

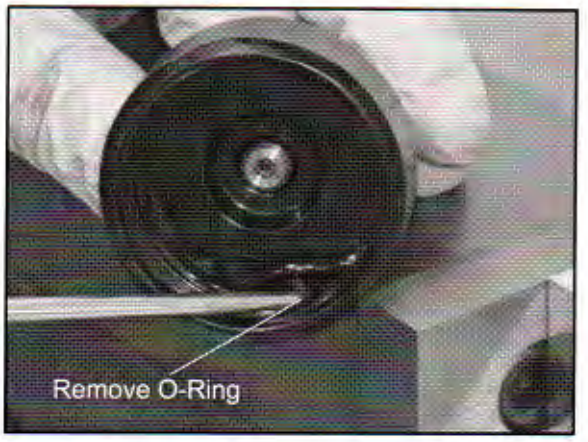


5. Depress the bearing assembly into the shock to expose the retaining ring.



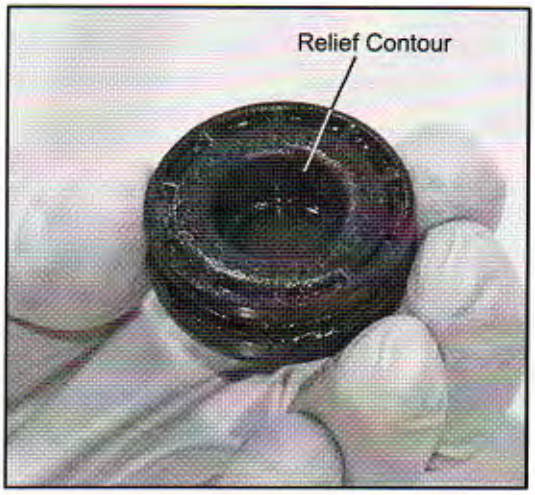
6. Use a small pick to remove the retaining ring. Carefully and slowly pull the shock rod shaft assembly out of the shock body.
7. With the shock removed from the body, pour the shock oil into a suitable container.
8. Mount the shock body in the vise with the body cap up.
9. Using a propane torch, carefully heat the body cap to soften the thread lock. Use a box wrench to remove the body cap from the shock body.

10. Remove residual thread lock from the threads with a wire brush and small pick.
11. Remove and discard the o-ring from the bearing cap.



NOTE: If the shock has been rebuilt several times, body cap assembly replacement is recommended as the air valve assembly is not serviceable.

12. Use a needle nose pliers to remove the IFP from the shock body. Note the orientation of the IFP as the relief contour must face the shock shaft assembly during installation.



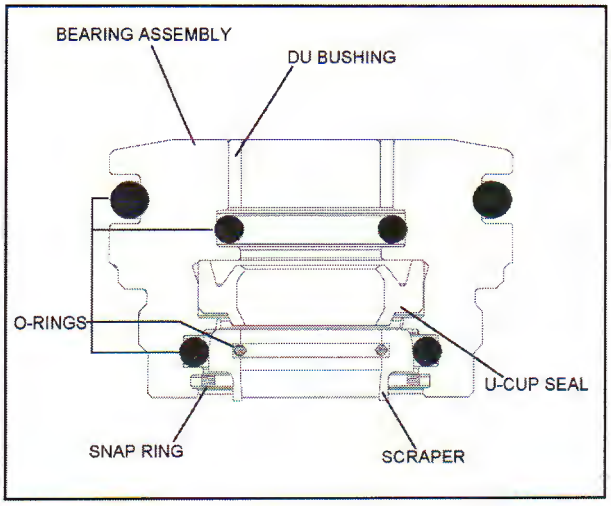
13. With the IFP removed from the shock, use a lint free towel to clean the shock body tube.

14. Mount the shock rod assembly eyelet in a bench vise. Remove the piston valve lock nut. Remove the piston valve, rebound, and compression shims as an assembly.

15. Remove the piston/wear band (if still attached). Discard wear band. Note the orientation of the rebound and compression sides of the piston.

16. Remove the bearing assembly from the shock rod.

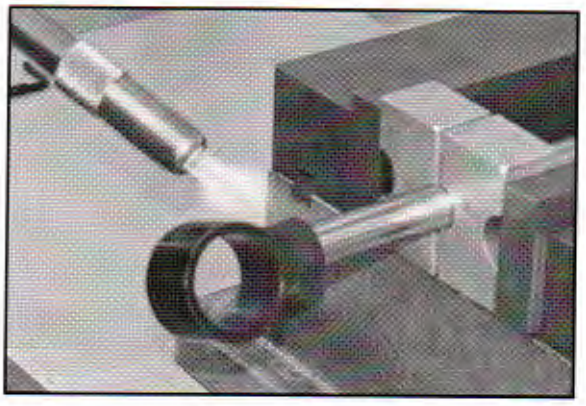
17. Use a snap ring pliers to remove the snap ring. Remove the scraper and discard. Using a pick or scribe, pierce and remove the o-rings inside the bearing assembly. Remove the u-cup seal. Inspect the DU bushing. If it requires service, replace the bearing assembly.



NOTE: If the bearing assembly inner DU bushing requires service, replace the bearing assembly.

18. If shock shaft eyelet service is required, mount the shock shaft in a bench vise using the shaft blocks.

19. Using a propane torch, heat the eyelet to soften the thread lock. Remove the eyelet from the shaft. Remove residual thread lock using a wire brush and small pick.



20. Inspect the piston valve and compression/rebound valve shims. Remember to keep the valve shims in their specified order. Replace the piston valve and/or valve shims if required.
21. Clean all parts with solvent and use compress air to dry. Place clean parts on a lint-free towel/shop rag.

FOX™ Zero Pro Shock Assembly

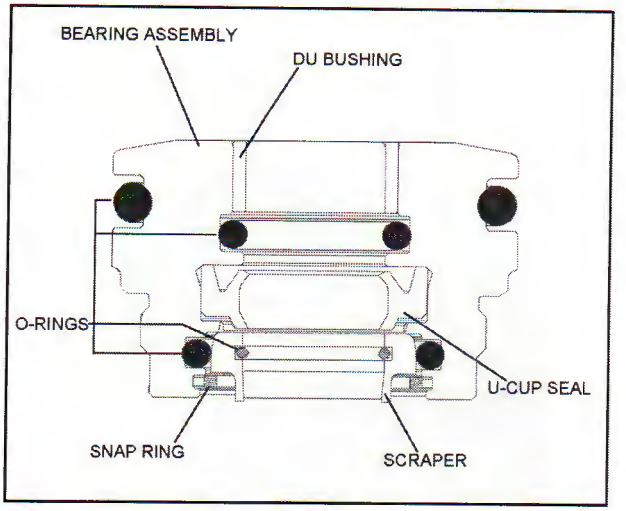
NOTE: The rebuild kit (PN: 1500710) will supply all of the required o-rings, wear bands and a u-cup seal.

Lubricate all components with new shock oil prior to assembly.

1. If the shock shaft eyelet was removed for service, clamp the shock shaft using the shaft blocks in a bench vise.
2. Apply Loctite™ Primer N to the shaft threads. Allow for proper curing time before apply Loctite™ Green 638 to threads.
3. Install the eyelet and torque to specification.

= T
Shock Shaft Eyelet: **50 ft-lbs (68 Nm)**

4. Mount the shock shaft eyelet in a bench vise with the threaded end upwards.
5. Assemble the bearing assembly using new o-rings, u-cup seal, and scraper.



6. Install the shock shaft seal protector tool onto the shock shaft. Install the body cap, and then the bearing assembly onto the shock shaft.

7. Install the piston valve and rebound/compression valve stacks as shown in the photo. Install the lock nut and torque to specification.

8. Replace the wear band on the piston valve and lubricate with shock oil.
9. Install new lock nut. Tighten lock nut to specification. Place shock rod assembly on a clean, lint free towel.

= T
Shock Shaft Lock Nut: **22 ft-lbs (30 Nm)**

10. Replace the IFP o-ring. Apply a thin layer of low temperature grease to the IFP.
11. Install the IFP into the shock body with the relief contour facing the shock shaft end of the shock.

12. Apply Loctite Primer N to the shock body cap threads.

13. While the primer is curing, set the IFP depth to the specification noted at the beginning of this chapter.

NOTE: The IFP will "shuttle" (move) to its specified location as the piston valve/shock rod is installed in later steps.

14. Handle the shock body with care after setting the IFP depth. Do not move the IFP after setting is established.
15. Replace the o-ring in the body cap. Apply Loctite 638 Green two threads wide for 360 degrees to the first two threads of the body cap. DO NOT ALLOW thread lock to come into contact with the o-ring.
16. Torque body cap to specification.

= T
Shock Body Cap: **50 ft-lbs (68 Nm)**

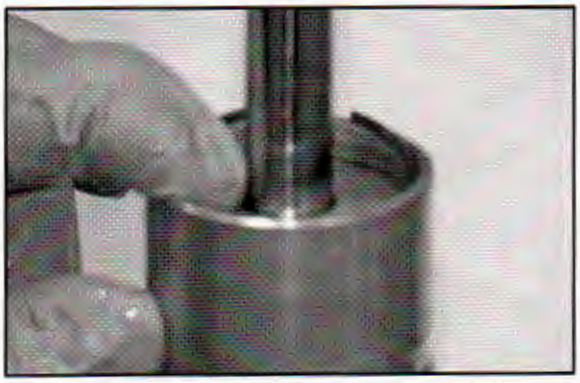
17. Place the body cap in a bench vise. Fill the shock body with shock oil. Fill until oil level is at or slightly above the retaining ring groove. Pass a propane torch quickly over the shock body to eliminate any air bubbles.

Polaris Gas Shock Oil - 5 wt.
PN 2870995 - qt.
PN 2872279 - 2.5 gal.

18. Slide the bearing assembly down the shock shaft.

19. Install the valve stack/piston and bearing as an assembly into the shock body slowly. Allow air bubbles to escape the valve stack/piston as the assembly is dropped into the oil.

20. With the shock rod fully extended, carefully and slowly push the bearing down just past the retainer groove in the shock body. Install the retainer ring into the shock body.



21. Once the retainer ring is installed, slowly push the shock shaft down into the shock body. DO NOT PULL THE SHAFT OUT. Do not move the shock shaft once the shaft bottoms out.

    NOTE: If the shock shaft rebounds upwards, it has come into contact with the IFP. If this occurs, the IFP position must be reset.

22. Secure the shock assembly in a bench vise.
23. Use the Top Fill Shock Fill Tool to charge the shock to specification. Charge the shock for approximately 10 seconds. During the charging process, the shock rod must extend outwards.

24. Inspect both ends of the shock assembly for leaks.
25. Slide the bearing assembly cap down the shock shaft. Use a wrench to tighten the bearing assembly cap.
26. Install the body cap and eyelet sleeves and bushings.

CHAPTER 8
STEERING/SUSPENSIONS

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

OVERVIEW / SPECIFICATIONS

Inspection

When inspecting steering and suspension components for wear or damage, always replace parts as necessary. Refer to the assembly exploded views in this chapter for identification of components and torque values of fasteners. Make notes of the direction a bolt goes through a part, what type of nut is used in an application, etc.

Always use genuine Polaris parts and hardware when replacing front end components. Review steering adjustment guidelines before making adjustments.

The following components must be inspected at this time.

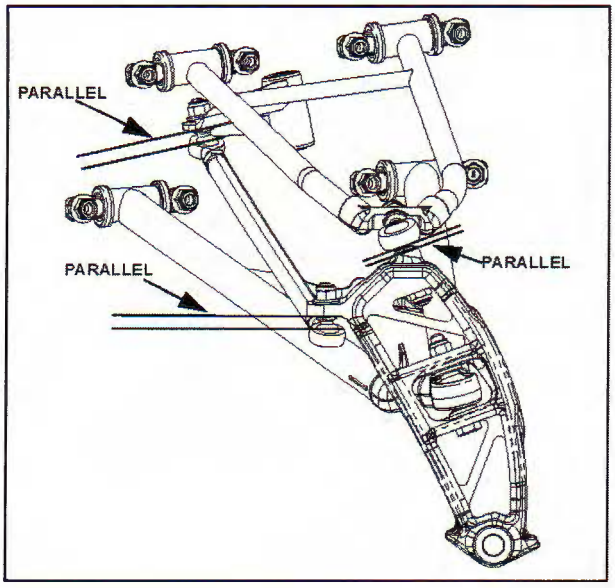
- Tie rods and tie rod ends
- Sway bar and bushings/linkage (where applicable)
- Handlebars and steering post assembly
- Spindles and bushings
- Skis and skags
- Pitman arms / Idler arms
- A-arms and bushings
- Shock absorbers, shock mounts, springs
- All related fasteners - check torque.
- Pivot shafts and bushings

Always follow rod end engagement guidelines. Maximum setup width must be checked whenever front suspension components are adjusted or replaced.

Rod End Installation

All rod ends in the front suspension and steering assemblies (including steering drag links) must be parallel with the corresponding mating surface after they are installed and torqued to specification.

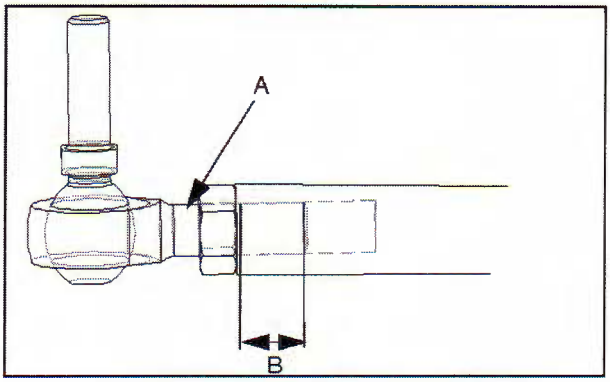
If the rod ends are not parallel, the rider may experience an increase in ski darting and/or bump steer.



Rod End Engagement

Rod ends must engage the rod a minimum of 2x the thread diameter when adjustment is complete.

Example: .4375" (11 mm) rod end (A) X 2 = minimum thread engagement (B) .875" (22 mm).



Front Suspension Type by Model

FRONT SUSPENSION	MODELS
Pro-Ride	2010-2011Rush/ Switchback Assault
Pro-Ride (Fixed Camber)	2012-Current Rush/Switchback/Switchback Assault INDY 121
Pro-Ride RMK Adjustable	RMK/Pro RMK INDY Voyager
Pro-Ride Wide Adjustable	RMK Assault

Rear Suspension Type by Model

REAR SUSPENSION	MODEL
Pro-Ride Progressive 120	2010 Rush
Pro-Ride Progressive 121	Rush
Pro-Ride Progressive 136	Switchback
INDY / RMK / Switchback 144	RMK Switchback Assault INDY Voyager
RMK Coil Over 155/ 163	RMK/Pro RMK/RMK Assault
INDY 121	INDY

Camber / Toe Specifications

Maximum width and camber measurements are achieved with the front end elevated and shocks at full extension.

Toe alignment is measured at ride height. This means that the machine is on the ground and resting at normal ride height, not full rebound. Measure at a point 10" (25.4cm) forward of the ski mount bolt and 10" (25.4 cm) behind the ski mount bolt, preferably on the center line of the carbide skags.

Maximum width is measured from the center of the spindles unless noted otherwise.

Camber measurement is taken from the top of the alignment bar to the top of the ski mount hole in the spindle with the bushing removed.

NOTE: Only models featuring upper control arms with rod ends allow camber adjustments.

CAMBER / TOE SPECIFICATIONS			
SUSPENSION	**MAXIMUM SET UP WIDTH IN/ CM (± .25IN / .6CM)**	**CAMBER IN / CM**	**TOE OUT (AT RIDE HEIGHT) IN / CM**
Pro-Ride	41.52/105	1.68 ± .31 (4.2 ± 0.8)	0 -.12 (0 -0.305)
Pro-Ride (Fixed Camber)		N/A	
Pro-Ride RMK Adjustable Welded Control Arms Bonded Control Arms **(Measured inside of spindles)**	36.26 / 92 36.85 / 93.6	1.95 ± 0.31 (4.3 ± 0.8)	
Pro-Ride Wide Adjustable **(Measured inside of spindles)**	38.58 / 98	2.25 ± 0.31 (5.7 ± 0.8)	

8

Suspension Mounting Fastener Torque

NOTE: Reference assembly illustrations for torque specifications not listed in table.

SUSPENSION MOUNTING FASTENER TORQUE	
Component	Torque Specification
Upper/Lower Control Arm Bulkhead Nuts	30 ft-lbs (41 Nm)
Upper/Lower Spindle-to-Control Arm Fasteners	40 ft-lbs (54 Nm)
Steering Rack Link Fastener Torque	37 ft-lbs (50 Nm)
Tie Rod-to-Spindle Fastener Torque	37 ft-lbs (50 Nm)
IFS Shock Upper/Lower Fastener Torque	37 ft-lbs (50 Nm)
Ski Fastener Torque	37 ft-lbs (50 Nm)
Sway Bar Linkage Fasteners	20 ft-lbs (27 Nm)
Sway Bar Bushing Block Fasteners	7 ft-lbs (10 Nm)
Lower Steering Shaft Bushing Block Fasteners 2010 2011-Current	14.7 ft-lbs (20 Nm) 22 ft-lbs (30 Nm)
Lower Steering Shaft-to-Bulkhead Fastener Nut	22 ft-lbs (30 Nm)
Drag Link Rod End Fasteners	37 ft-lbs (50 Nm)
Upper Steering Shaft Bushing Block Fasteners 2010 2011 - Current	15 ft-lbs (20 Nm) 20 ft-lbs (27 Nm)
Handlebar Riser/Clamp Fasteners	14.7 ft-lbs (20 Nm)
120/121/136 Front Torque Arm Tunnel Fasteners Apply Loctite® 262 to Threads	60 ft-lbs (80 Nm)
120/121/136 Rear Crank Tunnel Fasteners	60 ft-lbs (80 Nm)
120/121/136 Rear Track Shock Fasteners	33 ft-lbs (45 Nm)
120/121/136 Rear Track Shock Reservoir Clamp Fasteners	17 ft-lbs (23 Nm)
120/121/136 Rear Scissor-to-Rear Crank Fasteners	33 ft-lbs (45 Nm)
120/121/136 Rear Scissor-to-Rail Fasteners	60 ft-lbs (80 Nm)

SUSPENSION MOUNTING FASTENER TORQUE	
120/121/136 Upper Carrier Wheel Shaft Fasteners	33 ft-lbs (45 Nm)
120/121/136 Front Track Shock Fasteners	33 ft-lbs (45 Nm)
Rear Idler Wheel Shaft Fasteners	33 ft-lbs (45 Nm)
RMK/ Switchback 144 FTA-to-Tunnel Fasteners	45 ft-lbs (61 Nm)
RMK / Switchback 144 RTA-to-Tunnel Fasteners	45 ft-lbs (61 Nm)
RMK / Switchback 144 Limiter Strap Mount Fasteners	12 ft-lbs (16 Nm)
RMK / Switchback 144 Rear Idler Shaft Screws	35 ft-lbs (47.4 Nm)
RMK Coil-Over FTA-to-Tunnel Fasteners	46 ft-lbs (63 Nm)
RMK Coil-Over RTA-to-Tunnel Fasteners	46 ft-lbs (63 Nm)
RMK Coil-Over Rear Idler Screws Apply Loctite® 262™ to Threads	33 ft-lbs (44.7 Nm)
INDY 121 / 144 FTA-to-Tunnel Fasteners	60 ft-lbs (81 Nm)
INDY 121 / 144 RTA-to-Tunnel Fasteners	60 ft-lbs (81 Nm)
INDY 121 / 144 Rear Idler Fasteners	35 ft-lbs (47.4 Nm)
INDY 121 / 144 Limiter Strap Mount Fasteners	12 ft-lbs (16 Nm)

Special Tools

Bosch Automotive Service Solutions 1-800-345–2233 or https://polaris.service-solutions.com

Initial Shock Settings

Use the Initial Shock Settings Table below to set the vehicle suspension to the original factory configuration.

NOTE: A column for the RTS spring setting is not included as all vehicles require rider weight to set the spring length/SAG setting. This information is located within this chapter.

INITIAL SHOCK SETTINGS

MODEL	IFS SPRING PRELOAD (IN. / CM)	IFS SPRING INSTALLED LENGTH (IN. / CM)	IFS CLICKER SETTING (RE-BOUND)	FTS SPRING PRELOAD (IN. / CM)	FTS SPRING INSTALLED LENGTH (IN. / CM)	FTS CLICKER SETTING	RTS CLICKER SETTING
2010 Rush	3.75/9.5	N/A	6	.75/1.9	N/A	2	4
2011 Rush	4.5/11.4			1.0/2.54			
2011 800 SB Assault	N/A	10/25.4		N/A	7.25/18.4	8	8
2011 800 RMK		10.5/26.7	N/A		N/A	N/A	Screw
2011 800 RMK Assault		10.75/27.3	6		8.5/21.6		6
2011 800 PRO RMK		10.25/26	N/A				N/A
2012 Rush Base	3.75/9.5	N/A	N/A	2.0/5.08	N/A	N/A	N/A
2012 Rush PRO-R	2.875/7.3		6			2	4
2012 Rush PRO-R LE	3.75/9.5		6 (8)				
2012 SB Base	3.75/9.5		N/A	1.375/3.49		N/A	N/A
2012 SB ADV. 600 800	3.75/9.5 2.875/7.3		N/A 6			N/A 2	4 4
2012 SB PRO-R	2.875/7.3		6			2	4
2012 800 SB Assault	N/A	10/25.4	6	N/A	7.25/18.4	8	8
2012 600/800 RMK 144 155		10.5/26.7	N/A		N/A	N/A	Screw
2012 600/800 PRO RMK		10.25/26			8.5/21.6		N/A
2012 800 RMK Assault		10.75/27.3	6			6	6
2013 600 INDY		10.38/26.4	N/A	N/A	N/A	N/A	N/A
2013 600 INDY SP		10.75/27.3		.74/1.88			
2013 Rush Base	3.75/9.5	N/A	N/A	2.0/5.08	N/A	N/A	N/A
2013 Rush PRO-R	3.0/7.6		6			2	4
2013 Rush PRO-R LE			6 (8)				
2013 Switchback Fox	3.75/9.5		N/A	1.375/3.49		N/A	N/A
2013 Switchback	3.0/7.6		6			2	4

8

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

INITIAL SHOCK SETTINGS							
MODEL	IFS SPRING PRELOAD (IN. / CM)	IFS SPRING INSTALLED LENGTH (IN. / CM)	IFS CLICKER SETTING (RE-BOUND)	FTS SPRING PRELOAD (IN. / CM)	FTS SPRING INSTALLED LENGTH (IN. / CM)	FTS CLICKER SETTING	RTS CLICKER SETTING
Walker Evans							
2013 800 SB Assault	N/A	10/25.4	6	N/A	7.25/18.4	8	8
2013 600/800 RMK		10.5/26.7	N/A		N/A	N/A	Screw
2013 600/800 PRO RMK		10.25/26			8.5/21.6		N/A
2013 800 RMK Assault		10.75/27.3	6			6	6
2014–Current 600 INDY	N/A	10.38/26.4	N/A	N/A	N/A	N/A	N/A
2014–Current 600 INDY Voyager		10.5/26.7		N/A			
2014–Current 600 / 800 INDY SP		10.75/27.3		.74/1.88			
2014 Rush Base	3.75/9.5	N/A	N/A	2.0/5.08	N/A	N/A	N/A
2014 Rush PRO-R	3.0/7.6		6			2	4
2014 Rush PRO-R LE			6 (8)				
2014 Switchback Fox	3.75/9.5		N/A	1.375/3.49		N/A	N/A
2014 Switchback Walker Evans	3.0/7.6		6			2	4
2014–Current 600 / 800 SB Assault	N/A	10/25.4	6	N/A	7.25/18.4	8	8
2014–Current 600/800 RMK		10.5/26.7	N/A		N/A	N/A	Screw
2014–Current 600/800 PRO RMK Terrain Dominators		10.25/26			8.5/21.6		N/A
2014–Current 800 RMK Assault		10.75/27.3	6			6	6

Independent Front Suspension (IFS) Shock Settings

To change the IFS shock preload/installed spring height, raise the front of the snowmobile up and off the ground to remove the weight from the front suspension. Grasp the spring and rotate it. Increasing IFS shock spring preload too much may adversely affect the handling of the snowmobile and the performance of both the front and rear suspensions. Never exceed one inch (2.54 cm) of adjustment beyond the factory setting.

When decreasing IFS shock spring preload, make sure at least two turns of preload are holding the spring retainer against the spring. Failure to do so may cause the retainer to fall out when the shock is fully extended.


MEASURING INSTALLED LENGTH

⚠ CAUTION

Adjust shock spring settings with all weight removed from shock. Safely raise or tilt the snowmobile off the ground before making adjustments.
Verify at least two turns of preload are holding the spring retainer against the spring.

Adjusting the IFS shock spring preload raises or lowers the front vehicle ride height and either increases or decreases ski pressure when not accelerating. Increasing spring preload will also shift the vehicle balance towards the rear. Decreasing the spring preload will lower the front vehicle ride height and shift the vehicle balance towards the front.

The compression dampeners control ride comfort/quality. Turning the adjusters towards the SOFT setting (counter-clockwise) will make the ride quality less harsh, but may cause the shocks to bottom out. Turning the adjuster towards the STIFF setting (clockwise) will make the ride quality stiffer.

Make equal adjustments to both shocks and only one to two clicks at a time. Heavier riders may want to set the

compression clickers two to four clicks higher than lighter riders.

Rebound Adjustment

Rush 800 LE models feature IFS shocks with rebound adjusters.

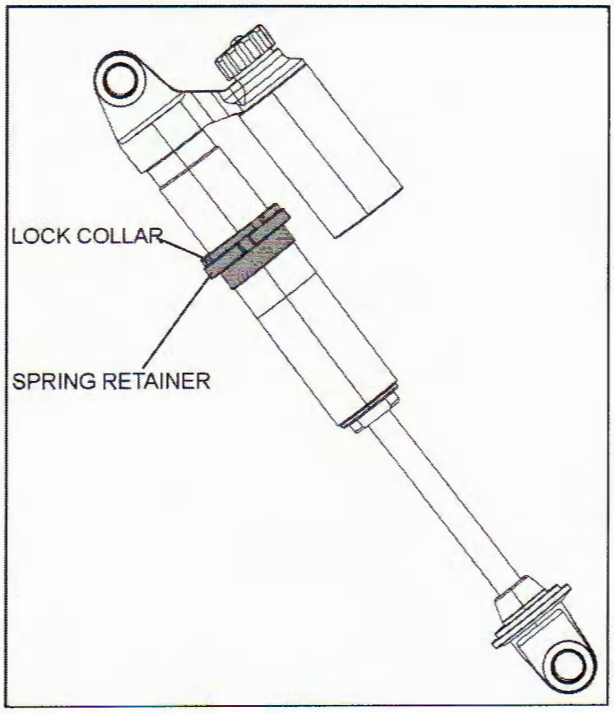
The rebound adjustment clicker is located at the bottom of the shock rod. There are 16 possible settings. The initial factory setting is 8 clicks.

Make equal adjustments to both shocks and only one to two clicks at a time.

- Turning the clicker clockwise (inwards) increases rebound control and the shock will extend slower after being compressed.
- Turning the clicker counter-clockwise (outwards) decreased rebound control and the shock will extend faster after being compressed.

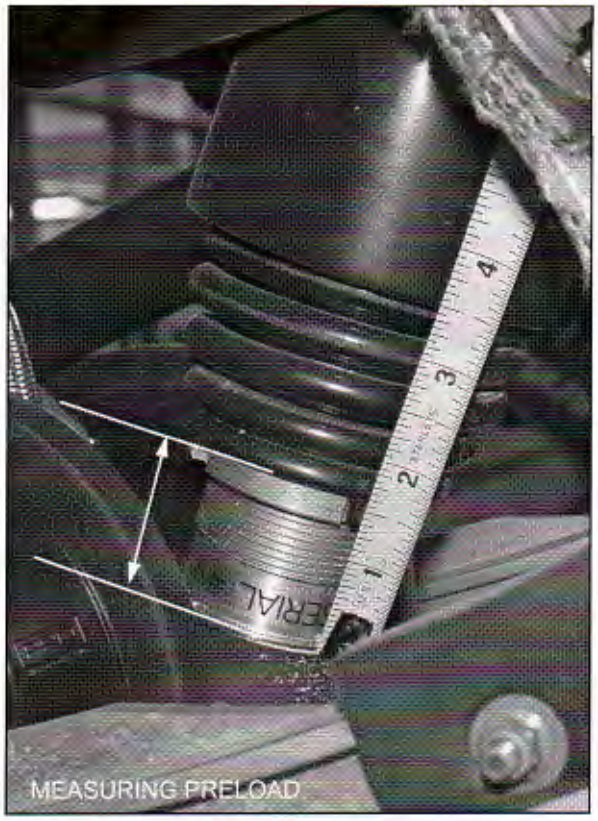
Walker Evans Spring Retainers

Some Walker Evans shocks feature a spring retainer and a lock collar. Apply one to two drops of RED thread lock to lock collar threads after adjusting spring length on these shocks.

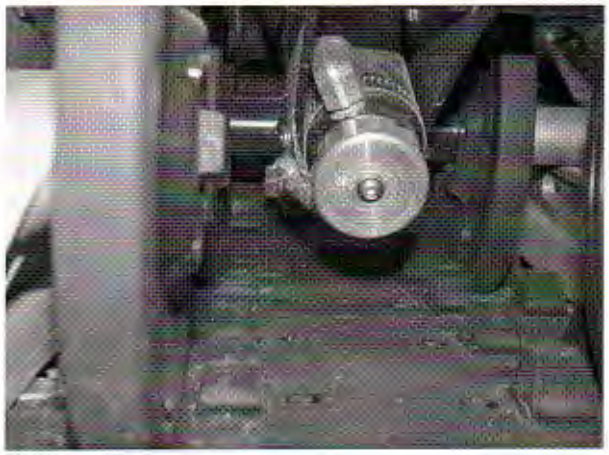


Front Track Shock (FTS) Factory Settings

To change the FTS spring preload, carefully tip the snowmobile onto its left side to remove weight from the front track shock. Grasp the spring and rotate it.


MEASURING PRELOAD

2010 RUSH



2011 - CURRENT RUSH / SWITCHBACK / RMK ASSAULT

When decreasing FTS spring preload, make sure at least two turns of preload are holding the spring retainer against the spring. Failure to do so may cause the retainer to fall out when the shock is fully extended.

When the snowmobile is not accelerating, Increasing FTS spring preload will decrease ski pressure. Decreasing FTS spring preload will increase ski pressure.

The compression dampener controls ride comfort/quality. Turning the adjuster towards the SOFT setting (counter-clockwise) will make the ride quality less harsh, but may cause the FTS to bottom out. Turning the adjuster towards the STIFF setting (clockwise) will make the FTS stiffer.

⚠ CAUTION

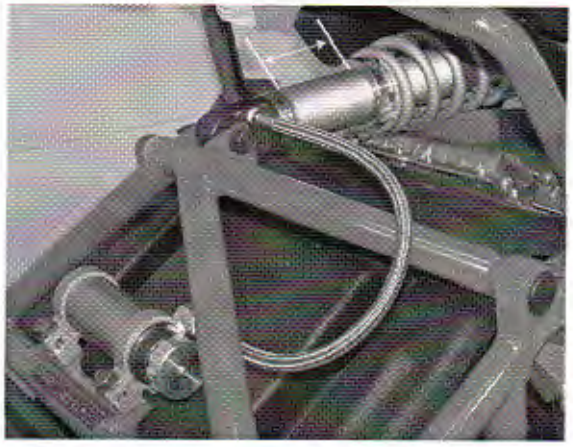
Adjust shock spring settings with all weight removed from shock. Safely raise or tilt the snowmobile off the ground before making adjustments.
Verify at least two turns of preload are holding the spring retainer against the spring.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

Rear Track Shock (RTS) Factory Settings

The RTS spring is the primary suspension setup and tuning component. For more information regarding how to set the spring preload and compression dampening, reference the Pro-Ride Progressive Suspension or Pro-Ride RMK Coil-Over Rear Suspension sections in this chapter.

2010 RUSH



2011 - CURRENT RUSH / SWITCHBACK

REAR COIL OVER

Limiter Straps - INDY 121 / RUSH / RMK Coil-Over Models

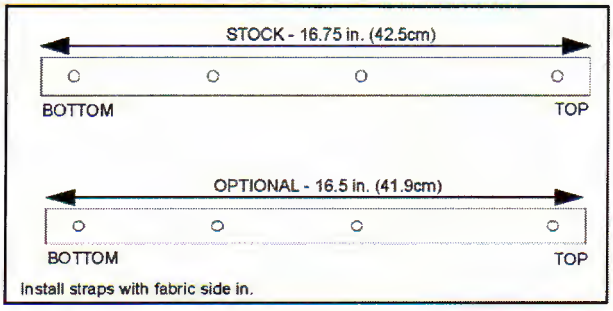
The limiter straps on INDY 121, RUSH Progressive and RMK Coil-Over rear suspensions are not adjustable. Drilling new holes in the straps to increase or decrease strap length is not recommended.

Limiter Straps - Switchback 136 Models

There are two limiter straps available for Switchback 136 models. The stock limiter straps are 16.75 in. (42.5 cm) in length.

Riders that spend the majority of their riding time on hard-pack, groomed trails can install optional limiter straps that are 16.5 in. (41.9cm) in length.

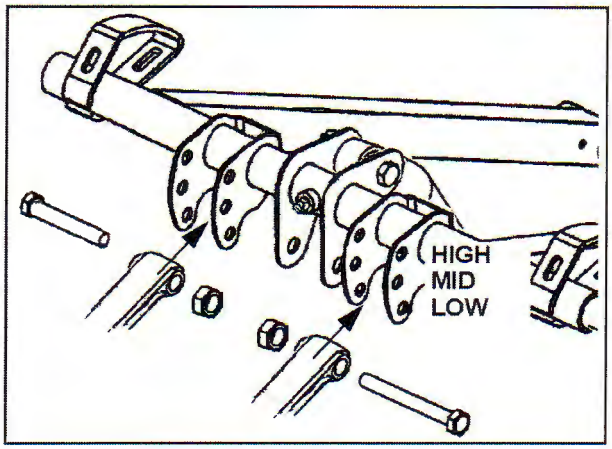
The optional limiter straps are shorter than the stock straps and will increase ski pressure and limit weight transfer during acceleration



Switchback 136 Limiter Straps (Short)
5414247 (2QTY.)

Limiter Straps - INDY / Switchback / RMK 144 Models

The limiter straps are adjustable. The limiter straps are initially set in the mid position.



Move BOTH limiter straps to the HIGH position to increase ski pressure and reduce ski lift. The HIGH position moves the balance of the snowmobile towards the front which increases cornering characteristics, but reduces flotation.

Move BOTH limiter straps to the LOW position to decrease ski pressure and increase ski lift. The LOW position moves the balance of the snowmobile towards the rear which increases traction and flotation, but reduces cornering characteristics.

Torque limiter strap nuts to specification.

= T
Limiter Strap Fasteners: 19 ft-lbs (25 Nm)

Torsion Springs/SAG Setting

INDY 121, and INDY / Switchback / RMK 144 rear suspensions are equipped with rear torsion springs. The spring preload can be set by adjusting the torsion spring preload blocks.

The torsion spring preload sets the rear suspension SAG setting. SAG is the difference between the unloaded and loaded rear bumper height when the snowmobile is sitting on snow.

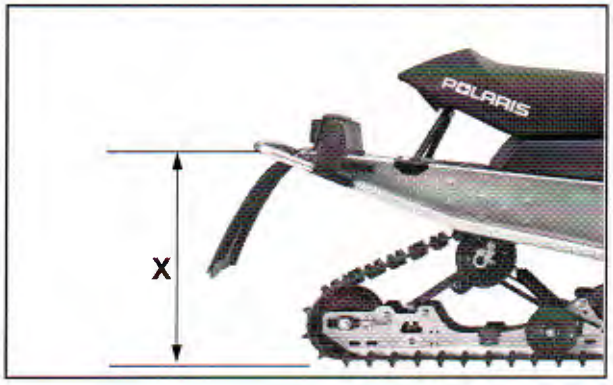
The SAG specifications are:

Rear Suspension SAG Settings:
INDY 121 - 3-4 in. (7.5-10 cm)
INDY / Switchback / RMK 144 - 5 in. (12.7 cm)

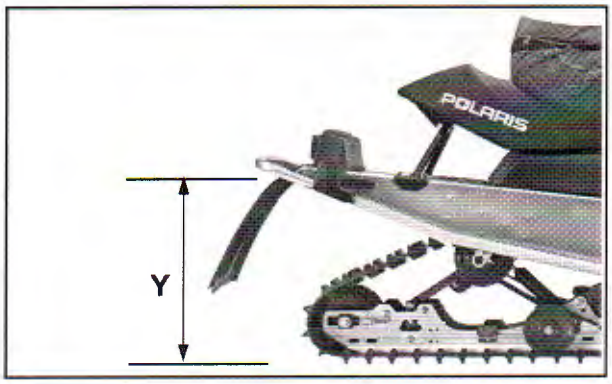
1. Position the snowmobile on snow.

   NOTE: Positioning the snowmobile on a hard surface (pavement/concrete) distributes more weight to the rear track shock/torsion springs and can distort the following measurements.

2. Lift the rear bumper to fully extend the rear suspension. Using a tape measure, find (X).



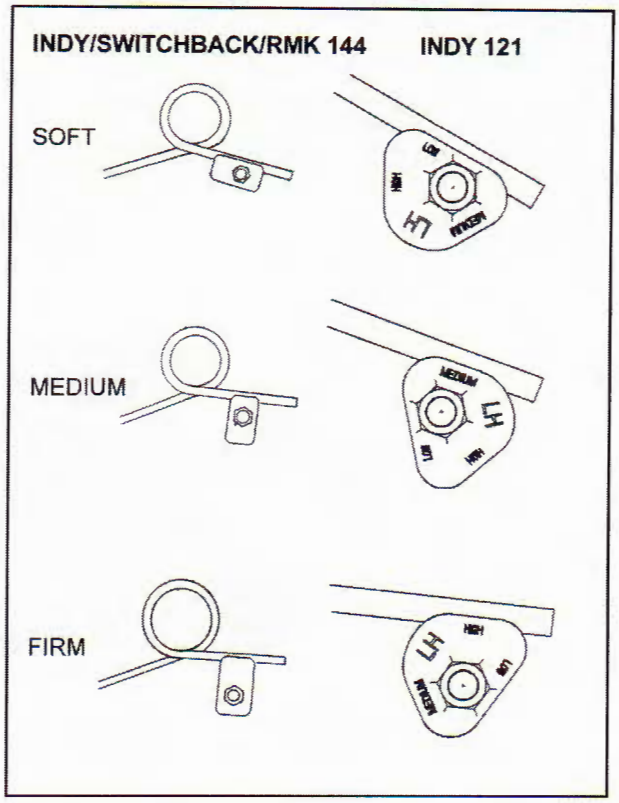
3. Have the rider, in riding gear, mount the snowmobile. The rider should drop down hard on the seat and bounce the suspension several times to collapse the suspension.
4. Again, measure the distance between the rear bumper and ground (Y).



5. Subtract measurement Y from X (X-Y=SAG).

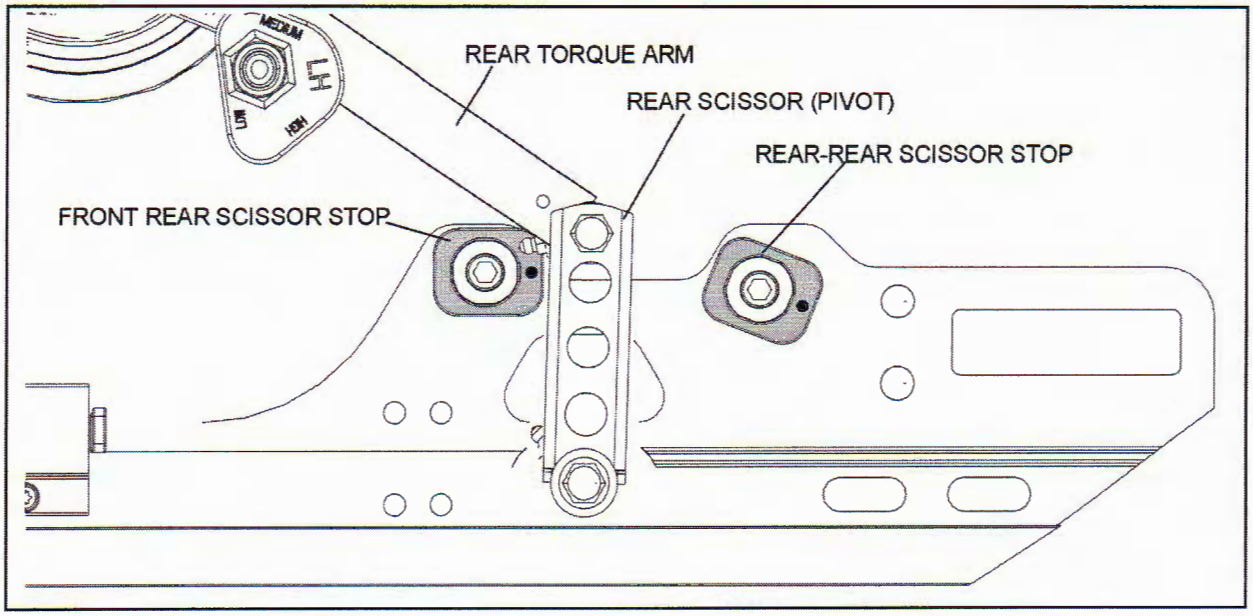
9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

6. Set both torsion spring adjuster blocks to LOW, MEDIUM, or HIGH to achieve the specified SAG measurement.



NOTE: Optional torsion springs are available to fine tune SAG setting. See individual model specifications in Chapter 1.

Scissor Stop Adjustment - INDY Models



The front rear scissor stop (FRSS) controls the bump attitude of the rear suspension. As the front torque arm (FTA) hits the bump, it forces the rear scissor to collapse a predetermined amount, depending on the FRSS block position.

This accomplishes two important things. First, it allows a lighter spring rate on the FTA because it can borrow spring rate from the rear torsion springs. Second, it prepares the rear portion of the suspension for the bump, reducing secondary kick back.

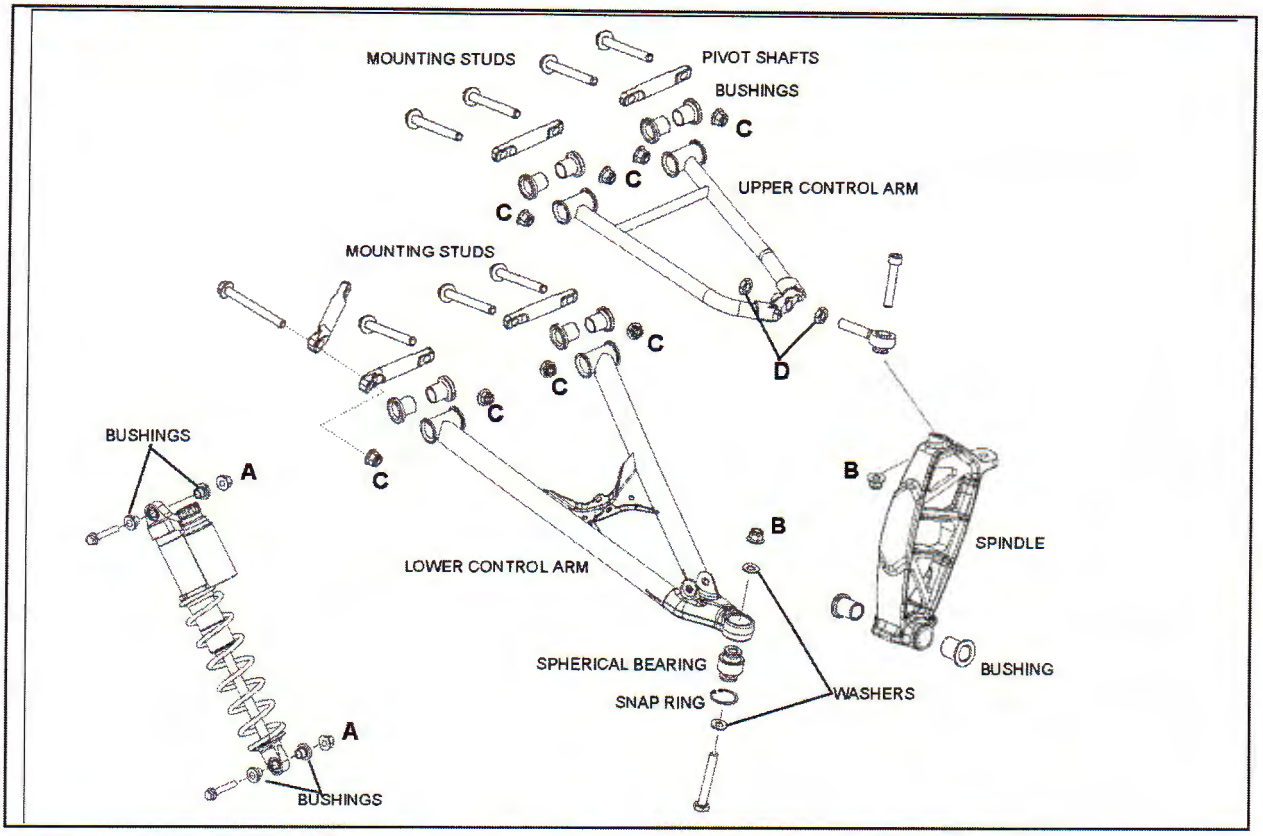
The recommended FRSS setting is in the HIGH position.

The rear-rear scissor stop (RRSS) controls weight transfer from the rear suspension to the skis. It also influences the stiffness of the ride by controlling the amount of coupling action between the front and rear torque arms. To decrease weight transfer, the RRSS should be set in the high position. To increase weight transfer, the RRSS should be set in the LOW position.

The dot is an indicator of the HIGH position. The sides are the LOW position and the bottom is the MEDIUM position.

FRONT SUSPENSIONS ASSEMBLY ILLUSTRATIONS

2010 Pro-Ride Front Control Arms



CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

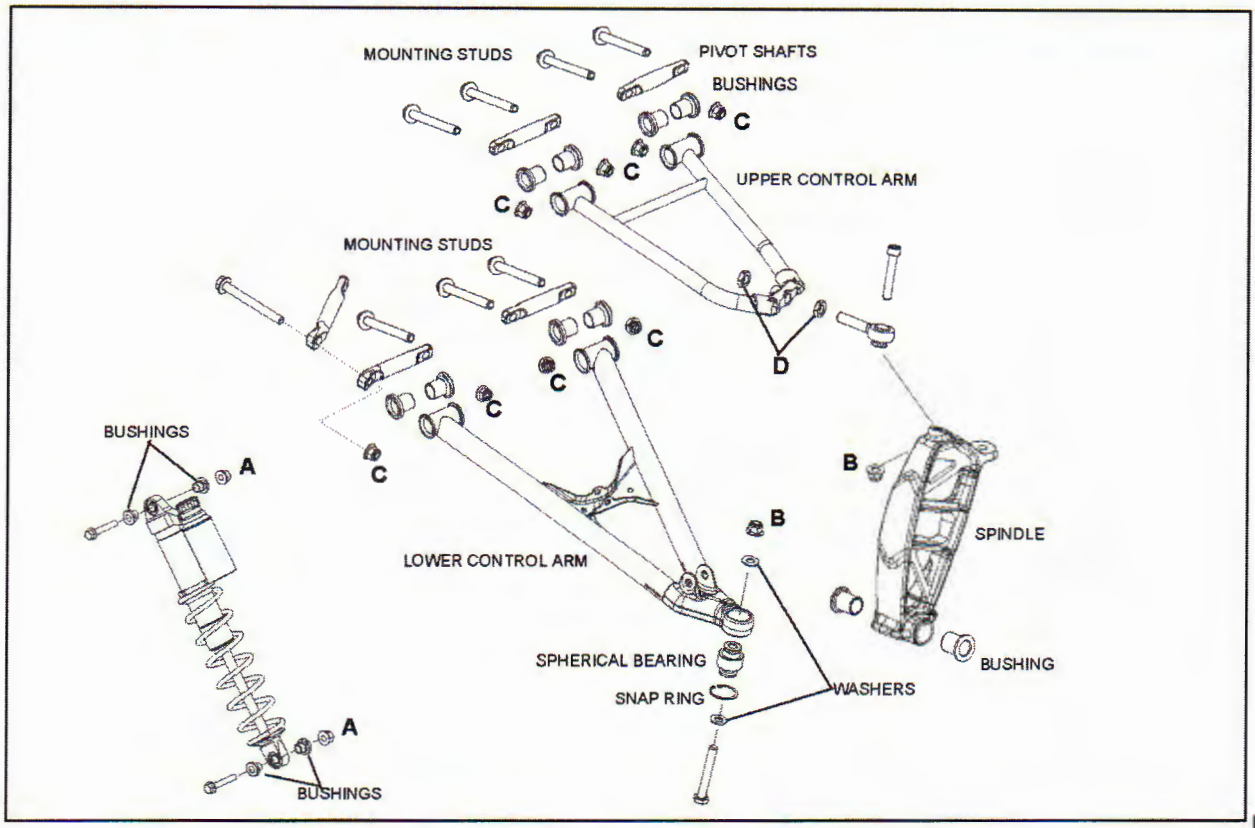
= T

A: 37 ft-lbs (50 Nm) (Shock Mounting Fastener Nuts)
B: 40 ft-lbs (54 Nm)
C: 30 ft-lbs (41 Nm)
D: 44 ft-lbs (60 Nm) Apply Loctite® 262™ to Threads

NOTE: Assembly Notes

- **Orientate rod ends so they are parallel with mating component.**
- **Apply grease to pivot shafts during assembly.**

2011 Pro-Ride Front Control Arms



CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

= T

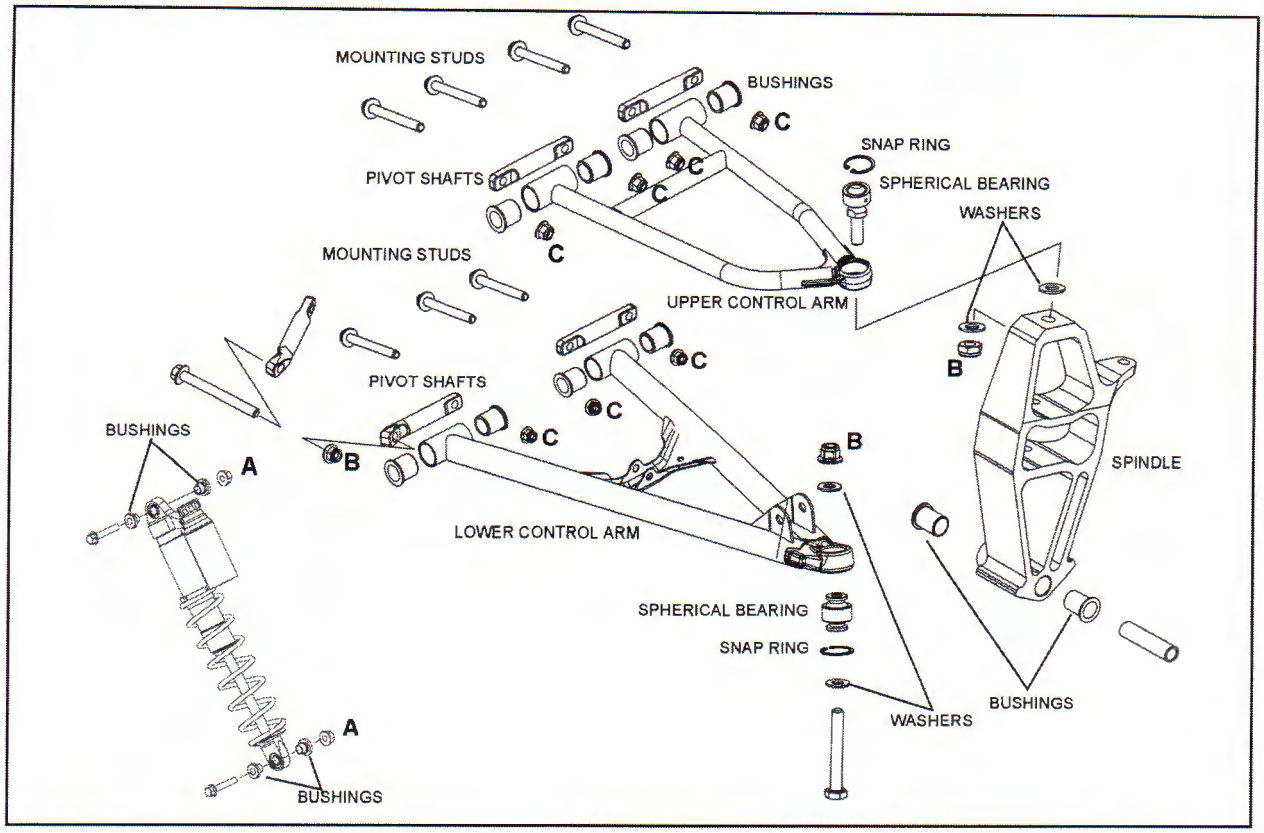
A: 37 ft-lbs (50 Nm) (Shock Mounting Fastener Nuts)
B: 40 ft-lbs (54 Nm)
C: 30 ft-lbs (41 Nm)
D: 44 ft-lbs (60 Nm) Apply Loctite® 262™ to Threads

NOTE: Assembly Notes

- **Orientate rod ends so they are parallel with mating component.**
- **Apply grease to pivot shafts during assembly.**

8

2012-2014 Pro-Ride (Fixed Camber) Front Control Arms



⚠ CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

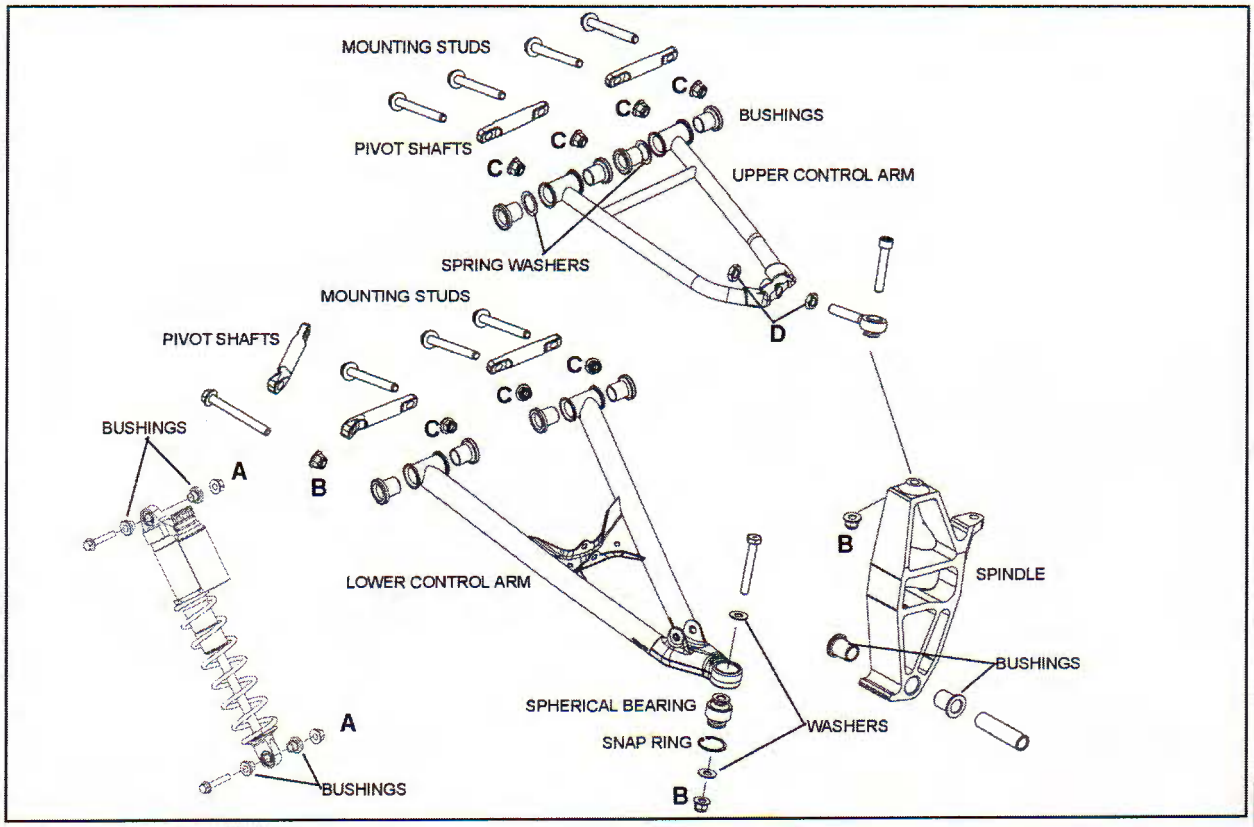
= T

A: 37 ft-lbs (50 Nm) (Shock Mounting Fastener Nuts)
B: 40 ft-lbs (54 Nm)
C: 30 ft-lbs (41 Nm)

NOTE: Assembly Notes

- **Orientate rod ends so they are parallel with mating component.**
- **Apply grease to pivot shafts during assembly.**

Pro-Ride RMK/Wide Adjustable Front Control Arms



CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

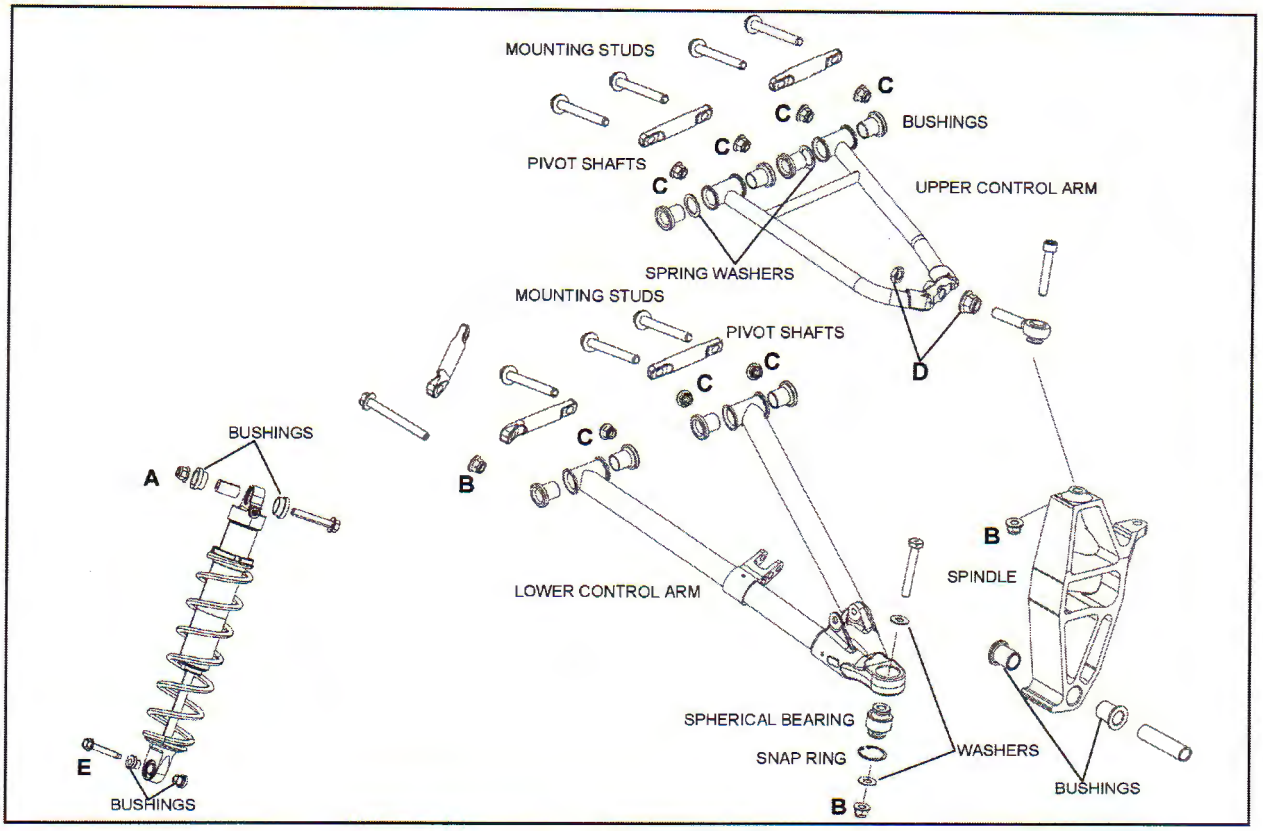
= T

A: 37 ft-lbs (50 Nm) (Shock Mounting Fastener Nuts)
B: 40 ft-lbs (54 Nm)
C: 30 ft-lbs (41 Nm)
D: 44 ft-lbs (60 Nm) Apply Loctite® 262™ to Threads

NOTE: Assembly Notes

- **Orientate rod ends so they are parallel with mating component.**
- **Apply grease to pivot shafts during assembly.**

PRO RMK Bonded Front Control Arms



CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

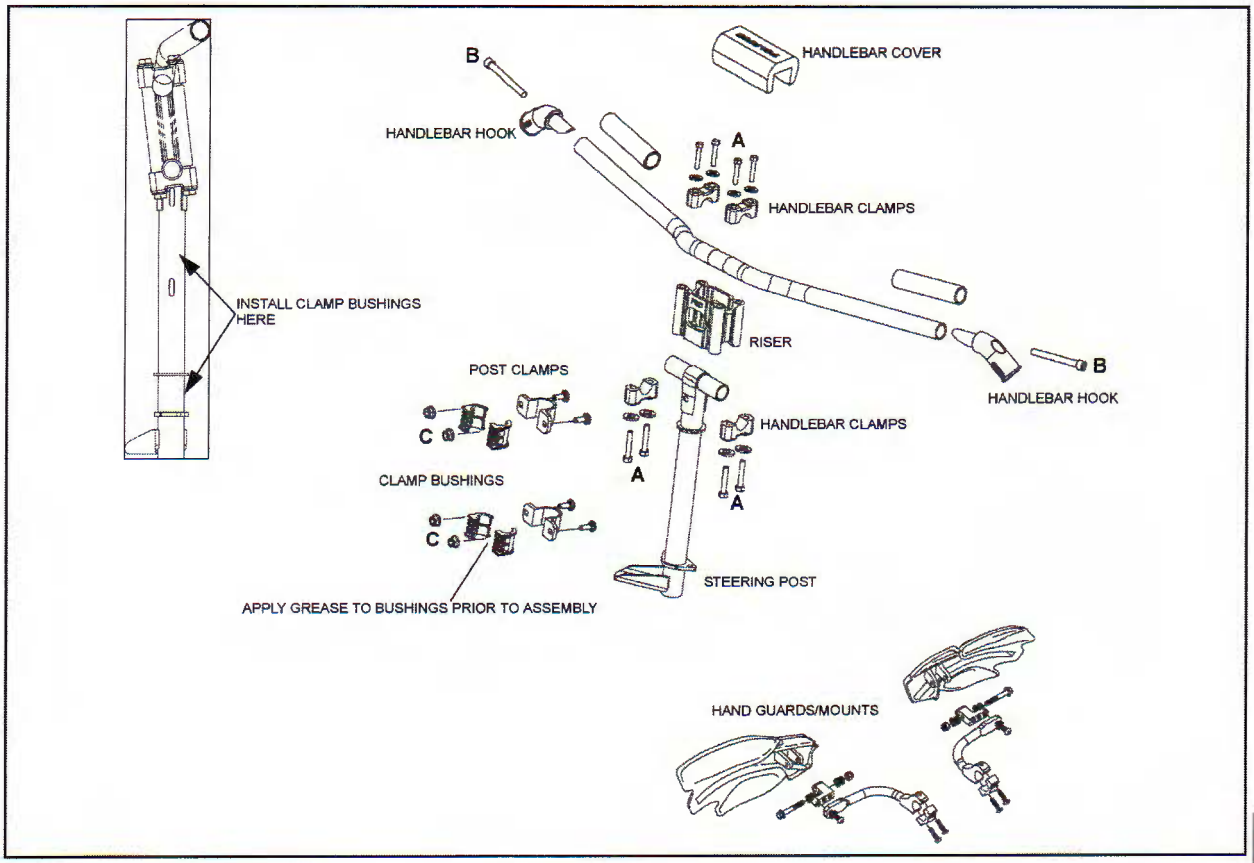
= T

A: 37 ft-lbs (50 Nm)
B: 40 ft-lbs (54 Nm)
C: 30 ft-lbs (41 Nm)
D: 44 ft-lbs (60 Nm) Apply Loctite® 262™ to Threads
E: 18 ft-lbs (25 Nm)

NOTE: Assembly Notes

- **Sway bar mount and tube collector are bonded components - DO NOT SERVICE.**
- **Orientate rod ends so they are parallel with mating component.**
- **Apply grease to pivot shafts during assembly.**

2010-2011 Rush Upper Steering Assembly



⚠ CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

= T

A: 14.7 ft-lbs (20 Nm)
B: 12 ft-lbs (16 Nm)
C: (2010) = 15 ft-lbs (20 Nm)
C: (2011) 20 ft-lbs (27 Nm)
Throttle Lever Block Screw: 35 in-lbs (4 Nm)
Master Cylinder Screws: 24 in-lbs (2.7 Nm)
Torque hand guard screws to prevent components from moving/rotating during operation. DO NOT CRUSH HANDLEBAR WHEN TORQUING SCREWS.

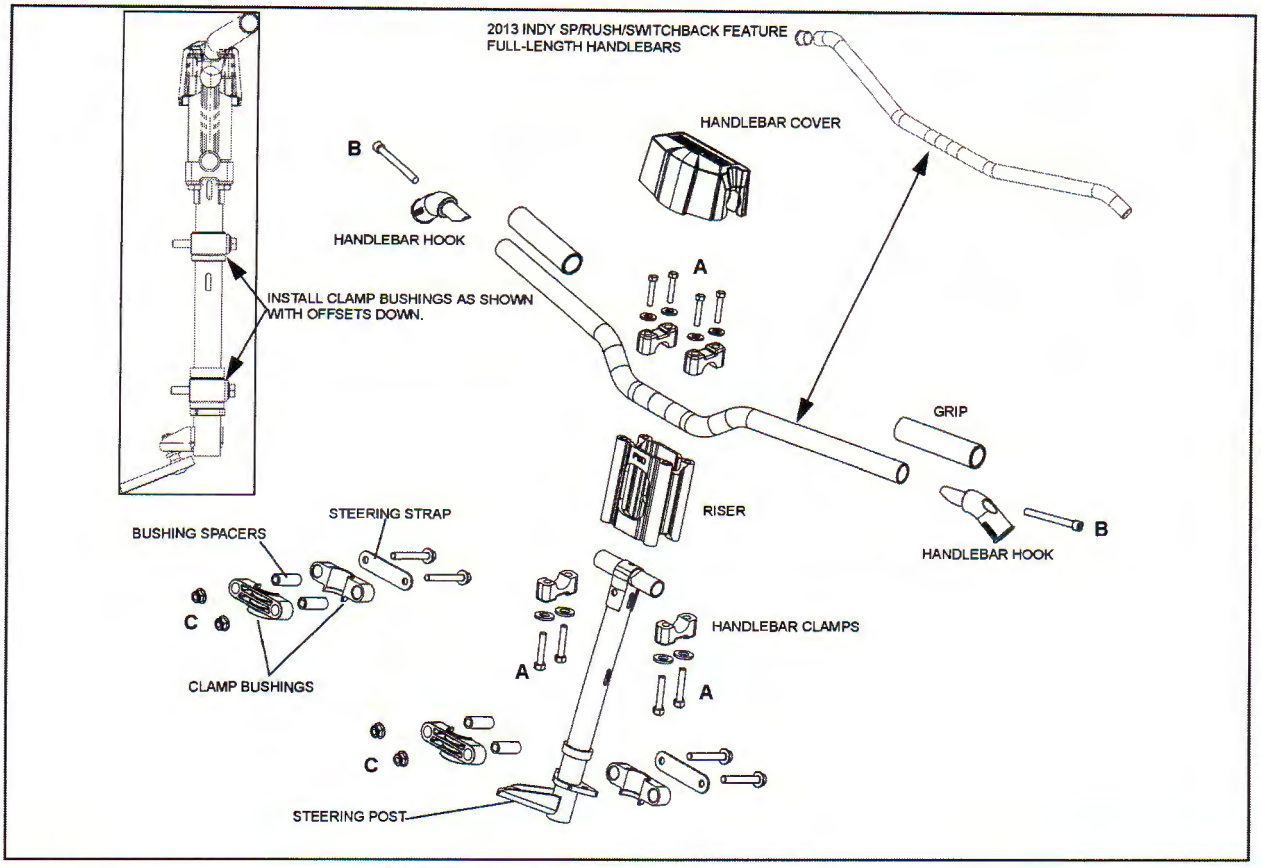
NOTE: Assembly Notes

- **Install handlebar riser with "FWD" facing front of vehicle.**

8

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

2012-2014 INDY / Rush / Switchback Upper Steering



CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

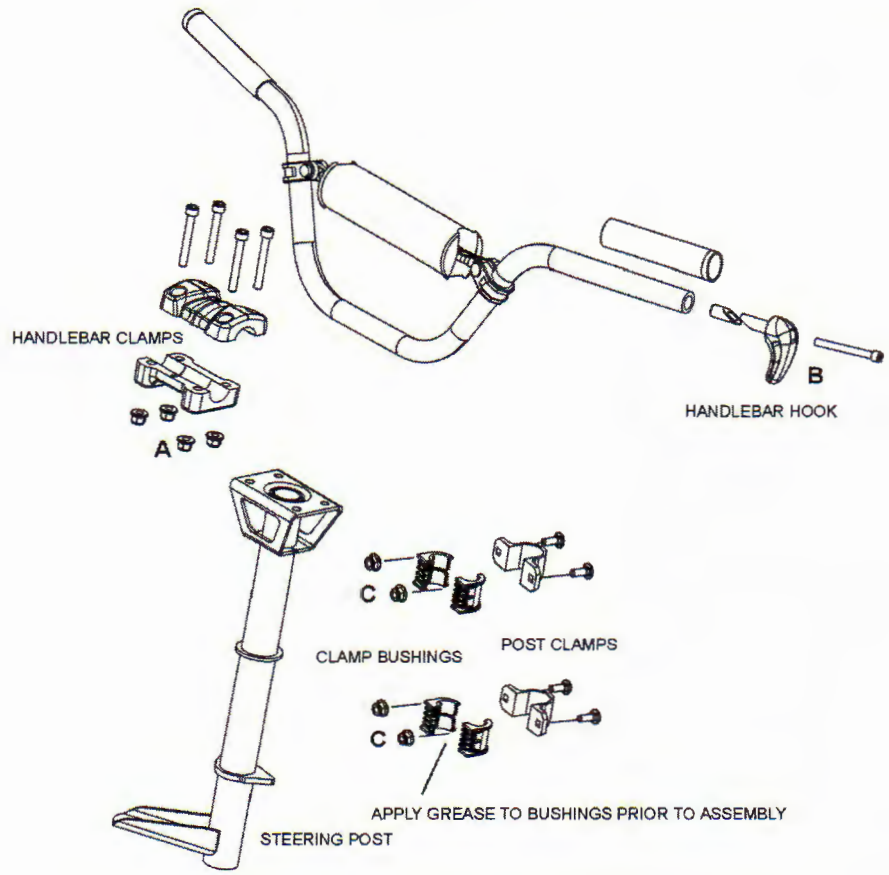
= T

A: 14.7 ft-lbs (20 Nm)
B: 12 ft-lbs (16 Nm)
C: 18 ft-lbs (25 Nm)
Throttle Lever Block Screw: 35 in-lbs (4 Nm)
Master Cylinder Screws: 24 in-lbs (2.7 Nm)
Torque hand guard screws to prevent components from moving/rotating during operation. DO NOT CRUSH HANDLEBAR WHEN TORQUING SCREWS.

