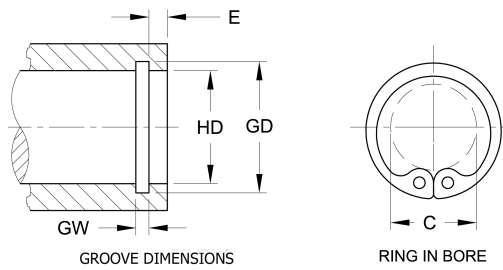


S&M Series IB Internal Basic Ring	HOUSING DIAMETER			RING DIMENSIONS											
	ASME-B18-27-1NA2 MIL-R-21248 MS-16625	DEC. EQUIV. INCH	FRAC. EQUIV. INCH	MM	FREE DIAMETER	THICKNESS		LARGE SECTION		SMALL SECTION		LUG		HOLE DIAMETER	
RING NUMBER	HD	HD	HD	FD	TOL.	T	TOL.	L	TOL.	S	TOL.	U	TOL.	H	TOL.
IB0025	.250	1/4	6.35	.280	+ .010 - .005	.015	+/- .002	.025	+/- .002	.015	+/- .002	.065	+/- .005	.031	+ .010 - .002
IB0031	.312	5/16	7.94	.346		.015		.033	.018	.066					
IB0037	.375	3/8	9.53	.415		.025		.040	.028	.082					
IB0043	.438	7/16	11.11	.482		.025		.049	+/- .003	.029	+/- .003	.098		.041	
IB0045	.453	29/64	11.51	.498		.025		.050	.030	.098	.047				
IB0050	.500	1/2	12.70	.548		.035		.053	.035	.114	.047				
IB0051	.512		13.00	.560		.035		.053	.035	.114	.047				
IB0056	.562	9/16	14.29	.620		.035		.053	+/- .004	.035	+/- .004	.132		.047	
IB0062	.625	5/8	15.88	.694		.035		.060	.035	.132	.062				
IB0068	.688	11/16	17.46	.763		.035		.063	.036	.132	.062				
IB0075	.750	3/4	19.05	.831	.035	.070	.040	.142	.062						
IB0077	.777		19.74	.859	.042	.074	.044	.146	.062						
IB0081	.812	13/16	20.64	.901	+ .015 - .010	.042	.077	.044	.155	.062					
IB0086	.866		22.00	.961		.042	.081	.045	.155	.062					
IB0087	.875	7/8	22.23	.971		.042	.084	.045	.155	.062					
IB0090	.901		22.89	1.000		.042	.087	+/- .005	.047	+/- .005	.155	.062			
IB0093	.938	15/16	23.81	1.041		.042	.091	.050	.155	.062					
IB0100	1.000	1	25.40	1.111		.042	.104	.052	.155	+/- .005	.155	.062			
IB0102	1.023		26.00	1.136		.042	.106	.054	.155	.062					
IB0106	1.062	1 1/16	26.99	1.180		.050	.110	.055	.180	.078					
IB0112	1.125	1 1/8	28.58	1.249		.050	.116	.057	.180	.078					
IB0118	1.181		30.00	1.319		.050	.120	.058	.180	.078					
IB0125	1.250	1 1/4	31.75	1.388	.050	.124	.058	.180	.078						
IB0131	1.312	1 5/16	33.34	1.456	+/- .025	.050	.130	+/- .006	.062	+/- .006	.180	.078			
IB0137	1.375	1 3/8	34.93	1.526	- .020	.050	.130	.063	.180	.078					
IB0143	1.438	1 7/16	36.51	1.596	.050	.133	.065	.180	.078						
IB0145	1.456		37.00	1.616	.050	.133	.065	.180	.078						
IB0150	1.500	1 1/2	38.10	1.660	.050	.133	.066	.180	.078						
IB0156	1.562	1 9/16	39.69	1.734	.062	.157	.078	.202	.078						
IB0162	1.625	1 5/8	41.28	1.804	.062	+/- .003	.164	.082	.227	.078					
IB0165	1.653		42.00	1.835	.062	.167	.083	.227	.078						
IB0168	1.688	1 11/16	42.86	1.874	+ .035	.062	.170	.085	.227	.078					
IB0175	1.750	1 3/4	44.45	1.942	- .025	.062	.171	.083	.234	.078					
IB0181	1.812	1 13/16	46.04	2.012	.062	.170	.084	.234	.093						
IB0187	1.850		47.00	2.054	.062	.170	.085	.234	.093						
IB0193	1.938	1 15/16	49.21	2.141	.062	.170	+/- .007	.085	+/- .007	.234	.093				
IB0200	2.000	2	50.80	2.210	.062	.170	.085	.240	.093						
IB0206	2.047		52.00	2.280	.078	.186	.091	.250	.093						
IB0212	2.125	2 1/8	53.98	2.350	+ .040	.078	.195	.096	.260	.093					
IB0218	2.165		55.00	2.415	- .030	.078	.199	.098	.264	.093					
IB0225	2.250	2 1/4	57.15	2.490	.078	.203	.099	.270	.093						

