



State of the art motors benefiting from 45 years of experience and innovating constantly to fit your demands.



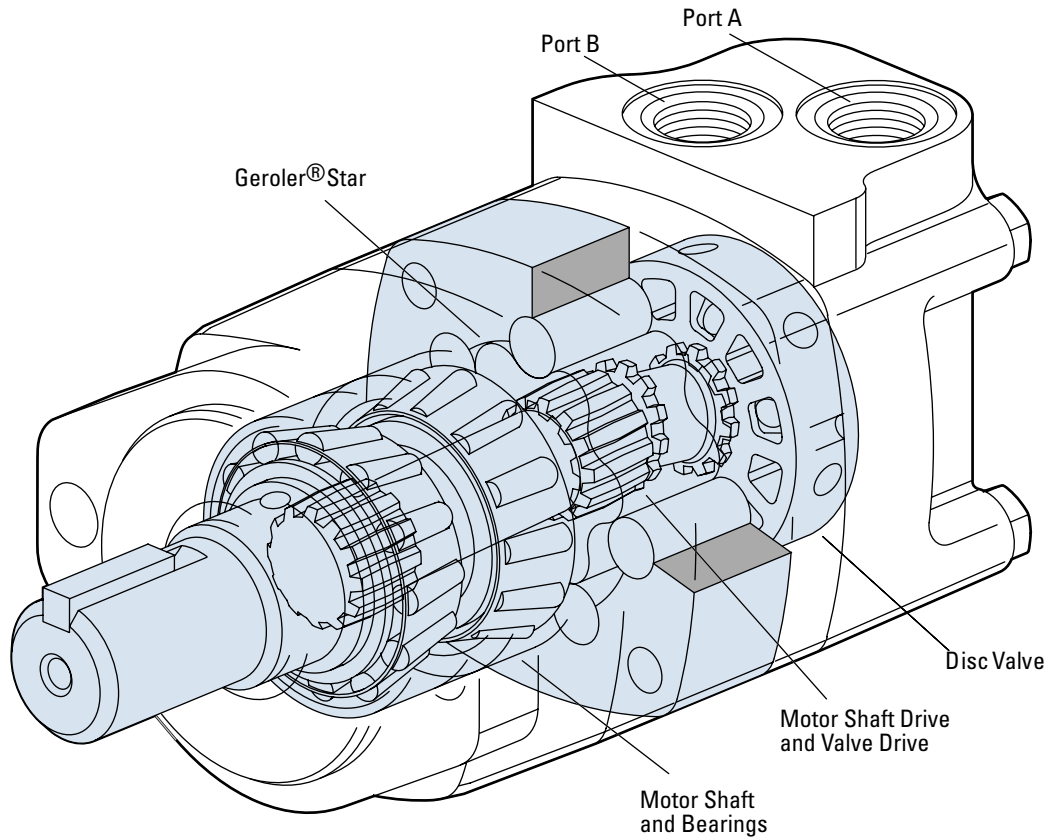
Disc Valve Hydraulic Motors

Highlights

Product Description

In the late 1950's the original low speed, high torque hydraulic motor was developed from a pump Geroler element consisting of an internal gear ring and a mating gear or star. While attaching the internal gear ring to the housing as a non moving part, oil was ported to pressurize and turn the internal star in an orbit around a center point. This slow turning star coupled with a splined drive to the output shaft became the Char-Lynn Orbit® motor.

A few years after this original Char-Lynn Orbit motor was introduced another original motor concept went into production. This motor had rolls incorporated into the internal gear ring, this element was identified by the name Geroler and is a registered trade name of Eaton Hydraulics. From these early years the Geroler motor has seen many design changes to make these Geroler motors the best the industry has to offer. Examine the simplicity of these Geroler disc valve motors shown below. Also examine all the following pages for high value Char-Lynn disc valve motors from Eaton Hydraulics.



Features, Benefits, and Applications

Features

Char-Lynn Hydraulic motors provide design flexibility. All disc valve motors are available with various configurations consisting of:

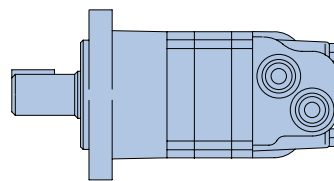
- Displacement (Geroler size)
- Output Shaft
- No Shaft and Bearing Assembly (Bearingless Motor)
- Port Configuration
- Mounting Flange
- Other Special Features

Benefits

- Lowest pressure drop motor in the industry
- Widest range of options
- The most experienced manufacturer of LSHT motors

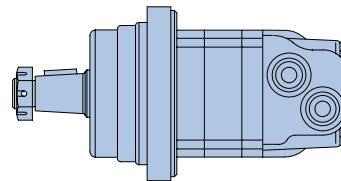
Applications

- Swing motor
- Brush Cutters & mowers
- Harvesting equipment
- Directional boring
- Turf equipment
- Skid Steer loaders
- Fairway mowers
- Harvesters
- Mowing
- Snow removal
- Sprayers
- Trencher
- Wood products
- Grinders and mixers
- Forestry equipment
- Irrigation reels



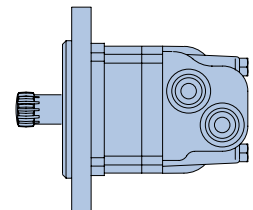
Standard Motor

The standard motor mounting flange is located as close to the output shaft as possible. This type of mounting supports the motor close to the shaft load. This mounting flange is also compatible with many standard gear boxes.



Wheel Motor

The wheel motor mounting flange is located near the center of the motor which permits part or all of the motor to be located inside the wheel or roller hub. In traction drive applications, loads can be positioned over the motor bearings for best bearing life. This wheel motor mounting flange provides design flexibility in many applications.



Bearingless Motor

The bearingless motor has the same drive components as the standard and wheel motors (with the exception that the motor is assembled without the output shaft, bearings and bearing housing). The bearingless motor is especially suited for applications such as gear boxes, winch drives, reel and roll drives. Bearingless motor applications must be designed with a bearing supported internal spline to mate with the bearingless motor drive. Product designs using these hydraulic motors provide considerable cost savings.

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10,000 Series

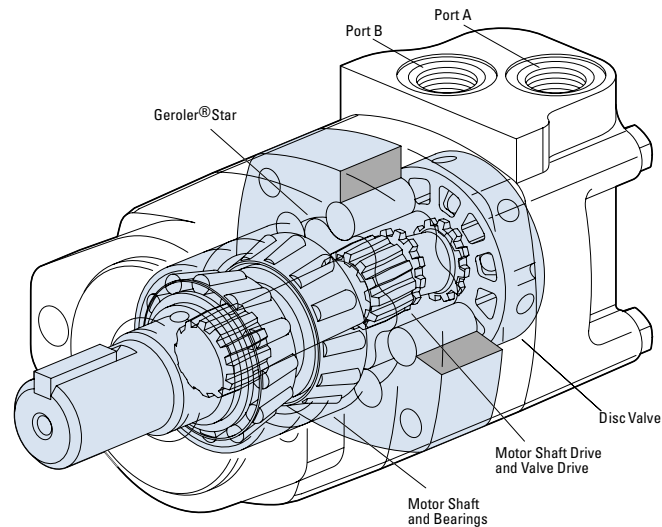
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2000 Series

Highlights



Features

- Three zone design for longer life and true bi-directionality.
- Bearings that meet the highest standards of the industry
- Options to optimize performance in every application
- Integrated cross-over relief valve option

Benefits

- Easy to design in a system
- Reliability and performance in tough application
- Compact design of the integrated cross-over relief valve option

Applications

- Skid Steer Attachments
- Swing Motor
- Brush Cutters & Mowers
- Harvesting Equipment
- Directional Boring any place pressure relief protection is optimal for system or motor performance and life
- Turf equipment

Description

The popular 2000 Series provides torque up to 7500 lb-in. This proven design is reliable and durable. Eaton has added options that make the motor more flexible to use in a wide variety of applications. The integral cross-over relief valve is the latest innovation in the 2000 series motors.

2000 Series

Geroler Element	10 Displacements
Flow l/min [GPM]	75 [20] Continuous** 115 [30] Intermittent*
Speed RPM	908 Cont.** 1042 Inter.*
Pressure bar [PSI]	200 [3000] Cont.** 300 [4500] Inter.*
Torque Nm [lb-in]	845 [7470] Cont.** 930 [8225] Inter.*

** Continuous—(Cont.) Continuous rating, motor may be run continuously at these ratings.

* Intermittent—(Inter.) Intermittent operation, 10% of every minute.



Auger



Boring



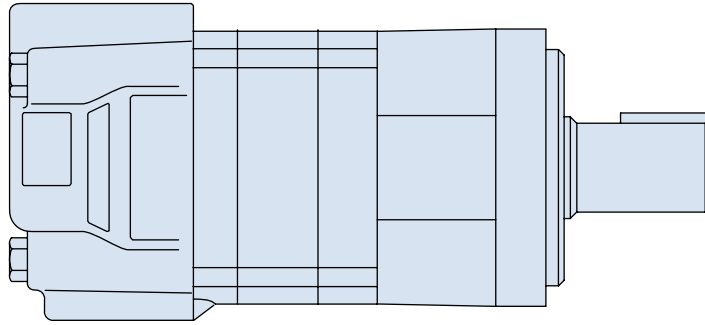
Plastic Injection



Oil and Gas Equipment

2000 Series

Specifications



SPECIFICATION DATA — 2000 SERIES MOTORS

Displ. cm ³ /r [in ³ /r]		80 [4.9]	90 [5.5]	100 [6.2]	130 [8.0]	160 [9.6]	195 [11.9]	245 [14.9]	305 [18.7]	395 [24.0]	490 [29.8]
Max. Speed (RPM)	Continuous	908	836	742	576	477	385	308	246	191	153
	Intermittent	908	1042	924	720	713	577	462	365	287	230
@ Flow											
Flow l/min [GPM]	Continuous	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]
	Intermittent	75 [20]	95 [25]	95 [25]	95 [25]	115 [30]	115 [30]	115 [30]	115 [30]	115 [30]	115 [30]
Torque* Nm [lb-in]	Continuous	235 [2065]	265 [2326]	295 [2630]	385 [3420]	455 [4040]	540 [4780]	660 [5850]	765 [6750]	775 [6840]	845 [7470]
	Intermittent	345 [3035]	390 [3458]	445 [3950]	560 [4970]	570 [5040]	665 [5890]	820 [7250]	885 [7820]	925 [8170]	930 [8225]
Pressure Δ bar [Δ PSI]	Continuous	205 [3000]	205 [3000]	205 [3000]	205 [3000]	205 [3000]	205 [3000]	205 [3000]	205 [3000]	155 [2250]	120 [1750]
	Intermittent	310 [4500]	310 [4500]	310 [4500]	310 [4500]	260 [3750]	260 [3750]	260 [3750]	260 [3700]	170 [2750]	140 [2000]
	Peak	310 [4500]	310 [4500]	310 [4500]	310 [4500]	310 [4500]	310 [4500]	310 [4500]	310 [4500]	205 [3250]	170 [2500]
Weight kg [lb]	Standard or Wheel Mount	9.3 [20.5]	9.3 [20.5]	9.5 [21.0]	9.8 [21.5]	10.0 [22.0]	10.4 [23.0]	10.9 [24.0]	11.3 [25.0]	11.8 [26.0]	12.2 [27.0]
	Bearingless	7.3 [16.0]	7.3 [16.0]	7.5 [16.5]	7.7 [17.0]	7.9 [17.5]	8.4 [18.5]	8.8 [18.5]	9.3 [20.5]	9.8 [21.5]	10.2 [22.5]

Maximum Case Pressure: See case pressure seal limitation graph.

*See shaft torque ratings for limitations.

Note:

To assure best motor life, run motor for approximately one hour at 30% of rated pressure before application to full load. Be sure motor is filled with fluid prior to any load applications.

Maximum Inlet Pressure:

310 bar [4500 PSI]
Do not exceed Δ pressure rating (see chart above).

Maximum Return Pressure:

310 bar [4500 PSI] with case drain line installed.
Do not exceed Δ pressure rating (see chart above).

Δ bar [Δ PSI] :

The true pressure difference between inlet port and outlet port

Continuous Rating:

Motor may be run continuously at these ratings

Intermittent Operation:

10% of every minute

Peak Operation:

1% of every minute

Recommended Fluids:

Premium quality, anti-wear type hydraulic oil with a viscosity of not less than 70 SUS at operating temperature.

Recommended Maximum System Operating Temp.:

82° C [180° F]

Recommended Filtration:





per ISO Cleanliness Code, 4406: 20/18/13

2000 Series

Performance Data

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

Performance data is typical at 120 SUS. Actual data may vary slightly from unit to unit in production.

	Continuous		Peak
	Intermittent		No Operation

80 cm³/r [4.9 in³/r]
 Δ Pressure Bar [PSI]

	[500]	[1000]	[1500]	[2000]	[2500]	[3000]	[3500]	[4000]	[4500]
	35	70	105	140	170	205	240	275	310
[.25]	[210]	[420]							
.95	25 3	45 1							
[.5]	[250]	[500]	[740]						
1.9	30 17	50 8	85 3						
[1]	[330]	[670]	[990]	[1300]	[1550]	[1800]	[1950]	[2110]	
3.8	35 44	75 40	110 37	145 34	175 28	205 22	220 14	240 2	
[2]	[330]	[670]	[995]	[1310]	[1580]	[1840]	[2100]	[2365]	[2630]
7.5	35 90	75 85	110 81	150 78	180 72	210 65	235 57	265 49	295 42
[4]	[325]	[670]	[1005]	[1330]	[1620]	[1920]	[2200]	[2480]	[2765]
15	35 182	75 176	115 170	150 166	185 159	215 152	250 140	280 128	310 117
[6]	[320]	[665]	[1010]	[1340]	[1655]	[1975]	[2270]	[2570]	[2880]
23	35 273	75 267	115 259	150 254	185 246	225 238	255 223	290 207	325 192
[8]	[310]	[660]	[1015]	[1345]	[1685]	[2020]	[2330]	[2640]	[2960]
30	35 365	75 375	115 349	150 341	190 333	230 325	265 306	300 286	335 266
[10]	[300]	[650]	[1010]	[1350]	[1700]	[2050]	[2370]	[2690]	[3010]
38	35 456	75 448	115 439	155 429	190 420	230 411	270 388	305 364	340 341
[12]	[285]	[640]	[1005]	[1350]	[1705]	[2065]	[2390]	[2715]	[3035]
45	30 547	70 537	115 530	155 516	195 507	235 497	270 470	305 442	345 415
[14]	[270]	[625]	[990]	[1340]	[1705]	[2065]	[2395]	[2720]	[3030]
53	30 638	70 629	110 622	150 603	195 593	235 584	270 553	305 521	340 490
[16]	[255]	[610]	[975]	[1330]	[1690]	[2055]	[2385]	[2700]	[2995]
61	30 729	70 720	110 714	150 689	190 679	230 670	270 635	305 599	340 564
[18]	[230]	[590]	[955]	[1310]	[1680]	[2025]	[2355]	[2660]	[2935]
68	25 818	65 810	110 795	150 775	190 765	230 756	265 717	300 677	330 638
[20]	[210]	[570]	[930]	[1290]	[1645]	[1985]	[2305]	[2600]	[2845]
76	25 908	65 901	105 880	145 861	185 851	225 842	260 799	295 755	320 712

90 cm³/r [5.5 in³/r]
 Δ Pressure Bar [PSI]

	[250]	[500]	[1000]	[1500]	[2000]	[2500]	[3000]	[3500]	[4000]	[4500]
	15	35	70	105	140	170	205	240	275	310
[.25]	[124]	[233]	[471]							
.95	14 5	26 2	53 1							
[.5]	[133]	[273]	[555]	[832]						
1.9	15 15	31 13	63 6	94 2						
[1]	[151]	[358]	[744]	[1091]	[1424]	[1697]	[1952]	[2189]	[2368]	
3.8	17 39	40 39	84 35	123 32	161 28	192 21	221 13	247 12	268 2	
[2]	[151]	[358]	[744]	[1099]	[1439]	[1737]	[2015]	[2293]	[2570]	[2855]
7.5	17 82	40 80	84 76	124 72	163 68	196 61	228 50	259 38	290 29	323 20
[4]	[151]	[350]	[899]	[1113]	[1473]	[1800]	[2132]	[2454]	[2775]	[3100]
15	17 167	40 163	102 158	126 152	166 148	203 139	241 126	277 115	314 102	350 90
[6]	[142]	[348]	[736]	[613]	[1492]	[1851]	[2208]	[2552]	[2898]	[3249]
23	16 250	39 245	83 240	69 233	169 227	209 218	249 203	288 191	327 176	367 161
[8]	[133]	[338]	[729]	[1128]	[1509]	[1890]	[2269]	[2635]	[3000]	[3367]
30	15 35	38 328	82 329	127 314	170 306	214 295	256 281	298 266	339 249	380 231
[10]	[124]	[331]	[724]	[1130]	[1521]	[1912]	[2309]	[2670]	[3036]	[3398]
38	14 418	37 410	82 404	128 395	172 385	216 373	261 361	302 342	343 322	384 302
[12]	[106]	[315]	[714]	[1127]	[1525]	[1924]	[2326]	[2704]	[3082]	[3458]
45	12 502	36 493	81 485	127 477	172 464	217 451	263 441	306 417	348 394	391 372
[14]	[98]	[298]	[706]	[1115]	[1525]	[1924]	[2326]	[2707]	[3080]	[3450]
53	11 585	34 575	80 567	126 559	172 543	217 529	263 521	306 493	348 467	390 431
[16]	[80]	[285]	[688]	[1107]	[1510]	[1907]	[2311]	[2697]	[3070]	[3432]
61	9 670	32 658	78 650	125 641	171 622	215 607	261 610	305 568	347 541	388 513
[18]	[62]	[262]	[673]	[1087]	[1490]	[1892]	[2281]	[2662]	[3030]	[3381]
68	7 753	30 740	76 732	123 719	168 701	214 685	258 680	301 643	342 613	382 583
[20]	[53]	[242]	[644]	[1045]	[1447]	[1850]	[2246]	[2617]	[2988]	[3301]
76	6 836	27 822	73 814	118 796	163 780	209 765	254 748	296 719	338 686	373 653
[22]	[35]	[231]	[639]	[1047]	[1437]	[1836]	[2218]	[2599]	[2981]	
83	4 920	26 916	72 907	118 895	162 876	207 854	251 843	294 803	337 774	
[24]	[18]	[204]	[612]	[1011]	[1366]	[1792]	[2182]	[2573]	[2963]	
91	2 1003	23 1000	69 991	114 978	154 960	202 940	247 918	291 882	335 850	
[25]		[195]	[594]	[994]	[1384]	[1765]	[2173]	[2564]		
95		22 1042	67 1033	112 1020	156 1003	199 984	246 954	290 921		

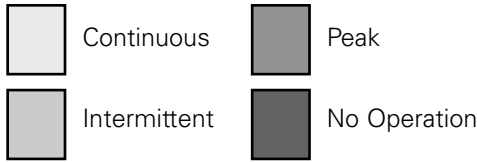
[570]
65 } Torque [lb-in]
901 } Nm
Speed RPM

2000 Series

Performance Data

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

Performance data is typical at 120 SUS. Actual data may vary slightly from unit to unit in production.

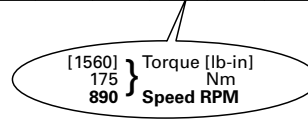


100 cm³/r [6.2 in³/r]
 Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[1000] 70	[1500] 105	[2000] 140	[2500] 170	[3000] 205	[3500] 240	[4000] 275	[4500] 310
[.25] .95	[140] 15 4	[260] 30 2								
[.5] 1.9	[150] 15 13	[300] 35 9	[620] 70 5	[940] 105 2						
[1] 3.8	[170] 20 35	[390] 45 34	[830] 95 31	[1210] 135 28	[1570] 175 23	[1870] 210 15	[2130] 240 6			
[2] 7.5	[170] 20 73	[390] 45 71	[830] 95 68	[1220] 140 63	[1590] 180 59	[1920] 215 51	[2220] 250 38	[2520] 285 24	[2810] 315 14	[3120] 355 4
[4] 15	[170] 20 148	[380] 45 145	[820] 90 141	[1240] 140 136	[1640] 185 131	[2010] 225 121	[2380] 270 104	[2750] 310 94	[3120] 355 80	[3490] 395 69
[6] 23	[160] 20 222	[380] 45 219	[820] 90 215	[1260] 140 209	[1670] 190 202	[2080] 235 192	[2480] 280 172	[2880] 325 163	[3280] 370 149	[3680] 415 134
[8] 30	[150] 15 297	[370] 40 294	[810] 90 288	[1260] 140 281	[1700] 190 273	[2130] 240 261	[2560] 290 243	[2990] 340 231	[3420] 385 216	[3840] 435 200
[10] 38	[140] 15 371	[368] 40 367	[810] 90 362	[1270] 145 354	[1720] 195 344	[2160] 245 330	[2610] 295 316	[3020] 340 300	[3440] 390 283	[3850] 435 266
[12] 45	[120] 15 445	[350] 40 442	[800] 90 436	[1270] 145 427	[1730] 195 415	[2180] 245 399	[2630] 295 389	[3070] 345 369	[3510] 395 350	[3950] 445 332
[14] 53	[110] 10 519	[330] 35 516	[800] 90 509	[1260] 140 500	[1740] 195 486	[2180] 245 469	[2630] 295 463	[3070] 345 437	[3500] 395 417	[3940] 445 378
[16] 61	[90] 10 594	[320] 35 591	[780] 90 583	[1260] 140 573	[1720] 195 558	[2160] 245 540	[2610] 295 537	[3060] 345 506	[3500] 395 485	[3940] 445 463
[18] 68	[70] 10 668	[300] 35 665	[770] 85 657	[1240] 140 646	[1700] 190 630	[2140] 240 611	[2580] 290 609	[3020] 340 574	[3460] 390 552	[3900] 440 529
[20] 76	[60] 5 742	[280] 30 739	[730] 80 731	[1180] 135 715	[1630] 185 703	[2090] 235 684	[2550] 290 662	[2980] 335 643	[3440] 390 619	[3830] 435 595
[22] 83	[40] 5 816	[260] 30 813	[720] 80 805	[1180] 135 794	[1620] 185 777	[2070] 235 758	[2500] 280 749	[2930] 330 712	[3360] 380 687	
[24] 91	[20] 1,0 890	[230] 30 887	[690] 80 879	[1140] 130 868	[1540] 175 852	[2020] 230 834	[2460] 280 814	[2900] 330 782	[3340] 375 754	
[25] 95		[220] 25 924	[670] 75 916	[1120] 125 905	[1560] 175 890	[1990] 225 873	[2450] 275 846	[2890] 325 817		

130 cm³/r [8.0 in³/r]
 Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[1000] 70	[1500] 105	[2000] 140	[2500] 170	[3000] 205	[3500] 240	[4000] 275	[4500] 310
[.25] .95	[170] 20 3									
[.5] 1.9	[190] 20 12	[410] 45 8	[870] 100 2							
[1] 3.8	[230] 25 28	[510] 60 27	[1070] 120 23	[1580] 180 19	[2050] 230 16	[2520] 285 13	[2920] 330 9	[3310] 375 3		
[2] 7.5	[230] 25 56	[510] 60 56	[1080] 120 53	[1600] 180 47	[2090] 235 42	[2580] 290 39	[2930] 330 36	[3320] 375 28	[3640] 410 21	[3990] 450 13
[4] 15	[220] 25 114	[500] 55 113	[1080] 120 111	[1620] 185 104	[2150] 245 97	[2660] 300 95	[3100] 350 92	[3540] 400 85	[3980] 450 77	[4420] 500 70
[6] 23	[220] 25 172	[490] 55 171	[1080] 120 169	[1640] 185 161	[2190] 245 153	[2740] 310 149	[3260] 370 146	[3770] 425 132	[4280] 485 118	[4800] 540 104
[8] 30	[200] 25 230	[480] 55 224	[1080] 120 222	[1650] 185 219	[2220] 250 210	[2780] 315 204	[3310] 375 201	[3840] 435 192	[4360] 495 184	[4890] 550 175
[10] 38	[180] 20 287	[470] 55 286	[1070] 120 282	[1650] 185 276	[2230] 250 269	[2800] 315 261	[3420] 385 255	[3940] 445 243	[4450] 505 231	[4970] 560 219
[12] 45	[160] 20 345	[460] 50 344	[1060] 120 338	[1640] 185 333	[2230] 250 327	[2800] 315 317	[3350] 380 307	[3910] 440 295	[4440] 500 284	[4960] 560 272
[14] 53	[150] 15 403	[440] 50 402	[1030] 115 395	[1620] 185 391	[2220] 250 385	[3000] 340 373	[3350] 380 360	[3910] 440 348	[4440] 500 336	
[16] 61	[130] 15 461	[420] 45 460	[1010] 115 452	[1600] 180 447	[2200] 250 443	[2780] 315 430	[3330] 375 411	[3890] 440 397	[4440] 500 384	
[18] 68	[110] 10 518	[400] 45 517	[990] 110 509	[1580] 180 504	[2160] 245 500	[2750] 310 484	[3300] 375 471	[3860] 435 456	[4410] 500 440	
[20] 76	[90] 10 576	[380] 45 575	[960] 110 568	[1550] 175 560	[2130] 240 551	[2710] 305 539	[3280] 370 524	[3840] 435 508		
[22] 83	[60] 5 634	[350] 40 633	[940] 105 624	[1520] 170 619	[2100] 235 604	[2680] 305 597	[3250] 365 579	[3820] 430 560		
[24] 91	[40] 5 692	[325] 35 691	[920] 105 682	[1490] 170 676	[2070] 235 665	[2650] 300 651	[3220] 365 633	[3780] 425 616		
[25] 95	[20] 1,0 720	[310] 35 719	[900] 100 712	[1480] 165 705	[2050] 230 692	[2630] 295 679	[3200] 360 682	[3700] 420 656		







2000 Series

Performance Data

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

Performance data is typical at 120 SUS. Actual data may vary slightly from unit to unit in production.

