

MARK-3[®]

SERIES

185cc Cylinder & Piston Matching

Overview:

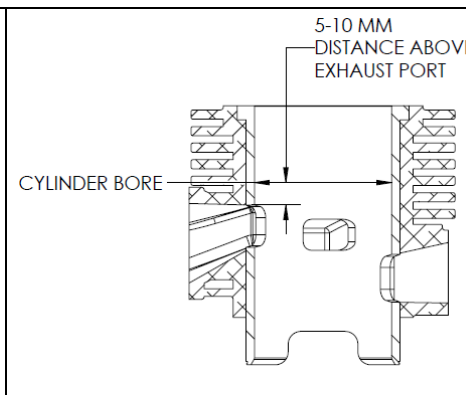
During engine top end repair, it is highly recommended to match the piston with the cylinder in order to obtain the optimal piston/cylinder clearance. To facilitate the matching process, *WATERAX* has created new item numbers to distinguish the different cylinder and piston grades. We have also introduced a factory matched Nikasil[®] cylinder & piston kit.



Piston/Cylinder Clearance:

For optimal engine performance, reliability and durability, it is very important to have the correct piston/cylinder clearance. A clearance that is too tight can cause the piston to seize. An engine with a clearance that is too loose will generate less power, more noise and may accelerate engine wear.

The piston/cylinder clearance is defined as the difference between the cylinder bore and the piston diameter. See the table below for instructions on how to measure the cylinder bore and piston diameter:

<p>To determine the cylinder bore, use a calibrated dial bore gauge and measure the cylinder bore at a distance of 5 to 10 mm above the exhaust port.</p> <p>See image.</p>	 <p>5-10 MM DISTANCE ABOVE EXHAUST PORT</p> <p>CYLINDER BORE</p> A technical cross-section diagram of a cylinder head. It shows the internal structure, including the combustion chamber and exhaust port. A horizontal line with arrows at both ends indicates the 'CYLINDER BORE' measurement. A vertical line with arrows at both ends indicates the '5-10 MM DISTANCE ABOVE EXHAUST PORT' measurement.
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TECH-NOTE

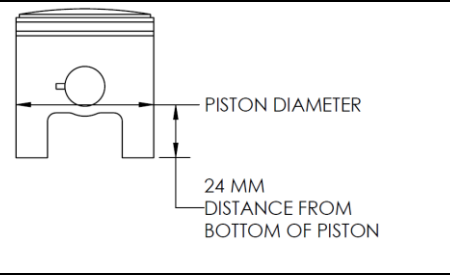
<p>To determine the piston diameter, use a calibrated micrometer and measure the piston diameter at a distance of 24 mm from the bottom of the piston. The measurement should be taken perpendicular to the piston pin axis (piston is oval).</p> <p>See image.</p>	
<p>Notes:</p> <ul style="list-style-type: none"> Measurements should be taken in a temperature controlled room adjusted at 20 °C (68 °F). Measuring instruments must be calibrated. 	

Fig. 1: Cylinder and piston measurement

Depending on the type of cylinder (Nikasil coated or cast iron sleeve), the required clearance will vary:

	Piston/cylinder clearance
Cast iron sleeve cylinder	0.06 - 0.08 mm .0024 - .0031 in
Nikasil coated cylinder	0.04 - 0.06 mm .0016 - .0024 in

Fig. 2: Piston/cylinder clearance

Piston/Cylinder Grades and Factory Matched Nikasil Cylinder & Piston Kit:

To facilitate the matching of new pistons and cylinders, a color scheme is used: red piston matches with red cylinder; green piston matches with green cylinder.

Below is a table outlining the different pistons, cylinders and factory matched Nikasil cylinder & piston kit:

		Red Grade		Green Grade	
		Item No.	Dimensions	Item No.	Dimensions
Pistons (with rings)	<i>Standard size</i>	801270	61.94 mm 2.4386 in	801269	61.95 mm 2.4390 in
	<i>Oversize</i>	801272	62.44 mm 2.4583 in	801271	62.45 mm 2.4587 in
Cylinders	<i>Cast iron sleeve Standard size</i>	N/A	62.00 mm 2.4409 in	N/A	62.01 mm 2.4413 in
	<i>Cast iron sleeve Oversize</i>	N/A	62.50 mm 2.4606 in	N/A	62.51 mm 2.4610 in
	<i>Nikasil coated Standard size only</i>	701233	61.99 mm 2.4406 in	701232	62.00 mm 2.4409 in
Cylinder & Piston Kit Nikasil	<i>Factory matched Standard size only</i>	801273	N/A	N/A	N/A

Fig. 3: 185CC pistons and cylinders

TECH-NOTE

Cylinder & Piston Kit Nikasil:

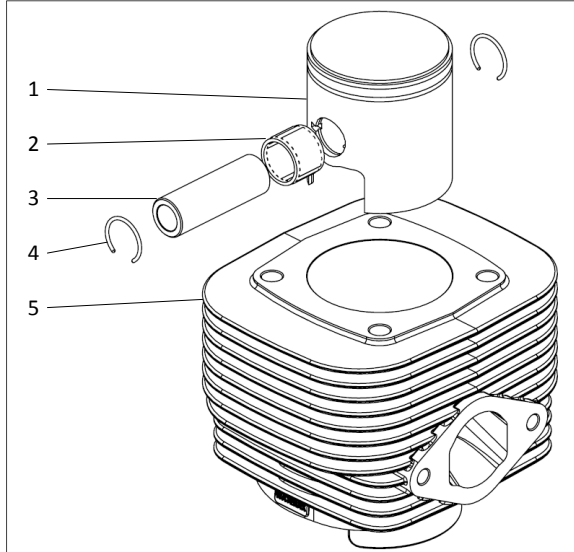


Fig. 4: 185cc Cylinder & Piston Kit Nikasil 801273

ID	ITEM NO	DESCRIPTION	QTY
1	801270	R-332R 185CC PISTON W/RINGS STD SIZE RED GRADE	1
2	800009	R-324 185CC NEEDLE BEARING	1
3	800030	R-328 185CC GUDGEON PIN	1
4	800028	R-329 185CC CIRCLIP	2
5	701233	R-257NR 185CC CYLINDER NIKASIL RED GRADE	1

Note: Kit may also come in green grade.

Gasket Kit Top End:

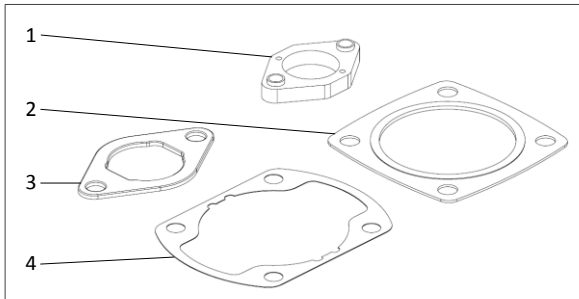


Fig. 5: 185cc Gasket Kit Top End 600590

ID	ITEM NO	DESCRIPTION	QTY
1	600540	R-1113N 185CC GASKET CARBURETOR	1
2	800066	R-238 185CC GASKET CYLINDER HEAD	1
3	800067	R-237 185CC GASKET MUFFLER	1
4	800046	R-235 185CC GASKET CYLINDER FLANGE	1