Rings must not be over-expanded during installation, since this will lead to ring failure. Providing groove has been machined to recommended dimensions, play between the groove diameter and the inside ring diameter indicates that the ring has been over-expanded.

*C=Ring clearance diameter after ring is applied into groove.

For plated, phosphate-coated, and stainless steel rings, the maximum ring thickness will not exceed the minimum groove width (GW) minus .0002".



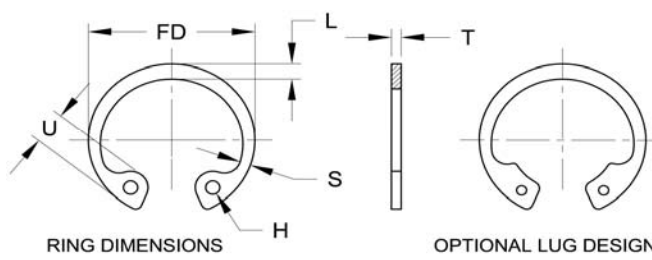
APPROX. WT. PER 1000 RINGS (Lbs.)	ROCKWELL HARDNESS (CARBON STEEL W/O PLATING)	Static Thrust Load (Lbs.) Sharp Corner Abutment		RING CLEARANCE	GROOVE DIMENSIONS				EDGE MARGIN	S&M Series IB Internal Basic Ring
		RING	GROOVE		Diameter		Width			ASME-B18-27-1NA2 MIL-R-21248 MS-16625
					TR	TG**	*C	GD		
.09	15N 86.0-88.0	420	190	.11	.268	+/- .001	.018	+ .002	.027	IB0025
.12	15N 86.0-88.0	530	240	.17	.330		.018	- .000	.027	IB0031
.26	30N 69.5-72.0	1050	350	.20	.397	+/- .002	.029	+ .003 - .000	.033	IB0037
.39	30N 69.5-72.0	1230	450	.23	.461		.029		.036	IB0043
.43	30N 69.5-72.0	1280	460	.25	.477		.029		.036	IB0045
.72	30N 69.5-72.0	1980	630	.26	.530		.029		.045	IB0050
.78	30N 69.5-72.0	2030	650	.27	.542		.039		.045	IB0051
.84	30N 68.5-72.0	2220	810	.28	.596		.039		.051	IB0056
.98	30N 68.5-72.0	2470	1060	.34	.665		.039		.060	IB0062
1.15	30N 68.5-72.0	2700	1280	.40	.732		.039		.066	IB0068
1.31	30N 68.5-72.0	3000	1460	.44	.796	.039	.069	IB0075		
1.65	30N 68.5-72.0	4600	1580	.47	.825	+/- .003	.046	+ .003 - .000	.072	IB0077
1.85	30N 67.5-71.0	4800	1710	.48	.862		.046		.075	IB0081
2.10	30N 67.5-71.0	5100	1980	.53	.920		.046		.081	IB0086
2.10	30N 67.5-71.0	5200	2080	.54	.931		.046		.084	IB0087
2.30	30N 67.5-71.0	5350	2200	.57	.959		.046		.087	IB0090
2.45	30N 67.5-71.0	5570	2460	.60	1.000		.046		.093	IB0093
2.75	30N 67.5-71.0	5930	2800	.67	1.066		.046		.099	IB0100
2.80	30N 67.5-71.0	6070	2950	.69	1.091		.046		.102	IB0102
3.60	C 48-52	7500	3060	.68	1.130	+/- .004	.056	+ .004 - .000	.102	IB0106
3.91	C 48-52	7900	3400	.74	1.197		.056		.108	IB0112
4.27	C 48-52	8400	3700	.79	1.255		.056		.111	IB0118
4.70	C 48-52	8830	4250	.86	1.330		.056		.120	IB0125
4.90	C 48-52	9270	4670	.93	1.396		.056		.126	IB0131
5.35	C 48-52	9700	5000	.99	1.461		.056		.129	IB0137
5.50	C 48-52	10200	5500	1.06	1.528		.056		.135	IB0143
6.12	C 48-52	10300	5700	1.07	1.548		.056		.138	IB0145
6.50	C 48-52	10600	6000	1.12	1.594	.056	.141	IB0150		
8.50	C 48-52	13700	6360	1.14	1.658	+/- .005	.068	+ .004 - .000	.144	IB0156
9.75	C 48-52	14200	6900	1.16	1.725		.068		.150	IB0162
10.00	C 48-52	14500	7100	1.18	1.755		.068		.153	IB0165
10.20	C 48-52	14800	7400	1.21	1.792		.068		.156	IB0168
10.50	C 48-52	15300	8000	1.26	1.858		.068		.162	IB0175
11.50	C 48-52	15900	8400	1.32	1.922		.068		.165	IB0181
12.50	C 48-52	16200	8700	1.36	1.962		.068		.168	IB0187
13.50	C 48-52	17000	9700	1.45	2.056		.068		.177	IB0193
15.00	C 48-52	17500	10300	1.50	2.122	.068	.183	IB0200		
18.00	C 48-52	22600	10700	1.54	2.171	+/- .006	.086	+ .005	.186	IB0206
19.50	C 48-52	23400	11300	1.59	2.251		.086		.189	IB0212
20.00	C 48-52	23900	12000	1.62	2.295		.086		.195	IB0218
22.00	C 48-52	24800	12600	1.68	2.382		.086		.198	IB0225

