

Piston Skirt Clearance

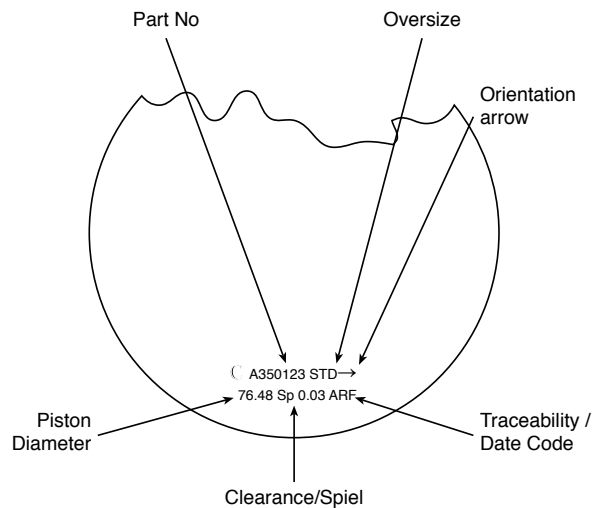
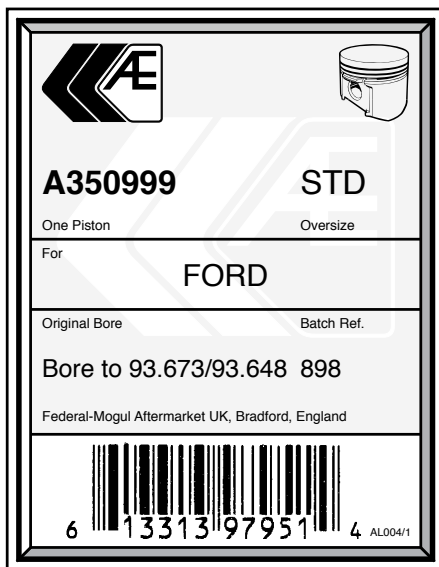
Introduction

All AE pistons should be fitted into cylinder bores finished to the bore size specified on the box label (see Fig. 1).

This is the **minimum** permissible diameter to be used in conjunction with the piston provided.

Because all of the AE pistons are designed to operate in the specified bore diameter, it is not necessary to measure the piston diameter or the piston to bore clearance.

In line with convention, all AE pistons for European applications specify the piston diameter and clearance on the piston crown - the sum of these two values equates to the **minimum** bore diameter (see Fig. 2).



If you should find it necessary to measure the piston diameter or to check the clearance, then it should be noted that the position on the piston skirt at which the measurement is taken is very important.

In order to understand the importance of the measuring position, it is necessary to explain basic piston geometry.

Piston Skirt Clearance

Firstly, a piston is not round but oval. This ovality is necessary to accommodate thermal expansion of the piston and deflection of the piston skirt caused by side loads.

Secondly, the piston is not parallel sided but tapered, usually with a barrel form. The piston has a larger diameter towards the bottom, usually between the base of the piston and the gudgeon pin hole, and becomes progressively smaller towards the top of the piston. This is because the piston expands more at the crown, due to this being the point closest to the heat source.

The correct position for piston skirt diameter measurement (point x) should be verified with the product supplier, as the exact point will vary by application. For specific clearance data telephone our Technical Services department on 01274 848283.

Note: When measuring a piston it should be noted that most pistons have a skirt diameter tolerance of less than twenty microns, (0.020mm), which is checked in a temperature controlled environment. If micrometers are to be used, their accuracy is 0.01 mm, which is greater than half the piston's diameter tolerance.