NOTE: Assembly Notes

- **Install handlebar riser with "FWD" facing front of vehicle.**

Switchback Assault Upper Steering Assembly



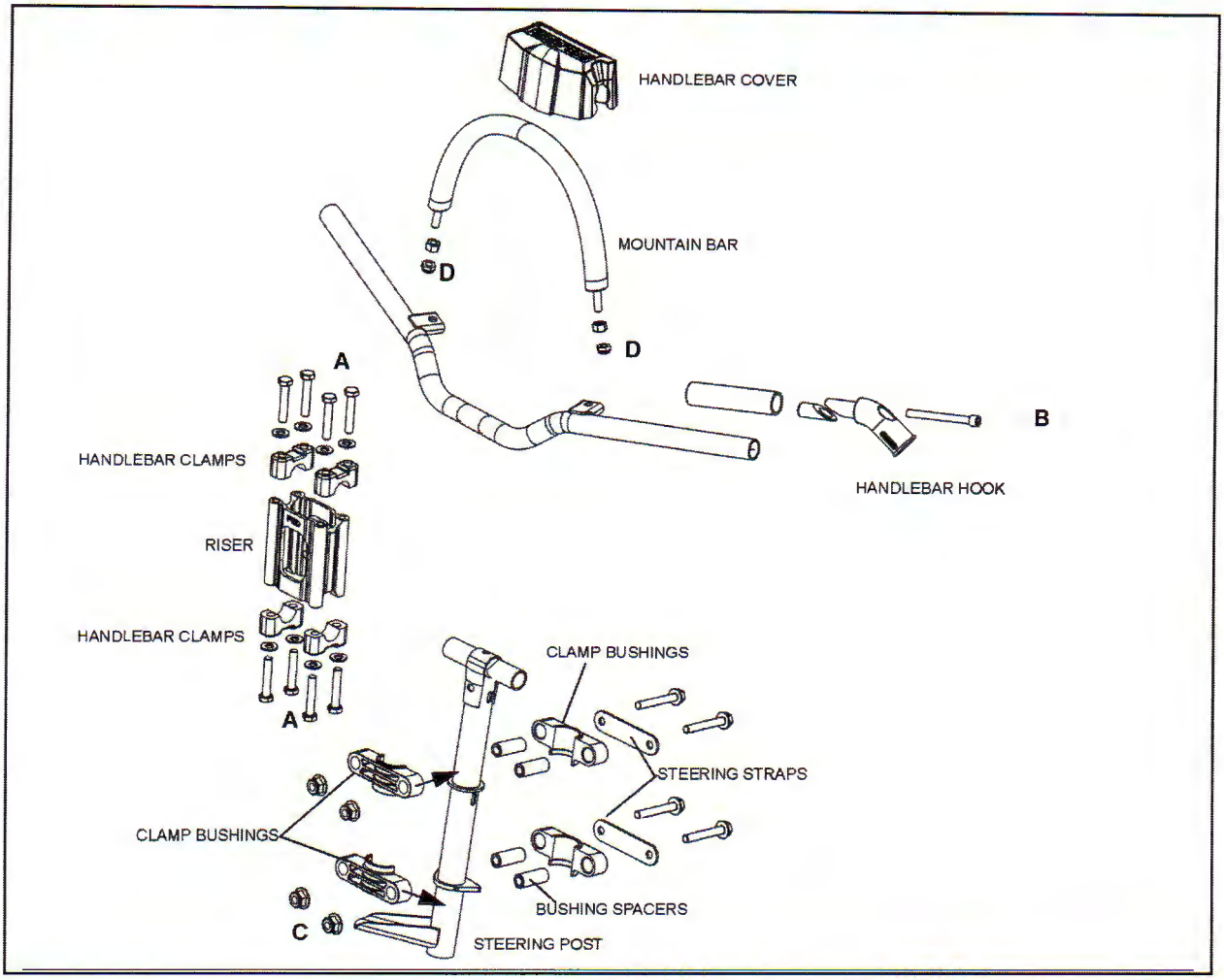
⚠ CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

= T

A: 14.7 ft-lbs (20 Nm)
B: 12 ft-lbs (16 Nm)
C: 20 ft-lbs (27 Nm)
Throttle Lever Block Screw: 35 in-lbs (4 Nm)
Master Cylinder Clamp: 60-80 in-lbs (6.8-9 Nm)
DO NOT CRUSH HANDLEBAR WHEN TORQUING SCREWS.

600 / 800 RMK Upper Steering Assembly



CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

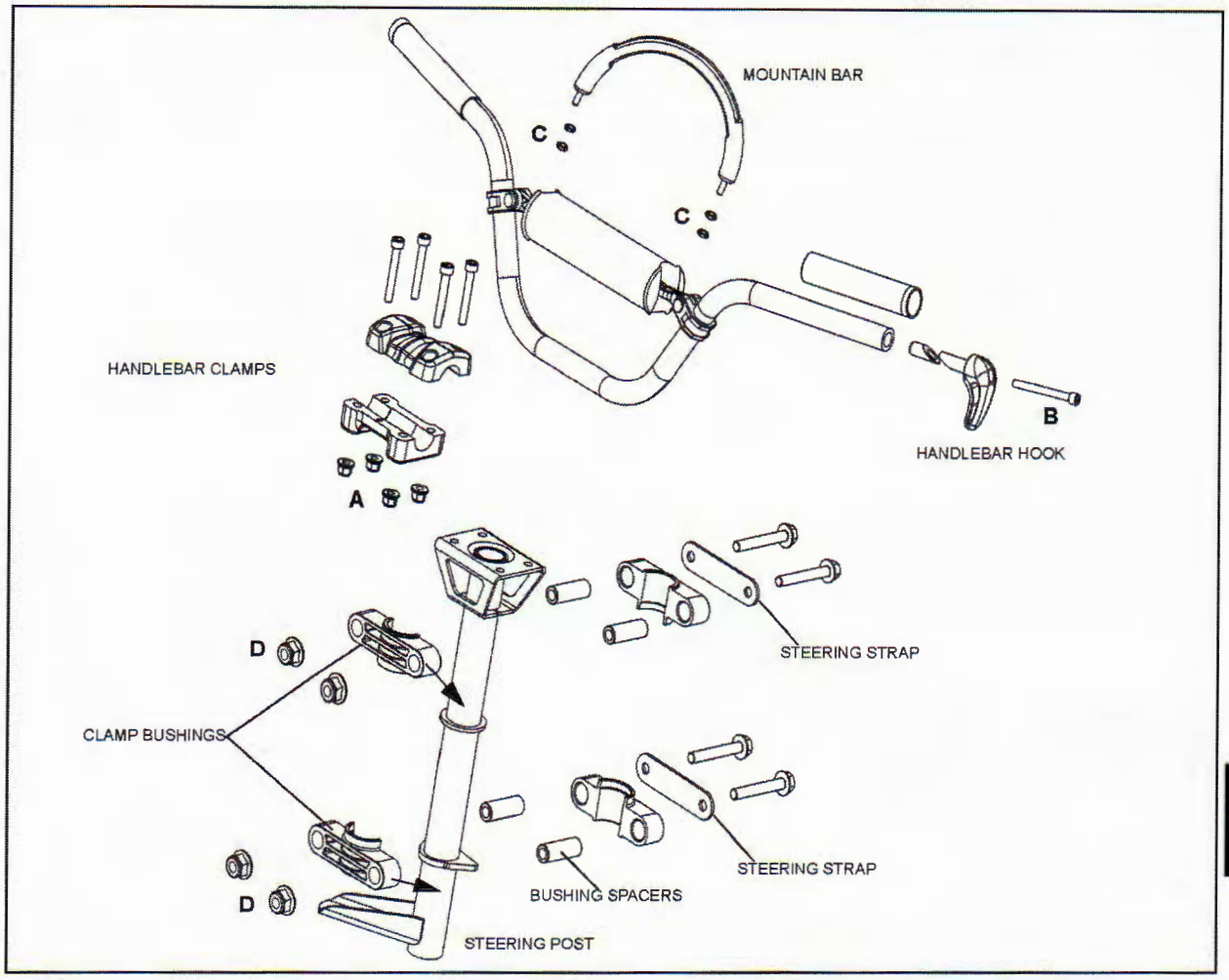
= T

A: 14.7 ft-lbs (20 Nm)
B: 12 ft-lbs (16 Nm)
C: 18 ft-lbs (25 Nm)
D: 5 ft-lbs (7 Nm)
Throttle Lever Block Screw: 35 in-lbs (4 Nm)
Master Cylinder Screws: 24 in-lbs (2.7 Nm)
DO NOT CRUSH HANDLEBAR WHEN TORQUING SCREWS.

NOTE: Assembly Notes

- **Install handlebar riser with FWD facing front of vehicle.**

600 / 800 PRO RMK / RMK Assault Upper Steering Assembly



⚠ CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

= T

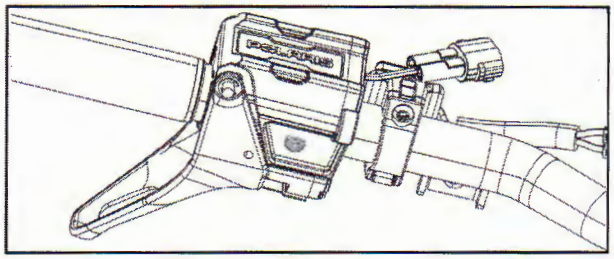
A: 14.7 ft-lbs (20 Nm)
B: 12 ft-lbs (16 Nm)
C: 5 ft-lbs (7 Nm)
D: 18 ft-lbs (25 Nm)
Throttle Lever Block Screw: 35 in-lbs (4 Nm)
Master Cylinder Clamp: 60-80 in-lbs (6.8-9 Nm)
DO NOT CRUSH HANDLEBAR WHEN TORQUING SCREWS.

Two Piece Throttle Control

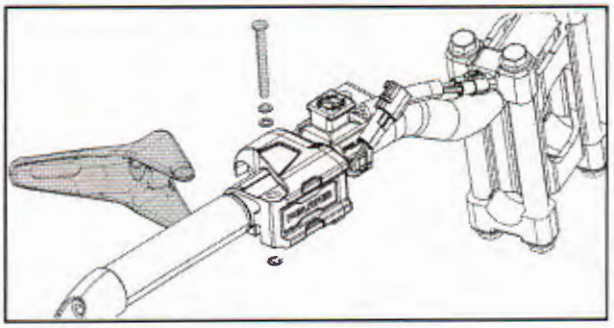
Some models are equipped with a two-piece throttle control on the handlebar. The two-piece throttle control is designed to be serviced without having to remove the grip and hand warmer element.

Removal:

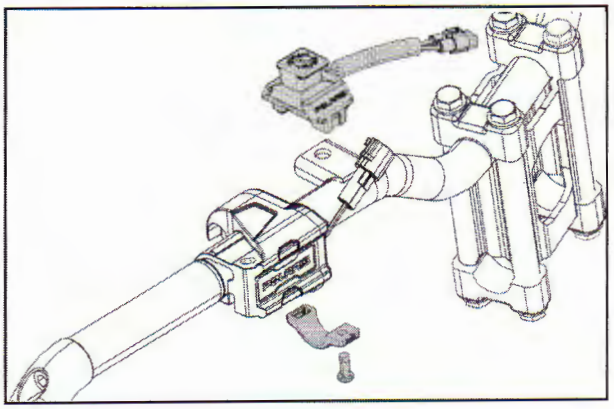
1. Use a needle-nose pliers to extract the throttle cable barrel out of the throttle lever.
2. Loosen the throttle block set screw.



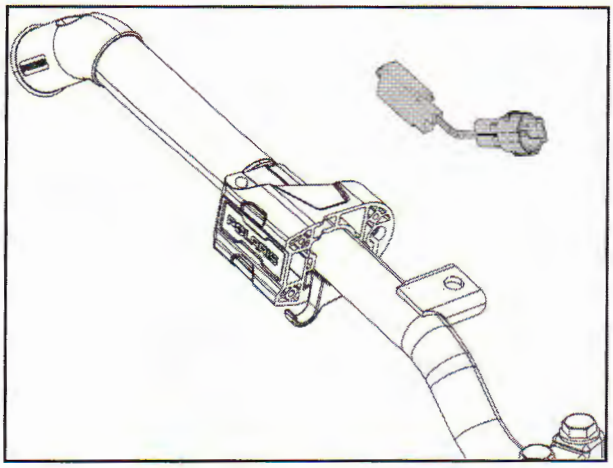
3. Remove the e-clip, the throttle lever pin and adjustment washers. Note the number of washers. Remove the throttle lever.



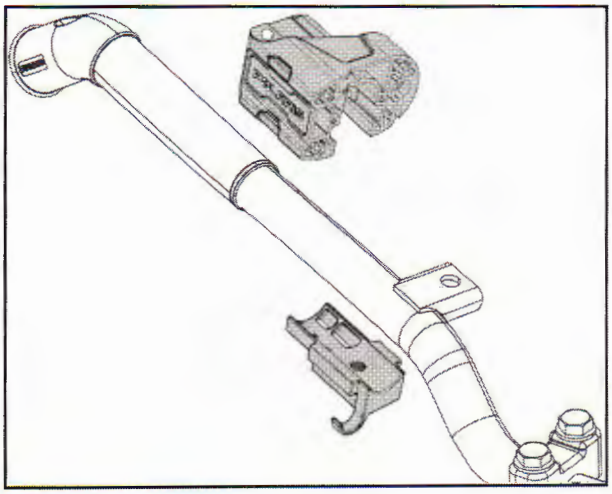
4. Remove the screw from the auxiliary stop switch block. Remove or reposition the stop switch assembly to gain access the cover screws.



5. Remove the throttle release switch from the throttle block. Note the orientation of the switch during removal.



6. Slide the lower block out of the upper block. Remove the throttle blocks from the handlebar.



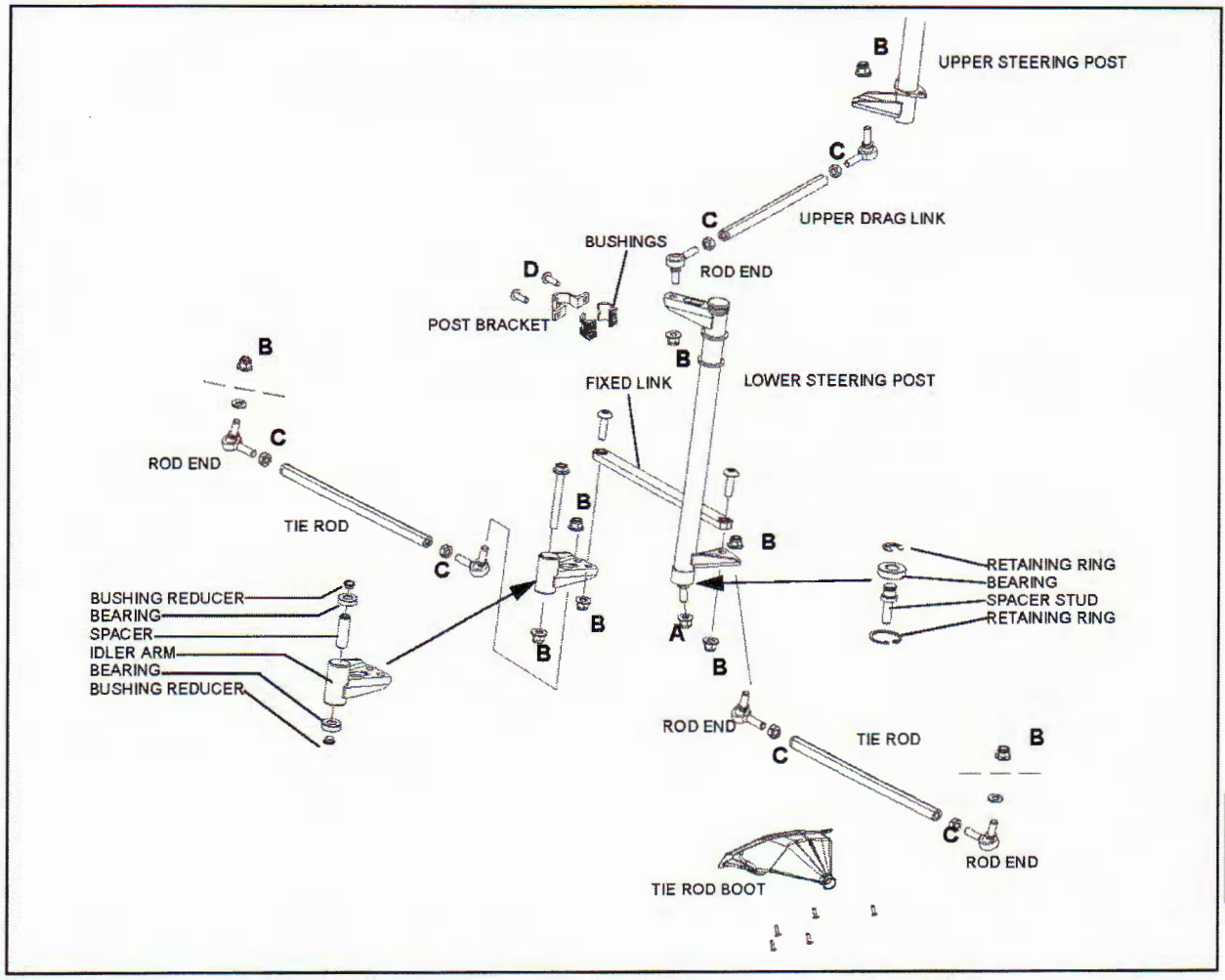
Assembly:

Reverse removal procedure to assembly throttle block assembly. Torque fasteners to specifications.

= T
Throttle Cover Screws: **6 in-lbs (.6 Nm)** Auxiliary Stop Switch Mount Screw: **12 in-lbs (1.35 Nm)** Throttle Block Set Screw: **27 in-lbs (3 Nm)**

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

2010 Rush Lower Steering Assembly



CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

= T

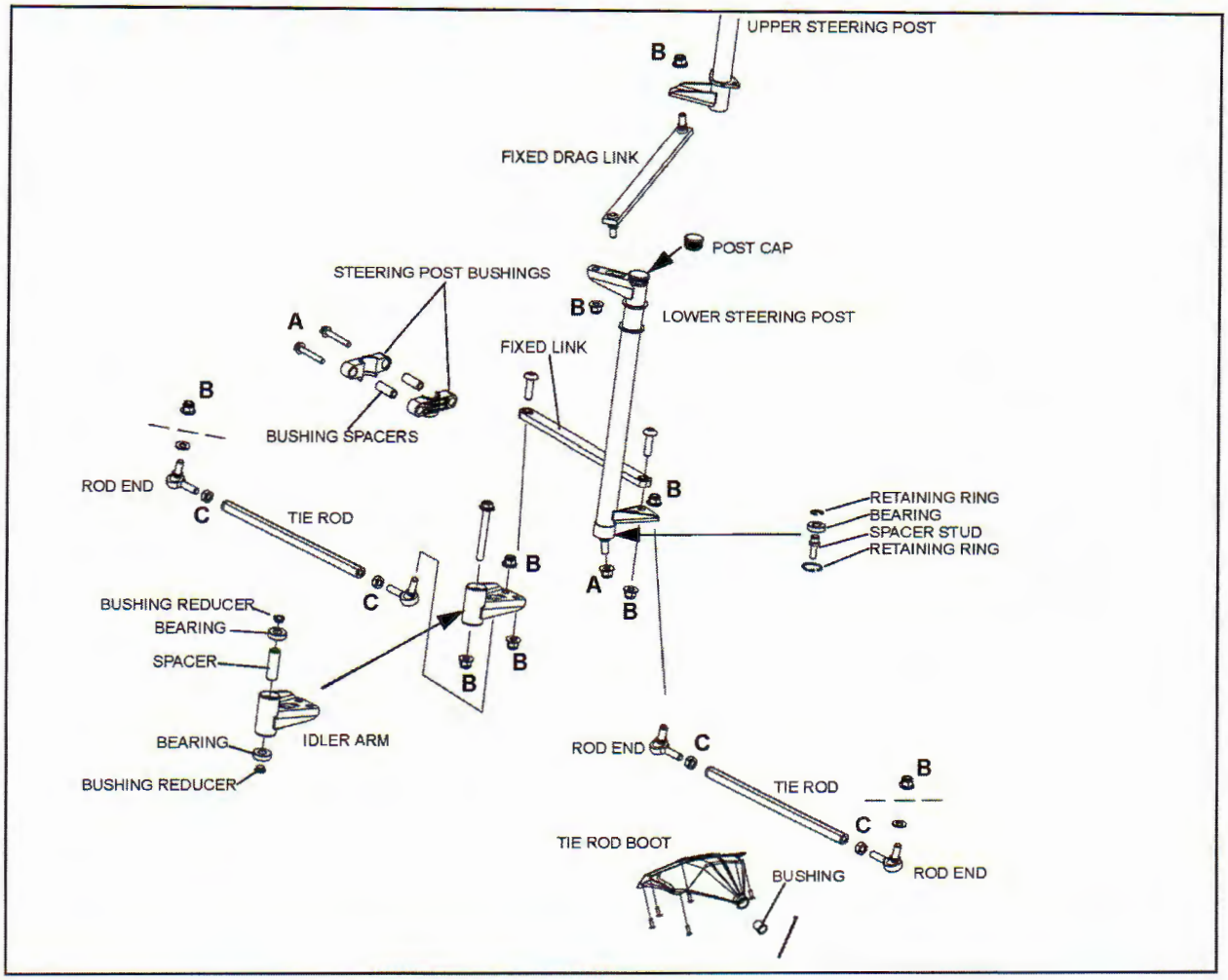
A: 22 ft-lbs (30 Nm)
B: 37 ft-lbs (50 Nm)
C: 11 ft-lbs (15 Nm)
D: 14.7 ft-lbs (20 Nm)

NOTE: Assembly Notes

- **Orientate rod ends so they are parallel with mating component.**
- **Tie rod end-to-rod end (center-to-center) length =15.04" (382 mm)**
- **Upper drag link rod end-to-rod end (center-to-center) length = 11.71" (297.5 mm)**

8

2011-2014 INDY / Rush / Switchback / Switchback Assault Lower Steering Assembly



CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

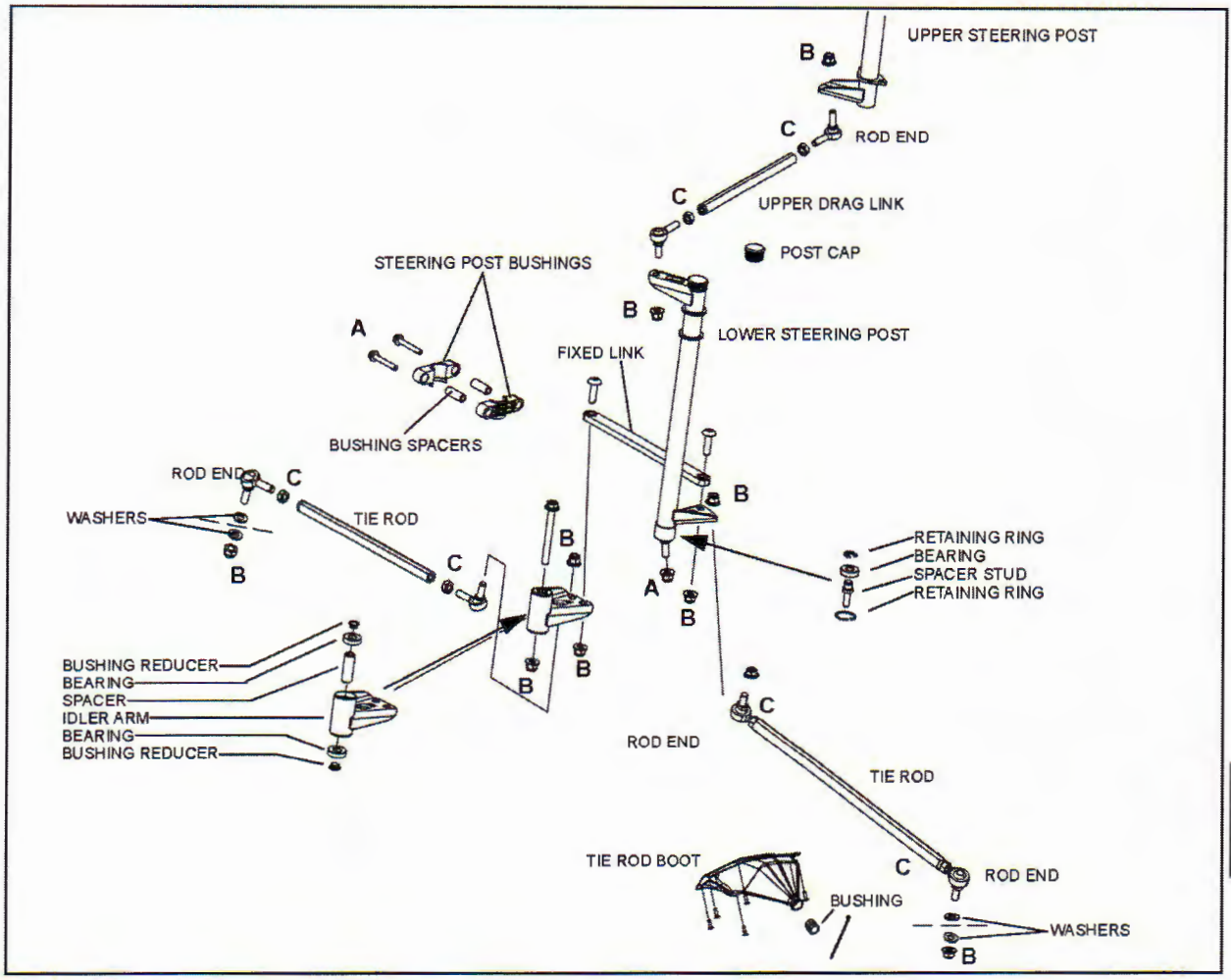
= T

A: 22 ft-lbs (30 Nm)
B: 37 ft-lbs (50 Nm)
C: 11 ft-lbs (15 Nm)

NOTE: Assembly Notes

- **Orientate rod ends so they are parallel with mating component.**
- **Tie rod end-to-rod end (center-to-center) length =15.04" (382 mm)**

2011-2014 RMK / PRO RMK / RMK Assault Steering Assembly



CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

= T

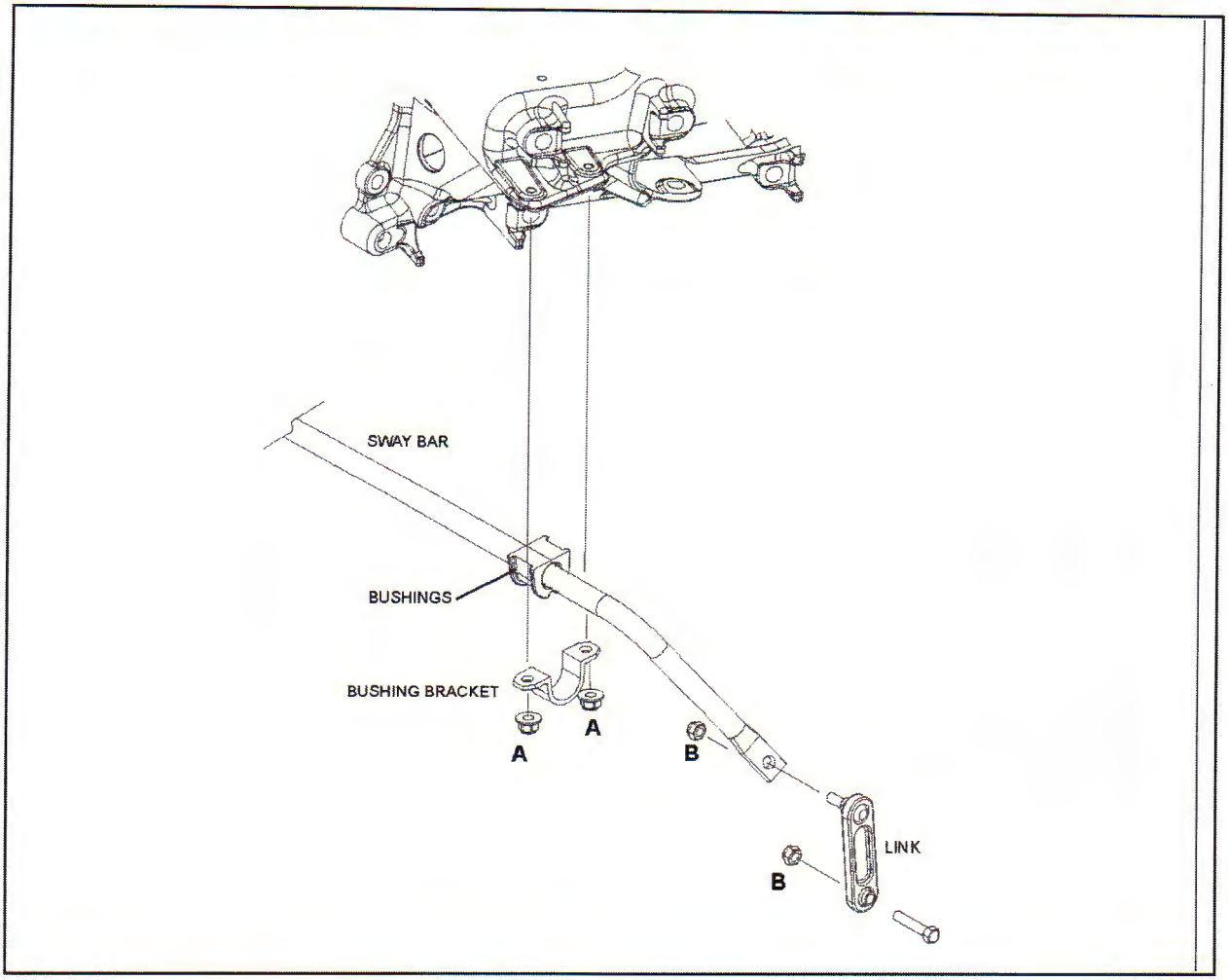
A: 22 ft-lbs (30 Nm)
B: 37 ft-lbs (50 Nm)
C: 11 ft-lbs (15 Nm)

NOTE: Assembly Notes

- **Orientate rod ends so they are parallel with mating component.**
- **Tie rod end-to-rod end (center-to-center) length =**
- **RMK/PRO RMK - 13.4" (354mm)**
- **RMK Assault - 15.04" (382mm)**
- **Upper drag link rod end-to-rod end (center-to-center) length = 15.19" (385.9mm)**

8

2010-2014 Sway Bar Assembly



⚠ CAUTION

Never re-use lock nuts. Always re-assemble using new lock nuts.

= T

A: 7.4 ft-lbs (10 Nm)
B: 15-22 ft-lbs (20-30 Nm)

FRONT SUSPENSION SETTINGS

Overview

The following topics are outlined involving the front suspension:

- Maximum Width
- Handlebar Centering
- Setting Camber
- Ski Toe Adjustment

Before making any adjustments to the front suspension, inspect all components for damage. Replace any broken, bent or worn components before making any adjustments.

Verify the sway bar and related hardware are not bent, loose, or broken. Inspect the shocks.

The shocks on the front suspension are the only components that limit maximum control arm extension. Bent shock rod (s) adversely affect front suspension settings and handling.

Never install longer (when fully extended) shocks. Installing longer shocks will stress the upper control arm rod ends and lower control arm spherical bearings.

Always verify track alignment. Proper track alignment is critical when aligning the skis with the chassis.

Rod ends must be parallel with mating components. Rod ends that are not parallel will increase the "bump steer" effect.

An alignment bar is an essential tool required to set camber.

Alignment Bar Specifications

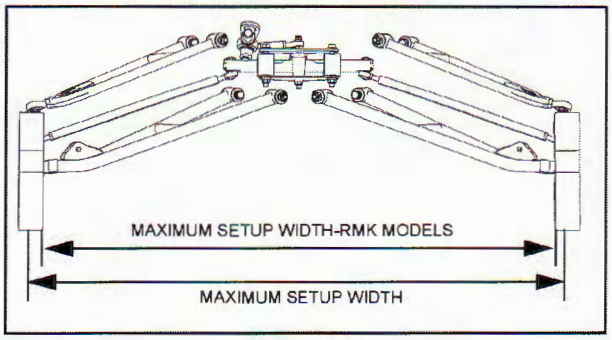
- DIAMETER: .623"-.625" (15.824-15.875mm)
- LENGTH: 45" (114.3cm)
- MATERIAL: C-1018
- Polaris PN: 5333508 (Order from tool vendor.)

Maximum Setup Width

The maximum width setting is the distance between the front center lines of both spindles with the skis off the ground and the shocks installed.

Because of the design of the front suspension, maximum width can only be changed by adjusting camber. This is due to the fact that only the upper control arms feature rod ends and thus camber can only be adjusted by turning the upper control rod ends in or out.

1. To measure the maximum setup width, raise the front of the snowmobile off the ground with the shocks and skis installed.
2. Center the skis/spindles. Measure the distance between the spindle center lines or inside of spindles on RMK models.



= In. / mm.

Maximum Width
Pro-Ride = 41.52/105
Pro-Ride RMK Adjustable:
Welded CA = 36.26 / 92
Bonded CA = 36.85 / 93.6
Pro-Ride Wide Adjustable = 38.58/98

3. If the measurement is out of specification, inspect the front suspension for damage. Replace damaged components.
4. If no damage is found, reset the camber.

Handlebar Centering

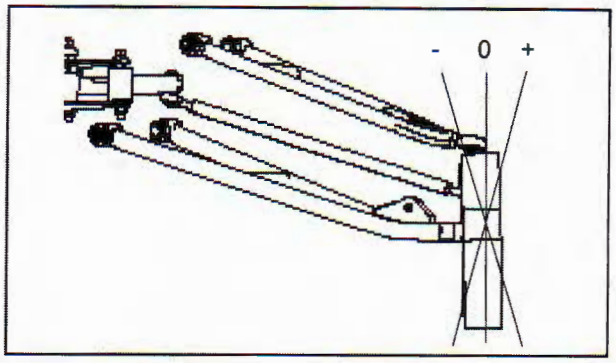
1. Raise the vehicle to remove the skis.
2. Verify the handlebars are straight. Measure from each bar end to a common center point at the rear of the vehicle.
3. Verify the steering drag link is not damaged, bent, or loose. If it is, the drag link must be either adjusted or replaced. If the drag link is correct, adjust the steering linkage tie rod ends until handlebar is centered. Note that the toe setting will require adjustment.
4. Reinstall the spindle rod ends, bushings, and skis. Torque bolts to specification.

Camber

On a snowmobile, camber is the angle of the spindle relative to vertical as viewed from the front. The camber angle becomes increasingly more negative as the control arms deflect upward.

- 0 = Neutral Camber. The spindle is perpendicular to the ground.
- + = Positive Camber. The top of the spindle is canted outward from the chassis.

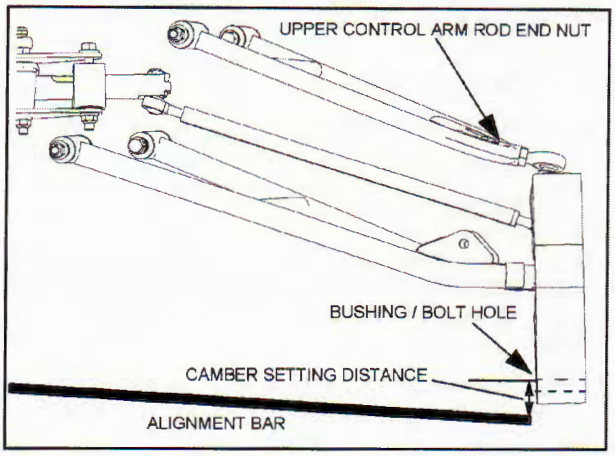
- - = Negative Camber. The top of the spindle is canted inward towards the chassis.



Camber Adjustment

= In. / mm.
Camber Setting Top of alignment bar to top of ski bushing / bolt spindle hole. Pro-Ride = 1.68±.31/42±0.8 Pro-Ride RMK Adjustable = 1.95 ± 0.31/4.3 ± 0.8 Pro-Ride Wide Adjustable = 2.25 ± 0.31/5.7 ± 0.8

1. Verify the handlebars are centered. Measure from each end to a common center point at the rear of the snowmobile if necessary.
2. Raise the front of the snowmobile off the ground. Remove the skis and ski bushings.
3. Verify the shocks are at full extension and that no IFS components are bent or damaged. Replace any component that is damaged before making any adjustments.
4. Insert the alignment bar, PN 5333508 or equivalent, through one spindle. Adjust the opposing spindle's upper control arm rod end to adjust the angle of the spindle.
5. Check the measurement between the top-end of the alignment bar and the top of the spindle's bushing/ski bolt hole (see illustration below).



6. Insert the alignment bar into the opposite spindle and perform the same steps. Monitor the specified camber measurement as the control arm rod end nuts are adjusted.
7. Continue making small rod end changes to both control arm rod end nuts until the camber setting specification is achieved at both spindles.

⚠ CAUTION
DO NOT EXCEED THE MAXIMUM SETUP WIDTH SETTING WHEN ADJUSTING CAMBER.

8. Verify the upper rod ends are torqued to specification. Ensure the rod ends remain parallel to the spindles when torquing nuts.
9. Apply a liberal amount of Premium Grease to the ski bushings, and then reinstall the bushings and skis. Torque fasteners to specification.

Toe Adjustment

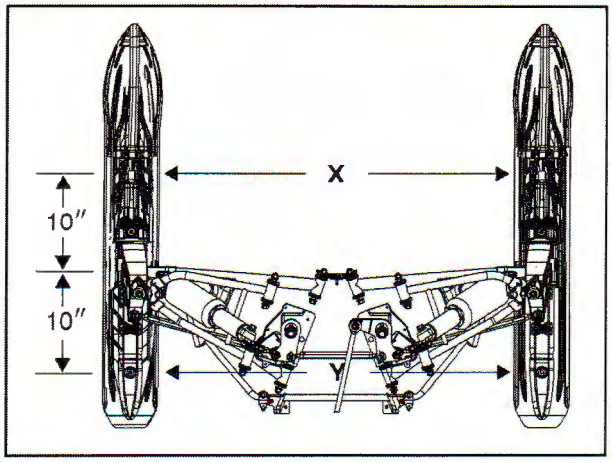
Toe is adjusted with the shocks and skis installed. Track alignment must be correct before starting this process.

Toe alignment is measured at ride height.

1. Rock the front end of the vehicle up and down and then set it down gently. This will set the front suspension at ride height.
2. Verify the handlebars are centered. Measure from each end to a common center point at the rear of the snowmobile to verify.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

3. Measure and make a mark 10" (2.54cm) forward of the ski mount bolt and 10" (2.54cm) behind the ski mount bolt, preferably on the center line of the carbide skags.



4. Place a straight edge along the one side of the track. Make sure that the straight edge is touching along the length of the track.
5. Record the measurements from the edge of the straight edge to the forward ski mark (X) and the rearward ski mark (Y).
6. Adjust the tie rod so that both measurements are the same.
7. Place the straight edge on the opposite side of the track and measure the opposite ski marks.
8. Adjust the tie rod so that both measurements are the same.
9. Steps 3 to 8 will align the skis with the track. At this point, verify the handlebar is centered with the skis.

   NOTE: The handlebar can be aligned with the skis on models featuring an adjustable drag link by adjusting the length of the drag link. If the snowmobile does not feature an adjustable drag link, handlebar-ski alignment can only be performed by adjusting the steering tie rod lengths.

10. Turn both tie rods equally to set ski toe. When finished, measurement (X) should be 0" - 1/8" wider than measurement (Y).
11. Torque steering tie rod jam nuts to specification and lower the vehicle.

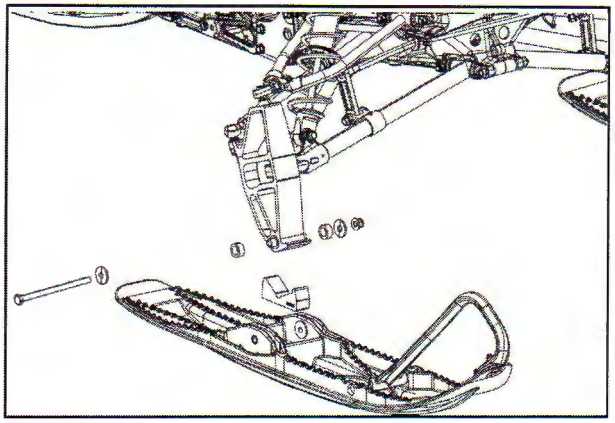
9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

FRONT SUSPENSION DISASSEMBLY / ASSEMBLY

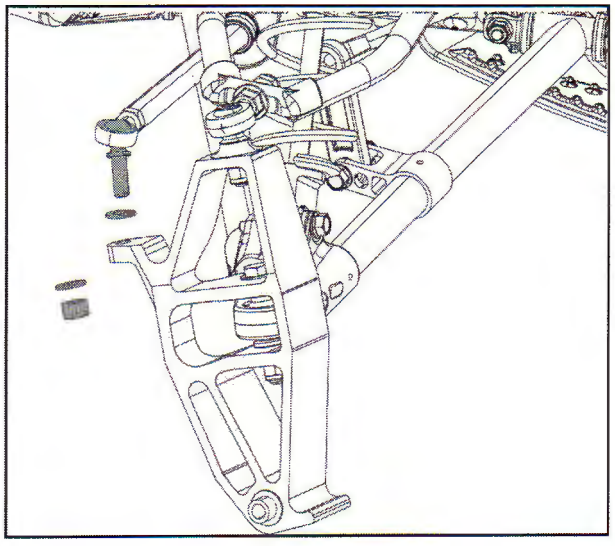
Spindle Removal

NOTE: Images of RMK model. All models similar. Reference front control arm and lower steering sections in this chapter for steering tie rod and lower control arm fastener locations.

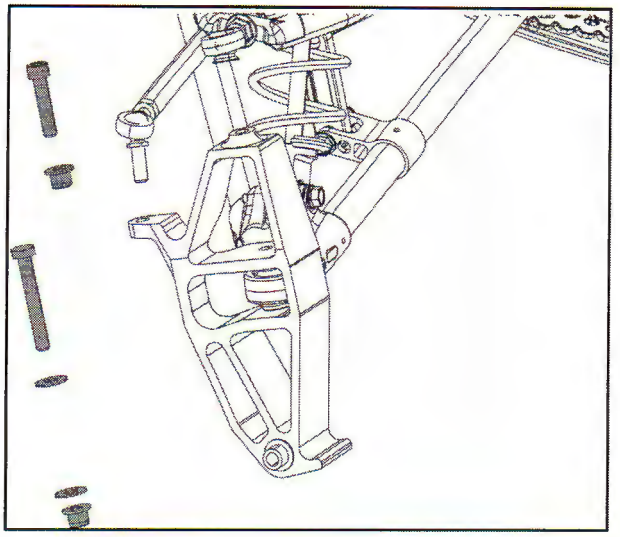
1. Raise the front of the snowmobile off the ground with a dedicated sled lift or floor jack.
2. Remove the ski. Note the orientation of the bolt, washers, and ski bumper.



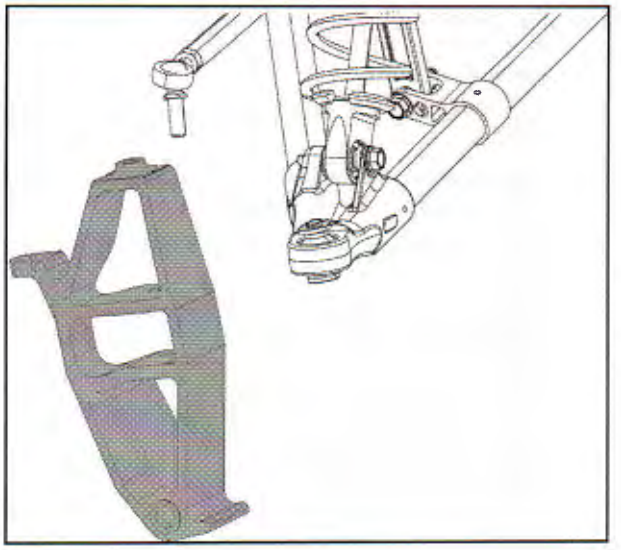
3. Remove the steering tie rod from the spindle.



4. Remove the fasteners and washers securing the upper and lower control arms to the spindle. Note the position of the washers.



5. Remove spindle.



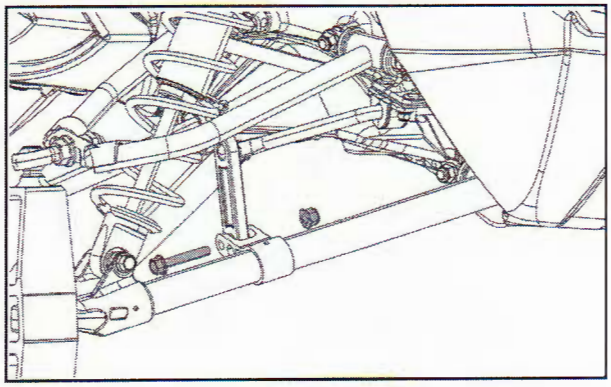
Spindle Assembly

Spindle assembly is the reverse of disassembly. Torque fasteners to specifications using new lock nuts where applicable.

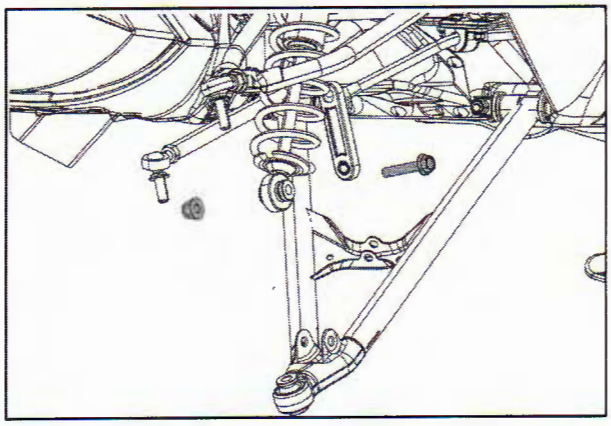
= T
Steering Tie Rod Nut: **37 ft-lbs (50 Nm)** Upper/Lower Control Arm Fasteners: **40 ft-lbs (54 Nm)** Ski Fastner = **37 ft-lbs (50 Nm)**

Upper/Lower Control Arm Removal

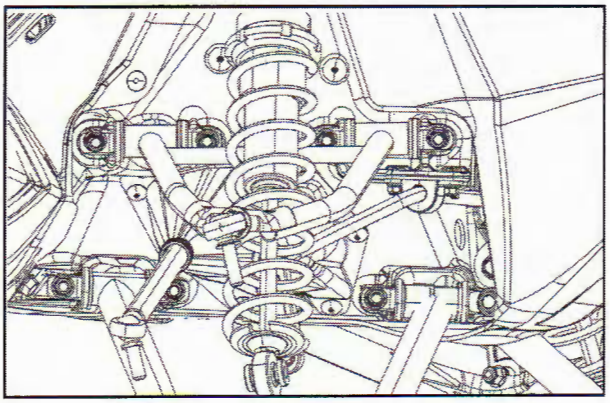
1. Remove ski assembly and spindle.
2. Remove the sway bar link fastener.



3. Remove the shock from the lower control arm.



4. If removing the upper control arm, remove the four lock nuts that secure the pivot shafts to the bulk head.
5. If removing the lower control arm, remove the four lock nuts that secure the pivot shafts to the bulk head. Note that the forward fastener location is a bolt with nut.

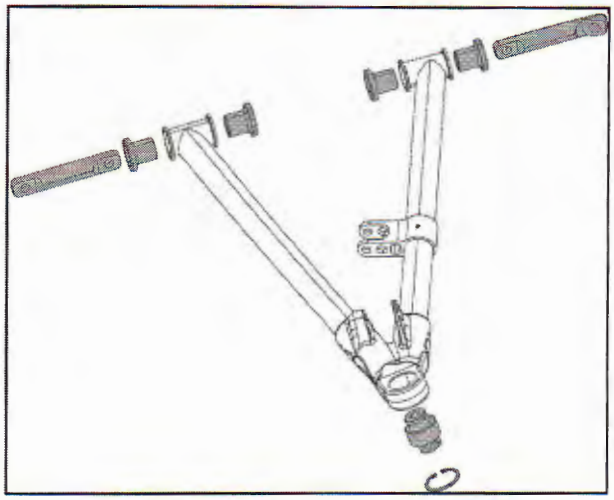


9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

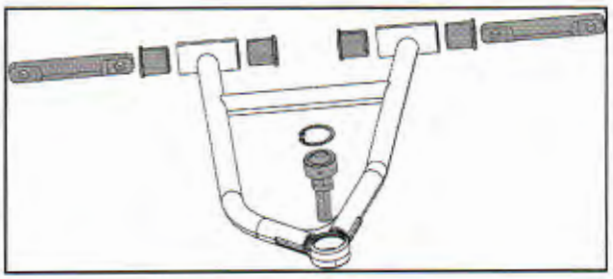
Upper/Lower Control Arm Installation

1. If replacing the pivot shafts, bushings, or rod ends, install the new parts. Reference the appropriate component assembly views for correct orientation of washers and bushings.

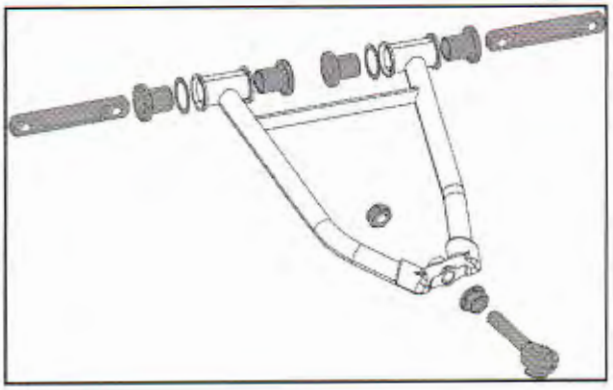
   • Lower Control Arm



   • Fixed Camber Upper Control Arm

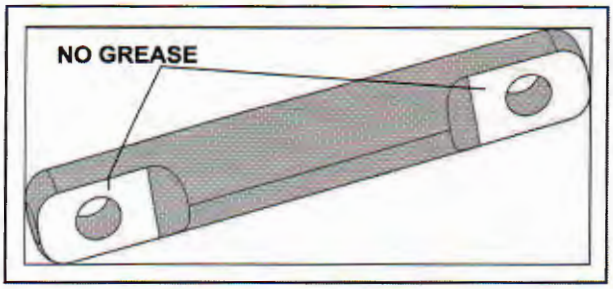


   • Adjustable Camber Upper Control Arm



2. If replacing the spherical bearing, reference Spherical Bearing Replacement procedure.

   NOTE: Apply Polaris Premium Grease to pivot shafts. Verify pivot shaft mounting faces are free from grease.



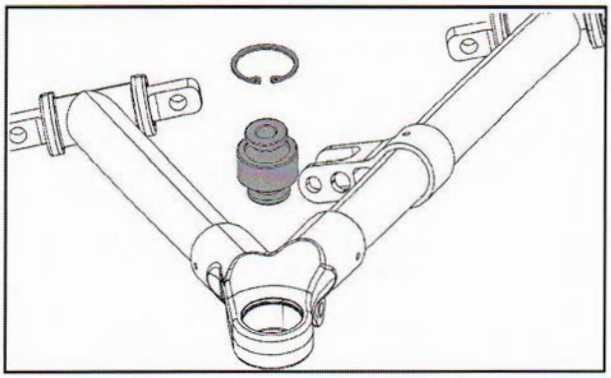
3. Install components in reverse order of disassembly. Use new lock nuts where applicable. Torque fasteners to specifications.

= T
Control Arm-to-Bulkhead Nuts: **30 ft-lbs (41 Nm)** Front Control Arm-to-Bulkhead Fastener/Nut: **40 ft-lbs (54 Nm)** Control Arm-to-Spindle Fasteners: **40 ft-lbs (54 Nm)** Sway Bar Linkage Fastener: **15-22 ft-lbs (20 - 30 Nm)**

NOTE: On adjustable camber models inspect and re-adjust camber settings after replacing the control arms or spindle rod ends.

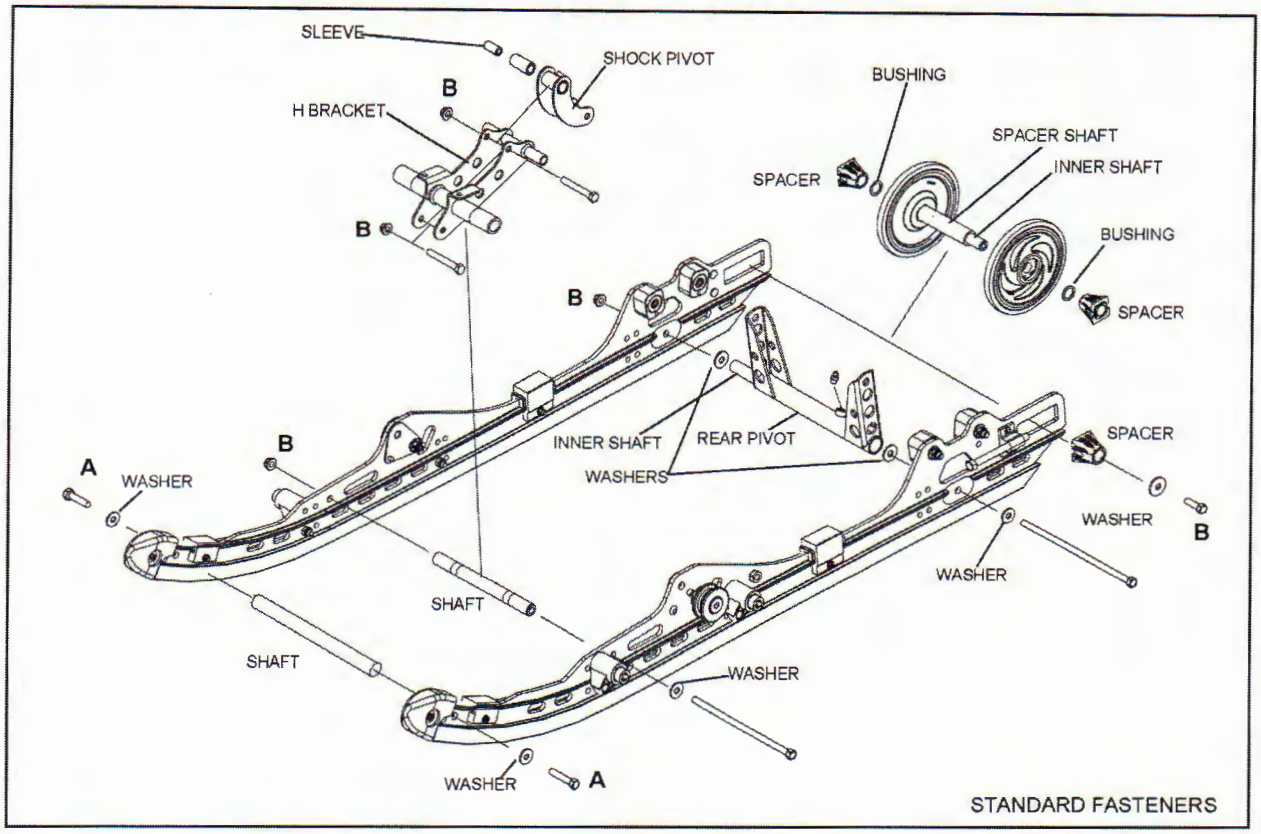
Spherical Bearing Replacement

1. Remove the lower control arm from the vehicle.
2. Place the control arm on the bench and remove the retaining ring.
3. Using an arbor press, press the spherical bearing out of the bore.
4. Obtain new spherical bearing. Use an arbor press and press the bearing into the control arm bore. Press on the outer bearing race.
5. Install a new retaining ring with the flat (sharp) edge out.



REAR SUSPENSION ASSEMBLY ILLUSTRATIONS

INDY 121 Conventional Pivots / Rear Idler



= T
A: 45 ft-lbs (61 Nm) B: 35 ft-lbs (47.4 Nm)

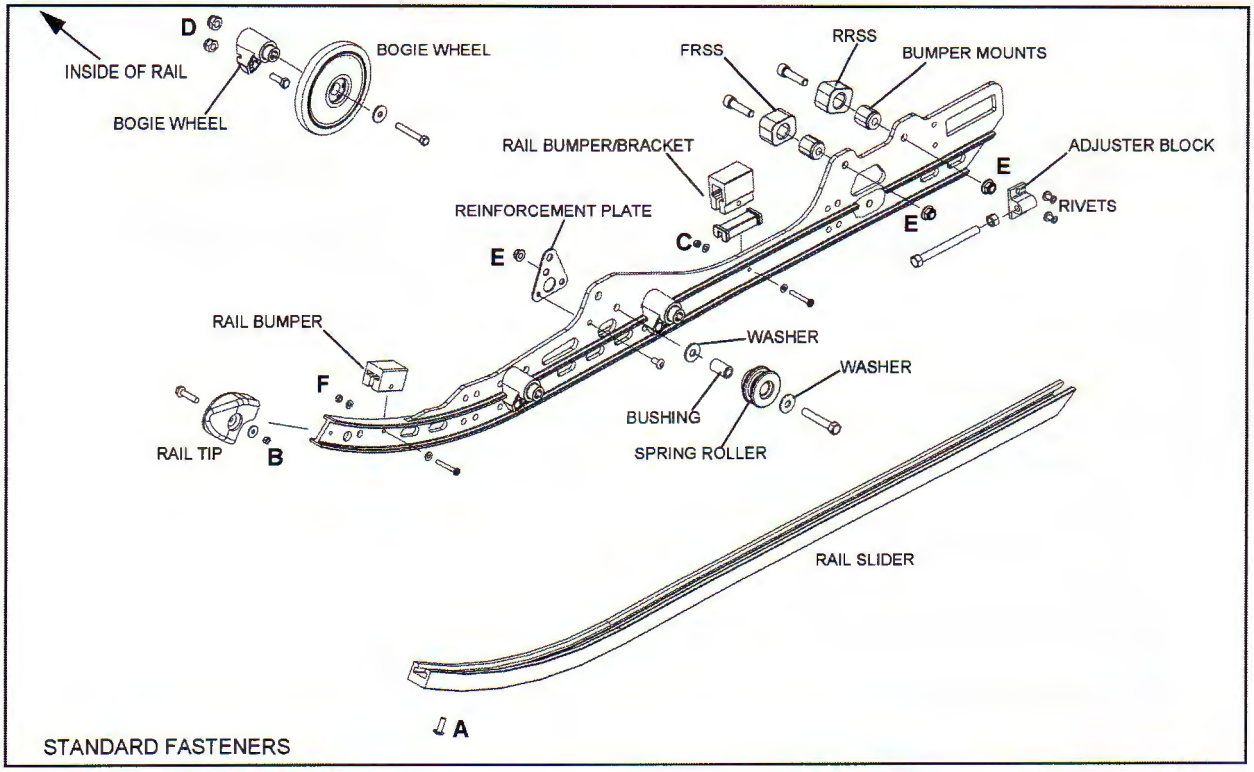
Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Install rear idler adjust spacers with flat side facing adjuster screw.

⚠ CAUTION

Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

INDY 121 Conventional Rail Assembly



= T
A: 3-6 ft-lbs (4-8 Nm) B: 4 ft-lbs (5.4 Nm) C: Torque nut until screw protrudes 7/32" (5.3mm) D: 19 ft-lbs (25 Nm) E: 35 ft-lbs (47 Nm) F: Torque nut until screw protrudes 1/8" (3mm)

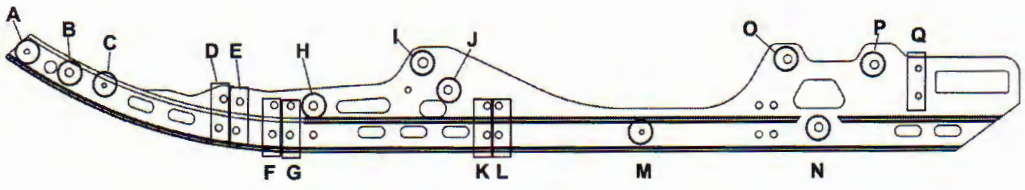
Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

INDY 121 Conventional Rail Fastener Locations

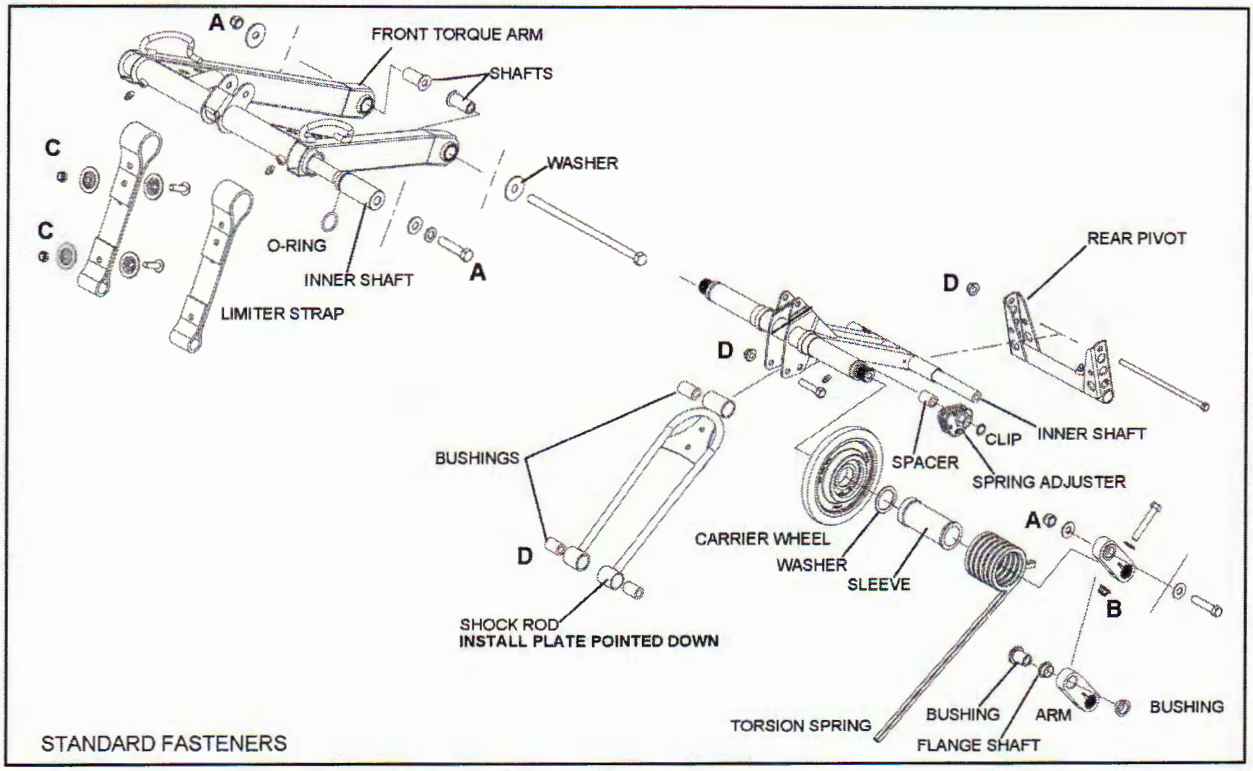


LEFT RAIL SHOWN

Components/Fasteners:

- A - Rail Tip
- B - Limiter Strap Shaft
- C - Rail Bumper
- D - Optional Bogie Wheel Asm. (Mount to inside of right rail).
- E - Optional Bogie Wheel Asm. (Mount to inside of left rail).
- F - Bogie Wheel Asm. (Mount to outside of right rail).
- G - Bogie Wheel Asm. (Mount to outside of left rail).
- H - H Bracket Mount
- I - Front Torque Arm Mount
- J - Spring Roller Mount
- K - Bogie Wheel Asm. (Mount to outside of left rail).
- L - Bogie Wheel Asm. (Mount to outside of right rail).
- M - Rail Bumper
- N - Rear Pivot Mount
- O - Front-Rear Scissor Stop (FRSS)
- P - Rear-Rear Scissor Stop (RRSS)
- Q - Rear Idler Adjuster Block Mount

INDY 121 Conventional Front / Rear Torque Arms



= T
A: 60 ft-lbs (81 Nm) B: 50 ft-lbs (68 Nm) C: 12 ft-lbs (16 Nm) D: 35 ft-lbs (47.4 Nm)

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

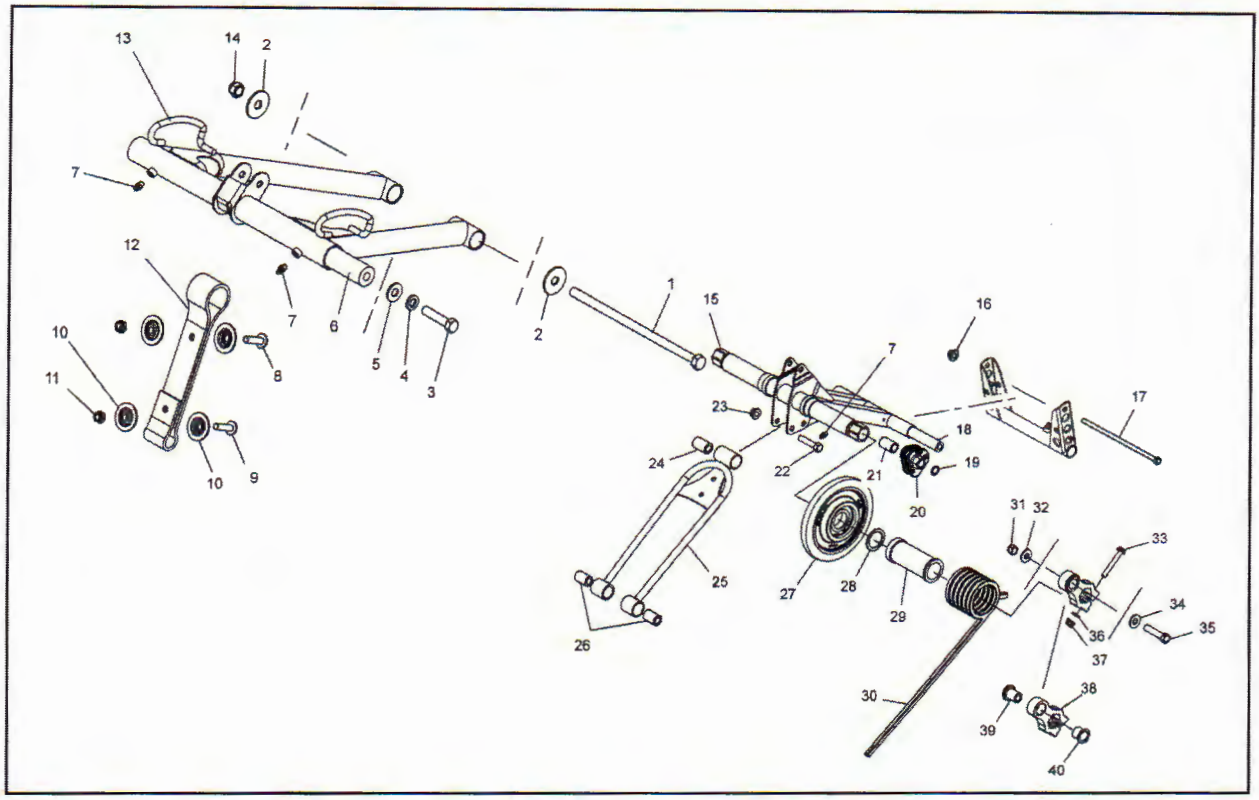
CAUTION

Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

8

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

2014 INDY 121 Front/Rear Torque Arm



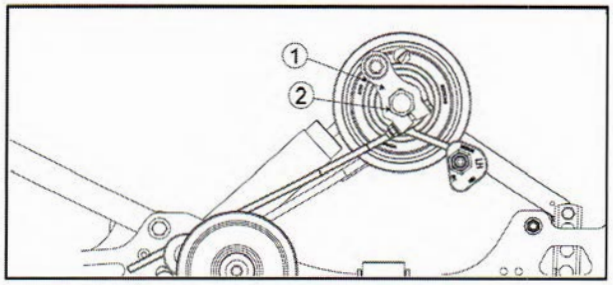
REF.	DESCRIPTION	NOTE
1	Pivot Bolt	
2	Washer	
3	Mount Bolt	60 ft-lbs (81 Nm)
4	Lock Washer	
5	Washer	
6	Pivot Shaft	
7	Zerk	
8	Bolt	5/16x18x1
9	Bolt	5/16x18x1-1/2
10	Spacers	
11	Nut	12 ft-lbs (16 Nm)
12	Limiter Strap	Install strap with free end down and facing forward.
13	Front Torque Arm	
14	Nut	35 ft-lbs (47 Nm)
15	Rear Torque Arm	
16	Nut	35 ft-lbs (47 Nm)
17	Pivot Bolt	
18	Pivot Shaft	
19	Lock Ring	
20	Spring Adj.	
21	Cam	
22	Bolt	

REF.	DESCRIPTION	NOTE
23	Nut	35 ft-lbs (47 Nm)
24	Bushing	
25	Shock Rod	Plate faces down.
26	Bushings Shock Lower Pivot Nut	35 ft-lbs (47 Nm)
27	Carrier Wheel	
28	Washer	
29	Spring Sleeve	Large sleeve step faces in.
30	Spring	
31	Nut	60 ft-lbs (81 Nm)
32	Washer	
33	Bolt	
34	Washer	
35	Mount Bolt	
36	Washer	
37	Nut	18 ft-lbs (24 Nm)
38	Link Arm	
39	Inner Bushing	
40	Outer Bushing	

INDY 121 Rear Torque Arm Hex Link

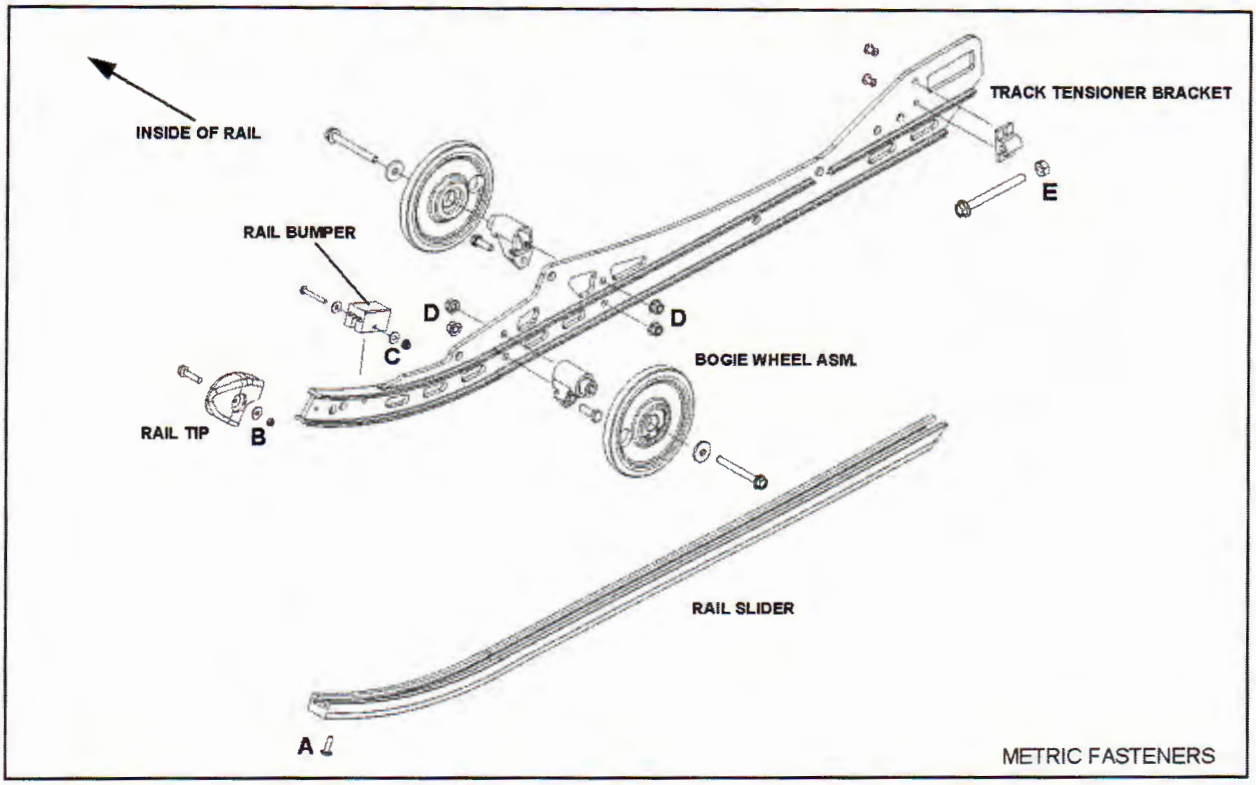
2014 Models

Install INDY 121 rear torque arm hex link as shown.



