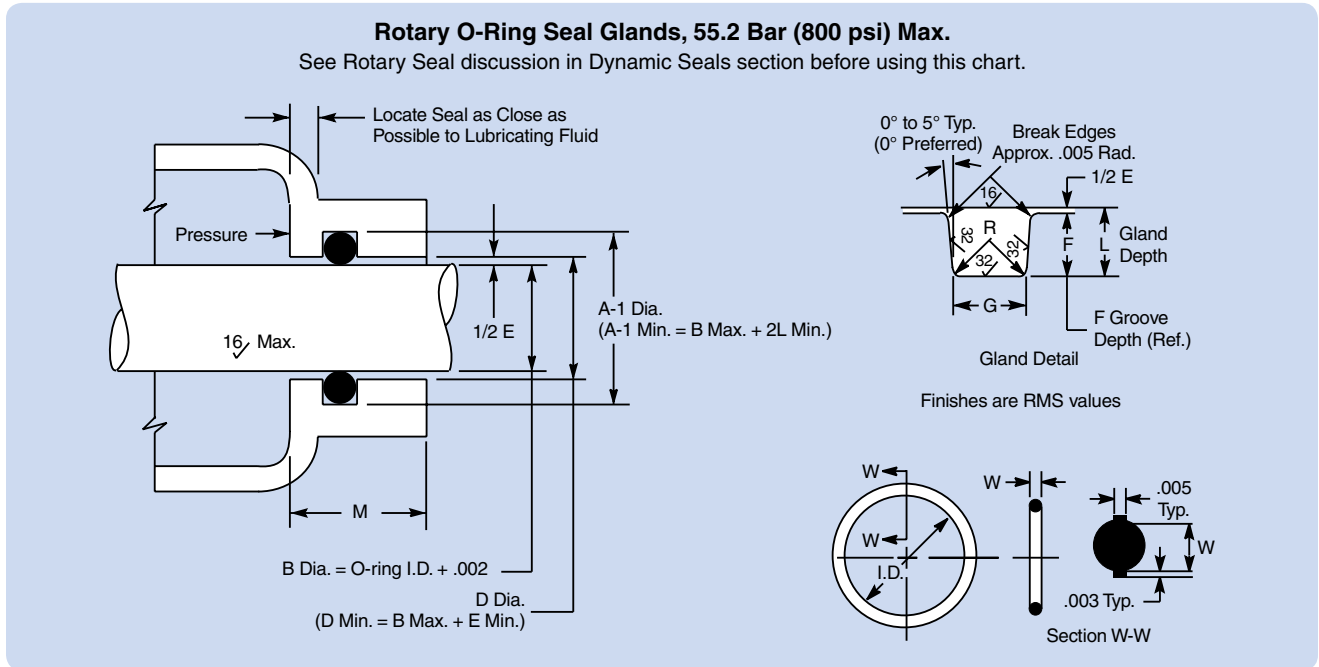


### 5.31.4 O-Ring Glands for Rotary Seals

Design Chart 5-4 provides the basis for calculating gland dimensions. For standard O-ring sizes, these dimensions have been calculated and are listed in Design Table 5-4. The procedures for the use of Design Table 5-4 are outlined in Design Guide 5-4 below.

After selecting gland dimensions, read horizontally to determine proper O-ring size number. Specify compound. Refer to the discussion on rotary seals earlier in this chapter for the selection of the proper compound. The effective part number for an O-ring consists of both a size number and a compound number.



**Note:** Due to effect of centrifugal force, do not locate groove in shaft. Refer to Design Chart 5-4 (below) and Design Table 5-4 for dimensions.

### Rotary O-Ring Seal Glands, 55.2 Bar (800 psi) Max. (c)

(Below 200 FPM, Use Design Chart 5-2)

O-Ring Size Parker No. 2-	W Cross Section		Maximum Speed FPM (a)	Squeeze %	L Gland Depth	G Groove Width	E (c) Diametral Clearance	Eccentricity Max (b)	M Bearing Length Min. (c)	R Groove Radius
	Nominal	Actual								
004 through 045	1/16	0.070 ±.003	200 to 1500	0-11	0.065 to 0.067	0.075 to 0.079	0.012 to 0.016	0.002	0.700	0.005 to 0.015
102 through 163	3/32	0.103 ±.003	200 to 600	1-8 1/2	0.097 to 0.099	0.108 to 0.112	0.012 to 0.016	0.002	1.030	0.005 to 0.015
201 through 258	1/8	0.139 ±.004	200 to 400	0-7	0.133 to 0.135	0.144 to 0.148	0.016 to 0.020	0.003	1.390	0.010 to 0.025

(a) Feet per minute = 0.26 X Shaft Diameter (inches) X rpm.