TG **=Groove wall thrust loads shown are for grooves machined in cold-rolled steel with a tensile yield strength of 45,000 psi.

For shaft material with greater or lesser yield strength, groove wall thrust load increases or decreases proportionally.

Standard Material= is Carbon Spring Steel (SAE 1060-1090)

Standard finish= Oil-dipped

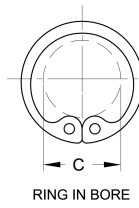
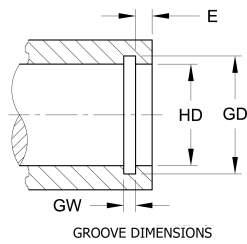


S&M Series IB Internal Basic Ring	HOUSING DIAMETER			RING DIMENSIONS													
	Dec. Equiv. Inch	Frac. Equiv. Inch	MM	Free Diameter		Thickness		LARGE SECTION		SMALL SECTION		LUG		HOLE DIAMETER			
				FD	TOL.	T	TOL.	L	TOL.	S	TOL.	U	TOL.	H	TOL.		
ASME-B18-27-1NA2 MIL-R-21248 MS-16625																	
RING NUMBER	HD	HD	HD	FD	TOL.	T	TOL.	L	TOL.	S	TOL.	U	TOL.	H	TOL.		
IB0231	2.312	2 5/16	58.74	2.535		.078		.206		.100		.270		.093			
IB0237	2.375	2 3/8	60.33	2.630		.078		.207		.102		.270		.093			
IB0244	2.440	2 7/16	62.00	2.702		.078		.209		.103		.280		.110			
IB0250	2.500	2 1/2	63.50	2.775		.078		.210		.103		.280		.110			
IB0256	2.562	2 9/16	65.09	2.844		.093		.222		.109		.290		.110			
IB0262	2.625	2 5/8	66.68	2.910		.093	+/- .003	.226		.111		.290		.110			
IB0268	2.677		68.00	2.980		.093		.230		.113		.300		.110			
IB0275	2.750	2 3/4	69.85	3.050	+.040	.093		.234	+/- .007	.115	+/- .007	.300	+/- .005	.110			
IB0281	2.812	2 13/16	71.43	3.121	-.030	.093		.230		.115		.300		.110			
IB0287	2.875	2 7/8	73.03	3.191		.093		.240		.120		.310		.110			
IB0300	2.953		75.00	3.325		.093		.250		.122		.310		.110			
IB0306	3.062	3 1/16	77.79	3.418		.109		.254		.126		.310		.125			
IB0312	3.125	3 1/8	79.38	3.488		.109		.259		.129		.310		.125			+ .015
IB0315	3.149		80.00	3.523		.109		.262		.129		.310		.125			- .002
IB0325	3.250	3 1/4	82.55	3.623		.109		.269		.135		.342		.125			
IB0334	3.346	3 11/32	85.00	3.734	+/- .055	.109		.276		.140		.342		.125			
IB0347	3.469	3 15/32	88.11	3.857		.109		.286	+/- .008	.144		.342		.125			