	Continuous		Peak
	Intermittent		No Operation

245 cm³/r [14.9 in³/r]
Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[750] 50	[1000] 70	[1250] 85	[1500] 105	[1750] 120	[2000] 140	[2250] 155	[2500] 170	[2750] 190	[3000] 205	[3250] 225	[3500] 240	[3750] 260
[.5] 1.9	[410] 45 4	[850] 95 2													
[1] 3.8	[450] 50 14	[930] 105 13	[1420] 160 12	[1850] 210 11	[2320] 260 10	[2780] 315 9	[3250] 365 8	[3650] 410 6	[4100] 465 5	[4540] 515 4	[4980] 560 4	[5430] 615 3	[5870] 665 2	[6310] 715 1	
[2] 7.5	[460] 50 29	[960] 110 28	[1460] 165 27	[1900] 215 26	[2400] 270 25	[2860] 325 23	[3340] 375 22	[3780] 425 20	[4320] 490 19	[4770] 540 18	[5210] 590 17	[5660] 640 15	[6110] 690 14	[6570] 740 12	[6950] 785 10
[4] 15	[470] 55 60	[1000] 115 59	[1540] 175 58	[1980] 225 56	[2510] 285 54	[3010] 340 53	[3480] 395 51	[3980] 450 49	[4450] 505 48	[4910] 555 47	[5380] 610 46	[5850] 660 46	[6320] 715 45	[6780] 765 44	[7250] 820 42
[6] 23	[460] 50 91	[1020] 110 90	[1550] 175 89	[2040] 230 87	[2580] 290 84	[3110] 350 83	[3590] 405 81	[4120] 465 78	[4580] 515 76	[5050] 570 73	[5520] 625 71	[5980] 675 69	[6440] 730 67	[6910] 780 65	
[8] 30	[460] 50 122	[1010] 115 121	[1560] 175 120	[2080] 235 118	[2630] 295 115	[3170] 360 113	[3670] 415 111	[4210] 475 108	[4680] 530 106	[5160] 585 104	[5630] 635 102	[6110] 690 100	[6590] 745 99		
[10] 38	[440] 50 153	[1000] 115 152	[1550] 175 150	[2110] 240 148	[2650] 300 146	[3200] 360 144	[3730] 420 142	[4250] 480 139	[4730] 535 137	[5210] 580 135	[5720] 635 133	[6230] 705 133			
[12] 45	[410] 45 184	[960] 110 183	[1530] 175 182	[2100] 235 180	[2640] 300 177	[3190] 360 175	[3760] 425 173	[4260] 480 170	[4740] 535 168	[5220] 600 165	[5730] 645 162				
[14] 53	[380] 40 215	[910] 105 214	[1500] 170 213	[2080] 235 211	[2600] 295 209	[3160] 355 207	[3760] 425 204	[4230] 480 201	[4710] 530 198	[5190] 585 195					
[16] 61	[340] 40 246	[860] 95 245	[1460] 165 244	[2040] 230 242	[2570] 290 240	[3120] 355 238	[3740] 425 235	[4180] 475 232	[4660] 525 227	[5140] 575 223					
[18] 68	[290] 30 277	[810] 90 276	[1420] 160 275	[2000] 225 273	[2520] 285 271	[3060] 345 269	[3700] 420 266	[4130] 465 263	[4610] 520 258	[5090] 575 253					
[20] 76	[250] 30 308	[800] 90 306	[1350] 155 304	[1910] 215 302	[2460] 280 300	[3010] 340 298	[3630] 410 295	[4110] 465 291	[4610] 520 288						
[22] 83	[200] 25 339	[710] 80 337	[1300] 145 337	[1870] 210 334	[2390] 270 332	[2940] 330 330	[3560] 400 327	[4010] 455 323	[4510] 510 318						
[24] 91	[150] 15 370	[670] 75 369	[1240] 140 367	[1790] 200 364	[2330] 265 362	[2880] 325 360	[3460] 390 357	[3960] 445 353	[4460] 505 344						
[25] 95	[120] 15 385	[660] 75 384	[1210] 135 382	[1750] 200 379	[2300] 260 377	[2860] 325 375	[3410] 385 372	[3950] 445 367	[4470] 505 363						
[30] 114		[520] 60 462	[1080] 120 460	[1620] 185 458	[2180] 245 456	[2720] 305 453	[3260] 370 450	[3790] 430 447							

305 cm³/r [18.7 in³/r]
Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[750] 50	[1000] 70	[1250] 85	[1500] 105	[1750] 120	[2000] 140	[2250] 155	[2500] 170	[2750] 190	[3000] 205	[3250] 225	[3500] 240
[.5] 1.9	[500] 55 4	[1050] 120 2												
[1] 3.8	[610] 70 12	[1180] 135 11	[1750] 200 11	[2330] 260 10	[2870] 325 10	[3440] 390 9	[3930] 445 8	[4410] 500 6	[4900] 555 3	[5380] 610 1				
[2] 7.5	[620] 70 24	[1210] 135 24	[1800] 205 23	[2400] 270 22	[2970] 335 22	[3510] 395 20	[4050] 460 19	[4600] 520 18	[5140] 580 17	[5680] 640 15	[6220] 705 13	[6750] 765 11	[7290] 825 8	[7820] 885 6
[4] 15	[680] 75 49	[1250] 140 49	[1880] 210 48	[2500] 280 47	[3120] 355 47	[3690] 415 45	[4260] 480 43	[4840] 545 42	[5410] 610 40	[5980] 675 38	[6550] 740 36	[7120] 805 34	[7690] 870 33	
[6] 23	[620] 70 74	[1270] 145 74	[1920] 215 72	[2560] 290 72	[3230] 365 71	[3810] 430 69	[4390] 495 66	[4970] 560 64	[5560] 630 61	[6130] 695 58	[6710] 760 55	[7290] 825 52		
[8] 30	[600] 70 98	[1270] 145 98	[1940] 220 97	[2600] 295 96	[3290] 370 95	[3880] 440 93	[4470] 505 90	[5070] 575 86	[5660] 640 83	[6250] 705 80	[6840] 775 77			
[10] 38	[570] 65 123	[1250] 140 122	[1940] 220 121	[2610] 295 120	[3310] 375 119	[3920] 440 117	[4530] 510 113	[5150] 580 110	[5760] 650 106	[6370] 720 102				
[12] 45	[530] 60 148	[1220] 140 147	[1920] 215 145	[2600] 295 144	[3300] 375 143	[3920] 440 142	[4530] 510 138	[5150] 580 133	[5760] 650 128	[6370] 720 124				
[14] 53	[480] 55 172	[1180] 135 172	[1870] 210 170	[2560] 290 168	[3260] 370 167	[3900] 440 165	[4510] 510 160	[5120] 580 156	[5730] 645 152					
[16] 61	[430] 50 196	[1120] 125 196	[1820] 205 194	[2500] 280 192	[3210] 365 191	[3870] 440 188	[4480] 505 183	[5080] 575 178	[5690] 645 174					
[18] 68	[370] 40 221	[1060] 120 221	[1760] 200 218	[2440] 275 217	[3140] 355 215	[3800] 440 212	[4420] 500 207	[5050] 570 202						
[20] 76	[320] 35 246	[980] 110 245	[1680] 190 243	[2360] 265 241	[3050] 345 239	[3710] 420 236	[4370] 495 231	[5020] 565 226						
[22] 83	[240] 25 271	[920] 105 270	[1620] 185 268	[2300] 260 266	[2990] 340 263	[3560] 400 260	[4190] 475 258	[4820] 545 255						
[24] 91	[180] 20 296	[870] 100 294	[1550] 175 293	[2240] 255 290	[2920] 330 288	[3420] 385 285	[4020] 455 283	[4630] 525 280						
[25] 95	[150] 15 308	[840] 95 307	[1520] 170 305	[2200] 250 303	[2890] 325 300	[3340] 375 298	[3930] 445 295	[4520] 510 293						
[30] 114		[680] 75 365	[1360] 155 362	[2040] 230 360	[2720] 305 357	[3140] 355 356	[3810] 430 352							

[3260] Torque [lb-in]
[370] Nm
[450] Speed RPM

2000 Series

Performance Data

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

Performance data is typical at 120 SUS. Actual data may vary slightly from unit to unit in production.

	Continuous		Peak
	Intermittent		No Operation

490 cm³/r [29.8 in³/r] Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[750] 50	[1000] 70	[1250] 85	[1500] 105	[1750] 120	[2000] 140
[.5]	[670] 75 2	[1600] 180 1						
1.9								
[1]	[920] 105 7	[2000] 225 6	[2990] 340 5	[3900] 440 4	[4880] 550 2			
3.8								
[2]	[950] 105 14	[2060] 235 13	[3110] 350 12	[4080] 460 10	[5110] 575 9	[6320] 715 7		
7.5								
[4]	[980] 110 30	[2130] 240 29	[3230] 365 28	[4270] 480 27	[5350] 605 26	[6370] 720 24	[7380] 835 22	[7980] 900 20
15								
[6]	[980] 110 45	[2120] 240 44	[3230] 365 43	[4300] 485 42	[5370] 605 41	[6420] 725 39	[7470] 845 37	[8225] 930 35
23								
[8]	[980] 110 61	[2110] 240 60	[3220] 365 59	[4330] 490 58	[5400] 610 57	[6470] 730 55	[7550] 855 52	
30								
[10]	[920] 105 76	[2050] 230 75	[3170] 360 74	[4300] 485 73	[5390] 610 72	[6460] 730 70	[7550] 855 68	
38								
[12]	[860] 95 91	[1990] 225 90	[3120] 355 90	[4260] 480 89	[5370] 605 87	[6460] 730 85	[7560] 855 84	
45								
[14]	[790] 90 106	[1930] 220 105	[3055] 345 105	[4185] 475 104	[5300] 600 102	[6400] 725 100		
53								
[16]	[720] 80 122	[1870] 210 121	[2990] 340 120	[4110] 465 119	[5230] 590 118	[6340] 715 116		
61								
[18]	[630] 70 137	[1770] 200 136	[2890] 325 135	[4020] 455 134	[5140] 580 133	[6260] 705 131		
68								
[20]	[550] 60 153	[1670] 190 152	[2800] 315 151	[3940] 445 150	[5060] 570 149	[6180] 700 146		
76								
[22]	[450] 50 168	[1570] 175 168	[2700] 305 167	[3830] 435 165	[4960] 560 164	[6070] 685 161		
83								
[24]	[360] 40 184	[1480] 165 184	[2600] 295 183	[3730] 420 181	[4860] 550 179	[5970] 675 177		
91								
[26]	[270] 30 199	[1390] 155 195	[2510] 285 194	[3640] 410 192	[4770] 540 190			
98								
[28]		[1260] 140 212	[2370] 270 211	[3520] 400 209	[4630] 525 207			
106								
[30]		[1130] 125 230	[2240] 255 229	[3400] 385 277	[4500] 510 224			
114								

395 cm³/r [24.0 in³/r] Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[750] 50	[1000] 70	[1250] 85	[1500] 105	[1750] 120	[2000] 140	[2250] 155	[2500] 170	[2750] 190
[.5]	[560] 65 4	[1310] 150 3									
1.9											
[1]	[770] 85 9	[1540] 175 9	[2290] 260 9	[3080] 350 8	[3780] 430 8	[4480] 505 7	[5170] 585 7	[5880] 665 6	[6580] 745 5	[7270] 820 4	[7980] 900 3
3.8											
[2]	[790] 90 18	[1580] 180 18	[2360] 265 18	[3180] 360 17	[3930] 445 17	[4680] 530 16	[5430] 615 15	[6180] 700 14	[6840] 775 13	[7500] 845 11	[8170] 925 10
7.5											
[4]	[810] 90 37	[1660] 190 37	[2480] 280 37	[3320] 375 36	[4130] 465 36	[4940] 560 35	[5740] 650 34	[6550] 740 33	[7230] 815 31	[7880] 890 28	
15											
[6]	[820] 90 57	[1700] 190 56	[2550] 290 56	[3420] 385 55	[4250] 480 54	[5080] 575 52	[5920] 670 50	[6750] 765 49	[7420] 840 47	[8000] 905 45	
23											
[8]	[820] 90 76	[1700] 190 75	[2580] 290 75	[3460] 390 74	[4300] 485 73	[5130] 580 71	[5960] 675 69	[6800] 770 68			
30											
[10]	[800] 90 95	[1700] 190 94	[2590] 295 94	[3480] 395 93	[4320] 490 92	[5160] 585 90	[6000] 680 88	[6840] 775 86			
38											
[12]	[770] 85 114	[1680] 190 113	[2570] 290 113	[3470] 390 112	[4310] 485 111	[5150] 580 109	[5990] 675 106	[6830] 770 103			
45											
[14]	[740] 85 133	[1640] 185 132	[2530] 285 132	[3430] 390 131	[4280] 485 129	[5120] 580 127	[5960] 675 124				
53											
[16]	[690] 80 153	[1590] 180 152	[2480] 280 152	[3370] 380 150	[4220] 485 149	[5060] 580 146	[5910] 670 144				
61											
[18]	[640] 70 172	[1530] 170 171	[2420] 275 171	[3310] 375 170	[4160] 470 169	[5010] 565 167	[5870] 665 164				
68											
[20]	[580] 65 191	[1470] 165 190	[2370] 270 190	[3260] 370 189	[4110] 465 188	[4960] 575 186	[5820] 660 184				
76											
[22]	[510] 60 210	[1390] 155 209	[2290] 260 209	[3170] 360 208	[4030] 455 207	[4880] 550 206					
83											
[24]	[440] 50 230	[1330] 150 229	[2220] 250 228	[3100] 350 227	[3950] 445 225	[4800] 540 224					
91											
[26]	[350] 40 249	[1240] 140 248	[2130] 240 247	[3020] 340 246	[3880] 440 244	[4730] 535 242					
98											
[28]	[270] 30 268	[1150] 130 267	[2050] 230 265	[2930] 330 264	[3790] 430 261	[4650] 525 259					
106											
[30]	[180] 20 287	[1060] 120 286	[1960] 220 284	[2850] 320 283	[3710] 420 281	[4570] 515 277					
114											
[35]		[840] 95 335	[1760] 200 334	[2640] 300 333	[3480] 395 332						
132											

[1760]
200
334 } Torque [lb-in]
Nm
Speed RPM

2000 Series

Dimensions

Standard Mount

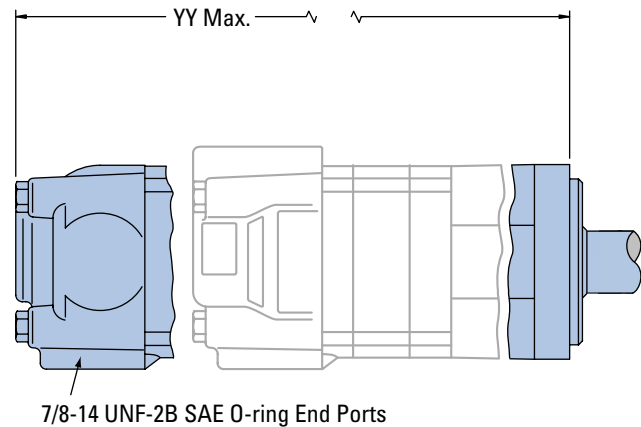
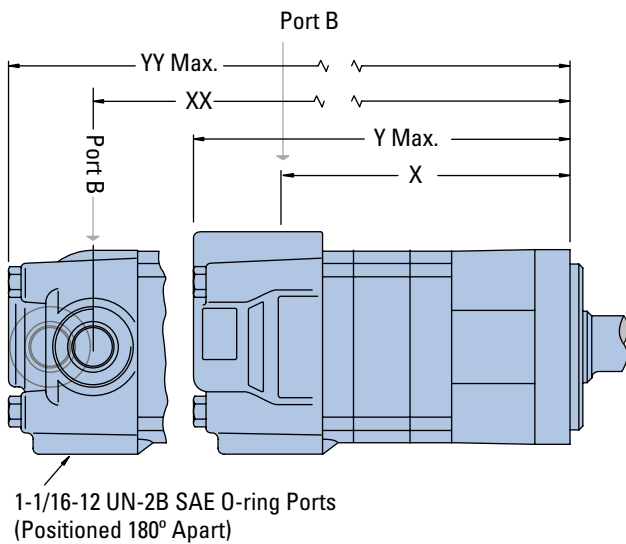
Ports

- 7/8 -14 UNF-2B SAE O-ring Staggered Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- 1 1/16 -12 UN-2B SAE O-ring Ports (Positioned 180° Apart) (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- 7/8 -14 UNF-2B SAE O-ring End Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- G 1/2 (BSP) Staggered Ports (2)
- G 1/4 (BSP) Case Drain Port (1) or
- Manifold Mount
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1)

Standard Rotation Viewed from Shaft End

- Port A Pressurized — CW
- Port B Pressurized — CCW

Standard Mount



STANDARD MOUNT MOTOR DIMENSIONS

Displacement cm ³ /r [in ³ /r]	X mm [inch]	Y mm [inch]	XX mm [inch]	YY mm [inch]
80 [4.9]	136,9 [5.39]	184,2 [7.25]	139,2 [5.48]	185,4 [7.30]
100 [6.2]	141,5 [5.57]	189,0 [7.44]	143,8 [5.66]	190,3 [7.49]
130 [8.0]	147,9 [5.83]	195,4 [7.69]	150,2 [5.92]	196,6 [7.74]
160 [9.6]	147,9 [5.83]	195,4 [7.69]	150,2 [5.92]	196,6 [7.74]
195 [11.9]	154,7 [6.09]	202,2 [7.96]	157,0 [6.18]	203,2 [8.00]
245 [14.9]	163,7 [6.45]	211,1 [8.31]	166,0 [6.54]	212,4 [8.36]
305 [18.7]	175,1 [6.90]	222,3 [8.75]	177,4 [6.99]	223,5 [8.80]
395 [24.0]	191,0 [7.52]	238,6 [9.39]	193,3 [7.61]	239,8 [9.44]
490 [29.8]	208,4 [8.21]	255,8 [10.07]	210,7 [8.30]	270,1 [10.12]

2000 Series

Dimensions

Standard Mount with
Integral Relief Valve

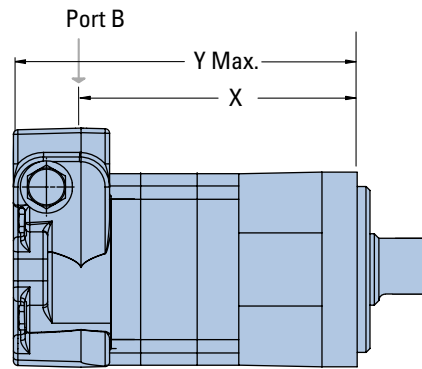
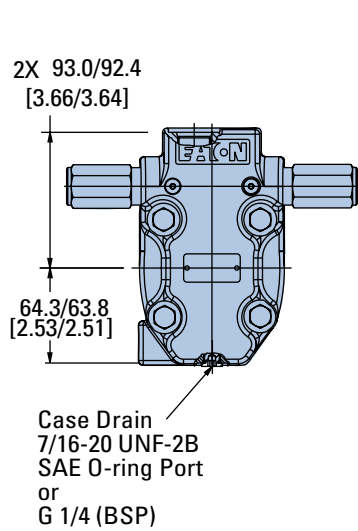
Ports

- 7/8 -14 UNF-2B SAE O-ring Staggered Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- G 1/2 (BSP) Staggered Ports (2)
- G 1/4 (BSP) Case Drain Port (1)

Standard Rotation Viewed from Shaft End

- Port A Pressurized — CW
- Port B Pressurized — CCW

Standard Mount with Integral Relief Valve



STANDARD MOUNT MOTOR DIMENSIONS

Displacement cm ³ /r [in ³ /r]	X mm [inch]	Y mm [inch]
80 [4.9]	137,0 [5.40]	184,5 [7.26]
100 [6.2]	141,6 [5.58]	189,0 [7.44]
130 [8.0]	147,9 [5.83]	195,4 [7.69]
160 [9.6]	147,9 [5.83]	195,4 [7.69]
195 [11.9]	154,8 [6.10]	202,2 [7.96]
245 [14.9]	163,7 [6.45]	211,1 [8.31]
305 [18.7]	175,1 [6.90]	222,6 [8.76]
395 [24.0]	191,1 [7.53]	238,6 [9.39]
490 [29.8]	208,4 [8.21]	255,8 [10.07]

2000 Series

Dimensions

Wheel Mount

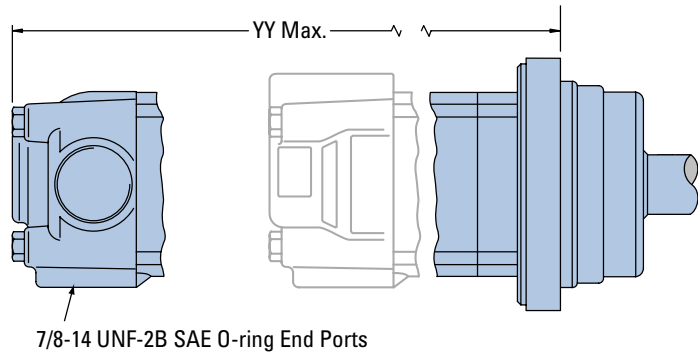
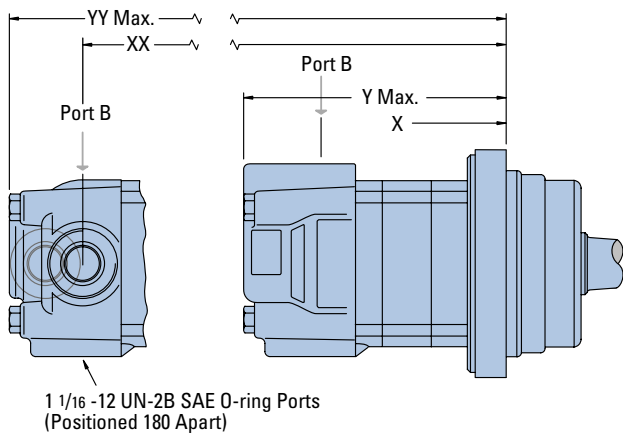
Ports

- 7/8 -14 UNF-2B SAE O-ring Staggered Ports (2)
 - 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
 - 1 1/16 -12 UN-2B SAE O-ring Ports (Positioned 180° Apart) (2)
 - 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
 - 7/8 -14 UNF-2B SAE O-ring End Ports (2)
 - 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
 - G 1/2 (BSP) Staggered Ports (2)
 - G 1/4 (BSP) Case Drain Port (1) or
- Manifold Mount
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1)

Standard Rotation Viewed from Shaft End

- Port A Pressurized — CW
- Port B Pressurized — CCW

Wheel Mount



WHEEL MOUNT MOTOR DIMENSIONS

Displacement	X	Y	XX	YY
cm ³ /r [in ³ /r]	mm [inch]	mm [inch]	mm [inch]	mm [inch]
80 [4.9]	96,8 [3.81]	144,0 [5.67]	99,1 [3,90]	145,3 [5.72]
100 [6.2]	101,3 [3.99]	148,9 [5.86]	103,6 [4.08]	150,2 [5.91]
130 [8.0]	107,8 [4.25]	155,2 [6.11]	110,1 [4.34]	156,5 [6.16]
160 [9.6]	107,8 [4.25]	155,2 [6.11]	110,1 [4.34]	156,5 [6.16]
195 [11.9]	114,6 [4.51]	161,8 [6.37]	116,8 [4.60]	163,1 [6.42]
245 [14.9]	123,5 [4.87]	171,0 [6.73]	125,8 [4.96]	172,3 [6.78]
305 [18.7]	135,0 [5.32]	182,1 [7.17]	137,4 [5.41]	183,4 [7.22]
395 [24.0]	150,9 [5.94]	198,4 [7.81]	153,2 [6.03]	199,7 [7.86]
490 [29.8]	168,2 [6.63]	215,7 [8.49]	170,7 [6.72]	217,0 [8.54]

2000 Series

Dimensions

Wheel Mount with Integral Relief Valve

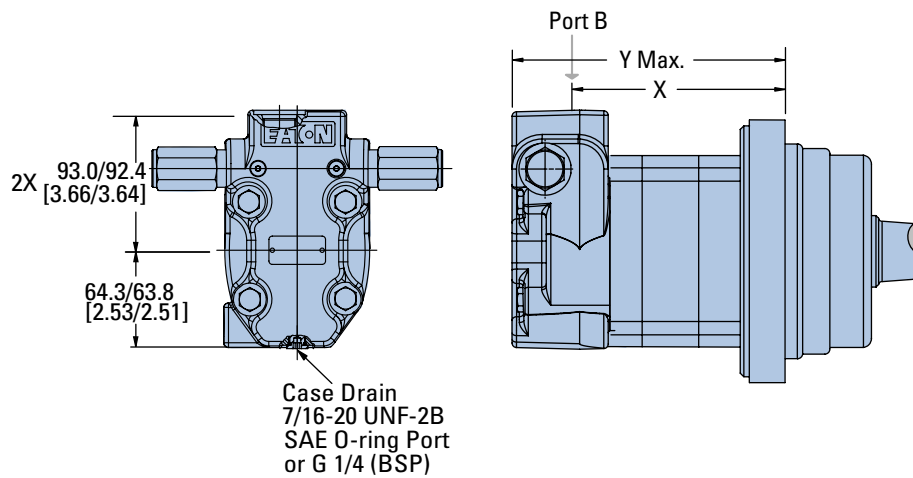
Ports

- 7/8 -14 UNF-2B SAE O-ring Staggered Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1)
- G 1/2 (BSP) Staggered Ports (2)
- G 1/4 (BSP) Case Drain Port (1)