- 1 = Link Arm
- 2 = Rear Torque Arm Hex End

2010 Progressive 120 Rail Assembly



= T
A: 7.4 ft-lbs (10 Nm) B: 4 ft-lbs (5.4 Nm) C: Torque nut until screw protrudes 7/32" (5.3mm) D: 17 ft-lbs (23 Nm) E: 33 ft-lbs (45 Nm)

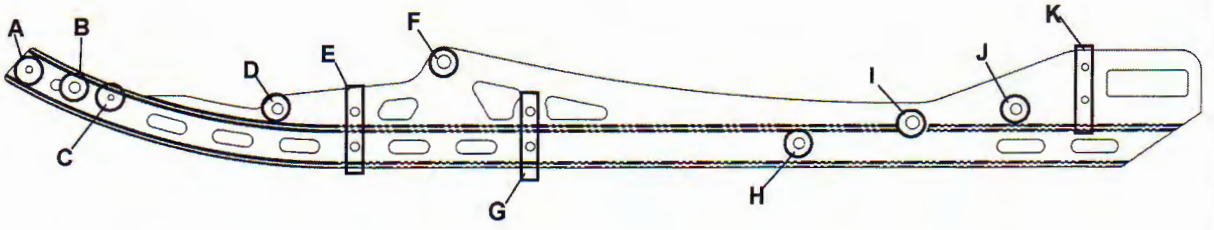
Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

CAUTION

Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

2010 Progressive 120 Rail Fastener Locations

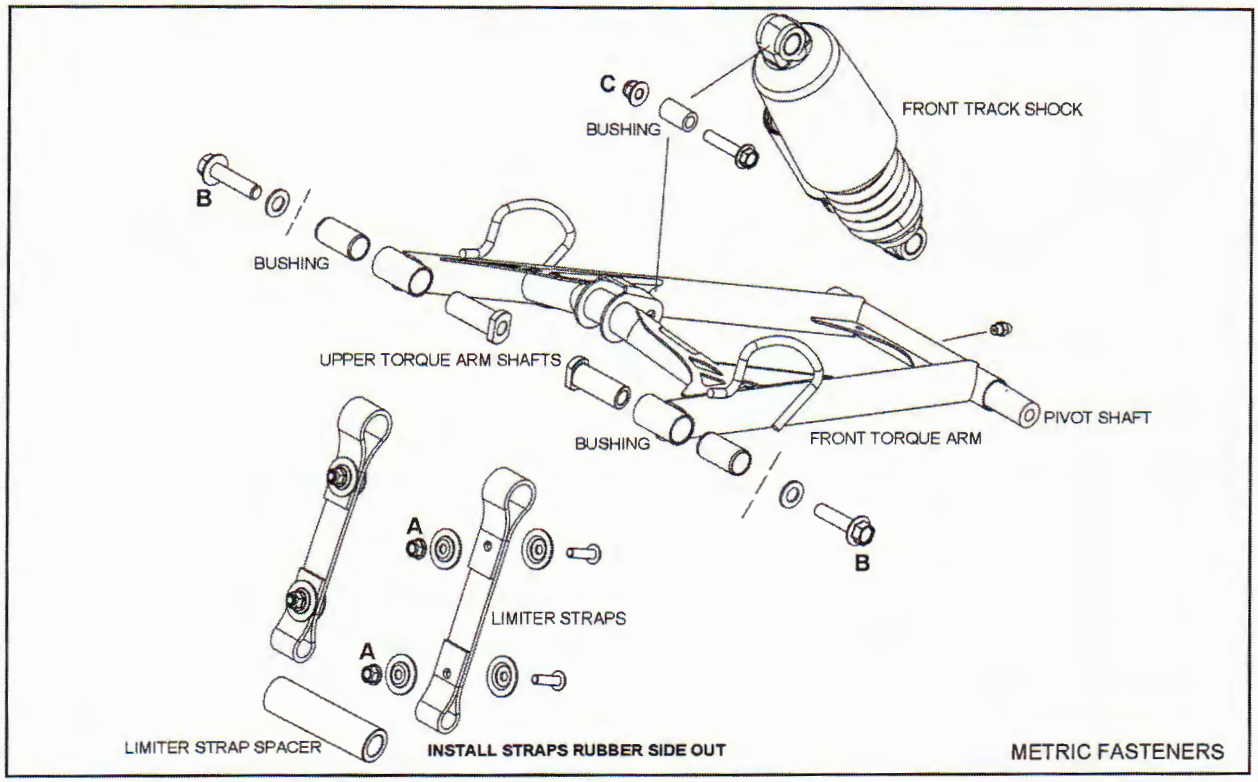


LEFT RAIL SHOWN

Components/Fasteners:

- A - Rail Tip
- B - Limiter Strap Shaft
- C - Rail Bumper
- D - H Bracket/Bogie Wheel Shaft
- E - Bogie Wheel Asm. (Mount to outside of rail).
- F - Front Torque Arm Shaft
- G - Bogie Wheel Asm. (Mount to inside of rail).
- H - Rail Brace Shaft
- I - Rear Pivot Shaft
- J - Rail Brace Shaft
- K - Rear Idler Adjuster Block

2010 Progressive 120 Front Torque Arm Assembly



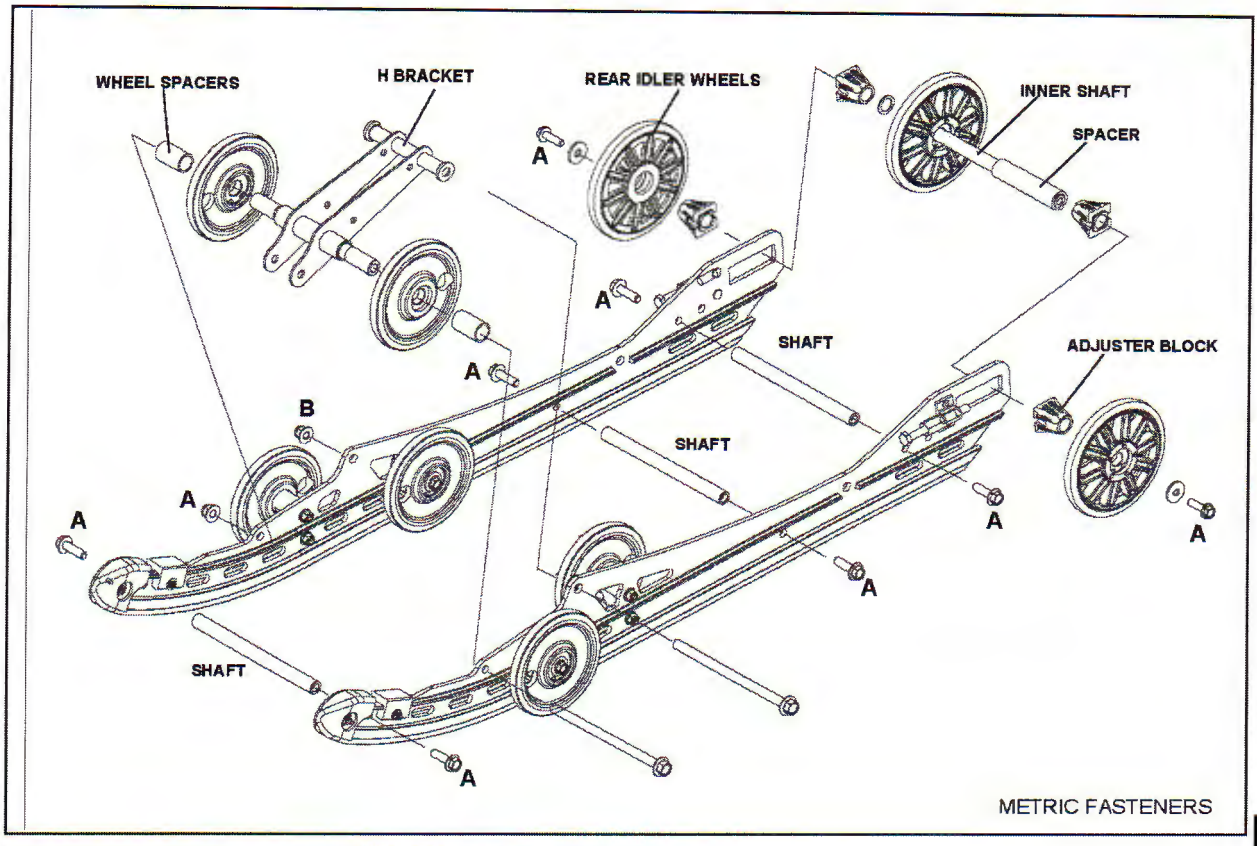
= T
A: 17 ft-lbs (23 Nm) B: 60 ft-lbs (80 Nm) Apply Loctite® 262™ to Threads C: 33 ft-lbs (45 Nm) D: 60 ft-lbs (80 Nm)

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

⚠ CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

2010 Progressive 120 Idler Shaft Assembly



= T
A: 33 ft-lbs (45 Nm) B: 60 ft-lbs (80 Nm)

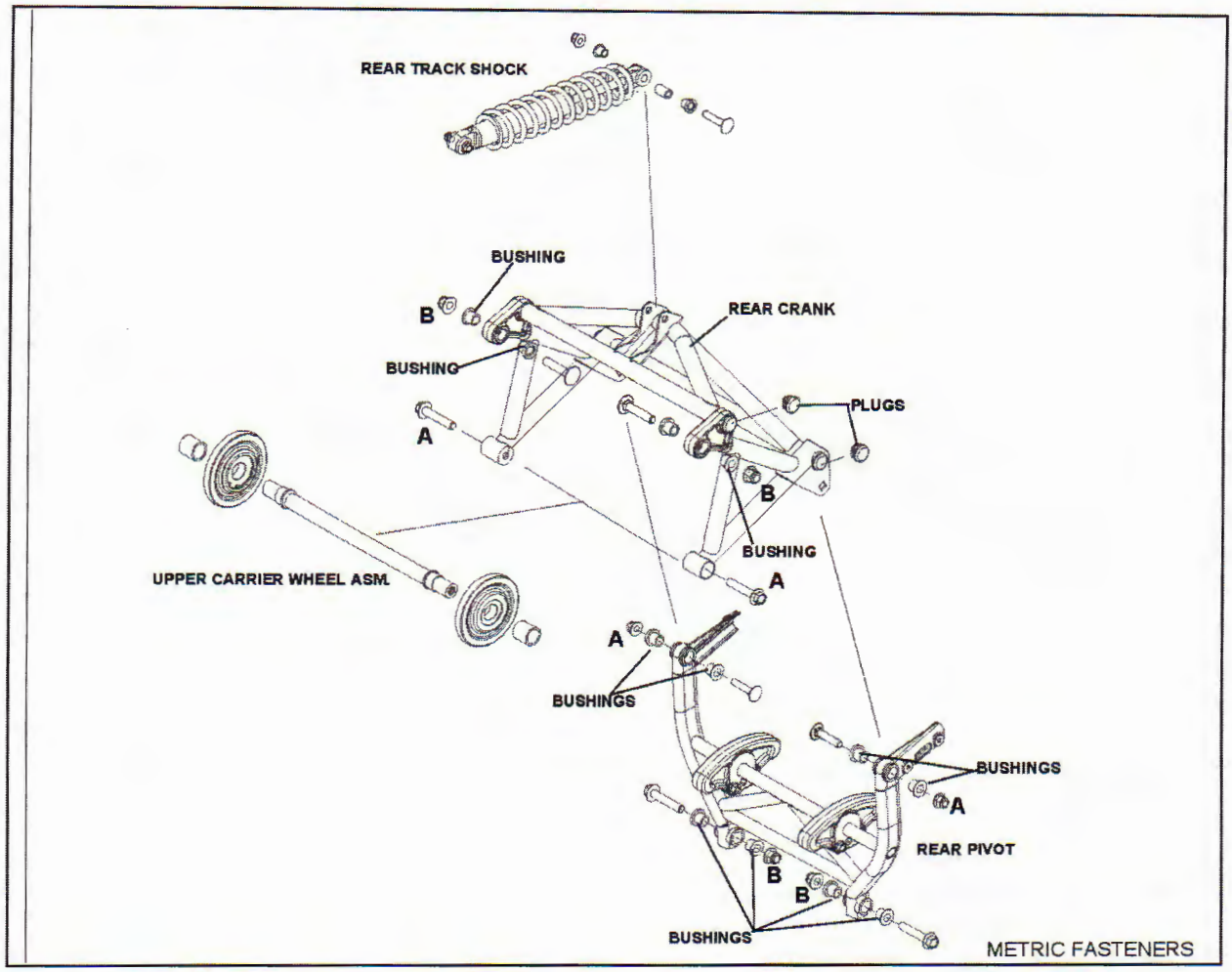
Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Install rear idler adjust blocks with flat side facing adjuster screw.

⚠ CAUTION

Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

2010 Progressive 120 Rear Crank / Scissor Assembly



= T
A: 33 ft-lbs (45 Nm) B: 60 ft-lbs (80 Nm)

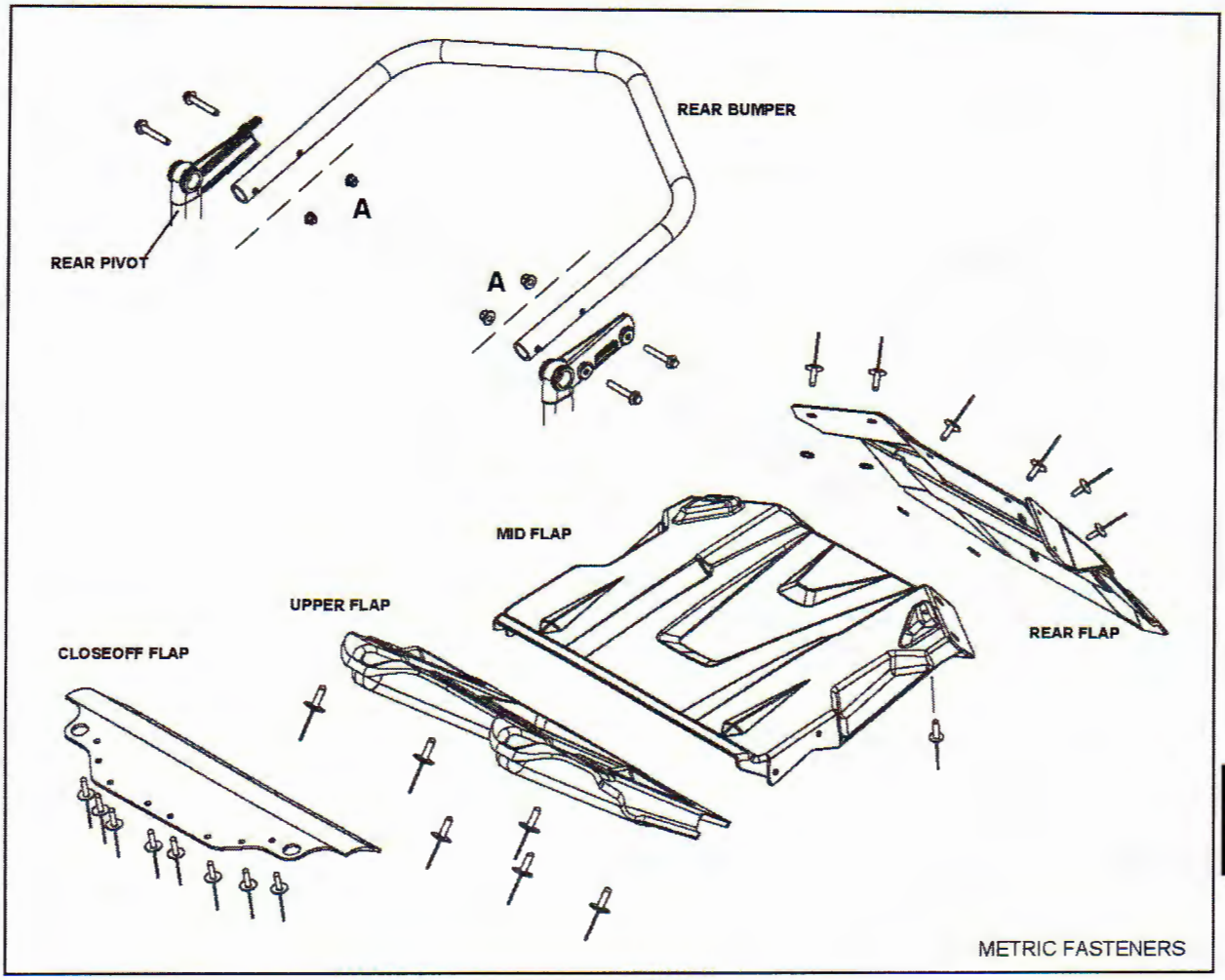
⚠ CAUTION

Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

2010 Progressive 120 Rear Bumper / Closeoff Assembly

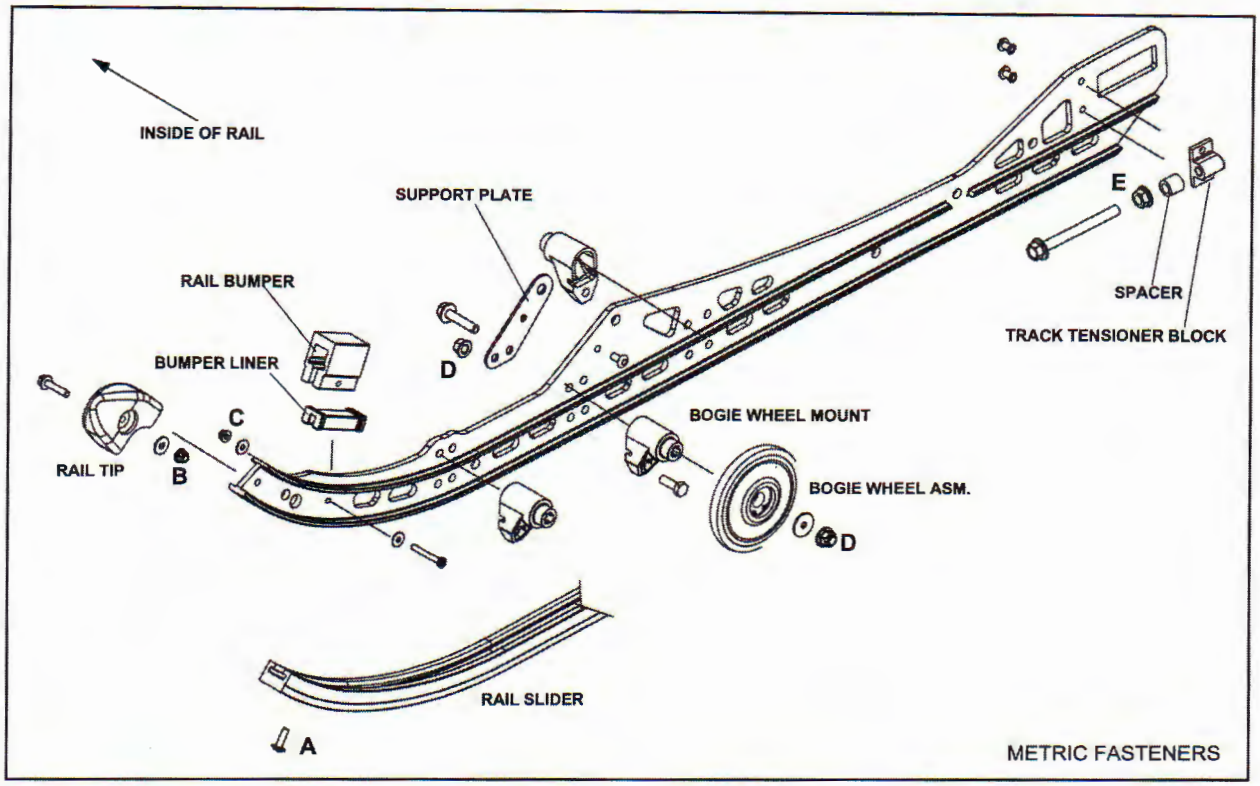


= T
A: 7 ft-lbs (9.5 Nm)

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

Progressive 121 Rail Assembly



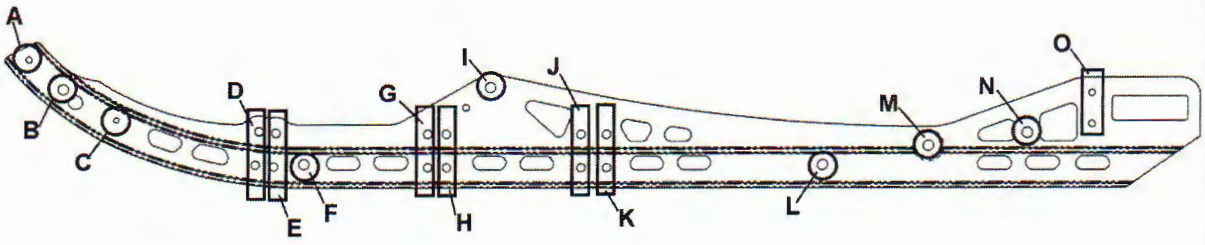
= T
A: 7.4 ft-lbs (10 Nm) B: 4 ft-lbs (5.4 Nm) C: Torque nut until screw protrudes 5mm D: 17 ft-lbs (23 Nm) E: 33 ft-lbs (45 Nm)

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

Progressive 121 Rail Fastener Locations

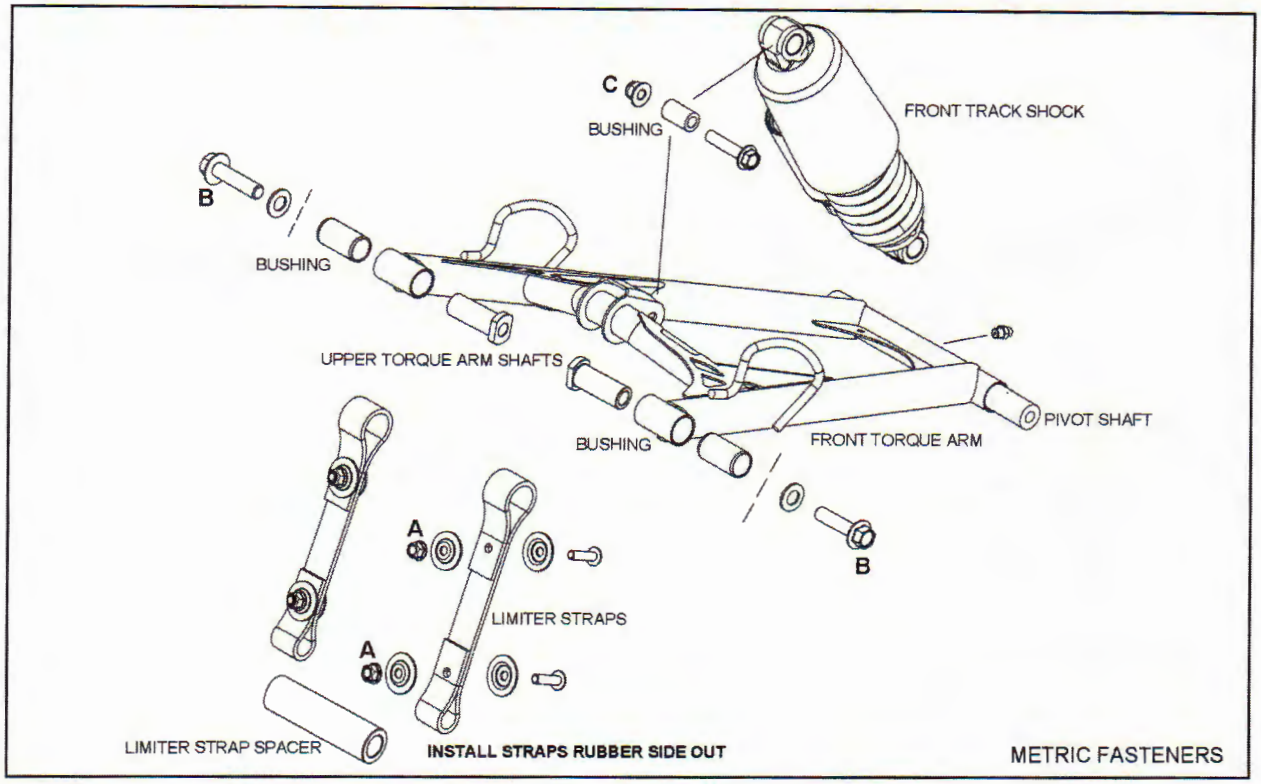


LEFT RAIL SHOWN

Components/Fasteners:

- A - Rail Tip
- B - Limiter Strap Shaft
- C - Rail Bumper
- D - *Left Rail Front Holes* - Bogie Wheel Asm. (Mount to outside of rail).
- E - *Right Rail Rear Holes* - Bogie Wheel Asm. (Mount to outside of rail).
- F - Front Shock Shaft
- G - *Left Rail Front Holes* - Bogie Wheel Asm. (Mount to outside of rail).
- H - *Right Rail Rear Holes* - Bogie Wheel Asm. (Mount to outside of rail).
- I - Front Torque Arm Shaft
- J - *Left Rail Front Holes* - Bogie Wheel Asm. (Mount to inside of rail).
- K - *Right Rail Rear Holes* - Bogie Wheel Asm. (Mount to inside of rail).
- L - Rail Brace Shaft
- M - Rear Pivot Shaft
- N - Rail Brace Shaft
- O - Rear Idler Adjuster Block

Progressive 121 Front Torque Arm



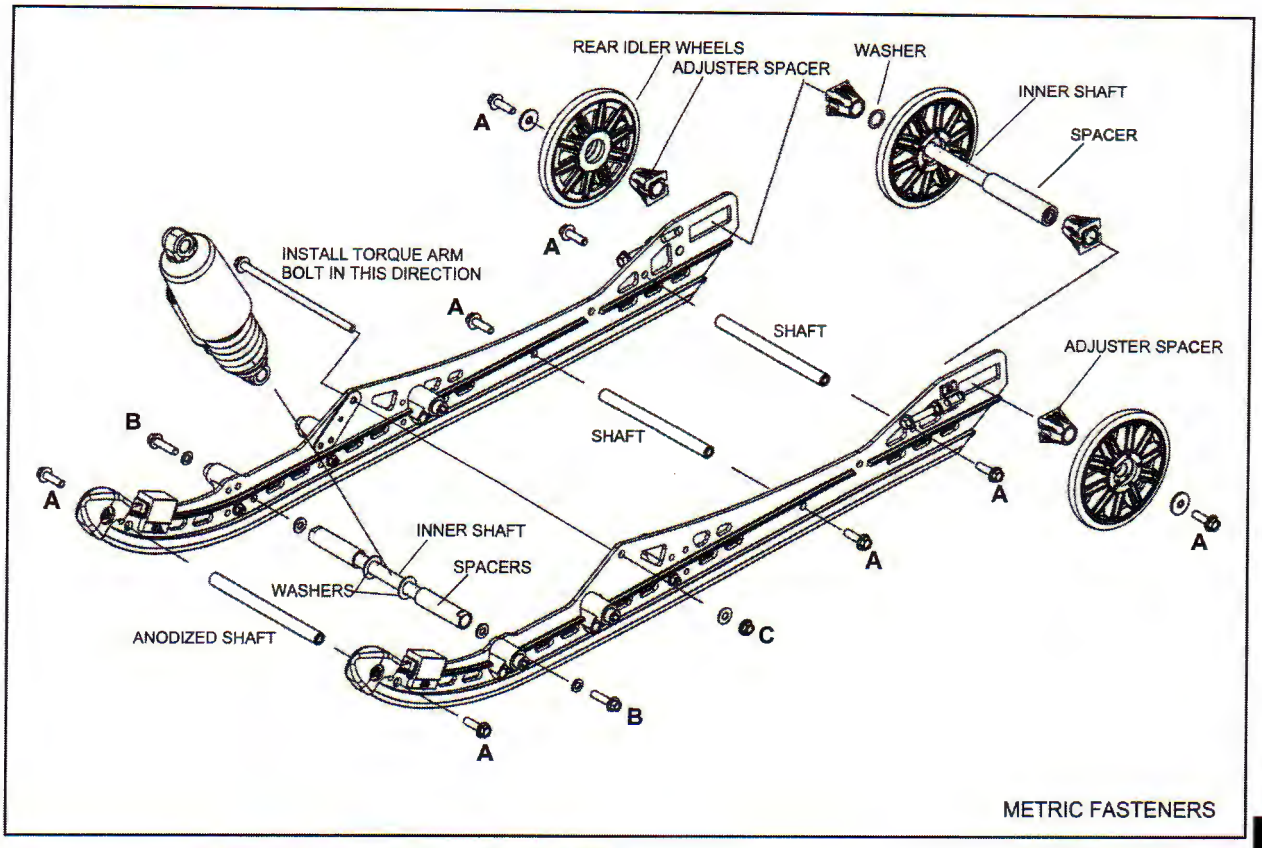
= T
A: 17 ft-lbs (23 Nm) B: 60 ft-lbs (80 Nm) Apply Loctite® 262™ to Threads C: 33 ft-lbs (45 Nm)

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

Progressive 121 Idler Shafts



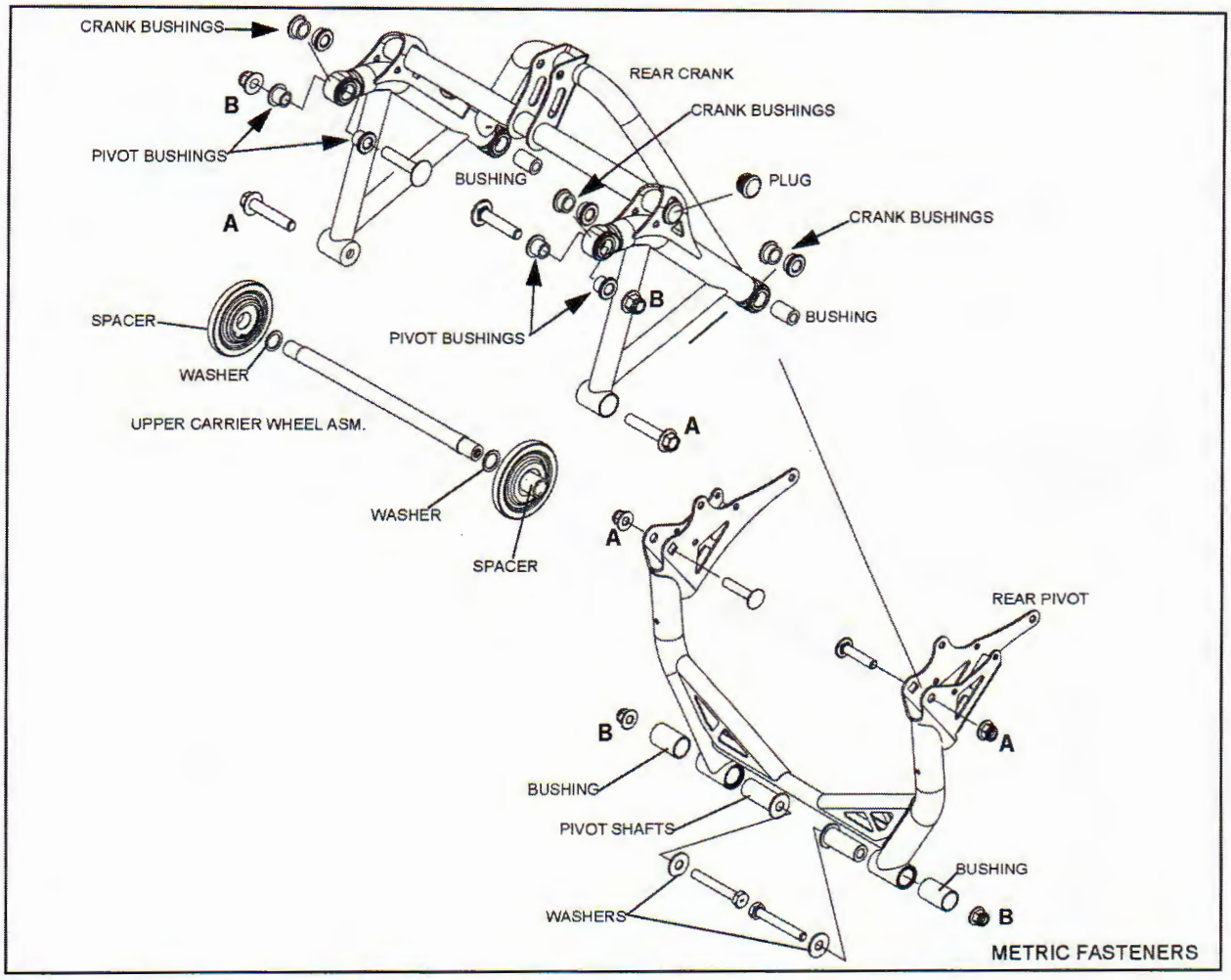
= T
A: 33 ft-lbs (45 Nm) Apply Loctite® 262™ to threads B: 50 ft-lbs (67 Nm) Apply Loctite® 262™ to threads C: 60 ft-lbs (81 Nm)

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Install rear idler adjust blocks with flat side facing adjuster screw.

CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

Progressive 121 Rear Crank / Scissor Assembly



= T
A: 33 ft-lbs (44.7 Nm) B: 60 ft-lbs (80 Nm)

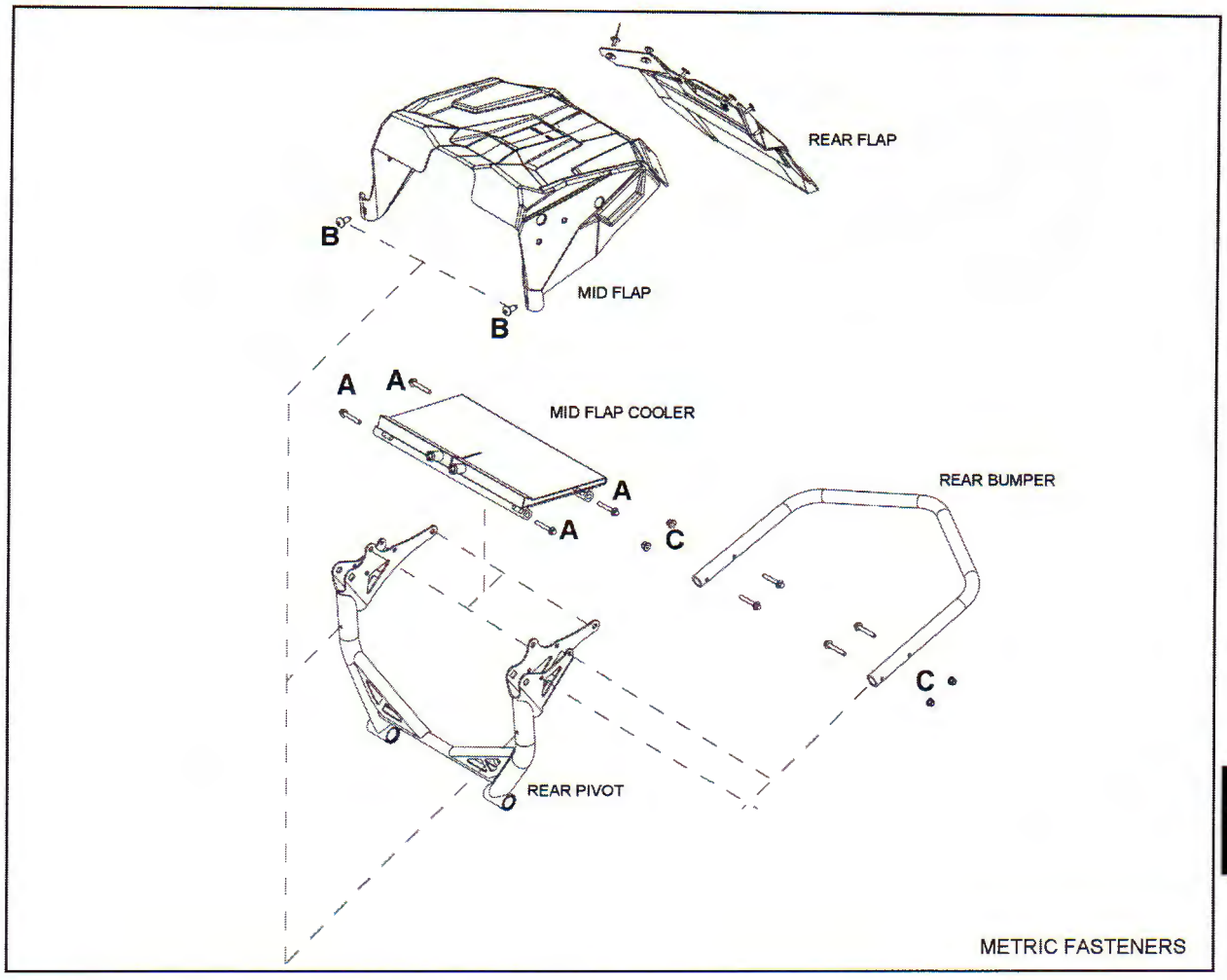
CAUTION

Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

2011 Progressive 121 Bumper / Closeoff Assembly

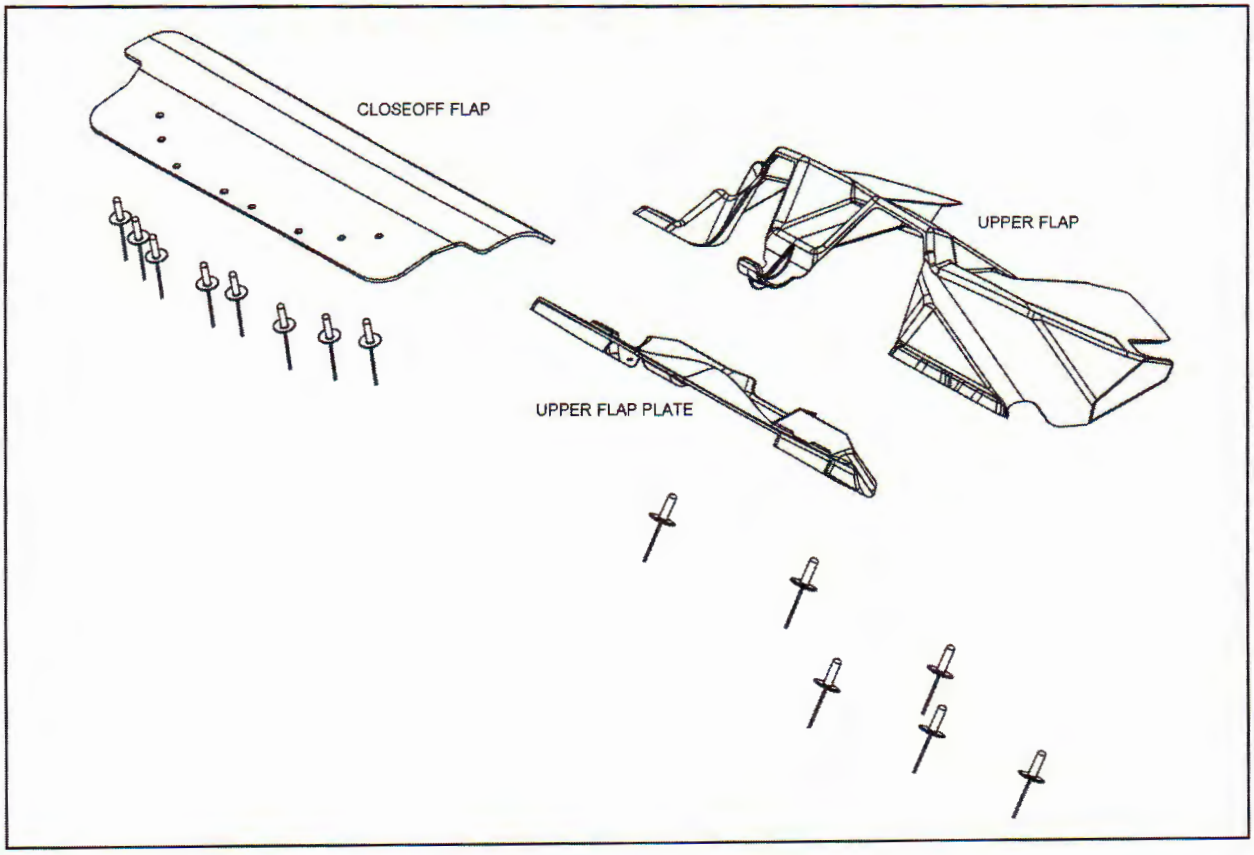


= T
A: 33 ft-lbs (44.7 Nm) B: 3.6 ft-lbs (5 Nm) C: 9.5 ft-lbs (7 Nm)

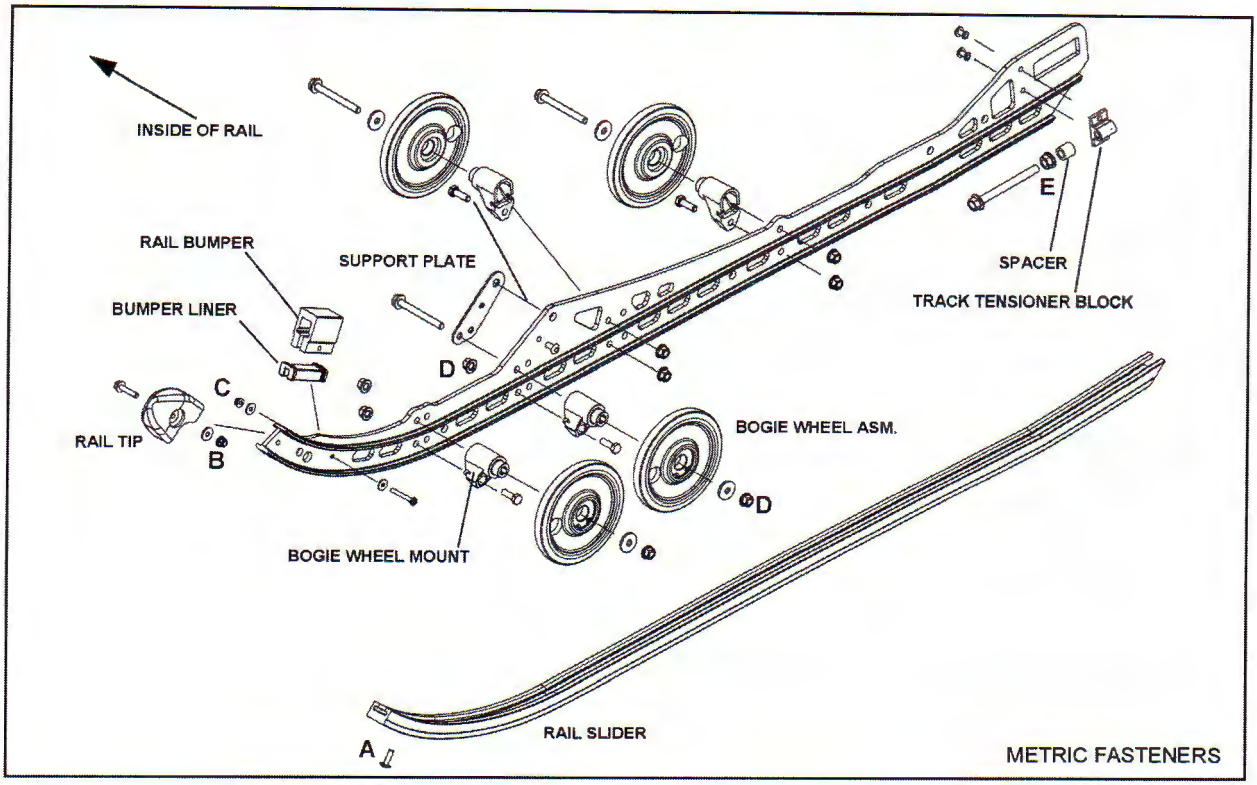
Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

2011 Progressive 121 Rear Mid Flap Covers



Progressive 136 Rail Assembly



= T
A: 7.4 ft-lbs (10 Nm) B: 4 ft-lbs (5.4 Nm) C: Torque nut until screw protrudes 5mm D: 17 ft-lbs (23 Nm) E: 33 ft-lbs (45 Nm)

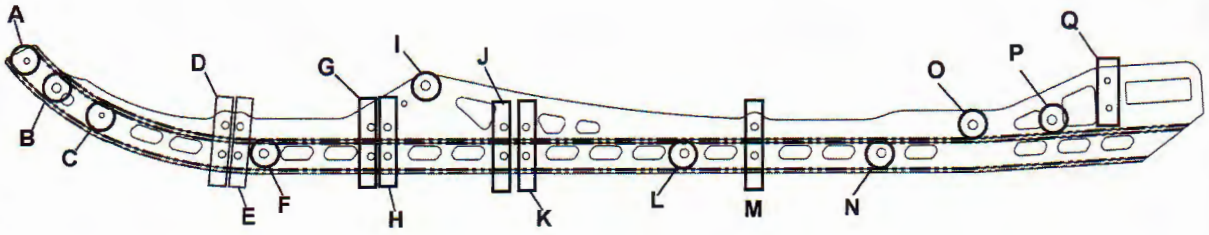
Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

Progressive 136 Rail Fastener Locations

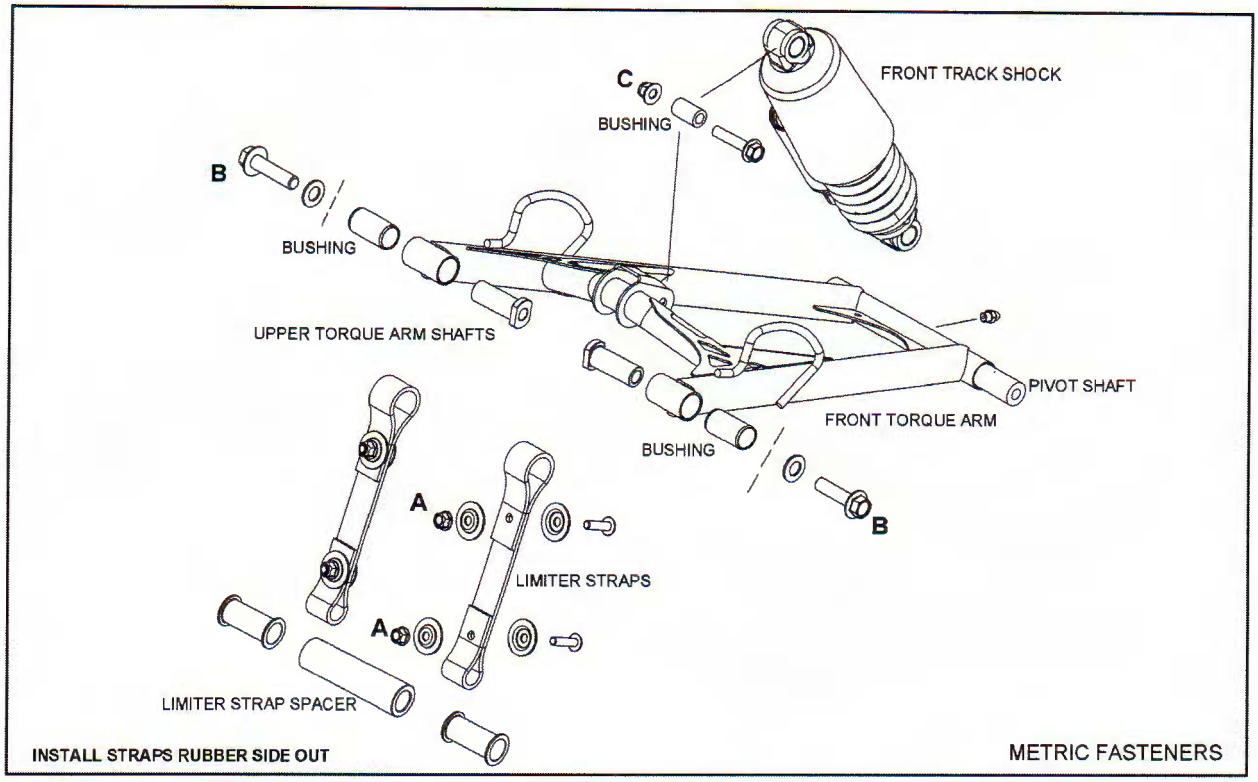


LEFT RAIL SHOWN

Components/Fasteners:

- A - Rail Tip
- B - Limiter Strap Shaft
- C - Rail Bumper
- D - *Left Rail Front Holes* - Bogie Wheel Asm. (Mount to outside of rail)
- E - *Right Rail Rear Holes* - Bogie Wheel Asm. (Mount to outside of rail)
- F - Front Shock Shaft
- G - *Left Rail Front Holes* - Bogie Wheel Asm. (Mount to outside of rail)
- H - *Right Rail Rear Holes* - Bogie Wheel Asm. (Mount to outside of rail)
- I - Front Torque Arm Shaft
- J - *Left Rail Front Holes* - Bogie Wheel Asm. (Mount to inside of rail)
- K - *Right Rail Rear Holes* - Bogie Wheel Asm. (Mount to inside of rail)
- L - Rail Brace Shaft
- M - Bogie Wheel Asm.
- (Mount to inside of rail)
- N - Rail Brace Shaft
- O - Rear Pivot Shaft
- P - Rail Brace Shaft
- Q - Rear Idler Adjuster Block

Progressive 136 Front Torque Arm



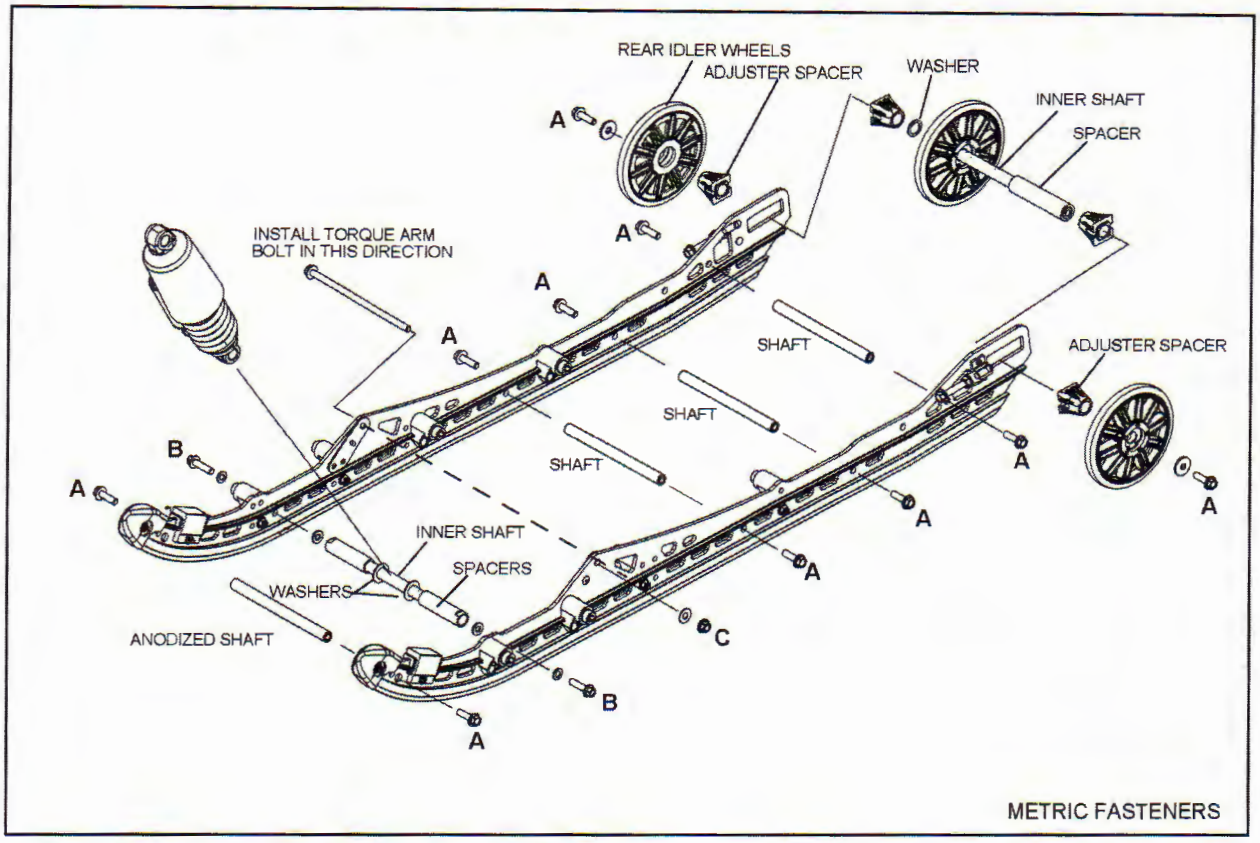
= T
A: 17 ft-lbs (23 Nm) B: 60 ft-lbs (80 Nm) Apply Loctite® 262™ to threads C: 33 ft-lbs (45 Nm)

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

Progressive 136 Idler Shafts



= T
A: 33 ft-lbs (45 Nm) Apply Loctite® 262™ to threads B: 50 ft-lbs (67 Nm) Apply Loctite® 262™ to threads C: 60 ft-lbs (81 Nm)

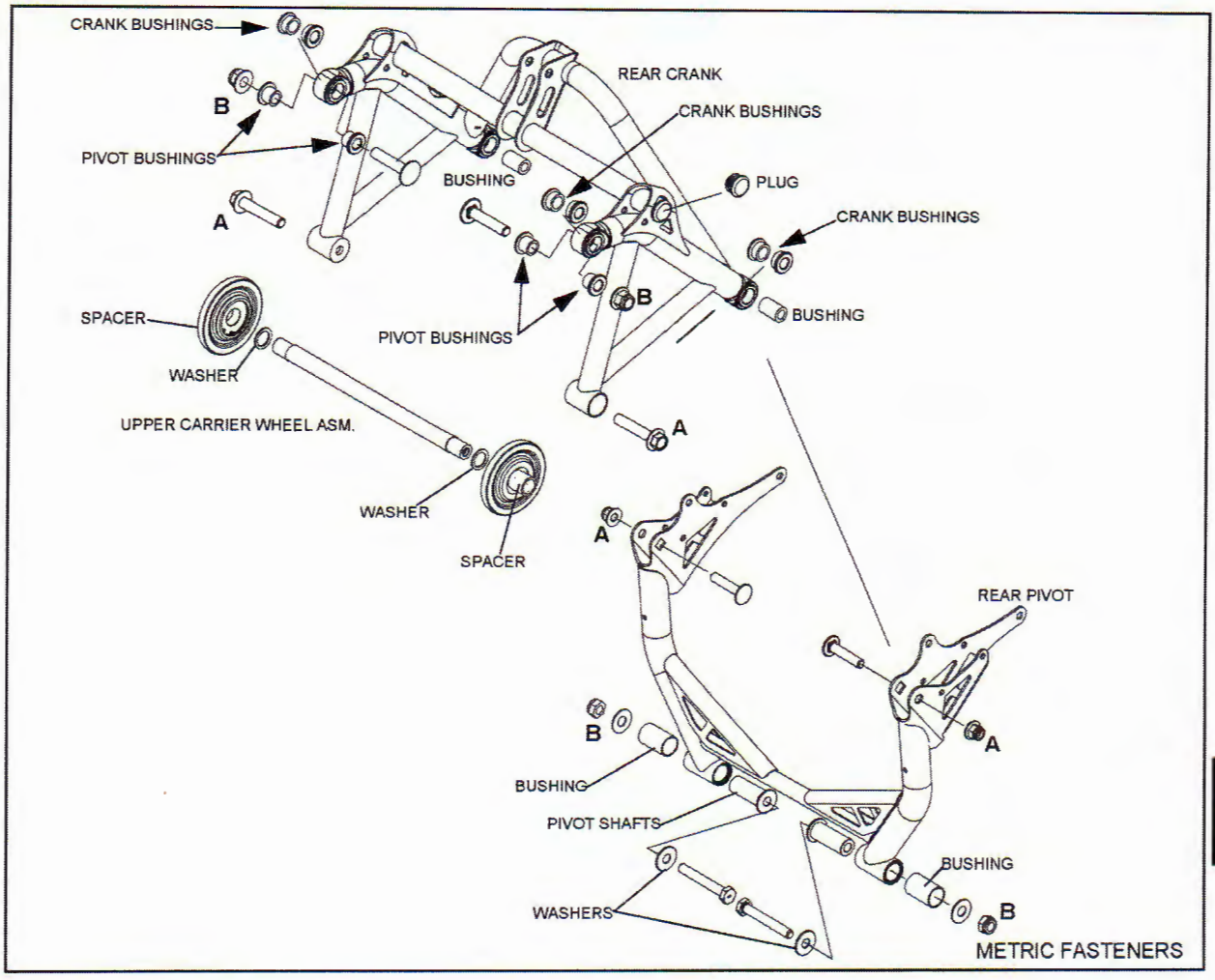
Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Install rear idler adjust blocks with flat side facing adjuster screw.

CAUTION

Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

Progressive 136 Rear Crank / Scissor Assembly



= T
A: 33 ft-lbs (44.7 Nm) B: 60 ft-lbs (80 Nm)

CAUTION

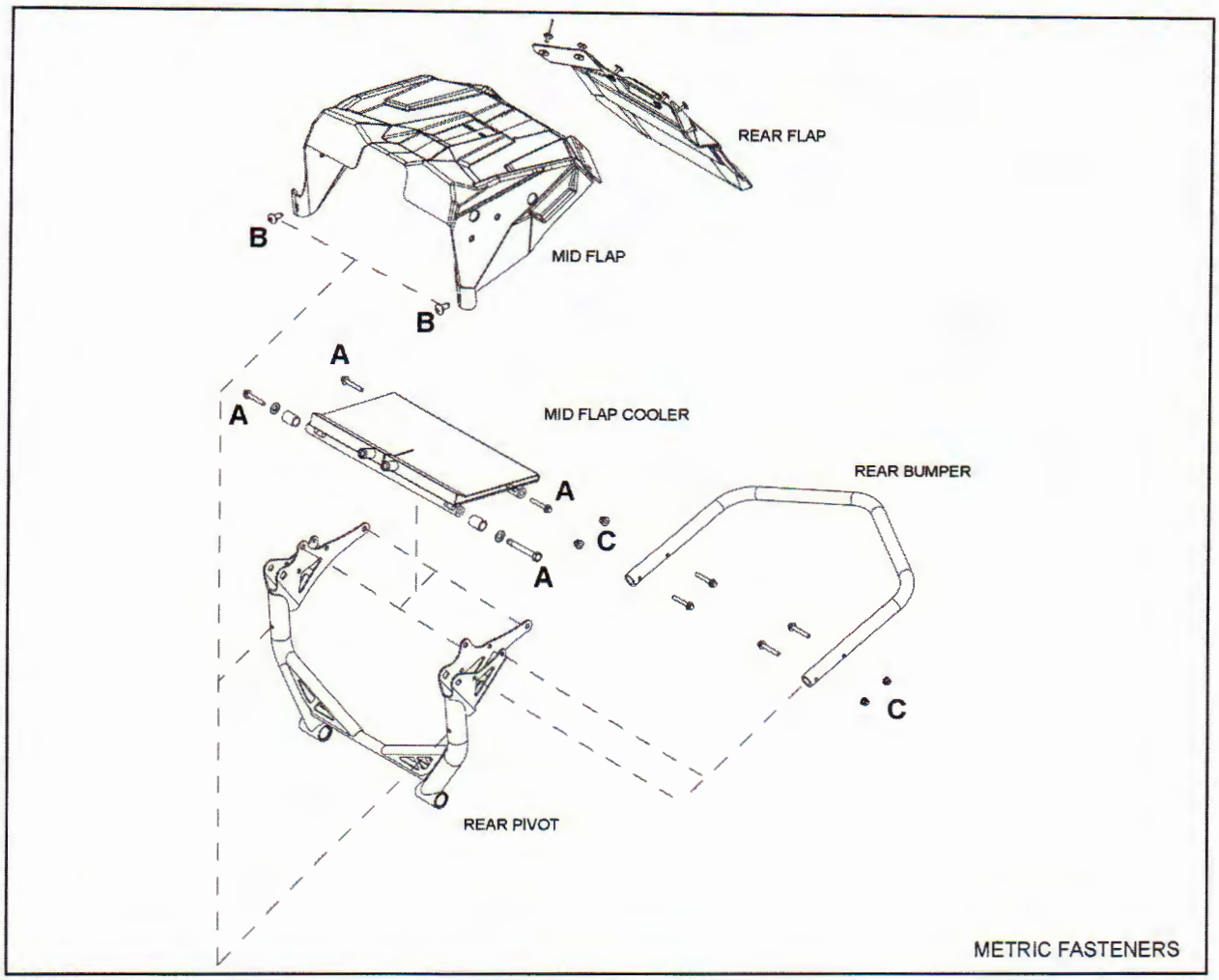
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

2012-2013 Progressive 121 / 136 Bumper / Closeoff

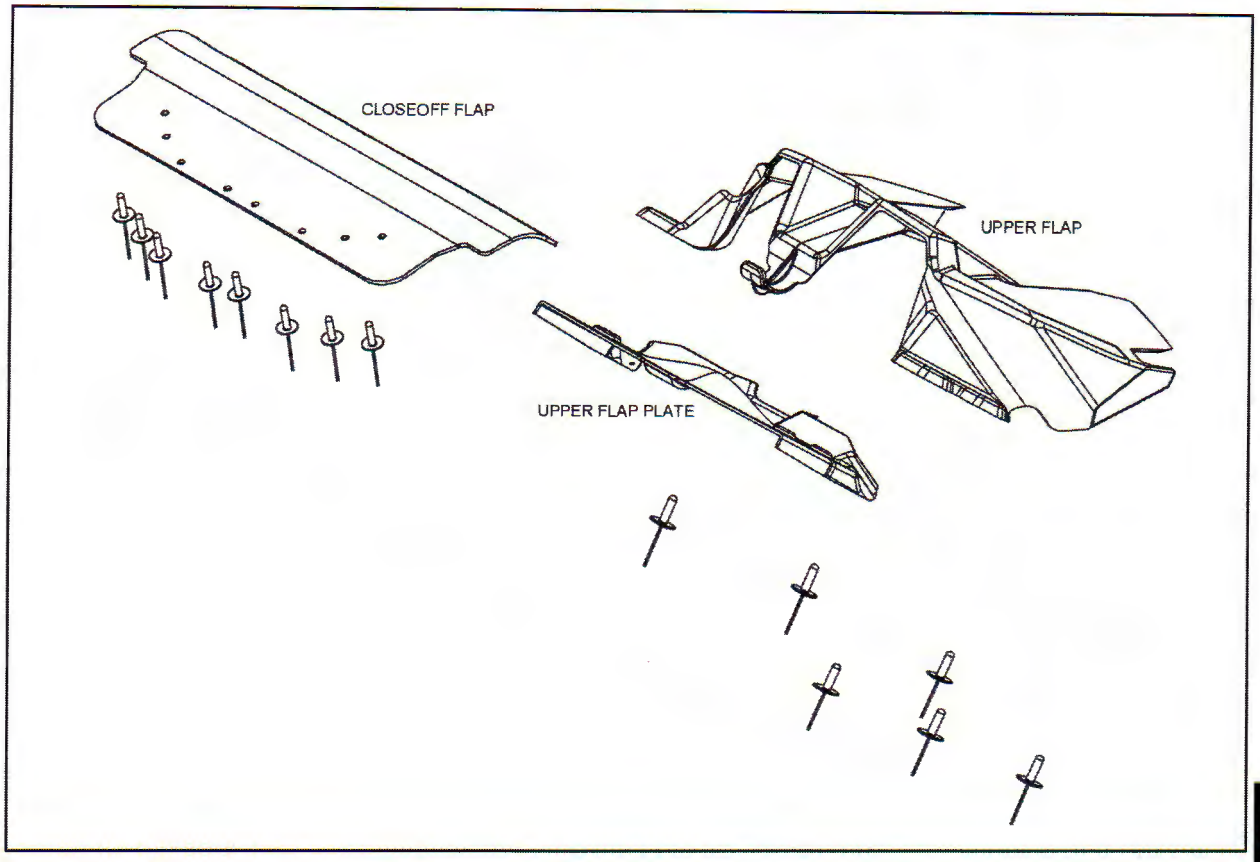


= T
A: 33 ft-lbs (44.7 Nm) B: 3.6 ft-lbs (5 Nm) C: 9.5 ft-lbs (7 Nm)

Assembly Notes

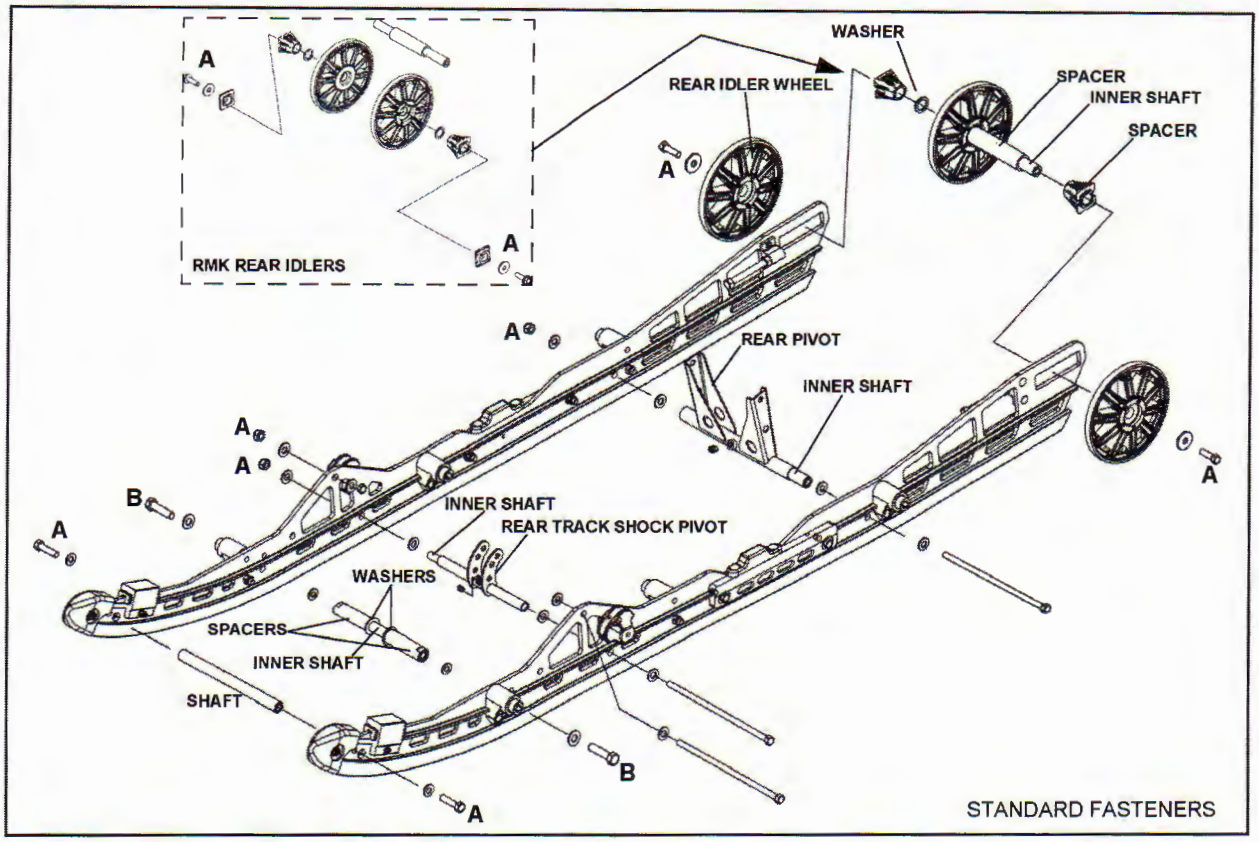
- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

2012-2013 Progressive 121/136 Rear Mid Flap Covers



9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

INDY / RMK / Switchback Assault 144 Pivots / Rear Idler



= T
A: 35 ft-lbs (47.4 Nm) B: 35 ft-lbs (47.4 Nm) Apply Loctite® 262™

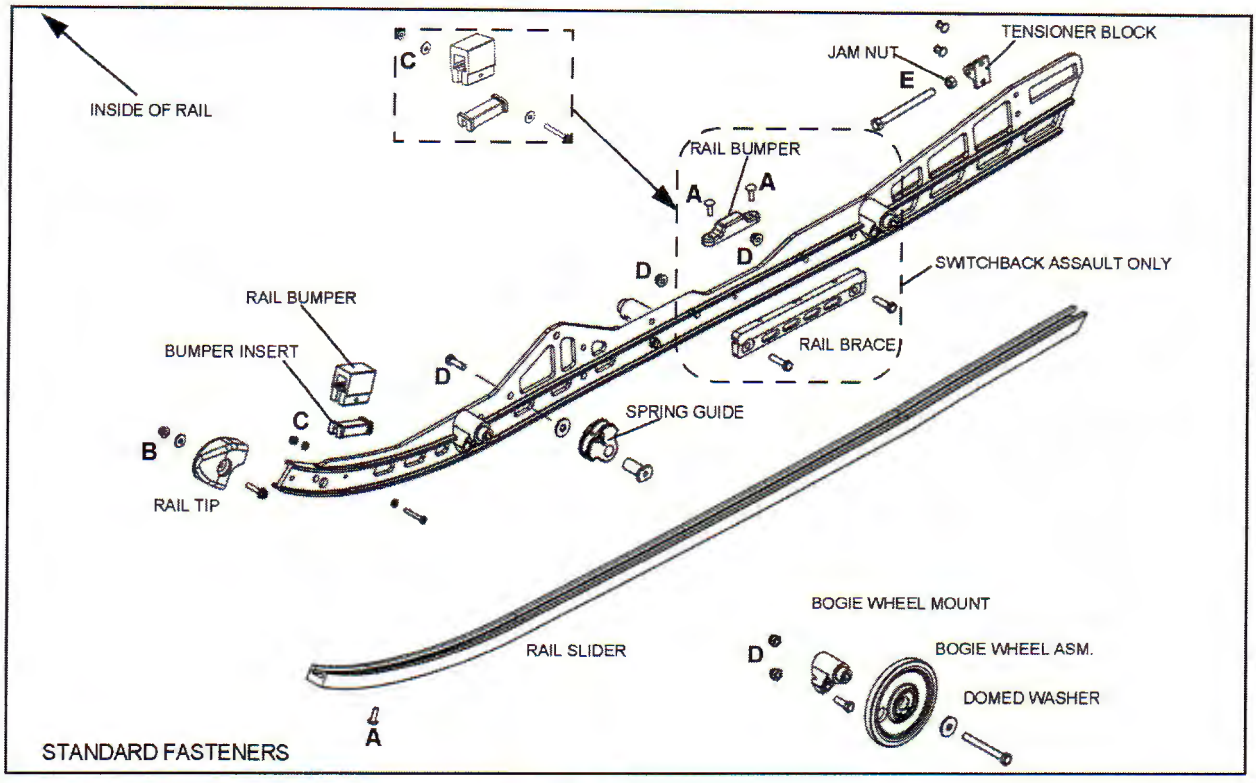
Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.
- Install rear idler adjust spacers with flat side facing adjuster screw.