(b) Total indicator reading between groove OD, shaft, and adjacent bearing surface.

(c) If clearance (extrusion gap) must be reduced for higher pressures, bearing length M must be no less than the minimum figures given. Clearances given are based on the use of 80 shore durometer minimum O-ring for 55.2 Bar (800 psi) max. See Figure 3-2 for recommended clearances when pressures exceed 55.2 Bar (800 psi).

**Design Chart 5-4: Design Chart for Rotary O-Ring Seal Glands**

Rotary O-Ring Seal Gland Dimensions

O-Ring Size Parker No. 2-	Dimensions			Mean O.D. (Ref)	B OD (Shaft) +.000 -.001	A-1 Groove Dia. (Gland) +.003 -.000	D Throat Dia. +.003 -.000	G Groove Width +.004 -.000
	I.D.	±	W					
004	.070	.005	↑	.210	.072	.202	.084	↑
005	.101	.005	↑	.241	.103	.233	.115	↑
006	.114	.005	↑	.254	.116	.246	.128	↑
007	.145	.005	↑	.285	.147	.277	.159	↑
008	.176	.005	↑	.316	.178	.308	.190	↑
009	.208	.005	↑	.348	.210	.340	.222	↑
010	.239	.005	↑	.379	.241	.371	.253	↑
011	.301	.005	↑	.441	.303	.433	.315	↑
012	.364	.005	↑	.504	.366	.496	.378	↑
013	.426	.005	↑	.566	.428	.558	.440	↑
014	.489	.005	↑	.629	.491	.621	.503	↑
015	.551	.007	↑	.691	.553	.683	.565	↑
016	.614	.009	↑	.754	.616	.746	.628	↑
017	.676	.009	↑	.816	.678	.808	.693	↑
018	.739	.009	.070	.879	.741	.871	.753	.075
019	.801	.009	±.003	.941	.803	.933	.815	↑
020	.864	.009	±.003	1.004	.866	.996	.878	↑
021	.926	.009	±.003	1.066	.928	1.058	.940	↑
022	.989	.010	±.003	1.129	.991	1.121	1.003	↑
023	1.051	.010	±.003	1.191	1.053	1.183	1.065	↑
024	1.114	.010	±.003	1.254	1.116	1.246	1.128	↑
025	1.176	.011	±.003	1.316	1.178	1.308	1.190	↑
026	1.239	.011	±.003	1.379	1.241	1.371	1.253	↑
027	1.301	.011	±.003	1.441	1.303	1.433	1.315	↑
028	1.364	.013	±.003	1.504	1.366	1.496	1.378	↑
029	1.489	.013	±.003	1.629	1.491	1.621	1.503	↑
030	1.614	.013	±.003	1.754	1.616	1.746	1.628	↑
031	1.739	.015	±.003	1.879	1.741	1.871	1.753	↑
032	1.864	.015	±.003	2.004	1.866	1.996	1.878	↑
033	1.989	.018	±.003	2.129	1.991	2.121	2.003	↑
034	2.114	.018	±.003	2.254	2.116	2.246	2.128	↑
035	2.239	.018	±.003	2.379	2.241	2.371	2.253	↑
036	2.364	.018	±.003	2.504	2.366	2.496	2.378	↑
037	2.489	.018	±.003	2.629	2.491	2.621	2.503	↑
038	2.614	.020	±.003	2.754	2.616	2.746	2.628	↑
039	2.739	.020	±.003	2.879	2.741	2.871	2.753	↑
040	2.864	.020	±.003	3.004	2.866	2.996	2.878	↑
041	2.989	.024	±.003	3.129	2.991	3.121	3.003	↑
042	3.239	.024	±.003	3.379	3.241	3.371	3.253	↑
043	3.489	.024	±.003	3.629	3.491	3.621	3.503	↑
044	3.739	.027	±.003	3.879	3.741	3.871	3.753	↑
045	3.989	.027	±.003	4.129	3.991	4.121	4.003	↑
102	.049	.005	↑	.255	.051	.245	.063	↑
103	.081	.005	.103	.287	.083	.277	.095	.108
104	.112	.005	±.003	.318	.114	.308	.126	↑
105	.143	.005	±.003	.349	.145	.339	.157	↑
106	.174	.005	±.003	.380	.176	.370	.188	↑

† For pressures over 55.2 Bar (800 psi), consult Design Chart 5-4 and the design sections of this Handbook.