Standard Rotation Viewed from Shaft End

- Port A Pressurized — CW
- Port B Pressurized — CCW

Wheel Mount with Integral Relief Valve



WHEEL MOUNT MOTOR DIMENSIONS

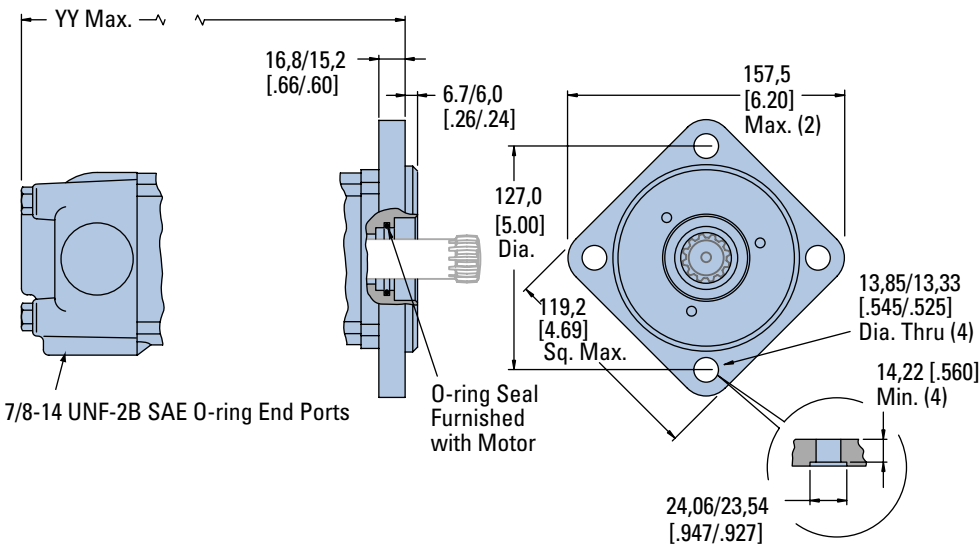
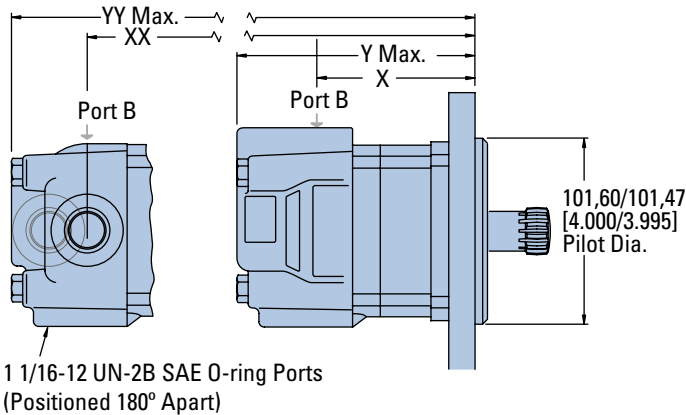
Displacement cm ³ /r [in ³ /r]	X mm [inch]	Y mm [inch]
80 [4.9]	96,9 [3.82]	144,3 [5.68]
100 [6.2]	101,4 [4.00]	148,9 [5.86]
130 [8.0]	107,8 [4.25]	155,2 [6.11]
160 [9.6]	107,8 [4.25]	155,2 [6.11]
195 [11.9]	114,6 [4.52]	162,1 [6.38]
245 [14.9]	123,5 [4.87]	171,0 [6.73]
305 [18.7]	135,0 [5.32]	182,4 [7.18]
395 [24.0]	151,0 [5.95]	198,4 [7.81]
490 [29.8]	168,2 [6.63]	215,7 [8.49]

2000 Series

Dimensions

Bearingless

Bearingless



Ports

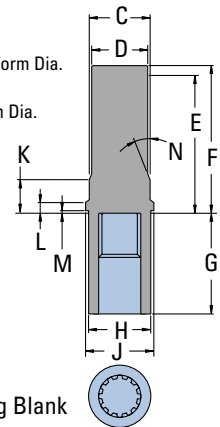
- 7/8 -14 UNF-2B SAE O-ring Staggered Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- 1 1/16 -12 UN-2B SAE O-ring Ports (Positioned 180° Apart) (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- 7/8 -14 UNF-2B SAE O-ring End Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- G 1/2 (BSP) Staggered Ports (2)
- G 1/4 (BSP) Case Drain Port (1) or
- Manifold Mount
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1)

Standard Rotation Viewed from Shaft End

- Port A Pressurized — CW
- Port B Pressurized — CCW

MAT'L

- C 35,86 [1.412] Dia.
- D 34,04 [1.340] Dia.
- E 81,0 [3.19] Min. Full Form Dia.
- F 86,1 [3.39] Max.
- G 62,10 [2.445] Full Form Dia.
- H 38,40 [1.512] Dia.
- J 43,7 [1.72] Dia.
- K 25,91 [1.020]
- L 8,25 [.325]
- M 0,89 [.035]
- N 15°



For 2000 Series Bearingless Motor application information contact your Eaton representative (mating coupling blanks available from Eaton Hydraulics).

Note:

After machining blank, part must be hardened per Eaton specification.

BEARINGLESS MOTOR DIMENSIONS

Displacement cm ³ /r [in ³ /r]	X mm [inch]	Y mm [inch]	XX mm [inch]	YY mm [inch]
80 [4.9]	79,0 [3.11]	126,5 [4.98]	81,3 [3.20]	127,8 [5.03]
100 [6.2]	83,5 [3.29]	131,4 [5.17]	85,8 [3.38]	132,6 [5.22]
130 [8.0]	89,9 [3.54]	137,7 [5.42]	92,2 [3.63]	139,0 [5.47]
160 [9.6]	89,9 [3.54]	137,7 [5.42]	92,2 [3.63]	139,0 [5.47]
195 [11.9]	96,8 [3.81]	144,3 [5.68]	99,0 [3.90]	145,5 [5.73]
245 [14.9]	105,6 [4.16]	153,5 [6.04]	107,9 [4.25]	154,7 [6.09]
305 [18.7]	117,1 [4.61]	164,6 [6.48]	119,4 [4.70]	165,9 [6.53]
395 [24.0]	133,1 [5.24]	180,9 [7.12]	135,4 [5.33]	182,1 [7.17]
490 [29.8]	150,3 [5.92]	198,2 [7.80]	152,7 [6.01]	199,3 [7.85]

2000 Series

Dimensions

Bearingless with Integral Relief Valve

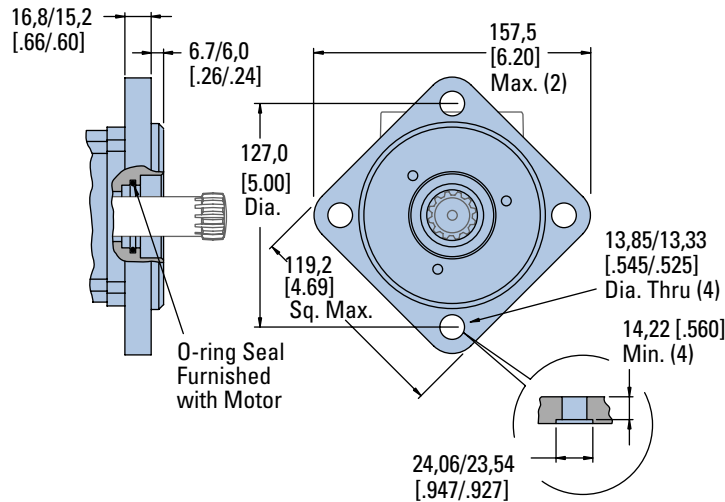
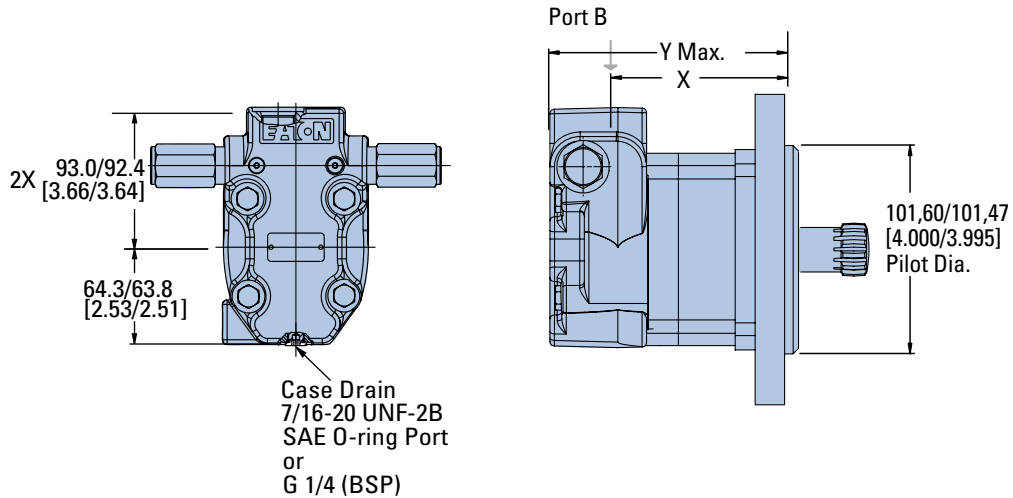
Ports

- 7/8 -14 UNF-2B SAE O-ring Staggered Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1)
- G 1/2 (BSP) Staggered Ports (2)
- G 1/4 (BSP) Case Drain Port (1)

Standard Rotation Viewed from Shaft End

- Port A Pressurized — CW
- Port B Pressurized — CCW

Bearingless with Integral Relief Valve



BEARINGLESS MOTORS DIMENSIONS

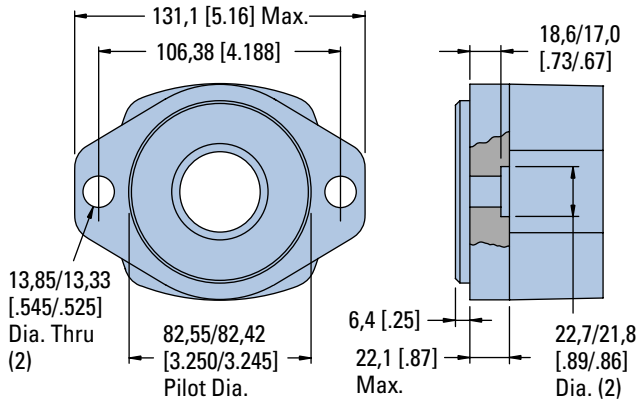
Displacement cm ³ /r [in ³ /r]	X mm [inch]	Y mm [inch]
80 [4.9]	79,0 [3.11]	126,8 [4.99]
100 [6.2]	83,5 [3.29]	131,4 [5.17]
130 [8.0]	89,9 [3.54]	137,7 [5.42]
160 [9.6]	89,9 [3.54]	137,7 [5.42]
195 [11.9]	96,8 [3.81]	144,6 [5.69]
245 [14.9]	105,6 [4.16]	153,5 [6.04]
305 [18.7]	117,1 [4.61]	164,9 [6.49]
395 [24.0]	133,1 [5.24]	180,9 [7.12]
490 [29.8]	150,3 [5.92]	198,2 [7.80]

2000 Series

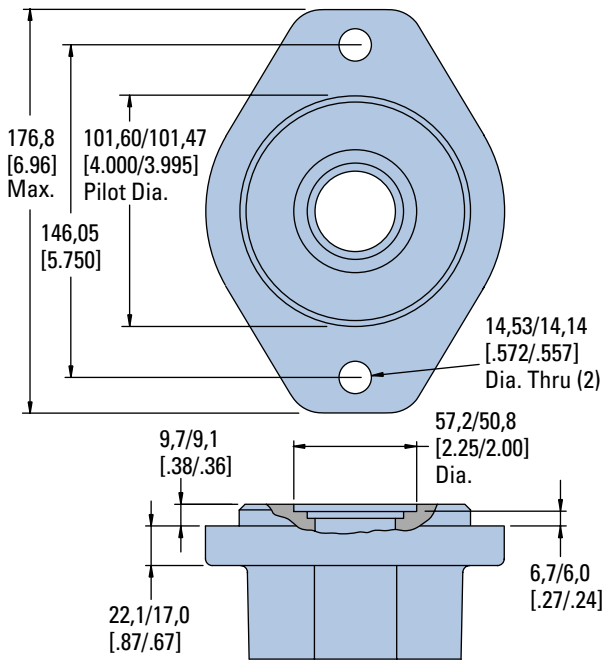
Dimensions

Mounting Options

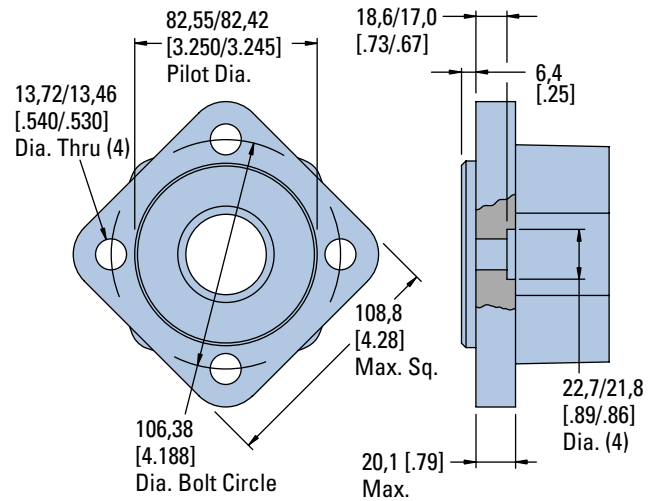
SAE A — Two Bolt (Standard Motor)



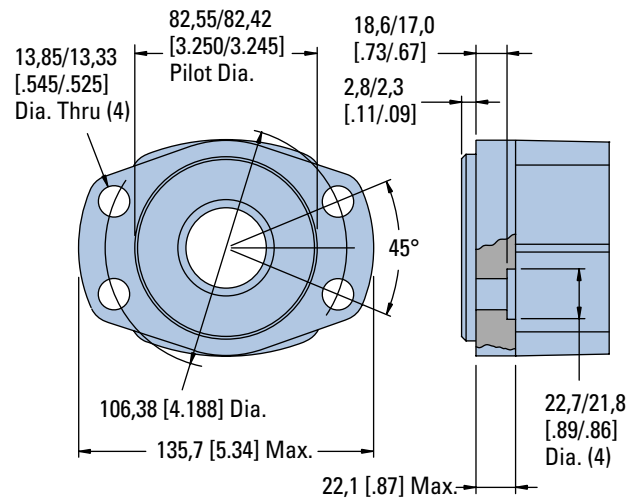
SAE B — Two Bolt



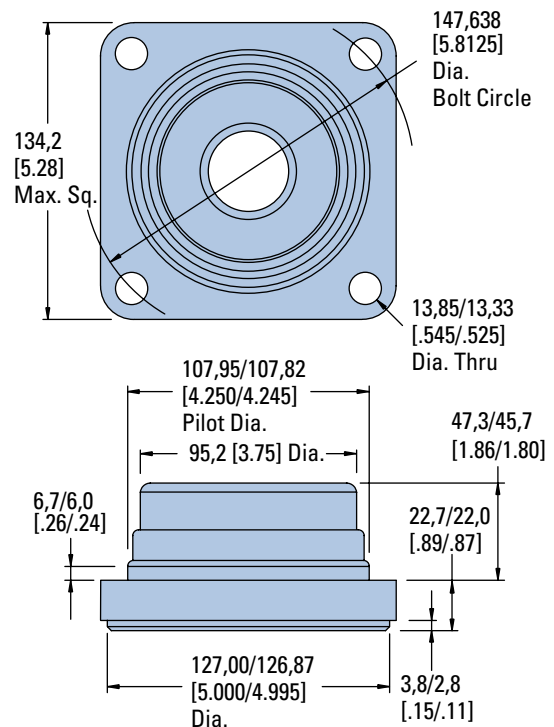
Four Bolt



Four Bolt Magneto



Four Bolt (Wheel Motor)

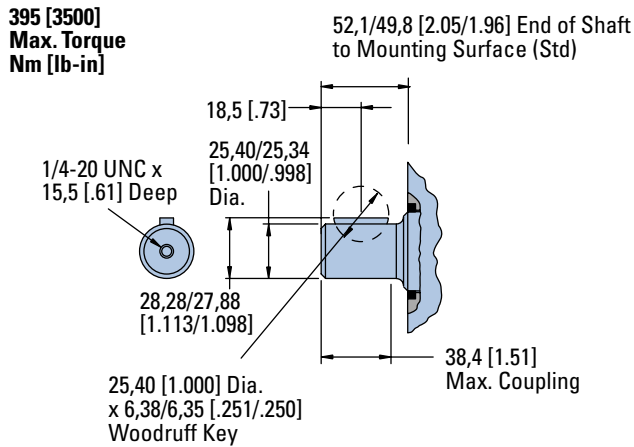


2000 Series

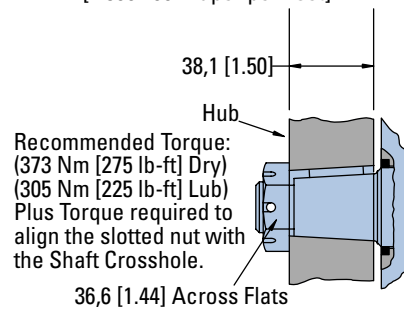
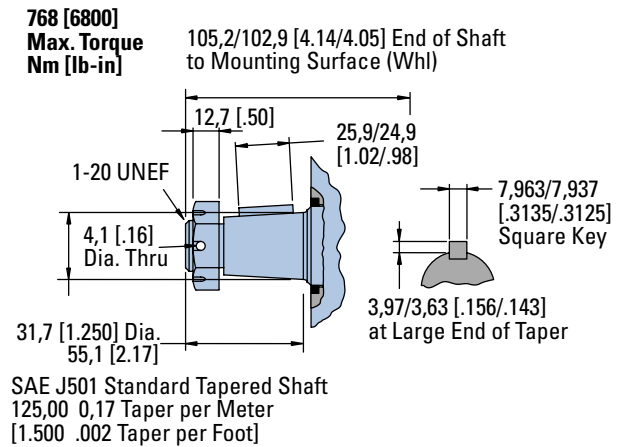
Dimensions

Shafts

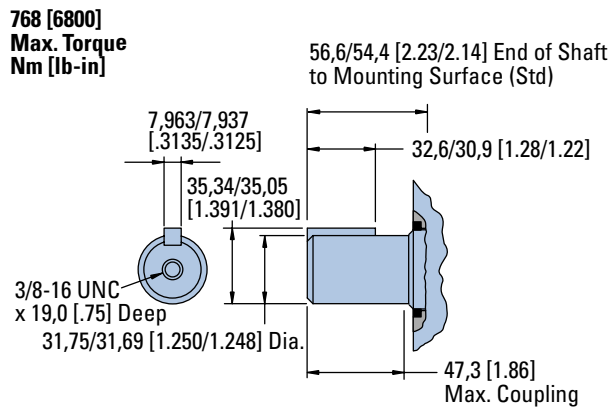
1 Inch Straight



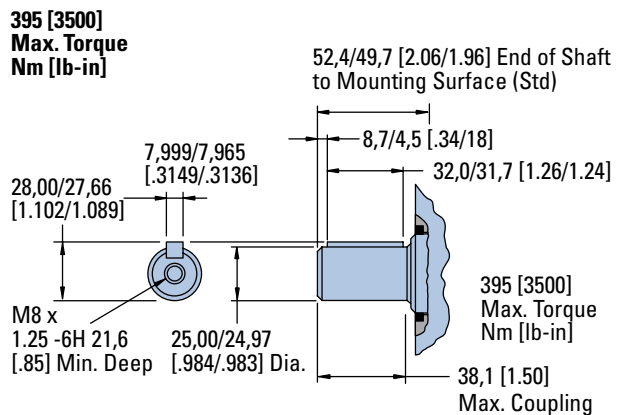
1 1/4 Inch Tapered



1 1/4 Inch Straight



25 mm Straight



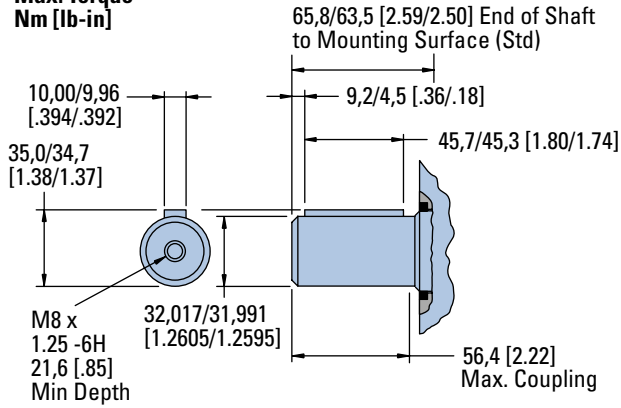
2000 Series

Dimensions

Shafts

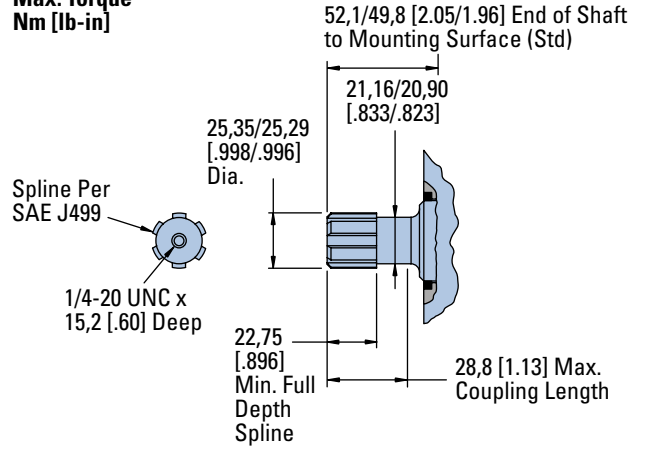
32 mm Straight

768 [6800]
Max. Torque
Nm [lb-in]



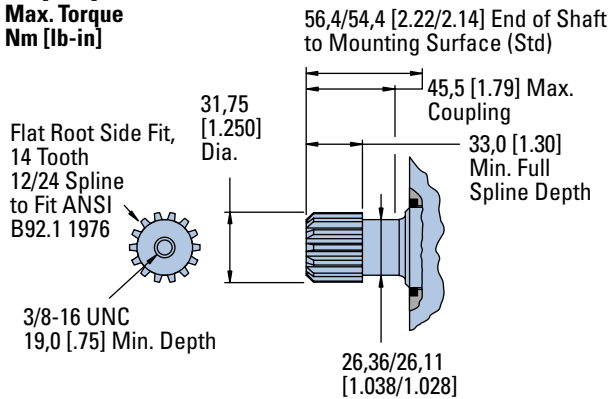
SAE 6B Splined

395 [3500]
Max. Torque
Nm [lb-in]



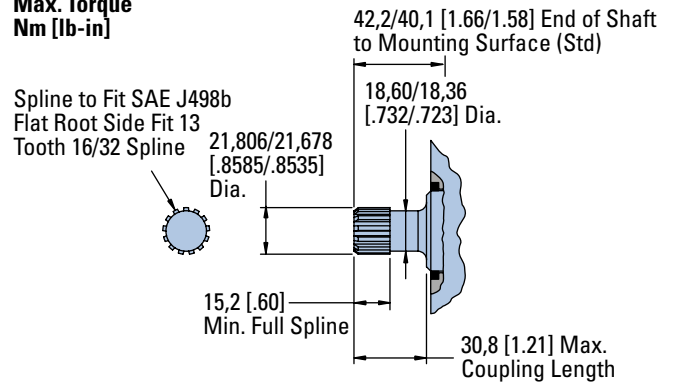
1 1/4 -14 Tooth Splined

768 [6800]
Max. Torque
Nm [lb-in]



13 Tooth Splined

141 [1250]
Max. Torque
Nm [lb-in]



2000 Series

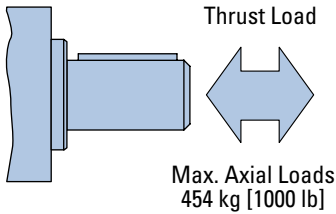
Shaft Side Load Capacity

These curves indicate the radial load capacity on the motor shaft at various locations with an allowable external thrust load of 454 kg [1000 lb].

Note:

Case pressure will increase the allowable inward thrust load and decrease the allowable outward thrust load. Case pressure will push outward on the shaft at 61 kg/7 Bar [135 lb/100 PSI].