CAUTION

Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

INDY / RMK / Switchback Assault 144 Rail Assembly



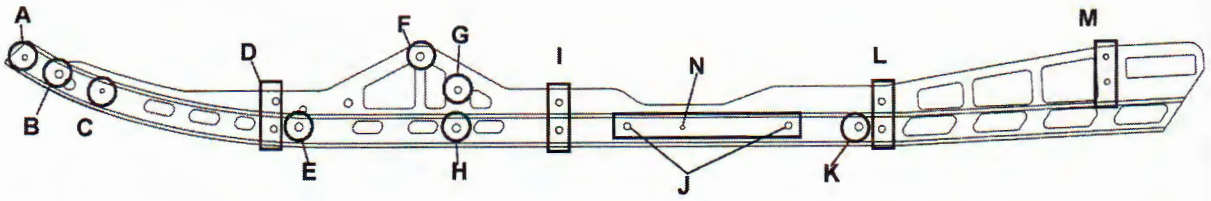
= T
A: 3-6 ft-lbs (4-8 Nm) B: 4 ft-lbs (5.4 Nm) C: Torque nut until screw protrudes 7/32" (5.3mm) D: 19 ft-lbs (25 Nm) E: 35 ft-lbs (47 Nm)

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

INDY / RMK / Switchback Assault 144 Rail Fastener Locations

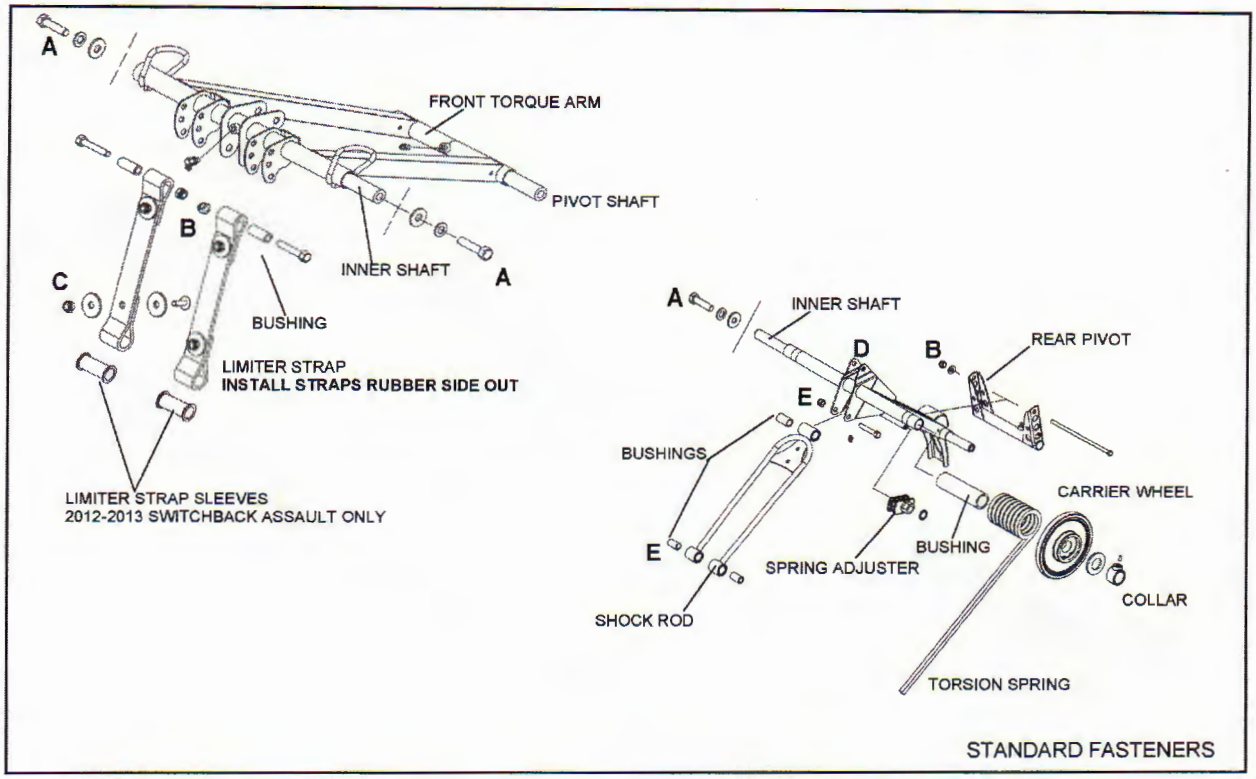


LEFT RAIL SHOWN

Components/Fasteners:

- A - Rail Tip
- B - Limiter Strap Shaft
- C - Rail Bumper
- D - Bogie Wheel Asm. (Mount to outside of rail).
- E - Front Shock Shaft
- F - Front Torque Arm Shaft/Screw
- G - Torsion Spring Guide
- H - Rear Track Shock Front Pivot Shaft
- I - Bogie Wheel Asm. (Mount to inside of rail).
- J - Rail Brace Asm. (Switchback Assault Only - Mount to outside of rail).
- K - Rear Pivot Shaft
- L - Bogie Wheel Asm. (Mount to outside of rail).
- M - Rear Idler Adjuster Block
- N - Rail Bumper (INDY / RMK 144 Only)

INDY / RMK / Switchback Assault 144 Front / Rear Torque Arm



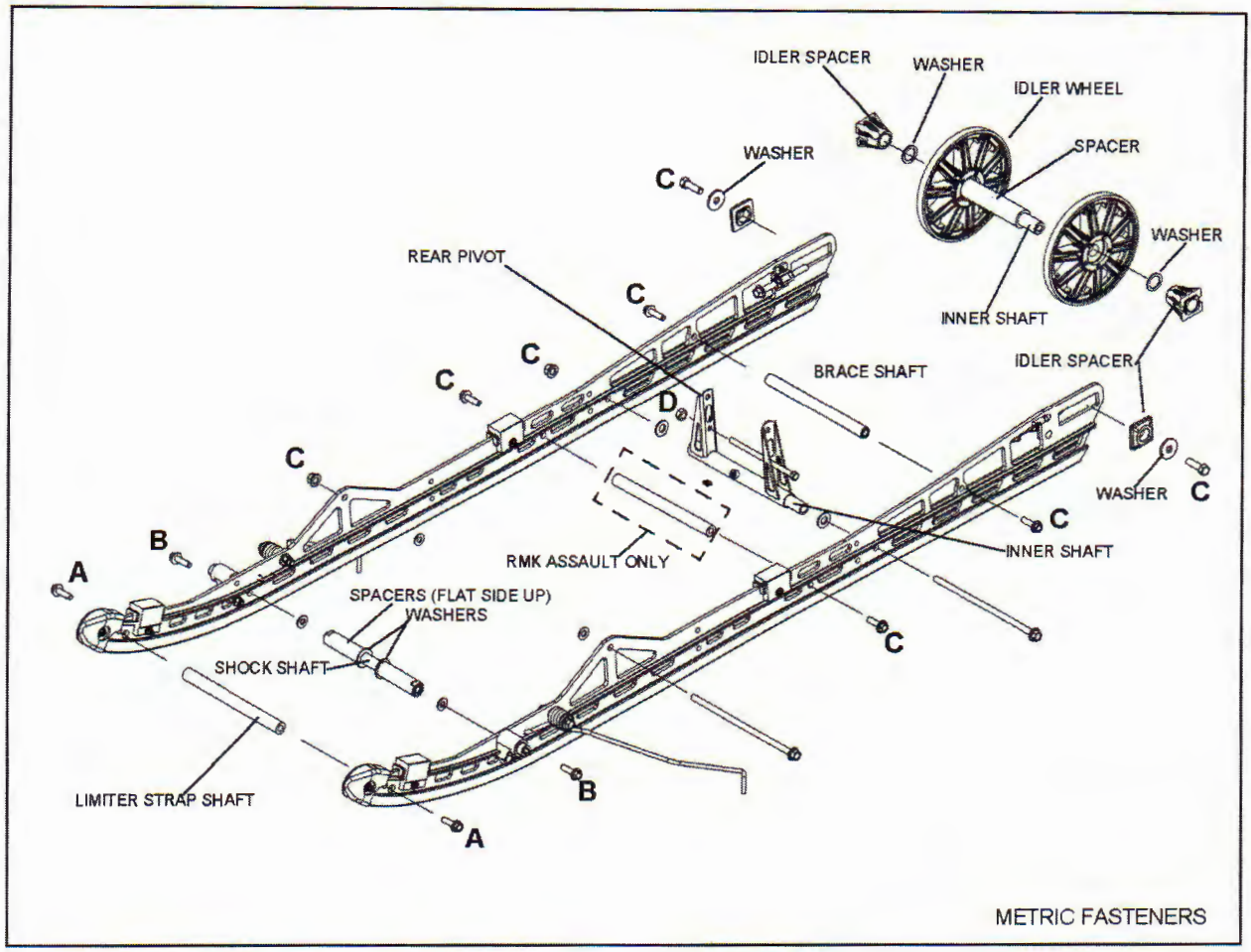
= T
A: 45 ft-lbs (61 Nm) B: 19 ft-lbs (25 Nm) C: 12 ft-lbs (16 Nm) D: 25 ft-lbs (34 Nm) E: 35 ft-lbs (47.4 Nm)

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

2011-2013 RMK / 2011-2012 PRO RMK 155 / 163 Pivots/Rear Idler



= T
A: 33 ft-lbs (44.7 Nm) - Apply Loctite® 262™ B: 46 ft-lbs (63 Nm) C: 33 ft-lbs (44.7 Nm) D: 6 ft-lbs (8 Nm)

This suspension used on:

- 2011-2013 155/163 Base RMKs
- 2011-2013 RMK Assault
- 2011-2012 155/163 PRO RMKs

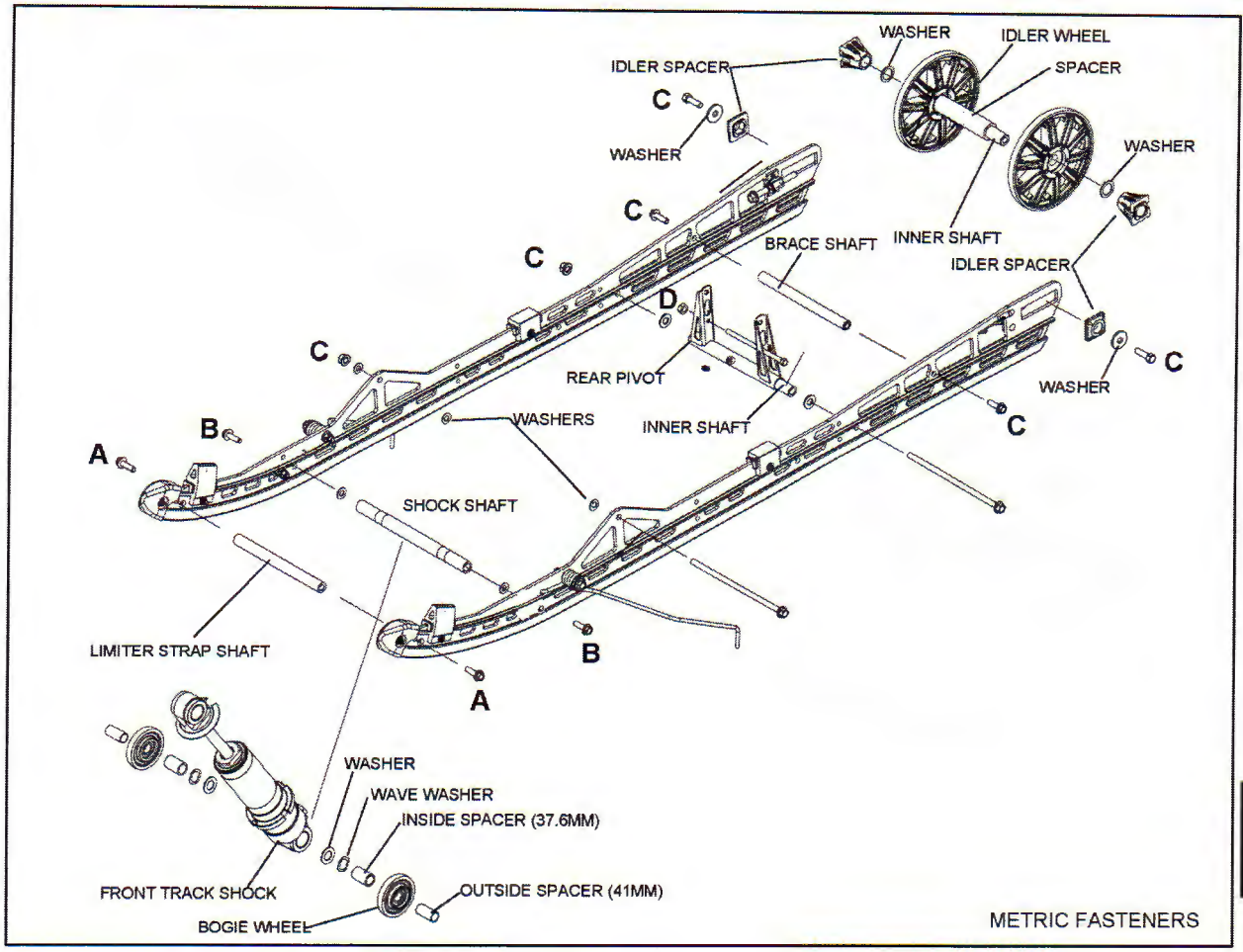
Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

⚠ CAUTION

Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

2013 - Current PRO RMK 155 / 163 Pivots/ Rear Idler



= T
A: 33 ft-lbs (44.7 Nm) - Apply Loctite® 262™ B: 46 ft-lbs (63 Nm) C: 33 ft-lbs (44.7 Nm) D: 6 ft-lbs (8 Nm)

⚠ CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

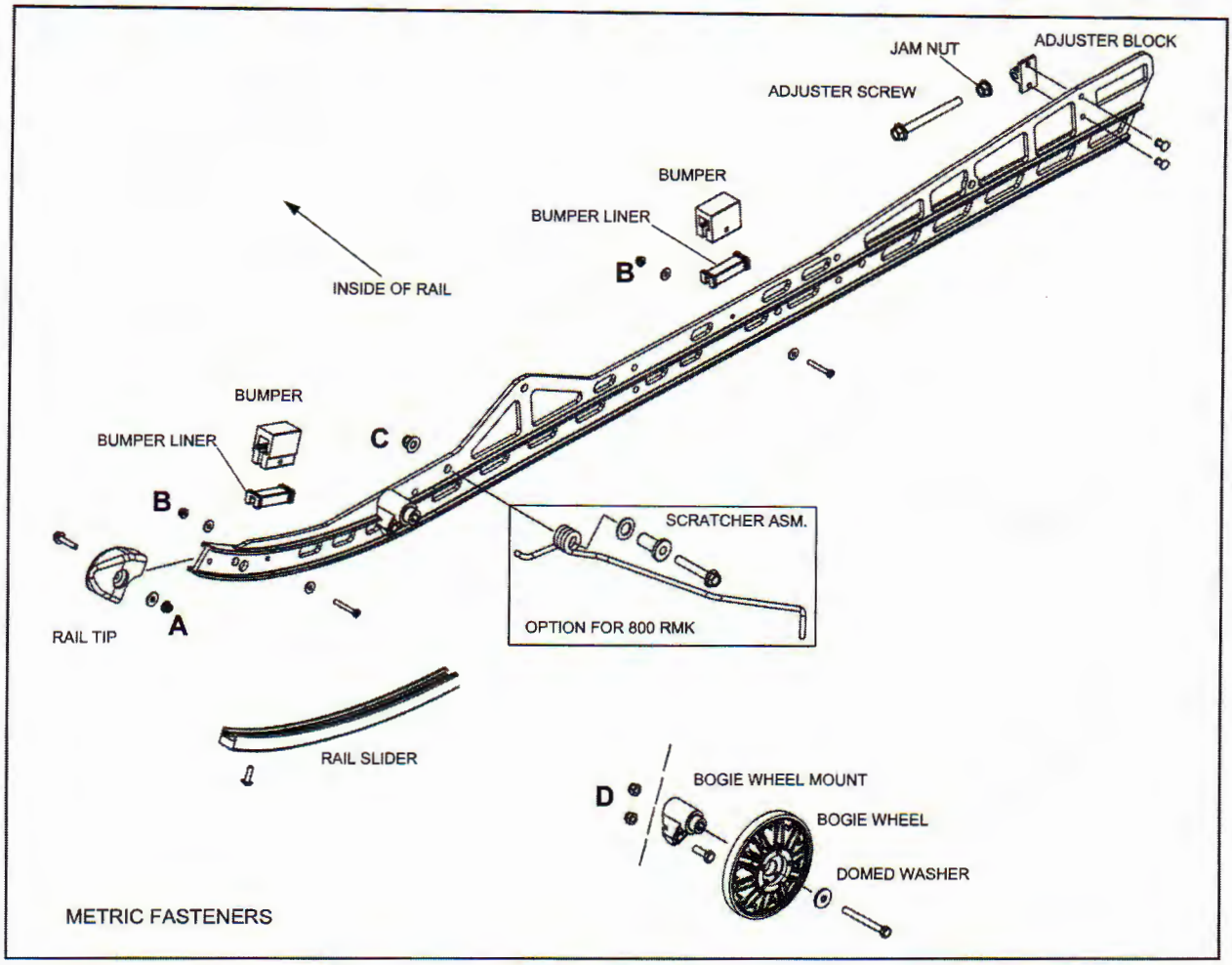
Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

8

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

RMK / PRO RMK 155 / 163 Rail Assembly



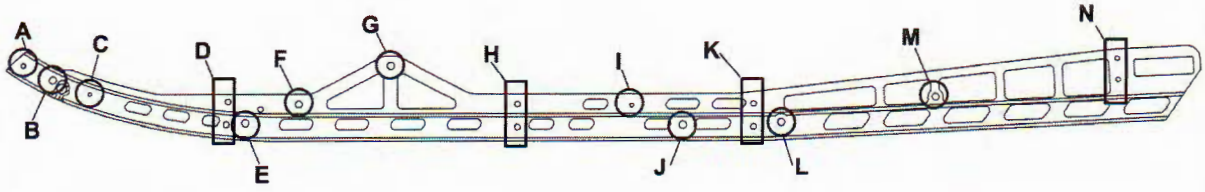
= T
A: 4 ft-lbs (5.5 Nm) B: Torque until 5mm of threads protruded from nut. C: 31 ft-lbs (42 Nm) D: 17 ft-lbs (23 Nm)

CAUTION
Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

RMK / PRO Ride RMK 155/163 Rail Fastener Locations



LEFT RAIL SHOWN

NOTE: 163 Rail Shown. 155/155 Assault Similar

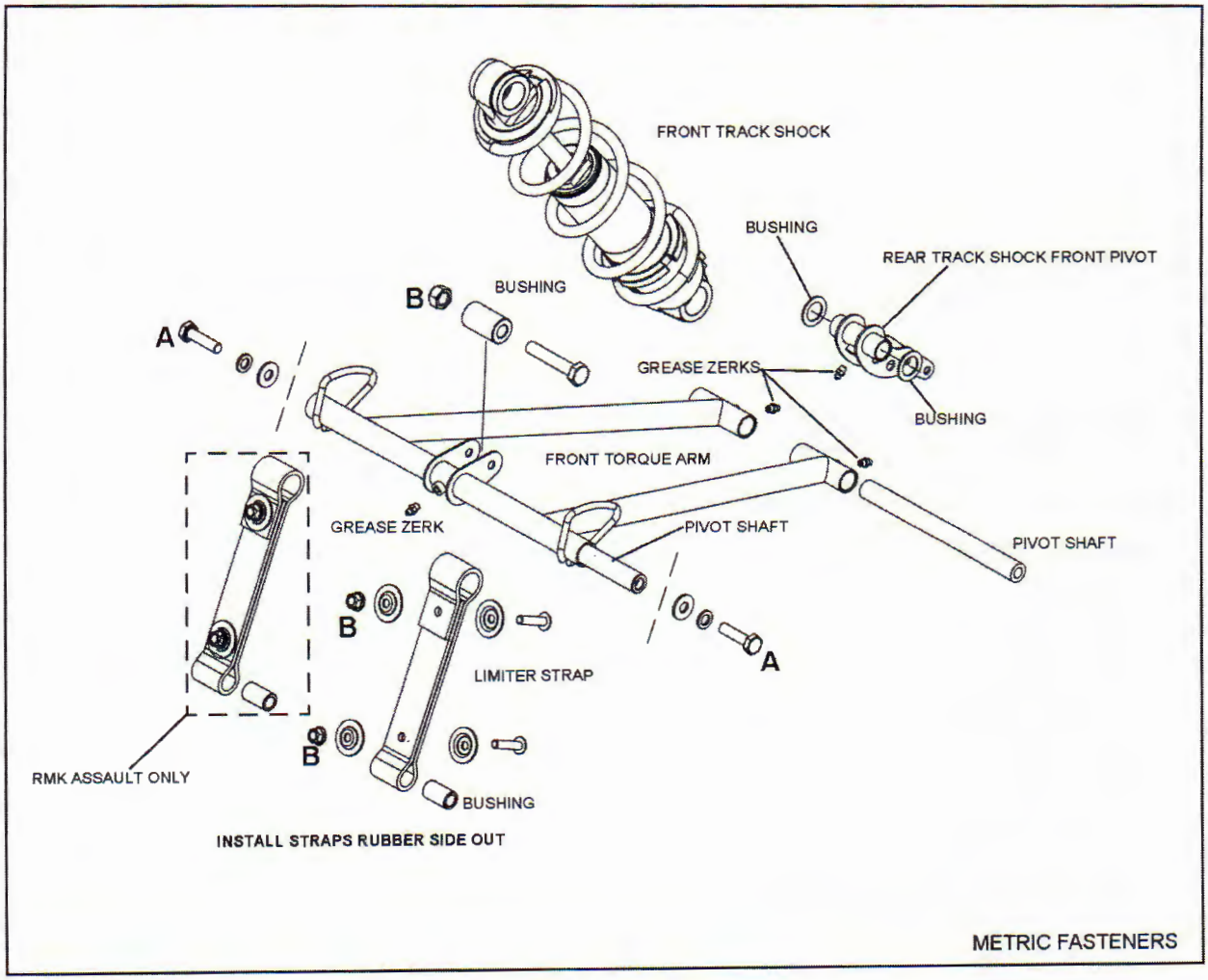
Components/Fasteners:

- A - Rail Tip
- B - Limiter Strap Shaft
- C - Rail Bumper
- D - Bogie Wheel Asm. (Mount to outside of rail)
- E - Front Shock Shaft
- F - Scratchers (Optional on 800 RMK)
- G - Front Torque Arm Shaft/Screw
- H - Bogie Wheel Asm. (Standard on 800 RMK. Optional for all other models. Mount to inside of rail on all models except for 800 RMK Assault)
- I - Rail Bumper
- J - Rail Brace Shaft/Screws (Standard on 800 RMK Assault)
- K - Bogie Wheel Asm. (Standard on 800 RMK. Optional for all other models. Mount to outside of rail)
- L - Rear Scissor Shaft/Screw
- M - Rail Brace Shaft/Screws
- N - Rear Idler Adjuster Block

NOTE: RMK Assault Models - If installing accessory bogie wheels, the wheels MUST be installed on the outside of the rails at location (H) and the scratchers must be removed.

Damage to the front track shock reservoir will occur if the accessory bogie wheels are installed on the inside of the rail.

RMK/PRO RMK 155/163 Front Torque Arm



= T
A: 46 ft-lbs (63 Nm) B: 17 ft-lbs (23 Nm)

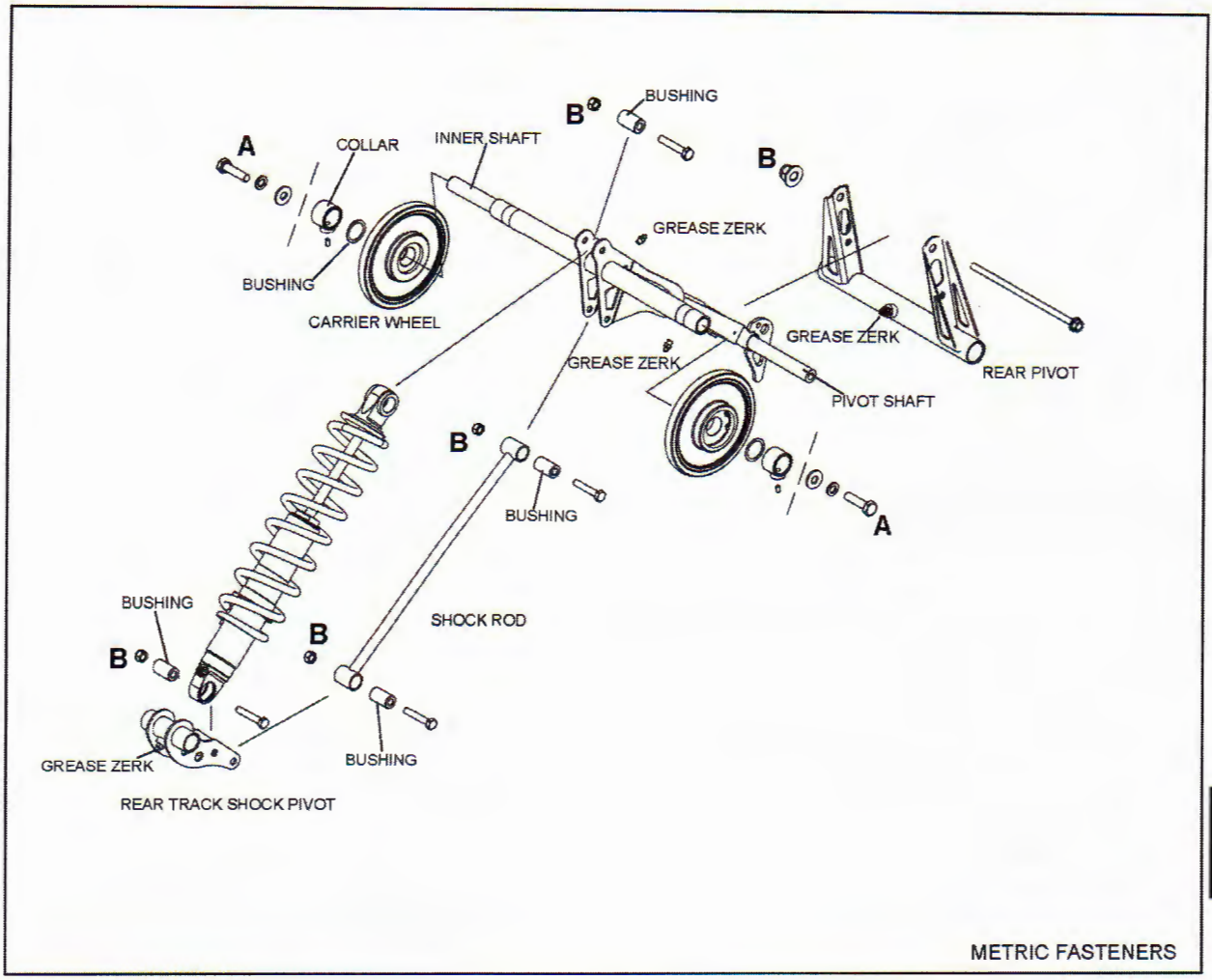
CAUTION

Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

RMK/PRO RMK 155/163 Rear Torque Arm



= T
A: 46 ft-lbs (63 Nm) B: 17 ft-lbs (23 Nm)

CAUTION

Some rail shaft fasteners are pre-coated with locking agent. Never re-use these fasteners once removed. Always use new pre-coated fasteners.

Assembly Notes

- Never re-use lock nuts. Always replace with new parts.
- All pivots must rotate freely after tightening fasteners.

PRO-RIDE PROGRESSIVE SUSPENSION OPERATION

Operation

The Pro-Ride progressive suspension allows the rider to easily adjust the desired amount of weight transfer, ski pressure, and ride comfort using the following components:

- Rear track shock spring preload
- Rear track shock compression dampener
- Front track shock spring preload
- Front track shock compression dampener
- IFS shock compression dampeners
- IFS shock spring preload

Unlike other Polaris rear suspensions, the Pro-Ride progressive rear suspension is not coupled and does not feature front or rear-rear scissor stops. The front torque arm is not linked with the rear crank or rear scissor.

Weight transfer during acceleration is controlled by two primary factors. The first weight transfer control is the rear track shock spring preload. The second weight transfer control is rider position.

- Increasing rear track shock spring preload reduces weight transfer during acceleration and increases ski pressure in all driving modes
- Sitting or standing close to the fuel tank decreases weight transfer and increases ski pressure in all driving modes
- Decreasing rear track shock spring preload increases weight transfer during acceleration and decreases ski pressure in all driving modes
- Sitting or standing at the rear of the seat increases weight transfer under acceleration and decreases ski pressure in all driving modes

Ride comfort is controlled by the compression dampener adjusters on the IFS, and front/rear track shocks. All shocks offer sixteen compression dampening settings.

- Increasing shock dampening reduces bottoming, but makes the ride stiffer
- Decreasing shock dampening makes the ride softer, but increases the chance the suspension will bottom-out

Adjustment Procedures

Always adjust the Pro-Ride Progressive suspension following these three steps:

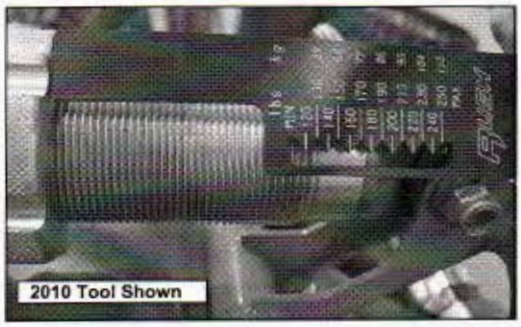
1. Set the rear track shock spring preload for the rider weight in everyday "street clothes", not riding gear.
2. Adjust "fine tune" the balance of the snowmobile based on rider preference by increasing or decreasing the rear track spring preload.
3. Adjust the shock compression dampeners to tune ride quality. Increase the compression dampening to stiffen the ride. Decrease the compression dampening to soften the ride.

STEP 1 - RTS SPRING PRELOAD

4. The rear track shock spring preload is set to the rider's weight in everyday clothing, not riding gear.
5. Using the spring gauge tool supplied with the vehicle, set the spring preload.

   NOTE: Lifting up on the seat support will remove the load on the shock spring, making spring adjustment easier.

6. If the shock threads are dirty or the preload knob is difficult to turn, spray the threads with Shock Thread Spray Lubricant, PN 2878018.
7. Place the spring gauge tool on top of the shock with the narrow end against the spring retainer knob.
8. Reference where the silver shock body meets the red shock end cap. Turn the spring preload adjuster knob in or out until the weight call out on the gauge is aligned with the silver-meets-red parting line.



9. A tape measure can be used to set the spring preload when a gauge is not available, or an accessory rear track shock spring is installed in place of the standard spring.

10. Reference the Spring Guide Table when using a tape measure for all springs.

2010-2011 RTS Spring Guide

The stock rear track spring is a 190#/inch spring. The stock spring will accommodate most riders weighing between 120 and 250 lbs. (54-113 kg).

Two additional accessory springs are available for riders whose weight is at the lowest or highest settings for the 190 spring.

All of the springs, spring gauge tools, and spring preload measurements using a tape measure are provided in the RTS Spring Guide Table below.

NOTE: Use a tape measure in the same manner as a gauge tool with the end of the tape against the spring tension adjuster knob and the preload measurement length at the shock-body cap parting line.

2010–20111 REAR TRACK SPRING GUIDE											
STOCK 190 SPRING 120 - 250 LBS.				120 LWT SPRING 90 - 155 LBS.				260 HD SPRING 240+ LBS.			
SPRING PN = 2010=7043572-385 2011 = 7043572-133				SPRING PN = 7041575-385				SPRING PN = 7043585-385			
STOCK SPRING GAUGE PN 2010 = 5253792 2011 = 5254748				LWT SPRING GAUGE PN 2010 = 5253854 2011 = 5254749				HD SPRING GAUGE PN 2010 = 5253855 2011 = 5254750			
RIDER WEIGHT		PRELOAD		RIDER WEIGHT		PRELOAD		RIDER WEIGHT		PRELOAD	
LBS.	KG	IN.	CM	LBS.	KG	IN.	CM	LBS.	KG	IN.	CM
120	54	2 5/8 MIN	6.7 MIN	90	41	2 5/8 MIN	6.7 MIN	240	109	2 3/8 MIN	6.0 MIN
130	59	2 3/4	7.0	95	43	2 3/4	7.0	255	116	2 1/2	6.3
140	64	2 7/8	7.3	100	45	2 7/8	7.3	270	122	2 5/8	6.7
150	68	3	7.6	105	48	3	7.6	280	127	2 3/4	7.0
160	73	3 1/8	7.9	110	50	3 1/8	7.9	295	134	2 7/8	7.3
170	77	3 1/4	8.3	115	52	3 1/4	8.3	310	141	3	7.6
180	82	3 3/8	8.6	120	54	3 3/8	8.6	320	145	3 1/8	7.9
190	86	3 1/2	8.9	125	57	3 1/2	8.9	335	152	3 1/4 MAX	8.3 MAX
200	91	3 5/8	9.2	130	59	3 5/8	9.2				
210	95	3 3/4	9.5	135	61	3 3/4	9.5				
220	100	3 7/8	9.8	140	64	3 7/8	9.8				
230	104	4	10.1	150	68	4	10.1				
240	109	4 1/8	10.5	155	70	4 1/8 MAX	10.5 MAX				
250	113	4 1/4 MAX	10.8 MAX								

CAUTION

DO NOT ADJUST SPRING PRELOAD PAST THE MINIMUM OR MAXIMUM SETTINGS LISTED FOR EACH SPRING.

2012-Current RTS Spring Guide

The stock spring will accommodate most riders weighing between 120 and 260 lbs. (54-118 kg).

Two additional accessory springs are available for riders whose weight is at the lowest or highest settings for the stock spring.

All of the springs, spring gauge tools, and spring preload measurements using a tape measure are provided in the RTS Spring Guide Table below.

NOTE: Use a tape measure in the same manner as a gauge tool with the end of the tape against the spring tension adjuster knob and the preload measurement length at the shock-body cap parting line.

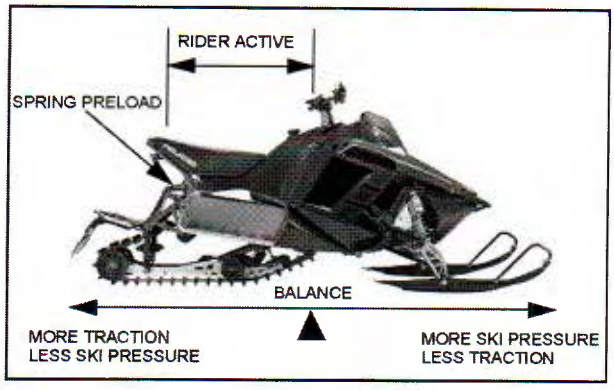
2012 — CURRENT RTS SPRING GUIDE

STOCK SPRING 120 - 260 LBS.				120 LWT SPRING 90 - 155 LBS.				260 HD SPRING 240+ LBS.			
SPRING PN = RUSH = 7043195-133 SWITCHBACK = 7043160-133				SPRING PN = 7041575-385				SPRING PN = 7043585-385			
STOCK SPRING GAUGE PN 9923267				LWT SPRING GAUGE PN 5254749				HD SPRING GAUGE PN 5254750			
RIDER WEIGHT		PRELOAD		RIDER WEIGHT		PRELOAD		RIDER WEIGHT		PRELOAD	
LBS.	KG	IN.	CM	LBS.	KG	IN.	CM	LBS.	KG	IN.	CM
120-140	54-64	1 1/2 MIN	3.81 MIN	90	41	2 5/8 MIN	6.7 MIN	240	109	2 3/8 MIN	6.0 MIN
				95	43	2 3/4	7.0	255	116	2 1/2	6.3
140-160	64-73	1 3/4	4.44	100	45	2 7/8	7.3	270	122	2 5/8	6.7
				105	48	3	7.6	280	127	2 3/4	7.0
160-180	73-82	2	5.08	110	50	3 1/8	7.9	295	134	2 7/8	7.3
				115	52	3 1/4	8.3	310	141	3	7.6
180-200	82-91	2 1/8	5.39	120	54	3 3/8	8.6	320	145	3 1/8	7.9
				125	57	3 1/2	8.9	335	152	3 1/4 MAX	8.3 MAX
200-220	91-100	2 1/4	5.71	130	59	3 5/8	9.2				
				135	61	3 3/4	9.5				
220-240	100-109	2 1/2	6.35	140	64	3 7/8	9.8				
				150	68	4	10.1				
240-260	109-118	2 3/4 MAX	6.98 MAX	155	70	4 1/8 MAX	10.5 MAX				

CAUTION

DO NOT ADJUST SPRING PRELOAD PAST THE MINIMUM OR MAXIMUM SETTINGS LISTED FOR EACH SPRING.

STEP 2 - FINE TUNE THE BALANCE



The Pro-Ride Progressive rear suspension allows the rider to fine tune the balance of the snowmobile depending on the driver's riding style and trail conditions. Balance control is accomplished both mechanically and by the driver.

Mechanical balance adjustment involves increasing or decreasing the rear track spring preload from the base setting established in step one. Fine tuning the balance should only be done after riding the snowmobile. Adjustments should always be performed in small increments.

NOTE: Turn the spring adjuster one full turn at a time and then ride the snowmobile taking note of any changes.

Increasing spring preload one full revolution at a time will shift the snowmobile balance to the front and result in increased ski pressure with less weight transfer for flatter cornering and more precise steering.

Riders who sit or stand at the rear of the seat or experience push through corners may want to increase rear track spring preload.

Decreasing spring preload one full revolution at a time will shift the snowmobile balance to the rear and result in decreased ski pressure with more weight transfer during acceleration.

Riders who sit or stand close to the fuel tank, when riding on loose snow with little traction, or when steering effort is too high may want to decrease rear track shock spring preload.

Rider-active balance control involves adjustments in rider position and/or rider weight distribution when turning, encountering bumps/road approaches, or during acceleration/braking. Rider-active balance control can affect the snowmobile balance just as much as adjusting the rear track spring preload.

For example, riders wanting less inside ski lift during cornering, but maximum traction during acceleration can shift their body position/weight towards the front and into the turn and then shift their body position/ weight rearward when exiting and accelerating out of the turn.

Likewise, riders who use a less active riding position may want to only adjust the rear track spring preload to achieve similar results.

Remember that while the Pro-Ride progressive rear suspension can be adjusted to satisfy all types of riders and riding styles, it is unlikely that one rider's setup will provide similar results for a different rider.

Always reset the rear track shock preload and shock compression dampening settings when a new driver rides the snowmobile.

KEY POINTS/RECOMMENDATIONS

- Increasing rear track shock spring preload shifts the snowmobile balance forward
- Decreasing rear track shock spring preload shifts the snowmobile balance rearward
- Always begin suspension setup by setting the rear track shock spring preload to the rider's weight in everyday street clothes.
- Make small adjustments when tuning the suspension settings
- Ride the snowmobile after making each change and take note of the results of each change
- Make ride position and weight distribution (sit at the rear of the seat or close to the fuel tank, lean into turns, etc.) changes while riding and take note of the results
- Ride the snowmobile on various trail conditions and take note of the results
- Adjusting spring preload controls balance, adjusting the compression or rebound (if equipped) clickers controls comfort
- Verify the track tension is set to specification

STEP 3 - ADJUSTING RIDE COMFORT/QUALITY

NOTE: Step 3 applies to shocks equipped with compression and/or rebound adjusters.

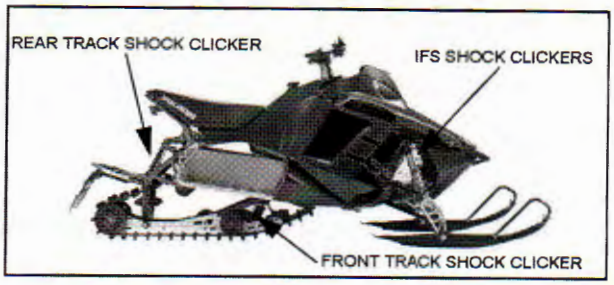
After performing steps one and two, the last step in adjusting the snowmobile's suspension is to adjust the ride comfort.

Ride comfort/quality is controlled by the remote shock compression dampeners.

NOTE: Use the compression dampeners to control suspension bottoming, not the spring preload adjusters.

Turning the compression adjuster knobs clockwise will increase resistance to bottoming, making the shock stiffer.

Turning the compression adjuster knobs counter-clockwise decreases resistance to bottoming, making the shock softer.



RIDE EXPERIENCE	ADJUSTMENT
IFS shocks bottom out	Turn adjuster knobs clockwise one click at a time. Set both IFS shocks to the same setting.
Front of rear suspension bottoms out	Turn front track shock compression adjuster knob clockwise one click at a time.
Rear of rear suspension bottoms out	Turn rear track shock compression knob clockwise one click at a time.
No bottoming, but ride is harsh/stiff in both the front and rear of rear suspension	Turn rear track shock compression knob counter-clockwise one click at a time.
Ride is harsh in stutter/ chatter bumps	Turn rear track shock compression knob counter-clockwise one click at a time.

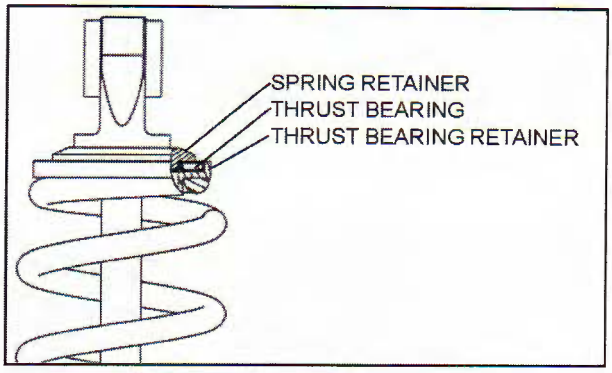
NOTE: Riders at the far ends of each rear track spring's rider weight/preload settings may want to adjust the compression dampener base settings. Lighter drivers should decrease the dampening by one click, while heavier riders may want to increase the dampening by one to two clicks.

Rear Track Shock Thrust Bearing

2011 and newer 600/800 Rush/Switchback models feature rear track shock retainers with a thrust bearing. The bearing significantly reduces the effort required to adjust the rear track shock spring.

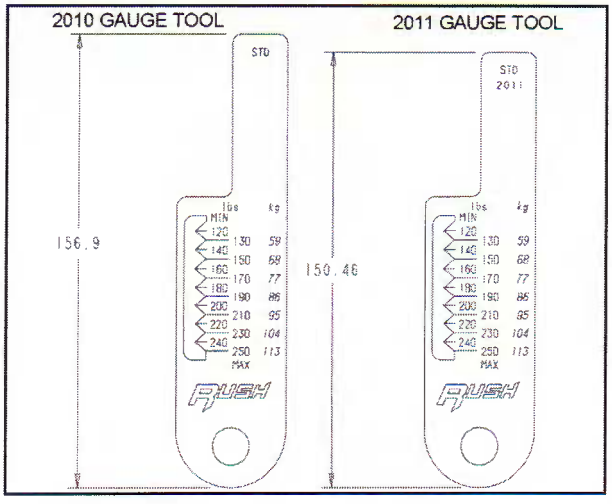
The thrust bearing can be installed on 2010 models (equipped with original Walker Evans Shocks) by installing the following parts:

- Spring Retainer - 5137540
- Thrust Bearing - 3514706
- Thrust Bearing Retainer - 5137541
- X-Brace (Indy Red) - 1017977-293 (Not Shown)



The addition of the thrust bearing on a 2010 Rush increases spring preload and requires the use of either a tape measure or the 2011 spring gauge tools to set the RTS spring length.

The 2010 tools can also be trimmed to 150.46mm as shown below.



9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

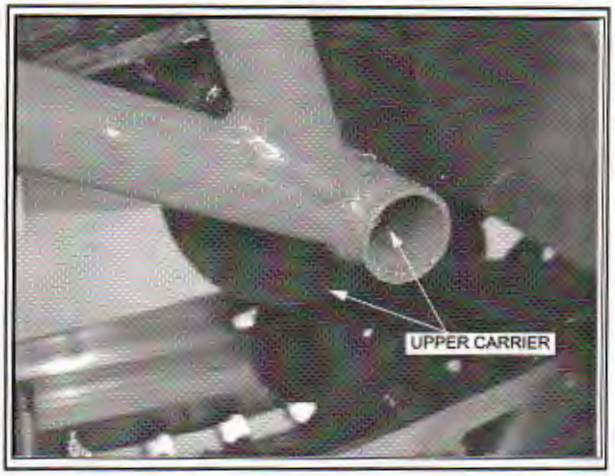
PROGRESSIVE REAR SUSPENSION REMOVAL AND INSTALLATION

Removal

1. Place a large mat, shop blanket, or piece of cardboard on the floor next to the snowmobile. The piece should be large enough to protect the plastics when the unit is laid on its side.
2. Remove the rear bumper assembly from the rear crank.

3. Loosen, but do not remove, the rear idler wheel fasteners.
4. Loosen the track tension adjuster jam nuts. Back out the threaded adjusters until flush with adjuster blocks.

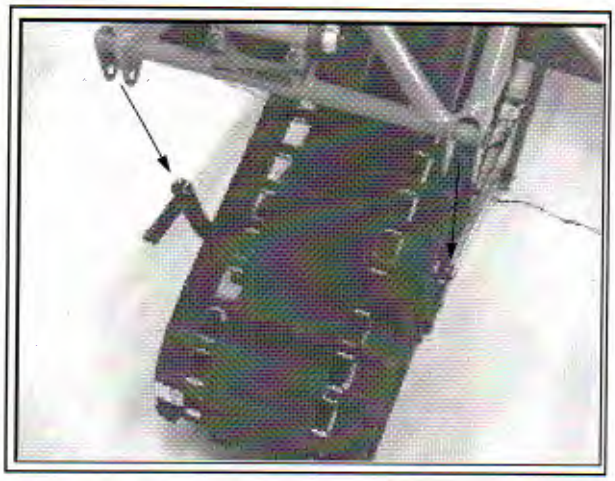
5. Using a snowmobile lift, raise the vehicle high enough off the ground to remove the vehicle weight from the rear suspension.
6. Remove the upper carrier wheel assembly from the rear crank.



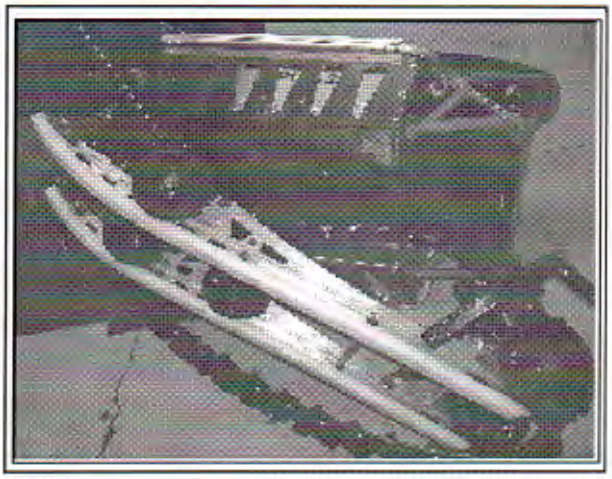
7. Remove the two fasteners and nuts securing the rear pivot to the rear crank.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

8. The rear of the suspension is now free to drop out of the tunnel if required.



9. Locate and remove the two fasteners and threaded pivot shafts securing the front torque arm to the tunnel.
10. The suspension should now be hanging inside the track.
11. Lower the snowmobile down to the floor. Remove the sled lift.
12. Carefully role the snowmobile on to its side making sure the plastics are protected by the mat or blanket previously placed on the ground.
13. Fold the rear scissor forward. Remove the suspension from the track by working the rear free from the track, and then pulling the front torque arm out of the tunnel.



14. Roll the snowmobile back over on to the skis.
15. If the track removal is required, reference the driveshaft removal procedure in chapter five. The track can be removed after the driveshaft is removed from the vehicle.
16. The rear suspension bushings, shafts, and pivots should be inspected. Replace bushings that are worn or damaged. Replace any part that is worn excessively or damaged.

Installation

1. If the track was removed, reinstall the track into the tunnel. Verify the arrow marks on the track point in the direction of forward vehicle travel.
2. Reference the driveshaft installation procedure outlined in chapter five.
3. Place a protective mat, shop blanket, or large piece of cardboard on the ground next to the vehicle.
4. Carefully roll the snowmobile on to its side making sure the plastics are protected by the mat, blanket or cardboard.
5. Install the rear suspension into the track by inserting the front torque arm assembly into the tunnel at an angle.
6. Fold the rear scissor forward, and then work the rear of the skid into the track.
7. Once the suspension is installed in the track, work the track to align the sliders with the track clips and guides.
8. Position the front torque arm and align its mounting holes with the holes in the tunnel. Loosely install the front torque arm threaded pivots and fasteners.
9. Loosely install the rear pivot-to-rear crank carriage bolts and nuts. Verify the carriage bolts are fully seated into the rear crank.
10. Roll the snowmobile back on to its skis. Raise the snowmobile up off the ground using a snowmobile lift.
11. Torque the front torque arm mounting bolts to specification.
12. Torque the rear pivot mounting nuts to specification.
13. Reinstall the upper carrier wheel assembly. Torque fasteners to specification.
14. Reinstall the rear bumper assembly. Loosely install all of the bumper fasteners first, and then torque to specification.
15. Set the track tension to specification using the track tension adjustment screws. Once the track tension is set, torque the jam nuts to specification.
16. Torque the rear idler fasteners to specification.

Rear Crank Service

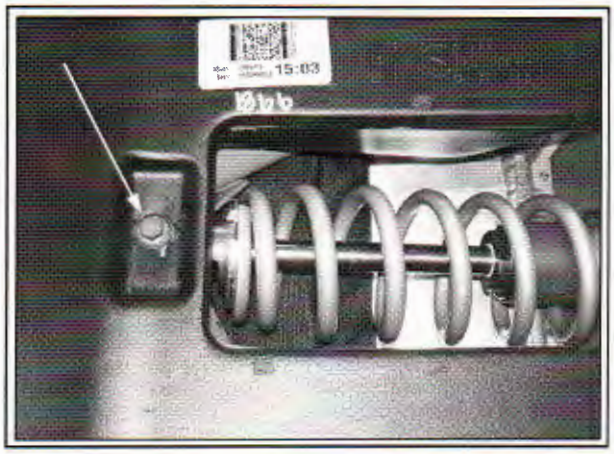
1. To remove the rear crank assembly, raise the snowmobile off the ground using a snowmobile lift.
2. Remove the rear track shock spring tension by turning the preload adjuster counter-clockwise.
3. Remove the fasteners securing the upper carrier assembly to the rear crank.
4. Remove the fasteners securing the rear crank to the rear pivot. Allow the suspension rail assembly to drop to the ground.
5. Remove the rear track shock fastener from the rear crank.
6. Remove the two fasteners securing the rear crank to the tunnel mounts. Remove the screws attaching the reservoir to the rear crank.
7. Remove the rear crank assembly.
8. Reverse procedure to assemble the rear crank. Reference to torque specifications located on the assembly view illustrations.

Rear Track Shock Service

1. Raise the snowmobile off the ground with a snowmobile lift.

   NOTE: Lifting at the bumper will compress the RTS.

2. Remove the seat assembly.
3. Remove the nut holding the fuel tank to the x-brace.



4. Remove the nut securing the shock to the rear crank.
5. Carefully lift up the rear of the fuel tank to access the shock fasteners. Prop the tank with a block of wood.
6. Remove the shock. To remove spring, turn preload knob counter-clockwise. Remove spring retainer, and then spring.
7. To remove the reservoir, remove the two clamp screws. Note the orientation of the reservoir hose. Route the hose as shown during installation.

8. Assembly is the reverse of removal. Torque fasteners to specification using new lock nuts.

= T
Rear Track Shock Fasteners: 33 ft-lbs (45 Nm) Reservoir Clamp Screws: 17 ft-lbs (23 Nm) Fuel Tank Screw: 7 ft-lbs (10 Nm) Seat Screws" 7 ft-lbs (10 Nm)

RMK COIL-OVER REAR SUSPENSION

Suspension Adjustments

The primary tuning component on all RMK coil-over rear suspensions is the rear track shock spring installed length.

All RMK coil-over rear suspensions are manufactured with STANDARD rear track shock springs that will accommodate rider weights (with gear) up to

340 lbs. (154kg).

Initially, the rear track shock spring should be set to the rider's weight (with gear). Reference the Rear Track Shock Spring (RTSS) Setup Table below.

RTSS SETUP — STANDARD SPRING (MEASURE SPRING LENGTH WITH SUSPENSION OFF THE GROUND.)				
RIDER WEIGHT (WITH GEAR)		MODEL	INSTALLED SPRING LENGTH	
LBS.	KG		INCHES	CM
<160	<73	RMK PRO RMK 155/163	10 3/4	27.3
		RMK ASSAULT	10 7/8	27.6
160-220	73-100	RMK	10 1/4	26
		PRO RMK 155/163	10 3/8	26.3
		RMK ASSAULT	10 1/4	26
220-280	100-127	RMK PRO RMK 155/163	10 1/8	25.7
		RMK ASSAULT	10	25.4
280-340	127-154	RMK PRO RMK 155/163	9 3/4	24.8
		RMK ASSAULT	9 1/2	24.1
NOTE: SHADED CELLS = FACTORY SETTING.				

CAUTION

CAUTION: Do not adjust STANDARD spring length greater than (>) or less than (<):
RMK = >10 3/4" or <9 5/8"
PRO RMK = >11" or <9 3/4"
RMK Assault = >11" or <9 3/8"

RMK Coil-Over Standard Springs

- RMK = 7043680-133 (210 Rate)
- PRO RMK = 7043714-133 (210 Rate)
- RMK Assault = 7043572-133 (190 Rate)

Heavy Duty Rear Track Shock Spring-RMK Coil-Over

An optional HEAVY DUTY spring is available if adjustments to the factory-installed springs are not sufficient for riders over 300 lbs. (136kg).

The part number for the HD spring is 7043741-067. Reference the RTSS Setup-Heavy Duty Spring Table below.

RTSS SETUP — HEAVY DUTY SPRING (MEASURE SPRING WITH SUSPENSION OFF THE GROUND.)				
RIDER WEIGHT (WITH GEAR)		MODEL	INSTALLED SPRING LENGTH	
LBS.	KG		INCHES	CM
250-300	113-136	RMK PRO RMK 155/163 RMK ASSAULT	10 1/8	25.7
300-350	136-159		10	25.4

CAUTION
CAUTION: Do not adjust HEAVY DUTY spring length greater than (>) or less than (<): ALL MODELS = >10 7/8" or < 9 7/8"

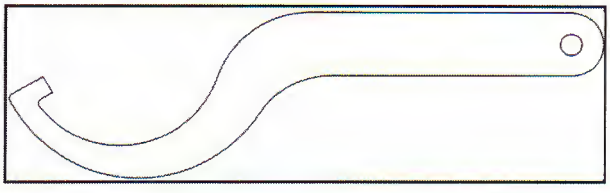
Measuring Rear Track Shock Spring Installed Length

1. Lift the rear of the snowmobile off the ground or tip the snowmobile on to its side to remove the weight from the rear suspension.
2. Use a tape measure to measure the spring installed length between the two spring retainers.

3. To adjust, clear away any snow/ice that may be trapped within the spring or threads. Rotate the spring using a spanner wrench to change the length. Regardless of spring type, do not adjust the spring past the MAXIMUM or MINIMUM measurements.

Spring Retainer Spanner Wrench

Use the spanner wrench included in the tool kit to adjust the rear track shock spring installed length.



Spanner Wrench PN: 2871095-329

Fine Tuning Adjustments

Additional minor adjustments can be made to the spring length to adjust the feel of the vehicle. Do not exceed the minimum and maximum installed length requirements.

For more ski lift (transfer), reduce spring preload by increasing the installed length. Rotate the spring 1-2 full turns counter-clockwise (when viewed from bottom). This will enhance maneuverability, making the snowmobile more "flickable" although it may hinder climbing performance.

For less ski lift (transfer), increase spring preload by reducing the installed length. Rotate the spring 1-2 full turns clockwise (when viewed from bottom). This will improve climbing ability and rider control.

To control the overall balance of the vehicle use the following guidelines:

- More rear track shock spring preload increases ski pressure. Less preload decreases ski pressure.
- Spring preload can affect bottoming resistance. More preload means less bottoming. Less preload means a softer ride (and more bottoming).

Both adjustments will affect overall balance and ski pressure.

After adjusting RTSS preload, the front track shock (FTS) spring preload and independent front suspension (IFS) spring preload can also be adjusted.

For a softer ride on rough, washboard surfaces, reduce front track shock (FTS) spring preload by 1-2 turns.

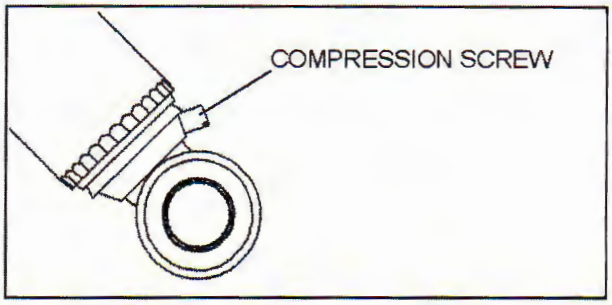
To improve corner stability, increase front suspension (IFS) spring preload by 1-2 turns on both sides of the vehicle.

Shock Dampening

Compression damping adjustments can be made on 800 RMK and 800 RMK Assault models to control ride quality and bottoming resistance.

600/800 RMK - Rear Track Shock

Make the adjustments in half-turn increments, then test ride. To stop bottoming, turn the damping screw clockwise one half-turn, then test ride. Repeat the adjustment until bottoming stops and the desired ride quality is achieved.



800 RMK Assault - IFS and Rear Track Shocks

Compression damping can be adjusted at the front suspension and at the rear track shock. Make adjustments in 2-click increments, then test ride. When adjusting the front suspension, always adjust both clickers equally.

To stop bottoming of the front or rear suspension (stiffer ride), rotate the clicker(s) clockwise two clicks (as viewed from the top of the clicker), then test ride. Repeat the adjustment until bottoming stops and the desired ride quality is achieved.

For a more plush ride at the front or rear suspension, rotate the clicker (s) counterclockwise two clicks, then test ride. Repeat the adjustment until the desired ride quality is achieved.

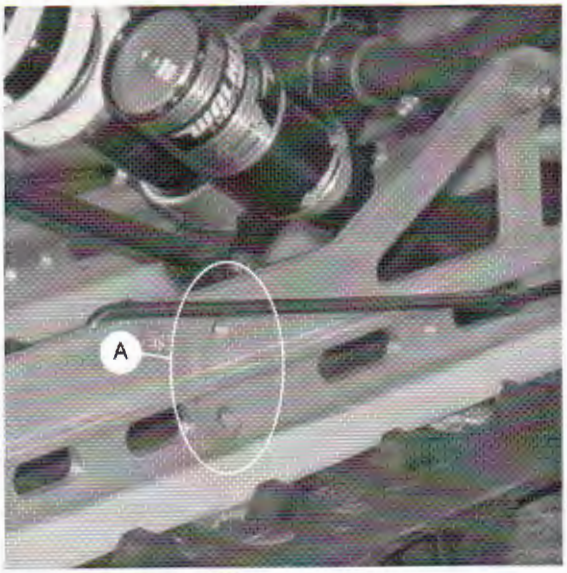
IFS Shock

Rear Track Shock

RMK Assault Bogie Wheels

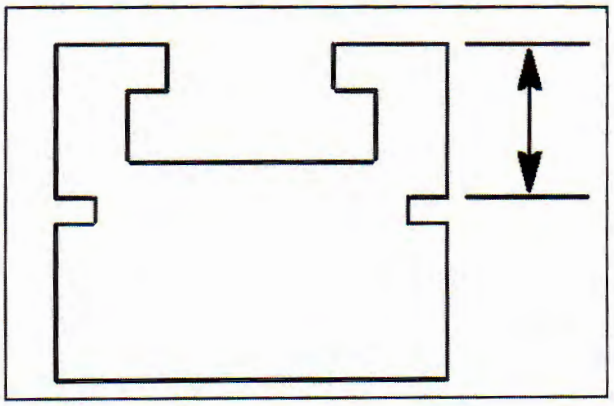
Stock RMK Assault rear suspensions are not equipped with mid-rail bogie wheels. If accessory bogie wheels are installed, the scratchers must be removed and the mid-rail bogie wheels (A) must be installed on the outside of the rails.

CAUTION
DO NOT install the bogie wheels on the inside of the rail beam. Rear track shock compression reservoir damage will occur if the bogie wheels are installed on the inside of the rail beam.



RAIL SLIDERS

Wear Limit



Replace sliders when wear exceeds notch. If sliders look "wavy" in appearance, check and adjust track tension or consider adding more bogie wheels.

Removal/Installation

1. Raise the snowmobile off the ground using a snowmobile lift.
2. Remove front rail slider retaining bolt, located at the rail tip.
3. Use a block of wood or a drift punch and hammer to drive the slider rearward off the slide rail.
4. With the rail slider at room temperature, install a new rail slider by reversing steps 1 - 3.

   NOTE: Lightly coat rail slider track clip area with a lubricant such as LPS2 or WD-40 to ease installation.

Break-In

After installing new rail sliders they must be "broken-in" for longer life and better wear patterns. When performing the break-in procedure, ride the sled on a surface that has adequate snow conditions with deeper snow nearby. Run the sled on the adequate snow surface and dip into the deeper snow every so often.

INDY 121 Optional Bogie Wheels

INDY 121 rear suspension operation in sustained low snow conditions may cause increased rail slider wear. Rail slider longevity can be increased by installing an additional set of bogie wheel assemblies as shown on page 8.35. Order the following parts:

- 7542324 QTY.4 - Nuts
- 5631446 QTY. 2 - Wheel Mount
- 7515317 QTY. 2 - Bolts
- 1590419-070 QTY.2 - Wheels
- 7556387 QTY. 2 - Spring Washers
- 7515346 QTY.2 - Nuts

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

PAINTED RAILS

Painted Rail Color Codes

NOTE: Polaris recommends touch-up repairs only. For complete rail paint re-spray, replace the rail assembly or consult local auto body repair shop.

P-CODE	COLOR
P–293A	Indy Red (For Suspension Components)
P–589	Orange Madness
P–067	Medium Gloss Black
C	Clear Coat

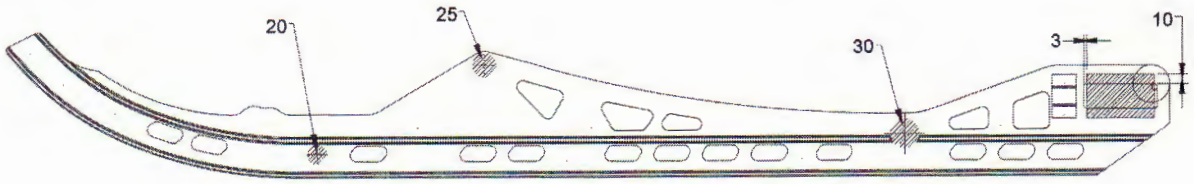
PAINTED RAILS

Some snowmobiles feature painted rails. Reference this section for paint type and masking information. Shaded regions denote areas to be masked off on both the INNER and OUTER sides of the rail beam(s).

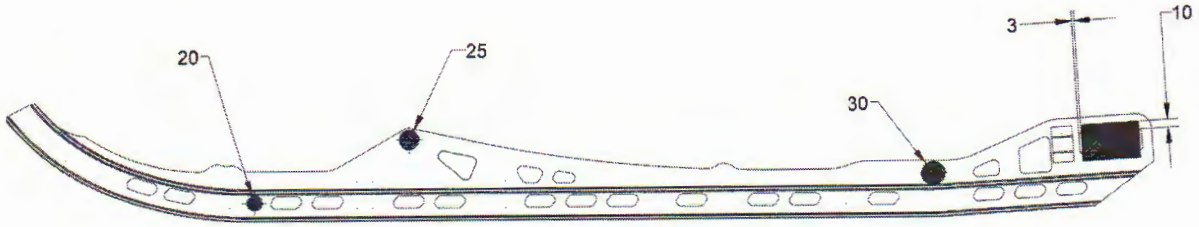
NOTE: All masking diameter dimensions shown in millimeters (mm).
Mask 10 mm above and below rear idler spacer slot on both INNER and OUTER sides of rail beam(s).

IMPORTANT: Mask rear idler adjuster bolt thread bores. Do not allow paint to contaminate threads.

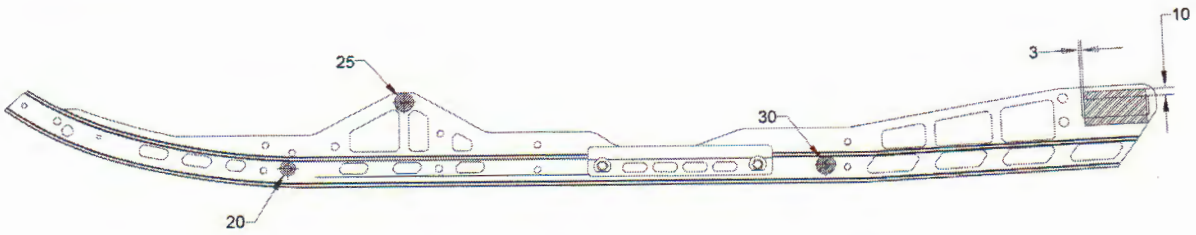
121 Progressive Rail



136 Progressive

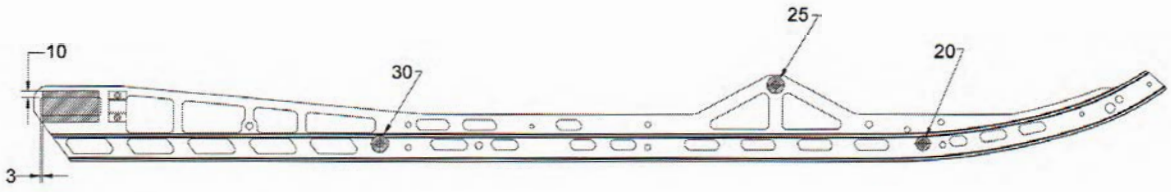


144 Switchback Assault



NOTE: Rail beam stiffener painted after mounted on rail.

155 / 163 RMK



NOTES

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

CHAPTER 9
CHASSIS

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

SAFETY INFORMATION

General Cautions and Notes

- Never re-use lock Nuts. Always replace lock nuts that have been removed with new parts.
- Never re-use pre-coated fasteners. Always replace pre-coated fasteners with new parts.
- The side braces, bulkhead floor, and the front tunnel cooler upper mating surface are bonded components.
- The only authorized bonding adhesive is Lord 406 Acrylic Adhesive. DO NOT ANY NON-SPECIFIED BONDING ADHESIVE, GLUE, OR EPOXY.
- Reference manufacture production and expiration dates printed on container. Do not store this product. Order repair kit as required and dispose product after repair is completed in accordance with local rules and regulations.
- Wear gloves, face mask, and protective eye wear when removing original adhesive from chassis components.
- Never apply excessive heat or flame to bonded components when not intending to remove them from the chassis.
- The engine overstructure / steering support assembly and floor board support tubes are bonded components. THESE COMPONENTS ARE NOT SERVICEABLE. REPLACE AS COMPLETE ASSEMBLIES.
- Bonded components must be removed, cleaned, and re-bonded if the adhesive is subjected to temperatures above 300° F (149° C).
- Adhesive working time is 6 to 10 minutes. Component handling time is achieved within 60 minutes. Complete cure time will take 24 hours at 68° F (20° C).
- Allow the adhesive to cure at room temperature 68° F (20° C). Do not move the snowmobile outside (colder temperature) while the adhesive is curing.
- Do not place the vehicle into service until the adhesive has completely cured (24 hours).

Lord 406 Acrylic Adhesive Information

Review and understand the following product handling practices and first aid measures prior to working with bonding adhesive.

For additional handling, first aid, or MSDS information, contact Lord at www.lord.com.

⚠ WARNING

Lord 406 Acrylic Adhesive is flammable. Do not store or use near heat, sparks, or open flame.

Handling Practices
Ventilation - Work in a well-ventilated area.

