Perfect Circle Plastigage®

Plastigage, a product developed by Perfect Circle, provides a fast and accurate way to check bearing clearances. Plastigage is a special extruded plastic thread of a definite diameter with accurately controlled crush properties. The material is round, smooth and flexible through a wide range of temperatures. Extreme cold will make it somewhat brittle and heat will soften the material. However, Plastigage remains usable and accurate through all normal atmospheric variations of temperature and humidity in work areas where bearing clearances may be checked. The product has been used and recommended by many automotive and leading bearing manufactures, as well as independent garages and mechanics, for over 30 years so that its physical stability has been amply demonstrated.

Plastigage is packaged in calibrated envelopes, twelve envelopes per box. These envelopes not only protect the plastic threads but also serve directly as scales to measure the bearing clearance. Both sides of the envelope have a printed scale of graduations. One side is calibrated in inches, the other in millimeters. The numbers on the scale are the bearing clearance in thousandths of an inch, or in millimeters. When the flattened section of Plastigage in a bearing or journal is matched in width with the appropriate numbered graduation, the bearing clearance is read directly from the scale. The scale graduations are repeated each 3/4" on the envelope, which contains a piece of Plastigage approximately 12" long. This is normally sufficient to check both main and connecting rod bearing clearance for one engine.

Plastigage is available in four types to cover four particular clearance ranges. Both the Plastigage thread and its matching envelope have a distinctive color for each clearance range. These types are:

Type	Color	Clearance Ranges
PG-1	Green	.001 to .003" (0,0254 to 0,076 mm)
PR-1	Red	.002 to .006" (0,05 to 0, 152 mm)
PB-1	Blue	.004 to .009 " (0,1 to 0,23 mm)
PY-1	Yellow	.009 to .020" (0,23 to 0,51 mm)

HOW TO USE PLASTIGAGE

When checking connecting rod bearings, turn the crankshaft so that the journal to be checked is about 30° from bottom dead center.

1. Remove the bearing cap and wipe the oil from the bearing insert and crankshaft journal.
2. Tear off a piece of Plastigage as long as the full bearing width. (Tear through both the envelope and plastic thread at the same time.) Lay the piece of Plastigage across the full width of the lower bearing shell about 1/4" off center.
3. Install and tighten the bearing cap to the proper torque specifications. Do not rotate the crankshaft while making this check.
4. Remove the bearing cap. The flattened Plastigage will adhere to either the bearing shell or the crankshaft.
5. Compare the width of the flattened Plastigage at the WIDEST point with the

graduations on the piece of envelope torn off in Step 2. The number within the graduations, which matches the flattened Plastigage width, indicates the total bearing clearance in thousandths of an inch or in millimeters. If the width of the flattened Plastigage does not exactly match one of the envelope graduations, interpolation can be used to determine the fraction of a thousandth in the same manner as when using micrometers.

TAPER

When one end of the flattened Plastigage is wider than the other, a difference in clearance is indicated. This difference is the amount of taper in the journal. Measure both ends of the flattened Plastigage. The difference between the wide and narrow readings is the approximate amount of taper.

OUT OF ROUNDNESS

This can be approximately determined as follows:

1 Place the connecting rod at bottom dead center and measure the bearing clearance with Plastigage.

2. Rotate the crankshaft approximately 100° from bottom dead center and again check the bearing clearance with Plastigage.

The difference between the bearing clearances measured in Steps 1 and 2 approximate out-of-roundness.

Upon completion of a clearance check, the flattened Plastigage can be scratched from the bearing or journal with a thumb nail. However, no harm is done if removal is over-looked. Plastigage is oil soluble and will disappear within a few revolutions of the crankshaft.

THE ADVANTAGES OF PLASTIGAGE

1. ECONOMICAL - When bearing clearances are measured with Plastigage, there is no need for feeler gauges, shims, or expensive micrometers. Clearances are read directly from the Plastigage envelope.

2. ACCURATE - Clearance checks with Plastigage are accurate to better than one one-thousandth inch when the material is used as directed.

3. FAST - The use of Plastigage saves as much as two-thirds of the time required for bearing clearance measurements by other means.

4. SAFE - Plastigage is absolutely safe to use. It will not dent or imbed in the softest bearing materials. In addition, it is oil soluble and will quickly disappear even when left in the bearing inadvertently.

Plastigage is used to check main and connecting rod bearing clearances, oil pump cover-to-gear clearances, and for many other clearance checks.

PG-1	.001 to .003"	***Quick!***
PR-1	.002 to .006"	With Perfect Circle Plastigage you can check bearing clearances in one-third the time taken by other methods.
PB-1	.004 to .009 "	***Accurate!***
PY-1	.009 to .020"	Plastigage is accurate. To assure maximum accuracy, regardless of the size clearance being measured, Plastigage is furnished in four clearance ranges: .001- .003; .002-.006; .004-.0091.009-.020 inches. The scales are also marked in millimeters.

Convenient!

Perfect Circle Plastigage is easy to use. Just remove the bearing cap and wipe the oil from the bearing insert and crankshaft journal. Then place a piece of Plastigage the full length of the bearing insert, about 1/2" off center, With the crank about 300° from bottom dead center, reinstall the bearing cap and tighten to the specified torque. When the bearing cap is removed, the flattened Plastigage will be found adhering to the bearing shelf or crankshaft. Compare the width of the flattened Plastigage to the graduations on the envelope (See illustration at left). The number within the matching graduation tells you the total clearance in thousandths of an inch or millimeters.