

Re-boring recommendations when fitting RRSL supplied replacement pistons

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To ensure best performance and durability when fitting RRSL supplied replacement pistons it is advised that these guidelines be supplied to your chosen repair shop.

- Before instructing the machine shop to undertake a re-bore, please consult with the RRSL stores to confirm we have in stock the expected size and type of pistons you require.
- If the block and/or head have been skimmed, it is prudent to do a trial assembly to ensure there is no clashing condition between the piston crown and the head hemisphere or valves on opening, when modified camshafts are fitted.
- On the 9hp engine, variations on original blocks have on occasions resulted in porosity issues at the +0.060" overbore, on other 9hp blocks even greater oversize have been ok.
- The expectation is that the recommended bore size is within the tolerance documented after completion of the honing that completes the re-bore.
- It is recommended that the top of each cylinder bore is given a chamfer of 0.025" x 45° to assist the fitting of the pistons.
- Improved oil control and wear reduction is best achieved by plateau honing, this uses two different stones for the honing. Using the 69.00mm bore 12/4 as an example: - Bore to 68.92mm / 68.93mm then hone to 68.98mm with 200 grit stones with a 120° cross hatch angle then finish with 600 grit to 69.0mm. The cross-hatch pattern should last for at least 10,000 miles.
- Before assembly, gap the piston rings, the recommended gaps are provided in the following.
- Ensure the circlips are properly seated in their grooves as you assemble the pistons.
- The gudgeon pins should just require finger pressure to insert into the piston at 20 degrees C. In addition, check the gudgeon pin to little end eye fit, the required clearance is 0.00065" to 0.00075". Clearances tighter than recommended will most likely result in problems.
- It is recommended that new big end bolts, nuts and split pins be used on re-assembly.
- The crank and main & big end bearing condition will have been assessed during the rebuild process, you may choose to have the connecting rods crack detected before reassembly.

Engine	Nominal Bore	Actual bore size to suit Omega pistons: Std. to + .060"									
		Std		+ 0.020		+ 0.040		+ 0.060		Skirt Clearance	
		mm	in	mm	in	mm	in	mm	in	µm	in
9HP	60.3	60.325	2.3750	60.833	2.3950	61.341	2.4150	61.849	2.4350	51	0.0020
Merlin 9	60.3	60.325	2.3750	60.833	2.3950	61.341	2.4150	61.849	2.4350	63	0.0025
14/6	60.3	60.325	2.3750	60.833	2.3950	61.341	2.4150	61.849	2.4350	51	0.0020
15/6	62	62.000	2.4409	62.508	2.4609	63.016	2.4809	63.524	2.5009	51	0.0020
12/4	69	69.000	2.7165	69.508	2.7365	70.016	2.7565	70.524	2.7765	57	0.0022
Big 4	80.5	80.506	3.1695	81.014	3.1895	81.522	3.2095	NA	NA	70	0.0028

1. Piston clearance is measured on the piston skirt at a point below the gudgeon pin on the thrust axis of the piston (i.e. at 90 degrees to the pin axis)
This point is 12mm below the pin centre for the 12/4 and 15mm below the pin centre for all other pistons
2. For hard use or competition use, it is acceptable to increase the bore diameter by a further 0.0016" to 0.002" over the dimensions given in the above table, the final dimension used to be the members choice.

3. The tolerance on piston diameters is ± 5 micro m.(0.0002in), The cylinders should be bored to a tolerance of ± 5 micro m. (0.0002in)
4. The recommended ring gap is .008in - .010in for the compression rings & .006in - .008in for the oil control ring.

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