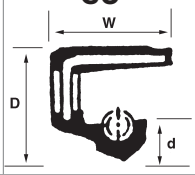
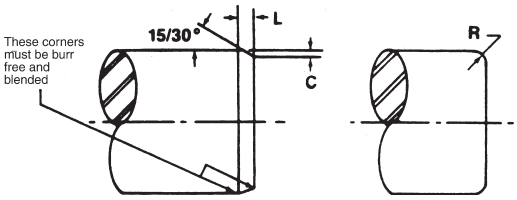
A1	A2	B2	B	BR	C
Rubber O.D design for excellent O.D. sealing ability.	Metal O.D design with an inner case for greater structural rigidity.	Most standardised and economical metal O.D design.	Metal O.D design with fluid side rubber covered.	Metal O.D design for greater O.D. scaling abiltiy.	Rubber O.D design for excellent O.D. sealing ability.
VC	SA2	SB2	SB	SBR	SC
					
KC	TA2	TB2	TB	TBR	TC
					

The Shaft Requirements

Shaft Configurations

A burr-free chamfer or radius is required as illustrated below (C = chamfer depth).



Shaft Diameter

Shaft Diameter (Inches)	C	R	Preferred L@15°	Optional L@30°
Up to 4.000	.093	.188	.347	.156
4.001 to 7.000	.125	.250	.466	.218
7.001 to 40.000	.188	.375	.702	.323
40.001 and larger	.250	.500	.933	.433

Shaft Diameter (Millimeters)	C	R	Preferred L@15°	Optional L@30°
up to 100.0	2.5	4.5	8.5	4.0
100.1 to 180.0	3.0	6.0	11.5	5.0
180.1 to 1000.0	5.0	9.5	18.0	8.0
1000:1 and larger	6.5	12.7	24.0	11.0

Shaft Material/Finish/Hardness

Seals perform best on medium to high carbon steel (SAE 1035,1045) or stainless steel. Soft shafts with good chrome-plated or nickel-plated surfaces, properly finished, are also acceptable. Soft materials such as brass, zinc, aluminum, magnesium or plastics are not recommended except at low surface speeds (less than 100 FPM) and clean environments.
The recommended shaft finish is 10-20 micro-inches Ra (arithmetic average), plunge ground, with a machine lead angle of zero i3 minutes.
Shafts should be hardened to Rockwell C30 or higher to prevent handling damage or abrasive wear.

Other sizes and materials available on request - please enquire. Standard terms and conditions apply.

Shaft Eccentricity

Two types of shaft eccentricity affect seal performance; both must be considered.

- Shaft-To-Bore Misalignment (STBM)
  The amount by which the shaft is off centre, with respect to the bore's centre. Common to some degree, it is caused by machining and assembly inaccuracies. To measure, attach a dial indicator to the shaft (between the shaft and bore), rotate the shaft and read the indicator. STBM is half of the Total Indicator Reading (TIR).
- Dynamic Run-Out (DRO)
  The amount by which the shaft does not rotate around the true centre. Misalignment, shaft bending, lack of shaft balance and other manufacturing inaccuracies are common causes. To measure, slowly rotate the shaft and read the total movement (TIR) of a dial indicator attached to the bore and held against the side of the shaft. For specific limitations, see the Recommended Operating Conditions Charts for small diameter seals and large diameter seals.

Shaft Speed

Maximum speeds for effective seal operation depend on shaft finish, pressure, temperature, eccentricity, lubricant or fluid being retained, seal type and other conditions. For example, shaft speeds may be increased when shaft finish is improved or eccentricity (dynamic-run-out) is reduced.

Surface speed at the contact point between the seal and shaft expressed in FPM (feet per minute) generally is a better measure for seal selection than RPM (revolutions per minute).

Shaft Tolerance

For satisfactory sealing performance, be sure the shaft diameter is within the following RMA and ISO recommended tolerances.

Inches

Up to and including 4.000	±.003
4.001 to 6.000	±.004
6.001 to 10.000	±.005
10.001 and larger	±.006

Millimetres

Nominal Shaft Diameter (ISO)	Tolerance
Over 6 to 10	+0.000 -0.090
Over 10 to 18	+0.000 -0.110
Over 18 to 30	+0.000 -0.130
Over 30 to 50	+0.000 -0.160
Over 50 to 80	+0.000 -0.190
Over 80 to 120	+0.000 -0.220
Over 120 to 180	+0.000 -0.250
Over 180 to 250	+0.000 -0.290
Over 250 to 315	+0.000 -0.320
Over 315 to 400	+0.000 -0.360
Over 400 to 500	+0.000 - 0.400

Other sizes and materials available on request - please enquire. Standard terms and conditions apply.