Each curve is based on



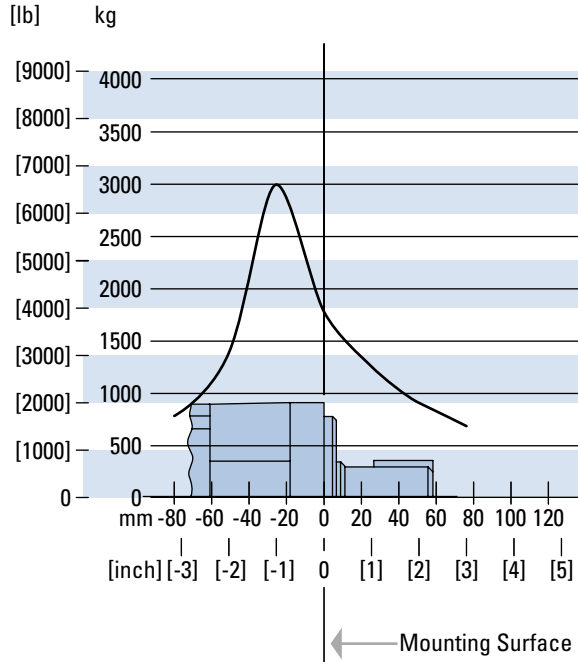
B 10 bearing life (2000 hours of 12,000,000 shaft revolutions at 100 RPM) at rated output torque.

To determine radial load at speeds other than 100 RPM, multiply the load values given on the bearing curve by the factors in the chart below.

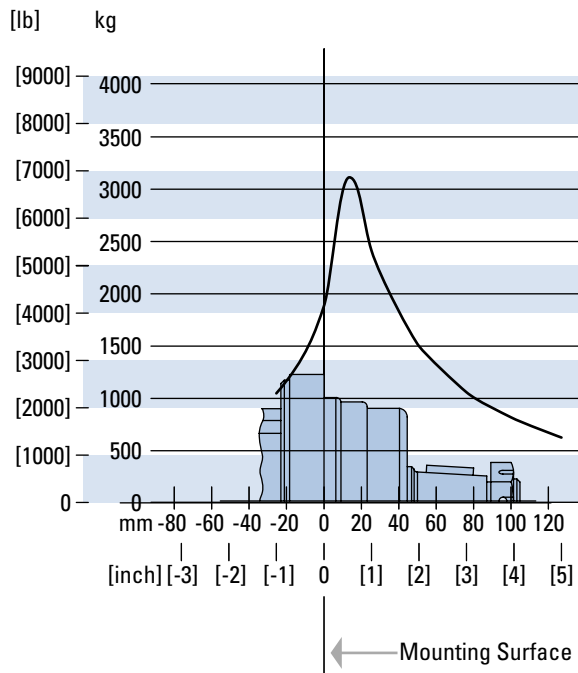
RPM	Multiplication Factor
50	1.23
100	1.00
200	0.81
300	0.72
400	0.66
500	0.62
600	0.58
700	0.56
800	0.54

For 3,000,000 shaft revolutions or 500 hours—Increase these shaft loads 52%.

**Standard Motor
Straight and Splined Shafts**



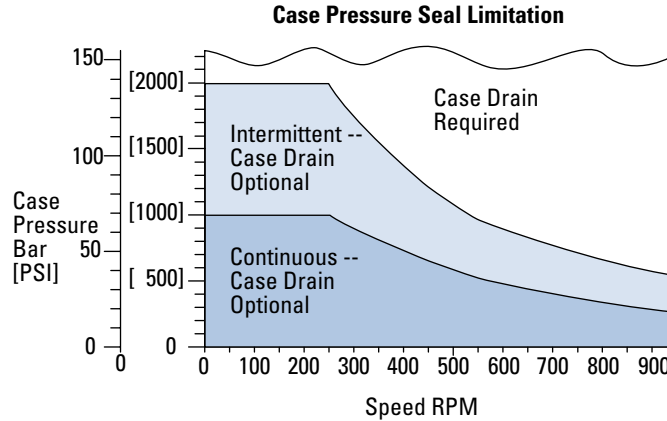
**Wheel Motor
Tapered Shaft**



2000 Series

Case Pressure and Case Porting

Char-Lynn 2000 Series motors are durable and have long life as long as the recommended case pressure is not exceeded. Allowable case pressure is highest at low shaft speeds. Consequently, motor life will be shortened if case pressure exceeds these ratings (acceptability may vary with application). Determine if an external case drain is required from the case pressure seal limitation chart.



Case Porting Advantage

Contamination Control — flushing the motor case.

Cooler Motor — exiting oil draws motor heat away.

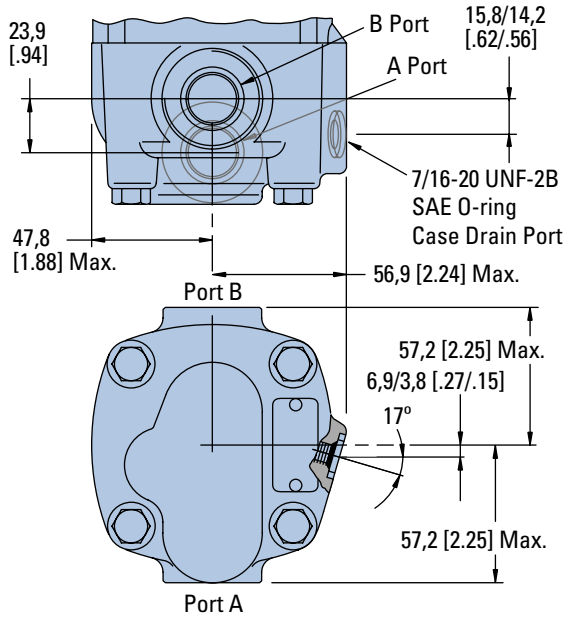
Extend Motor Seal Life — maintain low case pressure with a preset restriction in the case drain line.

2000 Series

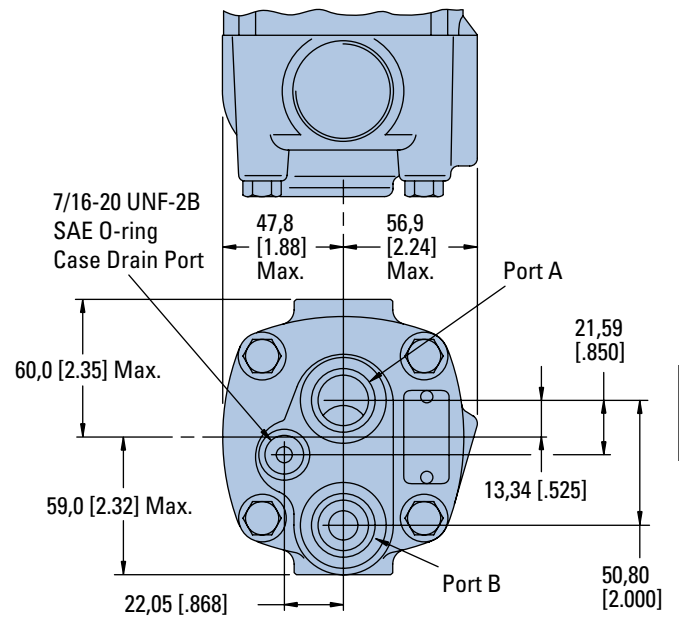
Dimensions

Ports

1-1/16-12 UN-2B SAE O-ring Ports (2) Positioned 180° Apart



7/8-14 UNF-2B SAE O-ring End Ports (2)

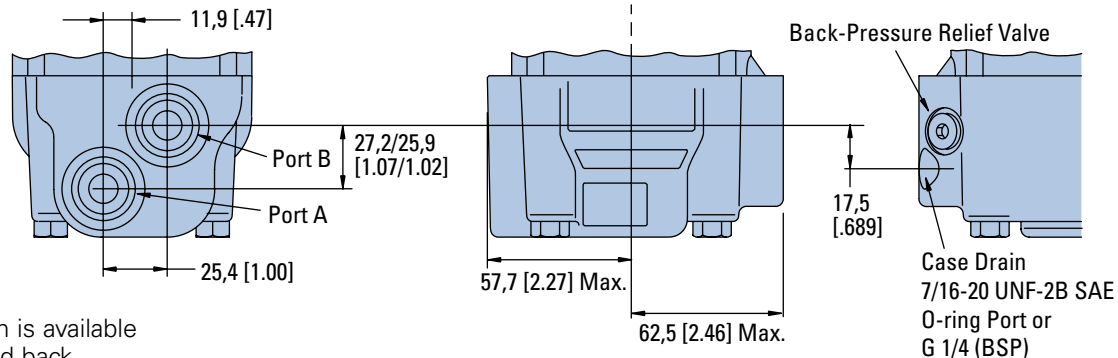


2000 Series

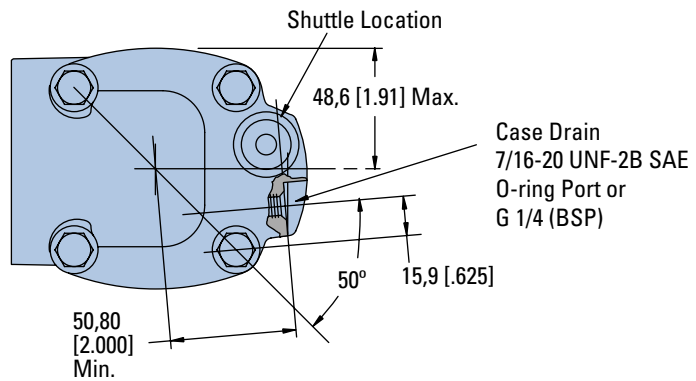
Dimensions

Ports with Shuttle

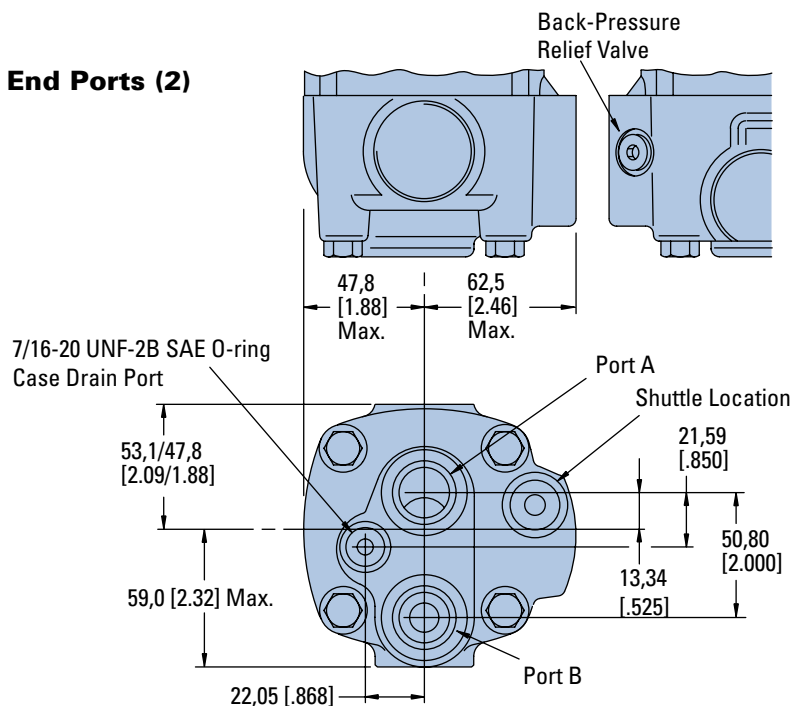
7/8 -14 UNF-2B SAE O-ring Ports (2) or G 1/2 (BSP) Ports (2)



This port option is available with shuttle and back pressure relief valve for closed loop applications.



7/8 -14 UNF-2B SAE O-ring End Ports (2)



This port option is available with shuttle and back pressure relief valve for closed loop applications.

2000 Series

Product Numbers

Note:
For 2000 Series Motors with a configuration **Not Shown** in the charts below: Use model code number system on the next page to specify product in detail.

Use digit prefix — 104-, 105-, or 106- plus four digit number from charts for complete product number— Example 106-1043.

Orders will not be accepted without three digit prefix.

MOUNTING	SHAFT	PORT SIZE	DISPL. cm ³ /r [in ³ /r] / PRODUCT NUMBER									
			80 [4.9]	90* [5.5]	100 [6.2]	130 [8.0]	160 [9.6]	195 [11.9]	245 [14.9]	305 [18.7]	395 [24.0]	490 [29.8]
2 Bolt SAE A Flange	1 Inch Straight	7/8 -14 O-ring Staggered	104-1001	—	-1002	-1003	-1004	-1005	-1006	-1007	-1143	—
		1 1/16 -12 O-ring 180° Apart	104-1037	—	-1038	-1039	-1040	-1041	-1042	-1043	-1044	—
	1 1/4 Inch Straight	7/8 -14 O-ring Staggered	104-1022	—	-1023	-1024	-1025	-1026	-1027	-1028	-1228	-1420
		1 1/16 -12 O-ring 180° Apart	104-1061	—	-1062	-1063	-1064	-1065	-1066	-1067	-1068	-1421
	1 1/4 Inch 14 T Splined	7/8 -14 O-ring Staggered	104-1029	—	-1030	-1031	-1032	-1033	-1034	-1035	-1229	-1422
		1 1/16 -12 O-ring 180° Apart	104-1087	—	-1088	-1089	-1090	-1091	-1092	-1093	-1094	-1423
2 Bolt SAE B Flange	1 1/4 Inch Straight	7/8 -14 O-ring Staggered	104-1200	—	-1201	-1202	-1203	-1204	-1205	-1206	-1207	—
	1 1/4 Inch Involute SAE C Splined	7/8 -14 O-ring Staggered	104-1208	—	-1209	-1210	-1211	-1212	-1213	-1214	-1215	—
	1 Inch SAE 6B Splined	7/8 -14 O-ring Staggered	104-1193	—	-1194	-1195	-1196	-1197	-1198	-1199	—	—
	7/8 Inch SAE B Splined	7/8 -14 O-ring Staggered	104-1216	—	-1217	-1218	-1219	-1220	—	—	—	—
Standard with 4 Bolt Flange	32 mm Straight	G 1/2 (BSP)	104-1384	—	-1385	-1386	-1387	-1388	-1389	-1390	-1391	—
	1 1/4 Inch 14 T Splined	G 1/2 (BSP)	104-1376	—	-1377	-1378	-1379	-1380	-1381	-1382	-1383	—
Wheel Motor	1 1/4 Inch Straight	7/8 -14 O-ring Staggered	105—	—	—	—	—	—	—	—	—	-1148
		1 1/16 -12 O-ring 180° Apart	105—	—	—	—	—	—	—	—	—	-1149
	32 mm Straight	G 1/2 (BSP)	105-1134	—	-1135	-1136	-1137	-1138	-1139	-1140	-1141	—
	1 1/4 Inch Tapered	7/8 -14 O-ring Staggered	105-1001	—	-1002	-1003	-1004	-1005	-1006	-1007	-1060	-1152
		1 1/16 -12 O-ring 180° Apart	105-1071	—	-1072	-1073	-1074	-1075	-1076	-1077	-1078	—
	1 1/4 Inch 14 T Splined	7/8 -14 O-ring Staggered	105-1029	—	-1030	-1031	-1032	-1033	-1034	-1035	-1096	—
1 1/16 -12 O-ring 180° Apart		105-1079	—	-1080	-1081	-1082	-1083	-1084	-1085	-1086	—	
Bearingless	G 1/2 (BSP)	7/8 -14 O-ring Staggered	106-1008	—	-1009	-1010	-1011	-1012	-1013	-1014	-1015	-1047
		G 1/2 (BSP)	106-1038	—	-1039	-1040	-1041	-1042	-1043	-1044	-1045	—

*New Release

106-1044

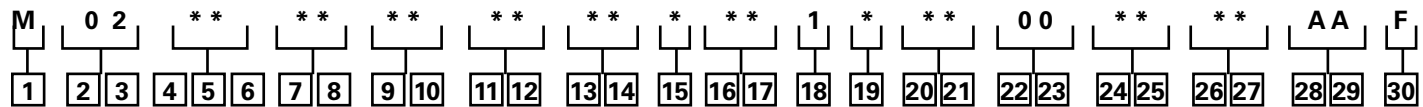
Motors with Corrosion Protection

MOUNTING	SHAFT	PORT SIZE	DISPL. cm ³ /r [in ³ /r] / PRODUCT NUMBER									
			80 [4.9]	90* [5.5]	100 [6.2]	130 [8.0]	160 [9.6]	195 [11.9]	245 [14.9]	305 [18.7]	395 [24.0]	490 [29.8]
2 Bolt SAE A Flange	1 inch Straight	7/8 -14 O-ring Staggered	104-1528	—	-1529	-1530	-1531	-1532	-1533	-1534	-1519	-1535
	1 1/4 Inch Straight	7/8 -14 O-ring	104-1516	—	-1536	-1537	-1538	-1539	-1452	-1479	-1509	-1489

*New Release

2000 Series

Model Code



The following 30-digit coding system has been developed to identify all of the configuration options for the 2000 Series motor. Use this model code to specify a motor with the desired features. All 30 digits of the code must be present when ordering. You may want to photocopy the matrix below to ensure that each number is entered in the correct box.

1 Product
M – 2000 Series Motor

2, 3 Product Series
02 – 2000 Series Motor

4, 5, 6 Displacement
cm³/r [in³/r]

049 – 80.6 cm³/r [4.92]
055 – 90.6 cm³/r [5.53 in³/r]
062 – 101.6 cm³/r [6.20 in³/r]
080 – 130.6 cm³/r [7.97 in³/r]
096 – 158.1 cm³/r [9.65 in³/r]
119 – 194.8 cm³/r [11.89 in³/r]
149 – 244.3 cm³/r [14.91 in³/r]
187 – 306.6 cm³/r [18.71 in³/r]
240 – 393.8 cm³/r [24.03 in³/r]
298 – 489.0 cm³/r [29.84 in³/r]

7, 8 Mounting Type
AB – Wheel, 4 Bolt: 108.0
[4.25] Pilot Dia. 13.59 [5.35]
Dia. Holes on 147.6 [5.81]
Dia. Bolt Circle. 127.0 [5.00]
Dia. Rear Mount Pilot
AC – Standard, 2 Bolt: 82.6
[3.25] Pilot Dia. 13.59 [5.35]
Dia. Holes on 106.4 [4.19]
Dia. Bolt Circle. SAE A

AD – Bearingless (w/ Leakage
Slots), 4 Bolt: 101.6 [4.00]
Pilot Dia. 13.59 [5.35] Dia.
Holes on 127.0 [5.00] Dia.
Bolt Circle

AF – Standard, 2 Bolt: 101.6
[4.00] Pilot Dia. 14.35 [5.65]
Dia. Holes on 146.0 [5.75]
Dia. Bolt Circle. SAE B

AH – Standard, 4 Bolt: 82.6
[3.25] Pilot Dia. 13.59 [5.35]
Dia. Holes on 106.4 [4.19]
Dia. Bolt Circle

AJ – Standard (Magneto),
4 Bolt: 82.6 [3.25] Pilot Dia.
13.59 [5.35] Dia. Holes on
106.4 [4.19] Dia. Bolt Circle.
2.79 [1.10] Pilot Length

AP – Wheel, 4 Bolt: 108.0
[4.25] Pilot Dia. 13.59 [5.35]
Dia. Holes on 147.6 [5.81]
Dia. Bolt Circle. 127.0 [5.00]
Dia. Rear Mount Pilot. Spigot
Reduced to 88.9 [3.50] Dia.
by 25.4 [1.00] Depth.

AZ – Bearingless (w/ Leakage
Slots), 4 Bolt: 100.0 [3.94]
Pilot Dia. 11.0 [4.3] Dia. Holes
on 125.0 [4.92] Dia Bolt Circle
(European)

9, 10 Output Shaft
00 – None (Bearingless)

01 – 25.40 [1.000] Dia.
Straight Shaft with 1/4-
20UNC-2B Thread in End,
6.35 [.250] Wide x 25.40
[1.000] Dia. Woodruff Key
02 – 31.75 [1.250] Dia.
Straight Shaft with .375-
16UNC-2B Thread in End,
7.938 [.3125] Sq x 31.75
[1.250] Straight Key
03 – 31.75 [1.250] Dia.
.125:1 Tapered Shaft per
SAE J501 with/1.000-20
UNEF-2A Threaded Shaft
End and Slotted Hex Nut,
7.938 [.3125] Sq x 25.40 [1.0]
Straight Key
04 – 31.75 [1.250] Dia. Flat
Root Side Fit, 14 Tooth,
12/24 DP 30° Involute Spline
w/ .375-16UNC-2B Thread
in End, 33.0 [1.30] Min. Full
Spline Length

05 – 25.40 [1.000] Dia. 6B
Spline per SAE J499 with
.250-20UNC-2B Thread in
End, 22.76 [.896] Min. Full
Spline Length
07 – 22.22 [.875] Dia. Flat
Root Side Fit, 13 Tooth, 16/32
DP 30° SAE B Involute Spline,
15.2 [.60] Min. Full Spline
Length

16 – 32.00 [1.260] Dia.
Straight Shaft with M8 x
1.25-6H Thread in End, 9.982
[.3930] W x 7.995 [.3132] H x
45.00 [1.772] L Key

17 – 31.75 [1.250] Dia.
Straight Shaft With 3/8-16
UNC-2B Thread in End, 7.938
[.3125] Sq x 31.75 [1.250]
Straight Key, Corrosion
Resistant (Seal area to shaft
end)

18 – 31.75 [1.250] Dia.
.125:1 Tapered Shaft per SAE
J501 with 1.000-20UNEF-
2A Threaded Shaft End
and Slotted Hex Nut, 7.938
[.3125] Sq x 25.40 [1.000]
Straight Key, Corrosion
Resistant (Under seal area
only)

19 – 25.00 [.984] Dia.
Straight Shaft with M8 x
1.25-6h Thread in End, 7.982
[.3142]W x 6.954 [.2738]H x
31.82 [1.254]L Key

28 – 32.00 [1.260] Dia. 10:1
Tapered Shaft Per ISO R775
with M10 X 1.50-6H Thread in
End, 6.00 [.236] Sq. x 50.00

[1.968] Key
39 – None (Bearingless)
European Spline
41 – 35.00 [1.378] Dia. 10:1
Tapered Shaft Per ISO R775
with M20 x 1.5-6g Threaded
Shaft End and Slotted Hex
Nut, 6.00 [.236] Sq. X 20.00
[.787] Key
42 – 35.00 [1.378] Dia.
Straight Shaft with M8 x
1.25-6h Thread in End, 9.982
[.3930]W x 7.995 [.3132]H x
45.00 [1.772]L Key

11, 12 Ports
AA – .875-14 UNF-2B SAE
O-ring Ports - Staggered
Ports

AB – 12.70 [.500] and 15.88
[.625] Dia. Manifold Ports
with 3 x .375-16 UNC-2B Port
Block Mounting Holes

AC – .875-14 UNF-2B SAE
O-ring Ports - Ports Oriented
180° to each other

AE – 12.70 [.500] And 15.88
[.625] Dia. Manifold Ports
with 3 x M10 x 1.5-6H Port
Block Mounting Holes

AF – 1.0625-12 UNF-2B SAE
O-ring Ports - Ports Oriented
180° to each other

AG – G-1/2 BSP Straight
THD Ports - Staggered Ports

AN – G-1/2 BSP Straight THD
Ports - End Ported

AR – .875-14 UNF-2B SAE O-
ring Ports - End Ported, Cast
Boss Removed

AS – G-1/2 Bsp Straight THD
Ports - Staggered Port with
2 x M10 x 1.5-6H Port Block
Mounting Holes - European

13, 14 Case Flow Options
Shuttles available with
port code AA only)

00 – None

01 – .4375-20 UNF-2B SAE
O-Ring Port

02 – G 1/4 BSP Straight THD
Port

09 – Reverse Flow Shuttle
Valve w/ G-1/4 BSP Straight
THD Port, .062 Dia. Shuttle
Flow Orifice

13 – Reverse Flow Shuttle
Valve w/ .4375-20 UNF-2B
SAE O-Ring Port, .062 Dia.
Shuttle Flow Orifice

15 Low Pressure Relief
0 – None

A – Set at 4.5 bar [65 lbf/in²]
B – Set at 15.2 bar [220 lbf/in²]
C – Set at 20.7 bar [300 lbf/in²]
E – Set at 11.03 bar [160 lbf/in²]

16, 17 Pressure/Flow
Option

Integral Cross-Over Relief Valve:

00 – None

30 – Set at 103.4 bar [1500 lbf/in²]

31 – Set at 120.6 bar [1750 lbf/in²]

32 – Set at 137.9 bar [2000 lbf/in²]

33 – Set at 155.1 bar [2250 lbf/in²]

34 – Set at 172.4 bar [2500 lbf/in²]

35 – Set at 189.6 bar [2750 lbf/in²]

36 – Set at 206.8 bar [3000 lbf/in²]

18 Geroler Option
1 – Standard

19 Seal Options
0 – Standard

1 – Viton

2 – Viton Shaft Seal

4 – Seal Guard

20, 21 Accessories
00 – None

AD – M 12 Threaded
Connector, Digital Speed
Pickup (30 Pulse)

AE – M 12 Threaded
Connector, Long Body Digital
Speed and Direction Pickup
(1 = Power Supply, Pin 2
= Output Signal 1, Pin 3 =
Common, Pin 4 = Output
Signal 2)

22, 23 Special Features
(Hardware)

00 – None

24, 25 Special Features
(Assembly)

00 – None

AB – Reverse Rotation

26, 27 Paint/Packaging
AA – No Paint, Indiv. Box
AB – Painted, Low Gloss
Black, Indiv. Box

AC – Epoxy Coated (Frost
Gray) Indiv. Box

28, 29 Customer ID
AA – None

30 Design Code
F – Sixth

2000 Series Two-Speed

Description

The Eaton 2000 Series motors are available with an integral two speed feature that changes the displacement in a ratio of 1 to 2 and shifts the motor from a low speed high torque (LSHT) mode to a high speed low torque (HSLT) mode. The open center selector valve shifts the speed mode from low to high speed when pilot pressure of 6.9 Δ Bar [100 Δ PSI] minimum is applied to the pilot port (6.9 Bar [100 PSI] higher than case pressure). In the high speed mode torque values are approximately one half with twice the speed of the conventional 2000 Series single speed motors.

