

Rotary Oil Seals

The Bore Requirements

In addition to the application, characteristics and makeup of the seal, conditions of the bore and shaft must be checked prior to seal mounting. These include configuration, tolerance, hardness, materials and finish of both shaft and bore, plus shaft speed and eccentricity.

Requirements for the bore and shaft appear on these two pages. Special installation and mounting requirements, other than those listed below, appear within the appropriate seal sections.

Bore Configurations

The lead corner, or entering edge, of the bore should be chamfered (as shown) and free of burrs.

The inside corner of the bore should have a maximum radius of .031" (0.81 mm).

Bore Tolerance

Rotary oil seals are manufactured to tight RMA/ISO/ DIN standards. Seal O.D.'s are normally .005" (metal) to .020" (rubber), (.13 mm to .51 mm) larger than the seal bore.

To assure the necessary press-fit, maintain the dimensions listed in the charts.

Tolerances in these charts apply only to ferrous materials. For example, aluminum usually has a higher rate of thermal expansion than steel.

Note: The metal case or rubber-covered O.D. is determined by averaging at least three measurements taken at equally spaced positions.

In a stepped bore, the bore depth should exceed the width of the seal by minimum of .01611 (.40 mm).

Bore Hardness

No specific Rockwell hardness is recommended; however, bore hardness should be high enough to maintain interference with the seal's outside diameter.

Bore Material

Ferrous and other commonly used metallic materials, like aluminum, are acceptable.

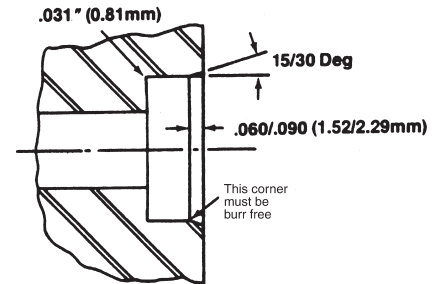
Bore Finish

Whenever lubricant pressure is present at the outside diameter of the seal, a bore finish of approximately 125 micro inches Ra (arithmetic average), or smoother, should be maintained to avoid leakage. For aluminum, the finish should be 100 to 200 micro inches Ra.

Bore Tolerance Charts

Inches

Bore Diameter	Bore Tolerance	Nominal Press-Fit		O.D Tolerance	
		Metal Case	Rubber Case	Metal O.D.	Rubber* O.D.
Up to 2.000	±.001	.005	.008	±.002	±.003
2.001 to 3.000	±.001	.005	.010	+.003 -.002	±.003
3.001 to 5.000	±.0015	.005	.010	+.004 -.002	±.003
5.001 to 7.000	±.0015	.006	.012	+.004 -.002	±.004
7.001 to 12.000.	±.002	.007	.012	+.005 -.002	±.004
12.001 to 20.000	±.002 -.004	.008	.015	+.008 -.002	±.005
20.001 to 40.000	+.002 -.006	.008	.018	+.008 -.002	±.006
40.001 to 60.000	+.002 -.010	.008	.020	+.010 -.002	±.007



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Millimetres

Diameter	(ISO/H8) Bore Tolerance	O.D. Diametral Tolerance	
		Metal Case	Rubber* Covered
Over 6 to 10	+0.022	+0.20	+0.30
	-0.000	+0.08	+0.15
Over 10 to 18	+0.027	+0.20	+0.30
	-0.000	+0.08	+0.15
Over 18 to 30	+0.033	+0.20	+0.30
	-0.000	+0.08	+0.15
Over 30 to 50	+0.039	+0.20	+0.30
	-0.000	+0.08	+0.15
Over 50 to 80	+0.046	+0.23	+0.35
	-0.000	+0.09	+0.20
Over 80 to 120	+0.054	+0.25	+0.35
	-0.000	+0.10	+0.20
Over 120 to 180	+0.063	+0.28	+0.45
	-0.000	+0.12	+0.25
Over 180 to 250	+0.072	+0.35	+0.45
	-0.000	+0.15	+0.25
Over 250 to 300	+0.081	+0.35	+0.45
	-0.000	+0.15	+0.25
Over 300 to 315	+0.081	+0.45	+0.55
	-0.000	+0.20	+0.30
Over 315 to 400	+0.089	+0.45	+0.55
	-0.000	+0.20	+0.30
Over 400 to 500	+0.097	+0.45	+0.55
	-0.000	+0.20	+0.30

*Rubber covered seals employing certain materials other than nitrile may require different tolerances to be agreed upon between manufacturer and end-user.