IB0350	3.500	3 1/2	88.90	3.890		.109		.289		.142	+/- .008	.342		.125			
IB0354	3.543		90.00	3.936		.109		.292		.142		.342		.125			
IB0362	3.625	3 5/8	92.08	4.024		.109		.299		.150		.342		.125			
IB0375	3.740		95.00	4.157		.109		.309		.155		.342	+/- .008	.125			
IB0387	3.875	3 7/8	98.43	4.291		.109		.319		.160		.370		.125			
IB0393	3.938	3 15/16	100.01	4.358		.109		.324		.161		.370		.125			
IB0400	4.000	4	101.60	4.424		.109		.330		.166		.370		.125			
IB0412	4.125	4 1/8	104.78	4.558		.109	+/- .003	.330		.171		.370		.125			
IB0425	4.250	4 1/4	107.95	4.691		.109		.335		.180		.370		.125			
IB0433	4.331		110.00	4.756		.109		.343		.180		.405		.156			
IB0450	4.500	4 1/2	114.30	4.940		.109		.351		.181		.405		.156			
IB0462	4.625	4 5/8	117.48	5.076	+/- .065	.109		.360		.183		.405		.156			
IB0475	4.724		120.00	5.213		.109		.370	+/- .009	.183		.405		.156			
IB0500	5.000	5	127.00	5.485		.109		.390		.186		.435		.156			
IB0525	5.250	5 1/4	133.35	5.770		.125		.408		.198	+/- .009	.455		.156			
IB0537	5.375	5 3/8	136.53	5.910		.125		.408		.198		.455		.156			
IB0550	5.500	5 1/2	139.70	6.066		.125	+/- .004	.408		.198		.455		.156			
IB0575	5.750	5 3/4	146.05	6.336		.125		.408		.198		.455		.156			
IB0600	6.000	6	152.40	6.620		.125		.408		.196		.455		.156			
IB0625	6.250	6 1/4	158.75	6.895		.156		.423		.211		.485		.187			+ .020
IB0650	6.500	6 1/2	165.10	7.170		.156		.438		.219		.485		.187			- .005
IB0662	6.625	6 5/8	168.28	7.308	+/- .080	.156		.447		.221		.485		.187			

Rings must not be over-expanded during installation, since this will lead to ring failure. Providing groove has been machined to recommended dimensions, play between the groove diameter and the inside ring diameter indicates that the ring has been over-expanded.

*C=Ring clearance diameter after ring is applied into groove.

For plated, phosphate-coated, and stainless steel rings, the maximum ring thickness will not exceed the minimum groove width (GW) minus .0002".



