

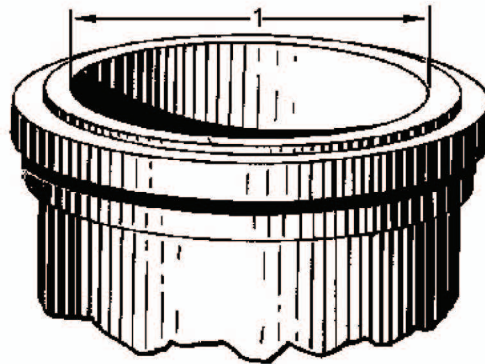


## Measuring Ring End Gaps

Service Manuals can occasionally be somewhat confusing when multiple specifications are involved and that can be the case when measuring ring end gaps.

Usually when looking for ring spec's, the manuals explain which direction to install the rings first and then somewhere towards the bottom of the page reference a bore (gauge) size for the liner. While the manuals may change in their wording the method to measure the end gap does not.

Using a common 5.40" bore as an example, a service manual may call for the intermediate piston ring being installed in a cylinder liner that has a bore size of 137.16 mm (5.400 inch), the clearance between the ends of the piston ring to be  $0.83 \pm 0.15$  mm ( $0.033 \pm 0.006$  inch). You must first know the actual bore size on the liner (as indicated by dimension 1 in the graphic below) to determine if the ring is within specifications. Make sure the ring is installed straight in the liner bore or you will get a false reading.



The end gaps expand depending on the liner bore and for each 0.03 mm (0.001 inch) increase in the cylinder liner bore size, the clearance between the ends of the piston ring increases by 0.08 mm (0.003 inch).

Now taking into consideration the specifications for a new liner in this example is  $137.19 \pm 0.03$  mm ( $5.401 \pm 0.001$  inch) the rings end gap could increase to as much as .045" and still be within specifications, if both the liner and ring are at the high side of their individual specifications. Worn or Reusable specifications would be even larger.

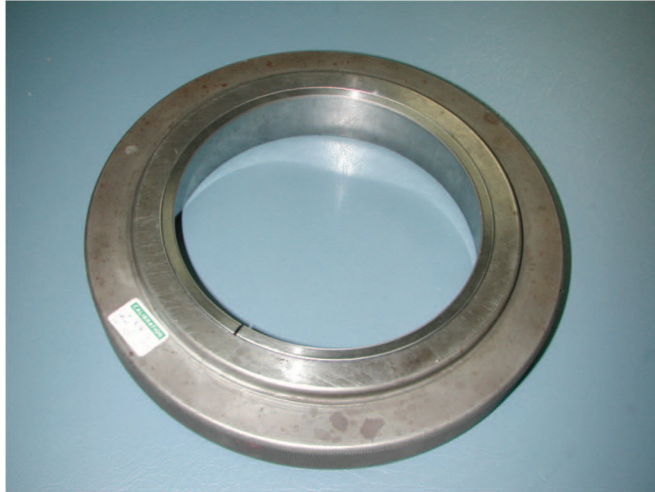
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Use of a certified “standard” , like the one used by IPD shown below helps simplify the ring end gap measuring process since it provides a consistent bore “gauge” diameter and allows the ring to lay flat on the surface.



The dimensions above were used as examples only. Ring end gap specifications vary by part number and application. They may have also changed over the years due to materials and updates so make sure the service manual you use is current and applies to the engine you are working on.

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