INSTALLATION INSTRUCTIONS

➢ PISTON INSTALLATION

VERTEX PISTONS are designed to run at a specific piston to cylinder clearance, and are manufactured under controlled conditions for a specific bore size. Finish hone the cylinder to achieve the recommended piston to cylinder clearance, which can be found on the below spreadsheet:

- **2 STROKE ENGINES Dirt / ATV / Snow / PWC / Road**

FEATURES		50/124cc		125/249cc		250cc & over	
		inches	mm	inches	mm	inches	mm
Piston/Cylinder clearance	**from**	0.0019	0.05	0.0019	0.05	0,0019	0.05
	to	0.0023	0.06	0.0023	0.06	0.0031	0.08
Piston's usage for		20 hours max		20 hours max		15 hours max	

- **2 STROKE ENGINES Go Kart**

FEATURES		50/124cc		125/249cc	
		inches	mm	inches	mm
Piston/Cylinder clearance	**from**	0.0031	0.08	0,0023	0.06
	to	0.0039	0.10	0.0031	0.08
Piston's usage for		2 hours max		4 hours max	

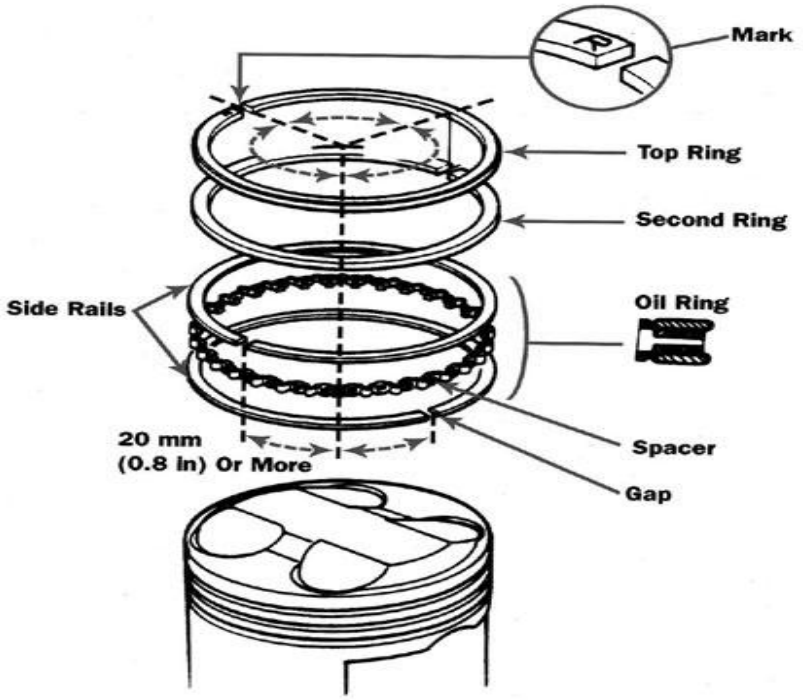
- **4 STROKE ENGINES Dirt / ATV / Snow / PWC / Road / Go Kart**

FEATURES		50/124cc		125/249cc		250cc & over	
		inches	mm	inches	mm	inches	mm
Piston/Cylinder clearance	**from**	0.0015	0.04	0.0015	0.04	0.0019	0.05
	to	0.0023	0.06	0.0023	0.06	0.0027	0.07
Piston's usage for		25 hours max		20 hours max		20 hours max	

NOTE: Additional bore clearance may be necessary for modified engines. (May include head or cylinder work, aftermarket pipe, or ignition modifications). **Additional bore clearance may also be necessary for cylinders utilizing a cast iron sleeve.** Always use new gaskets for assembly. No head gasket material should extend into the cylinder bore. When installing a piston that exceeds the OEM overbore sizes, it is recommended that you use an over bore gasket kit. (Most models available from VERTEX, check our catalogue)

➢ RINGS INSTALLATION

Install the piston rings as per following:



Pay strong attention to:

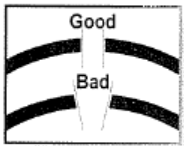
- **Install piston rings with the 'letter' facing UP**
- **Rotate the ring end gaps on four stroke pistons with at least 20mm of separation**
- **AVOID OVELAPPING THE ENDS OF THE OIL EXPANDER/SPACER RING**

Ring Gap Table Instructions

Application	Top Ring Gap	
	inches	mm
Dirt / ATV / Snow / PWC	.019"	0,48
High-Performance Street Engines	.020"	0,50
Late Model Stock	.021"	0,53

Additional bore clearance may also be necessary for cylinders utilizing a cast iron sleeve

Notes:
The chart above is a general guideline. Each ring should be fitted to the particular cylinder in which they are to be installed. The gap on the second ring should always be larger than the top ring end gap, this will help to reduce top ring flutter or lifting.