An external two position three way valve is required for shifting the pilot pressure port between signal pressure (HSLT) and low pressure (LSHT)

Two speed motors are available with a return line closed center shuttle for closed circuit applications. Low speed high torque mode is the normal position of the speed selector valve. When a differential pressure is supplied to the pilot port and 6,9 Bar [100 PSI] is reached, the selector valve overcomes the return spring force and the spool shifts to the high speed mode. The oil in the opposite side of the spool is drained internally. Pressure between the pilot supply and case drain or return line (depending on open or closed circuit system) must be maintained to keep the motor in the high speed mode.

When pilot pressure is removed from the pilot port the pressure in the pilot end of the spool valve is relieved and drained back through

this three way valve, the spring force returns the spool valve to LSHT position. Pilot pressure may come from any source that will provide uninterrupted pressure during the high speed mode operation. Pilot pressure 6,9 Δ Bar [100 Δ PSI] minimum, up to the full operating pressure of the motor.

In normal LSHT operation the Char-Lynn two speed motor will function with equal shaft output in either direction (CW or CCW), the same as the single speed Char-Lynn disc valve motors.

However, to prevent cavitation in the HSLT mode, the preferred direction of shaft rotation is counter clockwise (port B pressurized). This unique disc valve is not symmetrical in porting the fluid for the HSLT mode. Consequently, when the pressure is reversed for

HSLT CW rotation, cavitation can occur. Installing a restriction (200 psi or more depending on flow) in the hydraulic line that connects port B will prevent cavitation.

If you are operating in a critical area and a restriction in the hydraulic line causes concern, these two speed motors can be ordered timed with CW preferred HSLT shaft rotation. Hence, with this option port B will have to be pressurized for CW preferred HSLT shaft rotation. The restriction recommended for the line connecting port B remains unchanged.

Finally in closed circuit applications a hydraulic line restriction is not required. Instead, the charge pump can be used to supply and maintain a minimum pressure of 14 Bar [200 PSI].

Performance Data

In the high speed mode torque values are approximately one half with twice the speed of the conventional 2000 Series single speed motors.

In the low speed mode torque and speed values are the same as the conventional 2000 Series motors.

Note:

Low displacement (4.9 to 8.0 CID) motors have limited starting torque when started in high speed mode.

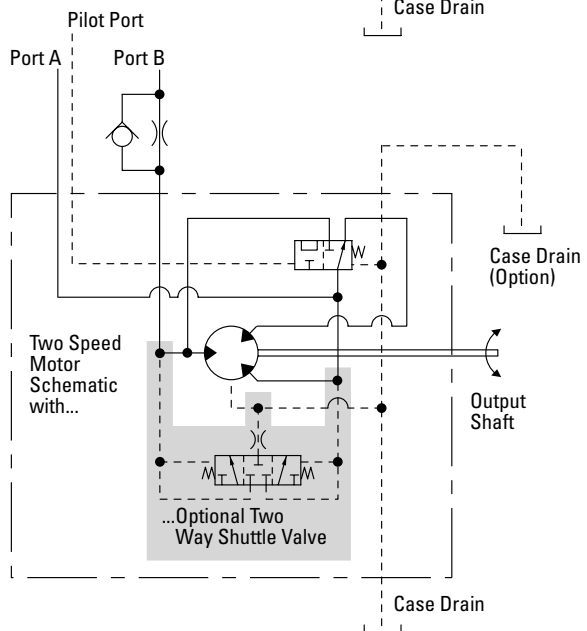
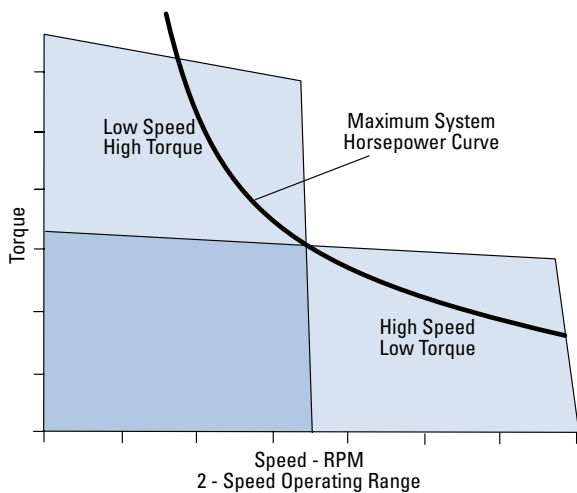
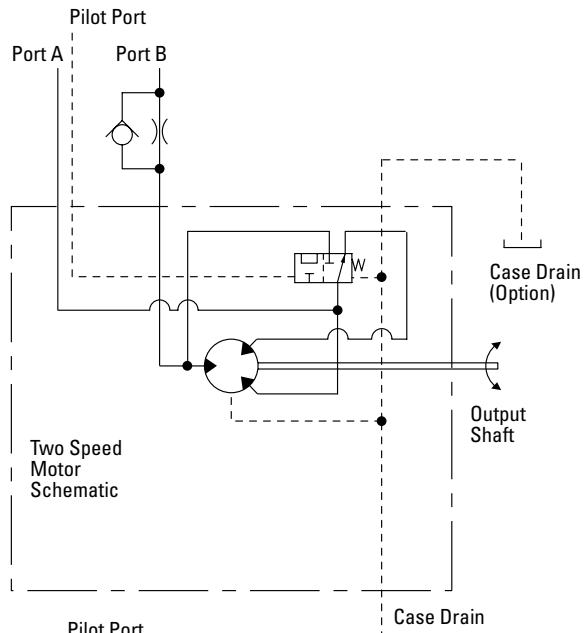
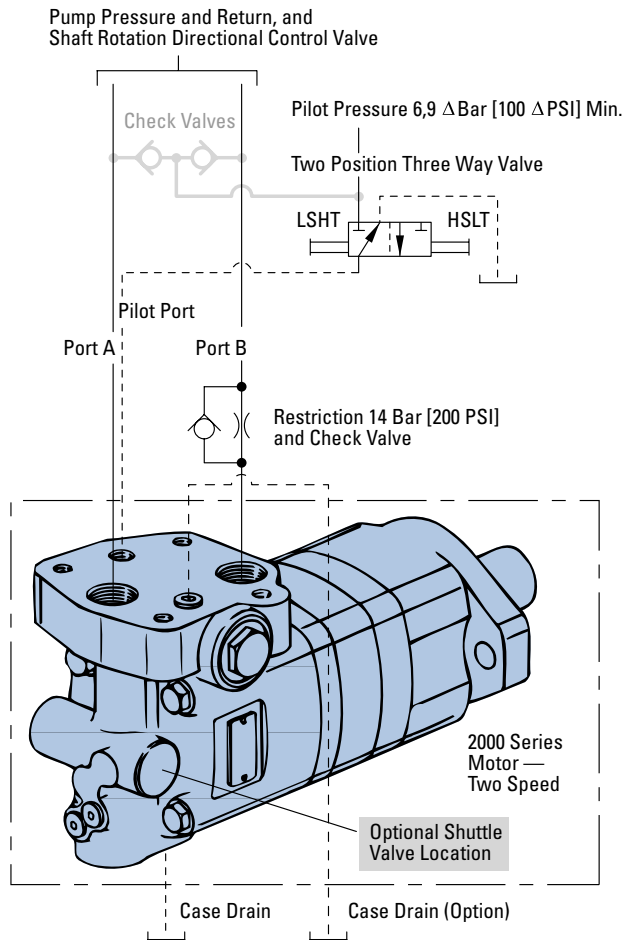
Be certain in closed loop applications that the charge pump when used for back pressure on the B port, has sufficient displacement to maintain charge pressure especially in dynamic braking or overrunning load conditions.

Important!

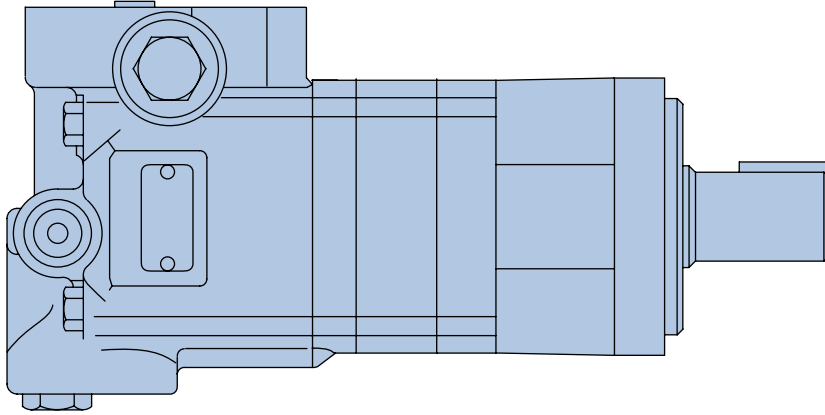
Due to potential problems in maintaining charge pump pressure at port B for uninterrupted back pressure during dynamic braking, Eaton does not recommend the two speed motor where overrunning conditions may exist.

2000 Series Two-Speed

Typical Hydraulic Circuit



2000 Series Two-Speed Specifications



SPECIFICATION DATA — 2000 SERIES TWO-SPEED MOTORS

Displ. cm ³ /r [in ³ /r]	High Speed Mode	40 [2.45]	50 [3.1]	65 [4.0]	80 [4.8]	95 [5.95]	120 [7.45]	155 [9.35]	195 [12.0]	245 [14.9]
	Low Speed Mode	80 [4.9]	100 [6.2]	130 [8.0]	160 [9.6]	195 [11.9]	245 [14.9]	305 [18.7]	395 [24.0]	490 [29.8]
Max. Speed (RPM) @ Continuous Flow	High Speed Mode	1000	1000	990	860	700	560	450	350	230
	Low Speed Mode	500	500	495	430	350	280	225	175	115
Flow l/min [GPM]	High Speed Mode	45 [12]	55 [15]	70 [19]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]
	Low Speed Mode	45 [12]	55 [15]	70 [19]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]
Torque* Nm [lb-in]	High Speed Mode									
	Continuous	100 [880]	125 [1115]	165 [1450]	195 [1725]	240 [2150]	300 [2675]	380 [3350]	365 [3225]	448 [3970]
	Intermittent	145 [1300]	185 [1660]	240 [2150]	240 [2150]	300 [2650]	375 [3330]	440 [3900]	445 [3940]	486 [4300]
Torque* Nm [lb-in]	Low Speed Mode									
	Continuous	235 [2065]	295 [2630]	385 [3420]	455 [4040]	540 [4780]	660 [5850]	765 [6750]	775 [6840]	845 [7470]
	Intermittent	345 [3035]	445 [3950]	560 [4970]	570 [5040]	665 [5890]	820 [7250]	885 [7820]	925 [8170]	930 [8225]
Pressure Δ bar [Δ PSI]	Continuous	205 [3000]	205 [3000]	205 [3000]	205 [3000]	205 [3000]	205 [3000]	205 [3000]	155 [2250]	120 [1750]
	Intermittent	310 [4500]	310 [4500]	310 [4500]	260 [3750]	260 [3750]	260 [3750]	260 [3750]	190 [2750]	140 [2000]
Weight kg [lb]	Standard or Wheel Mount	13,8 [30.5]	14,1 [31.0]	14,3 [31.5]	14,5 [32.0]	15,0 [33.0]	15,4 [34.0]	15,9 [35.0]	16,3 [36.0]	16,8 [37.0]
	Bearingless	11,8 [26.0]	12,0 [26.5]	12,2 [27.0]	12,5 [27.5]	12,9 [28.5]	13,4 [29.5]	13,8 [30.5]	14,3 [31.5]	14,7 [32.5]

Maximum Case Pressure: See case pressure seal limitation graph.

*See shaft torque ratings for limitations.

Note:

To assure best motor life, run motor for approximately one hour at 30% of rated pressure before application to full load. Be sure motor is filled with fluid prior to any load applications.

High Speed Mode

(Reduced Motor Displacement)

Low Speed Mode

(Full Motor Displacement)

Maximum Inlet Pressure:

310 bar [4500 PSI]

Do not exceed Δ pressure rating (see chart above).

Maximum Return Pressure:

310 bar [4500 PSI] with case drain line installed.

Do not exceed Δ pressure rating (see chart above).

Δ bar [Δ PSI] :

The true pressure difference between inlet port and outlet port

Continuous Rating:

Motor may be run continuously at these ratings

Intermittent Operation:

10% of every minute

Peak Operation:

1% of every minute

Recommended Fluids:

Premium quality, anti-wear type hydraulic oil with a viscosity of not less than 70 SUS at operating temperature.

Recommended Maximum System Operating Temp.:

82° C [180° F]

Recommended Filtration:

per ISO Cleanliness Code, 4406: 20/18/13

2000 Series Two-Speed

Dimensions

Standard and Wheel

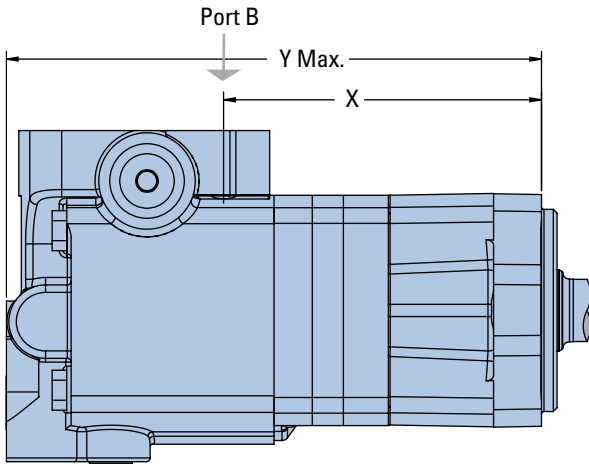
Ports

- 7/8 -14 UNF-2B SAE O-ring Staggered Ports (2)
- 9/16 -18 UNF-2B SAE O-ring Case Drain Port (1)
- 7/16 -20 UNF-2B SAE O-ring Pilot Control Port (1) or
- G 1/2 (BSP) Staggered Ports (2)
- G 1/4 (BSP) Case Drain Port (1)
- G 1/4 (BSP) Pilot Control Port (1)

Standard Rotation Viewed from Shaft End

- Port A Pressurized — CW
- Port B Pressurized — CCW

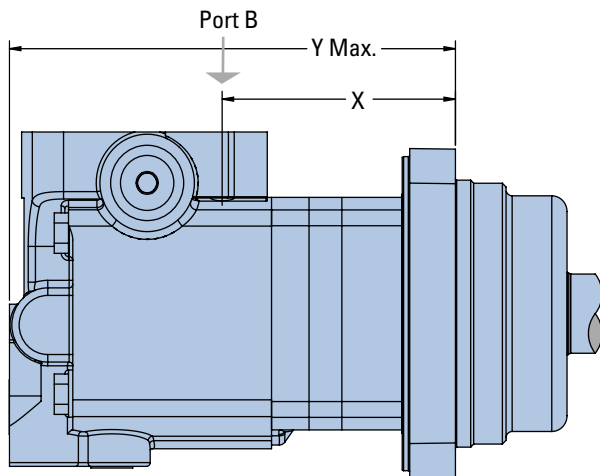
Two-Speed Standard Motors



STANDARD MOUNT MOTOR DIMENSIONS

Displacement cm ³ /r [in ³ /r]	X mm [inch]	Y mm [inch]
80 [4.9]	137,4 [5.41]	231,6 [9.12]
100 [6.2]	142,0 [5.59]	236,5 [9.31]
130 [8.0]	148,5 [5.85]	242,9 [9.56]
160 [9.6]	148,5 [5.85]	242,9 [9.56]
195 [11.9]	155,2 [6.11]	249,4 [9.82]
245 [14.9]	164,2 [6.47]	258,6 [10.18]
305 [18.7]	175,7 [6.92]	270,1 [10.63]
395 [24.0]	191,5 [7.54]	286,1 [11.26]
490 [29.8]	209,0 [8.23]	303,3 [11.94]

Two-Speed Wheel Motors



WHEEL MOUNT MOTOR DIMENSIONS

Displacement cm ³ /r [in ³ /r]	X mm [inch]	Y mm [inch]
80 [4.9]	97,2 [3.83]	191,5 [7.54]
100 [6.2]	101,8 [4.01]	196,4 [7.73]
130 [8.0]	108,3 [4.27]	202,7 [7.98]
160 [9.6]	108,3 [4.27]	202,7 [7.98]
195 [11.9]	115,0 [4.53]	209,3 [8.24]
245 [14.9]	124,2 [4.89]	218,5 [8.60]
305 [18.7]	135,5 [5.34]	229,9 [9.05]
395 [24.0]	151,4 [5.96]	245,9 [9.68]
490 [29.8]	168,9 [6.65]	263,1 [10.36]

2000 Series Two-Speed

Dimensions

Bearingless

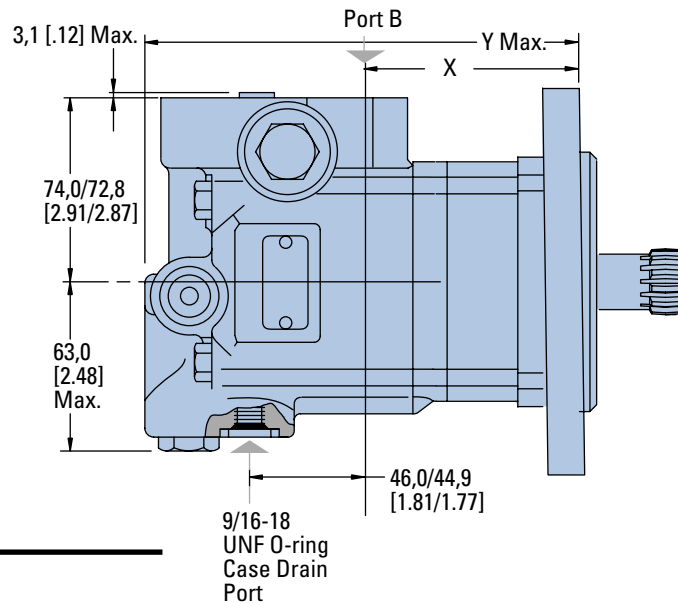
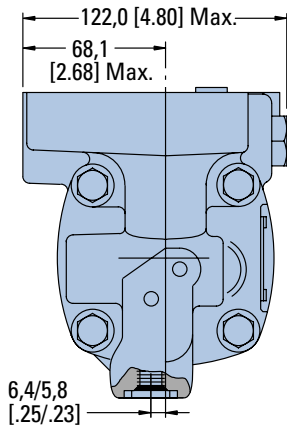
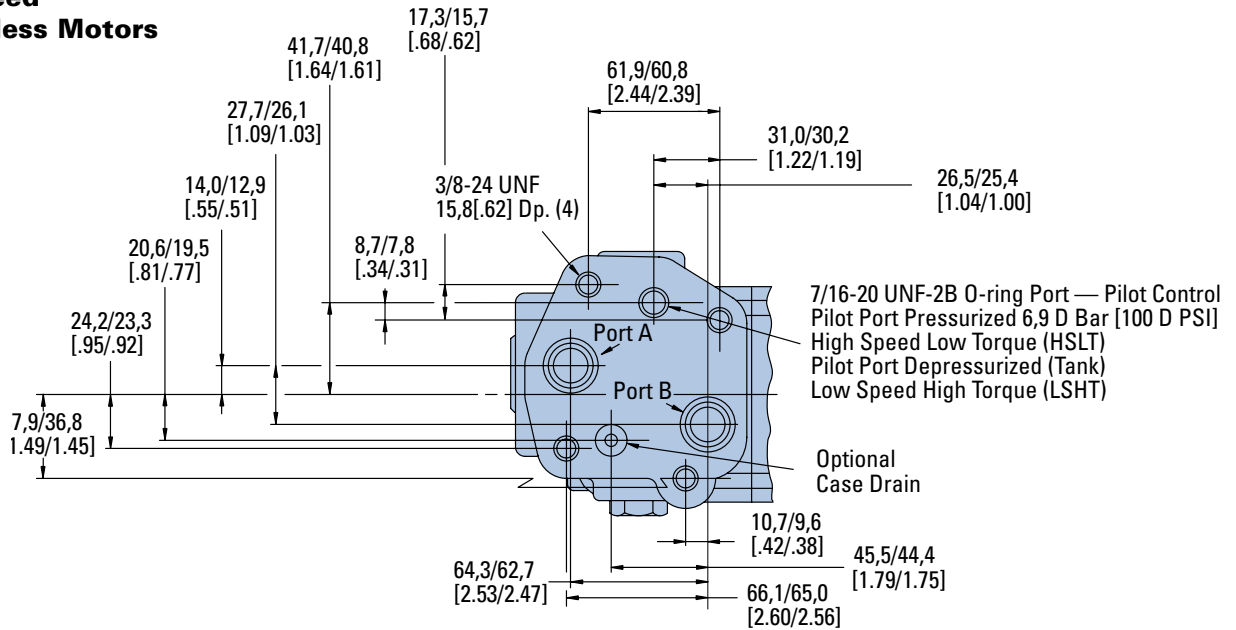
Ports

- 7/8 -14 UNF-2B SAE O-ring Staggered Ports (2)
- 9/16 -18 UNF-2B SAE O-ring Case Drain Port (1)
- 7/16 -20 UNF-2B SAE O-ring Pilot Control Port (1) or
- G 1/2 (BSP) Staggered Ports (2)
- G 1/4 (BSP) Case Drain Port (1)
- G 1/4 (BSP) Pilot Control Port (1)

Standard Rotation Viewed from Shaft End

- Port A Pressurized — CW
- Port B Pressurized — CCW

Two-Speed Bearingless Motors



BEARINGLESS MOTOR DIMENSIONS

Displacement cm ³ /r [in ³ /r]	X mm [inch]	Y mm [inch]
80 [4.9]	79,3 [3.13]	174,0 [6.85]
100 [6.2]	84,1 [3.31]	178,9 [7.04]
130 [8.0]	90,7 [3.57]	185,2 [7.29]
160 [9.6]	90,7 [3.57]	185,2 [7.29]
195 [11.9]	97,3 [3.83]	191,8 [7.55]
245 [14.9]	106,4 [4.19]	201,0 [7.91]
305 [18.7]	117,8 [4.64]	212,4 [8.36]
395 [24.0]	133,6 [5.26]	228,4 [8.99]
490 [29.8]	151,1 [5.95]	245,6 [9.67]

2000 Series Two-Speed

Product Numbers

Note:

For 2000 Series Motors with a configuration **Not Shown** in the charts below, contact your Eaton Representative.

Use digit prefix — 104-, 105-, or 106- plus four digit number from charts for complete product number— Example 106-2007.

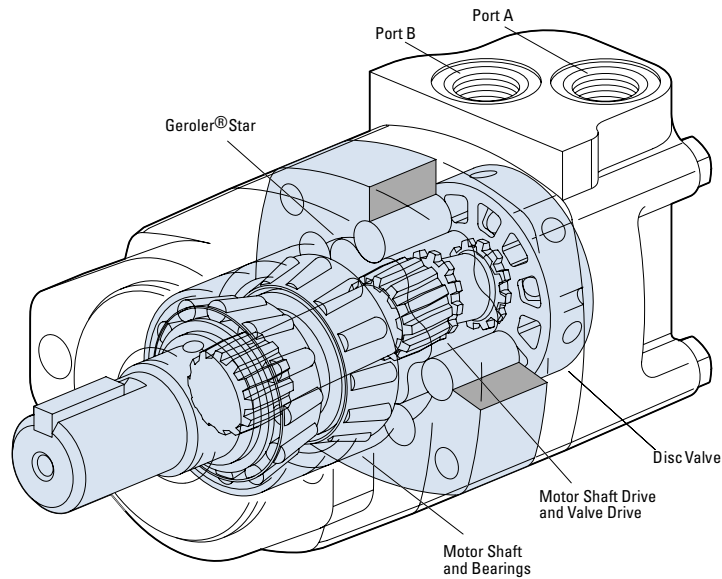
Orders will not be accepted without three digit prefix.

MOUNTING	SHAFT	PORT SIZE	DISPL. cm ³ /r [in ³ /r] / PRODUCT NUMBER								
			80 [4.9]	100 [6.2]	130 [8.0]	160 [9.6]	195 [11.9]	245 [14.9]	305 [18.7]	395 [24.0]	490 [29.8]
2 Bolt SAE A Flange	1 Inch Straight	7/8 -14 O-ring Staggered	104-2001	-2002	-2003	-2004	-2005	-2006	-2007	-2008	—
	1 1/4 Inch Straight	7/8 -14 O-ring Staggered	104-2009	-2010	-2011	-2012	-2013	-2014	-2015	-2016	-2219
	1 1/4 Inch 14 T Splined	7/8 -14 O-ring Staggered	104-2017	-2018	-2019	-2020	-2021	-2022	-2023	-2024	—
Wheel Motor	1 1/4 Inch Tapered	7/8 -14 O-ring Staggered	105-2001	-2002	-2003	-2004	-2005	-2006	-2007	-2008	—
	1 1/4 Inch 14 T Splined	7/8 -14 O-ring Staggered	105-2009	-2010	-2011	-2012	-2013	-2014	-2015	-2016	—
Bearingless		7/8 -14 O-ring Staggered	106-2001	-2002	-2003	-2004	-2005	-2006	-2007	-2008	—

106-2006

4000 Compact Series

Highlights



Features

- Shuttle Valve with Back-Pressure Relief Valve
- Speed Sensors
- End Ports.

