

In depth Engine – RT Piston grading

This article is aimed at RT kits. But is totally relevant to other alloy plated cylinders, the rules are basically the same – TS1, RB, Imola, Monza, Super Monza, Casa kits, Quadrini and other alloy plated cylinders.....

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RT 195/200 – 225/230 kits come with a plated cylinder bore, these bores are not reboreable! (you can deplate, bore out to larger pistons and replate if you want to)

Each cylinder from new is measured to a size and marked on the cylinder and should have a matched piston size grade.

There are 4 grades of cylinders and piston A, B, C and D

'A' been the smallest, 'D' been the largest.

A new 'A' cylinder should have a 'A' piston.

The size difference between an A and D is only around 0.002" or (0.05mm) so roughly 0.0005" difference in each size.

You can run larger grades in a smaller cylinder and you can run smaller grades in a larger bore but you have to be careful.

On average a new cylinder kit should have a piston to bore clearance of 0.0015" to 0.002"

You can use an A cylinder with an A or B piston.

You can use a D cylinder with a 'D' or 'C' piston.

Another reason to grade a piston is – you can fit a larger piston in a worn bore to get the clearances better.

Black coated pistons will loose the coating in a very short time, it is designed to reduce the running in time. But once the Black coating has gone, the piston to bore clearance becomes around 0.001 – 0.002" larger so a new cylinder and piston after a few hundred miles will have a piston to bore clearance of around 0.003" – 0.004".

Over worn cylinders will give a piston slap noise, which is a rattle at tick over.

In reality many customers have been using a worn piston and cylinder and we've seen 0.012 – 0.014" clearances and the customer hasn't noticed a difference in power or noise. Pistons do wear a lot whereas the cylinders don't wear very much. So a new piston can get a cylinder back to size to improve performance.

As long as ring gaps are correct, worn pistons work fine. Ring gaps new should be around 0.0012'' – 0.015'' and changed at say 0.025 – 0.035'' gaps. Any gap going over 0.050''+ could be prone for rings moving over the peg and knocking the peg into the piston – allowing the rings to spin into the exhaust port causing what is called a 'ring dropper'.

This term is not strictly true. There are two different things going off!

1) A ring dropper is when a faulty fitted ring peg comes out, letting the rings spin into the exhaust port with disastrous consequences!

2) Rings that wear create an over sized ring gap! For this to happen the hardened out side of the ring wears, which reduces the width thickness, when this happen the rings goes over a peg knocking it into the piston and the ring moves into the exhaust port again with disastrous consequences – which is usually deplating, welding up the damage, boring out the weld and then a replating to a new piston. Not cheap! But if done the MB-S way we would only Ceramic plate cylinders in the UK – any other replating service is inferior in the UK!

Measuring cylinders....

You measure a cylinder bore with a micrometer/bore gauge at around 10 – 20mm below the top of the cylinder from the exhaust to inlet side.

You measure a piston around 10 – 15mm from the bottom of the piston from the exhaust and inet side with a micrometer/bore gauge.

Measuring piston to bore clearances with a feeler gauge is not very accurate it will only be a guide. If your try this the important place is to measure between the lower edge of the piston to the bore with the piston fitted correctly at top dead center – it's only a guide!

Measuring piston to bore clearances is a professional job – not every Scooter shop is trained in this process! Here at MB-S we have all the equipment to measure bores and pistons and can evaluate condition of cylinder bore and we also stock all grades of pistons and can also modify pistons for reed valves.

If you are interested email mark@mbscooters.co.uk