Respirator - Use properly-fitted, organic vapor, air purifying respirator (face mask).

Skin Protection - Use neoprene, or rubber gloves. Wash hands and exposed skin with soap and water after working with product.

Eye Protection - Wear safety glasses/goggles.

First Aid Measures
Eye Contact - Flush eyes immediately with large amounts of water for at least 15 minutes holding eyelids open while flushing. Get prompt medical attention.

Skin Contact - Flush contaminated skin with large amounts of water while removing contaminated clothing. Wash affected skin areas with soap and water. Get medical attention if symptoms occur.

Inhalation - Move person to fresh air. Restore and support continued breathing. If breathing is difficult, give oxygen. Get immediate medical attention.

Ingestion - If swallowed, do not induce vomiting. Give victim one or two glasses of water or milk. Call a physician or poison control center immediately for further instructions. Never give anything by mouth if victim is rapidly losing consciousness, unconscious, or convulsing.

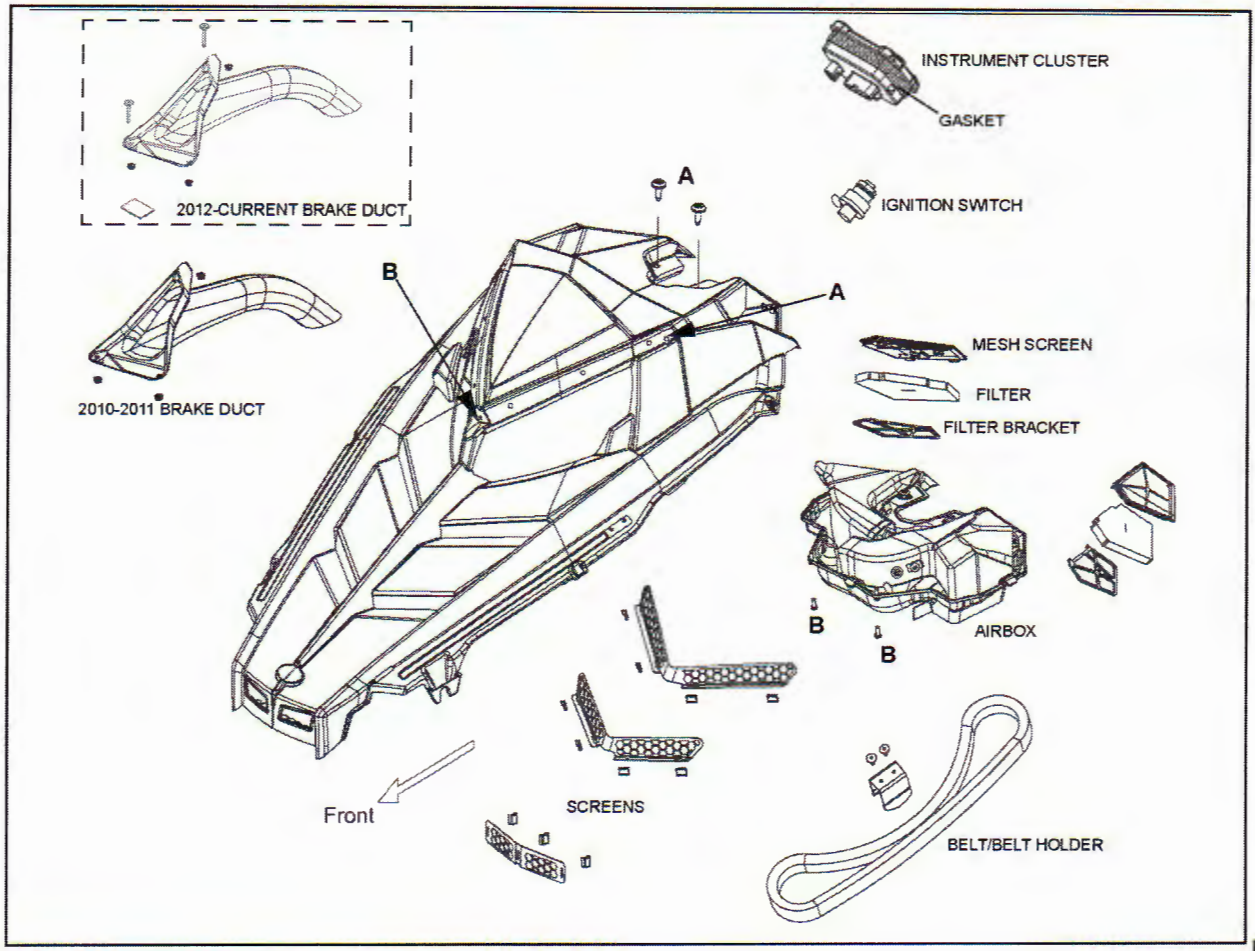
SPECIFICATIONS

Fastener Torque Specifications

COMPONENT	TORQUE
Rear hood-to-rear over structure screws	7.4 ft-lbs (10 Nm)
Head light asm.front/air box screws	3 ft-lbs (4 Nm)
Head light asm. side mounting screws	7.4 ft-lbs (10 Nm)
Front bumper-to-over structure/heat exchanger fasteners	7.4 ft-lbs (10 Nm)
Seat screws	7.4 ft-lbs (10 Nm)
Seat brace-to-x brace screws	7.4 ft-lbs (10 Nm)
Seat brace-to-rear brace screws	17 ft-lbs (23 Nm)
Bulkhead clip fasteners/ nuts	26 ft-lbs (35 Nm)
Exhaust silencer bracket nuts	20 ft-lbs (26 Nm)
Right side brace fasteners/ nuts	26 ft-lbs (35 Nm)
Left side brace fasteners/ nuts	26 ft-lbs (35 Nm)
Left side front/rear engine mounts-brace fasteners	22 ft-lbs (30 Nm)
Cross brace screws	35 ft-lbs (47 Nm)
Front over structure-to-bulkhead clip fasteners	22 ft-lbs (30 Nm)
Front over structure-to-rear over structure tube fasteners	17 ft-lbs (23 Nm)
Rope guide fastener	7 ft-lbs (9.5 Nm)
Rear over structure-to-front tunnel mount/x-brace fastener	35 ft-lbs (47 Nm)
Rear over structure-to-tunnel fastener	22 ft-lbs (30 Nm)
X-brace-to-rear brace support fasteners	35 ft-lbs (47 Nm)
Front footrest tube/rear over structure fasteners	22 ft-lbs (30 Nm)
Running board support-to-rear support braces	26 ft-lbs (35 Nm)
Rear support brace tunnel fasteners	26 ft-lbs (35 Nm)
Bulkhead cooler-to-tunnel/ braces fasteners	26 ft-lbs (35 Nm)

CHASSIS ASSEMBLIES

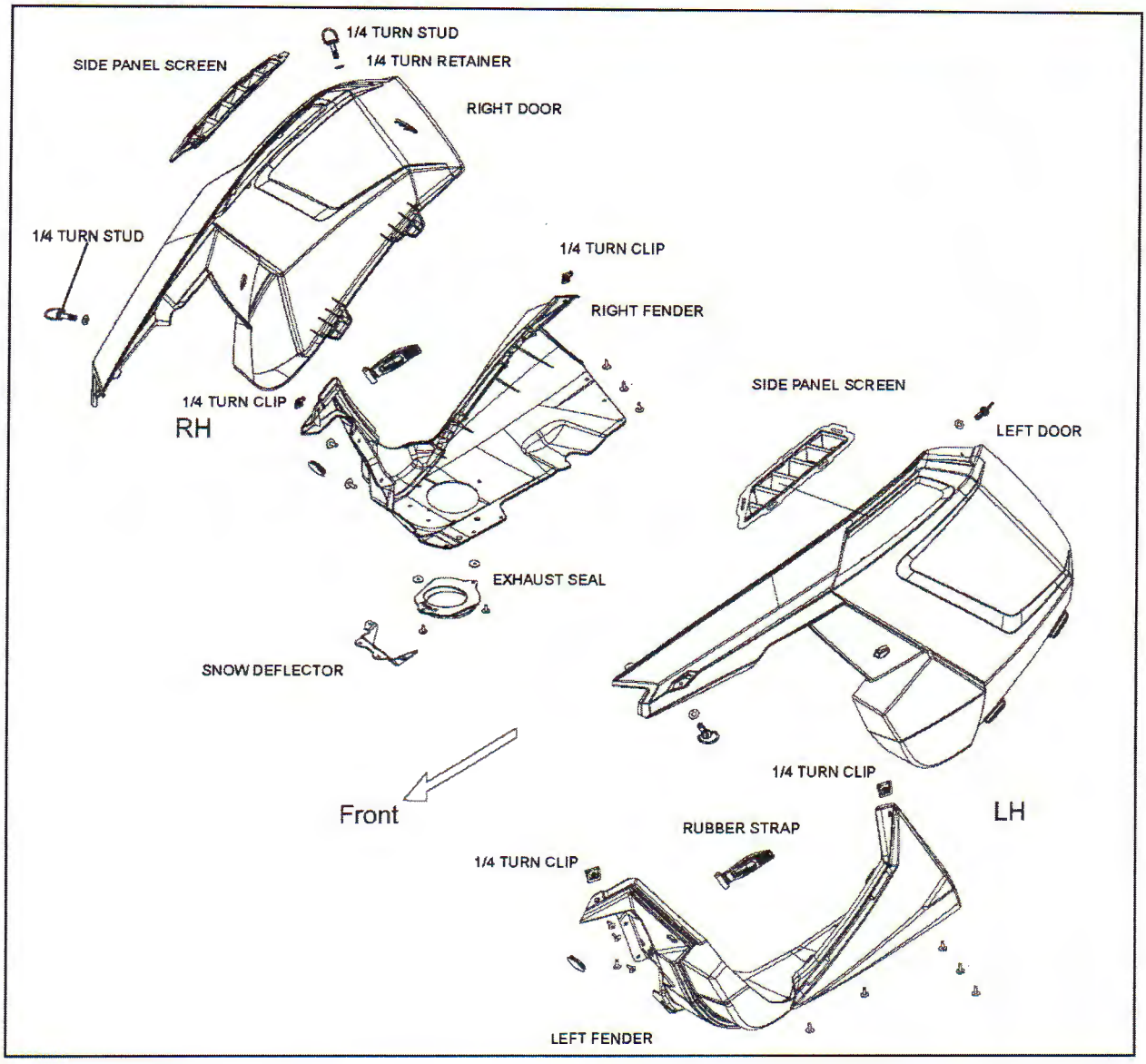
Hood



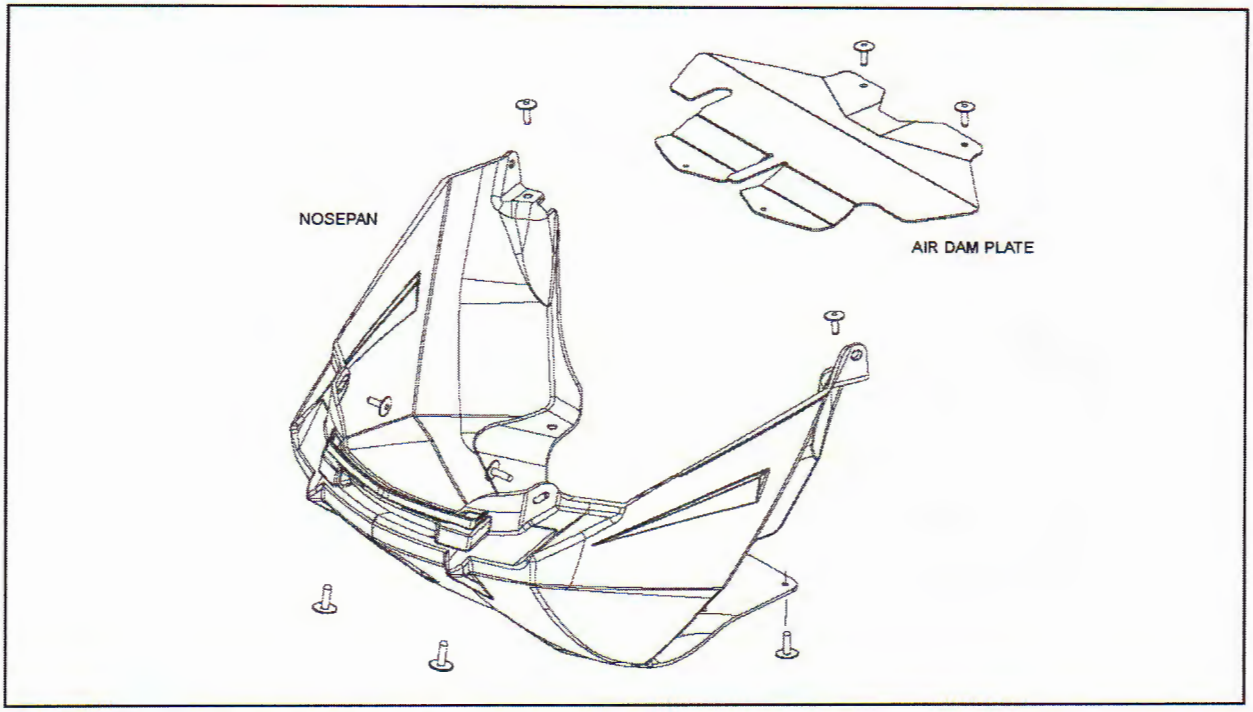
= T
A: 7.4 ft-lbs (10 Nm) B: 3 ft-lbs (4 Nm) (Airbox / Headlight Asm. Screws)

If the brake duct mounting posts break on a 2010-2011 Rush or Switchback Assault hood, install the Brake Duct Kit, PN 2204584.

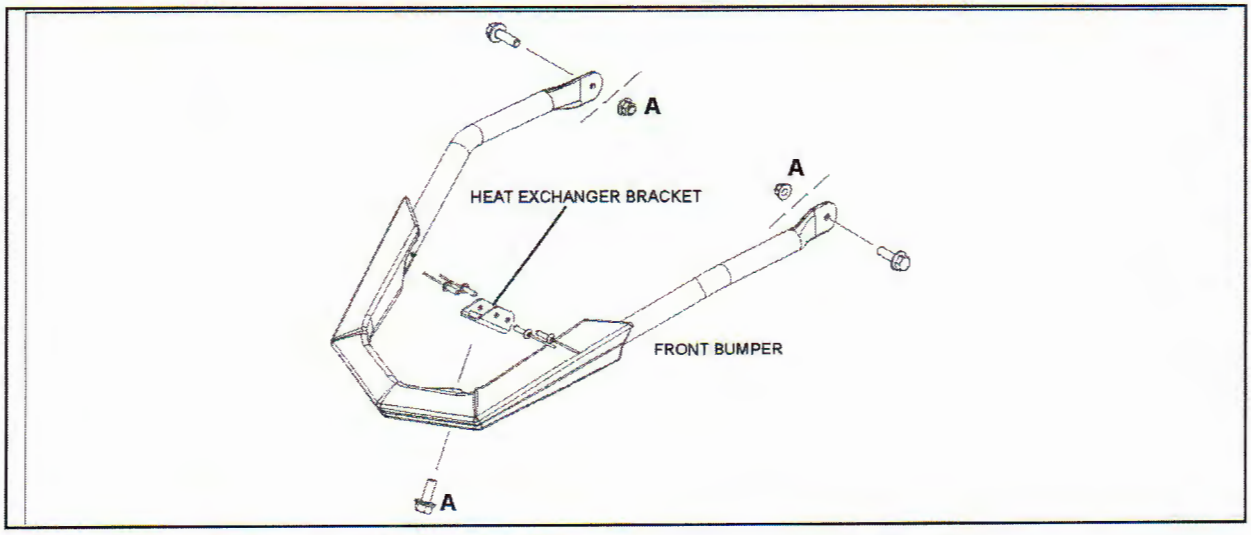
Left/Right Doors and Fenders



Nosepan - Rush /Switchback

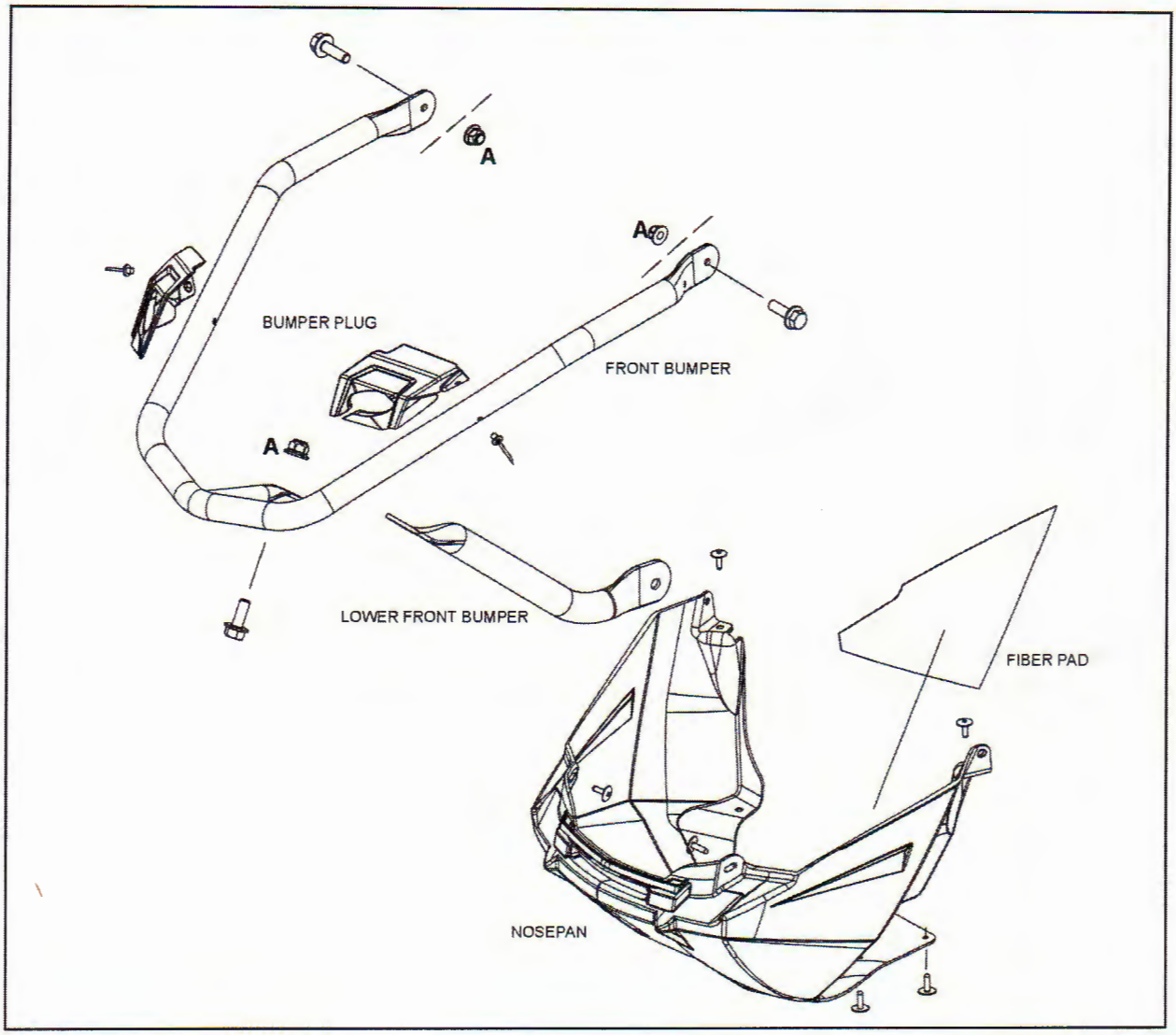


Front Bumper- Rush/Switchback



= T
A: 7.4 ft-lbs (10 Nm)

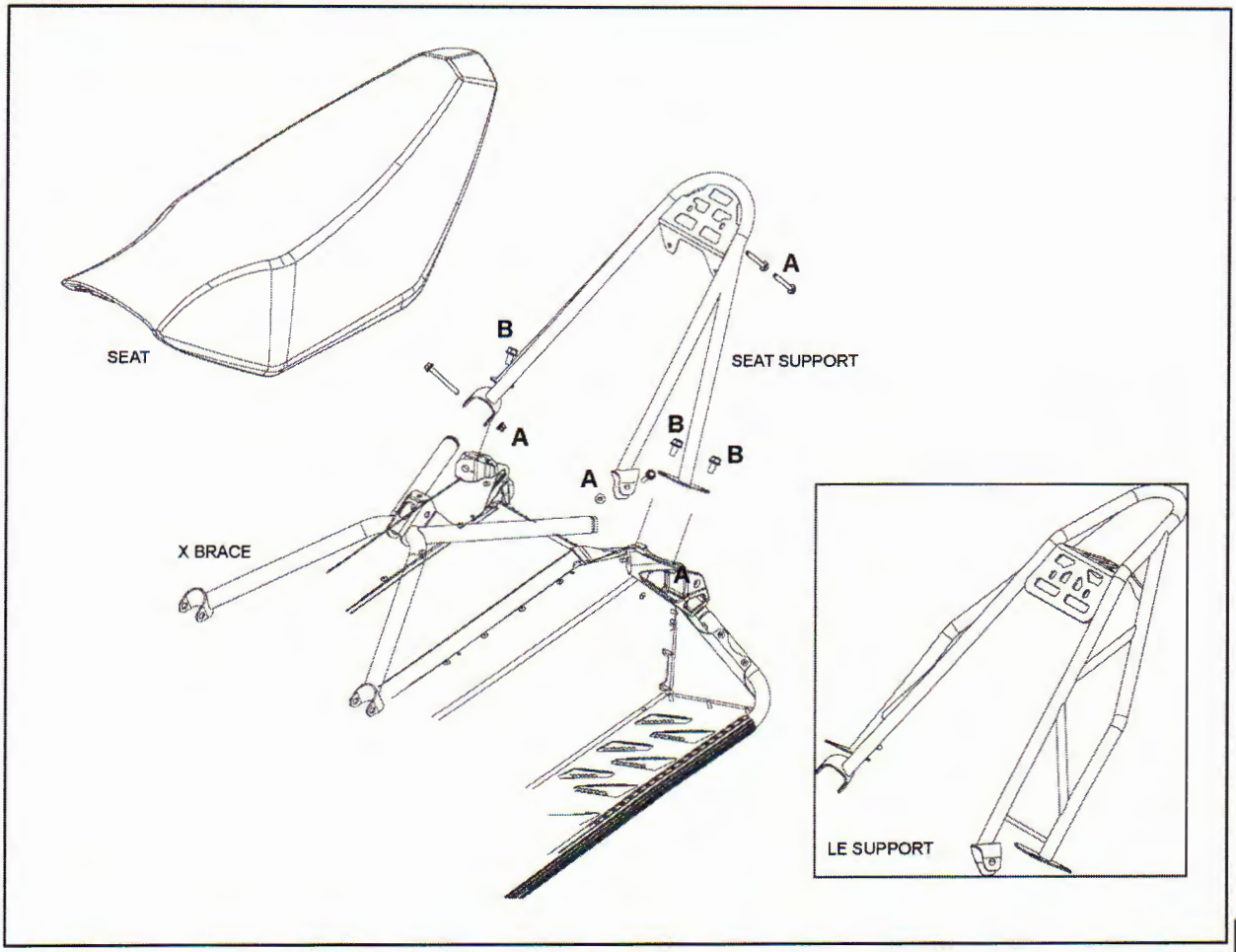
Front Bumper/Nosepan - INDY / Switchback Assault / RMK



= T
A: 7.4 ft-lbs (10 Nm)

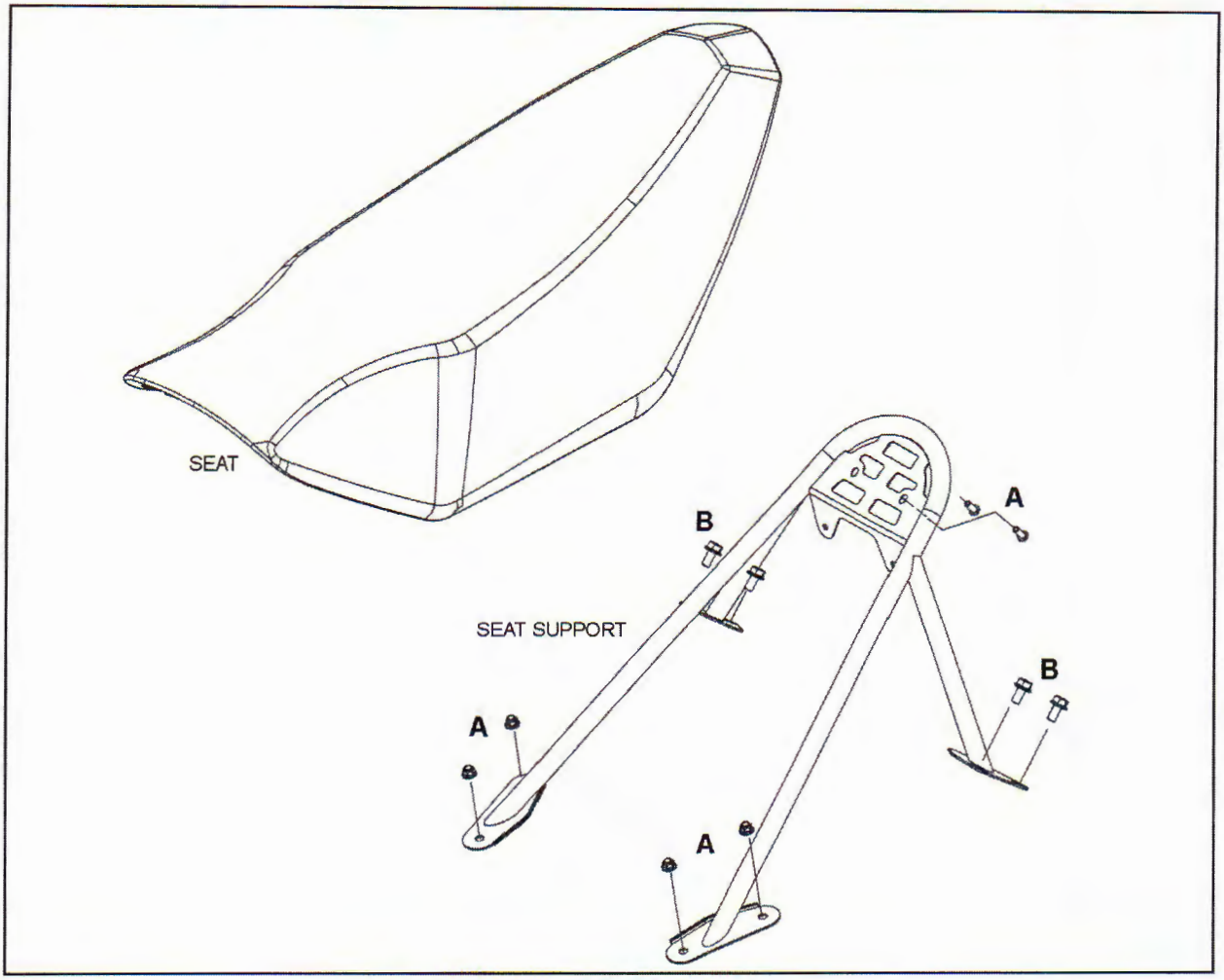
9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

Seat/Seat Support - RUSH Models



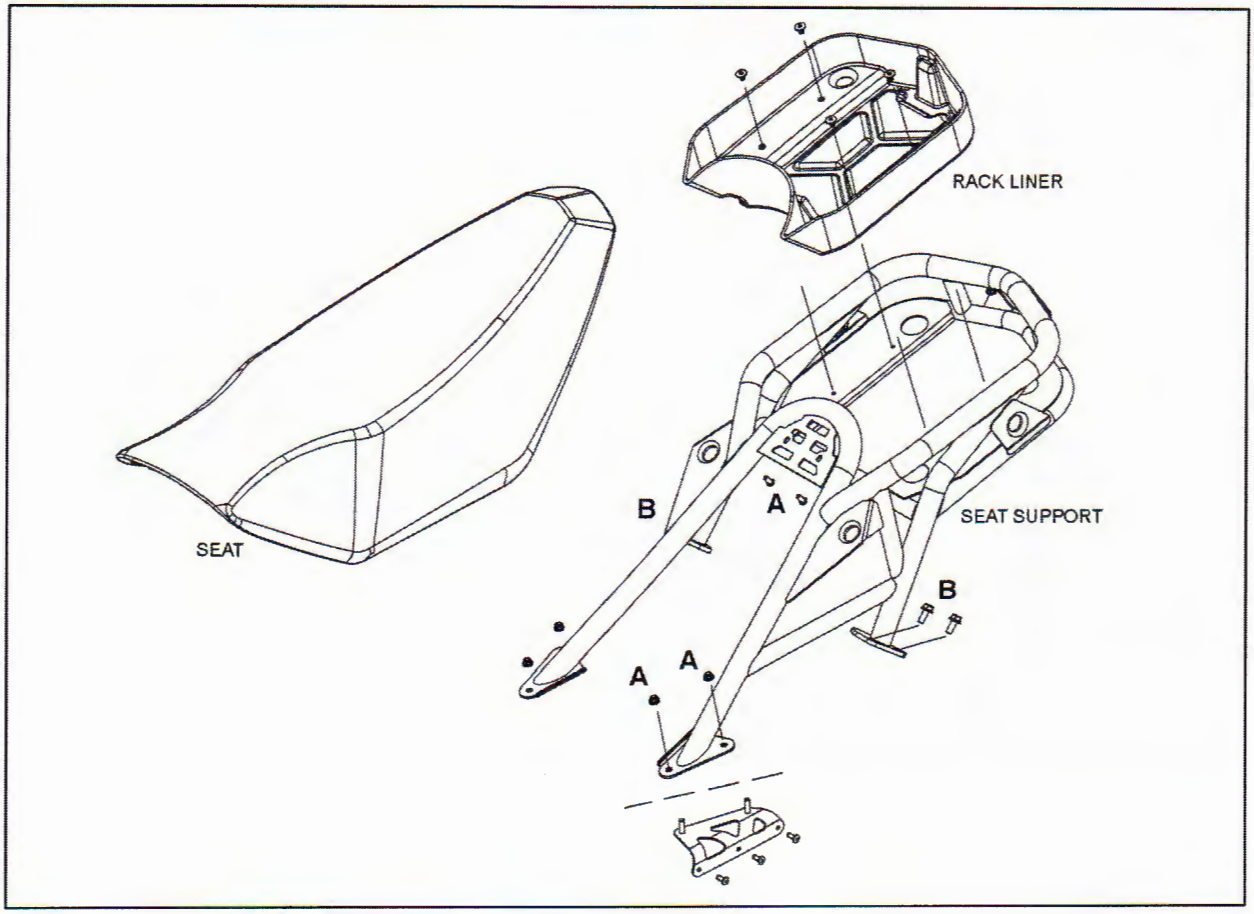
= T
A: 7.4 ft-lbs (10 Nm) B: 17 ft-lbs (23 Nm)

Seat/Seat Support - Switchback Models



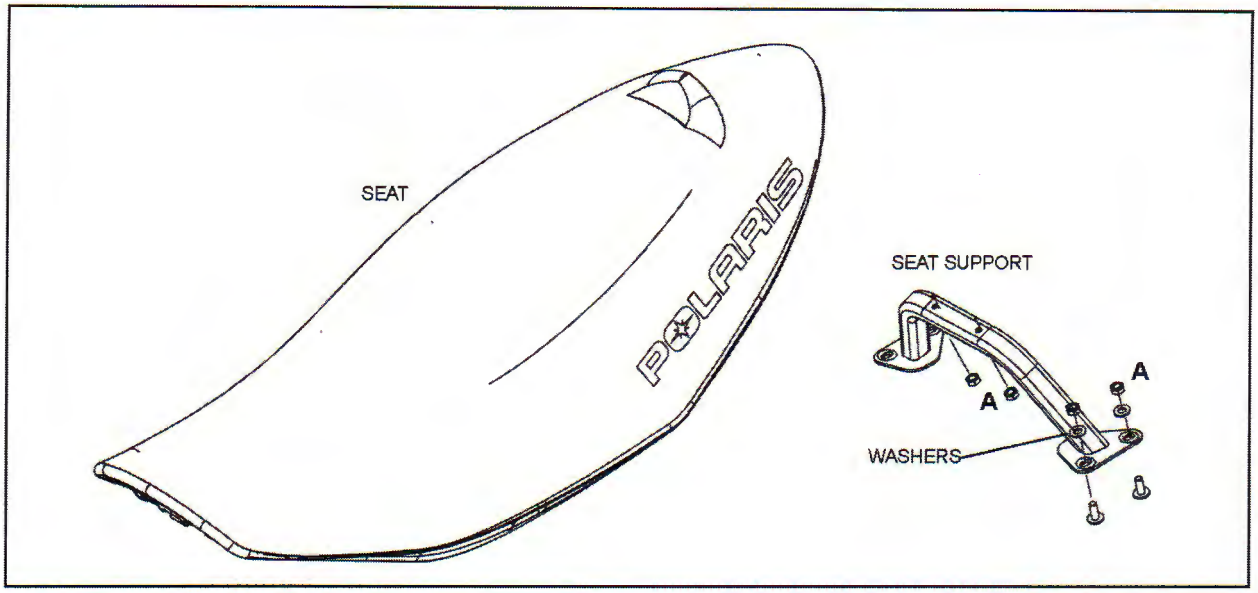
= T
A: 7.4 ft-lbs (10 Nm) B: 17 ft-lbs (23 Nm)

Seat/Seat Support - Switchback Adventure



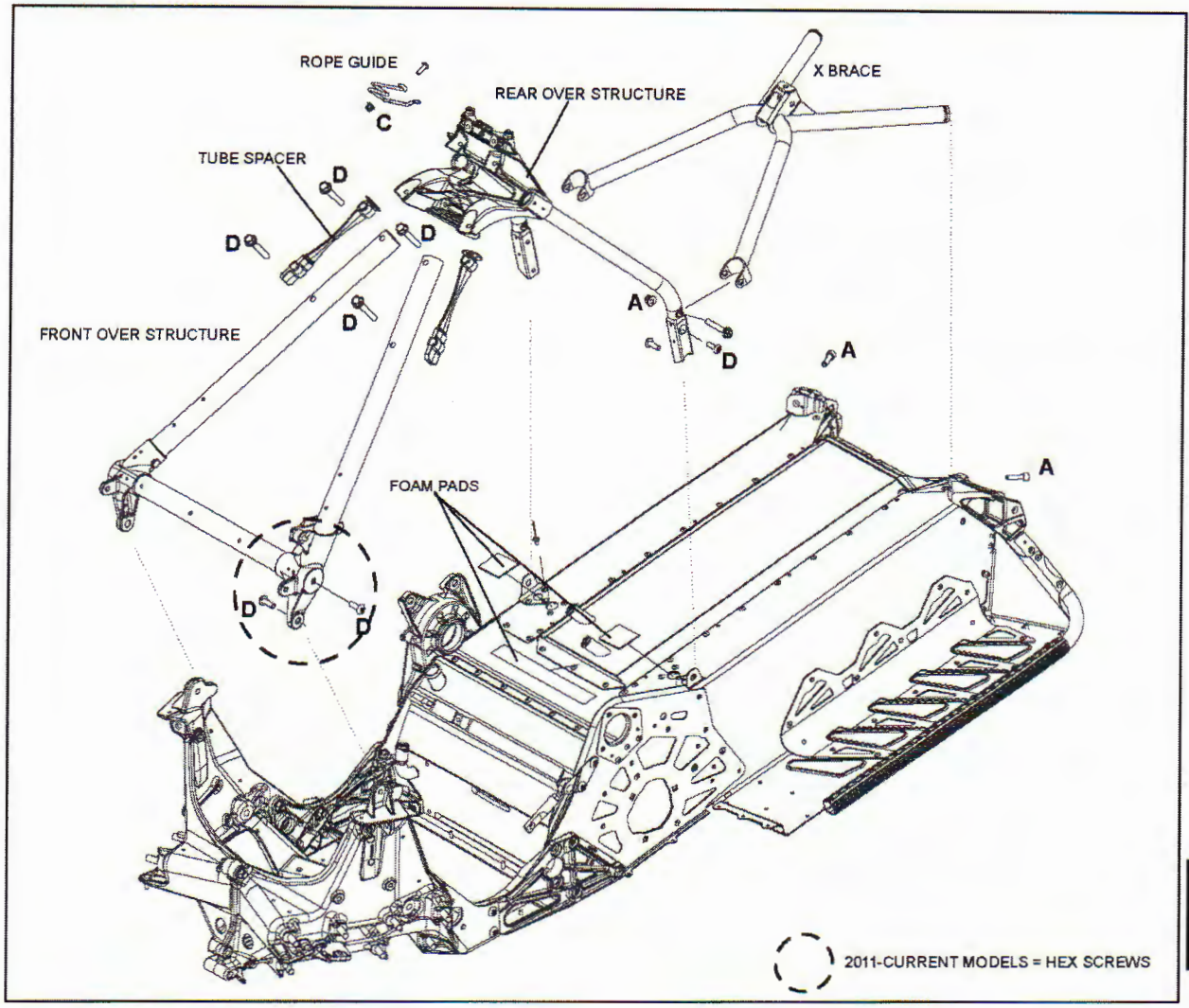
= T
A: 7.4 ft-lbs (10 Nm) B: 17 ft-lbs (23 Nm)

Seat/Seat Support - INDY / Switchback Assault / RMK



= T
A: 7.4 ft-lbs (10 Nm)

Front/Rear Over Structure/X Brace - RUSH Models

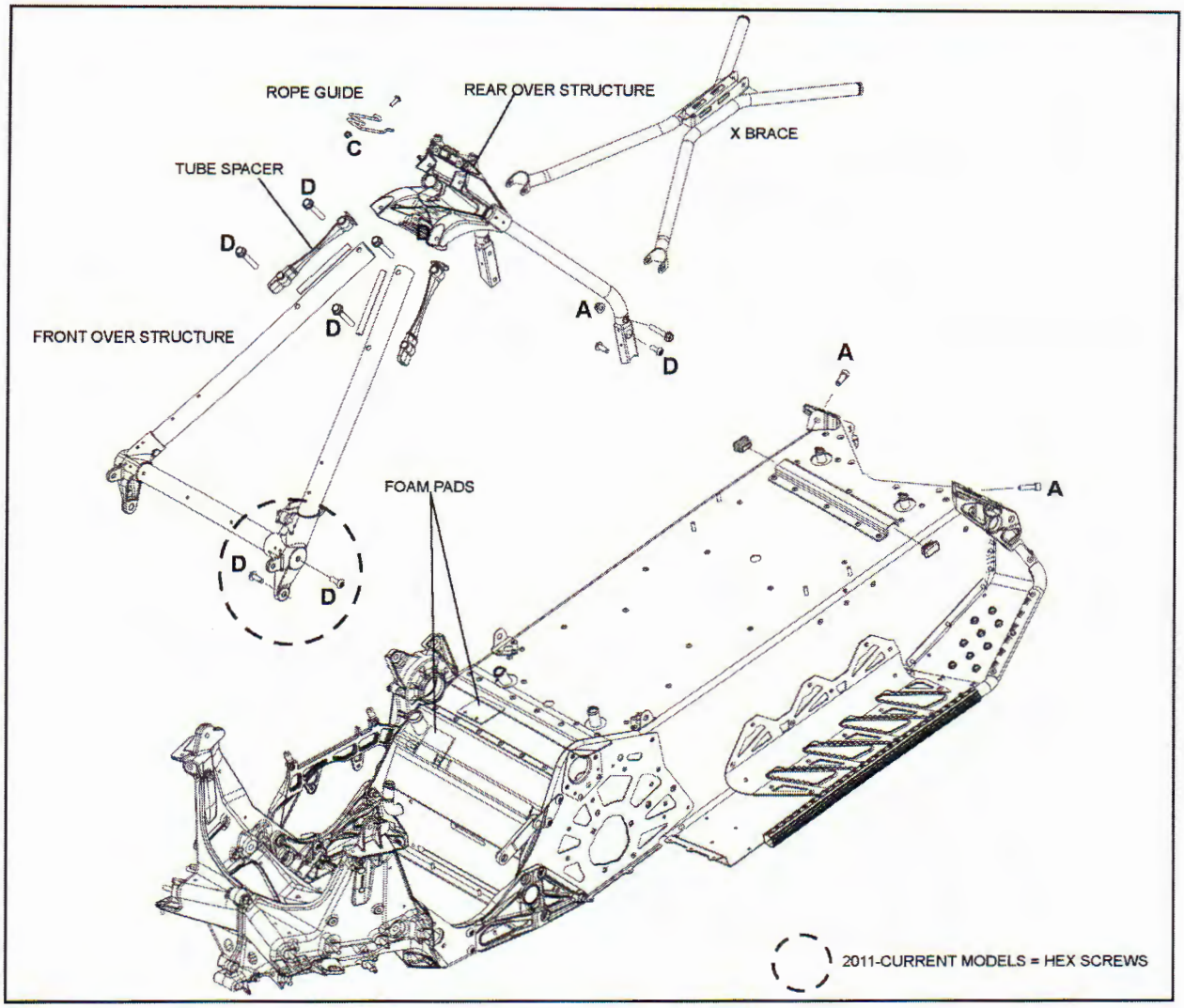


= T
A: 35 ft-lbs (47 Nm) B: 17 ft-lbs (23 Nm) C: 7 ft-lbs (9.5 Nm) D: 22 ft-lbs (30 Nm)

CAUTION

Front and rear over structure assemblies feature bonded components. Do not attempt to service over structure tubes.

Front/Rear Over Structure/X Brace - Switchback Models

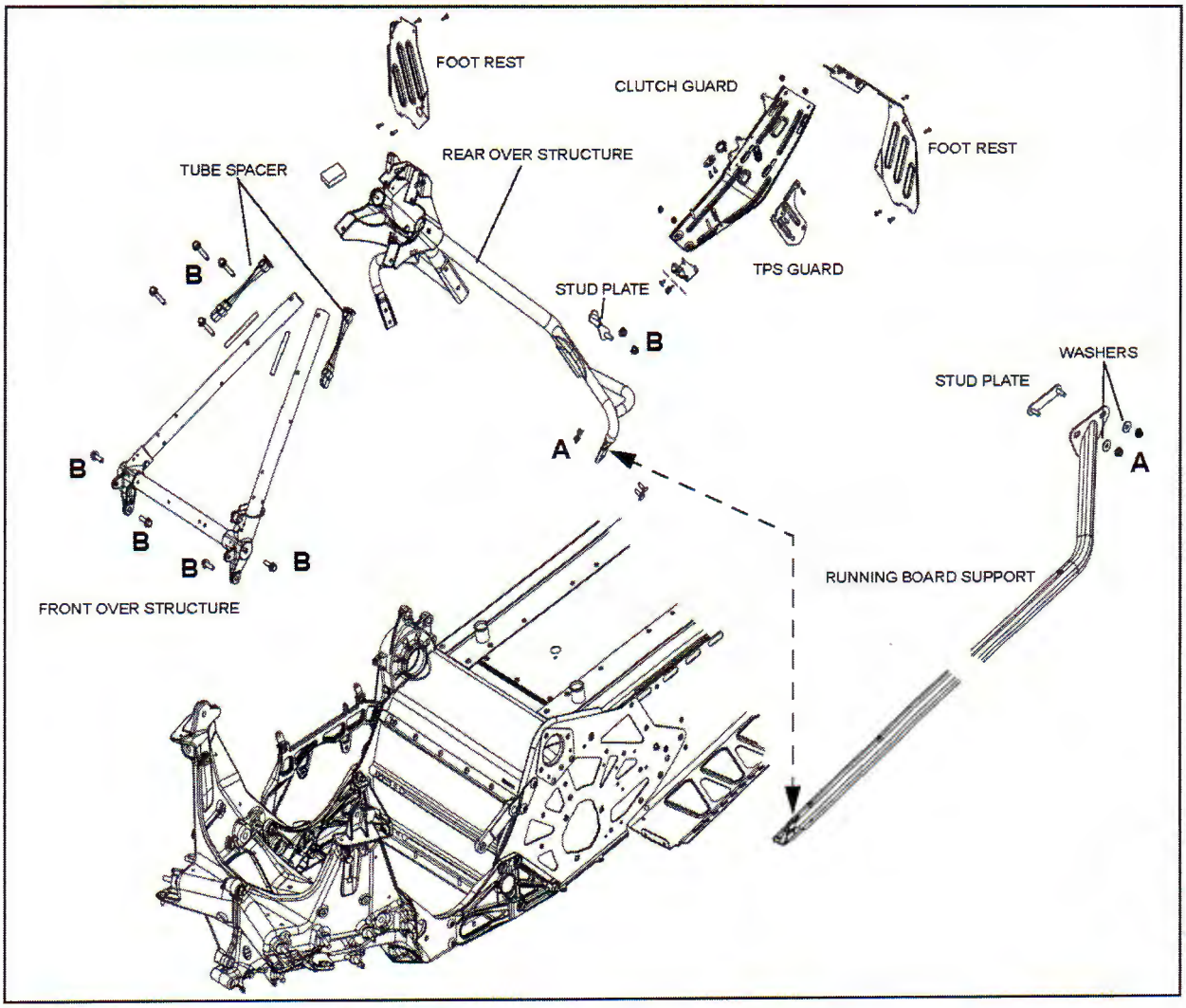


= T
A: 35 ft-lbs (47 Nm) B: 17 ft-lbs (23 Nm) C: 7 ft-lbs (9.5 Nm) D: 22 ft-lbs (30 Nm)

CAUTION

Front and rear over structure assemblies feature bonded components. Do not attempt to service over structure tubes.

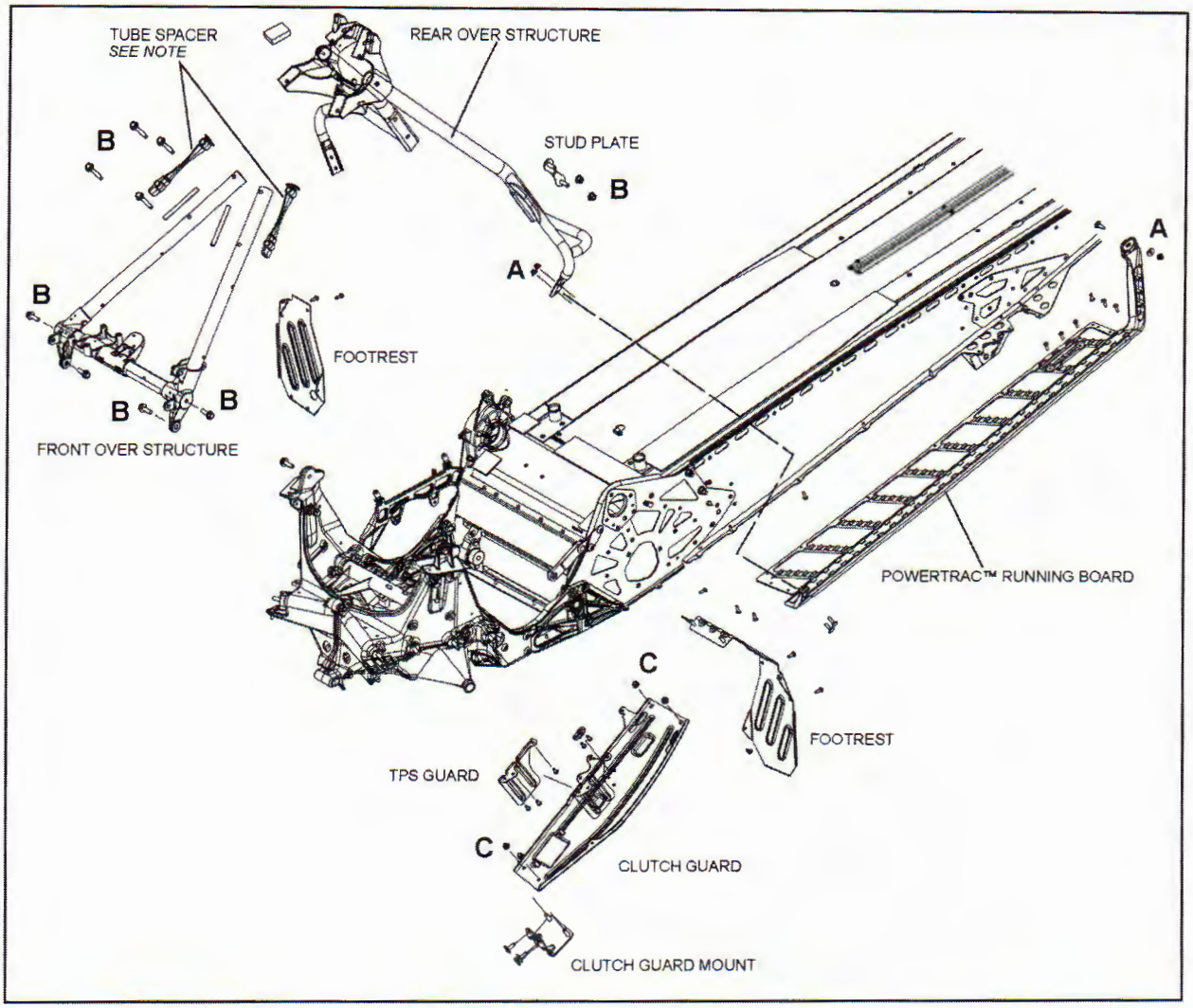
Front / Rear Over Structure - 2011-2012 RMK Models / 2011-2014 Switchback Assault / INDY 144



= T
A: 7 ft-lbs (9.5 Nm) B: 22 ft-lbs (30 Nm)

⚠ CAUTION
Front and rear over structure assemblies feature bonded components. Do not attempt to service over structure tubes.

Front / Rear Over Structure - 2013 - 2014
RMK 155/163 Models

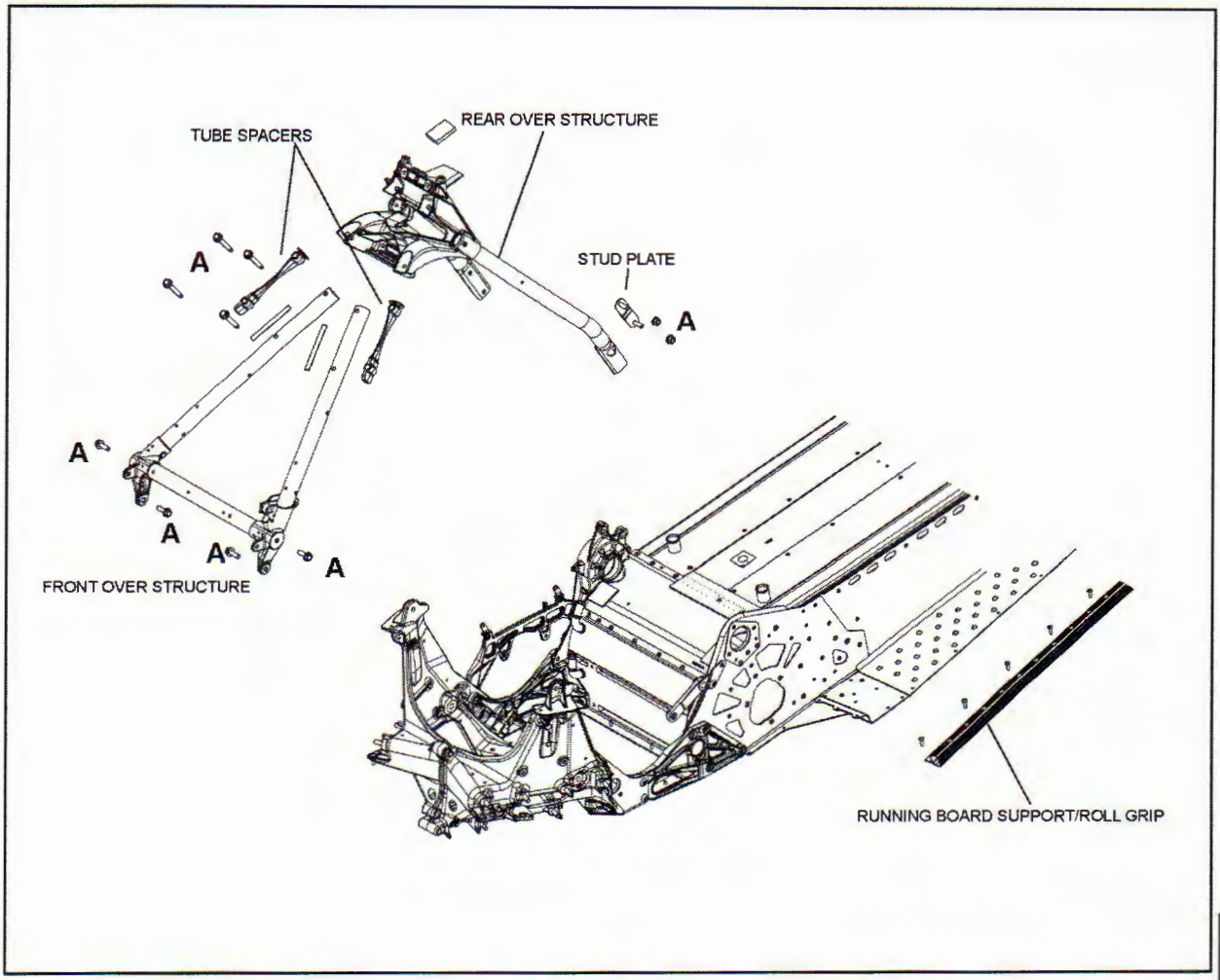


= T
A: 9 ft-lbs (12 Nm) B: 22 ft-lbs (30 Nm) C: 7 ft-lbs (9 Nm)

CAUTION
Front and rear over structure assemblies feature bonded components. Do not attempt to service over structure tubes. Ignition coil bracket not removable.

NOTE: Tube spacers for carbon fiber tubes not compatible with aluminum tubes.

Front Over Structure - INDY Models

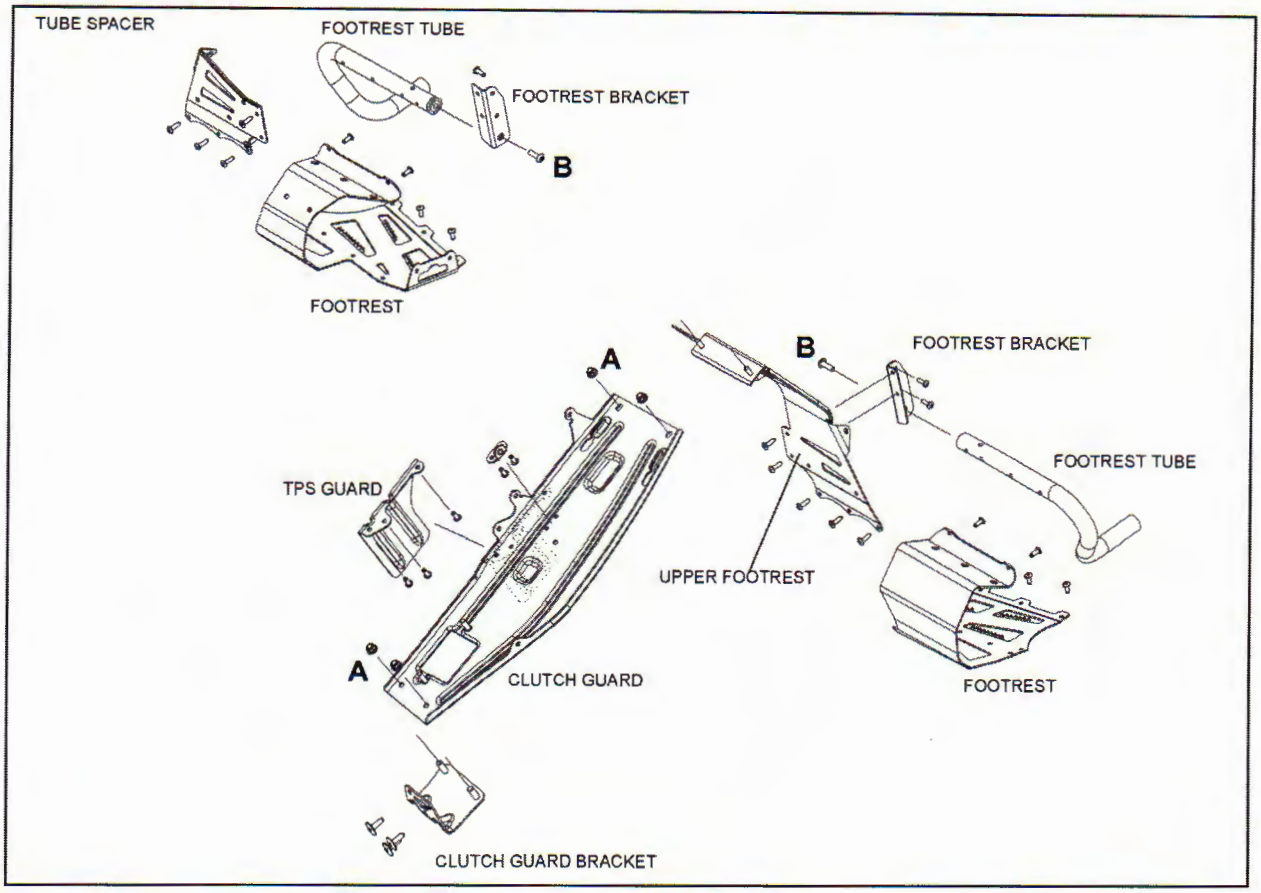


= T
A: 22 ft-lbs (30 Nm)

CAUTION

Front and rear over structure assemblies feature bonded components. Do not attempt to service over structure tubes.

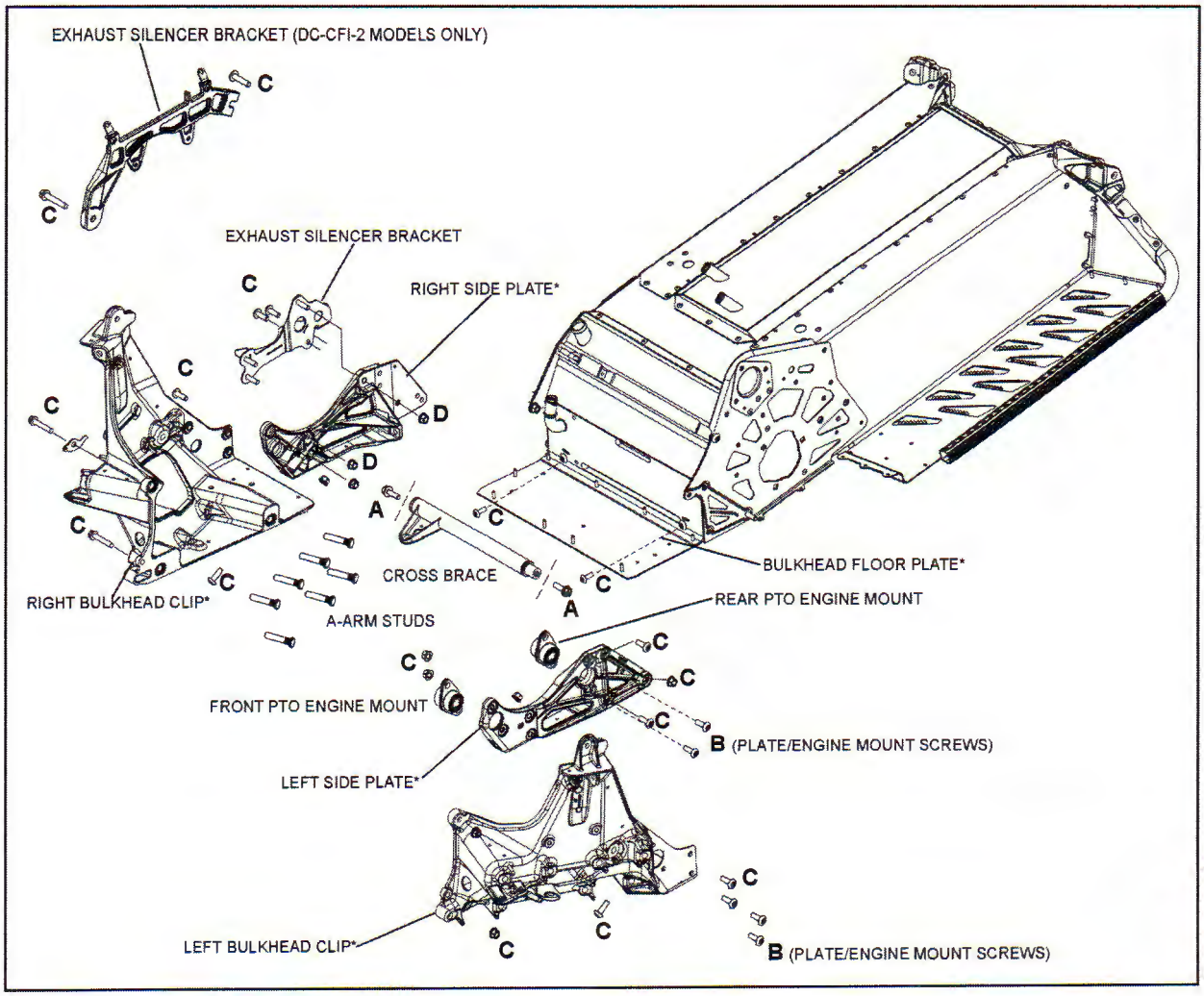
Footrest Supports / Clutch Guard - INDY Models



= T
A: 7 ft-lbs (9.5 Nm) B: 25 ft-lbs (35 Nm)

CAUTION
Front and rear over structure assemblies feature bonded components. Do not attempt to service over structure tubes.

Left/Right Bulkhead Clips/Side Braces-All Models

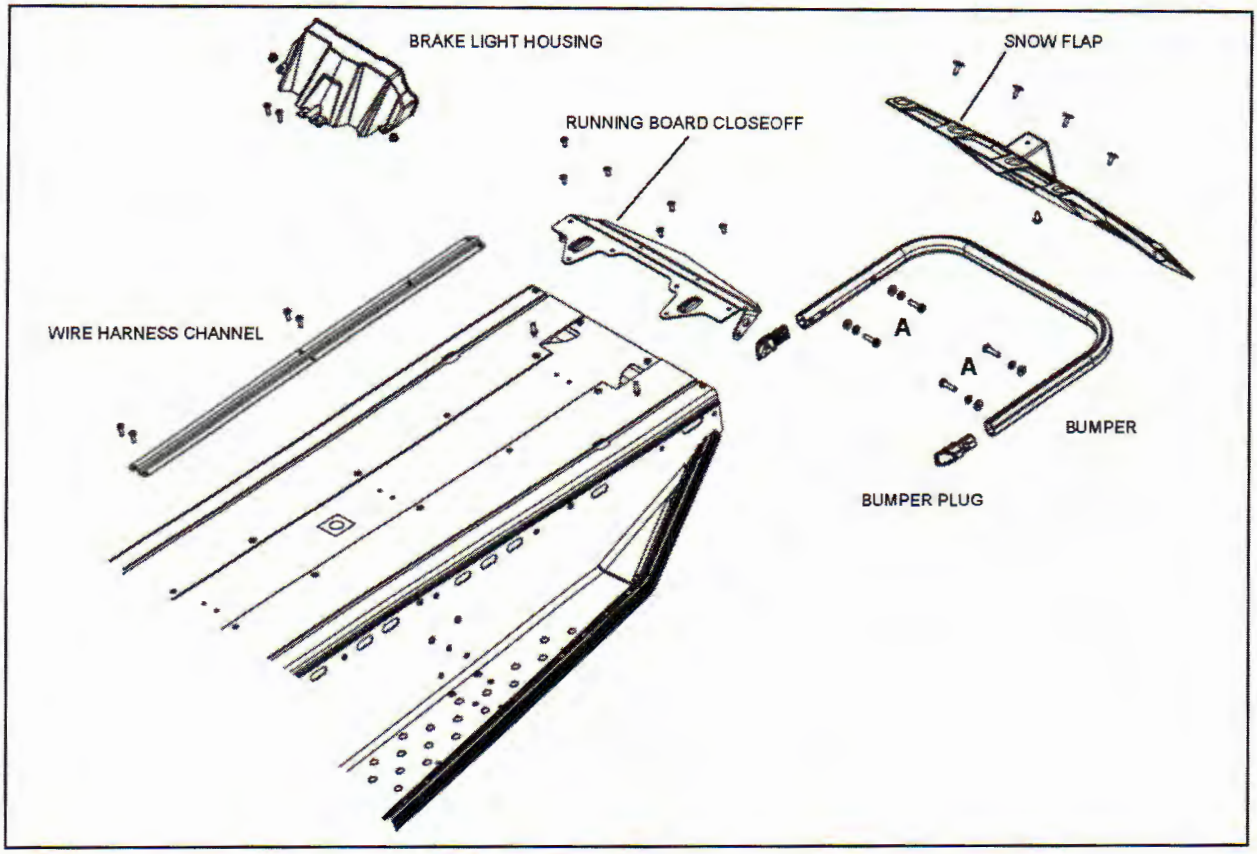


= T
A: 35 ft-lbs (47 Nm) B: 22 ft-lbs (30 Nm) C: 26 ft-lbs (35 Nm) D: 20 ft-lbs (26 Nm)

NOTE: * = Bonded component.

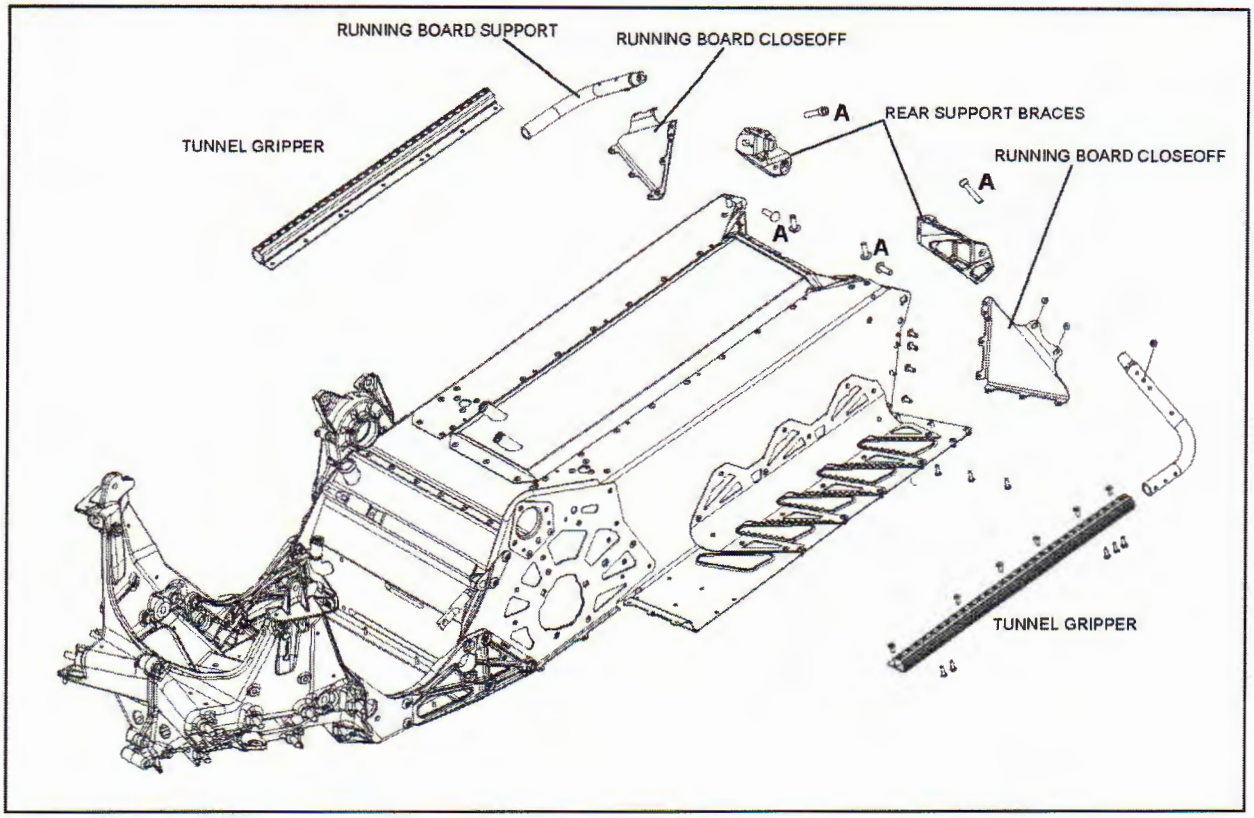
9

Tunnel Rear - INDY Models



= T
A: 7 ft-lbs (9.5 Nm)

Tunnel Rear - RUSH Models

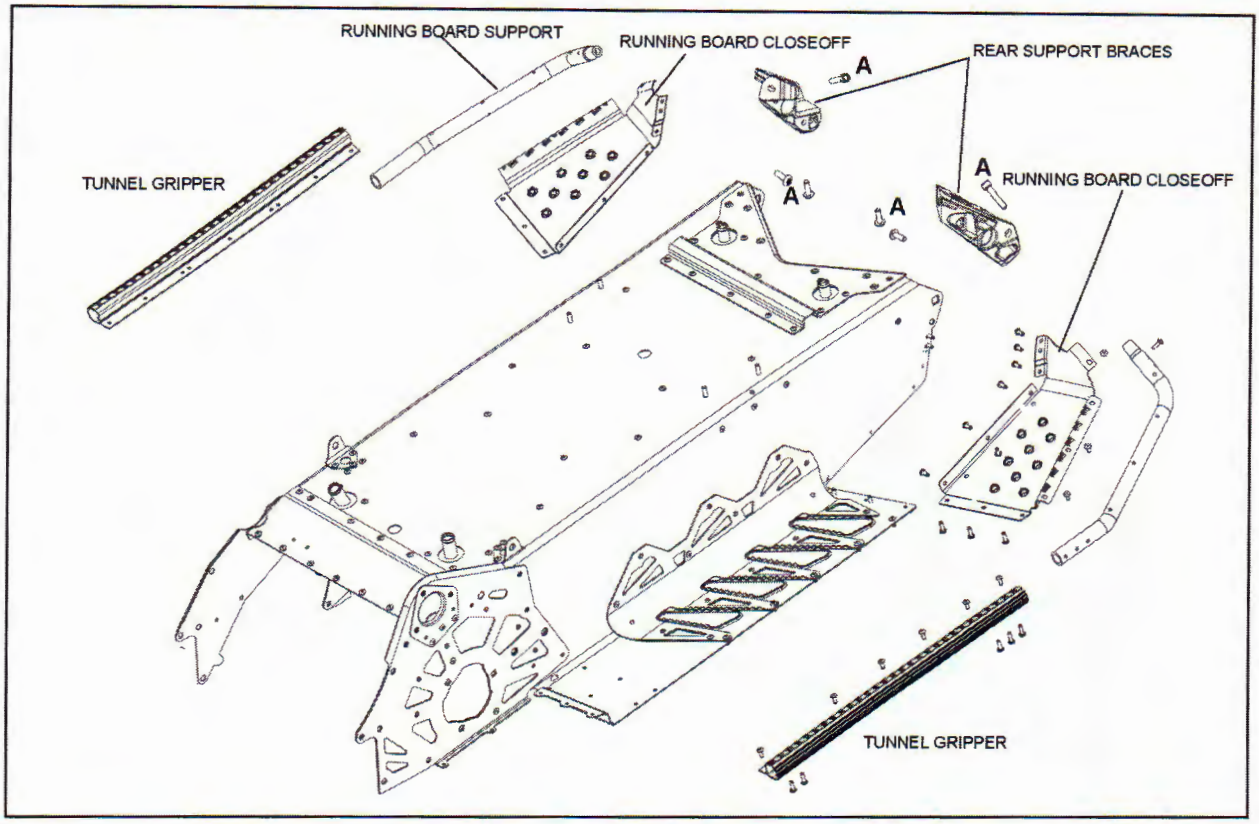


= T
A: 26 ft-lbs (35 Nm)

CAUTION

Running board supports feature bonded components. Do not attempt to service supports.