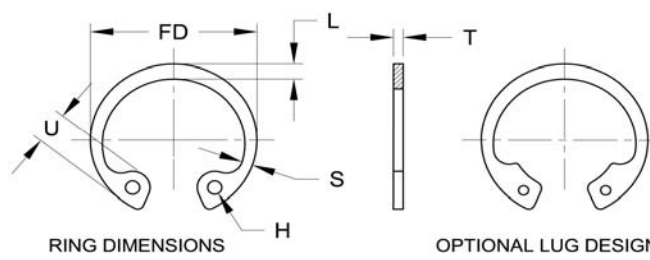
APPROX . WT. PER 1000 RINGS (Lbs.)	ROCKWELL HARDNESS (CARBON STEEL W/O PLATING)	Static Thrust Load (Lbs.) Sharp Corner Abutment		RING CLEARANCE	GROOVE DIMENSIONS				EDGE MARGIN	S&M Series IB Internal Basic Ring
		RING	GROOVE		C*	DIAMETER		E		ASME-B18-27-1NA2 MIL-R-21248 MS-16625
						TR	TG**			GD
22.6	C 48-52	25500	13500	1.75	2.450		.086	- .000	.207	IB0231
23.2	C 48-52	26100	14300	1.81	2.517		.086		.213	IB0237
25.4	C 48-52	26900	14900	1.86	2.584		.086		.216	IB0244
25.5	C 48-52	27600	15700	1.92	2.648		.086		.222	IB0250
34.0	C 48-52	33700	16500	1.96	2.714		.103		.228	IB0256
34.5	C 48-52	34500	17300	2.01	2.781		.103		.234	IB0262
35.0	C 48-52	35200	18100	2.06	2.837		.103	+ .005	.240	IB0268
35.5	C 48-52	36100	19100	2.12	2.914	.006	.103	- .000	.246	IB0275
36.0	C 48-52	36950	20000	2.18	2.980		.103		.252	IB0281
41.0	C 48-52	37800	21500	2.22	3.051		.103		.264	IB0287
42.5	C 48-52	38800	22800	2.39	3.135		.103		.273	IB0300
53.0	C 48-52	47100	24100	2.35	3.248		.120		.279	IB0306
56.0	C 48-52	48100	25200	2.47	3.315		.120		.285	IB0312
57.0	C 48-52	48500	25600	2.48	3.341		.120		.288	IB0315
60.0	C 48-52	50000	27000	2.54	3.446		.120		.294	IB0325
65.0	C 48-52	51600	28300	2.63	3.546		.120		.300	IB0334
69.0	C 48-52	53400	30300	2.76	3.675		.120		.309	IB0347
71.0	C 48-52	53900	31200	2.79	3.710		.120		.315	IB0350
72.0	C 48-52	54600	31800	2.82	3.755		.120		.318	IB0354
73.0	C 48-52	55900	33200	2.90	3.841		.120		.324	IB0362
78.0	C 48-52	57700	35500	2.99	3.964		.120		.336	IB0375
87.0	C 48-52	59700	38100	3.11	4.107		.120		.348	IB0387
88.0	C 48-52	60700	39400	3.17	4.174		.120		.354	IB0393
93.0	C 48-52	61700	40700	3.23	4.240	+/- .006	.120		.360	IB0400
97.0	C 48-52	63500	42000	3.35	4.365	.006	.120	+ .005	.360	IB0412
101.0	C 48-52	65500	43200	3.48	4.490		.120	- .000	.360	IB0425
105.0	C 48-52	66700	44100	3.49	4.571		.120		.360	IB0433
111.0	C 48-52	69300	45800	3.66	4.740		.120		.360	IB0450
117.0	C 48-52	71300	47000	3.79	4.865		.120		.360	IB0462
124.0	C 45-52	72800	48900	3.89	4.969		.120		.366	IB0475
136.0	C 45-52	73200	49100	4.09	5.260		.120		.390	IB0500
174.0	C 45-52	92700	60000	4.31	5.520	+/- .007	.139		.405	IB0525
179.0	C 45-52	94900	61500	4.41	5.650	.006	.139	+ .006	.405	IB0537
183.0	C 45-52	97200	63300	4.53	5.770		.139	- .000	.405	IB0550
192.0	C 45-52	101600	65900	4.78	6.020		.139		.405	IB0575
201.0	C 45-52	105900	68600	5.03	6.270		.139		.405	IB0600
266.0	C 45-52	137700	74100	5.24	6.530		.174		.420	IB0625
281.0	C 45-52	143300	79900	5.49	6.790		.174		.435	IB0650
305.0	C 45-52	146000	84200	5.60	6.925		.174		.450	IB0662

TG **=Groove wall thrust loads shown are for grooves machined in cold-rolled steel with a tensile yield strength of 45,000 psi.

For shaft material with greater or lesser yield strength, groove wall thrust load increases or decreases proportionally.

Standard Material= is Carbon Spring Steel (SAE 1060-1090)

