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Many time customers are alarmed when we supply rings that have greater gaps than specified by the engine or piston makers. In our experience, with conventional type rings, if supplied correctly for the bore size, ring gap is only an issue when there is none, as rings will crack if fitted with insufficient clearance but extra clearance on new rings creates no issues. Always fit new rings, and use the maker's gap specs as a minimum, not a maximum. Please do not return rings to us that have a gap in excess of specs unless incorrectly supplied, which is extremely rare.

Below is one maker's opinion on this issue:

We get a lot of questions concerning ring end gap. This article will help put in perspective what ring end gap really means to an engine's performance.

First, what is ring end gap? It is the distance between the ends of a piston ring when it is compressed to cylinder size as in Fig. 1. The gap permits installation and allows for expansion and contracting with changes in temperature and cylinder diameter.

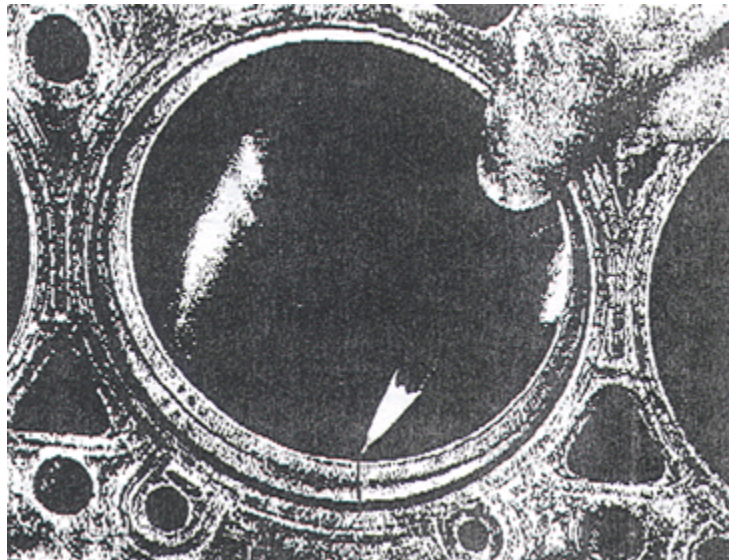


Fig. 1

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### Effect of Increased End Clearance on Oil Control

Maximum end clearance can be several times the recommended minimum with no measurable difference in oil control or ring life. The results shown in Fig. 2 are typical of the numerous fleet laboratory tests conducted to determine the effect of increased gap on engine performance. The rings used during the first test in the engine had .015" gap. Then the ends of identical rings were filed until the gaps were .085" and these rings were installed in the engine. As you can see, oil economy remained almost constant even when the gap was increased by .070". When rings are installed in cylinders .010" larger than ring size, gap is increased by only .081".