Tunnel Rear - Switchback

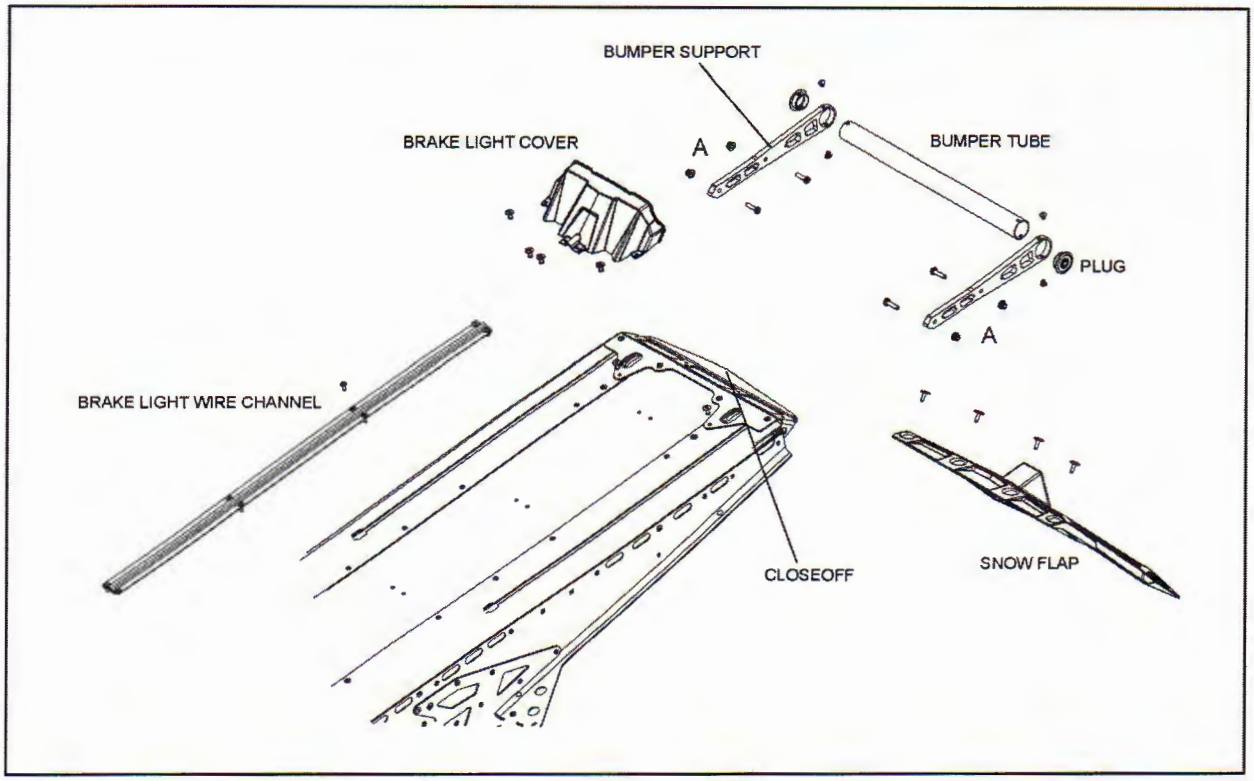


= T
A: 26 ft-lbs (35 Nm)

CAUTION

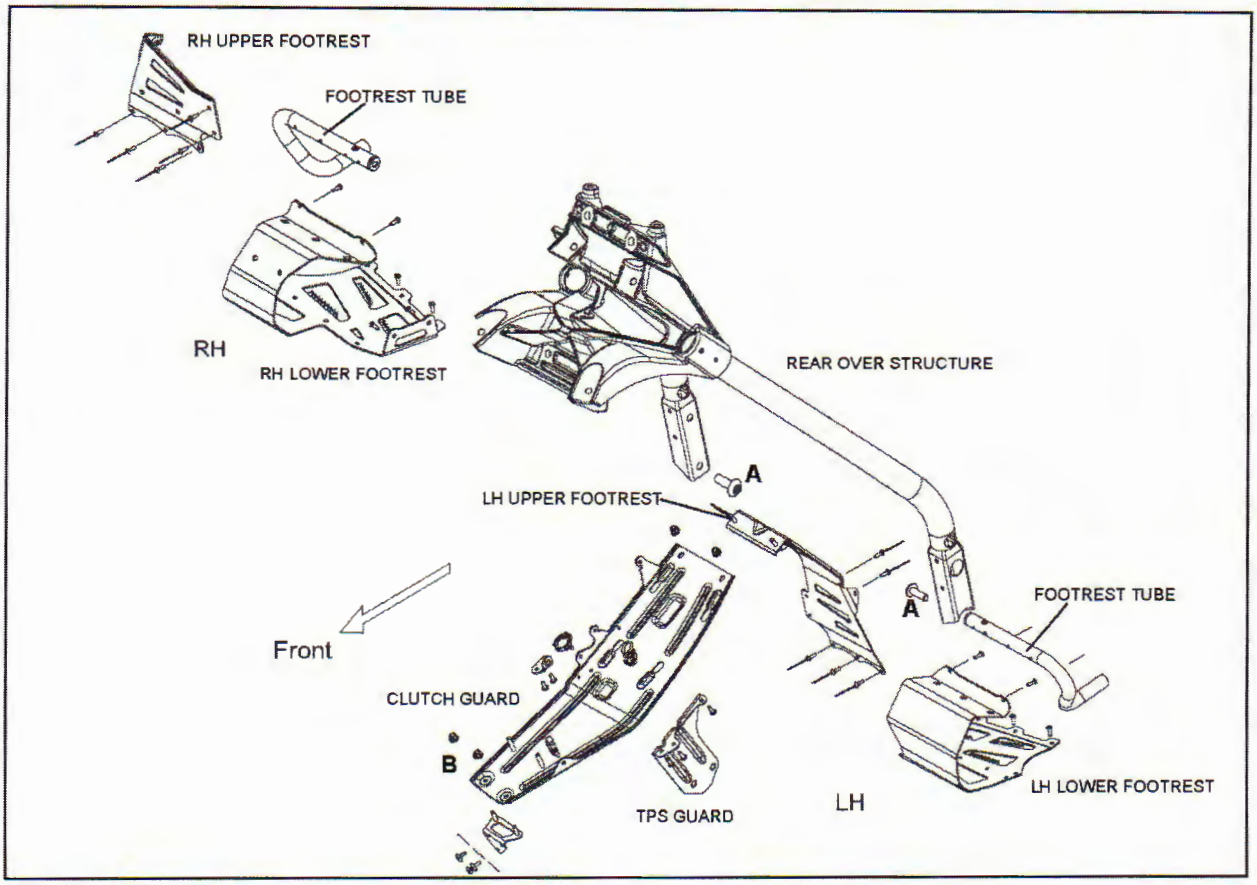
Running board supports feature bonded components. Do not attempt to service supports.

Tunnel Rear - Switchback Assault / RMK



= T
A: 7 ft-lbs (9.5 Nm)

Left/Right Foot Supports - RUSH / Switchback Models

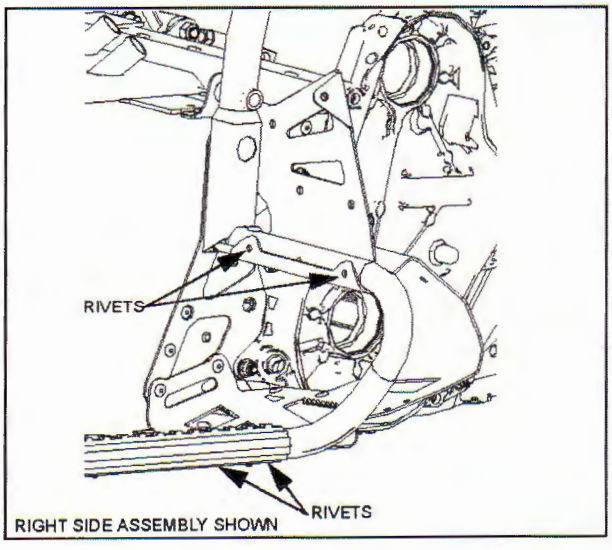


= T
A: 22 ft-lbs (30 Nm) B: 7.4 ft-lbs (10 Nm)

Assembly Notes:

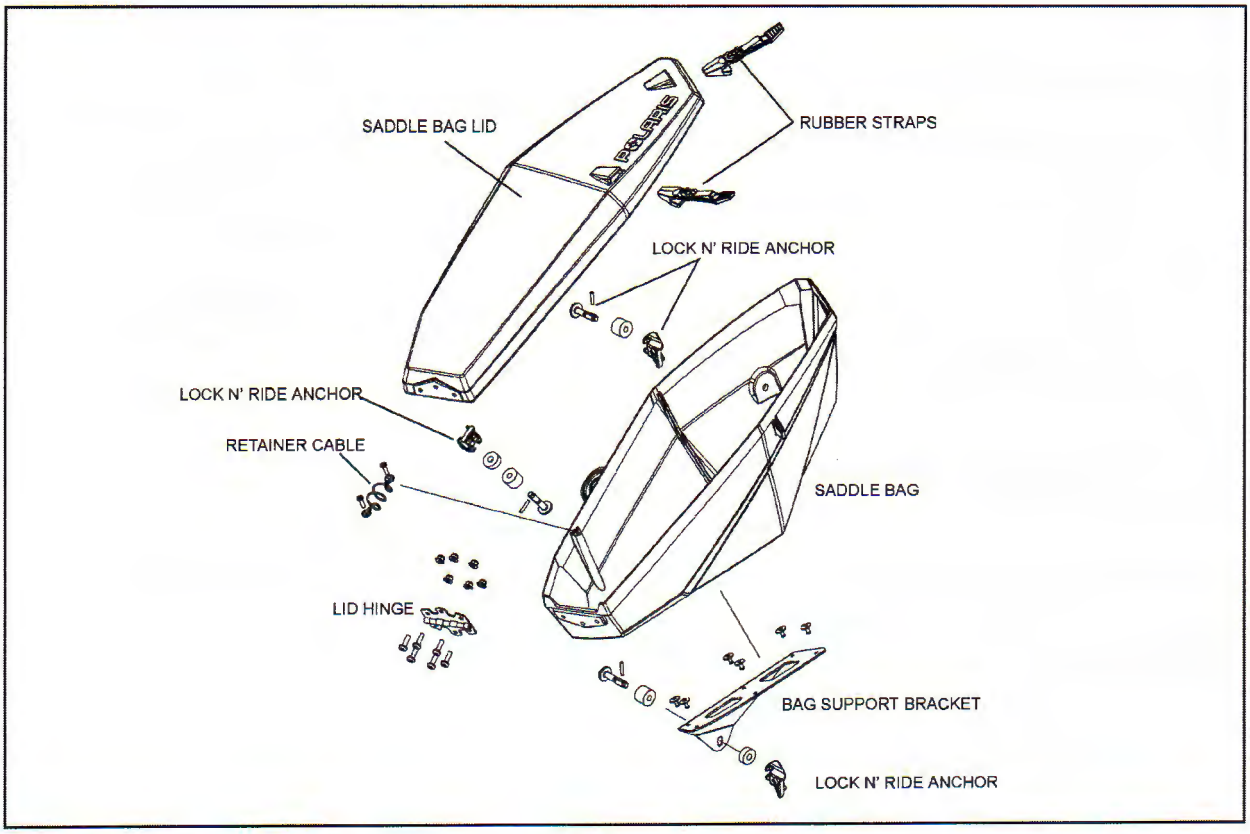
To remove the rear over structure from the tunnel after all of the fasteners are removed, the rivets attaching the lower footrests to the footrest tubes have to be removed along with the rivets attaching the footrest tubes to the tunnel grippers.

After removing the rear over structure, the rivets securing the upper footrest panels to the tubes can be drilled out.



RIGHT SIDE ASSEMBLY SHOWN

Switchback Adventure Saddle Bags



= T
Retainer Cable Fasteners: 3 ft-lbs (4 Nm) Lid Hinge Fasteners: 7.3 ft-lbs (10 Nm)

CAUTION
Running board supports feature bonded components. Do not attempt to service supports.

BONDED COMPONENT SERVICE

Overview

The following serviceable components are bonded with structural adhesive:

- Left/right bulkhead clips are bonded to the left/right support braces
- Left/right support braces are bonded to the tunnel assembly
- Bulkhead floor plate
- Top of front tunnel bulkhead cooler

NOTE: The left and right bulkhead clips are not bonded to each other.

Please read and understand the topics outlined on the following pages before working with any bonded component.

Bonded Component Removal

Breaking the adhesive bond between the before-mentioned components is required whenever performing the following repairs:

- Left or right bulkhead clip removal/replacement
- Left or right engine support side brace removal/replacement
- Front tunnel cooler removal/replacement

In every repair procedure listed, the bulkhead floor plate must be removed. Breaking the bulkhead floor plate bond will render the part unusable. The bulkhead floor plate is considered a sacrificial part and will always be replaced with a new plate whenever removed.

There are two removal methods. The first method does not require the use of the direct application of heat to break the bond. This method only involves removing the bulkhead floor plate and front tunnel bulkhead cooler. This method works because the adhesive has very little resistance to peel force and therefore the two parts can be easily pried/peeled off of the chassis.

The second removal method requires the use of the direct application of heat to release the bond. This method of removal only involves the removal of the bulkhead clip(s) and/or engine support brace(s).

The recommended source of heat is the use of propane gas, and can be obtained at most commercial hardware stores.

NOTE: In all bonded component repair procedures, the engine assembly and bulkhead floor plate are removed from the engine compartment.

Bonded Component Surface Preparation

⚠ WARNING

Handling Practices
Ventilation - Work in a well-ventilated area.

Respirator - Use properly-fitted, organic vapor, air purifying respirator (face mask).

Skin Protection - Use neoprene, or rubber gloves. Wash hands and exposed skin with soap and water after working with product.

Eye Protection - Wear safety glasses/goggles.

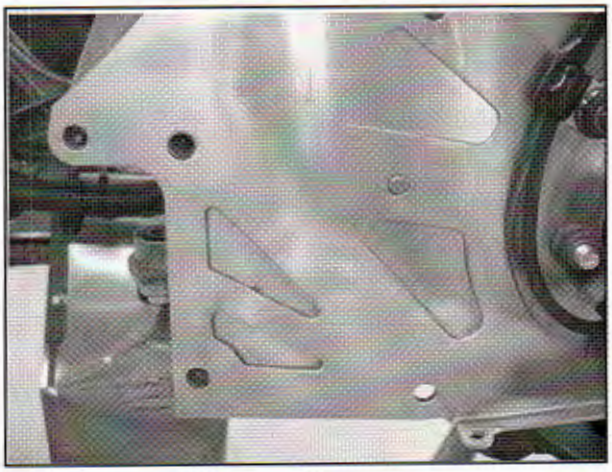
⚠ CAUTION

Original adhesive must be removed from bonded components prior to the application of new adhesive.

Bonded components that will be re-used during assembly must be cleaned and free from original adhesive.

Remove adhesive using a putty knife, gasket remover tool, wire brush, etc. and propane gas torch.

Apply heat to adhesive to assist in removal. After all of the residual adhesive is removed, the component mating surface should resemble the example in the photo below.



After removing the adhesive, clean the bonding area with warm, soapy water and allow to dry completely.

NOTE: New bonded parts should be washed with warm, soapy water and allowed to dry completely before the adhesive is applied.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

Adhesive Applicator Kits

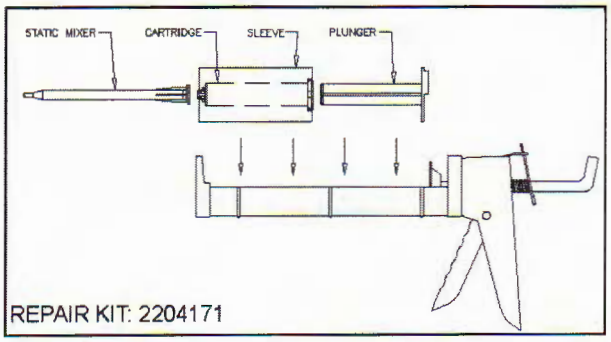
Polaris offers a repair kit, individual adhesive cartridges, and replacement needle packs. It is recommended to leave product unopened until needed. When performing multiple repairs at one time, leave mixer needle attached to cartridge when not in use.

Discard the adhesive cartridge on the date of expiration noted on cartridge label in accordance with local rules and ordinances.

Lord 406/19 Repair Kit (50 ml): 2204171
Includes:
-12qty. Static mixer needles
- 1qty. 50mL 406/19 adhesive cartridge
- 1qty. Standard caulking gun adapter sleeve
- 1qty. Plunger adapter

Lord 406/19 50mL Adhesive Cartridge: 2204400

Lord Static Mixer Needles (12qty.): 2204172



REPAIR KIT: 2204171

The Lord 406/19 Repair Kit (2204171) is supplied with a adapter sleeve and plunger adapter designed to work with a standard size, caulk gun. A smooth rod-type caulk gun is preferable over a ratchet rod type.

Perform the following steps to assemble the repair kit:

1. Insert the cartridge into the adapter sleeve.
2. Install the plunger into the back of the cartridge.
3. Install the plunger/cartridge into the caulk gun. Manually extend the rod so it engages the plunger squarely.
4. Squeeze the trigger slowly making sure the plunger makes equal contact with both cartridge chambers.
5. Only install the mixer needle when ready to apply the adhesive to the components.

   Obtaining Adhesive/Mixing Tools Commercially

   - The only Polaris-authorized adhesive is Lord 406/19 Acrylic Adhesive (Lord 50 ml PN:3003680).
   - Do not use Lord Fusor® Adhesive.
   - Lord Dispensing Gun = Lord Pak 50 (3001112)
   - Lord Plunger = Lord Pak 50 4:1 Plunger (3004479)
   - Lord Mixing Needles = .25" x 6" Needle (3004476)

Adhesive Application

NOTE: Read and understand the following steps to ensure the adhesive is applied correctly.

The adhesive has a maximum working time of 6 to 10 minutes at room temperature. It is critical to pre-position all of the components, screws, nuts, and tools before applying any adhesive.

All bonded components and mating surfaces must be cleaned and free from grease, oils, dirt, etc. Clean all mating surfaces with a soap/water solution and allow to air dry.

Verify the adhesive and components are at room temperature (68° F / 20° C).

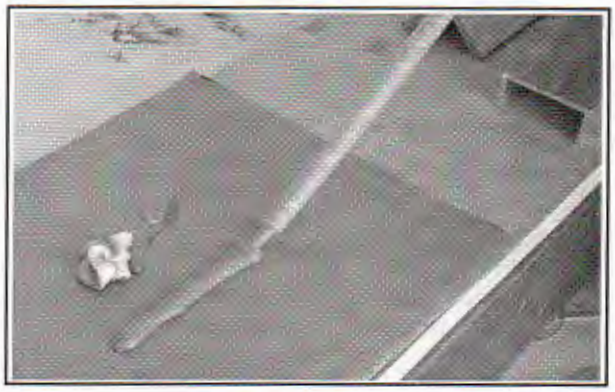
NOTE: The components, and adhesive, must be at room temperature 68° F (20° C) to ensure the adhesive cures properly.

1. When ready to apply the adhesive, remove the cartridge end caps. Level the plunger by slowing squeezing the trigger and expelling the adhesive from the plug onto scrap piece of material.

2. Attach a new mixer needle to the cartridge.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

3. While holding the mixer needle over a piece of scrap material, slowly compress the caulk gun trigger to fill the mixer needle. The needle will automatically mix and dispense the correct volumetric ratio of adhesive and accelerator.



4. Continue squeezing the trigger until a needle's length of adhesive is expelled.
5. Quickly apply a 4 mm bead of adhesive to the component as shown on the following pages. Apply adhesive to one component at a time.
6. Carefully install the component and torque the fasteners to specification immediately. Do not break the bond once the components are mated.

⚠ CAUTION

The bonded parts can be repositioned by gently sliding them into position. Never pull the parts apart. Doing so will introduce air gaps and will require removing the parts, and removing all adhesive.

7. When not using the adhesive, leave the mixer needle attached to the cartridge.
8. If the needle has sat idle for any amount of time, simply remove the needle, and repeat steps 2 through 4 to apply adhesive to additional components.

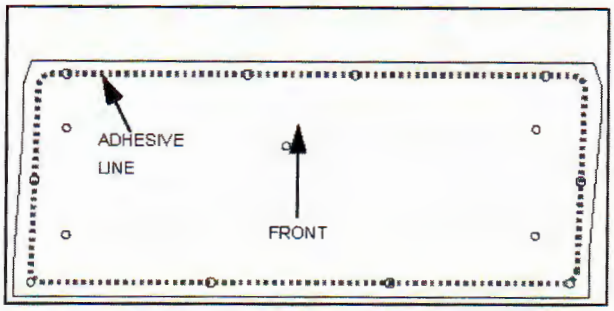
CAUTION

Do not manually mix the adhesive and accelerator. Always use a mixing needle to apply the adhesive.

Adhesive Application Patterns

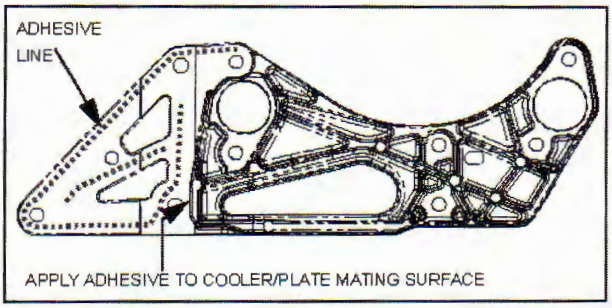
Reference the following illustrations showing the exact patterns for each bonded component when applying the adhesive.

BULKHEAD FLOOR

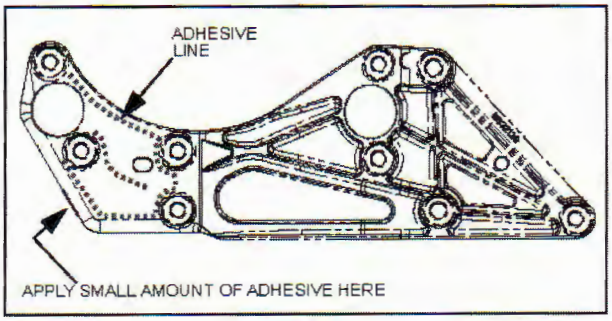


LH (PTO) SIDE BRACE

(BULKHEAD MATING SURFACE)

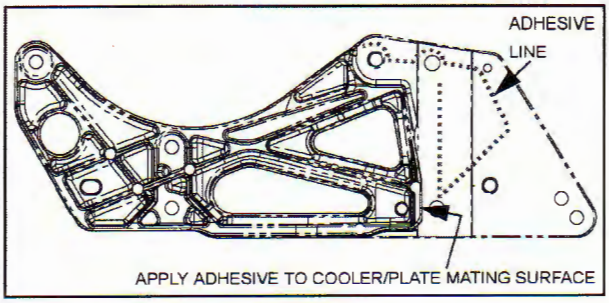


(FRONT CLIP MATING SURFACE)

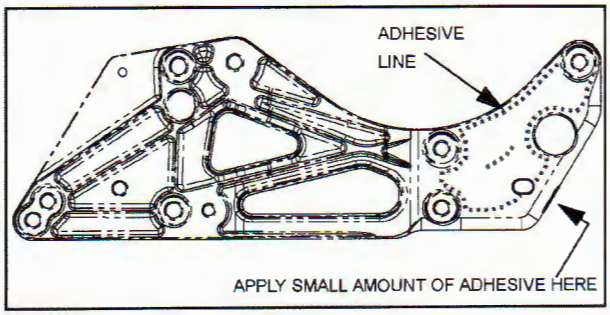


RH (MAG) SIDE BRACE

(BULKHEAD MATING SURFACE)

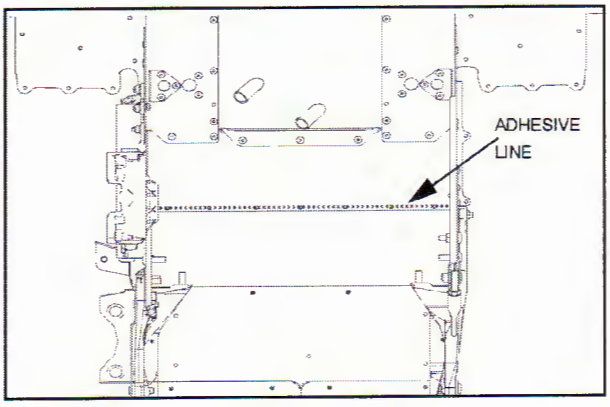


(FRONT CLIP MATING SURFACE)



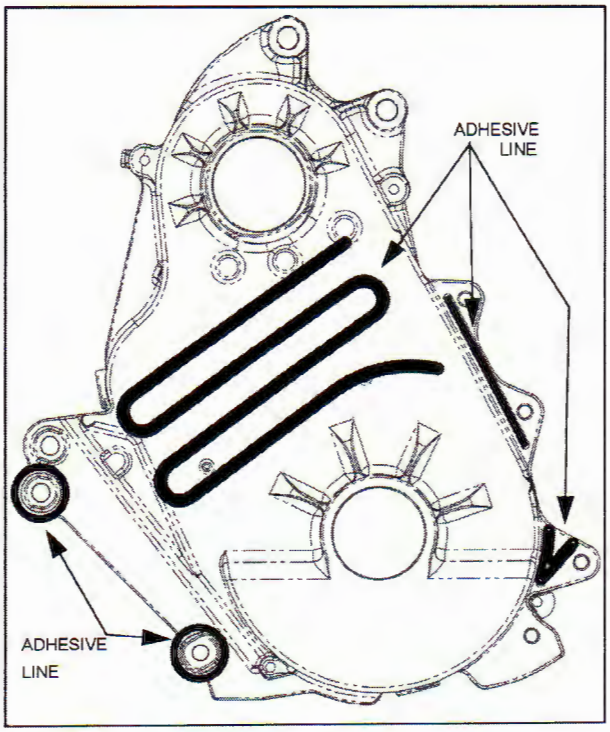
FRONT BULKHEAD COOLER/PLATE

(TUNNEL MATING SURFACE)



Chaincase (2012-Later Models)

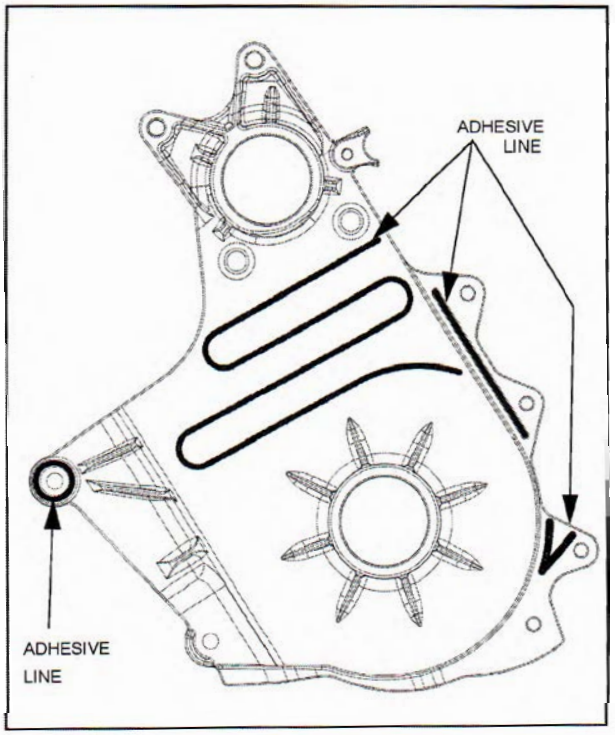
(MATING SURFACE)



NOTE: Adhesive application can be used on 2010-2011 models.

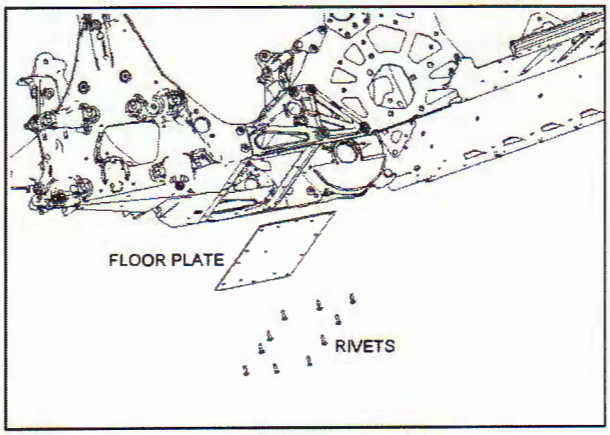
QuickDrive Backer Plate

(MATING SURFACE)



Bulkhead Floor Plate Removal

1. Follow the procedures for removing the engine. See Engine chapter.
2. Remove the fender from the chassis on the side of the vehicle that requires service.
3. The bulkhead floor plate is riveted and bonded to the chassis.
4. Locate and drill-out the rivets securing the plate to the bulkhead clips, support plates and bulkhead cooler. Drill out the rivet in the center of the plate that secures the cooling hose p-clamp.



5. Insert the blade of a flat blade screwdriver into one of the plate's corners. Pry the plate away from the chassis.
6. Continue working the screwdriver along the edge of the plate until the plate can be grasped with a Vise Grip pliers.
7. Using the Vise Grip pliers, pull/peel the plate away from the chassis. Discard the plate.
8. Thoroughly clean the chassis mating surfaces where the plate attaches to the chassis. Reference the Bonded Component Surface Preparation section.

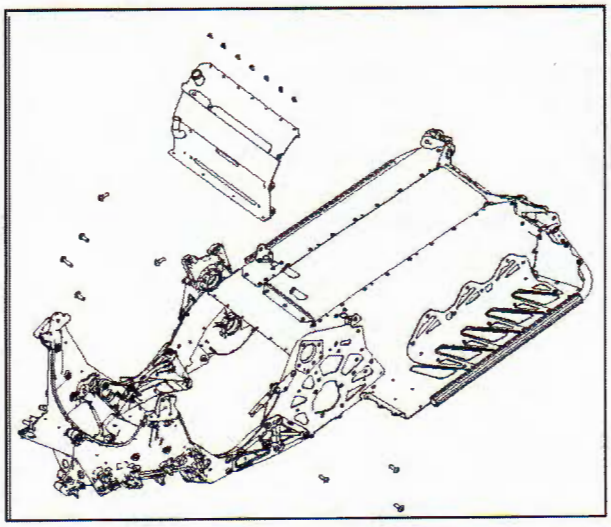
Bulkhead Floor Plate Installation

1. Clean the new bulkhead floor plate with warm, soapy water. Allow the plate to completely dry.
2. The next assembly step is applying the adhesive. Thoroughly read and understand the Adhesive Applicator Tool and Adhesive Application sections before proceeding.
3. Apply the adhesive to the plate. Reference the illustration in the Adhesive Application Patterns section.
4. Install the plate using new rivets.
5. Reinstall the fender.
6. Install the rivet securing the cooling hose p-clamp to the plate from inside engine compartment.
7. Reinstall the engine assembly.

NOTE: Allow the adhesive to cure for 24 hours at 68° F (20° C) before placing the snowmobile back into service.

Front Tunnel Bulkhead Cooler Removal

1. Remove the following components:
   - Right/left engine compartment door
   - Hood
   - Exhaust pipe/silencer
   - Oil tank/clutch cover assembly
   - Airbox assembly
   - Engine assembly
   - Driven clutch
   - Bulkhead floor plate
   - Fuel tank assembly
2. Drill out the rivets securing the cooler to the top of the tunnel.
3. Remove the fasteners securing the cooler to the sides of the tunnel.
4. Remove the fasteners securing the engine support braces to the cooler.
5. Remove the cooler from the chassis.



6. Remove any residual adhesive from the tunnel and/or cooler if it is going to be re-used.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

Front Tunnel Bulkhead Cooler Installation

1. If installing the original bulkhead cooler, verify all of the original adhesive is removed from the mating surface.
2. The next assembly step is applying the adhesive. Thoroughly read and understand the Adhesive Applicator Tool and Adhesive Application sections before proceeding.
3. Apply the adhesive to the bulkhead cooler. Reference the illustration in the Adhesive Application Patterns section.
4. Install the cooler using new rivets.
5. Install the fasteners securing the cooler to the engine support braces. Torque to specification.

= T
Bulkhead Cooler-to-Tunnel/Braces: 26 ft-lbs (35 Nm)

6. Install the fasteners securing the cooler to the sides of the tunnel. Torque fasteners to specification.

= T
Bulkhead Cooler-to-Tunnel Fasteners: 26 ft-lbs (35 Nm)

7. If the MAG rear engine mount bracket was removed for the cooler, reinstall the mount and torque fasteners to specification.

= T
MAG Engine Mount-to-Cooler Fasteners: 22 ft-lbs (30 Nm)

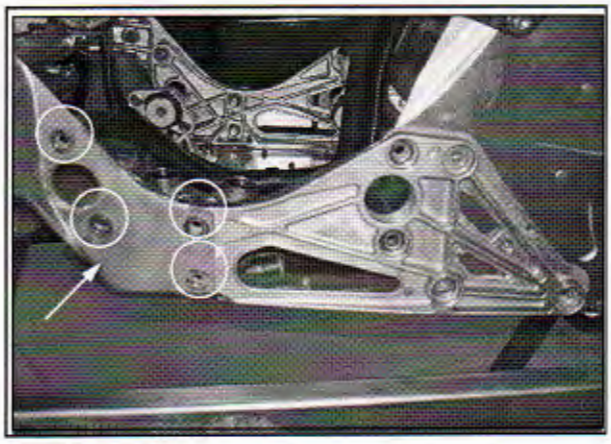
8. Reinstall the following components:
   - Right/left engine compartment door
   - Hood
   - Exhaust pipe/silencer
   - Oil tank/clutch cover assembly
   - Airbox assembly
   - Engine assembly
   - Driven clutch
   - Bulkhead floor plate
   - Fuel tank assembly

   NOTE: Allow the adhesive to cure for 24 hours at 68° F (20° C) before placing the snowmobile back into service.

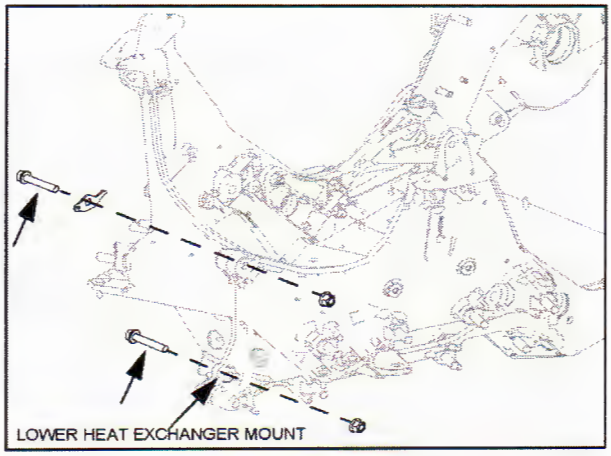
Left Bulkhead Clip Removal

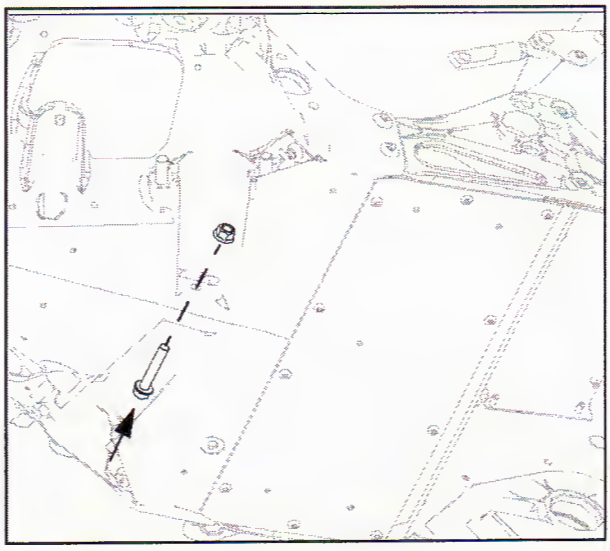
1. Remove the following components:
   - Right/left engine compartment door
   - Hood
   - Nosepan/bumper
   - Exhaust pipe/silencer
   - Oil tank/clutch cover assembly
   - Airbox assembly
   - Engine assembly
   - Left-side front engine mount
   - Bulkhead floor plate
   - Left side front suspension components
   - Lower steering arm
   - Fuel tank (Remove fuel hoses and gasoline from tank)
2. Drill out the rivets securing the left fender to the bulkhead and chassis.

3. Remove the five fasteners and nuts (including the two engine mount fasteners/nuts) securing the bulkhead clip to the left side engine side support brace.

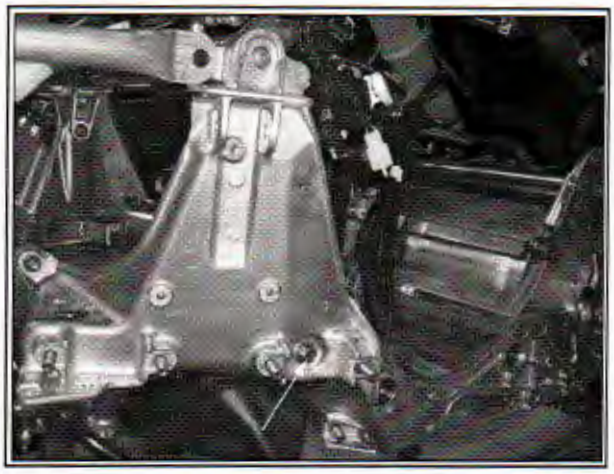


4. Remove the bulkhead clip fasteners/nuts.

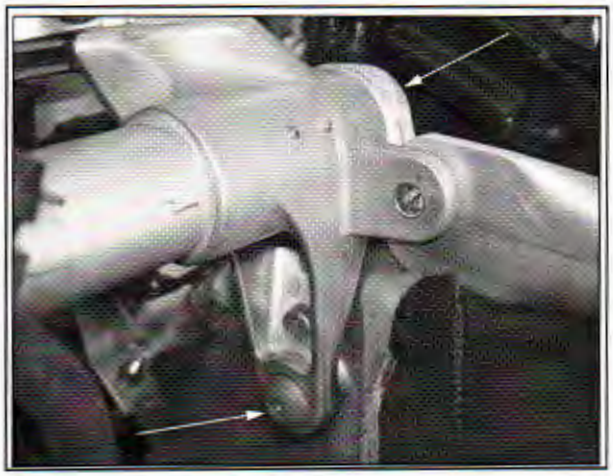




5. Remove the cross shaft fastener from the bulk head clip.



6. Remove the screws securing the over structure to the bulk head clip.



7. Remove the tie rod boot. Remove the lower steering shaft nut.

8. When all of the noted fasteners and nuts are removed, the next step is to heat where the bulkhead clip mates with the engine side support brace.
9. Wearing heat resistant gloves, use a propane gas torch to heat the adhesive between the two components.
10. Apply torch until adhesive begins to crackle. During this time, the adhesive may smoke and bubble.

11. Continue heating the area until the components can be separated.

⚠ CAUTION

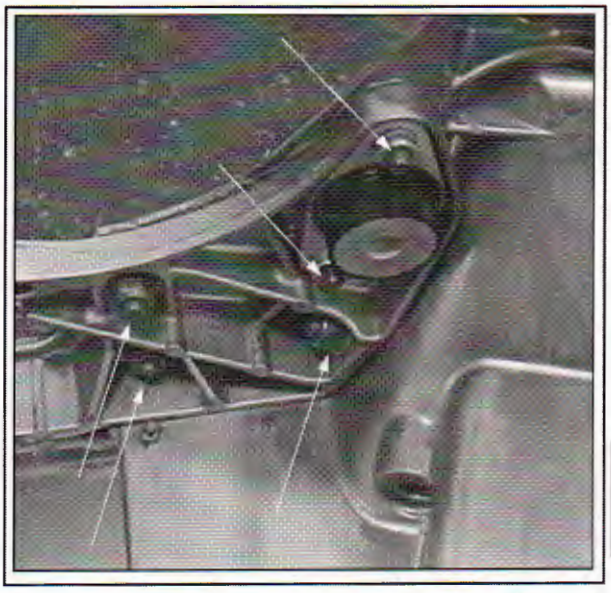
Keep flame away from flammable materials. Use torch in well-ventilated area.

Only apply heat to area that requires adhesive bond separation. Do not apply heat to areas of adhesive where bond line separation is not needed. Doing so will require removing the part, removing adhesive, and then re-applying new adhesive.

12. Once the adhesive bond is broken, remove the left-side bulkhead clip from the chassis. Note the old (residual) adhesive. If the component is to be re-used, the adhesive must be completely removed. See Bonded Component Surface Preparation section.

Left Bulkhead Clip Installation

1. Verify the bulkhead clip and engine side support brace are thoroughly cleaned and all residual adhesive is removed from both parts.
2. Gather together the three T40 fasteners and nuts, and two T40 engine mount screws that secure the bulkhead clip to the engine side support brace.
3. The next assembly step is applying the adhesive. Thoroughly read and understand the Adhesive Applicator Tool and Adhesive Application sections before proceeding.
4. Apply the adhesive to the front, left engine side support brace as outlined in the Adhesive Application section.
5. Install the bulkhead clip. Install and torque the T40 screws that attach the clip to the side support brace.
6. Torque fasteners to specification.



⚠ CAUTION

The fasteners must be torqued within the adhesive working time of 6 to 10 minutes.

= T

Bulkhead Clip-to-Side Brace Fasteners: 26 ft-lbs (35 Nm)

Engine Mount Fasteners: 22 ft-lbs(30 Nm)

9

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

7. Reinstall the bulkhead clip fasteners including lower heat exchanger mount screw/nut. Torque nuts to specification.

= T
Bulkhead Clip Fasteners: 26 ft-lbs (35 Nm)

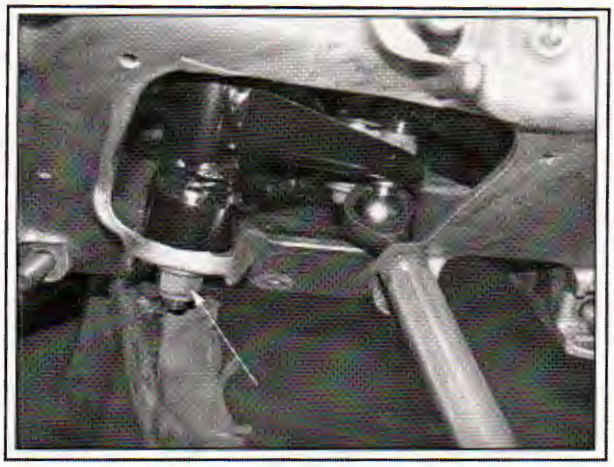
8. Reinstall the over structure-to-bulkhead screws. Torque screws to specification.

= T
Over Structure-to-Bulkhead Fasteners: 22 ft-lbs (30 Nm)

9. Reinstall the cross shaft fastener. Torque to specification.

= T
Cross Shaft Fasteners: 35 ft-lbs (47 Nm)

10. Reinstall the lower steering shaft nut. Torque nut to specification.



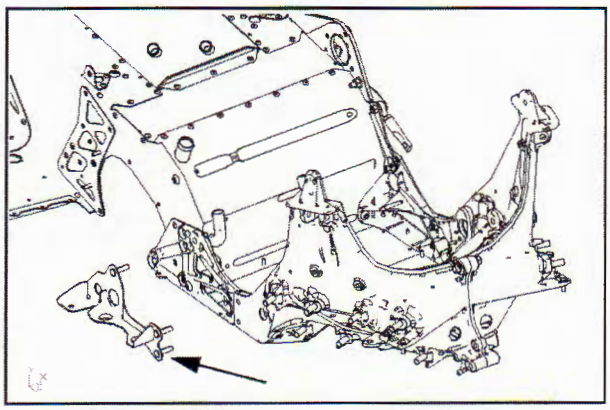
= T
Steering Shaft Nut: 22 ft-lbs (30 Nm)

11. Reinstall the tie rod boot.
12. Reinstall the bulkhead floor plate.
13. Reinstall the left fender assembly using new rivets.
14. Reinstall the following components:
    - Right/left engine compartment door
    - Hood
    - Exhaust pipe/silencer
    - Oil tank/clutch cover assembly
    - Airbox assembly
    - Engine assembly
    - Left side front suspension components

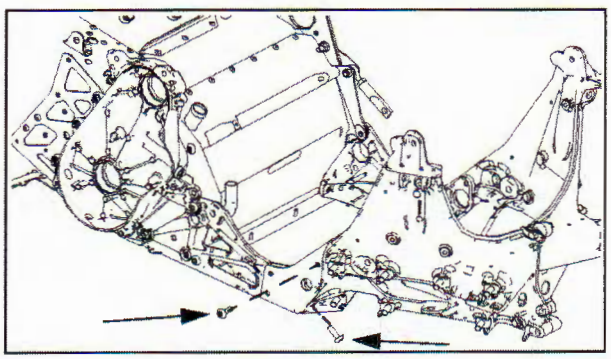
    NOTE: Allow the adhesive to cure for 24 hours at 68° F (20° C) before placing the snowmobile back into service.

Right Bulkhead Clip Removal

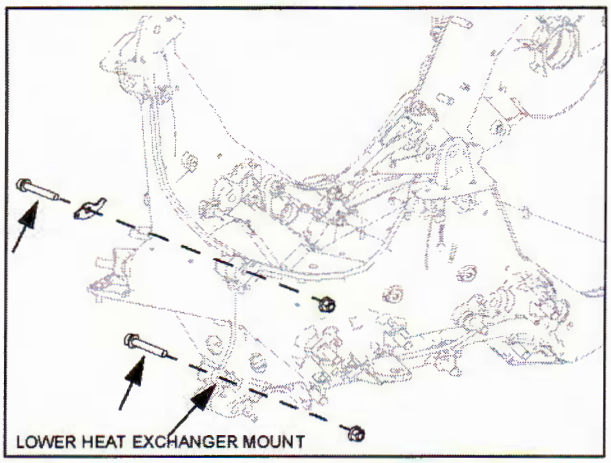
1. Remove the following components:
   - Right/left engine compartment door
   - Hood
   - Nosepan/bumper
   - Exhaust pipe/silencer
   - Exhaust silencer bracket
   - Oil tank/clutch cover assembly
   - Airbox assembly
   - Engine assembly
   - Bulkhead floor plate
   - Right side front suspension components
   - Fuel tank (Remove fuel hoses and gasoline from tank)
2. Drill out the rivets securing the right fender to the bulkhead and chassis.
3. Remove the exhaust silencer bracket.

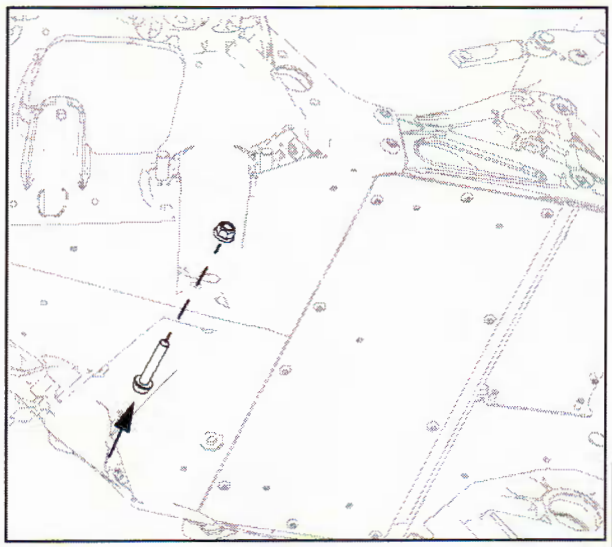


4. Remove the two remaining brace screws and nuts.

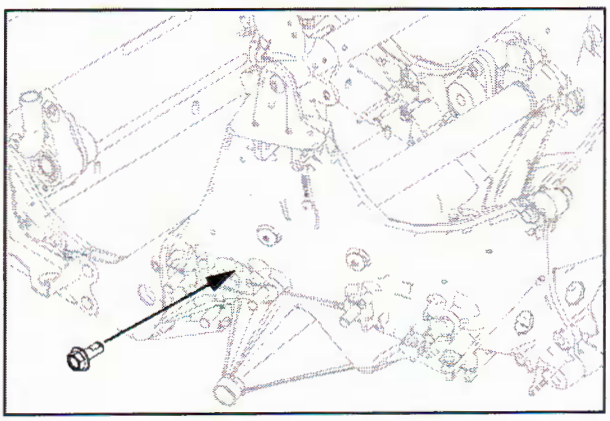


5. Remove the bulkhead clip fasteners/nuts.



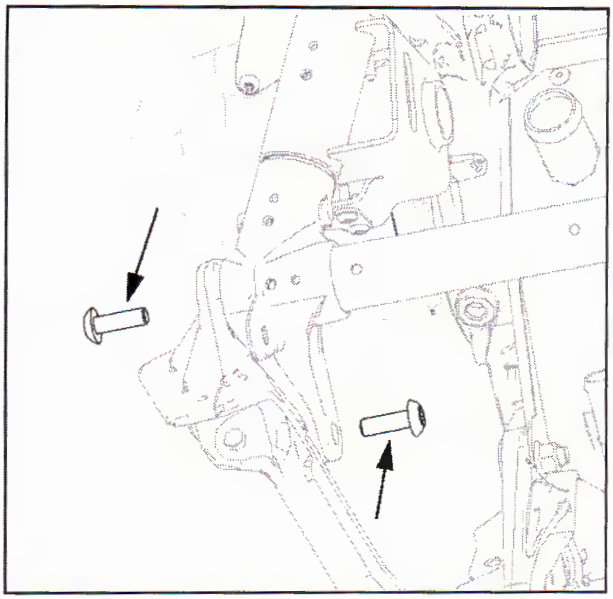


6. Remove the cross shaft fastener from the bulk head clip.

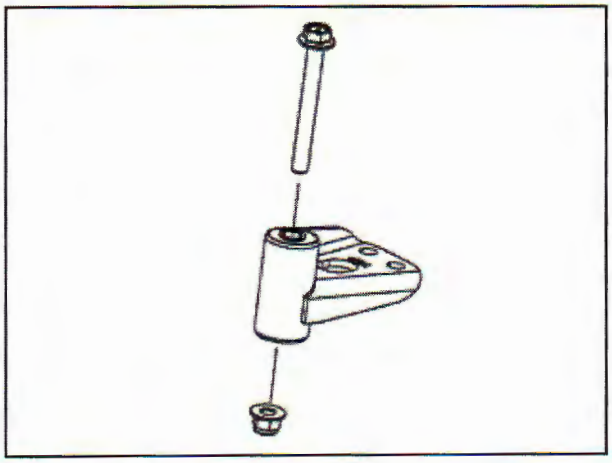


9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

7. Remove the screws securing the over structure to the bulk head clip.



8. Remove the tie rod boot. Remove the idler arm bolt and nut.



9. When all of the noted fasteners and nuts are removed, the next step is to heat where the bulkhead clip mates with the engine side support brace.
10. Wearing heat resistant gloves, use a propane gas torch to heat the adhesive between the two components.
11. Apply torch until adhesive begins to crackle. During this time, the adhesive may smoke and bubble.
12. Continue heating the area until the components can be separated.

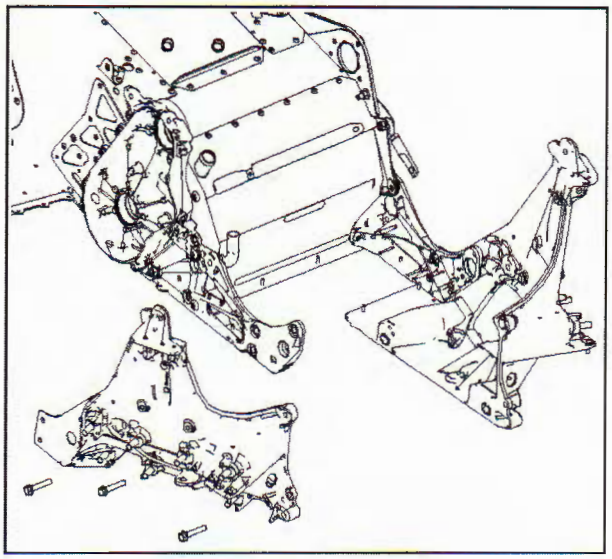
NOTE: Left side shown.

⚠ CAUTION

Keep flame away from flammable materials. Use torch in well-ventilated area.

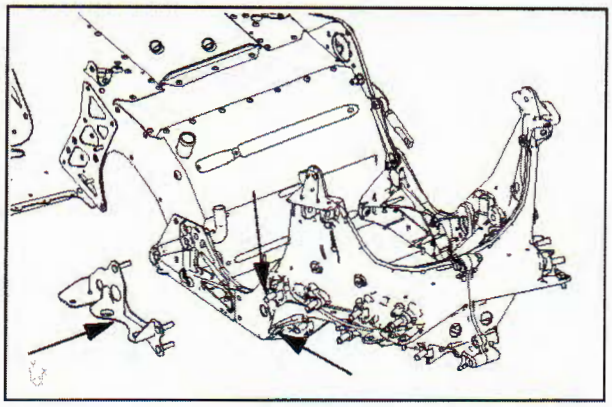
Only apply heat to area that requires adhesive bond separation. Do not apply heat to areas of adhesive where bond line separation is not needed. Doing so will require removing the part, removing adhesive, and then re-applying new adhesive.

13. Once the adhesive bond is broken, remove the right-side bulkhead clip from the chassis. Note the old (residual) adhesive. If the component is to be re-used, the adhesive must be completely removed. See Bonded Component Surface Preparation section.



Right Bulkhead Clip Installation

1. Verify the bulkhead clip and engine side support brace are thoroughly cleaned and all residual adhesive is removed from both parts.
2. Gather together the two T40 fasteners and nuts, and the exhaust bracket screw and nuts that secure the bulkhead clip to the side brace.
3. The next assembly step is applying the adhesive. Thoroughly read and understand the Adhesive Applicator Tool and Adhesive Application sections before proceeding.
4. Apply the adhesive to the front, right side brace as outlined in the Adhesive Application section.
5. Install the bulkhead clip. Install and torque the T40 screws that attach the clip to the side support brace, and the screw and three nuts that attach the exhaust silencer bracket to the brace.
6. Torque fasteners to specification.



CAUTION

The fasteners must be torqued within the adhesive working time of 6 to 10 minutes.

= T

Bulkhead Clip-to-Side Brace Fasteners:
26 ft-lbs (35 Nm)
Exhaust Bracket Nuts
20 ft-lbs (26 Nm)

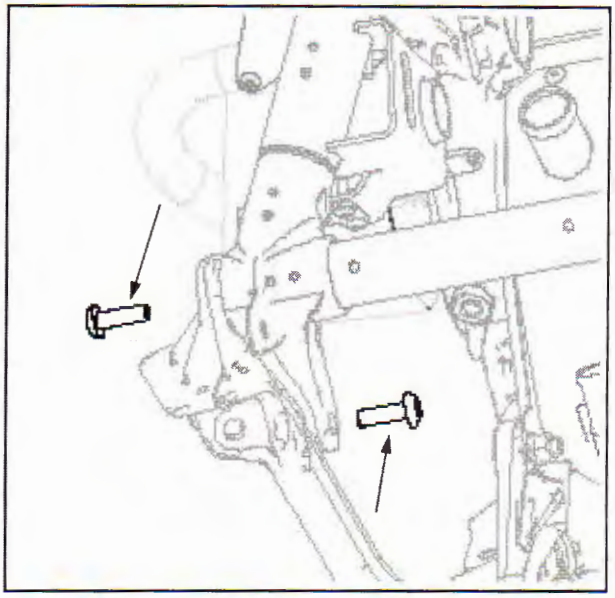
7. Reinstall the bulkhead clip fasteners including lower heat exchanger mount screw/nut. Torque nuts to specification.

= T

Bulkhead Clip Fasteners:
26 ft-lbs (35 Nm)

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

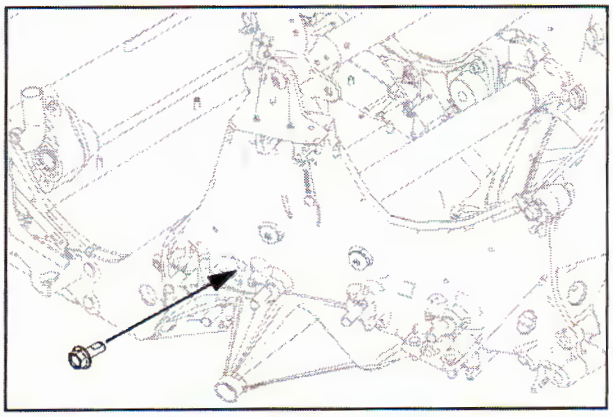
8. Reinstall the over structure-to-bulkhead screws. Torque screws to specification.



= T

Over Structure-to-Bulkhead Fasteners: 22 ft-lbs (30 Nm)

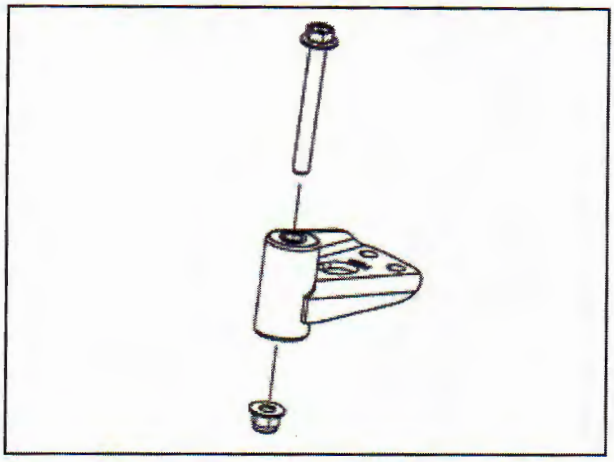
9. Reinstall the cross shaft fastener. Torque to specification.



= T

Cross Shaft Fasteners: 35 ft-lbs (47 Nm)

10. Reinstall the idler arm bolt and nut. Torque nut to specification.



= T

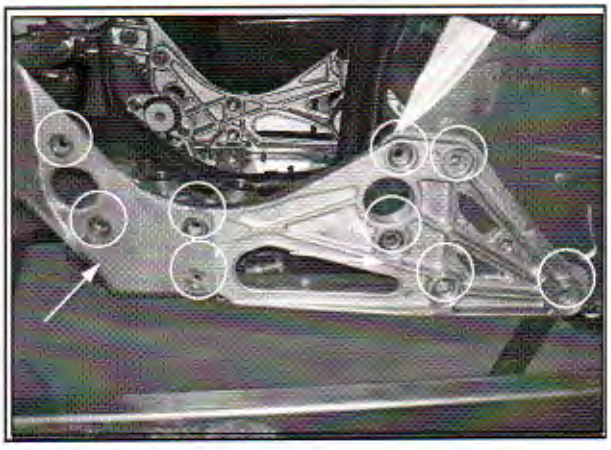
Idler Arm Nut: 37 ft-lbs (50 Nm)

11. Reinstall the tie rod boot.
12. Reinstall the bulkhead floor plate.
13. Reinstall the right fender assembly using new rivets.
14. Reinstall the following components:
    - Right/left engine compartment door
    - Hood
    - Exhaust pipe/silencer
    - Oil tank/clutch cover assembly
    - Airbox assembly
    - Engine assembly
    - Right side front suspension components

    NOTE: Allow the adhesive to cure for 24 hours at 68° F (20° C) before placing the snowmobile back into service.

Left Support Brace Removal

1. Remove the following components:
   - Right/left engine compartment door
   - Hood
   - Exhaust pipe/silencer
   - Oil tank/clutch cover assembly
   - Driven clutch
   - Airbox assembly
   - Engine assembly
   - Left-side front/rear engine mount
   - Bulkhead floor plate
   - Fuel tank (Remove fuel hoses and gasoline from tank)
2. Drill out the rivets securing the left fender to the bulkhead and chassis.
3. Remove the three screws and nuts and seven screws securing the bulkhead clip to the left side engine side support brace.
4. Note the screw located on the inside of the brace attaching the brace to the bulkhead cooler.



5. When all of the noted fasteners, nuts, and screws are removed, the next step is to heat where the brace mounts to the tunnel and bulkhead clip.
6. Wearing heat resistant gloves, use a propane gas torch to heat the where the brace mounts to the tunnel and bulkhead clip.
7. Apply torch until adhesive begins to crackle. During this time, the adhesive may smoke and bubble.
8. Continue heating the area until the brace can be separated from the bulkhead and tunnel.

⚠ CAUTION

Keep flame away from flammable materials. Use torch in well-ventilated area.

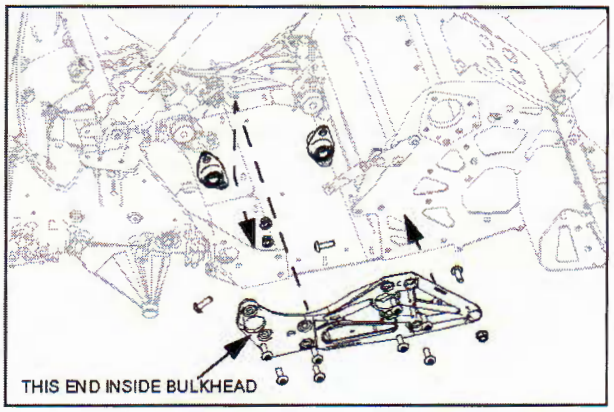
Only apply heat to area that requires adhesive bond separation. Do not apply heat to areas of adhesive where bond line separation is not needed. Doing so will require removing the part, removing adhesive, and then re-applying new adhesive.

9. Note the residual adhesive on the brace, bulkhead clip and tunnel. If the component is to be re-used, the adhesive must be completely removed. See Bonded Component Surface Preparation section.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

Left Support Brace Installation

1. Verify the bulkhead clip, side brace, and tunnel are thoroughly cleaned and all residual adhesive is removed from the parts.
2. Gather together the T40 screws and nuts, and engine mounts.
3. The next assembly step is applying the adhesive. Thoroughly read and understand the Adhesive Applicator Tool and Adhesive Application sections before proceeding.
4. Apply the adhesive to the front and rear of the left side brace as outlined in the Adhesive Application section.
5. Install the brace. Torque fasteners to specification. Note the screw on the inside of the brace mounting the brace to the bulkhead cooler.



CAUTION

The fasteners must be torqued within the adhesive working time of 6 to 10 minutes.

= T

Bulkhead Clip-to-Brace Fasteners: 26 ft-lbs (35 Nm)
Brace-to-Tunnel Fasteners: 26 ft-lbs (35 Nm)
Brace Engine Mount Fasteners: 22 ft-lbs(30 Nm)

6. Install a new bulkhead floor plate.
7. Reinstall the left side fender using new rivets.
8. Install the following components:
   - Right/left engine compartment door
   - Hood
   - Exhaust pipe/silencer
   - Oil tank/clutch cover assembly
   - Driven clutch
   - Airbox assembly
   - Engine assembly

   NOTE: Allow the adhesive to cure for 24 hours at 68° F (20° C) before placing the snowmobile back into service.

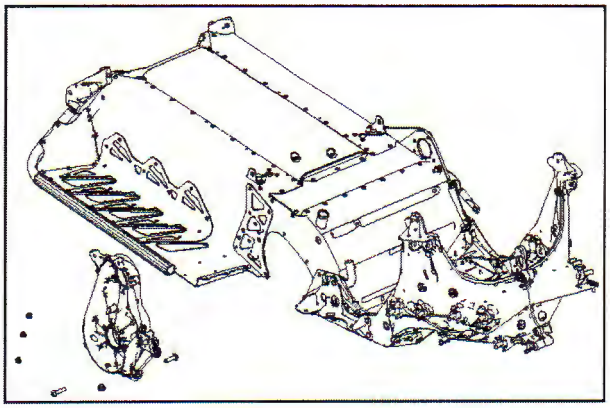
Right Support Brace Removal

1. Remove the following components:
   - Right/left engine compartment door
   - Hood
   - Nosepan/bumper
   - Exhaust pipe/silencer
   - Exhaust silencer bracket
   - Chaincase components/chaincase
   - Oil tank/clutch cover assembly
   - Airbox assembly
   - Engine assembly
   - Bulkhead floor plate
   - Right side front suspension components
   - Fuel tank (remove fuel hoses and gasoline from tank)
2. Drill out the rivets securing the right fender to the bulkhead and chassis.

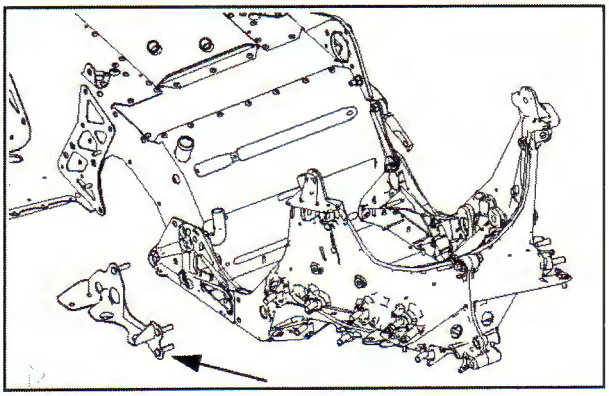
9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

3. Disassemble the chaincase. Remove the chaincase from the tunnel and brace.

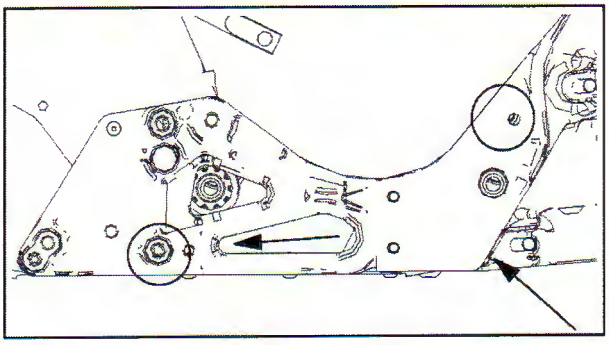
   NOTE: 2012-current models feature bonded chaincases.



4. Remove the exhaust silencer bracket.



5. Remove the four remaining brace screws and nuts. Note the screw located on the inside of the brace attaching the brace to the bulkhead cooler.



6. When all of the noted fasteners, nuts, and screws are removed, the next step is to heat where the brace mounts to the tunnel and bulkhead clip.

7. Wearing heat resistant gloves, use a propane gas torch to heat the where the brace mounts to the tunnel and bulkhead clip.

8. Apply torch until adhesive begins to crackle. During this time, the adhesive may smoke and bubble.

9. Continue heating the area until the brace can be separated from the bulkhead and tunnel.

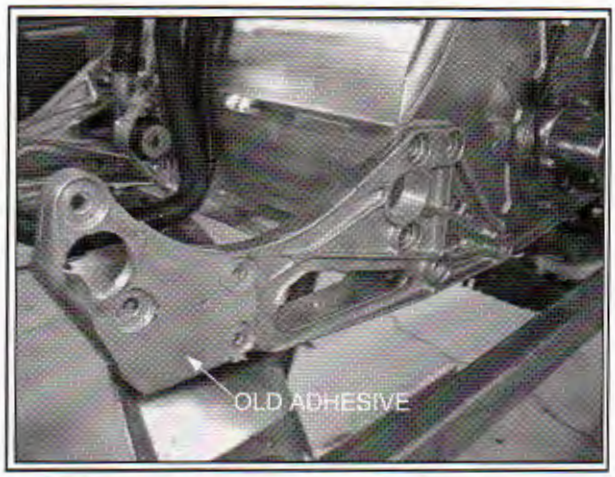
   NOTE: Left side shown.

⚠ CAUTION

Keep flame away from flammable materials. Use torch in well-ventilated area.

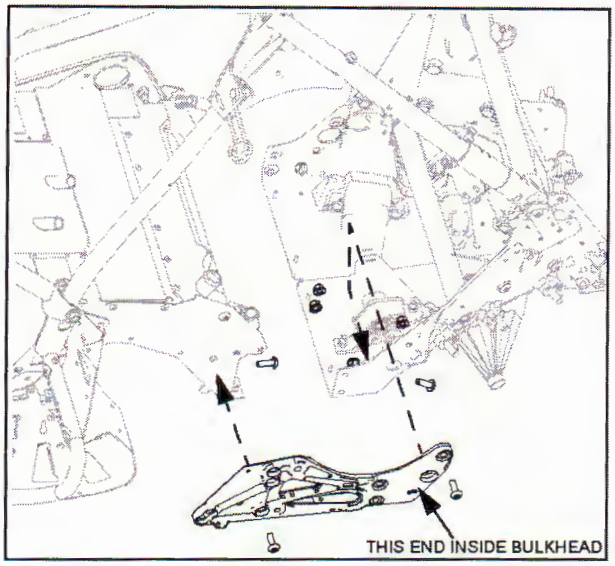
Only apply heat to area that requires adhesive bond separation. Do not apply heat to areas of adhesive where bond line separation is not needed. Doing so will require removing the part, removing adhesive, and then re-applying new adhesive.

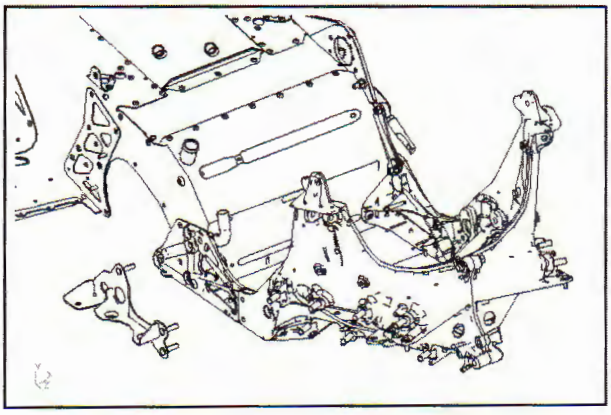
10. Note the residual adhesive on the brace, bulkhead clip and tunnel. If the component is to be re-used, the adhesive must be completely removed. See Bonded Component Surface Preparation section.



Right Support Brace Installation

1. Verify the bulkhead clip, side brace, and tunnel are thoroughly cleaned and all residual adhesive is removed from the parts.
2. Gather together the T40 screws and nuts, and exhaust silencer bracket and nuts.
3. The next assembly step is applying the adhesive. Thoroughly read and understand the Adhesive Applicator Tool and Adhesive Application sections before proceeding.
4. Apply the adhesive to the front and rear of the right side brace as outlined in the Adhesive Application section.
5. Install the brace. Torque fasteners to specification. Note the screw on the inside of the brace mounting the brace to the bulkhead cooler.





