

# S.P.I. PISTON & RING INSTALLATION GUIDE FOR SNOWMOBILE APPLICATIONS

The following guide is a reference only, some models may vary (refer to the Manufactures Specifications)

## Preparation

If the old piston has failed, determine the cause and remedy the problem before replacing. Seizing on the exhaust side is caused from a lean mixture or air leak. A "four corner" style seizure is caused from insufficient warm up or clearance. A hole in the piston is caused from detonation, a result of advanced timing or poor fuel quality. A broken piston skirt is caused from excess piston to cylinder clearance.

- To remove a piston, use a piston pin puller and heat piston if necessary, (do not hit pin with a hammer)
- Measure the cylinder for clearances and out of roundness, service limit is .0035" out of round up to 65mm / .0045" out of round over 66mm larger size.
- Cast iron cylinders- finish cylinders with a 220 or 300 grit stone
- nikasil or electrofusion cylinders - if necessary can use a 500 grit hone to clean cylinder.
- To prevent ring breakage, make sure all port edges are chamfered@ 30 deg angles with a radius of .9 to 1.4mm

## TIPS

- If the cylinder is in good condition but has aluminum build up from a seizure, muriatic acid can be used to soften and clean off aluminum during cylinder preparation.
- Chrome plated rings can be used in cast or nikasil or electrofusion bore but cannot be used in chrome bore. (note: Chrome was used in pre early 80's production but seldom after that.)
- Always check that the ring end gap will not be in align with a port. By putting a mark on the top of the piston were the ring locating pins(s) are is a quick and easy way to check.

## Installation

Check piston to cylinder clearance before assembly. Typical clearance range for snowmobiles as follows (Always refer to manufactures specifications)

bore size	Air cooled	Liquid Cooled
50-65mm	.003"-.004"	.004"-.005"
66 + up	.0035"-.0045"	.005"-.006"

- Check ring end gap; single ring piston's range from .010" to .025"  
two ring piston's range from .010" to .035"
- Install pistons with arrow facing exhaust or on some Polaris's the arrow will face the magneto side of engine.
- If wrist pin has a tight interference - heat the piston + oil the pin for ease of assembly.
- Put a rag under piston and carefully install circlips without bending or distorting them. Be careful they are tight in the circlip groove. It is recommended to install the circlips with the opening at "6 o'clock" or "12 o'clock".
- Remove rag and make sure gasket surface's are clean, oil cylinder and install.

## Break-in procedure

- For the first tank of fuel on oil injected machines, use 50: 1 fuel / 2- stroke oil mixture
- On Pre-mix applications use 20: 1 fuel / 2 stroke oil mixture for first tank.
- Avoid prolonged high RPM operations for the first 5 hours of use

## Piston oversize cross-reference

	<u>Inches</u>	<u>mm</u>
	.010"	.25mm
	.020"	.50mm
	.030"	.75mm
	.040"	1.00mm
	.060"	1.50mm
	.080"	2.00mm