ADVICE - Place a shop towel over the engine case opening to avoid dropping any components into the engine. Install the piston with rings onto the connecting rod**.** The arrow on the dome MUST point toward the exhaust side of the cylinder. Install the cylinder as outlined in the service manual, using proper assembly methods and torque specifications. A break in procedure is necessary for proper ring seal. Refer to the service manual for proper break in procedures, air filter service, and oil premix ratios.

IMPORTANT – Piston pin retainers must be installed with care. Wire type retainers and snap-ring type retainers must not be collapsed smaller than the piston pin-hole diameter when being installed into the piston.

CAUTION - If the piston pin retainers are damaged, crimped, bent, or over-collapsed upon installation, the piston pin retainers may fail as the result of this damage. If piston pin retainers become damaged upon installation, ask VERTEX for new retainers.

➢ CYLINDER PREPARATION

Cast Iron Sleeved Cylinders
To ensure proper ring seal, it is necessary to hone the cylinder with a rigid or brush hone. DO NOT install a new piston without honing the cylinder to break the glaze. Finish hone with a 280 grit. Crosshatch is necessary to ensure proper ring seal and adequate lubrication. If the cylinder is in good condition, simply honing the cylinder may be enough to restore the bore to an acceptable condition. However in some cases, boring may be necessary to insure the cylinder bore is within the tolerances outlined in the service manual.
Plated Cylinders
Includes nickel ceramic coatings (Nikasil), chrome, Electrofusion, and boron composite. If the plated cylinder is in good condition, honing may not be necessary. If deglazing is necessary, DO NOT use a ball hone. Use a rigid or brush type diamond hone. Plated cylinders cannot be bored oversize without re-plating or re-sleeving. Any time a cylinder is bored or honed, all ports must be chamfered. The top of the cylinder should be deburred, and the bottom should be generously chamfered for ease of piston and ring installation. When boring a cylinder with an exhaust bridge, the face of the bridge must be relieved .002”-.004” to allow for bridge expansion. Without proper bridge clearance, engine damage could occur.

IMPORTANT: After honing, the cylinder must be washed with warm soapy water to remove all honing grit. Be sure to wash away any grit that may have traveled into the transfer and exhaust ports during honing. The cylinder is NOT clean until you can wipe the cylinder wall with a clean, oil dampened cloth, and it does not pick up any honing grit. Lightly oil the cylinder bore to prevent oxidation and assist with piston installation.

VERTEX PISTONS, LIMITED WARRANTY

VERTEX warrants his products free from defects in material and workmanship for thirty (30) days following date of original purchase. If the product is found by VERTEX to be defective, such products will, at VERTEX's option, be replaced or repaired at its own cost. All products alleged by Purchaser to be defective must be returned to VERTEX, postage prepaid, within thirty (30) days warranty period. This limited warranty does not cover labor or other costs or expenses incidental to the repair and/or replacement of products or parts. This limited warranty does not apply to any product which has been used in a hi-performance application, or racing or is subject to misuse, mishandling, misapplication, neglect (including but not limited to improper maintenance), accident, improper installation, modification (including but not limited to use of unauthorized parts or attachments), or adjustment or repair performed by anyone other than VERTEX. The parties hereto expressly agree that the purchaser's sole and exclusive remedy against VERTEX shall
be for the repair or replacement of the defective product as provided in this limited warranty. This exclusive remedy shall not be deemed to have failed of its essential purpose so long as VERTEX is willing and able to repair or replace defective goods.
THIS LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THOSE OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE NOT EXPRESSLY SET FORTH HEREIN. ANY PRODUCT WHICH MAY BE SOLD BY VERTEX BUT WHICH IS NOT MANUFACTURED BY VERTEX IS NOT WARRANTED BY VERTEX, BUT IS SOLD ONLY WITH THE WARRANTIES, IF ANY, OF THE MANUFACTURERS THEREOF.
VERTEX's liability (whether under the theories of breach of contract or warranty, negligence or strict liability) for its products shall be limited to repairing or replacing parts found by VERTEX to be defective, or at VERTEX'S option, to refund the purchase price of such product. In no event shall VERTEX be liable for incidental or consequential damages arising out of or in connection with the product. Consequential damages shall include, without limitation, loss of use, income or profit, or losses sustained as the result of injury (including death) to any person, or loss of or damage to property. Any claim by purchaser regarding this product shall be deemed waived by the purchaser unless submitted in writing to VERTEX within the earlier of (i) fifteen (15) days following the date Purchaser discovered, or by reasonable inspection should have discovered, any claimed breach of this limited warranty, or (ii) thirty (30) days following the date of original purchase. Any cause of action for breach of this limited warranty shall be brought within six months from the date the alleged breach was discovered or should have been discovered, whichever occurs first. This limited warranty gives you specific legal rights, and you may also have other rights which vary from country to country.

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