Benefits

- Higher bearing capacity than 2000 Series
- Torque of 4000 Series

Applications

- Skid Steer Loaders
- Fairway Mowers
- Harvesters
- Vehicles where space may be at a premium.

Description

This new compact addition in a family of disc valve hydraulic motors produces the same amount of torque as the current 4000 Series. Yet, it is housed in an envelope similar to its smaller counterpart, the 2000 Series. The unit's intermittent torque rating is 1220 Nm [10800 lb-in]. A variety of mounting options include two 2 bolt mounts (SAE A, SAE B), and four 4 bolt mounts (magneto, standard and wheel mounts.) For added flexibility, the motor can be specified with either the larger size shafts of the 2000 Series or standard output shaft sizes of the 4000 Series, plus one new 1-1/2 inch straight (the small envelope and optional shaft sizes make this motor ideal for vehicles like skid-steer loaders whose hallmark is high power and productivity in a small frame.)

Specifications

Geroler Element	6 Displacements
Flow l/min [GPM]	75 [20] Continuous**
	115 [30] Intermittent*
Speed RPM	464 Cont.**
	699 Inter.*
Pressure bar [PSI]	200 [3000] Cont.**
	300 [4500] Inter.*
Torque Nm [lb-in]	975 [8627] Cont.**
	1218 [10788] Inter.*

** Continuous— (Cont.) Continuous rating, motor may be run continuously at these ratings.

* Intermittent— (Inter.) Intermittent operation, 10% of every minute.



Lawn and Turf



Skid Steer



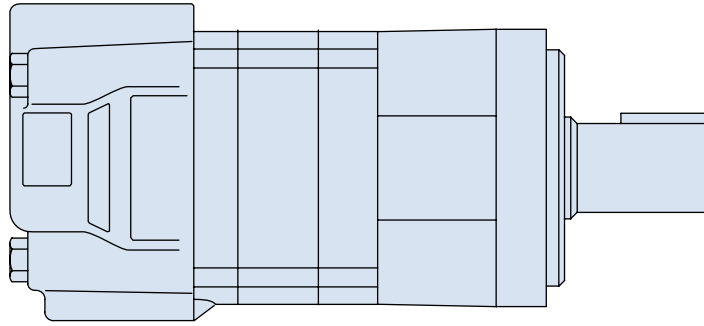
Boom Lift



Harvester

4000 Compact Series

Specifications



SPECIFICATION DATA — 4000 COMPACT SERIES MOTORS

Displ. cm ³ /r [in ³ /r]		160 [9.8]	200 [12.3]	250 [15.4]	325 [19.8]	405 [24.6]	490 [29.8]
Max. Speed (RPM) @ Flow	Continuous	464	375	300	234	188	155
	Intermittent	699	562	450	351	282	232
Flow l/min [GPM]	Continuous	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]
	Intermittent	115 [30]	115 [30]	115 [30]	115 [30]	115 [30]	115 [30]
Torque* Nm [lb-in]	Continuous	510 [4514]	758 [5715]	734 [6500]	793 [7021]	800 [7079]	975 [8627]
	Intermittent	690 [6108]	840 [7436]	935 [8272]	1053 [9320]	921 [8153]	1218 [10778]
Pressure Δ bar [Δ PSI]	Continuous	225 [3000]	225 [3000]	205 [3000]	170 [2500]	140 [2000]	140 [2000]
	Intermittent	310 [4500]	295 [4250]	260 [3750]	240 [3500]	170 [2500]	171 [2500]
	Peak	310 [4500]	310 [4500]	310 [4500]	310 [4500]	275 [4000]	260 [3750]
Weight kg [lb]	Standard or Wheel Mount	10,4 [23.0]	10,9 [24.0]	11,3 [25.0]	11,8 [26.0]	12,2 [27.0]	12,2 [27.0]
	Bearingless	8,4 [18.5]	8,8 [19.5]	9,3 [20.5]	9,8 [21.5]	10,2 [22.5]	10,2 [22.5]

Maximum Case Pressure: See case pressure seal limitation graph.

*See shaft torque ratings for limitations.

Note:

To assure best motor life, run motor for approximately one hour at 30% of rated pressure before application to full load. Be sure motor is filled with fluid prior to any load applications.

Maximum Inlet Pressure:

310 bar [4500 PSI]
Do not exceed Δ pressure rating (see chart above).

Maximum Return Pressure:

310 bar [4500 PSI] with case drain line installed.
Do not exceed Δ pressure rating (see chart above).

Δ bar [Δ PSI] :

The true pressure difference between inlet port and outlet port

Continuous Rating:

Motor may be run continuously at these ratings

Intermittent Operation:

10% of every minute

Peak Operation:

1% of every minute

Recommended Fluids:

Premium quality, anti-wear type hydraulic oil with a viscosity of not less than 70 SUS at operating temperature.

Recommended Maximum System Operating Temp.:

82° C [180° F]

Recommended Filtration:

per ISO Cleanliness Code, 4406: 20/18/13

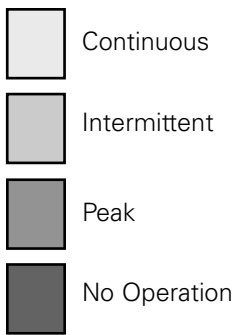
4000 Compact Series

Performance Data

160 cm³/r [9.8 in³/r]
 Δ Pressure Bar [PSI]

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

Performance data is typical at 120 SUS. Actual data may vary slightly from unit to unit in production.



	[250] 15	[500] 35	[750] 50	[1000] 70	[1250] 85	[1500] 105	[1750] 120	[2000] 140	[2250] 155	[2500] 170	[2750] 190	[3000] 205	[3250] 225	[3500] 240	[3750] 260	[4000] 275	[4250] 295
[0.25] 0.95	244 28 4	543 61 3															
[0.5] 1.9	274 31 10	554 63 8	854 96 7														
[1] 3.8	274 31 22	593 67 21	899 102 20	1210 137 19	1513 171 17	1816 205 14	2092 236 12	2361 267 10	2621 296 9	2874 325 7	3088 349 6						
[2] 7.5	301 34 40	623 70 39	940 106 38	1261 143 36	1579 178 35	1898 214 33	2197 248 31	2492 282 28	2766 313 24	3033 343 20	3270 369 17	3496 395 14	3761 425 10	4022 454 6			
[4] 15	305 27 87	662 75 85	1004 113 83	1354 153 81	1699 192 79	2046 231 77	2386 270 74	2725 308 72	3049 344 67	3368 381 63	3693 417 59	4016 454 55	4319 488 49	4618 522 44	4828 545 35	5022 567 27	
[6] 23	293 33 133	659 74 131	1003 113 129	1357 153 127	1705 193 124	2056 232 121	2399 271 118	2741 310 114	3074 347 109	3405 385 104	3751 424 99	4098 463 93	4417 499 87	4732 535 80	5023 568 71	5308 600 63	
[8] 30	280 32 181	656 74 179	1002 113 177	1360 154 175	1711 193 172	2066 233 169	2412 273 166	2758 312 162	3100 350 157	3442 389 152	3809 430 145	4180 472 139	4514 510 133	4846 548 127	5218 590 120	5593 632 113	5856 662 104
[10] 38	259 29 228	630 71 225	978 110 223	1348 152 220	1701 192 217	2061 233 213	2408 272 209	2755 311 204	3102 351 199	3450 390 193	3806 430 186	4163 470 179	4500 508 172	4835 546 165	5191 586 157	5547 627 150	5784 653 141
[12] 45	238 27 275	604 68 272	954 108 269	1336 151 266	1692 191 262	2056 232 258	2403 272 253	2752 311 247	3105 351 241	3458 391 235	3802 430 229	4146 468 223	4485 507 214	4824 545 205	5163 583 197	5501 622 189	
[14] 53	210 24 322	577 65 319	923 104 316	1308 148 313	1665 188 308	2034 230 304	2385 269 298	2739 310 293	3092 349 286	3447 390 279	3796 429 272	4144 468 265	4487 507 256	4830 546 247			
[16] 61	182 21 370	550 62 367	893 101 363	1280 145 360	1638 185 356	2012 227 351	2367 267 345	2727 308 339	3080 348 332	3436 388 324	3789 428 317	4143 468 301	4489 507 292	4836 546 262			
[18] 68	143 16 417	514 58 414	853 96 410	1247 141 406	1601 181 401	1973 223 397	2329 263 390	2692 304 383	3045 344 375	3401 384 366	3756 424 358	4114 465 350					
[20] 76	105 12 464	478 54 461	814 92 457	1213 137 453	1564 177 448	1935 219 442	2291 259 435	2658 300 428	3010 340 418	3366 380 409	3724 421 400	4085 462 390					
[22] 83		433 49 508	762 86 504	1167 132 500	1518 172 495	1893 214 489	2252 254 482	2623 296 474	2973 336 465	3328 376 456	3682 416 446	4040 456 436					
[24] 91		387 44 556	711 80 552	1121 127 548	1472 166 542	1851 209 537	2212 250 529	2589 292 521	2937 332 513	3291 372 504	3641 411 493	3995 451 483					
[25] 95		363 41 580	683 77 576	1095 124 572	1445 163 566	1824 206 560	2184 247 552	2561 289 544	2910 329 535	3266 369 526							
[30] 114		244 28 699	546 62 695	967 109 692	1308 148 685	1689 191 678	2045 231 669	2421 274 660	2777 314 648	3144 355 637							

[2777]
314 } Torque [lb-in]
648 } Nm
Speed RPM

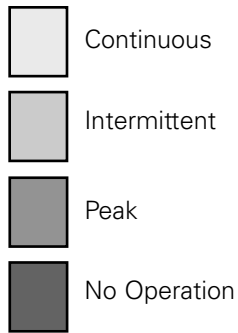
4000 Compact Series

Performance Data

200 cm³/r [12.3 in³/r]
 Δ Pressure Bar [PSI]

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

Performance data is typical at 120 SUS. Actual data may vary slightly from unit to unit in production.



	[250] 15	[500] 35	[750] 50	[1000] 70	[1250] 85	[1500] 105	[1750] 120	[2000] 140	[2250] 155	[2500] 170	[2750] 190	[3000] 205	[3250] 225	[3500] 240	[3750] 260	[4000] 275	[4250] 295
[0.25] 0,95	115 13 4	504 57 3															
[0.5] 1,9	268 30 8	584 66 7	963 109 4	1274 144 3													
[1] 3,8	306 35 17	721 81 16	1104 125 14	1516 171 13	1913 216 12	2243 253 10	2397 271 9	2772 313 6									
[2] 7,5	402 45 35	841 95 34	1218 138 32	1647 186 31	2107 238 30	2478 280 28	2826 319 27	3238 366 24	3954 447 29	4451 503 26	4755 537 23	5127 579 21	5407 622 17	5569 664 11	5855 706 8		
[4] 15	403 46 72	896 101 70	1361 154 69	1780 201 68	2247 254 66	2649 299 65	3068 347 62	3513 397 60	3947 446 56	4367 493 53	4710 532 50	5125 579 46	5509 622 42	5880 664 37	6249 706 31	6547 740 24	6753 763 19
[6] 23	385 44 109	863 98 107	1354 153 106	1785 202 104	2260 255 102	2657 300 100	3087 349 97	3547 401 93	3965 448 90	4389 496 86	4793 542 81	5218 590 77	5610 634 72	6015 680 66	6408 724 60	6754 763 52	7436 840 47
[8] 30	368 42 147	831 94 146	1347 152 144	1790 202 142	2273 257 140	2665 301 137	3106 351 134	3581 405 130	3982 450 127	4382 498 122	4776 551 117	5171 600 113	5571 645 108	6151 695 103	6567 742 98	6961 786 91	7334 829 83
[10] 38	353 40 185	822 93 184	1319 149 181	1774 200 179	2212 250 177	2642 299 174	3086 349 170	3556 397 165	3974 449 161	4410 498 156	4839 547 151	5297 598 146	5715 646 140	6147 695 134	6563 742 129		
[12] 45	339 38 223	813 92 222	1291 146 219	1758 199 217	2151 243 214	2620 296 211	3067 346 207	3530 399 202	3965 448 197	4408 498 192	4802 543 186	5283 597 180	5718 646 174	6144 694 167	6568 742 164		
[14] 53	282 32 261	762 86 260	1237 140 257	1693 191 255	2121 240 252	2601 294 248	2968 335 244	3504 396 238	3953 447 233	4368 493 227	4832 546 221	5261 594 214	5690 643 208				
[16] 61	224 25 299	712 80 298	1183 134 296	1629 184 293	2091 236 290	2581 292 286	2870 324 282	3477 393 275	3940 445 269	4328 489 263	4861 549 256	5240 592 249	5661 640 243				
[18] 68	200 23 337	667 75 336	1148 130 334	1619 183 331	2053 232 328	2520 285 324	2899 328 320	3442 389 314	3906 441 307	4337 490 301	4819 544 293	5245 593 285	5644 638 278				
[20] 76	176 20 375	623 70 374	1112 126 372	1609 182 369	2014 228 366	2458 278 363	2929 331 358	3407 385 353	3872 437 346	4347 491 339	4777 540 331	5250 593 322	5627 636 315				
[22] 83		565 64 412	1053 119 410	1530 173 407	1934 219 404	2387 270 401	2868 324 396	3347 378 390	3804 430 383	4254 481 375	4698 531 367						
[24] 91		507 57 449	994 112 448	1450 164 446	1855 210 443	2316 262 439	2806 317 434	3287 371 427	3737 422 420	4162 470 412	4618 522 403						
[25] 95		465 53 468	950 107 467	1411 159 464	1820 206 462	2276 257 458	2768 313 453	3233 365 446	3688 417 439	4116 465 431	4493 508 423						
[30] 114		259 29 562	726 82 563	1214 137 559	1645 186 555	2072 234 556	2577 291 550	2961 335 545	3443 389 536	3889 439 527	3866 437 521						

[2072] } Torque [lb-in]
 234 } Nm
 556 } Speed RPM

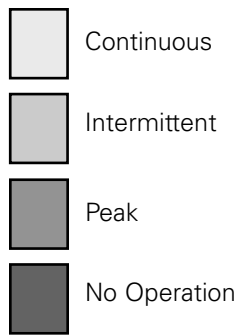
4000 Compact Series

Performance Data

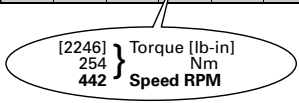
250 cm³/r [15.4 in³/r]
 Δ Pressure Bar [PSI]

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

Performance data is typical at 120 SUS. Actual data may vary slightly from unit to unit in production.



	[250] 15	[500] 35	[750] 50	[1000] 70	[1250] 85	[1500] 105	[1750] 120	[2000] 140	[2250] 155	[2500] 170	[2750] 190	[3000] 205	[3250] 225	[3500] 240	[3750] 260
[0.5] 1.9	384 43 6	833 94 5													
[1] 3.8	438 49 14	904 102 14	1403 158 13	1887 213 12	2359 267 11	2798 316 9	3221 364 8	3657 413 7	3822 432 4	4326 489 3					
[2] 7.5	492 56 28	1054 119 27	1563 177 26	2081 235 25	2623 296 24	3160 357 23	3717 420 21	4147 469 17	4585 518 16	5070 573 13	5470 618 9	5721 646 7	5962 674 5		
[4] 15	603 68 58	1183 134 56	1771 200 55	2275 257 54	2817 318 52	3364 380 50	3895 440 47	4495 508 44	5005 565 42	5496 621 38	5982 676 35	6500 734 32	7054 797 28	7519 850 24	7941 897 17
[6] 23	587 66 88	1159 131 86	1741 197 84	2329 263 82	2815 318 80	3369 381 77	3951 446 74	4483 506 71	5021 567 67	5555 628 63	6068 686 59	6557 741 55	7131 806 50	7641 863 45	8107 916 38
[8] 30	571 65 118	1135 128 116	1710 193 114	2384 269 112	2813 318 110	3375 381 107	4008 453 103	4471 505 100	5038 569 96	5613 634 92	6154 695 87	6614 747 83	7209 815 78	7763 877 73	8272 935 67
[10] 38	552 62 148	1138 129 146	1671 189 144	2304 260 142	2804 317 139	3361 380 136	3950 446 131	4452 503 127	5006 566 123	5587 631 119	6123 692 113	6612 747 109	7201 814 102		
[12] 45	532 60 178	1140 129 177	1631 184 175	2224 251 173	2796 316 170	3347 378 166	3892 440 161	4434 501 157	4974 562 151	5561 628 146	6093 688 141	6610 747 136	7193 813 129		
[14] 53	441 50 209	1072 121 207	1600 181 205	2207 249 202	2754 311 199	3320 375 195	3888 439 190	4433 501 185	4958 560 179	5529 625 174	6066 685 168	6590 745 162			
[16] 61	349 39 239	1003 113 237	1568 177 235	2190 247 233	2711 306 229	3292 372 225	3884 439 220	4431 501 214	4941 558 208	5496 621 202	6039 682 195	6570 742 189			
[18] 68	306 35 269	940 106 267	1513 171 265	2114 239 263	2653 300 259	3251 367 255	3830 433 250	4380 495 243	4904 554 236	5446 615 230	5984 676 223	6518 736 214			
[20] 76	263 30 300	876 99 298	1458 165 296	2038 230 293	2595 293 290	3210 363 285	3777 427 280	4328 489 272	4867 550 265	5395 610 259	5928 670 251	6471 731 241			
[22] 83		826 93 328	1414 160 326	1991 225 323	2528 286 320	3144 355 315	3709 419 309	4262 482 302	4806 543 295	5354 605 288	5915 668 279				
[24] 91		776 88 359	1370 155 356	1945 220 354	2462 278 350	3079 348 345	3642 411 339	4196 474 332	4745 536 325	5313 600 317	5901 667 308				
[25] 95		732 83 374	1322 149 371	1959 221 369	2426 274 365	3026 342 360	3594 406 354	4153 469 347	4696 531 340	5152 582 333					
[30] 114		509 57 450	1082 122 449	2029 229 445	2246 254 442	2761 312 437	3358 379 430	3939 445 423	4450 503 414	4347 491 413					



4000 Compact Series

Performance Data

325 cm³/r [19.8 in³/r]
 Δ Pressure Bar [PSI]

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

Performance data is typical at 120 SUS. Actual data may vary slightly from unit to unit in production.



	[250] 15	[500] 35	[750] 50	[1000] 70	[1250] 85	[1500] 105	[1750] 120	[2000] 140	[2250] 155	[2500] 170	[2750] 190	[3000] 205	[3250] 225	[3500] 240
[0.5] 1.9	536 61 5	1152 130 4												
[1] 3.8	555 63 11	1220 138 10	1900 215 10	2559 289 9	3222 364 9	3862 436 8	4522 511 7	5061 572 5	5580 630 3	6106 690 3				
[2] 7.5	643 73 22	1349 152 21	2025 229 20	2712 306 19	3378 382 19	4051 458 17	4696 531 15	5335 603 13	5889 665 10	6366 719 5	6876 777 3			
[4] 15	679 77 45	1420 160 44	2140 242 43	2852 322 42	3557 402 40	4259 481 38	4947 559 36	5628 636 33	6300 712 30	6960 786 26	7596 858 23	8201 927 19	8767 991 14	9320 1053 11
[6] 23	654 74 68	1400 158 67	2132 241 66	2859 323 64	3575 404 62	4281 484 59	4977 562 56	5668 640 53	6346 717 49	7021 793 44	7678 868 40	8244 931 38	8792 993 35	
[8] 30	629 71 92	1379 156 90	2125 240 89	2866 324 87	3592 406 85	4304 486 82	5007 566 79	5707 645 75	6392 722 71	7082 800 66	7760 877 61	8400 949 56		
[10] 38	587 66 115	1337 151 114	2082 235 112	2827 319 110	3556 402 107	4272 483 103	4976 562 100	5672 641 94	6362 719 90	7053 797 85				
[12] 45	546 62 139	1295 146 137	2040 230 136	2787 315 134	3520 398 130	4240 479 125	4944 559 121	5638 637 115	6332 715 110	7023 794 105				
[14] 53	489 55 162	1238 140 161	1984 224 159	2729 308 157	3467 392 153	4193 474 148	4903 554 143	5600 633 136	6293 711 131					
[16] 61	431 49 186	1182 134 185	1929 218 183	2671 302 181	3415 386 177	4145 468 171	4861 549 165	5562 628 159	6254 707 153					
[18] 68	360 41 210	1110 125 208	1856 210 206	2600 294 204	3343 378 200	4073 460 195	4794 542 189	5499 621 183						
[20] 76	288 33 234	1038 117 232	1784 202 230	2529 286 228	3271 370 224	4001 452 220	4726 534 214	5436 614 207						
[22] 83		958 108 256	1706 193 254	2451 277 251	3194 361 248	3926 444 243	4650 525 237	5360 606 229						
[24] 91		878 99 279	1628 184 277	2373 268 275	3116 352 271	3850 435 266	4574 517 260	5285 597 252						
[25] 95		826 93 291	1576 178 289	2320 262 287	3063 346 283	3798 429 277	4523 511 271							
[30] 114		566 64 351	1314 148 349	2056 232 346	2799 316 342	3536 399 337	4268 482 332							





[2799] } Torque [lb-in]
 316 } Nm
 342 } Speed RPM

4000 Compact Series

Performance Data

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

Performance data is typical at 120 SUS. Actual data may vary slightly from unit to unit in production.

-  Continuous
-  Intermittent
-  Peak
-  No Operation

405 cm³/r [24.6 in³/r]

Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[750] 50	[1000] 70	[1250] 85	[1500] 105	[1750] 120	[2000] 140	[2250] 155	[2500] 170
[0.5]	719	1458								
1.9	81	165								
3.8	3	2								
[1]	777	1631	2423	3148	3690					
3.8	88	184	274	356	417					
8	8	7	5	4	3					
[2]	853	1812	2596	3375	4179	4845	5375	5841	6501	
7.5	96	205	293	381	472	547	607	660	735	
17	17	15	14	12	11	9	8	3	2	
[4]	878	1859	2687	3667	4554	5388	6232	7004	7660	8153
15	99	210	304	414	515	609	704	791	865	921
35	35	34	32	30	28	25	23	19	16	11
[6]	882	1836	2716	3680	4577	5388	6269	7079	7856	
23	100	207	307	416	517	609	708	800	888	
54	54	52	51	48	46	42	39	35	31	
[8]	885	1813	2746	3694	4600	5388	6307	7153	8052	
30	100	205	310	417	520	609	713	808	910	
73	73	72	70	68	65	62	58	55	50	
[10]	810	1736	2693	3639	4540	5390	6310	7151	7994	
38	92	196	304	411	513	609	713	808	903	
92	92	90	89	86	84	80	75	71	67	
[12]	735	1660	2640	3584	4480	5391	6314	7149		
45	83	188	298	405	506	609	713	808		
111	111	110	108	106	103	98	93	88		
[14]	661	1622	2560	3512	4412	5330	6242	7059		
53	75	183	289	397	498	602	705	798		
130	130	128	127	124	121	117	112	108		
[16]	587	1585	2480	3440	4343	5268	6170			
61	66	179	280	389	491	595	697			
149	149	147	146	143	141	137	131			
[18]	492	1472	2379	3333	4270	5190	6084			
68	56	166	269	377	482	586	687			
168	168	167	165	162	160	156	150			
[20]	397	1359	2279	3226	4197	5112	5999			
76	45	153	257	365	474	578	678			
188	188	186	184	182	179	175	170			
[22]		1264	2194	3124	4093	5008	5904			
83		143	248	353	462	566	667			
205		205	203	201	198	193	188			
[24]		1169	2110	3023	3989	4904	5810			
91		132	238	342	451	554	656			
224		224	222	220	216	212	207			
[25]		1106	2049	2961	3929	4851	5766			
95		125	231	335	444	548	651			
233		233	232	229	226	222	217			
[30]		790	1744	2655	3634	4587	5543			
114		89	197	300	411	518	626			
282		282	280	277	274	270	266			

[2655] } Torque [lb-in]
 300 } Nm
 227 } Speed RPM

4000 Compact Series

Performance Data

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

Performance data is typical at 120 SUS. Actual data may vary slightly from unit to unit in production.

