# BREAK-IN PROCEDURES

## 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.**

Polaris recommends filling the oil tank and pre-mixing the first full tank of fuel with Premium 2-Cycle Semi-Synthetic Oil when the engine is either new or refurbished (new pistons, crankshaft, cylinder, etc.). Polaris semi-synthetic engine oil will seat the rings faster than when using Polaris VES Gold Plus oil.

After the break-in period use Polaris VES Gold Plus engine oil for normal operation.

## Fuel/Oil Premix Ratio

During the break-in period, premix the first tank a fuel (10 US gallons) using a 40:1 (fuel:oil) ratio.

Formula = 1 US Gallon = 128 oz. / 40 (Desired Ratio) = 3.2 oz. for every 1 US gallon of fuel.

10 US gallons of fuel require 32 oz. of oil to achieve a 40:1 premix ratio.

Always mix fuel and oil 5 gallons at a time. Never fill the tank with fuel and then add oil.

## 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.

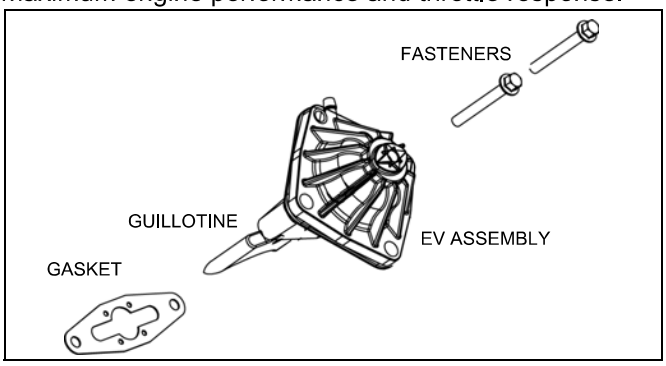
New drive belts that feature a sanded finish should be first washed with warm, soapy water and allowed to air dry prior to use.

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

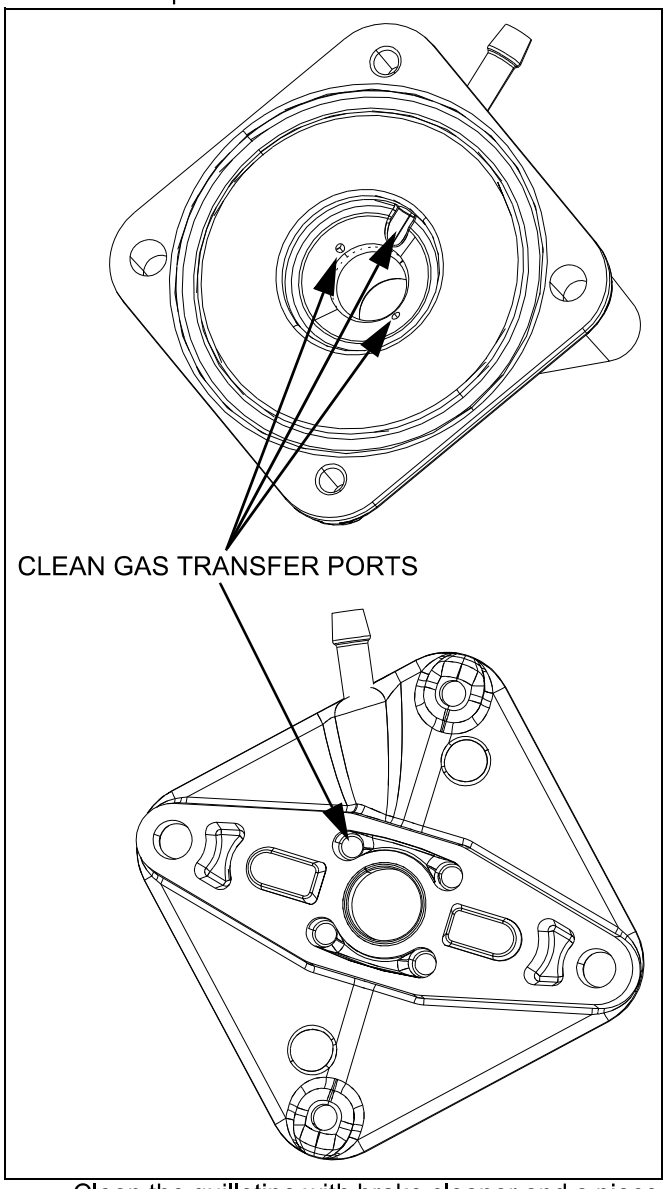
The exhaust valve guillotines must be cleaned to ensure maximum engine performance and throttle response.




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.

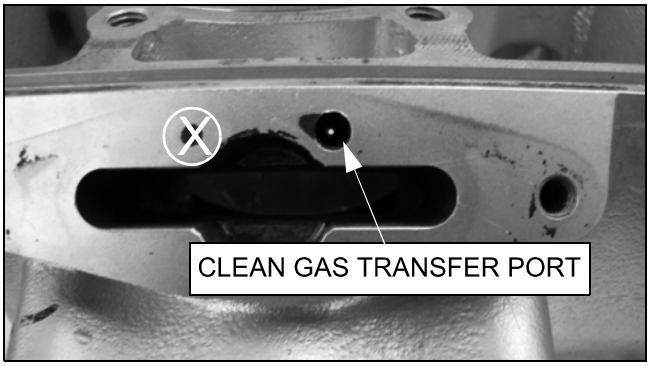
7. Inspection:
   - Inspect the guillotine for signs of damage. Replace guillotine if damage is found. Inspect the cylinder and piston for damage if guillotine is damaged.
   - Inspect the spring. Replace if rusted, damaged, or bent.
   - Inspect bellows. Replace if damaged or excessively worn.
   - 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).

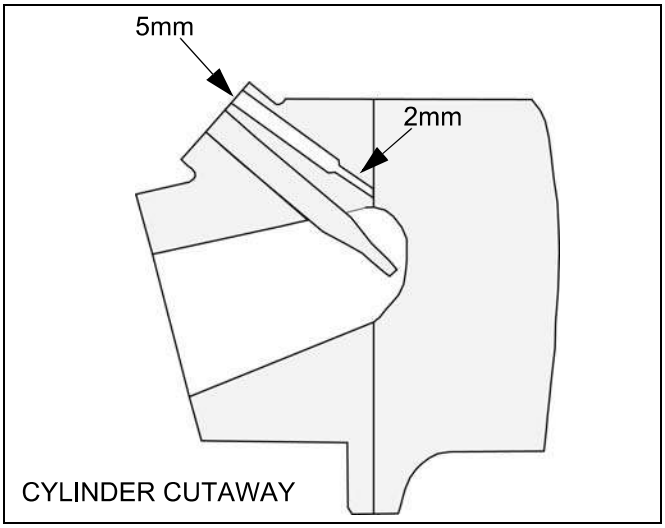



10. Light must be seen through the VES gas port(s). If a port appears to be blocked, use compressed air or a long .075" drill bit to clean the port.

**NOTE: Do not drill hole marked: “X”.**

**⚠ CAUTION**

Rotate the crankshaft to move piston(s) to BDC-below VES gas ports. Do not damage pistons when using drill bit to clean ports.




**NOTE: The transfer port diameter starts at 5mm and then tapers to 2mm as it approaches the cylinder wall. Do not damage taper and/or 2mm 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.