Standard finish= Oil-dipped

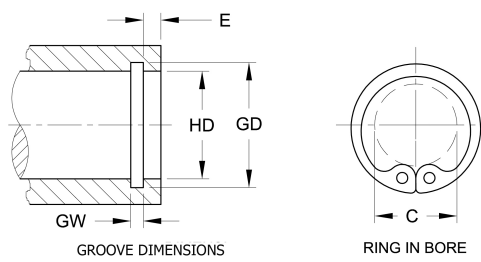


S&M Series IB Internal Basic Ring	HOUSING DIAMETER			RING DIMENSIONS											
	DEC. EQUIV. INCH	FRAC. EQUIV. INCH	MM	FREE DIAMETER	THICKNESS	LARGE SECTION		SMALL SECTION		LUG		HOLE DIAMETER			
ASME-B18-27-1NA2 MIL-R-21248 MS-16625	HD	HD	HD	FD	TOL.	T	TOL.	L	TOL.	S	TOL.	U	TOL.	H	TOL.
IB0675	6.750	6 3/4	171.45	7.445		.156		.456		.224		.530		.187	
IB0700	7.000	7	177.80	7.720		.156		.474		.232		.530		.187	
IB0725	7.250	7 1/4	184.15	7.995		.187		.489		.238		.560	+/- .010	.187	
IB0750	7.500	7 1/2	190.50	8.270		.187		.507		.247		.560		.187	
IB0775	7.750	7 3/4	196.85	8.545		.187		.523		.255		.560		.187	
IB0800	8.000	8	203.20	8.820		.187	+/- .005	.540		.262		.600		.187	
IB0825	8.250	8 1/4	209.55	9.095		.187		.558		.270		.600		.187	
IB0850	8.500	8 1/2	215.90	9.285	+/- .090	.187		.573	+/- .010	.277	+/- .010	.660		.187	
IB0875	8.750	8 3/4	222.20	9.558		.187		.591		.286		.660	+/- .010	.187	+ .202
IB0900	9.000	9	228.60	9.830		.187		.609		.294		.660		.187	-.005
IB0925	9.250	9 1/4	235.00	10.102		.187		.625		.299		.660		.187	
IB0950	9.500	9 1/2	241.30	10.375		.187		.642		.304		.735		.187	
IB0975	9.750	9 3/4	247.70	10.648		.187		.658		.309		.735		.187	
IB1000	10.000	10	254.00	10.920		.187		.675		.315		.735		.187	

Rings must not be over-expanded during installation, since this will lead to ring failure. Providing groove has been machined to recommended dimensions, play between the groove diameter and the inside ring diameter indicates that the ring has been over-expanded.

*C=Ring clearance diameter after ring is applied into groove.

For plated, phosphate-coated, and stainless steel rings, the maximum ring thickness will not exceed the minimum groove width (GW) minus .0002".



APPROX. WT. PER 1000 RINGS (Lbs.)	ROCKWELL HARDNESS (CARBON STEEL W/O PLATING)	Static Thrust Load (Lbs.) Sharp Corner Abutment		RING CLEARANCE	GROOVE DIMENSIONS				EDGE MARGIN	S&M Series IB Internal Basic Ring
		RING	GROOVE		DIAMETER		WIDTH			ASME-B18-27-1NA2 MIL-R-21248 MS-16625
		TR	TG		C*	GD	TOL.	GW		TOL.
325.0	C 45-52	148800	87000	5.65	7.055	+/- .008 .006	.174	+ .008 - .000	.456	IB0675
344.0	C 45-52	154300	93100	5.88	7.315		.174		.471	IB0700
428.0	C 45-52	191500	99600	6.08	7.575		.209		.486	IB0725
485.0	C 45-52	198200	108100	6.33	7.840		.209		.510	IB0750
520.0	C 45-52	204800	115000	6.58	8.100		.209		.525	IB0775
555.0	C 45-52	211400	122000	6.75	8.360		.209		.540	IB0800
603.0	C 45-52	218000	129300	7.00	8.620		.209		.555	IB0825
634.0	C 45-52	224600	136900	7.51	8.880		.209		.570	IB0850
653.0	C 45-52	230400	145500	7.77	9.145		.209		.591	IB0875
732.0	C 45-52	237800	154100	8.03	9.405		.209		.606	IB0900
767.0	C 45-52	244400	163600	8.30	9.668	.209	.627	IB0925		
803.0	C 45-52	251000	173100	8.41	9.930	.209	.645	IB0950		
833.0	C 45-52	257600	181900	8.67	10.190	.209	.660	IB0975		
863.0	C 45-52	264200	190700	8.93	10.450	.209	.675	IB1000		

TG **=Groove wall thrust loads shown are for grooves machined in cold-rolled steel with a tensile yield strength of 45,000 psi.

For shaft material with greater or lesser yield strength, groove wall thrust load increases or decreases proportionally.

Standard Material= is Carbon Spring Steel (SAE 1060-1090)

Standard finish= Oil-dipped