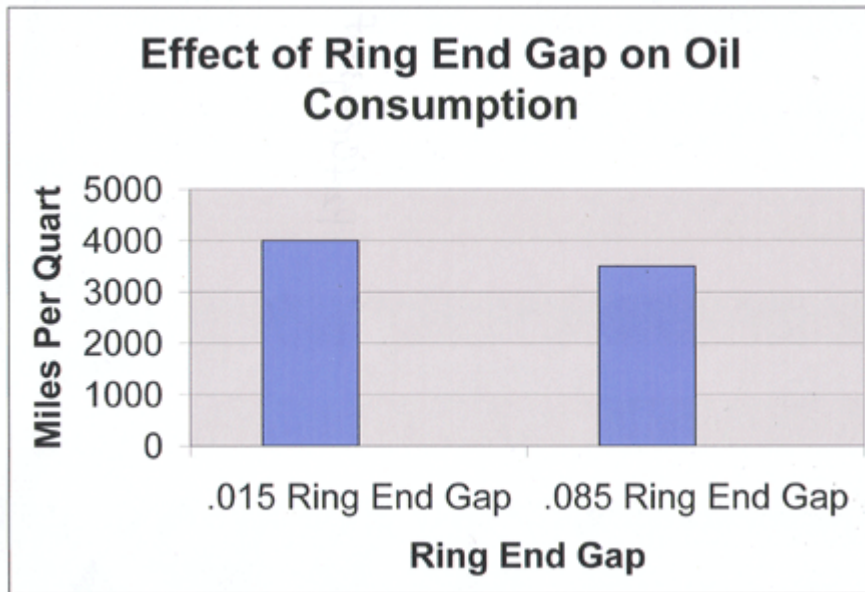


Fig. 2

### Why Increased Gap Has Little Effect on Oil Control

The reason increased gap has little effect on oil control is because the portion of the gap where leakage can occur is so small. The portion of the ring gap that is not sealed is that which projects beyond the piston land. This unsealed area of the gap is circled in Fig. 3. The rest of the gap is sealed within the groove. Only about 1/10 of the total ring gap is not sealed within the ring groove.

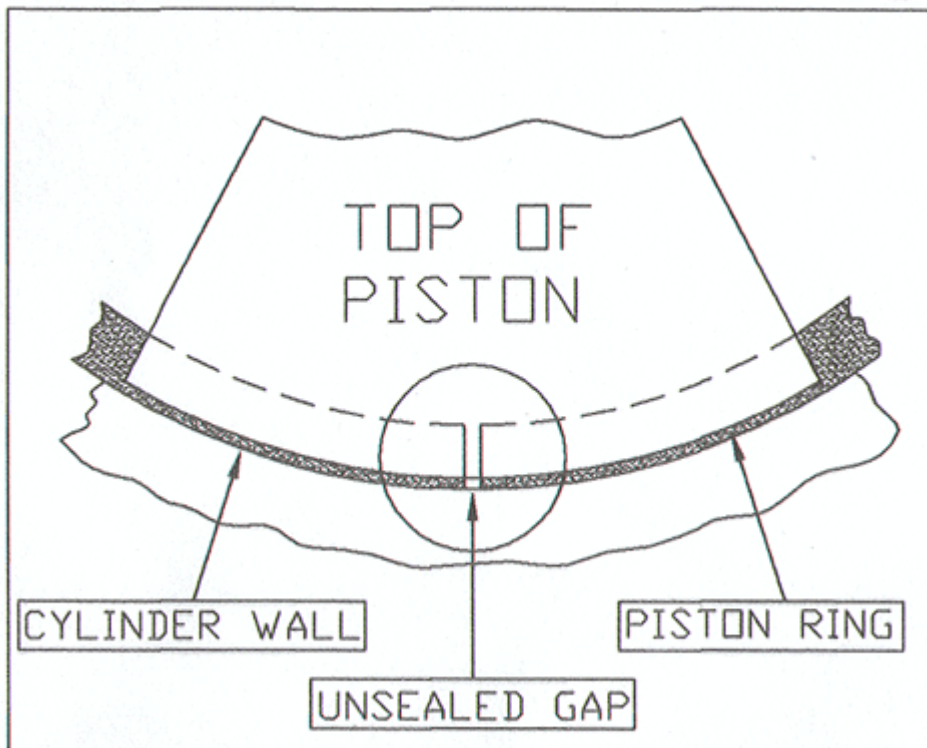


Fig. 3

Fig. 4 compares the unsealed gap area of a standard ring in a standard cylinder on the left to that of a standard ring in a .010" oversize cylinder on the right. The arrow points to the unsealed gap. The difference in unsealed gap is very small. Depending upon the amount of ring land setback, the difference is approximately .00035" of a square inch or approximately one-tenth the area of a common pin head. In terms of oil control, this difference in unsealed gap area is insignificant.