-  Continuous
-  Intermittent
-  Peak
-  No Operation

490 cm³/r [29.8 in³/r]
 Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[750] 50	[1000] 70	[1250] 85	[1500] 105	[1750] 120	[2000] 140	[2250] 155	[2500] 170
[0.5] 1,9	375 42 3	1669 189 3								
[1] 3,8	525 59 7	1762 199 7	2945 333 6	3965 448 6	5099 576 6	5926 670 5	6715 759 4	7503 848 3		
[2] 7,5	639 72 14	2108 238 14	3287 371 13	4169 471 13	5416 612 11	6570 742 11	7188 812 9	8295 937 6	8959 1012 5	
[4] 15	981 111 30	2201 249 29	3333 377 29	4574 517 28	5558 628 27	6634 750 26	7694 869 24	8627 975 21	9567 1081 18	10399 1175 13
[6] 23	1049 119 45	2218 251 45	3332 376 44	4584 518 43	5604 633 42	6670 754 40	7711 871 38	8713 984 35	9698 1096 31	10588 1196 26
[8] 30	1118 126 61	2236 253 60	3331 376 60	4593 519 59	5650 638 58	6705 758 56	7727 873 54	8798 994 51	9828 1110 48	10778 1218 44
[10] 38	1060 120 76	2230 252 76	3304 373 75	4503 509 75	5607 633 73	6693 756 72	7721 872 69	8836 998 66		
[12] 45	1003 113 92	2223 251 91	3276 370 91	4413 499 90	5564 629 89	6680 755 88	7715 872 85	8874 1003 82		
[14] 53	858 97 108	2127 240 107	3136 354 107	4320 488 106	5496 621 105	6542 739 103	7653 865 100			
[16] 61	713 81 124	2030 229 123	2997 339 122	4226 477 122	5428 613 121	6403 723 119	7590 858 115			
[18] 68	631 71 139	1907 215 139	2935 332 138	4133 467 137	5330 602 136	6339 716 134	7431 840 130			
[20] 76	548 62 155	1784 202 154	2872 325 153	4041 457 153	5232 591 152	6275 709 150	7362 832 148			
[22] 83		1669 189 170	2704 306 169	3928 444 169	5048 570 168	6124 692 166	7208 814 164			
[24] 91		1553 175 186	2536 287 185	3816 431 185	4864 550 184	5972 675 182	7055 797 179			
[25] 95		1469 166 193	2475 280 193	3737 422 193	4810 543 192	5909 668 190	6959 786 187			
[30] 114		1047 118 232	2172 245 232	3341 378 232	4538 513 231	5592 632 229	6482 732 227			

{ [3341]
378 } Torque [lb-in]
232 } Nm
Speed RPM

4000 Compact Series

Dimensions

Standard Mount

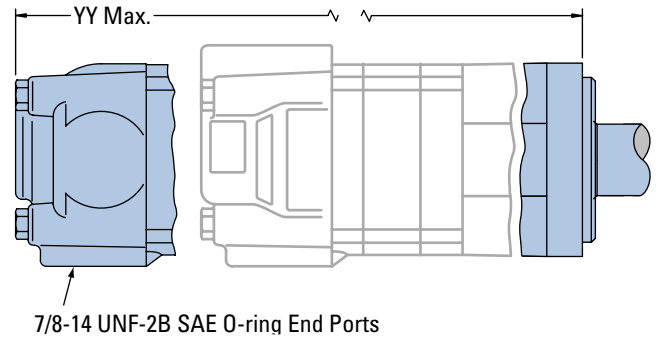
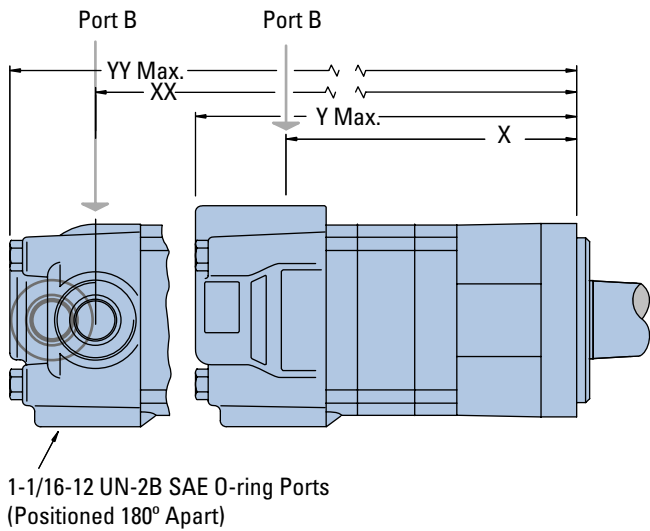
Ports

- 7/8 -14 UNF-2B SAE O-ring Staggered Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- 1 1/16 -12 UN-2B SAE O-ring Ports (Positioned 180° Apart) (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- 7/8 -14 UNF-2B SAE O-ring End Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- G 1/2 (BSP) Staggered Ports (2)
- G 1/4 (BSP) Case Drain Port (1) or
- Manifold Mount
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1)

Standard Rotation Viewed from Shaft End

- Port A Pressurized — CW
- Port B Pressurized — CCW

Standard Mount



STANDARD MOUNT MOTOR DIMENSIONS

Displacement	X	Y	XX	YY
cm ³ /r [in ³ /r]	mm [inch]	mm [inch]	mm [inch]	mm [inch]
160 [9.8]	154,7 [6.09]	201,9 [7.95]	157,0 [6.18]	203,3 [8.00]
200 [12.3]	163,8 [6.45]	211,1 [8.31]	166,1 [6.54]	212,3 [8.36]
250 [15.4]	175,3 [6.90]	222,5 [8.76]	177,5 [6.99]	223,8 [8.81]
325 [19.8]	191,0 [7.52]	238,5 [9.39]	193,3 [7.61]	239,8 [9.44]
405 [24.6]	208,5 [8.21]	255,8 [10.07]	210,8 [8.30]	257,0 [10.12]
490 [29.8]	208,5 [8.21]	255,8 [10.07]	210,8 [8.30]	257,0 [10.12]

4000 Compact Series

Dimensions

Wheel Mount

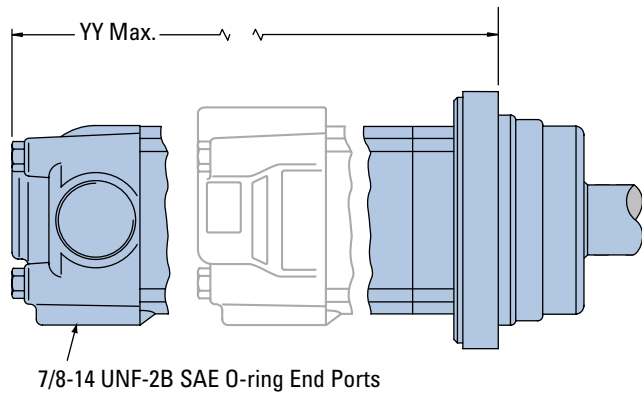
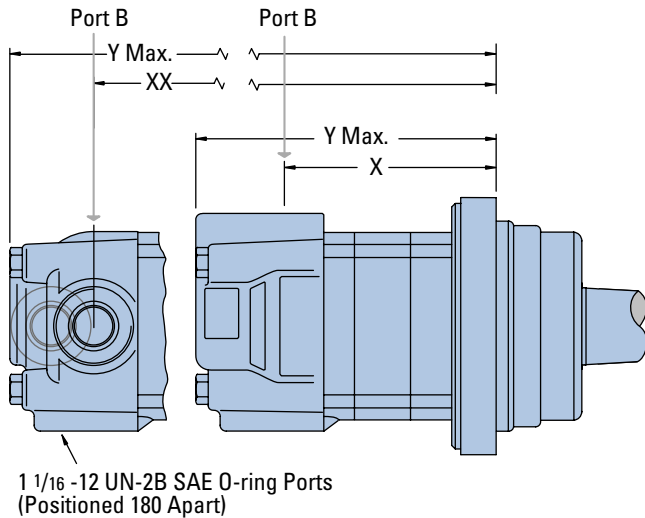
Ports

- 7/8 -14 UNF-2B SAE O-ring Staggered Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- 1 1/16 -12 UN-2B SAE O-ring Ports (Positioned 180° Apart) (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- 7/8 -14 UNF-2B SAE O-ring End Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- G 1/2 (BSP) Staggered Ports (2)
- G 1/4 (BSP) Case Drain Port (1) or
- Manifold Mount
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1)

Standard Rotation Viewed from Shaft End

- Port A Pressurized — CW
- Port B Pressurized — CCW

Wheel Mount



WHEEL MOUNT MOTOR DIMENSIONS

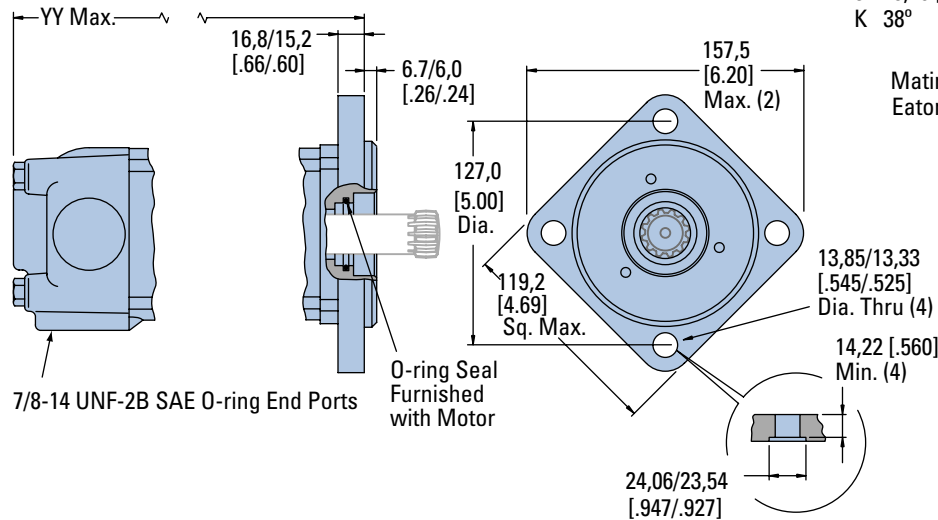
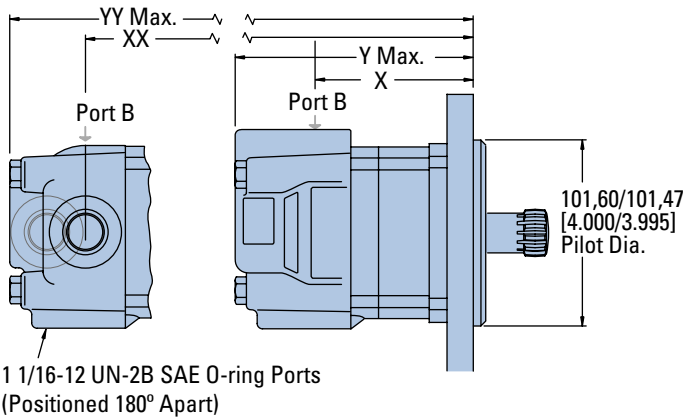
Displacement	X	Y	XX	YY
cm ³ /r [in ³ /r]	mm [inch]	mm [inch]	mm [inch]	mm [inch]
160 [9.8]	114,6 [4.51]	161,8 [6.37]	114,6 [4.51]	161,8 [6.37]
200 [12.3]	123,7 [4.87]	170,9 [6.73]	123,7 [4.87]	170,9 [6.73]
250 [15.4]	135,1 [5.32]	182,4 [7.18]	135,1 [5.32]	182,4 [7.18]
325 [19.8]	150,9 [5.94]	198,4 [7.81]	150,9 [5.94]	198,4 [7.81]
405 [24.6]	168,4 [6.63]	215,6 [8.49]	168,4 [6.63]	215,6 [8.49]
490 [29.8]	168,4 [6.63]	215,6 [8.49]	168,4 [6.63]	215,6 [8.49]

4000 Compact Series

Dimensions

Bearingless

Bearingless



Ports

- 7/8 -14 UNF-2B SAE O-ring Staggered Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- 1 1/16 -12 UN-2B SAE O-ring Ports (Positioned 180° Apart) (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- 7/8 -14 UNF-2B SAE O-ring End Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- G 1/2 (BSP) Staggered Ports (2)
- G 1/4 (BSP) Case Drain Port (1) or
- Manifold Mount
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1)

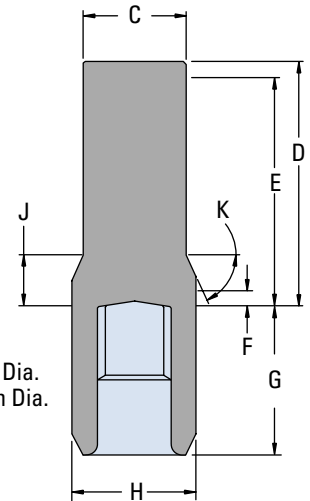
Standard Rotation Viewed from Shaft End

- Port A Pressurized — CW
- Port B Pressurized — CCW

For 4000 bearingless motor application information, contact your Eaton representative (mating coupling blanks available from Eaton Hydraulics).

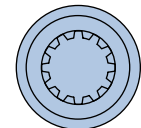
Note:

After machining blank, part must be hardened per Eaton specification.



- C 47,2 [1.86] Dia.
- D 112,5 [4.43] Max.
- E 107,4 [4.23] Full Form Dia.
- F 7,4 [.29] Min. Full Form Dia.
- G 68,8 [2.71] Max.
- H 56,9 [2.24] Dia.
- J 18,29 [.720]
- K 38°

Mating Coupling Blank
Eaton Part No. 12745-003



BEARINGLESS MOTOR DIMENSIONS

Displacement	X	Y	XX	YY
cm ³ /r [in ³ /r]	mm [inch]	mm [inch]	mm [inch]	mm [inch]
160 [9.8]	96,8 [3.81]	144,3 [5.68]	99,1 [3.90]	145,5 [5.73]
200 [12.3]	105,7 [4.16]	153,4 [6.04]	108,0 [4.25]	154,7 [6.09]
250 [15.4]	117,1 [4.61]	164,8 [6.49]	119,4 [4.70]	166,1 [6.54]
325 [19.8]	133,1 [5.24]	180,8 [7.12]	135,4 [5.33]	182,1 [7.17]
405 [24.6]	150,4 [5.92]	198,1 [7.80]	152,7 [6.01]	199,4 [7.85]
490 [29.8]	150,4 [5.92]	198,1 [7.80]	152,7 [6.01]	199,4 [7.85]

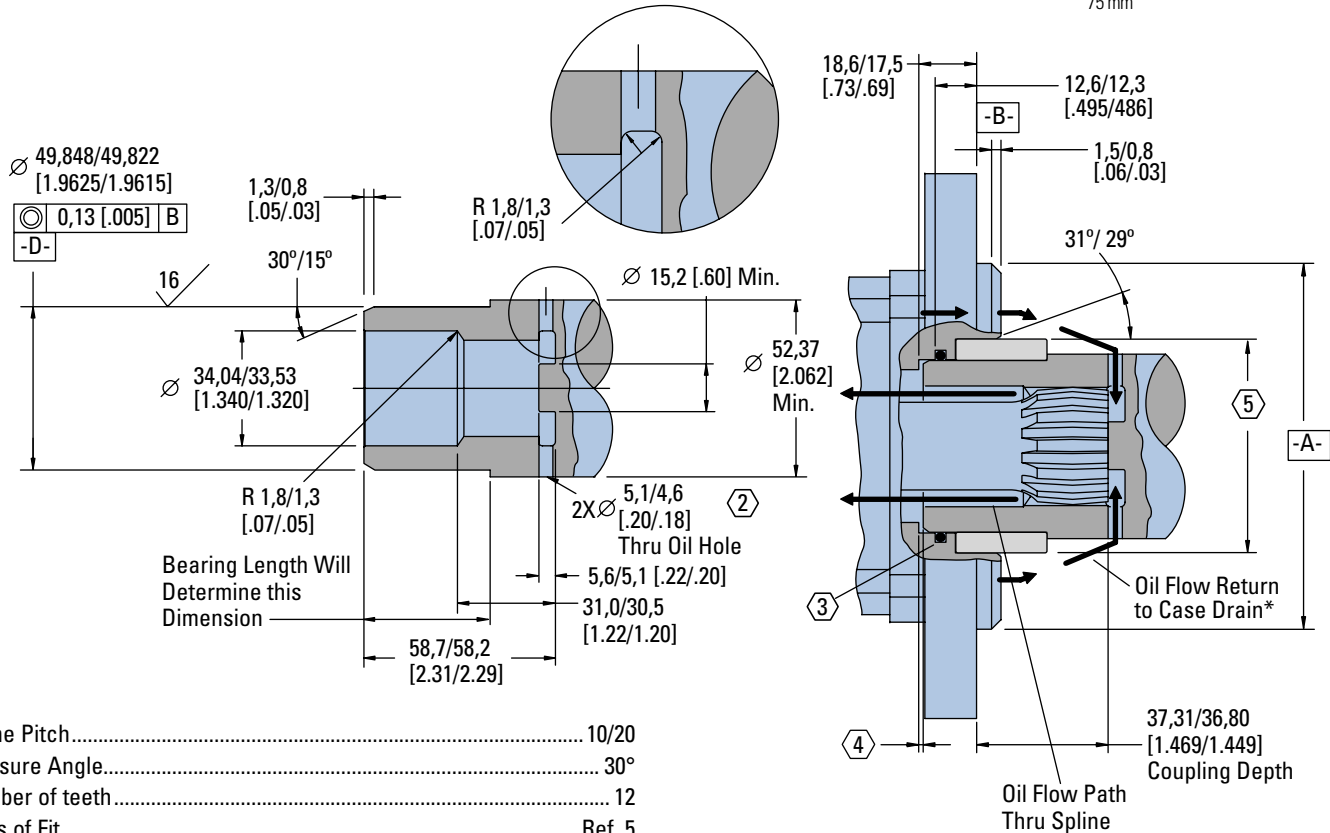
4000 Compact Series

Installation Information

Bearingless

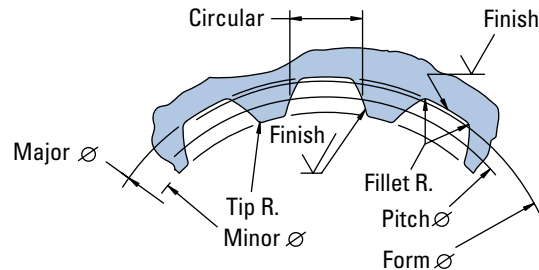
- 1 Internal spline in mating part to be per spline data specification. Material to be ASTM A304, 8620H vacuum degassed alloy steel carbonize to a hardness of 59-62 HRC with case depth (to 50HRC) of 0,76 - 1,02 [.030 - .040] dimensions apply after heat treat.
- 2 Mating part to have critical dimensions as shown. Oil holes must be provided and open for proper oil circulation.
- 3 Seal to be furnished with motor for proper oil circulation thru splines.

- 4 Some means of maintaining clearance between shaft and mounting flange must be provided.
- 5 Counterbore designed to adapt to a standard sleeve bearing 50,010 - 50,040 [1.9689 - 1.9700] ID by 60,050 - 60,080 [2.3642 - 2.3653] (Oilite bronze sleeve bearing) Source: Beemer Precision Inc. www.oilite.com, 1-800-836-2340 AAM 50 mm ID - 60 mm OD Length Determined by the Customer.
Stock Bearing Lengths:
35 mm
50 mm
60 mm
70 mm
75 mm



Spline Pitch.....	10/20
Pressure Angle.....	30°
Number of teeth.....	12
Class of Fit.....	Ref. 5
Type of Fit.....	Side
Pitch Diameter.....	Ref. 30,480000 [1.2000000] ↗ 0,20 [.008] D
Base Diameter.....	Ref. 26,396455 [1.0392305]
Major Diameter.....	(33,43 [1.316] Max. 33,23 [1.308] Min.)
Minor Diameter.....	28,40 - 25,58 [1.118 - 1.125]
Form Diameter, Min.....	32,59 [1.283]
Fillet Radius.....	0,63 - 0,76 [.025 - .030]
Tip Radius.....	0,26 - 0,51 [.010 - .020]
Finish.....	1,6 (63)
Involute Profile Variation.....	+0,000 -0,025 [+0.0000 - .0010]
Total Index Variation.....	0,038 [.0015]
Lead Variation.....	0,013 [.0005]
Circular Space Width:	
Maximum Actual.....	5,045 [.1986]
Minimum Effective.....	4,995 [.1951]
Maximum Effective.....	Ref. 5,009 [.1972]
Minimum Actual.....	Ref. 4,986 [.1963]
Dimension Between Two Pins.....	Ref. 22,783 - 22,929 [.8970 - .9027]
Pin Diameter.....	5,334 [.2100] Pins to Have 3,73 [.147]

Wide Flat for Root Clearance

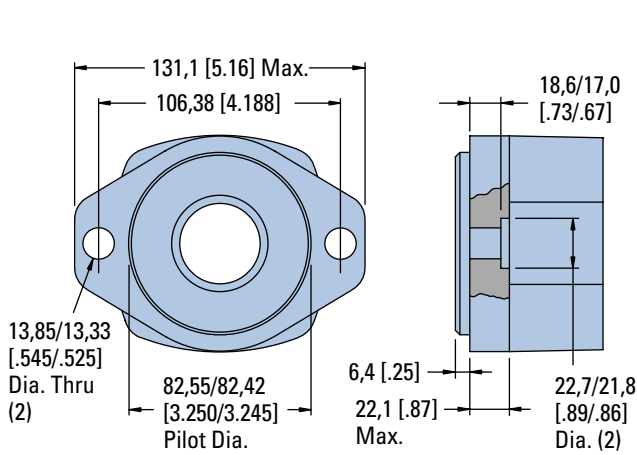


4000 Compact Series

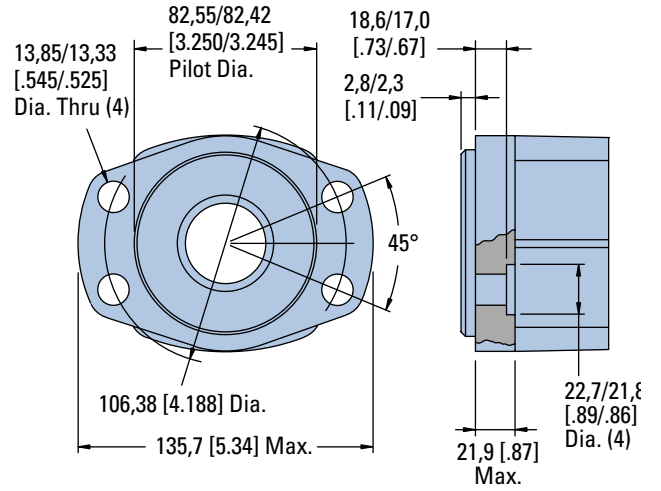
Dimensions

Mounting Options

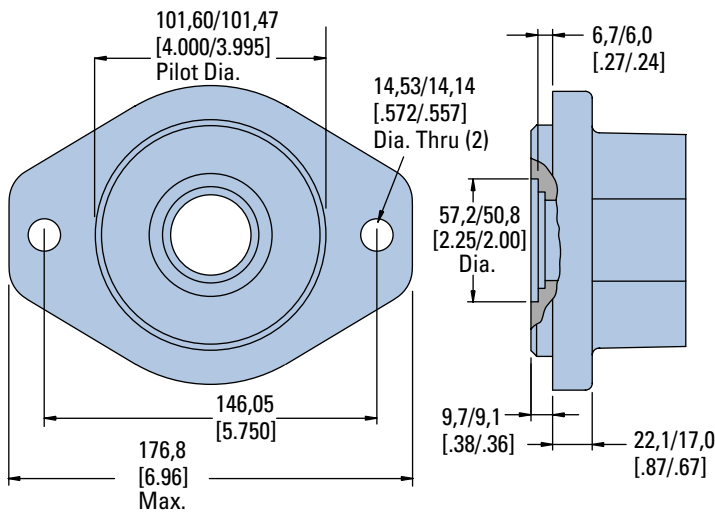
SAE A — Two Bolt (Standard Motor)



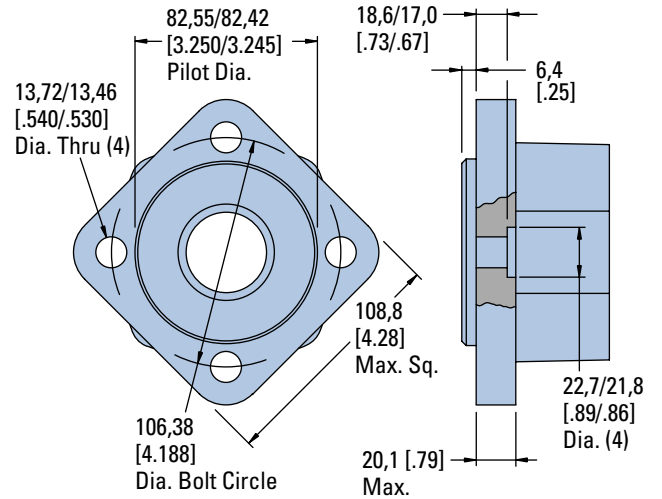
Four Bolt Magneto



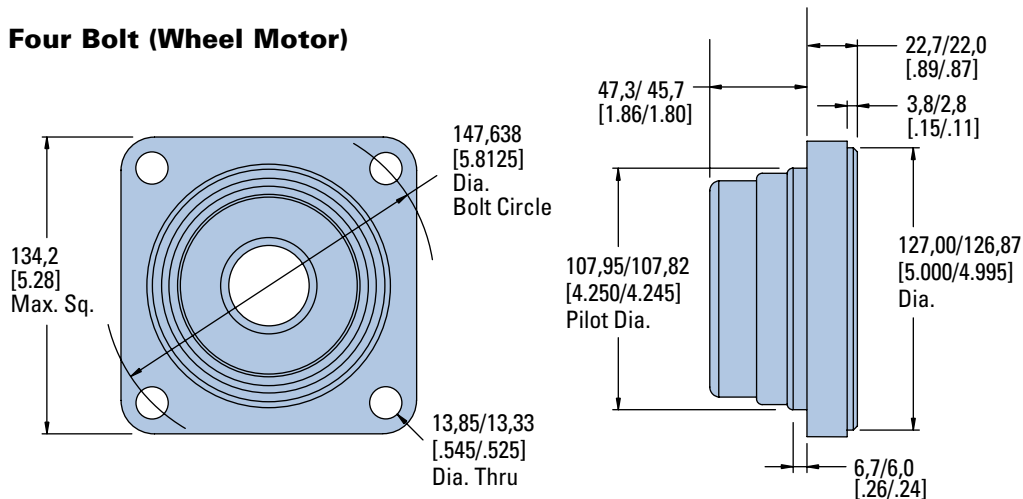
Two Bolt SAE B



Four Bolt



Four Bolt (Wheel Motor)