Design Table 5-4: Rotary O-Ring Seal Gland Dimensions

Rotary O-Ring Seal Gland Dimensions (Continued)

O-Ring Size Parker No. 2-	Dimensions			Mean O.D. (Ref)	B OD (Shaft) +.000 -.001	A-1 Groove Dia. (Gland) +.003 -.000	D Throat Dia. +.003 -.000	G Groove Width +.004 -.000
	I.D.	±	W					
107	.206	.005	↑	.412	.208	.402	.220	↑
108	.237	.005		.443	.239	.433	.251	
109	.299	.005		.505	.301	.495	.313	
110	.362	.005		.568	.364	.558	.376	
111	.424	.005		.630	.426	.620	.438	
112	.487	.005		.693	.489	.683	.501	
113	.549	.007		.755	.551	.745	.563	
114	.612	.009		.818	.614	.808	.626	
115	.674	.009		.880	.676	.870	.688	
116	.737	.009		.943	.739	.933	.751	
117	.799	.010		1.005	.801	.995	.813	
118	.862	.010	1.068	.864	1.058	.876		
119	.924	.010	1.130	.926	1.120	.938		
120	.987	.010	.103	1.193	.989	1.183	1.001	.108
121	1.049	.010	±.003	1.255	1.051	1.245	1.063	
122	1.112	.010	1.318	1.114	1.308	1.126		
123	1.174	.012	1.380	1.176	1.370	1.188		
124	1.237	.012	1.443	1.239	1.433	1.251		
125	1.299	.012	1.505	1.301	1.495	1.313		
126	1.362	.012	1.568	1.364	1.558	1.376		
127	1.424	.012	1.630	1.426	1.620	1.438		
128	1.487	.012	1.693	1.489	1.683	1.501		
129	1.549	.015	1.755	1.551	1.745	1.563		
130	1.612	.015	1.818	1.614	1.808	1.626		
131	1.674	.015	1.880	1.676	1.870	1.688		
132	1.737	.015	1.943	1.739	1.933	1.751		
133	1.799	.015	2.005	1.801	1.995	1.813		
134	1.862	.015	2.068	1.864	2.058	1.876		
135	1.925	.017	2.131	1.927	2.121	1.939		
136	1.987	.017	2.193	1.989	2.183	2.001		
137	2.050	.017	2.256	2.052	2.246	2.064		
138	2.112	.017	2.318	2.114	2.308	2.126		
139	2.175	.017	2.381	2.177	2.371	2.189		
140	2.237	.017	2.443	2.239	2.433	2.251		
141	2.300	.020	2.506	2.302	2.496	2.314		
142	2.362	.020	2.568	2.364	2.558	2.376		
143	2.425	.020	2.631	2.427	2.621	2.439		
144	2.487	.020	2.693	2.489	2.683	2.501		
145	2.550	.020	2.756	2.552	2.746	2.564		
146	2.612	.020	2.818	2.614	2.808	2.626		
147	2.675	.022	2.881	2.677	2.871	2.689		
148	2.737	.022	2.943	2.739	2.933	2.751		
149	2.800	.022	3.006	2.802	2.996	2.814		
150	2.862	.022	3.068	2.864	3.058	2.876		
151	2.987	.024	3.193	2.989	3.183	3.001		
152	3.237	.024	3.443	3.239	3.433	3.251	↓	
153	3.487	.024	3.693	3.489	3.683	3.501		

† For pressures over 55.2 Bar (800 psi), consult Design Chart 5-4 and the design sections of this Handbook.

Design Table 5-4: Rotary O-Ring Seal Gland Dimensions



Rotary O-Ring Seal Gland Dimensions (Continued)