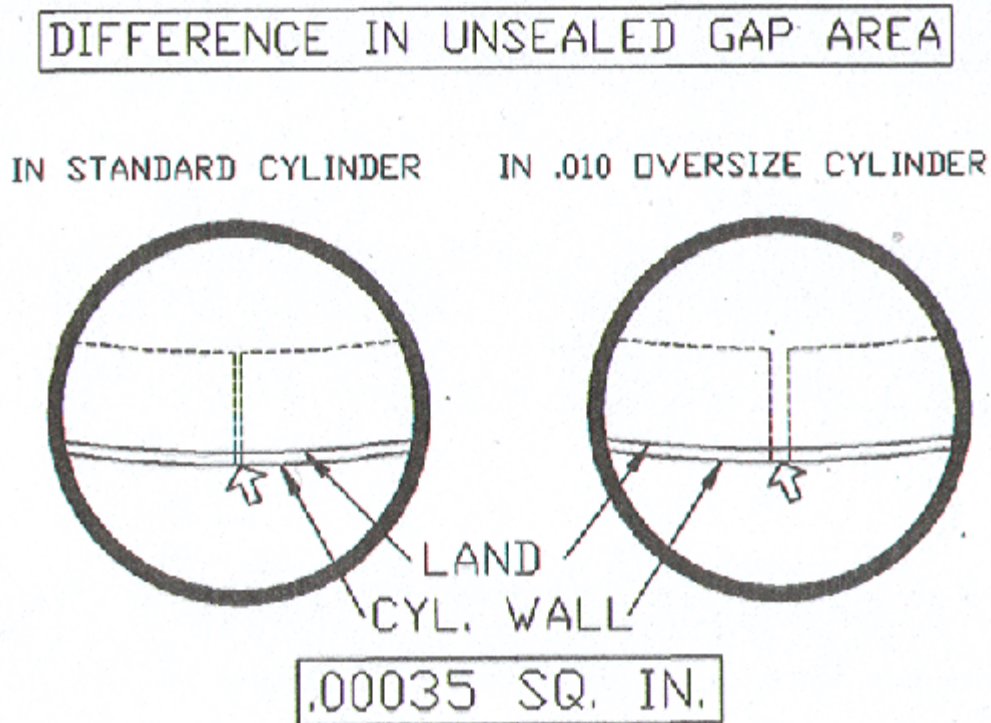


Fig. 4

When a standard ring is installed in a standard of .010" oversize cylinder as illustrated at left in Fig. 5, the ring face contacts the cylinder wall around its entire circumference. However, when a standard ring is installed in a .020" oversize cylinder, contact between the ring face and cylinder wall is broken near the gap as illustrated at right in Fig 5. This would allow excessive oil consumption and blow-by. Therefore, rings cannot be used successfully in cylinders .020" larger than ring diameter. We would suggest using the proper ring size whenever possible (.030" piston with .030" rings). In some cases, however, you may be up against a deadline and this gives you a guideline to follow when you cannot attain the exact ring set.

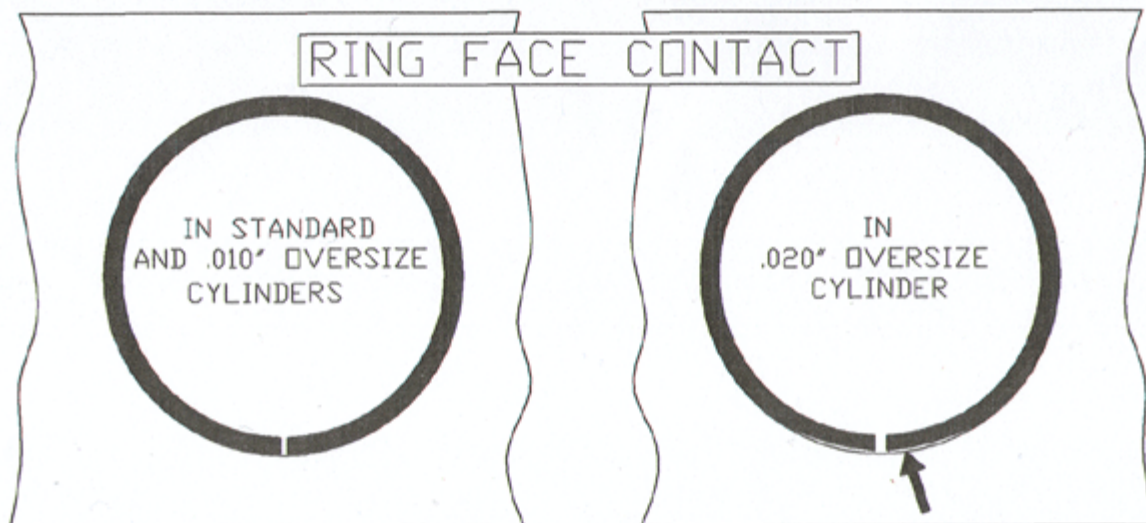


Fig. 5