When giving dimensions for a packing space, in which an Oil Seal is to be used, the nominal dimensions A, B and C should be specified.

A – Nominal Shaft Diameter

B – Nominal Bore Diameter

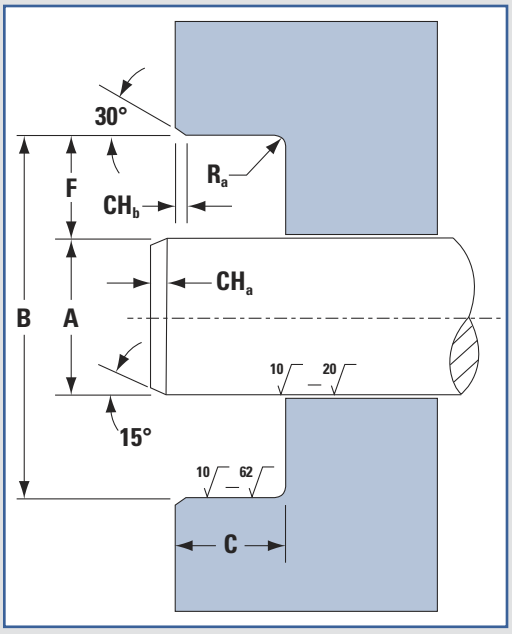
C – Nominal Cavity Width

F – Nominal Flange Size

CH_b – Bore Entrance Chamfer Width

CH_a – Shaft Entrance Chamfer Width

R_b – Inner Bore Face Radius



Shaft Tolerance				
Shaft Speeds – F.P.M, (m/min)	Under 2800 (854)			Over 2800 (854)
Shaft Diameters – Inches (mm)	To 5.999 (152)	6.000 To 15.999 (152 to 466)	16.000 & Up (406 & over)	All Diameters
Design Types				
LUP, LPD, LPD-ST,LDS, LUPW, LPDW, RUP, RPD, RPDT, SS, H, P, SDS, DS, SSW	+/- .003 (.08) +/- .005 (.13) +/- .002 (.05) +/- .002 (.05) +/- .002 (.05)	+/- .005 (.13) +/- .007 (.18) +/- .002 (.05) +/- .002 (.05) +/- .005 (.13)	+/- .010 (.25) +/- .012 (.30) +/- .002 (.05)	+/- .003 (.08) +/- .005 (.13) +/- .002 (.05) +/- .002 (.05)
Bore Tolerance				
Cavity Bore Diameter – Inches (mm)	To 5.999 (152)	6.000 To 15.999 (152 to 406)	16.000 To 30.999 (406 To 787)	31.000 & Up (787 & Over)
All design H1 types – (mm)	+/- .002 (.05)	+/- .005 (.13)	+/- .008 (.20)	+/- .010 (.25)
Metal reinforced type – ST-H1	+/- .002 (.05)	+/- .002 (.05)	+/- .005 (.13)	+/- .005 (.13)

Cavity Depth Tolerance		Shaft and Bore Finishes
Nominal Bore	Depth "C" Tolerance	Shaft Finish Range 10 to 20 = 10 to 20 RMS
Range	Inches (mm)	Bore Finish Range 10 to 62 = 10 to 62 RMS
Up to 5.999	-.000 +.031 (.79)	
Over 6.000	-.000 +.062 (1.57)	

SHAFT ECCENTRICITY

Optimum seal performance is obtained when shaft misalignment, run-out and whip are kept to a minimum.

Static measurements will reflect shaft to bore misalignment due to:

1. Poor tolerances of bearing and bore locating dimensions.
2. Bearing-shaft clearances
3. Shaft out of round condition.

Dynamic measurements reflect some degree of the static measurements and shaft run-out and whip due to:

1. Shaft deflections
2. Shaft vibrations

Dynamic measurements cannot be predicted by equipment design. They are extremely difficult to measure on operating equipment, but they do exist.

In seal applications the basic guidance and control limits are the static measurement of shaft to bore misalignment. Measurements are made with dial instruments and readings are expressed in inches (mm) as "Total Indicator Reading" (T.I.R.)

The following table lists the maximum values of misalignment, run-out and whip which are considered practical for seal lip types LUP, LPD and SS. For eccentricity above these values use types LUPW and LPDW to a maximum of 1000 F.P.M.

Shaft Speed RPM (m/min)	Shaft to Bore Misalignment – Static Measurement T.I.R. Ins. (mm)	Shaft Run-Out & Whip – Dynamic Measurement T.I.R. Ins. (mm)	Total Eccentricity Static & Dynamic Ins. (mm)
0 to 800 (0 to 244)	.010 (.254)	.010 (.254)	.020 (.508)
800 to 2000 (244 to 610)	.005 (.127)	.005 (.127)	.010 (.254)
2000 to 4200 (610 to 1280)	.005 (.127)	.003 (.076)	.008 (.203)

CHAMFERS The bore entrance must be chamfered to facilitate proper entrance of the seal into the cavity. Use the following recommendations:

Diameters – Range In Inches	Chamfer (Cha)	Chamfer (Chb)	Angle	Radius (Rb)
Shaft (mm)	Inches (mm)	Inches (mm)	Degrees	Inches (mm)
1/4 to 1 (6 to 25)	.062 (1.57)		15	
1 to 3 (25 to 75)	.093 (2.36)		15	
3 to 5 (75 to 125)	.125 (3.18)		15	
5 to 10 (125 to 250)	.250 (6.35)		15	
10 to 20 (250 to 500)	.375 (9.53)		15	
20 and up (500 & up)	.500 (12.70)		15	
Bore (mm)				
3/4 to 5 (19 to 125)		.040 (1.02)	30	.008 (.20) Max.
5 to 10 (125 to 250)		.062 91.57)	30	.015 (.38) Max
10 to 20 (250 to 500)		.094 (2.39)	30	.031 (.79)
29 and up (500 & up)		.125 (3.18)	30	.048 (1.22) Max.

****** Special seal designs are required for high pressure sealing service. ******