O-Ring Size Parker No. 2-	Dimensions			Mean O.D. (Ref)	B OD (Shaft) +.000 -.001	A-1 Groove Dia. (Gland) +.003 -.000	D Throat Dia. +.003 -.000	G Groove Width +.004 -.000		
	I.D.	±	W							
154	3.737	.028	↑	3.943	3.739	3.933	3.751	↑		
155	3.987	.028		4.193	3.989	4.183	4.001			
156	4.237	.030		4.443	4.239	4.433	4.251			
157	4.487	.030		.103	4.693	4.489	4.683		4.501	.108
158	4.737	.030		±.003	4.943	4.739	4.933		4.751	
159	4.987	.035	↓	5.193	4.989	5.183	5.001	↓		
160	5.237	.035		5.443	5.239	5.433	5.251			
161	5.487	.035		5.693	5.489	5.683	5.501			
162	5.737	.035		5.943	5.739	5.933	5.751			
163	5.987	.035		6.193	5.989	6.183	6.001			
201	.171	.005		↑	.449	.173	.439		.189	↑
202	.234	.005	.512		.236	.502	.252			
203	.296	.005	.574		.298	.564	.314			
204	.359	.005	.637		.361	.627	.377			
205	.421	.005	.699		.423	.689	.439			
206	.484	.005	↓	.762	.486	.752	.502	↓		
207	.546	.007		.824	.548	.814	.564			
208	.609	.009		.887	.611	.877	.627			
209	.671	.009		.949	.673	.939	.689			
210	.734	.010		1.012	.736	1.002	.752			
211	.796	.010		1.074	.798	1.064	.814			
212	.859	.010	1.137	.861	1.127	.877				
213	.921	.010	1.199	.923	1.189	.939				
214	.984	.010	.139	1.262	.986	1.252	1.002	.144		
215	1.046	.010	±.004	1.324	1.048	1.314	1.064			
216	1.109	.012	↓	1.387	1.111	1.377	1.127	↓		
217	1.171	.012		1.449	1.173	1.439	1.189			
218	1.234	.012		1.512	1.236	1.502	1.252			
219	1.296	.012		1.574	1.298	1.564	1.314			
220	1.359	.012		1.637	1.361	1.627	1.377			
221	1.421	.012		1.699	1.423	1.689	1.439			
222	1.484	.015		1.762	1.486	1.752	1.502			
223	1.609	.015		1.887	1.611	1.877	1.627			
224	1.734	.015		2.012	1.736	2.002	1.752			
225	1.859	.018		2.137	1.861	2.127	1.877			
226	1.984	.018	↓	2.262	1.986	2.252	2.002	↓		
227	2.109	.018		2.387	2.111	2.377	2.127			
228	2.234	.020		2.512	2.236	2.502	2.252			
229	2.359	.020		2.637	2.361	2.627	2.377			
230	2.484	.020		2.762	2.486	2.752	2.502			
231	2.609	.020		2.887	2.611	2.877	2.627			
232	2.734	.024		3.012	2.736	3.002	2.752			
233	2.859	.024		3.137	2.861	3.127	2.877			
234	2.984	.024		3.262	2.986	3.252	3.002			
235	3.109	.024		3.387	3.111	3.377	3.127			
236	3.234	.024	↓	3.512	3.236	3.502	3.252	↓		
237	3.359	.024		3.637	3.361	3.627	3.377			

† For pressures over 55.2 Bar (800 psi), consult Design Chart 5-4 and the design sections of this Handbook.

Design Table 5-4: Rotary O-Ring Seal Gland Dimensions

Dynamic O-Ring Sealing



**Rotary O-Ring Seal Gland Dimensions** (Continued)

O-Ring Size Parker No. 2-	Dimensions			Mean O.D. (Ref)	B OD (Shaft) +.000 -.001	A-1 Groove Dia. (Gland) +.003 -.000	D Throat Dia. +.003 -.000	G Groove Width +.004 -.000		
	I.D.	±	W							
238	3.484	.024	↑	3.762	3.486	3.752	3.502	↑		
239	3.609	.028		3.887	3.611	3.877	3.627			
240	3.734	.028		4.012	3.736	4.002	3.752			
241	3.859	.028		4.137	3.861	4.127	3.877			
242	3.984	.028		4.262	3.986	4.252	4.002			
243	4.109	.028		4.387	4.111	4.377	4.127			
244	4.234	.030		4.512	4.236	4.502	4.252			
245	4.359	.030		4.637	4.361	4.627	4.377			
246	4.484	.030		.139	4.762	4.486	4.752		4.502	.144
247	4.609	.030		±.004	4.887	4.611	4.877		4.627	
248	4.734	.030	5.012	4.736	5.002	4.752				
249	4.859	.035	5.137	4.861	5.127	4.877				
250	4.984	.035	5.262	4.986	5.252	5.002				
251	5.109	.035	5.387	5.111	5.377	5.127				
252	5.234	.035	5.512	5.236	5.502	5.252				
253	5.359	.035	5.637	5.361	5.627	5.377				
254	5.484	.035	5.762	5.486	5.752	5.502				
255	5.609	.035	5.887	5.611	5.877	5.627				
256	5.734	.035	6.012	5.736	6.002	5.752				
257	5.859	.035	6.137	5.861	6.127	5.877				
258	5.984	.035	↓	6.262	5.986	6.252	6.002	↓		

† For pressures over 55.2 Bar (800 psi), consult Design Chart 5-4 and the design sections of this Handbook.

**Design Table 5-4: Rotary O-Ring Seal Gland Dimensions**