CAUTION
The fasteners must be torqued within the adhesive working time of 6 to 10 minutes.

= T
Bulkhead Clip-to-Brace Fasteners: 26 ft-lbs (35 Nm) Brace-to-Tunnel Fasteners: 26 ft-lbs (35 Nm) Exhaust Bracket Nuts: 20 ft-lbs (26 Nm)

6. Install a new bulkhead floor plate.
7. Reinstall the right side fender using new rivets.

8. Reinstall the following components:
   - Right/left engine compartment door
   - Hood
   - Nosepan/bumper
   - Exhaust pipe/silencer
   - Exhaust silencer bracket
   - Chaincase components/chaincase
   - Oil tank/clutch cover assembly
   - Airbox assembly
   - Engine assembly
   - Bulkhead floor plate
   - Right side front suspension components

   NOTE: Allow the adhesive to cure for 24 hours at 68° F (20° C) before placing the snowmobile back into service.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

NOTES

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

CHAPTER 10
BATTERY/CHASSIS ELECTRICAL

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

SPECIFICATIONS

Engine Models

MODEL NUMBER	ENGINE
S4202-6044-OP6N S4215-6044-OO6N S4357-6044-OL6N	Domestic L/C 600cc DC-CFI-4
S4316-6044-OL6G S4452-6044-OL6G S4504-6044-0A6G S4506-6044-0A6G S4505-6044-OA6G S4769-6044-OR6G S4770-6044-OR6G S4771-6044-OR6G S4948-6044-OI6G S4949-6044-OI6G S4950-6044-OI6G	Domestic L/C 600cc DC-CFI-2
S4139-8044-OO8G S4229-8044-OO8G S4092-8044-OO8G S4360-8044-OL8G S4361-8044-OL8G S4359-8044-OL8G S4509-8044-OA8G S4510-8044OA8G S4508-8044-OA8G S4773-8044-OR8G S4774-8044-OR8G S4775-8044-OR8G S4952-8044-OI8G S4953-8044-OI8G	Domestic L/C 800cc DC-CFI-2

Spark Plugs

DC-CFI SPARK PLUGS		
MODEL	SPARK PLUG	GAP (INCHES / MM)
All Others 2012 DC-CFI-2	NGK BPR9ES NGK GR9A-EG	.027 / 0.70
NOTE: The NGK BPR9ES is an equivalent replacement for the GR9A-EG spark plug.		

Charging/Lighting System

MODEL	STATOR OUTPUT	# OF PULSES
ALL	400W	N/A

Ignition Timing

MODEL	SPECIFICATION
600 DC-CFI-4 600 DC-CFI-2	18° @ Idle (1700 RPM [0.95 VDC TPS]) and 120° Engine Coolant Temperature
800 DC-CFI-2	18° @ Idle (1700 RPM [0.94 VDC TPS]) and 120° Engine Coolant Temperature

⚠ WARNING

PROPOSITION 65 WARNING
Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the state of California to cause cancer and reproductive harm. Wash hands after handling. Battery electrolyte is poisonous. It contains acid!

Serious burns can result from contact with the skin, eyes, or clothing

ANTIDOTE:
EXTERNAL: flush with water.

INTERNAL: drink large quantities of water or milk. follow with milk of magnesia, beaten egg, or vegetable oil. call physician immediately.

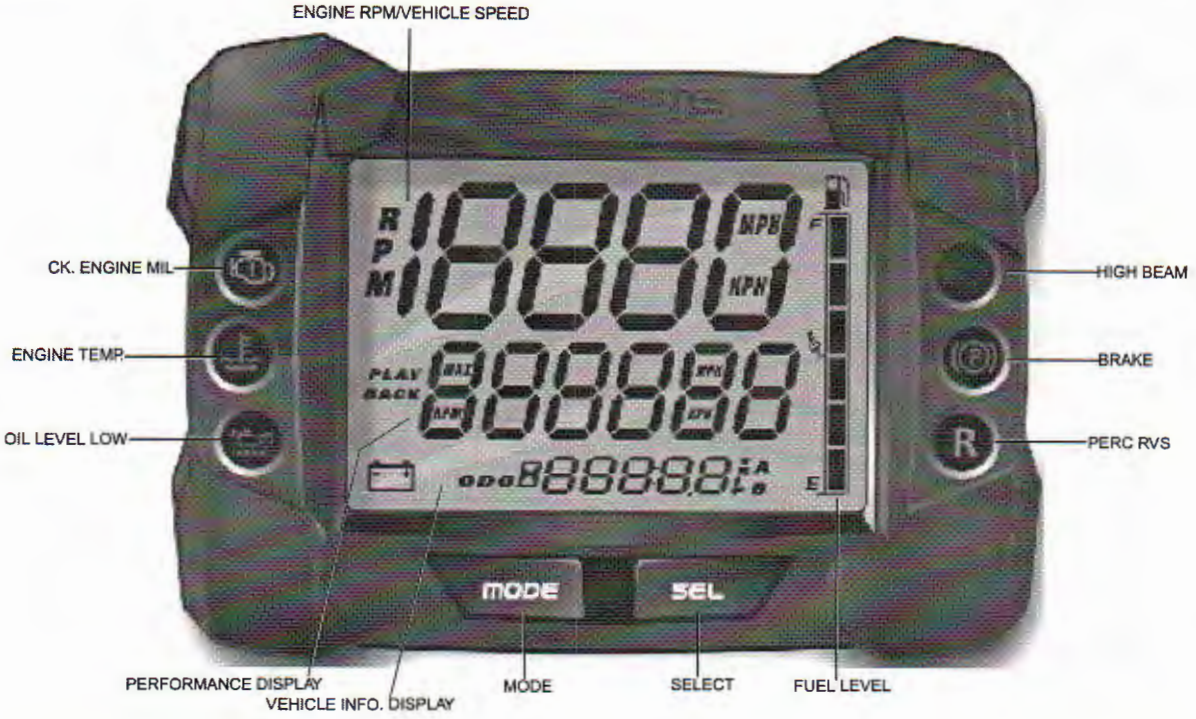
EYES: flush with water for 15 minutes and get prompt medical attention.

Batteries produce explosive gases. keep sparks, flame, cigarettes, etc. away. ventilate when charging or using in closed space. always shield eyes when working near batteries.

KEEP OUT OF REACH OF CHILDREN.

DIGITAL INSTRUMENT CLUSTER

Overview



Information regarding vehicle speed, engine RPM, engine overheat, PERC, oil level, brake, engine temperature (2011-current models) and check engine MIL (diagnostic trouble codes) is transmitted to the gauge from the ECU using CAN BUS communication technology.

Current fuel level is received from the fuel level sender located on the fuel pump. When the high beam headlights are illuminated, the gauge receives a signal from the YEL/RED high beam circuit.

The MODE and SEL buttons perform the same functions as the LH control MODE/SET toggle button.

In addition to standard engine and vehicle information, the instrument cluster can playback up to three minutes of historical engine performance, and vehicle speed information and display diagnostic trouble codes when the check engine MIL is illuminated.

The instrument cluster is powered by the RED/WHT chassis power 12 VDC circuit.

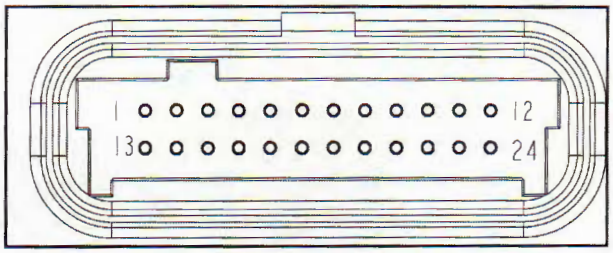
Rider Information Display

The rider information display is located in the instrument cluster. All segments will illuminate for approximately one second at start-up.

NOTE: If the instrument cluster fails to illuminate, an over-voltage condition may have occurred forcing the instrument cluster to power down.

1. **RPM / Vehicle Speed Display** - LCD display of either engine RPM or vehicle speed in MPH or km/h.
2. **MPH / km/h Display** - MPH is displayed when the instrument cluster is in the "Standard" mode. Km/h is displayed when the instrument cluster is in the "Metric" mode.
3. **Performance Information Area** - Engine RPM or Vehicle Speed (whichever is not displayed in top section of display) / MAX RPM / MAX Ground Speed and engine temperature (2011 models) are shown in the middle of the screen. The performance information area also displays "Play Back" when the play back function is enabled.
4. **Vehicle Information Area** - Trip meters A and B / Odometer / Service Interval Hours / Throttle Opening (TCS). TCS is only available during playback mode.
5. **Fuel Level Indicator** - Six segment LCD bar graph indicating current fuel level. All segments will flash when the last segment is cleared indicating a low fuel warning.
6. **Check Engine MIL** - Illuminated when the ECU has detected a Diagnostic Trouble Code (DTC) within the engine management system. Icon will flash when DTC display mode is active.
7. **Engine Temperature Indicator** - LED icon will illuminate when the ECU determines the engine is overheating. The icon will flash to indicate the engine is overheating. The icon will stay lit and not flash if a severe overheating condition exists.
8. **Low Oil Level Indicator** - Icon will illuminate when the oil level in the oil tank becomes too low. Add oil at the next fuel stop.
9. **High Beam Indicator** - LED will illuminate when the high beam headlamps are active.
10. **Parking Brake Indicator** - Icon will illuminate whenever the brake lever is pulled or when the parking brake is engaged.
11. **Reverse Indicator** - Icon will illuminate and flash whenever PERC reverse mode button is pushed on the LH control.

Instrument Cluster Pinouts



INSTRUMENT CLUSTER PINOUTS	
FUNCTION	**PIN**
DC Gauge Voltage (VDC) - RED/WHT (RD/BK Gauge / EV Actuator PWR)	1
Ground - BRN/WHT	2
DC Gauge Voltage (VDC) - RED/WHT (RD/BK Gauge / EV Actuator PWR)	3
CAN 1 High - YELLOW	4
CAN 1 Low - DK GREEN	5
LH Mode Switch - WHT/RED	10
LH Set Switch - WHT/BLK	11
High Beam Signal - YEL/RED	20
Fuel Level Sensor Signal - VIOLET/WHT	23
System Ground - BRN/WHT	24

NOTE: CAN wires are twisted together and must remain twisted to prevent interference.

Engine RPM/Vehicle Speed Display

The top section of the display will show either engine RPM or vehicle speed. If engine RPM is displayed at the top, then vehicle speed will be displayed in the performance information area and vice-versa. To change the top section display, follow these steps:

1. The engine RPM or vehicle speed must be displayed in the performance information area. If neither is displayed, press and release the MODE button on the gauge or LH control until engine RPM or vehicle speed is displayed.
2. Press and hold the MODE button on the instrument cluster or LH control for 3 seconds to switch between the two displays.

Performance Information Area

The performance information area (middle) of the display screen is dedicated to displaying:

- Engine RPM or vehicle speed (whichever is not displayed at the top of the screen)
- Maximum ground speed
- Maximum engine RPM
- Engine temperature (2011-current models only)

Press and release the MODE button on the instrument cluster or LH control to toggle between the different displays.

Vehicle Information Area

The bottom of the instrument cluster screen is dedicated to displaying the following information:

- Odometer
- Trip A
- Trip B
- Engine hours

Press and release the SEL button on the instrument cluster or SET button on the LH control to toggle between the different displays.

To reset the Trip A and Trip B displays, press and hold the SEL button on the instrument cluster or SET button on the LH control for 3 seconds when the desired trip meter is displayed on the screen. The counter will reset to 0.

NOTE: Engine hours and odometer cannot be reset.

Changing Units

The instrument cluster will display either standard or metric units. Change between the two by following these steps:

1. Press and release the SEL button on the instrument cluster or the SET button on the LH control until the ODOMETER is displayed on the screen.
2. Once the ODOMETER is displayed, press and hold either the SEL button or SET button for 3 seconds until the units change.

Diagnostic Display

The instrument cluster can display diagnostic trouble codes (DTCs) when, and only when, the check engine MIL is illuminated.

To display DTCs, follow these steps:

1. When an active DTC is realized, the check engine MIL will illuminate.

   NOTE: The instrument cluster will display historic DTCs, but only during the same power cycle. All codes stored in the instrument cluster are lost when the instrument cluster is powered down.

2. Keep the engine running. Press and release the SEL button on the instrument cluster or the SET switch on the LH control until the diagnostics mode is activated. Once activated, the check engine MIL will begin flashing and "Err" will be displayed on the screen.
3. The diagnostics mode will display the SPN and FMI codes. A list of codes can be found in chapter four.
4. To check for multiple codes, press and hold the SEL button on the instrument cluster for 2 seconds until a new code is displayed. Repeat until no new codes are displayed.
5. To exit the diagnostics mode, either turn off the engine or press and release the SEL button on the instrument cluster.

Playback Mode

The instrument cluster can be used as an engine RPM, vehicle speed, and TPS data recorder. Once enabled, the gauge can record up to three minutes of information.

To initiate RECORD:

1. Press and hold the MODE and SEL buttons on the instrument cluster for 3 seconds.
2. The PLAY BACK icon will begin flashing when record is activated.

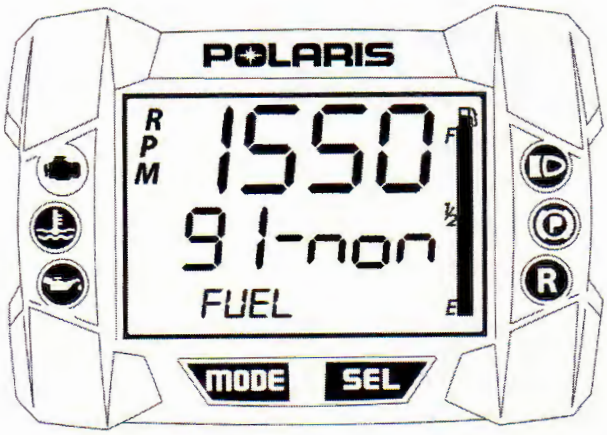
To PLAY BACK:

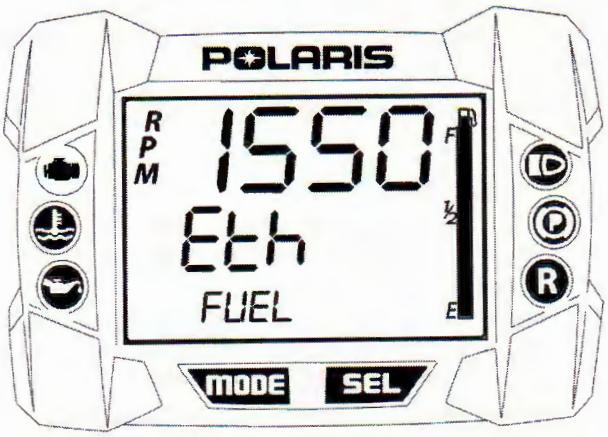
3. Once the snowmobile has stopped and the engine RPM drops below clutch engagement speed, press and hold the MODE and SEL buttons on the instrument cluster to enter the play back mode.
4. To exit the play back mode, slightly tap the throttle lever.

Fuel Select Mode

2013 - Current models utilize the instrument cluster to select fuel modes.

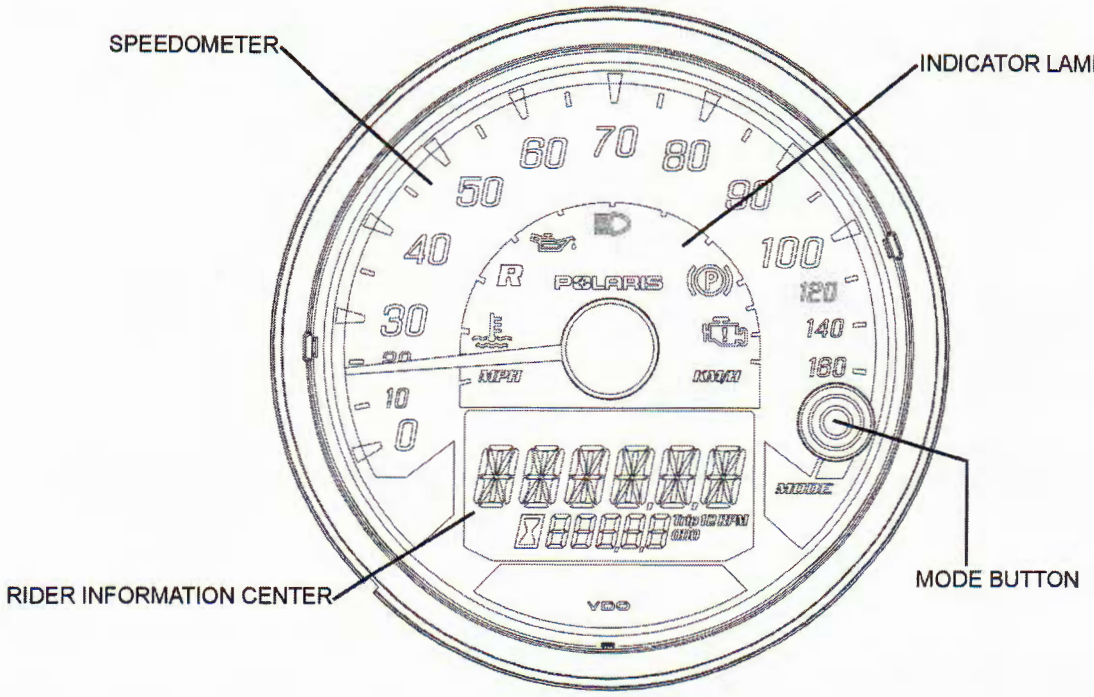
1. Start the engine.
2. Lock the parking brake.
3. Press and release the "SEL" button on the gauge or the "SET" button on the left hand control until either "Eth" or "91–non" is displayed in the lower section of the instrument cluster.
4. Press and hold the "SEL" button on the gauge or the "SET" button on the left hand control until the desired fuel type is displayed on the screen.





ANALOG / DIGITAL INSTRUMENT CLUSTER

Overview



Information regarding vehicle speed, engine RPM, engine overheat, PERC, oil level, brake, engine temperature and check engine MIL (diagnostic trouble codes) is transmitted to the gauge from the ECU using CAN BUS communication technology.

When the high beam headlights are illuminated, the gauge receives a signal from the YEL/RED high beam circuit.

The MODE button performs the same functions as the LH control MODE toggle button.

In addition to standard engine and vehicle information, the instrument cluster can display diagnostic trouble codes when the check engine MIL is illuminated.

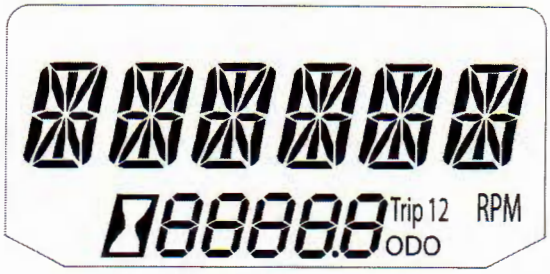
The instrument cluster is powered by the RED/WHT chassis power 12 VDC circuit.

Rider Information Display

The rider information display is located in the instrument cluster. All segments will illuminate for approximately one second at start-up.

Use the MODE button on the cluster or the left hand control to toggle between options. To clear a trip meter, toggle to the meter (1 or 2), and press and hold the MODE button on the cluster or left hand control.

NOTE: If the instrument cluster fails to illuminate, an over-voltage condition may have occurred forcing the instrument cluster to power down.



- **RPM (Tachometer) - LCD display of engine RPM**
- **Odometer / Engine Hours - LCD display of total vehicle miles/km or total accumulated engine hours**
- **Trip 1 / Trip 2 - LCD display of trip meters**

Indicator Lamps

The indicator lamp panel displays the indicator and warning lamps.

Check Engine MIL - Illuminated when the ECU has detected a Diagnostic Trouble Code (DTC) within the engine management system. Icon will flash when DTC display mode is active.

Engine Temperature Indicator - LED icon will illuminate when the ECU determines the engine is overheating. The icon will flash to indicate the engine is overheating. The icon will stay lit and not flash if a severe overheating condition exists.

Low Oil Level Indicator - Icon will illuminate when the oil level in the oil tank becomes too low.

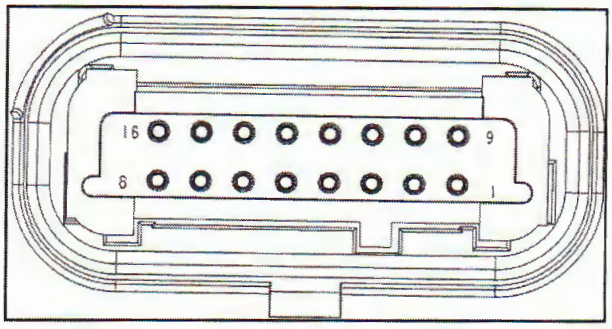
High Beam Indicator - LED will illuminate when the high beam headlamps are active.

Parking Brake Indicator - Icon will illuminate whenever the brake lever is pulled or when the parking brake is engaged.

Reverse Indicator - Icon will illuminate and flash whenever PERC reverse mode button is pushed on the LH control.

MPH / KM/H - Units of measure gauge is set to

Instrument Cluster Pinouts



Connector Pinouts

ANALOG / DIGITAL INSTRUMENT CLUSTER PINOUTS	
FUNCTION	**PIN**
CAN High - YELLOW	1
CAN Low - GREEN	2
DC Gauge Voltage (VDC) - RED/WHT	3
DC Gauge Voltage (VDC) - RED/WHT	4
Ground - BRN/WHT	5
High Beam Switch - YEL/RED	8
Fuel Level - VT/WHT	11
LH Set Switch - WHT/BLK	12
LH Mode Switch - WHT/RED	13

NOTE: CAN wires are twisted together and must remain twisted to prevent interference.

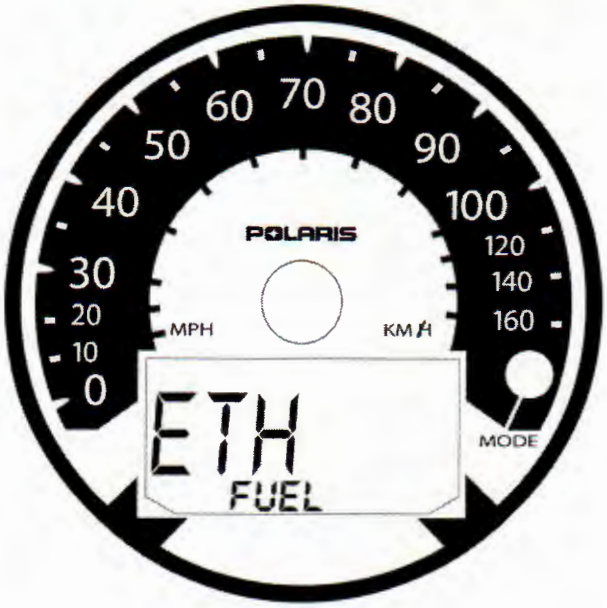
Changing Units

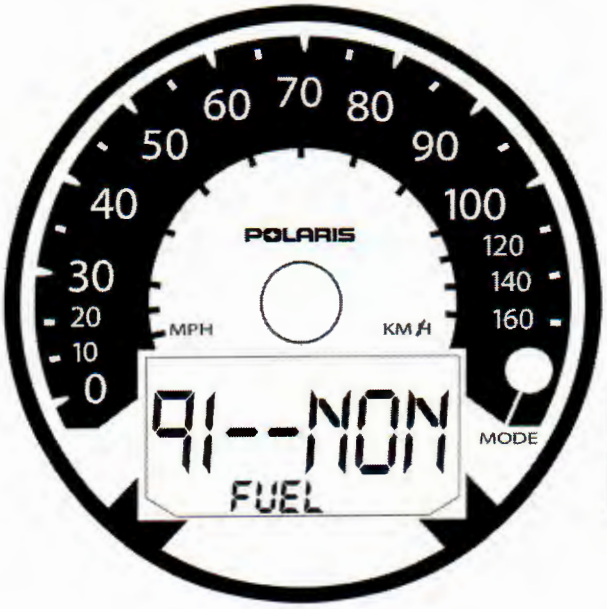
The instrument cluster will display either standard or metric units. Change between the two by following these steps:

1. Press and release the MODE button on the cluster or left hand control to display the engine temperature on the rider information screen.
2. While in the engine temperature display, press and hold the MODE button to change units.

Fuel Selector

1. Start the engine.
2. Lock the parking brake.
3. Press and release the MODE button on the left handlebar control until either "ETH" or "91–NON" is displayed on the instrument cluster.
4. Press and hold the MODE button on the left handlebar control to change between fuel settings.





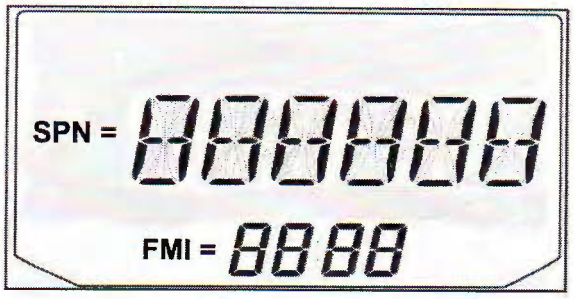
9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

Analog/Digital IC Error Code Display

Active diagnostic trouble codes can be reviewed by accessing the instrument cluster's diagnostic display mode.

The diagnostic display mode is accessible when a trouble code is active (MIL illuminated) and when the engine is running.

1. Keep the engine running, and set the parking brake.
2. With the engine running and the MIL illuminated, press and release the MODE button to toggle to the diagnostic display mode. If an error code exists, two numbers will appear in the display and the MIL will flash.
3. A set of two numbers will appear in the display.
   - The 2-6 digit suspect parameter number (SPN) in the information display area indicates which component is generating the fault code.
   - The 1-2 digit failure mode indicator (FMI) number in the odometer area indicate the fault mode, such as open or short circuit.



4. More than one fault may be active. Press and hold the MODE button or MODE switch for two seconds to toggle to the next active code. Repeat until all codes are retrieved.
5. Press and release the MODE button to exit this mode.

NOTE: "SPN=" and "FMI=" are not displayed on screen.

SECURITY SYSTEM

Security System: Overview

An optional security feature is available on all 2012 and later Pro-Ride snowmobiles which is enabled by an authorized Polaris dealer using Digital Wrench®. The security feature allows the operator to lock the ECU to prevent unauthorized use. When security is locked the ECU will prevent clutch engagement by limiting engine speed to 3500 RPM.

NOTE: If the engine is running and security is locked, the ECU will shut the engine off when the engine temperature is above 120° F (49° C) for 60 seconds.

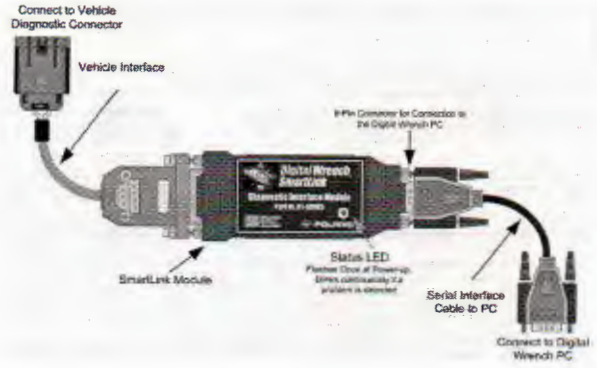
Security System: Digital Wrench® Enable

Use Digital Wrench® to enable the security function in the ECU. The following list of tools is required to enable the security function:

- PC/Laptop equipped with Digital Wrench® and associated snowmobile SmartLink communication cables
- Fully Charged 12 VDC Battery
- Chassis Power-Up Harness: PS-47296-A
- Dual Power-Up Adapter: PS-50805
- Internet connection to Polaris reflash authorization site

Chassis Power-Up Harness and Dual PWR/Fuel Pump Prime Adapter

Digital Wrench® SmartLink Module/Communication Cables



The security enable process has to be performed when:

- User wants security function turned on
- ECU has been reflashed with new reflash fileset
- Installing a new ECU

To enable the security function:

1. Open the left side engine compartment door and locate the Digital Wrench® diagnostic plug, ECU power plug, and DC power plug.

2. Connect the dual power-up adapter to the chassis power-up harness. Attach one of the dual power-up connectors to the ECM PWR plug, and the other to the DC PWR plug. Connect the alligator clamps to a fully charged 12 VDC battery.

3. Start Digital Wrench® on the PC/laptop. Navigate to the appropriate vehicle home page. Select OPTION 6 - SECURITY FUNCTIONS from the Special Tests (Red Toolbox) Menu.

4. Select ENABLE SECURITY on the following screen.

5. After selecting ENABLE SECURITY, Digital Wrench® will scan the ECU to verify the process can be completed. If the security function is already enabled, Digital Wrench™ will display the following screen.

NOTE: 2013 - current models do not require the user to generate a request code or obtain an authorization code to enable or disable the security functions.

6. If the security function is not enabled, the following screen will appear. Highlight the entire REQUEST code and then copy it by pressing (CTRL+C).

7. Log on the reflash authorization site at www.polarisdealers.com. Paste the request code into the field using (CTRL+V). Enter the VIN and customer information to generate an authorization code.

8. Copy the authorization key provided on the authorization site by highlighting the entire code and then pressing (CTRL +C). Go back to Digital Wrench® and paste the Authorization key into the AUTHORIZATION KEY field by pressing (CTRL+V). Click CONTINUE.

9. Digital Wrench® will begin to reflash the ECU. A timer and status indicator bar on the screen will indicate the process is working.

NOTE: Do not disturb the vehicle or computer until this process is complete!

10. After the reflash process is complete, cycle the power to the ECU by disconnecting and then re-connecting the ECU PWR 12 VDC power-up cable. Click the FINISH button.

11. The following screen will appear. Click on the red X.

12. Determine if the Instrument Cluster Initialization procedure has to be completed by starting the engine, setting the parking brake, and then pressing and holding the MODE and SEL buttons on the instrument cluster.

Security System: Digital Wrench® Disable

The security system can be disabled by turning off the function in the ECU. Select DISABLE SECURITY from the SECURITY FUNCTIONS screen.

After selecting Disable Security from the Security Functions Menu, follow the step-by-step procedure as outlined by Digital Wrench®. The process is the same as the Enable Procedure.

NOTE: 2013 - current models do not require the user to generate a request code or obtain an authorization code to enable or disable the security functions.

Security System: Digital Wrench® Pass code Reset

If the three digit pass code is either lost or unknown, it can be reset to 000 using Digital Wrench®.

The ECU and instrument cluster must be powered at the same time. This can be done by either starting and running the engine in a well-ventilated area or with the chassis power-up harness and dual power-up adapter.

When using the chassis power-up harness and dual power-up adapter to reset the password, follow these steps:

1. Open the left side engine compartment door and locate the Digital Wrench® diagnostic plug, ECU power plug, and DC power plug.

2. Connect the dual power-up adapter to the chassis power-up harness. Attach one of the dual power-up connectors to the ECM PWR plug and the other connector to the DC PWR TEST plug. Connect the alligator clamps to a fully charged 12 VDC battery.

   NOTE: The ECU and DC chassis power circuits (instrument cluster, LED brake, etc) are now powered. Confirm the instrument cluster is powered-up.

3. Start Digital Wrench® on the PC/laptop. Navigate to the appropriate vehicle home page. Select OPTION 5 - SECURITY FUNCTIONS from the Special Tests (Red Toolbox) Menu.

4. Select RESET PASSCODE on the following screen.

5. Digital Wrench® will reset the instrument cluster pass code to 000. During the process the instrument cluster display, oil level, and engine temp. MIL LEDs will flash.

6. After the reset passcode process is complete, the following screen will be displayed. Click on the RETURN button to return to the main screen.

7. Cycle the power to the ECU and DC PWR test connectors to finish the procedure.

Security System: Instrument Cluster Initialization

NOTE: Use the MODE button on the cluster when performing procedure on models featuring the analog/digital instrument cluster.

Instrument cluster initialization is a one-time procedure that must be performed when the instrument cluster is linked for the first time to a security-enabled ECU.

The ECU and instrument cluster must be powered at the same time. This is accomplished with the chassis power-up harness and dual power-up adapter.

When using the chassis power-up harness and dual power-up adapter, follow these steps:

1. Open the left side engine compartment door and locate the Digital Wrench® diagnostic plug, ECU power plug, and DC PWR test plug.

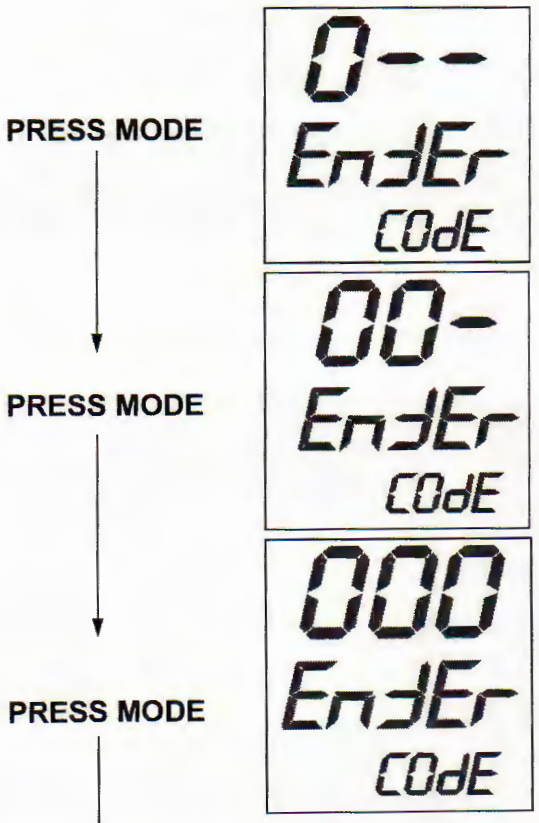
2. Connect the dual power-up adapter to the chassis power-up harness. Attach one of the dual power-up connectors to the ECM PWR plug and the other connector to the DC PWR TEST plug. Connect the alligator clamps to a fully charged 12 VDC battery.

   NOTE: The ECU and DC chassis power circuits (instrument cluster, LED brake, etc) are now powered. Confirm the instrument cluster is powered-up.

3. **Hold the brake lever.** Press and hold the MODE and SEL buttons for 3 seconds, then release. SECURE OFF should be displayed. If not, repeat this step.

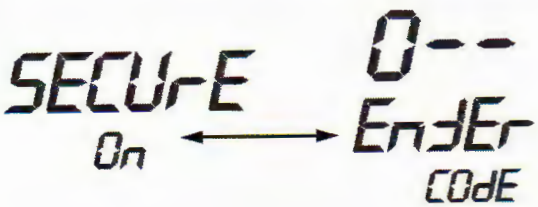
4. Wait until ENTER CODE displays , and then press and release MODE button 3 consecutive times to enter and accept the 000 base code.

NOTE: If the ENTER CODE screen exits due to inactivity, repeat step 3.

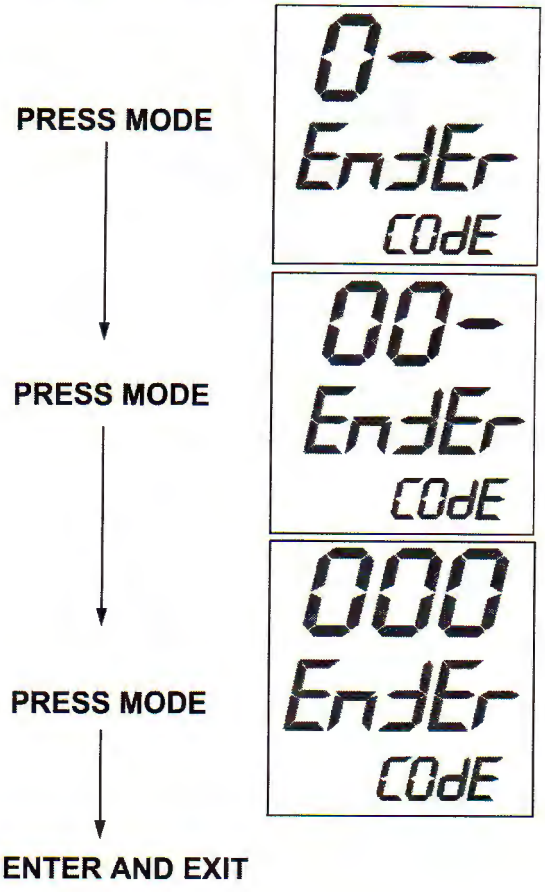


Security is now LOCKED.

5. SECURE ON will be displayed. The display will alternate between SECURE ON and ENTER CODE.



6. Wait until ENTER CODE displays , then press and release MODE button 3 consecutive times to enter and accept the 000 digit base code.



7. SECURE OFF displays if the system unlocks.

8. Immediately after locking and unlocking the security system, and while SECURE OFF is displayed, press and hold the MODE button to bring up the enter code screen.

9. When ENTER CODE displays, use the MODE and SEL buttons to select and accept each digit of a new personal security code.
   - SEL = Advances up 1 digit (0 to 9 to 0)
   - MODE = Enter and move 1 digit to right

10. After pressing MODE to accept the last digit, view the display screen. The new code and CODE SET will display if the system accepted the new code. If successful, you will not see this screen again.

NOTE: If steps 9-11 are not completed immediately after performing the initialization procedure, the security code will be 000. See Changing Security Code to enter a new passcode.

11. Record the new security code in a safe place (Owner's Manual or Customer RO) for future reference.

Security System: Locking

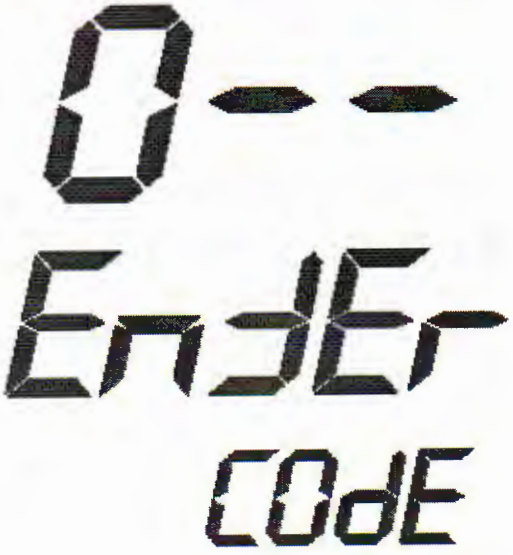
NOTE: Use the MODE button on the cluster when performing procedure on models featuring the analog/digital instrument cluster.

1. Start the engine in a well-ventilated area.

2. **Hold the brake lever.** Press and hold the MODE and SEL buttons for 3 seconds, then release. SECURE OFF should be displayed. If not, repeat this step.

- SEL = Advances up 1 digit (0 to 9 to 0)
- MODE = Enter and move 1 digit to right

3. When ENTER CODE displays, press and release SEL to advance the digit. When the first digit of your security code is displayed, press and release the MODE button to accept the digit and move to the next digit.

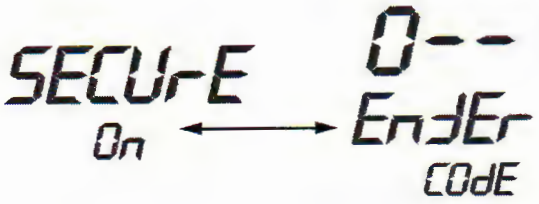


NOTE: If the ENTER CODE screen exits due to inactivity, repeat the locking procedure.

4. Continue to use MODE and SEL to select and accept the remaining two digits of the security code.

5. After pressing MODE to accept the last digit, view the display screen. SECURE ON displays if the system locks. Engine RPM speed is now limited and the snowmobile cannot be driven.

NOTE: When the engine is running and security is locked, the display will alternate between SECURE ON and ENTER CODE.



6. If an incorrect code is entered, BAD CODE will be displayed. Wait until the display returns to the ENTER CODE screen and then re-enter the correct pass code.

Security System: Unlocking

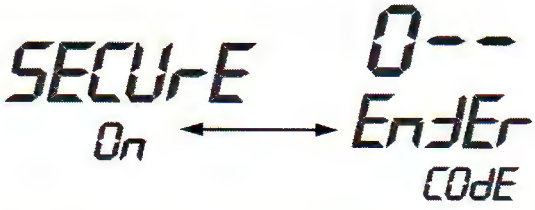
NOTE: Use the MODE button on the cluster when performing procedure on models featuring the analog/digital instrument cluster.

1. When the engine is running and security is locked, the display will alternate between SECURE ON and ENTER CODE.

   NOTE: When the system is locked and the engine temperature is above 120° F (49° C), the correct pass code must be entered within 60 seconds or the engine will shut down.

   - **SEL = Advances up 1 digit (0 to 9 to 0)**
   - **MODE = Enter and move 1 digit to right**

2. When ENTER CODE displays, press and release SEL to advance the digit. When the first digit of your security code is displayed, press and release MODE to accept the digit and move to the next digit.



3. Continue to use MODE and SEL to select and accept the remaining two digits of the code.
4. After pressing MODE to accept the last digit, view the display screen. SECURE OFF displays if the system unlocks.

5. If an incorrect code is entered, BAD CODE will be displayed. Wait until the display returns to the ENTER CODE screen and then re-enter the correct pass code.

Security System: Changing Pass Code

NOTE: Use the MODE button on the cluster when performing procedure on models featuring the analog/digital instrument cluster.
To change the current security code to a new code, perform these steps:
The instrument cluster illustrations on the following pages reference the 000 default security code. Use the owner's current security code.

1. Start the engine and lock the parking brake.
2. Lock and then unlock the security function on the instrument cluster using the existing pass code.
3. Immediately after unlocking security, press and hold the MODE button to display the ENTER CODE screen.
   - SEL = Advances up 1 digit (0 to 9 to 0)
   - MODE = Enter and move 1 digit to right
4. When ENTER CODE displays, use the MODE and SEL buttons to select and accept each digit of the new security code.

5. After pressing MODE to accept the third digit, the new code and CODE SET will display if the system accepted the new code. If successful, this screen will not be displayed again.

6. Record the new security code in a safe place (Owner's Manual or Customer RO) for future reference.

Security System – PRO-RIDE User Notes

NOTE: Applies only to 2012 – Current 600 / 800 PRO-RIDE models.

General Notes:

- Security system activation requires an authorized Polaris dealer using Digital Wrench to enable security in the ECU.
- Security is a function of the ECU. If security is set, the ECU will still limit engine RPM if the hood is removed.
- When security is enabled, engine speed is limited to approximately 3,000 RPM.
- The instrument cluster or IDD retains the last programmed security pass code. Disabling and enabling the security function in the ECU does not change the code in the instrument cluster. If the pass code is unknown, perform the Reset Pass Code Procedure to reset the code back to 000.
- Performing the ECU Replacement Procedure disables the security function. Perform the Security Enable procedure after replacing the ECU.

Standard Instrument Cluster Notes:

- First time use after security is enabled requires the user to perform the gauge / security initialization procedure to turn on the security function in the instrument cluster.
- Holding the brake lever closed and pressing the MODE and SEL buttons for 3 seconds will bring up the security display on the instrument cluster.
- If the brake lever is not held while pressing the MODE and SEL buttons for 3 seconds, the instrument cluster will start the record / playback data logging feature.
- Pressing the MODE button will accept the selected digit and move to the next digit. After entering the third digit, pressing MODE a fourth time will enter the code.
- Pressing the SEL button advances each digit up from 0 to 9 then back to 0.

Polaris Interactive Digital Display (IDD) Notes:

- First-time gauge / security initialization is not required with the IDD.
- If the snowmobile is equipped with a battery, turning the ignition key to "RUN" will turn on the IDD, but does not power-up the ECU. The engine must be running or 12V battery power suppled to the ECM PWR test connector to access Vehicle Security Settings on the IDD. Security cannot be accessed if the ECU is not powered.
- If security is enabled in the ECU, the IDD will provide the security feature as long as the IDD is initialized to the vehicle. On 600 / 800 PRO-RIDE snowmobiles, the user must perform the IDD initialization procedure after the ECU is replaced or after new IDD updates / RIDER X maps – trails are installed.

MAINTENANCE-FREE BATTERY

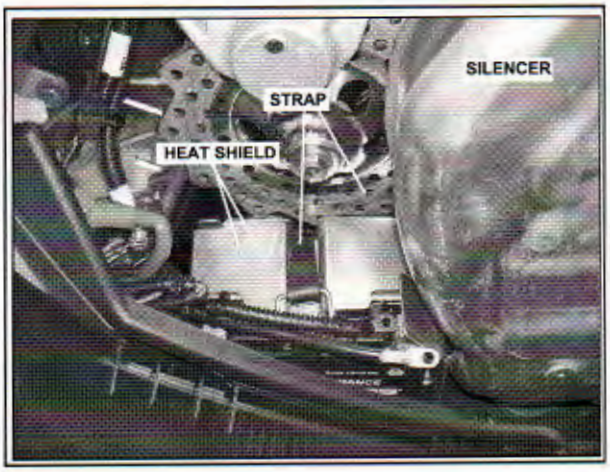
Specifications

BATTERY PN 4012638	
BATTERY TYPE	**YUASA - YTX20CH-BS**
Nominal Capacity	12VDC / 18AH @ 10hr. rate.
Electrolyte Volume	28oz.
Specific Gravity	1.340
CCA @ 0F (-18C)	270 AMPS
Charging Current	1.8 AMPS (5-10 Hours)

Specifications

BATTERY PN 4013045	
BATTERY TYPE	**YUASA - YTX20CH (SEALED)**
Nominal Capacity	12VDC / 18AH @ 10hr. rate.
Electrolyte Volume	28oz.
Specific Gravity	1.340
CCA @ 0F (-18C)	270 AMPS
Charging Current	1.8 AMPS (5-10 Hours)

Battery Removal/Installation



1. Open the left and right side door panels. Remove the hood.
2. Remove the exhaust silencer.
3. Remove the battery heat shield.
4. Remove the rubber strap. Disconnect the BLACK(-) cable first, and then the POSITIVE(+) cable.

5. Installation is the reverse of removal. Install the RED (+) cable first, and then the BLACK (-) cable during installation.

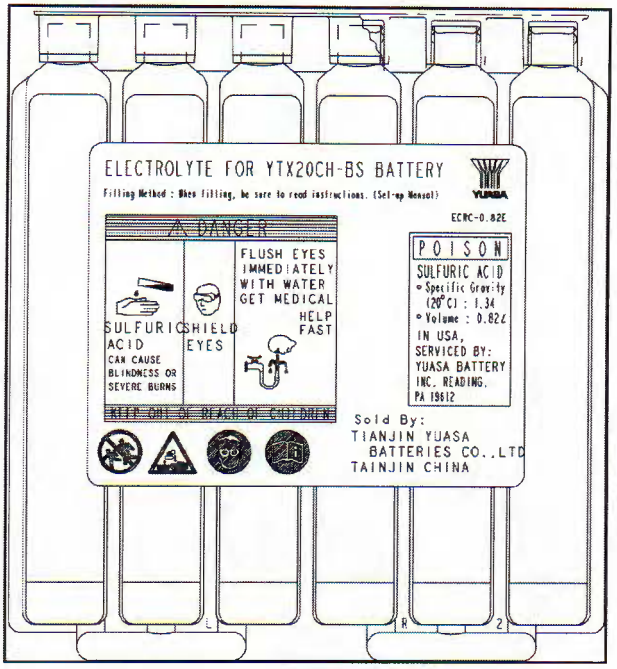
Battery Preparation

⚠ WARNING

WEAR PROTECTIVE GLOVES AND EYEGLASSES WHEN SERVICING THE BATTERY.

NOTE: Do not service the battery unless it will be put into regular service within 30 days.

Some original equipment and service batteries are supplied with acid packs.



1. To fill the dry battery, remove the vent cap from the battery and the sealing cap from the acid pack. Carefully tip the acid pack into the battery vent ports.
2. Set battery aside and allow it to cool and stabilize for at least 30 minutes.

   NOTE: This is the last time that electrolyte should be added.

3. Charge battery at 1/10 of its amp/hour rating. Example:1/10 of 9 amp battery =.9 amps, 1/10 of 14 amp battery = 1.4 amps, 1/10 of 18 amp battery = 1.8 amps (recommended charging rates).
4. Check specific gravity of each cell with a hydrometer to ensure each has a reading of 1.270 or higher.
5. Install vent cover.

   NOTE: Once the vent cover is installed, the battery is sealed. Do not remove the cover.

Charging Procedure

If battery voltage is 12.6 VDC or less, the battery may need recharging. When using an automatic charger, refer to the charger manufacturer's instructions for recharging.

Do not exceed 10 amps when charging the battery.

NOTE: Charge the battery using an automatic charger that will not exceed 14.6 VDC. An automatic charger will signal when charging is complete.

Allow the battery to stand disconnected for several hours after being properly charged. If the voltage drops below 12.6 volts, charging was ineffective or the battery needs to be replaced.

⚠ WARNING

An overheated battery could explode, causing severe injury or death. Always watch charging times carefully. Stop charging if the battery becomes very warm to the touch. Allow it to cool before resuming charging.

BATTERY CHARGING REFERENCE TABLE

STATE OF CHARGE	VOLTAGE (DC)	ACTION	CHARGE TIME
100%	12.8 or more	None, check again in 3 months	None Required
75% - 100%	12.6 - 12.8	May need slight charge	3 - 6 hrs
50% - 75%	12.3 - 12.6	Needs Charge	5 - 11 hrs
25% - 50%	12.0 - 12.3	Needs Charge	At least 13 hrs
0% - 25%	12.0 or less	Needs Charge	At least 20 hrs

NOTE: Follow the charger instructions supplied by the manufacture regarding the order or connections, switch positions and when to connect the charger to an outlet.

Battery Testing

Whenever a service complaint is related to either the starting or charging systems, the battery should be checked first.

Following are two tests which can easily be made on a sealed Maintenance Free battery to determine its condition: OCV Test and a Load Test.

OCV - Open Circuit Voltage Test

Battery voltage should be checked with a digital multimeter. Readings of 12.6 volts or less require further battery testing and charging. See the following chart and "Load Test".

NOTE: Maintenance Free batteries should be kept at a high state of charge during storage. If the battery is stored or used at a low state of charge, hard crystal sulfation will form on the plates, reducing the efficiency and service life of the battery.

Use a volt/ohm meter to test battery voltage.

OPEN CIRCUIT VOLTAGE	
State of Charge	Maintenance Free
100%	12.8 V and up
75% Charged	12.6 V
50% Charged	12.3 V
25% Charged	12.0 V
0% Charged	11.8 V or less

Load Test

⚠ CAUTION

To prevent shock or component damage, remove spark plug high tension leads and connect securely to engine ground before proceeding.

A battery may indicate a full charge condition in the OCV test, but still may not have the storage capacity necessary to properly function in the electrical system. For this reason, a battery capacity or load test should be conducted whenever poor battery performance is encountered.

To perform this test, use a load testing device that has an adjustable load. Apply a load of three times the ampere-hour rating. At 14 seconds into the test, check battery voltage. A good 12V battery will have at least 10.5 volts. If the reading is low, charge the battery and retest.

Battery Conductance Analyzer

Conductance describes the ability of a battery to conduct current. A conductance tester functions by sending a low frequency AC signal through the battery and a portion of the current response is captured, from this output a conductance measurement is calculated. Conductance testing is more accurate than voltage, specific gravity, or load testing.

Authorized Polaris dealers/distributors are required to use the conductance analyzer when testing 12V Polaris batteries.

Polaris MDX-610P
Conductance Analyzer

Polaris MDX-610P
PN: PU-50296

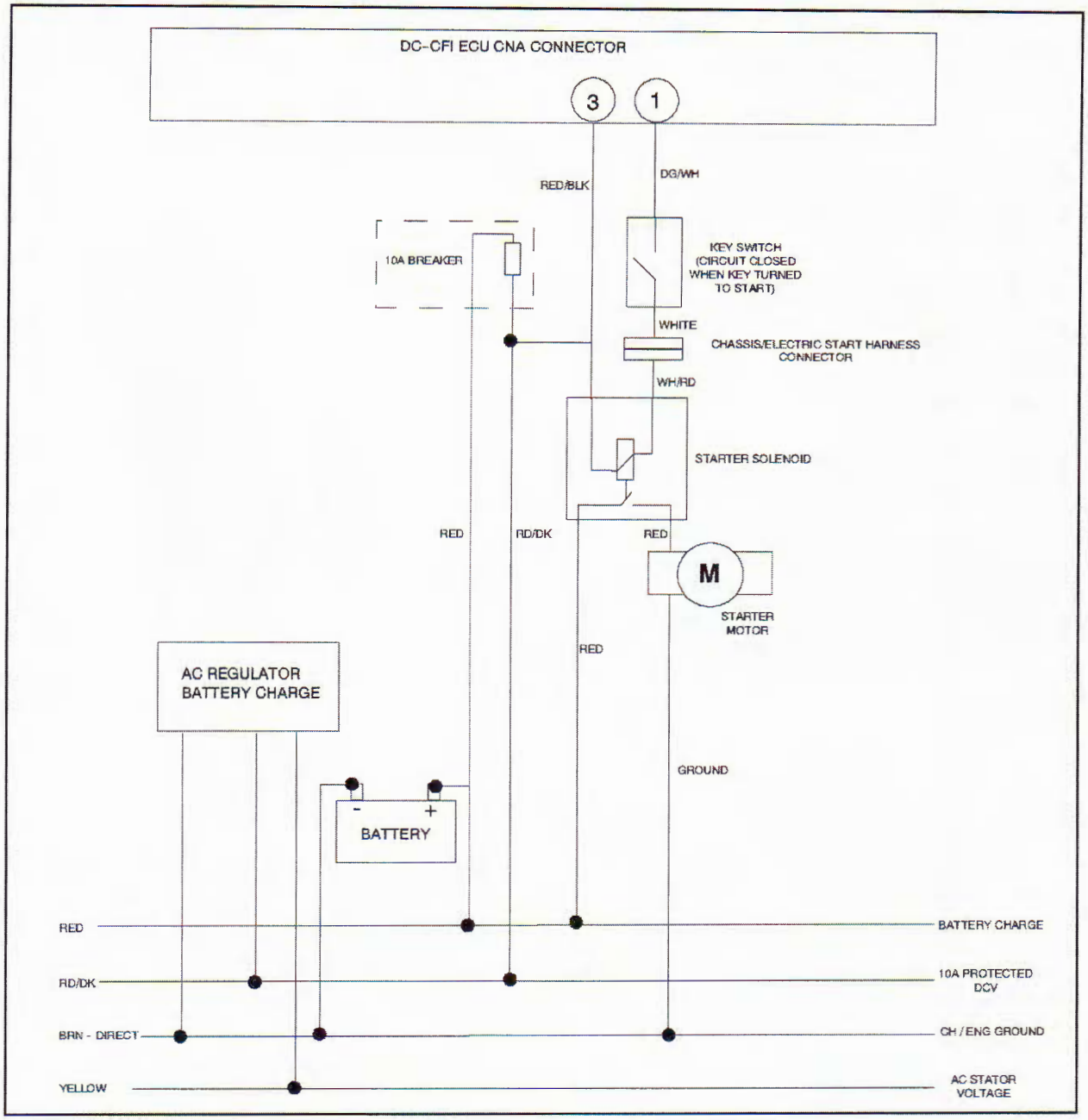
Battery Off Season Storage

Whenever the vehicle is not used for a period of three months or more, remove the battery from the vehicle, ensure that it's fully charged, and store it out of the sun in a cool, dry place. Check battery voltage each month during storage and recharge as needed to maintain a full charge.

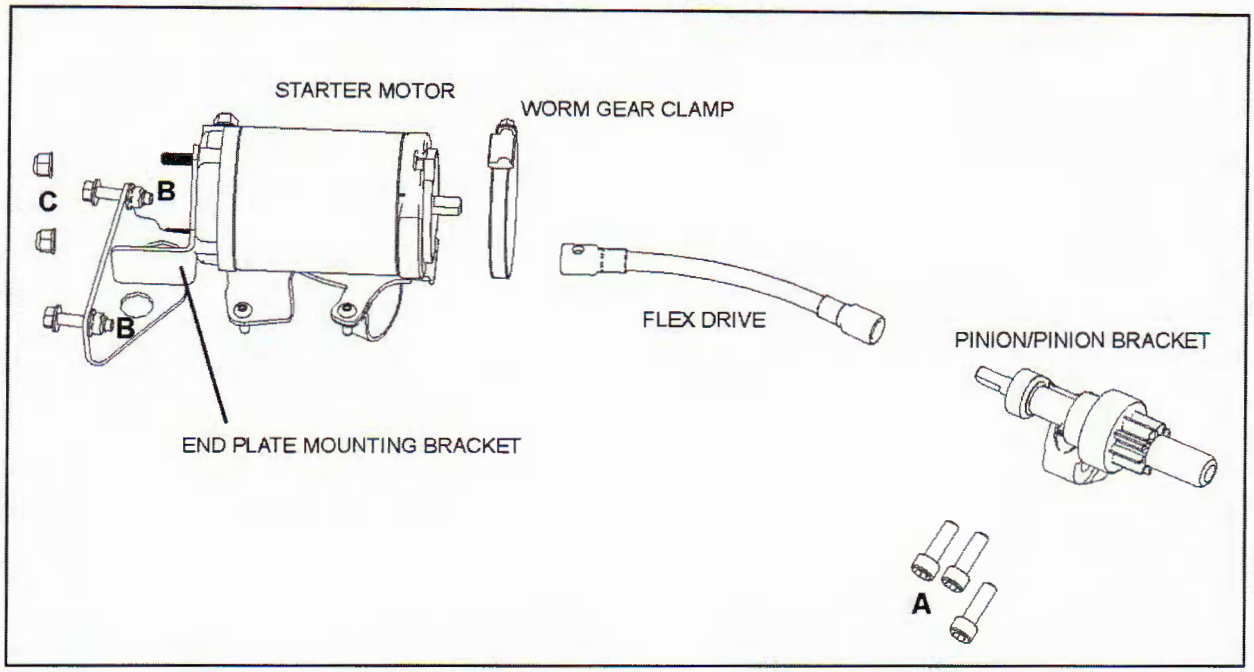
NOTE: Battery charge can be maintained by using a Polaris battery tender charger or by charging once a month to make up for normal self-discharge. Battery tenders can be left connected during the storage period, and will automatically charge the battery if the voltage drops below a pre-determined point.

ELECTRIC START

System Schematic



Starter Motor/Flex Drive Assembly



⚠ CAUTION

Disconnect battery before servicing starter motor components.
Always remove BLACK (-) battery cable first, and then RED (+) cable. Reverse order during battery installation.

= T

A = **22 ft-lbs (30 Nm)**
B = **7 ft-lbs (10 Nm)**
C = **8 ft-lbs (11 Nm)**

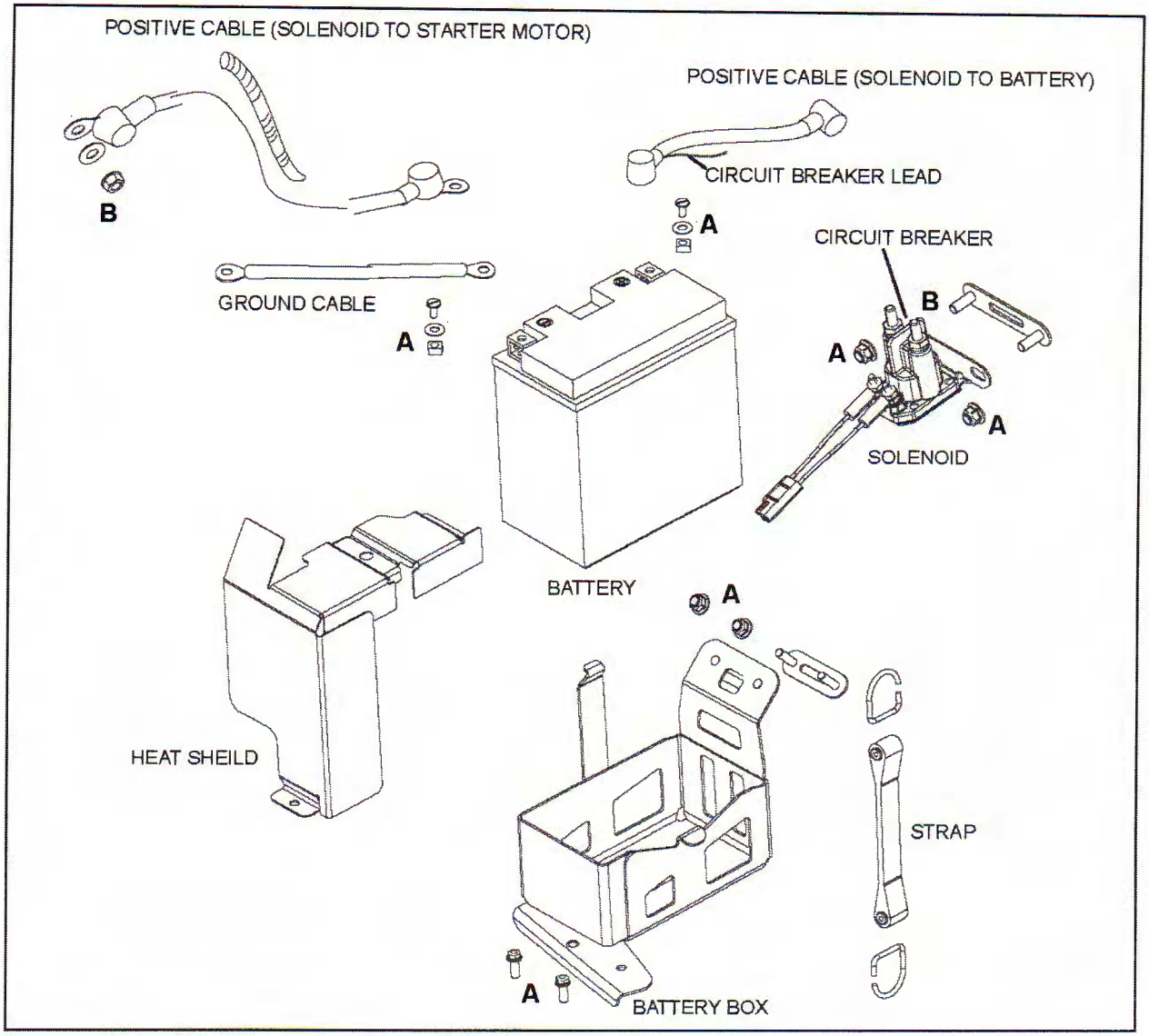
Starter Motor/Flex Drive Service

The starter motor, flex drive, and pinion gear can be serviced with the engine in the snowmobile.

1. Remove the exhaust pipe. If servicing the motor, remove the silencer.
2. When servicing the pinion gear, remove the y-pipe.
3. Using a ball-end allen wrench, remove the 3 screws attaching the pinion assembly to the engine.
4. To remove the starter motor, remove the gear clamp, and then the two-rear starter motor mount nuts.
5. During assembly, install the flex drive on to the pinion assembly. Install the three pinion assembly screws and torque to specification.
6. Loosely fit the gear clamp around the motor, and then install the flex drive on to the motor shaft.
7. Torque the rear nuts to specification.
8. Torque the gear clamp hand tight.
9. Reinstall the y-pipe. Torque fasteners to specification.
10. Reinstall the silencer and exhaust pipe.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

Battery Box Assembly



CAUTION

Always disconnect BLACK (-) battery cable first, and then RED (+) cable. Reverse order during battery installation.

= T

A = **7 ft-lbs (10 Nm)**
B = **8 ft-lbs (11 Nm)**

IGNITION TIMING

Ignition Timing Chart

Convert the ignition timing specification from ° Before Top Dead Center (BTDC) to either inches or millimeters, then use a dial indicator to verify timing marks.

NOTE: 18° BTDC is the default ignition timing setting when the throttle position sensor (TPS) is disconnected.

° BTDC	600 DC-CFI-2 / 4 128 MM ROD / 64 MM STROKE		800 DC-CFI-2 132 MM ROD / 70 MM STROKE	
	MM	INCHES	MM	INCHES
1	0.0061	0.0002	0.0067	0.0003
2	0.0244	0.0010	0.0270	0.0011
3	0.0548	0.0022	0.0607	0.0024
4	0.0974	0.0038	0.1078	0.0042
5	0.1522	0.0060	0.1684	0.0066
6	0.2190	0.0086	0.2424	0.0095
7	0.2979	0.0117	0.3298	0.0130
8	0.3889	0.0153	0.4305	0.0169
9	0.4919	0.0194	0.5445	0.0214
10	0.6068	0.0239	0.6717	0.0264
11	0.7336	0.0289	0.8121	0.0320
12	0.8723	0.0343	0.9656	0.0380
13	1.0227	0.0403	1.1321	0.0446
14	1.1849	0.0466	1.3115	0.0516
15	1.3586	0.0535	1.5038	0.0592
16	1.5439	0.0608	1.7089	0.0673
17	1.7406	0.0685	1.9266	0.0758
18	1.9487	0.0767	2.1569	0.0849
19	2.1681	0.0854	2.3996	0.0945
20	2.3986	0.0944	2.6547	0.1045
21	2.6402	0.1039	2.9220	0.1150
22	2.8927	0.1139	3.2013	0.1260
23	3.1560	0.1243	3.4927	0.1375
24	3.4300	0.1350	3.7958	0.1494
25	3.7146	0.1462	4.1106	0.1618
26	4.0096	0.1579	4.4369	0.1747
27	4.3149	0.1699	4.7746	0.1880
28	4.6303	0.1823	5.1235	0.2017
29	4.9558	0.1951	5.4835	0.2159
30	5.2911	0.2083	5.8543	0.2305
31	5.6361	0.2219	6.2358	0.2455
32	5.9907	0.2359	6.6278	0.2609
33	6.3546	0.2502	7.0302	0.2768
34	6.7278	0.2649	7.4427	0.2930
35	7.1099	0.2799	7.8652	0.3097
36	7.5010	0.2953	8.2974	0.3267
37	7.9007	0.3111	8.7392	0.3441
38	8.3089	0.3271	9.1903	0.3618
39	8.7254	0.3435	9.6506	0.3799
40	9.1501	0.3602	10.1198	0.3984

Ignition Timing Verification Procedure

NOTE: All 600 / 800 DC-CFI engine management systems feature simultaneous ignition and fire both the MAG and PTO spark plugs at the same time.

Use the ignition timing verification procedure to determine if the flywheel key is sheared.

NOTE: Ignition timing will not be accurate if the crankshaft is out-of-index. Abrupt engine stalling caused by a broken drive belt, piston seizure or crankcase / cylinder hydrolock may cause an out-of-index crankshaft. If the crankshaft is believed to be out-of-index, perform the Crankshaft Index Inspection procedure as described in the Engine Chapter.

Ignition timing on 600 / 800 DC-CFI engines is variable and determined by many factors including: engine RPM, engine temperature, and barometric pressure. For this reason, the ignition timing verification procedure requires the technician to disconnect the throttle position sensor (TPS) from the engine harness.

Disconnecting the TPS will set the engine management system to lock the ignition timing to 18° BTDC between 1300 – 3000 RPM regardless of engine sensor input.

NOTE: Disconnecting the TPS when the engine is running will also set the fuel injection to a base map. The engine may idle erratically because of this. Diagnostic Trouble Codes (DTCs) will also be triggered and will have to be cleared after completing this procedure.

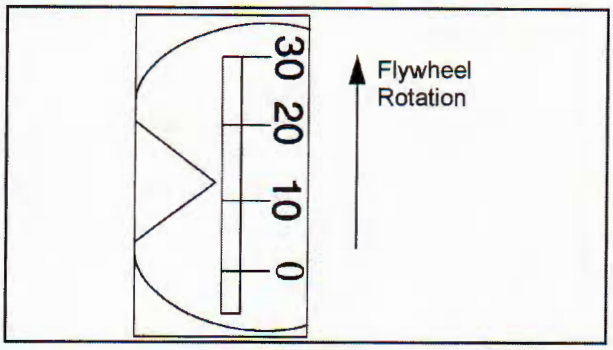
All 600 / 800 DC-CFI engines feature flywheel housings with a timing inspection hole. The inspection hole is located on the top of the housing and includes a pointer.

If the snowmobile allows access to the inspection hole, use it to perform this procedure.

If access to the inspection hole is hidden by cooling hoses or the exhaust system, perform this procedure by using a dedicated pointer (wire or magnetic base pointer) affixed to the engine or chassis to mark the drive clutch or degree wheel attached to the PTO-end of the crankshaft.

1. Reference the Ignition Timing Chart and locate the measurements for either the 600 or 800 engine at 18° BTDC.
2. Remove the MAG spark plug and install a dial indicator gauge into the spark plug hole.
3. Place the MAG piston at 18° BTDC and either note the flywheel timing mark location in the flywheel housing inspection hole, or on the clutch / degree wheel on the PTO-end of the crankshaft.

Timing Inspection Hole View:



NOTE: Each 10° mark on the flywheel is separated by lines every 2°. Acceptable ignition timing variance is +/- 2°.

4. Remove the dial indicator gauge and reinstall the spark plug and spark plug cap.
5. Connect a timing light to the MAG spark plug high tension lead and battery according to the timing light manufacturer's instructions.
6. Access the TPS on the throttle body. Note the orientation of the wire harness and connector. If a cable tie is used to secure the harness to the TPS, note its location prior to removal.
7. Disconnect the TPS wire connector.
8. In a well ventilated area, start the engine. Verify the engine RPM is between 1300 – 3000 RPM.

   NOTE: The check engine light will illuminate because the TPS is disconnected.

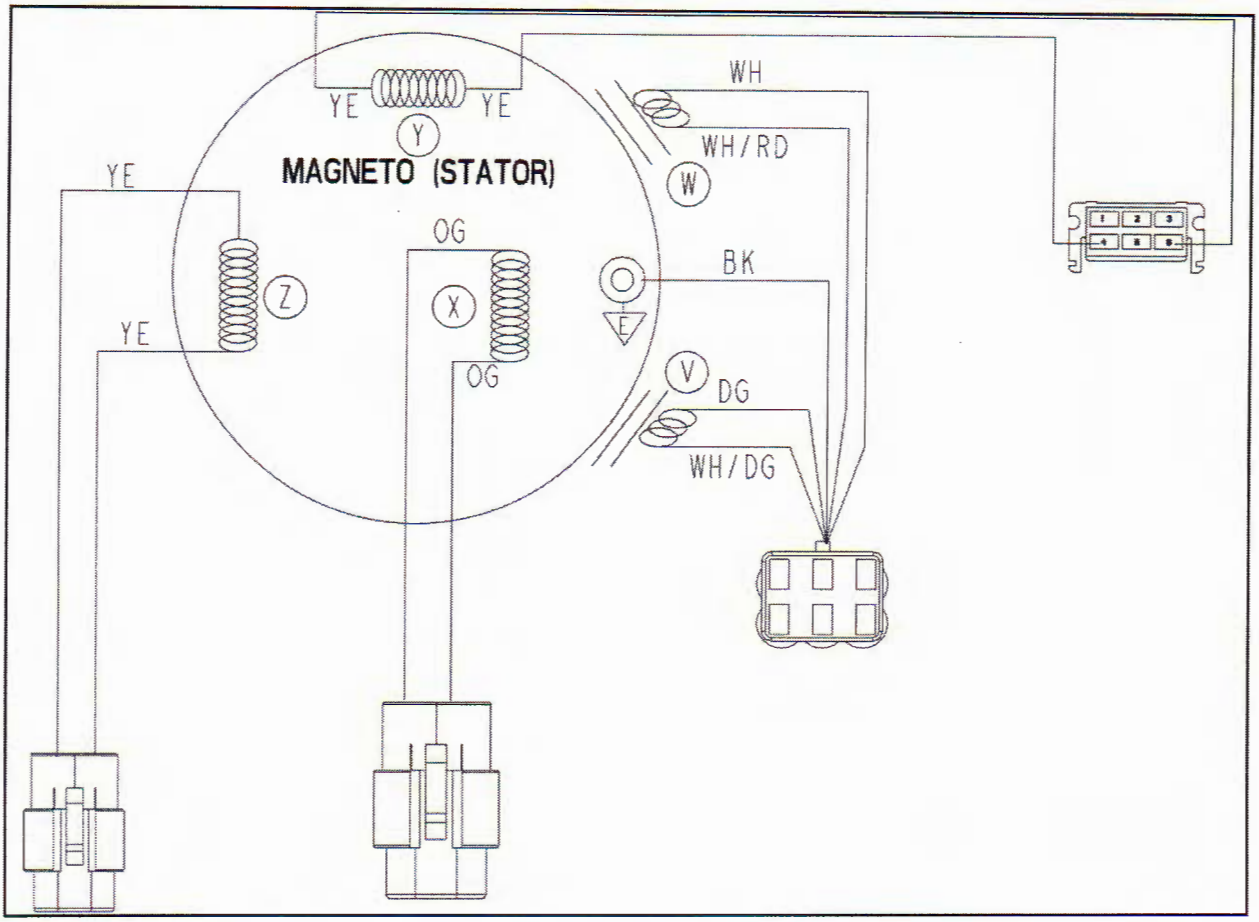
9. Point the timing light at the timing inspection, drive clutch, or degree wheel.
10. With your head positioned so there is a straight line between your eye, the stationary pointer and the crankshaft center line, note the relative position between the marked flywheel line and the pointer. If the stationary pointer is aligned with the mark or within the acceptable variance, ignition timing is correct.
11. If the pointer is outside the variance, either the flywheel key has sheared allowing the flywheel to move on the crankshaft, the crankshaft is out of index, a problem with the engine electrical harness exists, or one of the crankshaft position sensors has moved.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

12. After performing the timing verification procedure, reconnect the TPS. Use Digital Wrench to erase the diagnostic trouble codes (DTCs) triggered by the disconnected TPS.

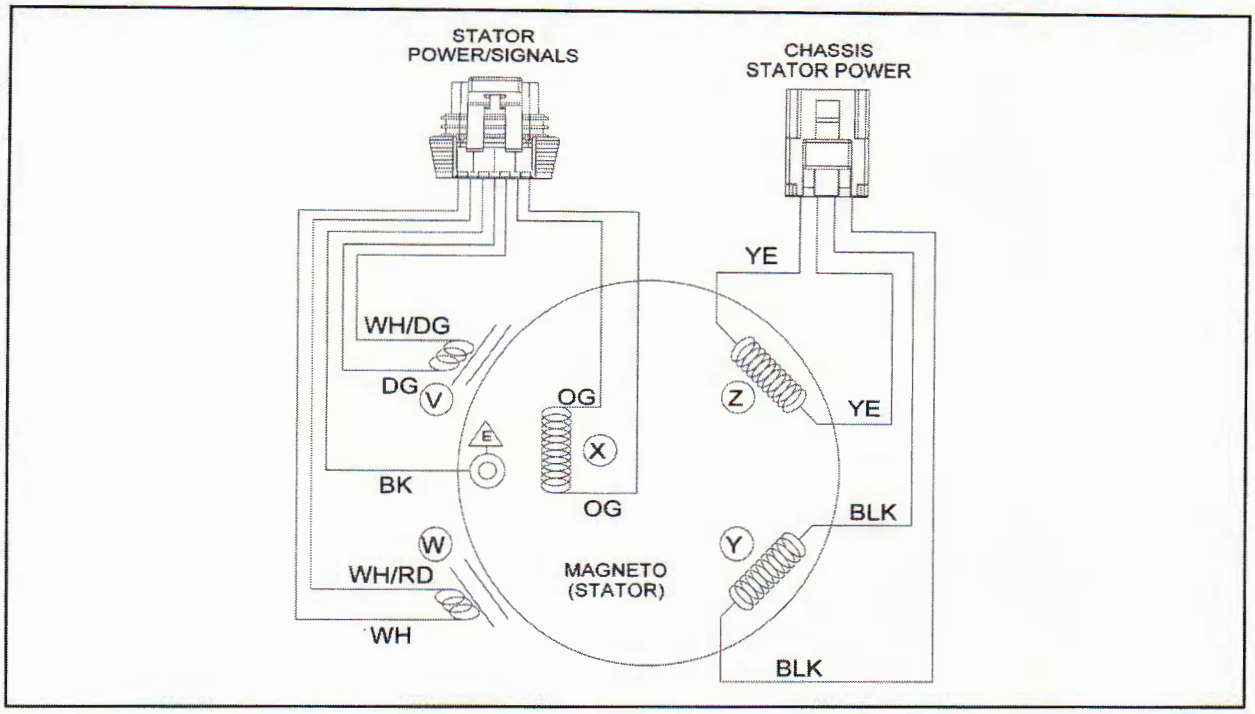
DC-CFI ELECTRICAL SYSTEMS

2010-2012 DC-CFI Stator Assembly



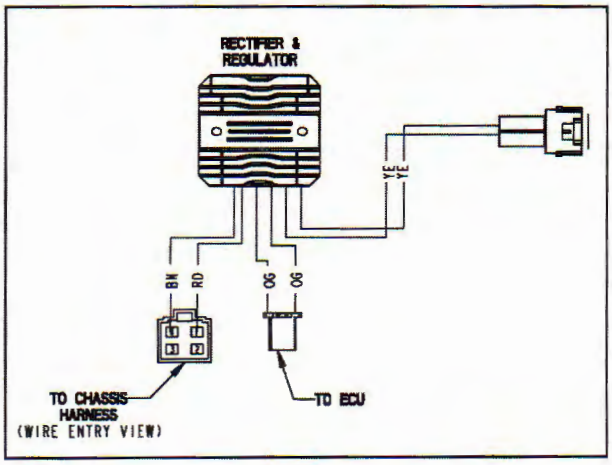
ITEM	COLOR	SYSTEM FUNCTION	RESISTANCE +/- 15% @68°F (20°C)
AC Lighting Coil (Y)	YELLOW to YELLOW	14VAC Chassis Power - Battery Charge - Head / Tail Lights - Hand / Thumb Warmers	YELLOW TO YELLOW = 0.12Ω NO CONTINUITY TO GROUND
DC Chassis Coil (Z)	YELLOW to YELLOW	14VDC Chassis Power - Fuel Pump - Chassis Relay Coil - EV Solenoid - Instrument Cluster	YELLOW TO YELLOW = 0.22Ω NO CONTINUITY TO GROUND
DC System Coil (X)	ORANGE to ORANGE	16 VDC System Power - Fuel Injector Power - ECU / Sensor Power (Regulated to 5VDC) - Ignition Coil Power	ORANGE TO ORANGE = 0.77Ω NO CONTINUITY TO GROUND
Pulser Coil 2 (CPS 2)	GRN to WHT/GRN	Crank Position Sensor (5 Tooth) Ignition timing	GRN to WHT/GRN = 190Ω
Pulser Coil 1 (CPS 1)	WHT to WHT/RED	Crank Position Sensor (2 Tooth) Locates TDC and RPM	WHT to WHT/RED = 190Ω
ENGINE GROUND	BLACK	Engine Ground	0Ω

2013 – Current DC-CFI Stator Assembly



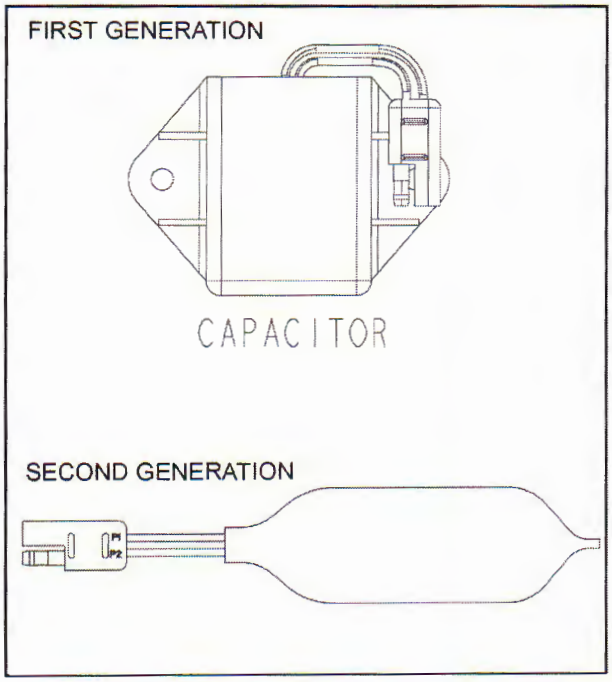
ITEM	COLOR	SYSTEM FUNCTION	RESISTANCE +/- 15% @68°F (20°C)
AC Lighting Coil (Z)	YELLOW to YELLOW	14VAC Chassis Power - Battery Charge - Head Lights - Hand / Thumb Warmers	YELLOW TO YELLOW = 0.12Ω NO CONTINUITY TO GROUND
DC Chassis Coil (Y)	BLACK to BLACK	14VDC Chassis Power - Fuel Pump - Chassis Relay Coil - EV Solenoid - Instrument Cluster - Brake Lamp	BLACK TO BLACK = 0.22Ω NO CONTINUITY TO GROUND
DC System Coil (X)	ORANGE to ORANGE	16 VDC System Power - Fuel Injector Power - ECU / Sensor Power (Regulated to 5VDC) - Ignition Coil Power	ORANGE TO ORANGE = 0.77Ω NO CONTINUITY TO GROUND
Pulser Coil 2 (CPS 2)	GRN to WHT/GRN	Crank Position Sensor (5 Tooth) Ignition Timing	GRN to WHT/GRN = 190Ω
Pulser Coil 1 (CPS 1)	WHT to WHT/RED	Crank Position Sensor (2 Tooth) Locates TDC and RPM	WHT to WHT/RED = 190Ω
ENGINE GROUND	BLACK	Engine Ground	0Ω

DC Regulator/Rectifier



DC-CFI REGULATOR / RECTIFIER CONNECTIONS		
CONNEC-TOR	WIRE COLORS	ITEM
Stator	YELLOW	VAC from stator coils.
ECU	ORANGE	VDC supplied to ECU to boost power to fuel pump during engine start-up.
Chassis	BROWN	14.5 VDC Chassis power. (Instrument cluster/EV solenoid/DC power points)
	RED	

DC-CFI Chassis Power Capacitor



There are two generations of capacitors used on PRO-RIDE snowmobiles. The first generation is mounted on top of the DC regulator/rectifier located on the clutch cover.

Second generation capacitors housed in a weather-tight pouch taped to the wiring harness located next to combination AC/DC regulator/rectifier.

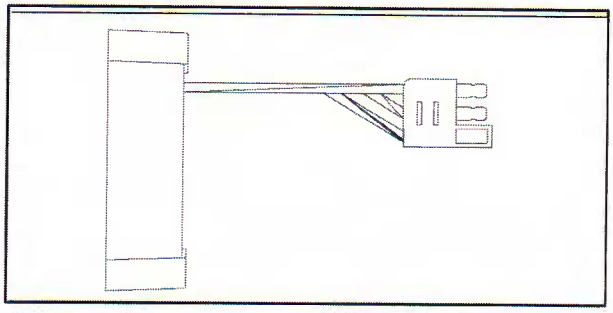
Capacitor Testing

1. Charge the capacitor for 10 seconds using a 12 volt battery by connecting the positive (+) lead to the Red/White wire and the negative (-) lead to the brown wire.
2. Monitor the capacitor voltage with a multimeter. The voltage should slowly drain down from the initial charge. If the cap does not hold a charge or drains rapidly, replace the component.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

DC-CFI AC Regulator/Battery Charge Rectifier

DC-CFI models feature an AC regulator/DC (battery charge) rectifier. The AC regulator/battery charge rectifier only regulates AC voltage and charges the battery (when equipped). It does not supply VDC to the instrument cluster or accessory power points.

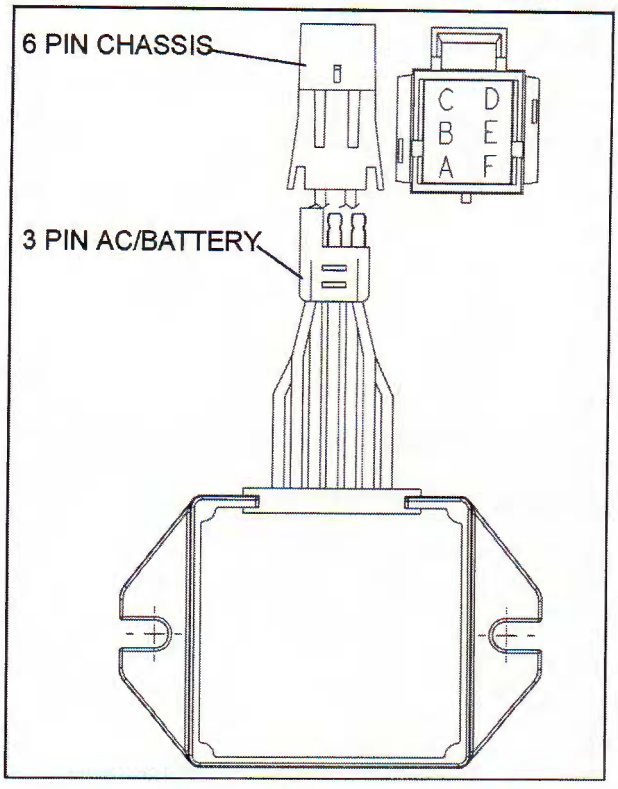


DC-CFI AC REGULATOR / BATTERY CHARGE RECTIFIER	
PLUG PIN / COLOR	**FUNCTION**
1 - RED/DK. GREEN	14.7DCV BATTERY (+)
2 - YELLOW	14.3 ACV (FROM STATOR)
3 - BROWN	GROUND (-)

Combination AC/DC Regulator - Battery Charge Rectifier

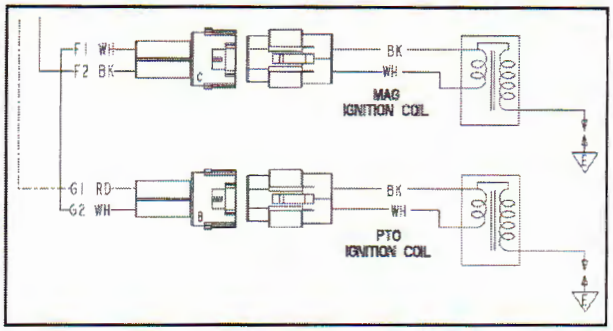
2013 — Current DC-CFI models feature a combination AC/DC regulator with battery charge rectifier. The module regulates all AC and DC power for the vehicle and rectifies power for all DC circuits and for charging the battery.

The combination AC/DC regulator is mounted to the clutch cover with the cooling fins exposed to the drive clutch.



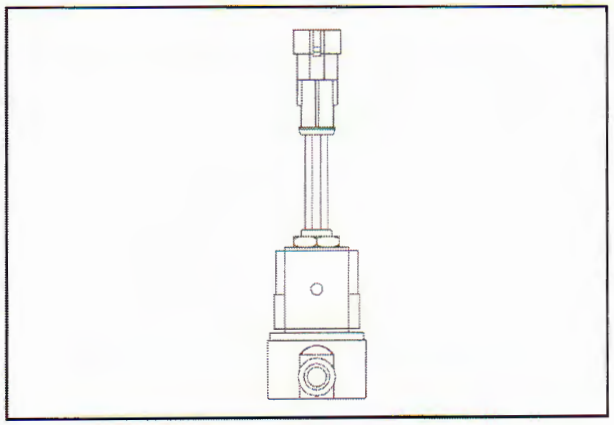
COMBINATION AC/DC REGULATOR / RECTIFIER		
CONNEC-TOR	**WIRE COLORS**	**ITEM**
6 PIN Connector - System Power		
A - Chassis	RED	14.5 VDC Chassis power. (Instrument cluster/EV solenoid/DC power points)
B/E - Boost	ORANGE	VDC supplied to ECU to boost power to fuel pump during engine start-up.
C/D - Stator	YELLOW	VAC from stator coils.
F - Ground	BROWN	Ground
3 PIN Connector - Regulated AC / DC Battery Charge		
1 - Ground	BROWN	Ground
2 - AC PWR	YELLOW	14.3 Regulated AC PWR
3 - DC PWR	RED	14.7 DC PWR (Battery)

Ignition Coil Packs



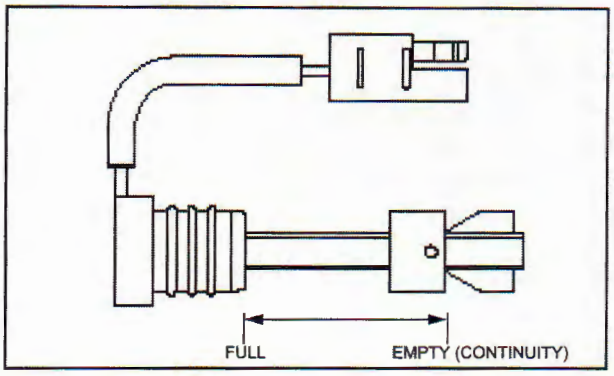
IGNITION COIL PACK SPECIFICATIONS		
COIL PACK WIRES/LEADS	600 DC-CFI-4	600/800 DC-CFI-2
	+/- 15% @ 68°F (20°C)	
BLACK to WHITE (Primary)	0.20W	0.45W
BLACK to Secondary Lead	6.3KW	18KW
Plug cap	5KW	

Exhaust Valve Solenoid



EXHAUST VALVE SOLENOID SPECIFICATIONS	
Coil Resistance (WH/YE to RED)	15W +/- 15% @ 68°F (20° C)

Oil Level Sender

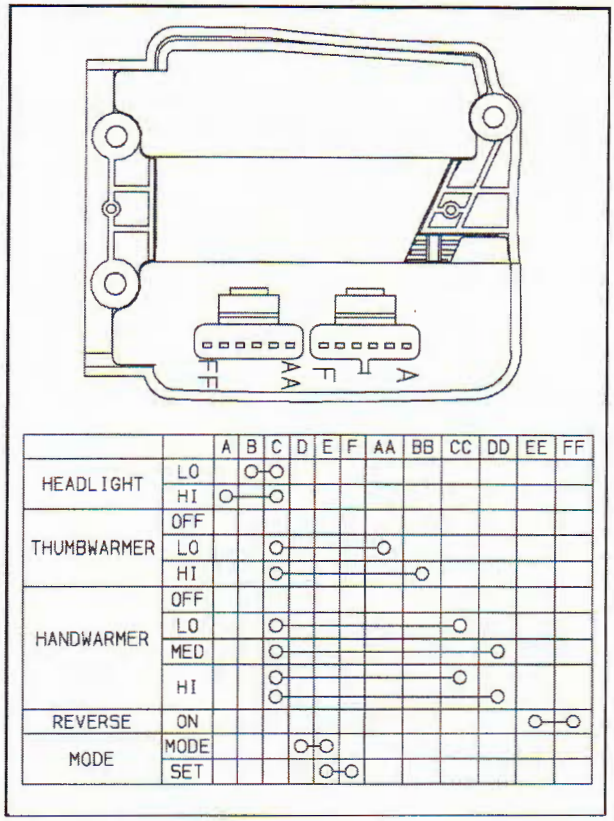


To test the oil level sender, position the sender as it would be in the oil tank. Allow the float to drop in the direction it would if the oil tank were empty. Continuity should be present when using a multimeter to test the sender with the float in the "empty" position.

No continuity should be present when the float is moved away from the "empty" position.

LH Control Assembly

Test the left hand (LH) control assembly using a multimeter set to show continuity. Reference the illustration below for continuity checks.

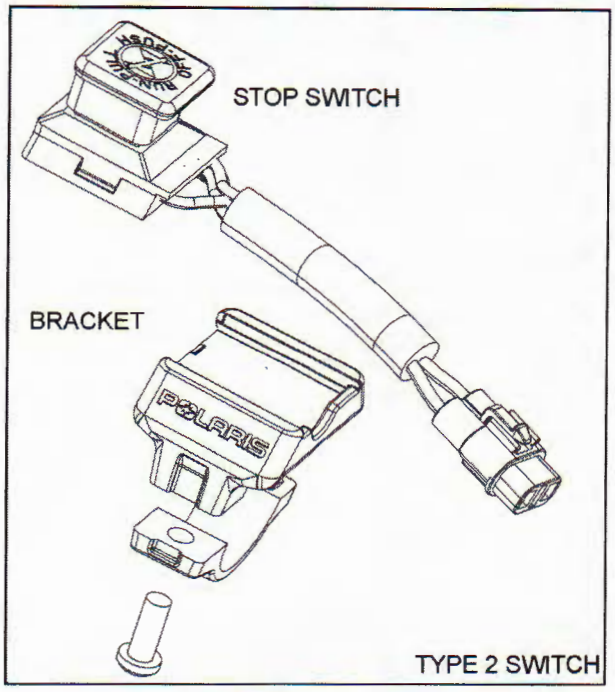


		A	B	C	D	E	F	AA	BB	CC	DD	EE	FF
HEADLIGHT	LO		O	O									
	HI	O		O									
THUMBWARMER	OFF												
	LO			O				O					
	HI			O					O				
HANDWARMER	OFF												
	LO			O						O			
	MED			O							O		
	HI			O						O			
				O							O		
REVERSE	ON											O	O
MODE	MODE				O	O							
	SET					O	O						

Auxiliary Stop Switch

The auxiliary stop switch is a hard stop switch and will shut off the engine when pushed down.

There are two switch types used on PRO-RIDE snowmobiles, but both types function the same. Type one switches are integrated into the right hand throttle block. Type two switches are snapped into a bracket which is secured directly to the handlebar tube.

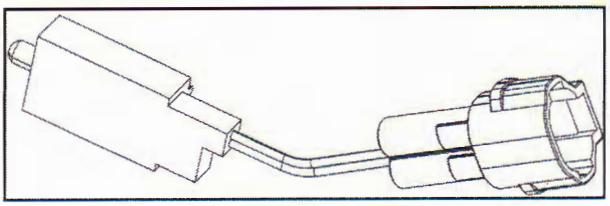


AUXILIARY STOP SWITCH CONTINUITY		
	BK/BLU	BLK
UP		
DOWN	X	X

Throttle Release Switch

The throttle release switch is integrated into the right hand throttle control block. The switch provides a software stop signal to the ECU.

A software stop is used to determine the position of the throttle release switch. The software stop system is activated when the throttle release switch is closed (closed throttle), but the TPS (throttle plate position) is still above idle. When this occurs, the ECU will determine the throttle cable is "stuck" and disable the ignition system.

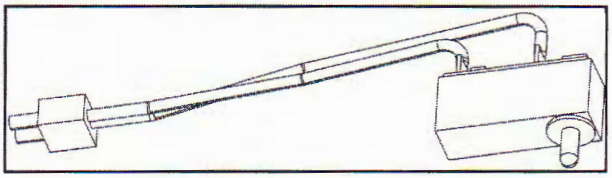


9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

THROTTLE RELEASE SWITCH TESTING		
	BK/BLU PIN 1	BK/RED PIN 2
PUSHED	6790Ω +/- 185	
RELEASED	2148Ω +/- 185	

Brake Switch

The brake switch is integrated into the brake lever assembly. When the brake lever is pulled, the switch closes. The closed switch completes the brake signal to the ECU and rear brake LEDs. The ECU signals the instrument cluster to illuminate the brake icon.

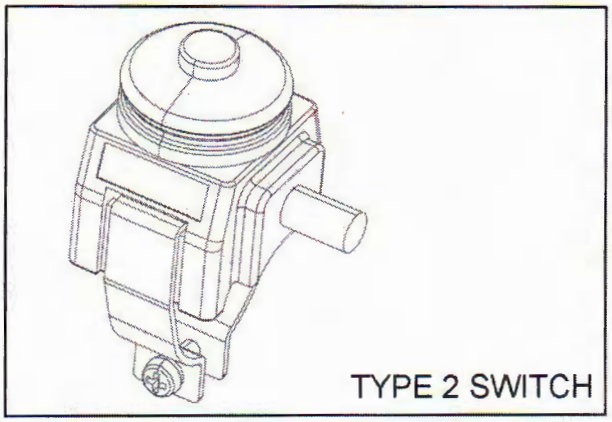


BRAKE SWITCH CONTINUITY		
	RED	ORG/BLK
PUSHED	X	X
RELEASED		

PERC Switch

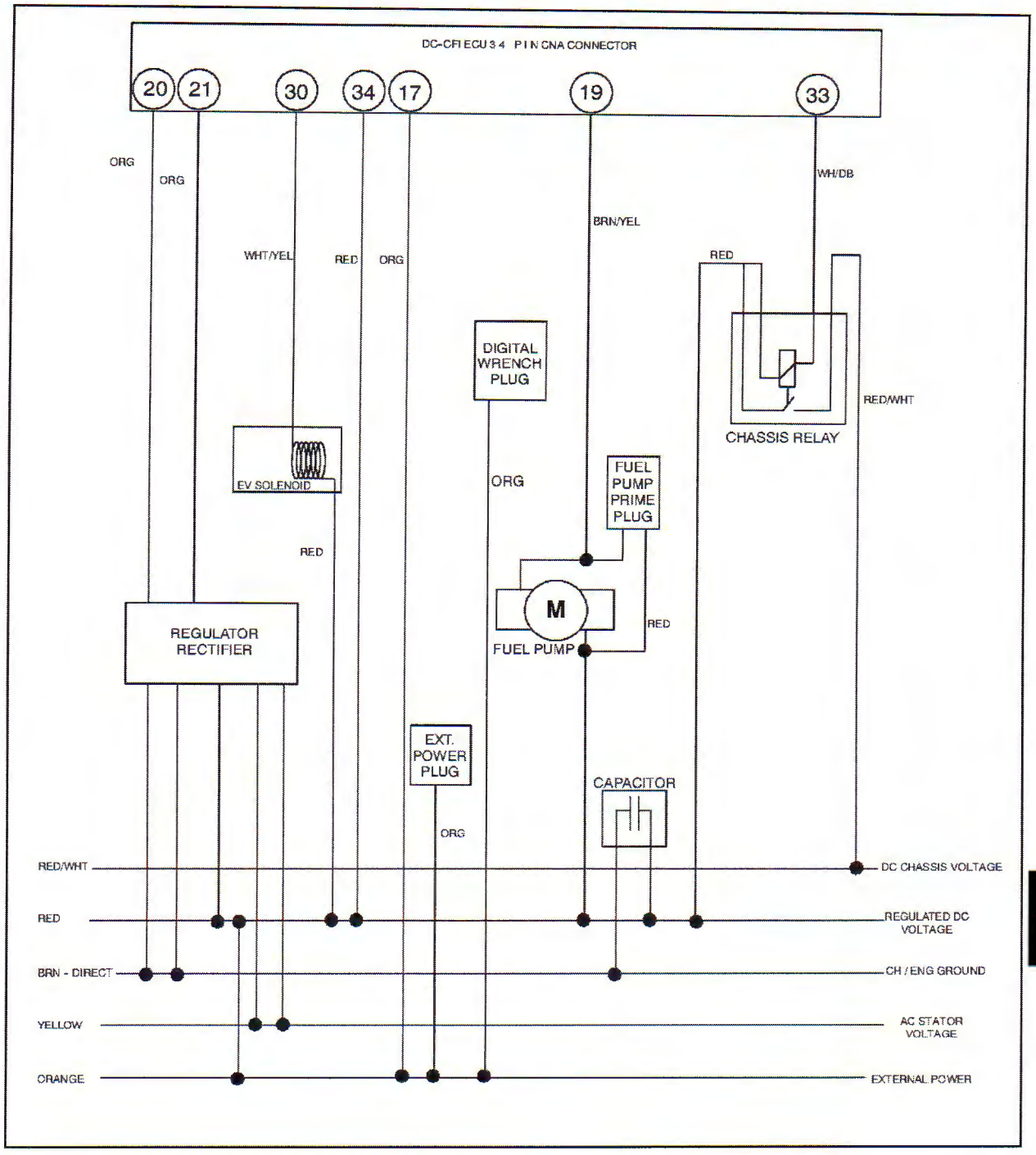
There are two types of Polaris Electronic Reverse Control (PERC) switches used on PRO-RIDE snowmobiles, but both function the same. Type one is integrated into the left hand control block and is not serviceable. The type two switch is mounted to the handlebar.

When pushed, the reverse command signal is sent to the ECU. The ECU uses the signal to engage reverse engine control.



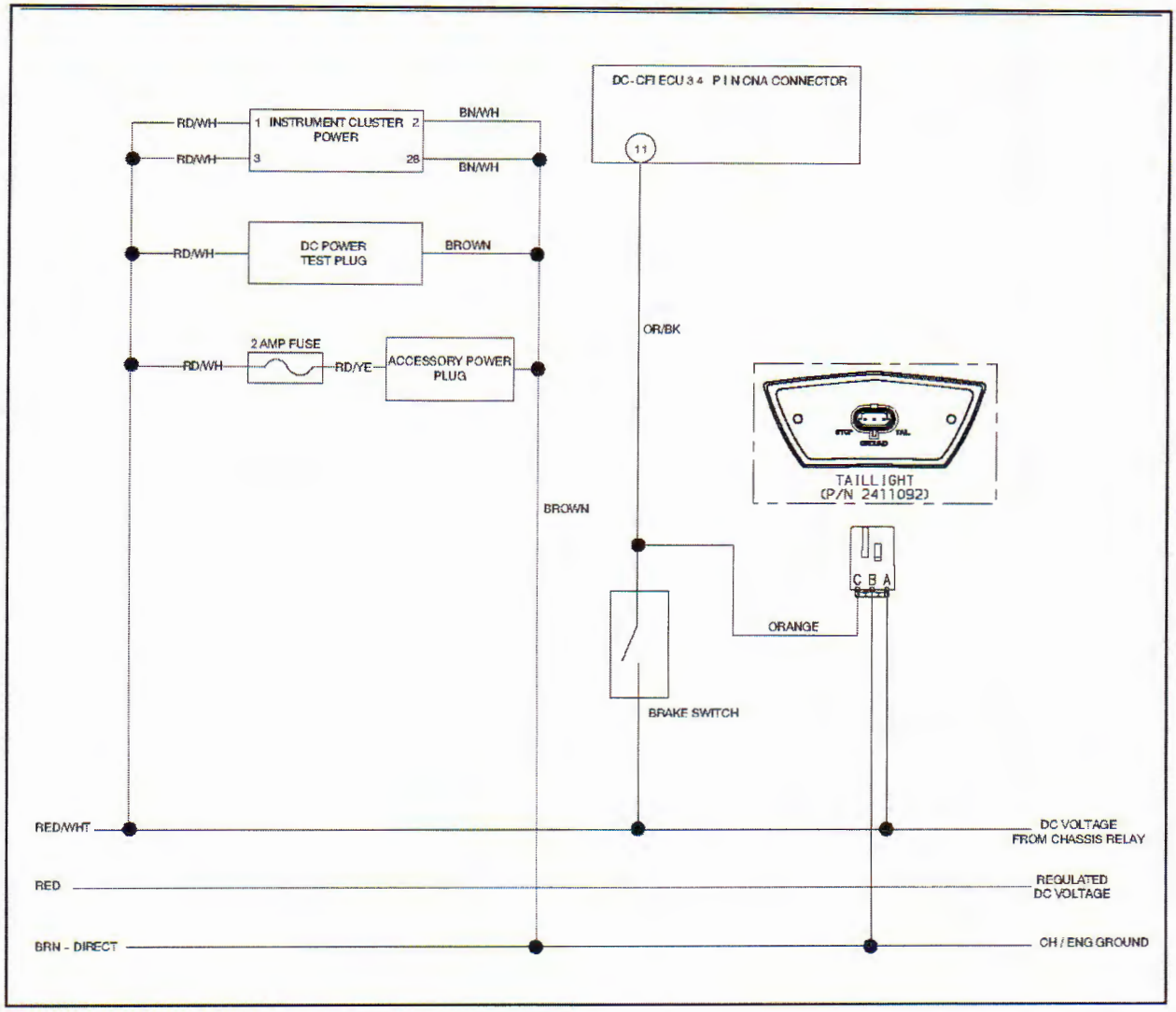
PERC BUTTON CONTINUITY		
	PIN 1 OR LH CNTRL EE	PIN 2 OR LH CNTRL FF
PUSHED	X	X
RELEASED		

DC-CFI Regulated (Red) Power Circuits

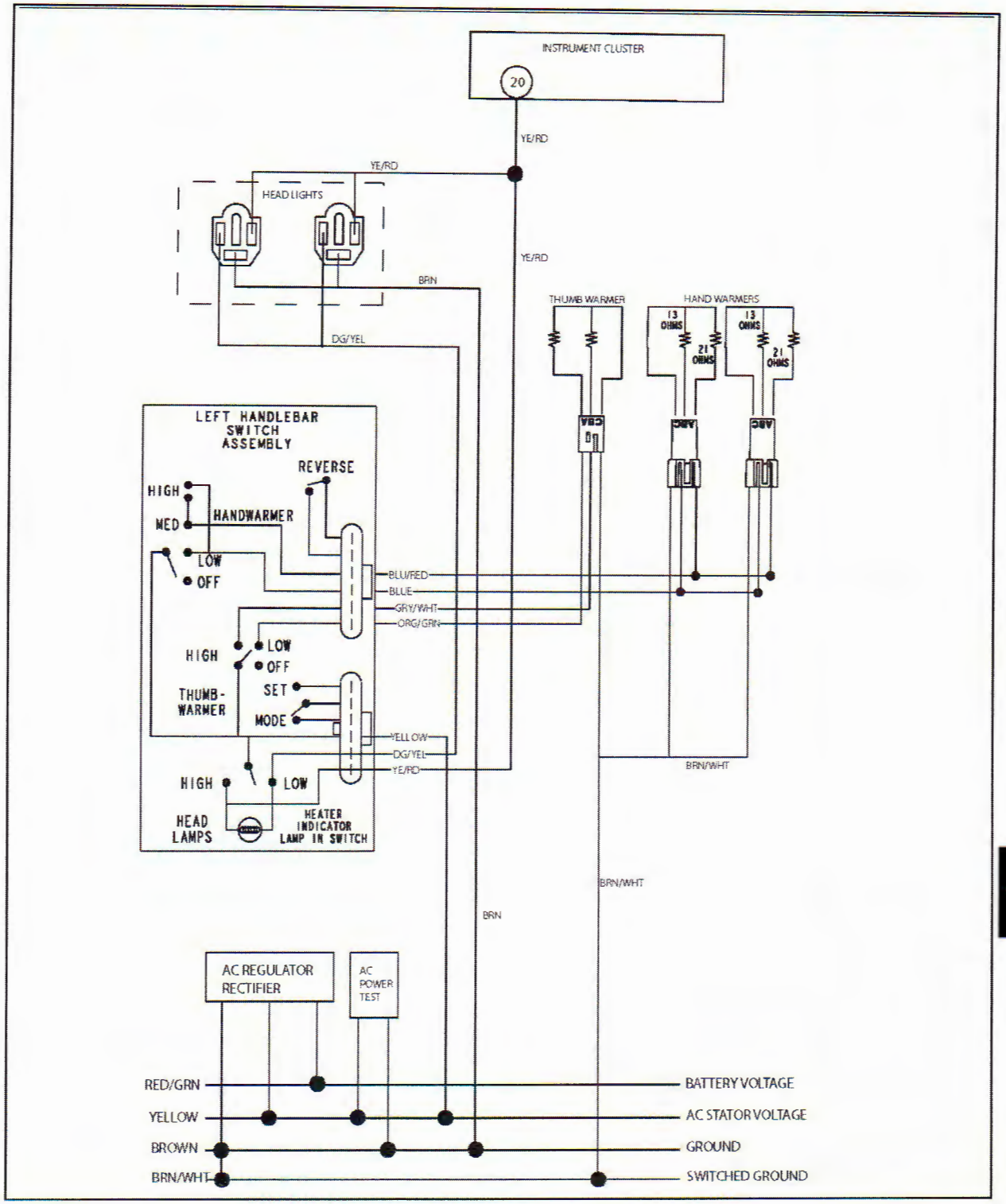


9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

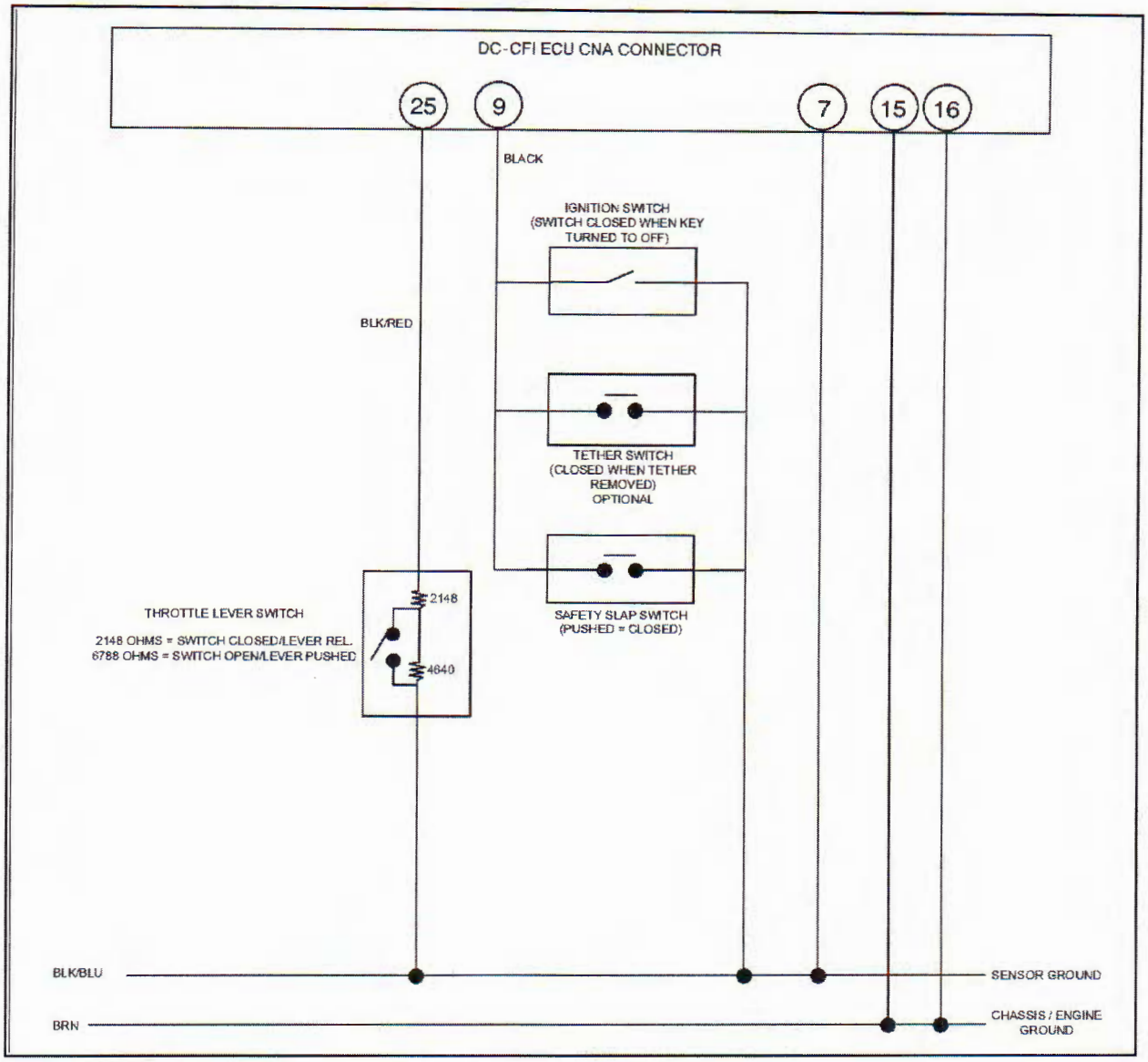
DC-CFI Chassis (Red/White) Power Circuits



DC-CFI AC Power (Lighting) Circuits



DC-CFI Throttle/Ignition Disable System



System Overview

A software stop is used to determine the position of the throttle release switch. The software stop system is activated when the throttle release switch is closed (closed throttle), but the TPS (throttle plate position) is still above idle. When this occurs, the ECU will determine the throttle cable is "stuck" and disable the ignition system.

To test the throttle lever, measure the resistance with the lever pushed/closed and compare results to those in illustration.

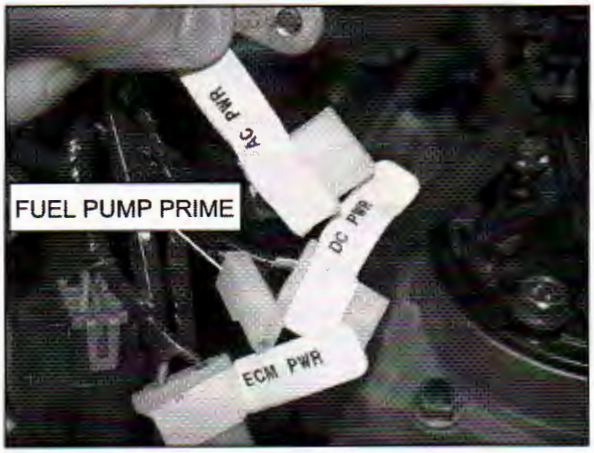
Always verify the throttle lever freeplay is set to specification.

A hardware stop system is a direct ignition kill system. That is, whenever the operator turns the key to off, pulls the tether, or pushes the safety slap switch down, the ignition system is immediately killed.

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

DIAGNOSTIC PLUGS

Power Test Plugs



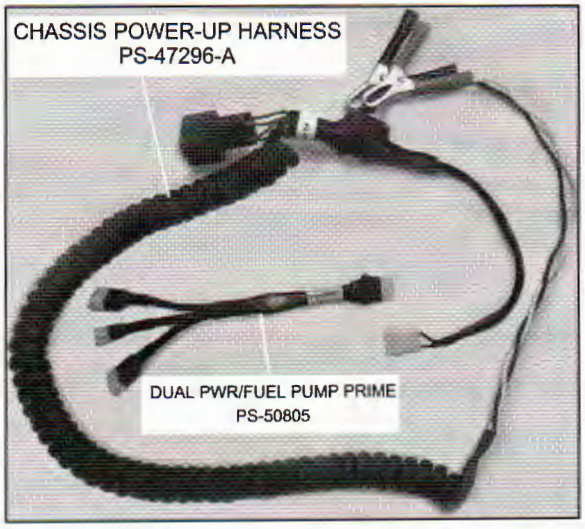
A set of power test and fuel pump prime plugs allows a technician to test several electrical circuits on the snowmobile.

The plugs can be accessed behind the left door panel.

NOTE: The AC power test plug is located on the handlebar wiring harness on 2011-later models.

Shown below is the Chassis Power-Up Harness, PS-47269-A, and Dual Power/Fuel Pump Prime Adapter, PS-50805.

When both tools are used together, the technician can supply power to the ECM PWR and DC PWR plugs. This is required for enabling the security function on 2012 models. Also, the Dual PWR/Fuel Pump Prime Adapter can connect to the fuel pump prime plug.



DC PWR Plug

Connect the Chassis Power-Up Harness to the DC PWR plug to supply battery power to the following components:

- Instrument cluster
- DC accessory power points
- LED tail lamp/brake lamp

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

ECM PWR Plug

Connect the Chassis Power-Up Harness to the ECM PWR plug to supply battery voltage to the following components:

- Digital Wrench® communication connector
- ECU
- Chassis relay driver coil
- VES solenoid
- DC Power capacitor
- Fuel pump power side

Fuel Pump Prime Plug

Use the Chassis Power-Up Harness and Dual PWR/Fuel Pump Prime Adapter to supply battery voltage to the fuel pump. This is useful for purging the fuel system of air or testing fuel pump pressure with the engine off.

⚠ CAUTION

Verify the fuel hoses are connected to the fuel pump and fuel rail before connecting the fuel pump prime plug to the engine harness.

AC PWR Plug

⚠ CAUTION

DO NOT CONNECT BATTERY VOLTAGE TO THE AC PWR TEST PLUG. SEVERE ELECTRICAL SYSTEM DAMAGE WILL OCCUR.

The AC circuits can be tested with a multimeter at the AC PWR plug. AC circuits include the head lights, hand warmers, and thumb warmer.

NOTE: The AC power test plug is located on the handlebar wiring harness on 2011-later models.

HAND / THUMB WARMERS

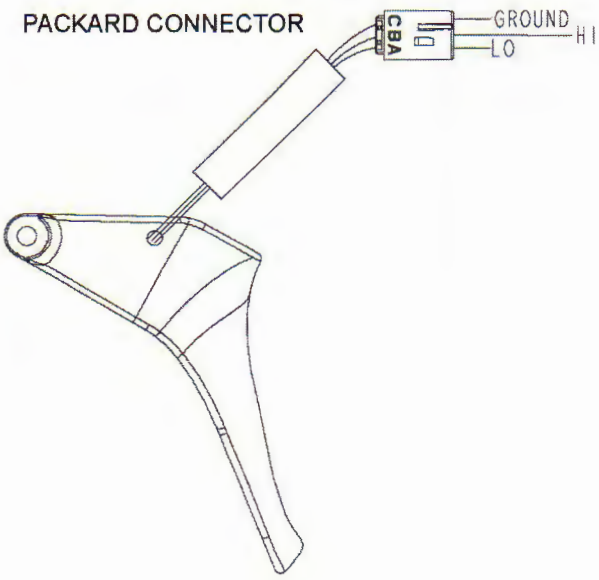
Thumb Warmer Diagnostics

The thumb warmer on all Polaris snowmobiles is a thermistor-type warming element pad. This means its resistance will change based on temperature.

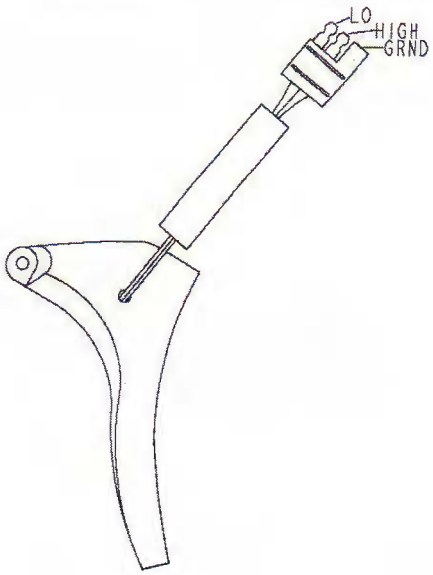
Thumb Warmer Resistance Checks

THUMB WARMER RESISTANCE CHECKS	
CIRCUIT (WIRE COLOR)	**RESISTANCE @ ROOM TEMP. (68 F / 20 C)**
LOW (ORANGE/GRAY) to GROUND (BROWN)	1 - 120
HIGH (WHITE/GRAY) to GROUND (BROWN)	1 - 120
LOW or HIGH to CHASSIS (SHORT)	O.L. (OPEN CIRCUIT)

PACKARD CONNECTOR



MOLEX CONNECTOR



Hand Warmer Diagnostics

There are two types of hand warmer element pads used on Polaris snowmobiles. One version is used on steel/ painted handlebars and touring model rear passenger grab bars, while the other is used on aluminum (Pro Taper) handlebars. The difference between the two hand warmer element pads is in the resistance values. A lower resistance element pad is used on aluminum bars because aluminum dissipates heat faster than steel.

A common misconception with Polaris hand warmer elements is the higher resistance circuit is the high temperature element. In reality, the hand warmer circuit with the least amount of resistance will flow more current, and thus create more heat. This is an important fact that must be taken into consideration when performing resistance checks on a set of hand warmers.

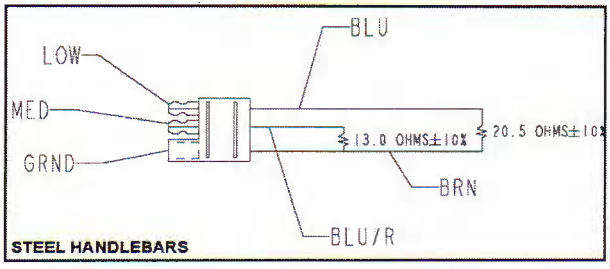
For example, if a customer has a concern that the left hand warmer appears to be cooler than the right, the technician should compare the resistance readings of each pad to the specifications, and then between the left and right pads. If the resistance of the left pad is significantly higher than that of the right, more current will flow to the right side. While more common reasons for this can be attributed to how the customer holds the bar in their hands (fingers on brake lever and not wrapped around grip, etc.), there may be instances where comparing the left and right hand warmer resistance values may resolve the customer's concern.

Another issue is when one or both of the element circuits shorts to the handlebar itself. This can occur either because the pad was improperly installed, solder breaks, or if the grip moves on the bar.

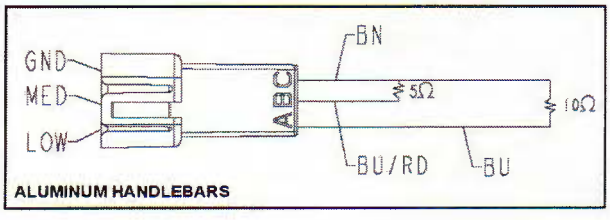
Hand Warmer Resistance Checks

NOTE: Hand warmer pads do not feature a high temperature circuit. On snowmobiles featuring a left-hand control, high temperature is achieved by supplying power to both the low and medium circuits. On snowmobiles featuring console-mount controls, the medium circuit is the high temperature circuit.

HAND WARMER RESISTANCE CHECKS	
CIRCUIT (WIRE COLOR)	**RESISTANCE @ ROOM TEMP. (68 F / 20 C)**
STEEL HANDLEBARS	
LOW (BLUE) to GROUND (BROWN)	20.5 +/-10%
MEDIUM (BLUE/RED) to GROUND (BROWN)	13 +/-10%
LOW or MEDIUM to CHASSIS (SHORT)	O.L. (OPEN CIRCUIT)
ALUMINUM HANDLEBARS	
LOW (BLUE) TO GROUND (BROWN)	10 +/-10%
MEDIUM (BLUE/RED) to GROUND (BROWN)	5 +/-10%
LOW or MEDIUM to CHASSIS (SHORT)	O.L. (OPEN CIRCUIT)



STEEL HANDLEBARS



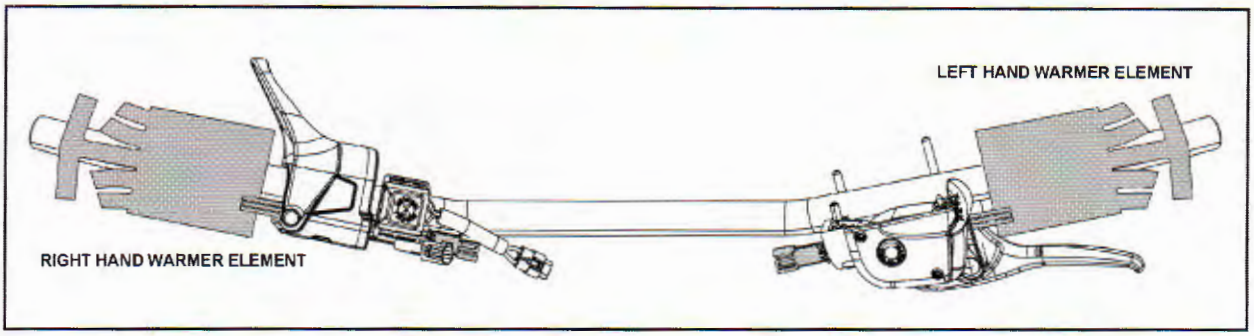
ALUMINUM HANDLEBARS

10

Full Length Hand Warmers

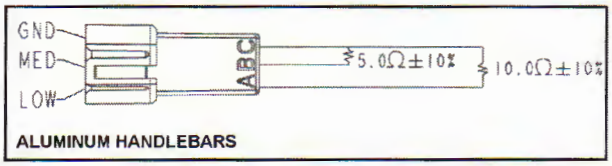
Some models feature integrated handlebar hooks with full length hand warmer elements. These hand warmers differ from standard length warmers in that they are cut to match the bend of the integrated handlebar hooks. Because of this, there are separate warming elements for the left and right side of the handlebar assembly.

To install, note the orientation of the hand warmer element before removal. Reference the illustration and notes below to properly install the element pads.



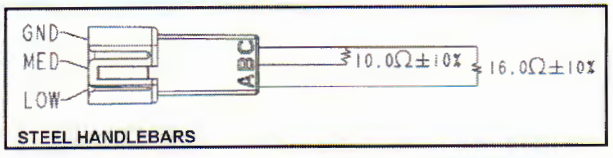
Assembly Notes:

- Install heater element pads .75 in. (19 mm) from end of handlebars.
- Orientate heater element pads 90° to hook bends.



Full Length Hand Warmer Resistance Checks

FULL LENGTH HAND WARMER RESISTANCE CHECKS	
CIRCUIT (WIRE COLOR)	**RESISTANCE @ ROOM TEMP. (68 F / 20 C)**
STEEL HANDLEBARS	
LOW (BLUE) to GROUND (BROWN)	16 +/-10%
MEDIUM (BLUE/RED) to GROUND (BROWN)	10 +/-10%
LOW or MEDIUM to CHASSIS (SHORT)	O.L. (OPEN CIRCUIT)
ALUMINUM HANDLEBARS	
LOW (BLUE) TO GROUND (BROWN)	10 +/-10%
MEDIUM (BLUE/RED) to GROUND (BROWN)	5 +/-10%
LOW or MEDIUM to CHASSIS (SHORT)	O.L. (OPEN CIRCUIT)



INTERACTIVE DIGITAL DISPLAY (IDD) ACCESSORY KIT

IDD Overview – PRO-RIDE Snowmobiles

The Polaris Interactive Digital Display (IDD) can be installed on a 600 / 800 PRO-RIDE snowmobile as an accessory using the following kits:

- Interactive Digital Display (IDD), part number 2880402
- PRO-RIDE IDD Hood Harness / Install Kit, part number 2880495
- PRO-RIDE Defrost Bag, part number 2879090 OR PRO-RIDE Low Pro Defrost Bag, part number 2879789

The IDD is supplied with the GPS receiver and USB flash memory stick harness.

The PRO-RIDE IDD hood harness / install kit is supplied with a new hood harness, optional battery power harness, and a 3 position ignition switch.

The PRO-RIDE IDD accessory kit does not require a battery to function. An optional battery power harness is included with the install kit so that if the snowmobile is equipped with electric start, the battery will provide power to the IDD when the 3 position key is in the ON position.

If a battery is not installed on the snowmobile, the operator will not be able to use the IDD without running the engine. The IDD and GPS receiver will also lose power and re-boot whenever the engine is turned off/on or when the PERC button is used.

NOTE: When shutting off the engine on an IDD-equipped PRO-RIDE snowmobile featuring a battery, always turn the ignition key to the OFF position to power-down the IDD.

PRO-RIDE IDD Initialization:

The IDD will not auto-initialize with the ECUs on 600 / 800 PRO-RIDE snowmobiles. Because of this, the user will have to follow the initialization procedure outlined in the IDD User's Guide / Owner's Manual when the IDD is first installed, or whenever new GPS maps / gauge software is installed onto the IDD.

If the user does not initialize the IDD for the vehicle, the gauge will display ORV icons.

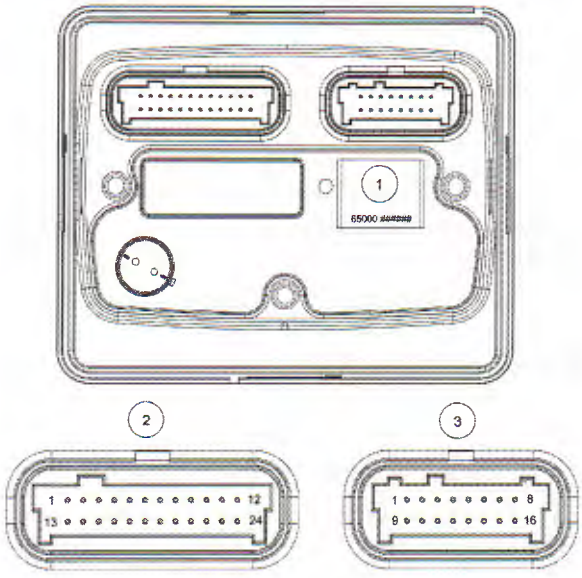
KEY On Power Note:

Key on power using the ignition switch will provide power to the IDD and GPS receiver, but not turn on the ECU. To utilize certain functions such as vehicle security and IDD initialization, the engine must be running OR 12V battery power connected to the ECM (EXTERNAL) PWR and DC PWR test connectors.

⚠ WARNING

Never run the engine in an enclosed space. Run engine in a well ventilated area.

Interactive Digital Display (IDD) – PRO-RIDE Connector Pinouts



The back of the IDD features a decal with the serial number ①, 24 pin connector ② and 16 pin connector ③.

② IDD 24 PIN CONNECTOR – PRO-RIDE (USB)		
PIN	**FUNCTION**	**WIRE COLOR**
6	USB Ground	BLK
7	USB Shield	GRAY
17	USB VBUS	RED
18	USB DATA –	WHT
19	USB DATA +	DK GRN

③ IDD 16 PIN CONNECTOR – PRO-RIDE (POWER / SIGNALS)		
PIN	**FUNCTION**	**WIRE COLOR**
1	CAN HIGH	YEL
2	CAN LOW	DK GRN
3	Power (+)	RED / YEL (From either key-switched or vehicle chassis power.)
4		
5	Chassis Ground	BN / WHT
8	High Beam	YEL / RED
11	Fuel Level	VT / WHT
12	Set Switch	WHT / BLK
13	Mode Switch	WHT / RED

IDD User's Guide / Owner's Manual

For information on how to use the IDD, troubleshoot potential issues and set the fuel type selection, and security functions, reference the IDD User's Guide and Owner's Manual, part number 9925416.

A printed copy of the manual was included with all snowmobiles equipped with the IDD. If the manual is lost, a new one can be obtained through normal parts ordering channels. The manual can also be viewed by accessing the Polaris Owner's Manual website.

DOWNLOAD POLARIS OWNER'S MANUALS WEBSITE:

http://www. polaris. com/en-us/company/owners-manual. com

When on the Owner's Manual website, select "Snowmobiles" from the Vehicle Type drop-down menu.

Select "Owners" from the Manual Type drop-down menu.

Select "2015" from the Model Year drop-down menu.

After making these selections, a full menu list of all available snowmobile owner's manuals will appear on the screen. From this selection, click on " Interactive Digital Display".

The manual can be viewed online, or downloaded and saved as a local copy on the electronic device.

IDD Initialization Procedure – PRO-RIDE

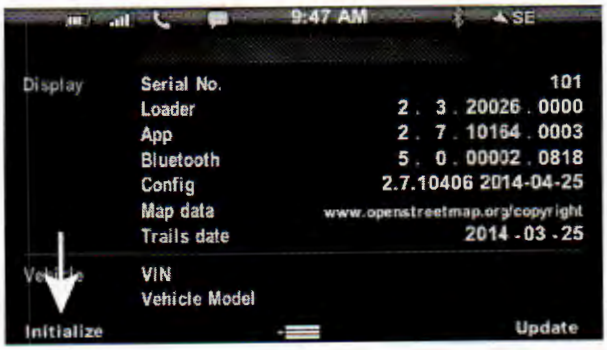
NOTE: This procedure only applies to 600 / 800 PRO-RIDE snowmobiles equipped with the IDD.

The initialization procedure must be performed after replacing the ECU, or after updating the RIDER X Maps-Trails or IDD software.

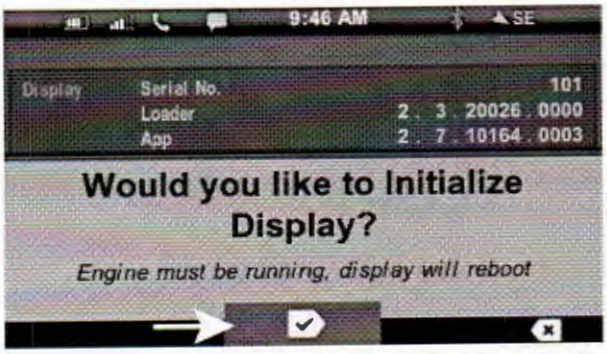
If the IDD is not initialized with the ECU, ORV icons will be displayed on the screen, and the fuel selector and security features will not display on the screen.

The engine must be running to perform this procedure OR 12V battery power connected to the ECM (EXTERNAL) PWR test and connector. Turning the key to the RUN position does not power-up the ECU. Always run the engine in a well ventilated area.

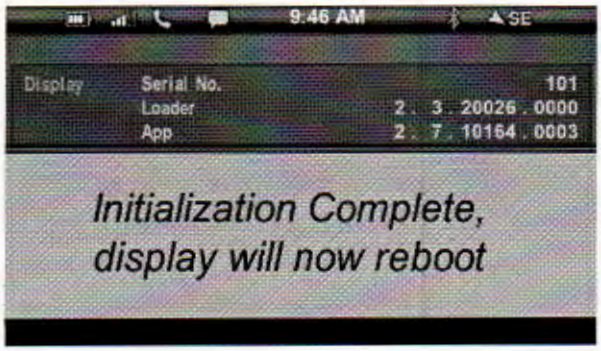
1. Start the engine and allow it to idle OR connect 12V battery power to the ECM (EXTERNAL) PWR and DC PWR test connectors. If the snowmobile is equipped with a battery, turn the KEY to the RUN position.
2. After the IDD boots, access the System Information page. Press and hold KEY 1 (key furthest to the left on the screen).



3. If done correctly, the following screen will appear.



4. Press and release KEY 3 to initialize the IDD with the ECU. The IDD will reboot once and then initiate the auto-configuration process. When completed, the following screen will appear.



5. When completed, turn off the engine and turn the key to the OFF position.

IDD – USB Flash Drive Recommendations

Polaris recommends using a Scandisk® or similar USB flash drive with a minimum of 4 GB available memory.

USB Flash Drive Notes / Troubleshooting

- The flash drive must be formatted as FAT 32. Use Quick Format on the PC to format the drive as FAT 32.

  IMPORTANT: Formatting the flash drive will erase all of its contents.

- Use a dedicated USB flash drive with only RIDER X Maps-Trails / IDD update files on the drive.
- Don't create file folders on the flash drive. Download the RIDER X Maps-Trails or IDD update files to the root level of the drive.
- When removing the flash drive from the PC or laptop, use the "Safely Remove Hardware and Eject Media" tool provided by the operating system.
- Updating the IDD does not require the engine to be running if the snowmobile is equipped with a battery. Verify the battery is fully-charged.
- If errors are encountered during the update process or the IDD does not recognize the USB flash drive, follow these steps:
  1. Re-format the drive as FAT 32.
  2. Download the update file again from RIDER X.
  3. Re-attempt to update the IDD.
  4. If the IDD does not recognize the USB flash drive, try the procedure with a different flash drive.

IDD User Notes / Troubleshooting

User Notes:

ORV Icons Displayed on Screen:

- IDD has not been initialized with the vehicle's ECU. On 800 AXYS snowmobiles, the IDD will auto-initialize after the engine is started and the IDD completes the booting process.
- On 600 AXYS and 600 / 800 PRO-RIDE snowmobiles, perform the initialization procedure.

Security Settings / Diagnostic Trouble Codes (DTCs) Not Shown:

- Security has not been enabled. Use Digital Wrench to enable security.
- ECU is not powered. Start engine or supply 12V battery power to the ECM PWR test connector to supply power to ECU.

  NOTE: Some DTCs will not set unless the engine is running.

IDD Update Process / Duration:

- The IDD update process can take upwards of 30 minutes to complete and is dependant on update file size.
- If the snowmobile is not equipped with a battery, the engine must be running to perform the IDD update procedure. Allow the engine idle to stabilize after start-up prior to starting the procedure. Never run the engine in an enclosed space. Run the engine is a well ventilated area.
- The update indicator bar shown on the screen will not always indicate an accurate time-to-complete file install status. Reference the rotating indicator in the upper left corner of the screen during the update. If the indicator is rotating, the IDD is updating. Do not turn the key to OFF or disconnect battery power during the update.

Troubleshooting:

Screen Locked "Frozen":

- Reset the IDD by pressing and holding KEY 5 for 20 seconds.

Screen Goes Black During Update:

- Typically caused by a failed update or corrupted file on USB flash memory drive.

1. Remove flash drive and re-format as FAT 32.

   IMPORTANT: Formatting the flash drive will erase all of its contents.

2. Re-download latest update files from RIDER X website.
3. Verify downloaded files are not in a folder on the flash drive and non-IDD files are cleared from drive.
4. Turn off IDD with key switch (disconnect battery power or turn off engine if applicable) and wait for at least 10 seconds.
5. Plug USB drive into USB port.
6. Press and hold any key on keypad and then turn on IDD.
7. Once "Booting" is no longer shown on the screen, release the key button.
8. The IDD will go into bootloader mode. Use the IDD key buttons to select the update file on the flash drive and install.

IDD – Using a Service Battery – PRO-RIDE

NOTE: Applies to all 600 / 800 PRO-RIDE snowmobiles equipped with an IDD as an accessory or if the rider removed the battery from the vehicle.

⚠ CAUTION

Using a stand-alone 12V service battery is to be used for updating the IDD only. Under no circumstances should a snowmobile be put into service with a loose battery placed in the engine compartment without the vehicle—specified battery bracket, heat shield hold-down strap and ground cable installed.

While a 12V battery is not required to use the IDD when the engine is running, it is required to power the IDD when the engine is off.

When the IDD is installed on a snowmobile as an accessory, a battery is not included with the installation

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

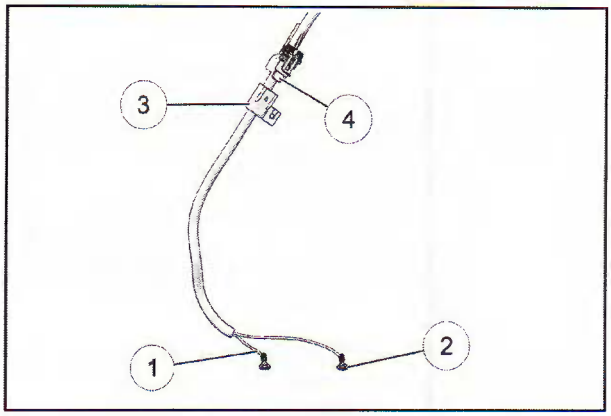
kit. Updating the IDD will require the user to either start the engine or connect a stand-alone 12V battery.

In addition, some riders may prefer to use a stand-alone 12V battery, rather than start the engine or have removed the battery from the vehicle if the snowmobile is not equipped with electric start.

600 / 800 PRO-RIDE

The PRO-RIDE IDD installation kit, part number 2880495, is supplied with a new hood harness, part number 2412976. This hood harness has the following items used for connecting a service battery:

- ① Positive (RED) Battery Terminal
- ② Negative (BLACK) Battery Terminal
- ③ Fuse Cover
- ④ 5A Mini Blade Fuse



When connecting a stand-alone 12V battery, verify the battery is fully-charged.

Connect the positive (RED) terminal first, and then the negative (BLACK) terminal last.

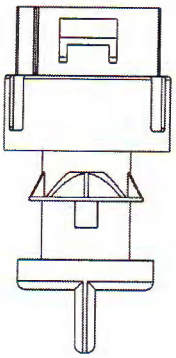
Place the battery inside the right fender next to the chaincase.

CAUTION
If the engine has been running, allow the exhaust system to completely cool before placing the battery in the engine compartment.

When finished, disconnect the negative (BLACK) terminal first, and then the positive (RED) terminal last.

Ignition Switch

Test the ignition switch using a digital multimeter. Reference the continuity table and test each circuit as the key is turned. Replace ignition switch if testing indicates an open connection.



	A	B	C	D	E	F
OFF					●	●
ON	●		●			●
START	●		●			

Key Blanks / Switch Replacement:

The keys used with the 3 position key switch can be duplicated only by obtaining a key blank and having it cut by mating it with an existing key.

If both of the original keys are lost, the ignition switch assembly must be replaced.

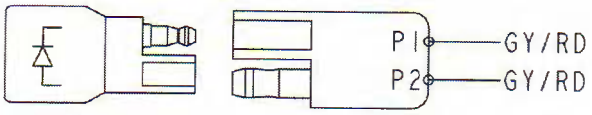
To identify which series the key is, take the first two digits on the original key and refer to the chart to the right for the proper part number.

SERIES #	PART NUMBER
20	4010278
21	4010278
22	4010321
23	4010321
27	4010321
28	4010321
31	4110141
32	4110148
67	4010278
68	4010278

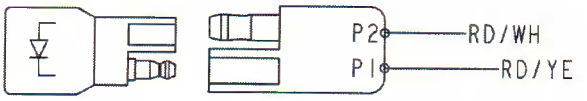
Key Cover
PN 5433534

Key On / Chassis Power Diodes

KEY ON POWER DIODE



CHASSIS POWER DIODE



These diodes work together to prevent voltage back-feeding on the RD/WH and battery power circuits. When the key is in the ON position, IDD power is supplied by the battery (if equipped). When the engine is started, IDD power is supplied by the RD/WH circuit.

Both diodes are taped to the IDD hood wire harness.

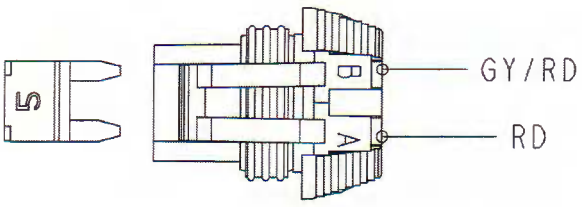
The key on power diode prevents voltage back-feeding from the chassis RD/WH circuit to the battery when the engine is running.

The chassis power diode prevents voltage back-feeding from the key on battery power circuit to the chassis RD/WH circuit when the key is in the ON position.

Test both diodes using the diode check function on a digital multimeter.

Key On Power Fuse

The IDD wire harness features a 5 amp key on power fuse. The fuse protects KEY ON power at the ignition switch. KEY ON power supplies battery voltage to the IDD and GPS puck when the ignition key is in the ON position.



A

B

C

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

D

E

9925071 R01 - 2010 - 2015 600 / 800 PRO-RIDE Snowmobile Service Manual

F

G

H

I

J

K

L

M

N

O

P

Q

R

S

T

U

V

W