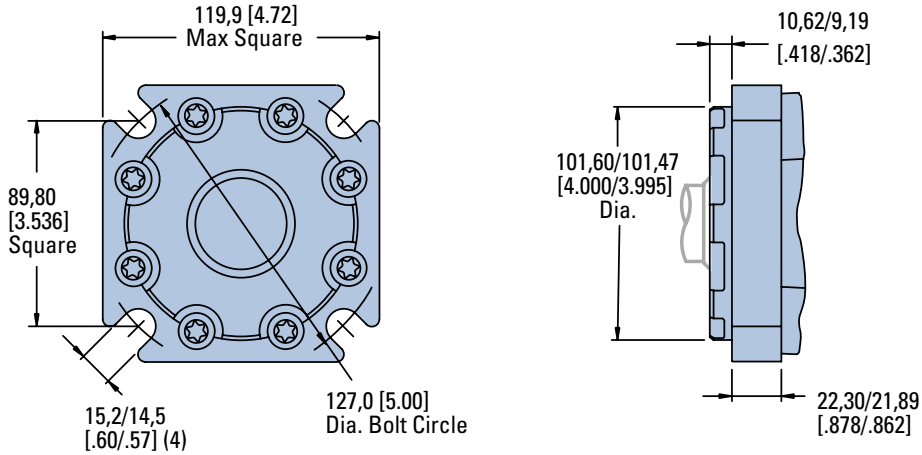


4000 Compact Series

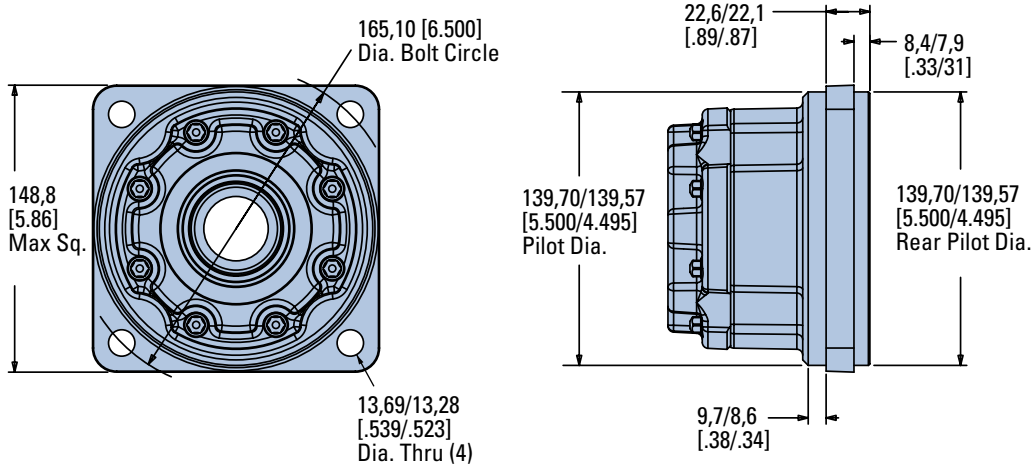
Dimensions

Mounting Options for use with Enhanced Bearings

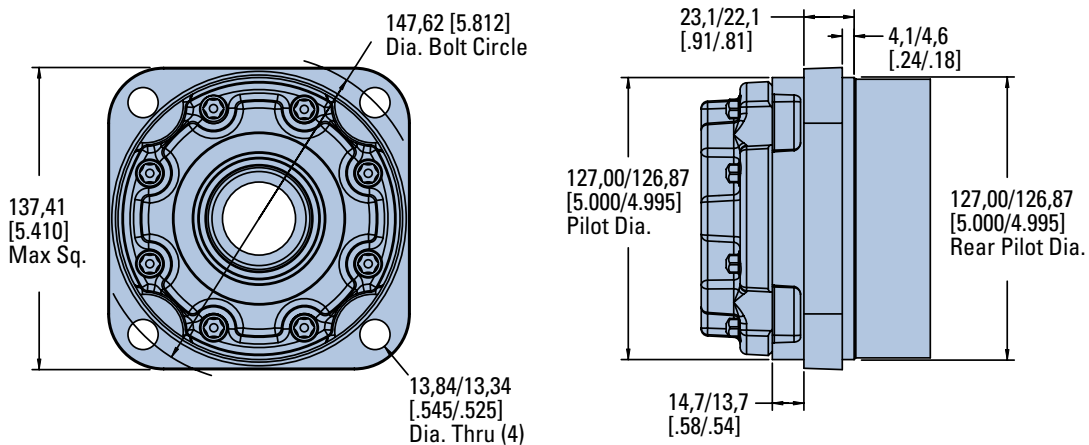
Standard Flange- Similar to SAE B type



Four Bolt (Wheel Motor)



Four Bolt (Wheel Motor- Short)

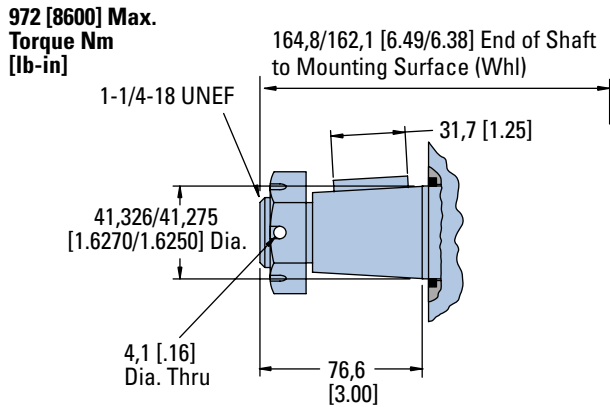


4000 Compact Series

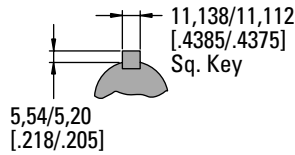
Dimensions

Shafts

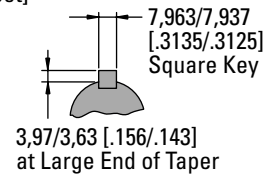
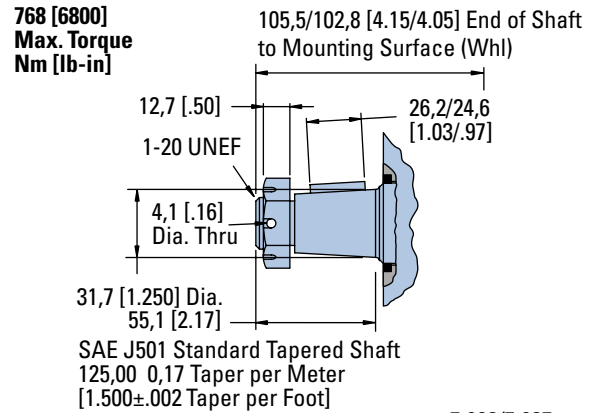
1-5/8 Inch Tapered



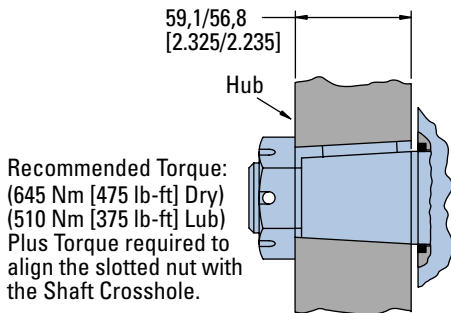
SAE J501 Standard Tapered Shaft
125,00 0,17 Taper per Meter
[1.500±.002 Taper per Foot]



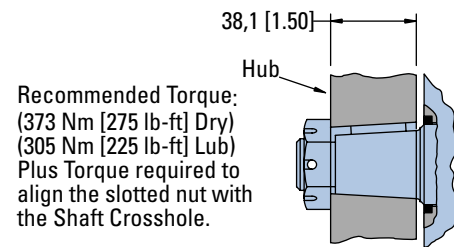
1-1/4 Inch Tapered



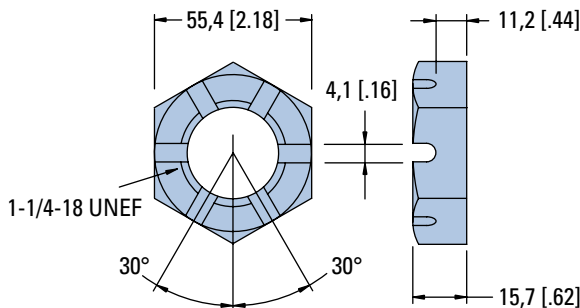
Tapered Shaft Hub Data



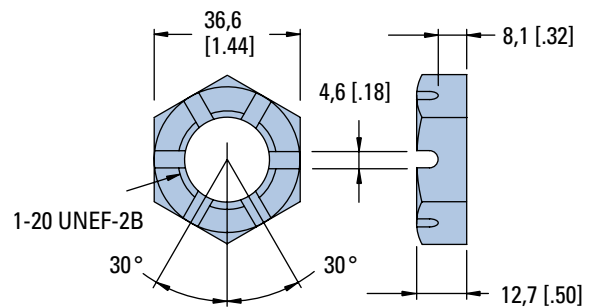
Tapered Shaft Hub Data



Slotted Hexagon Nut



Slotted Hexagon Nut

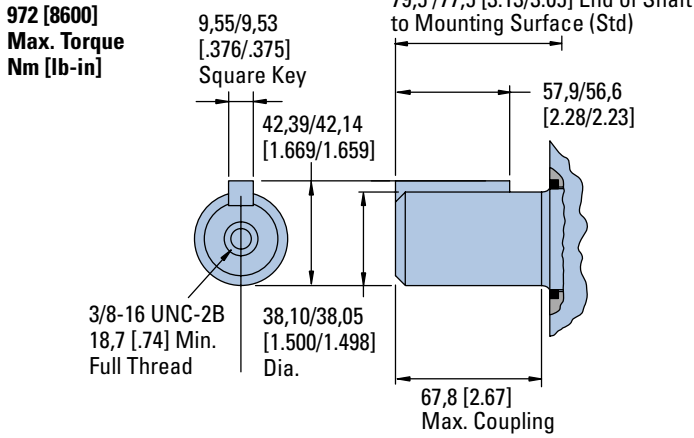


4000 Compact Series

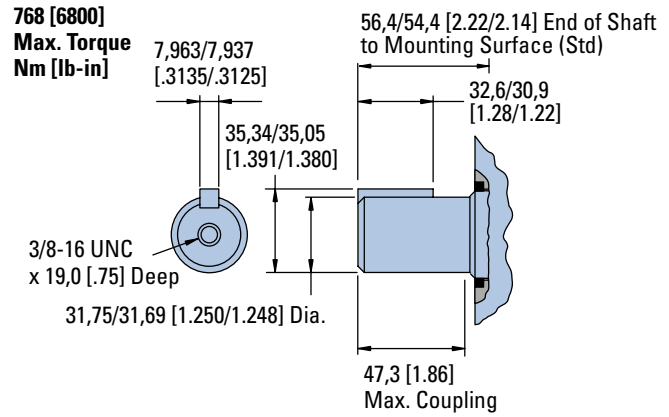
Dimensions

Shafts

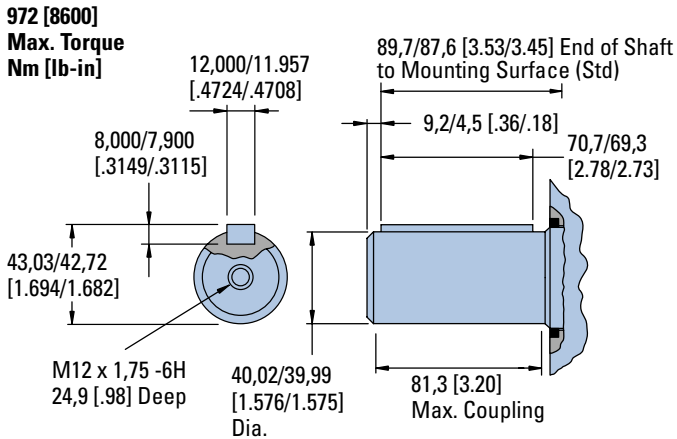
1-1/2 Inch Straight



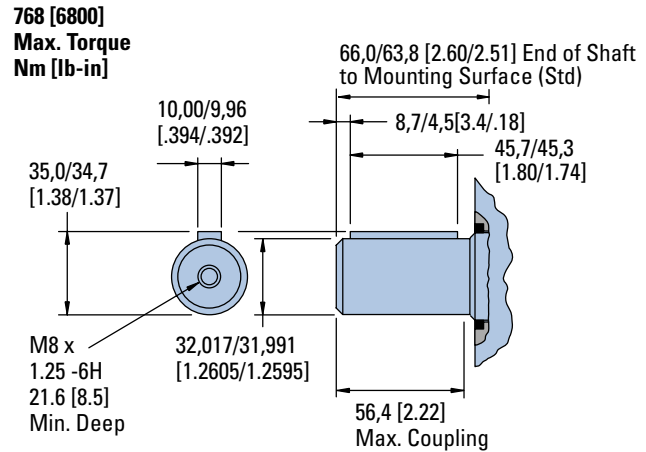
1-1/4 Inch Straight



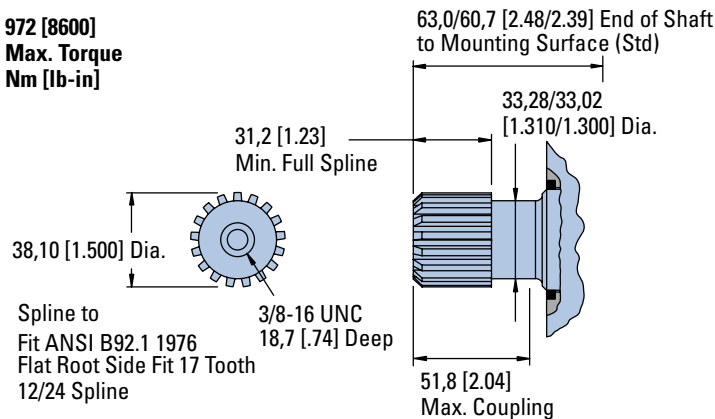
40 mm Straight



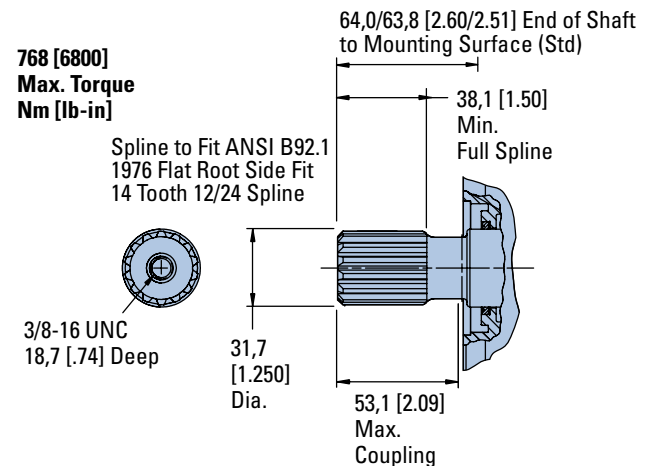
32 mm Straight



1-1/2 Inch 17 Tooth Straight



1-1/4 Inch 14 Tooth Splined



4000 Compact Series

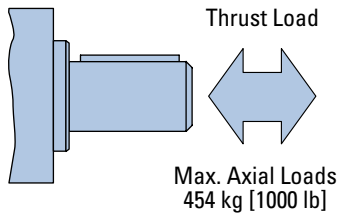
Shaft Side Load Capacity

These curves indicate the radial load capacity on the motor shafts) at various locations with an allowable external thrust load of 454 kg [1000 lb].

Note:

Case pressure will increase the allowable inward thrust load and decrease the allowable outward thrust load. Case pressure will push outward on the shaft at 94 kg/7 Bar [208 lb/100 PSI].

Each curve is based on



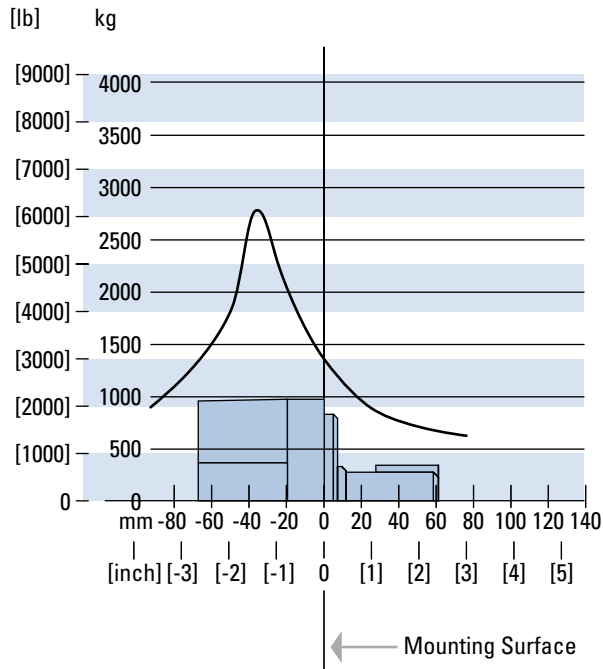
B 10 bearing life (2000 hours of 12,000,000 shaft revolutions at 100 RPM) at rated output torque.

To determine radial load at speeds other than 100 RPM, multiply the load values given on the bearing curve by the factors in the chart below.

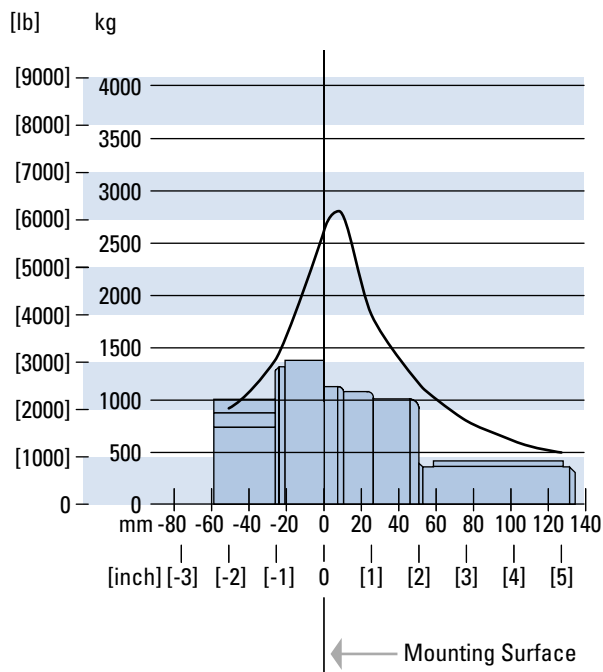
RPM	Multiplication Factor
50	1.23
100	1.00
200	0.81
300	0.72
400	0.66
500	0.62
600	0.58
700	0.56
800	0.54

For 3,000,000 shaft revolutions or 500 hours — Increase these shaft loads 52%.

Standard Mount- All shaft options 1-1/4 inch and larger



Wheel Mount- All shaft options 1-1/4 inch and larger



4000 Compact Series

Case Pressure and Case Port

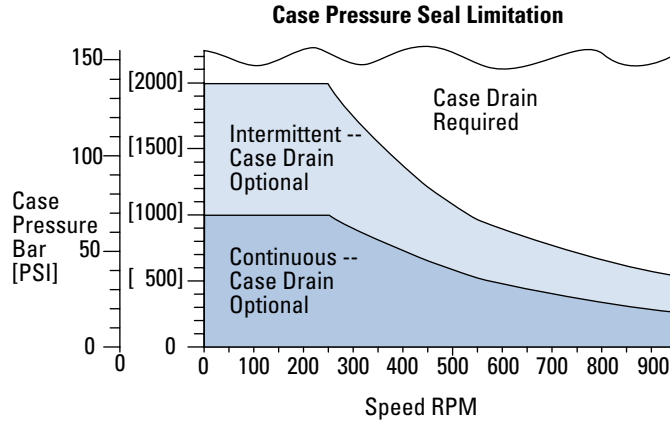
Char-Lynn 4000 Compact Series motors are durable and have long life as long as the recommended case pressure is not exceeded. Allowable case pressure is highest at low shaft speeds. Consequently, motor life will be shortened if case pressure exceeds these ratings (acceptability may vary with application). Determine if an external case drain is required from the case pressure seal limitation charts.

Case Porting Advantage

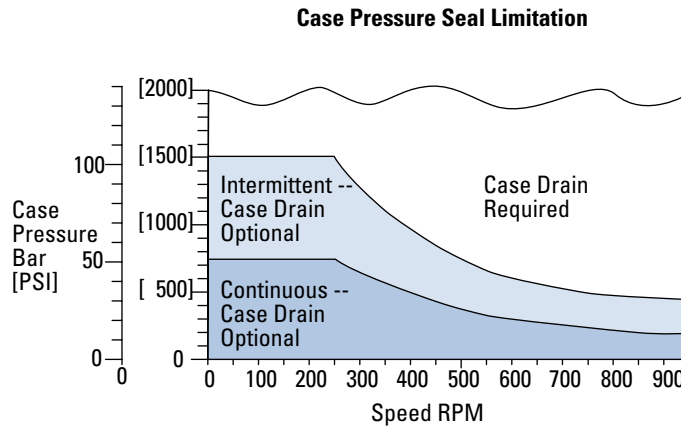
Contamination Control — flushing the motor case.

Cooler Motor — exiting oil draws motor heat away.

Extend Motor Seal Life — maintain low case pressure with a preset restriction in the case drain line.



All Shaft options 1-1/4 inch and smaller.



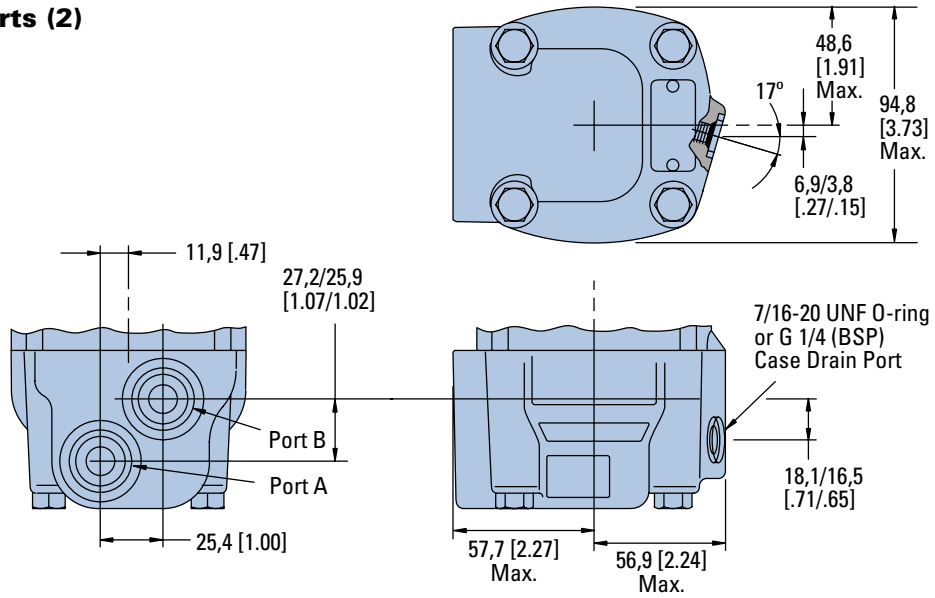
All Shaft options larger than 1-1/4 inch.

4000 Compact Series

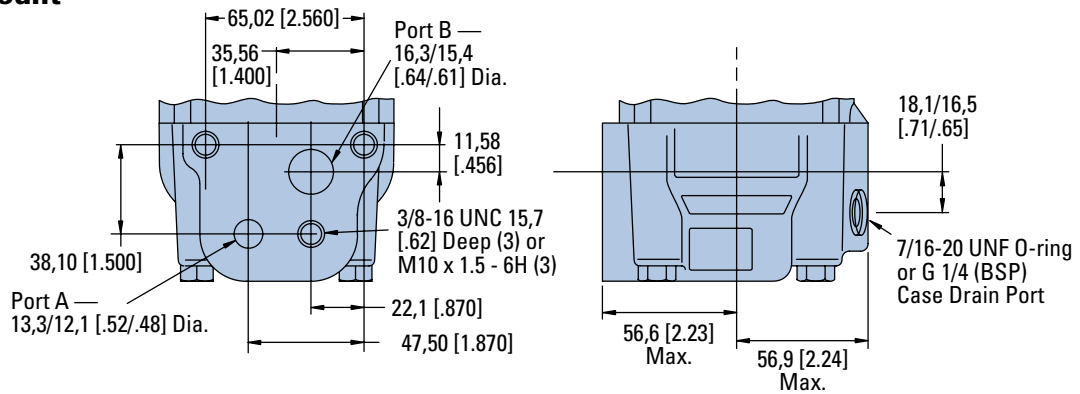
Dimensions

Ports

7/8-14 O-ring Ports (2) or G 1/2 (BSP) Ports (2)



Manifold Mount

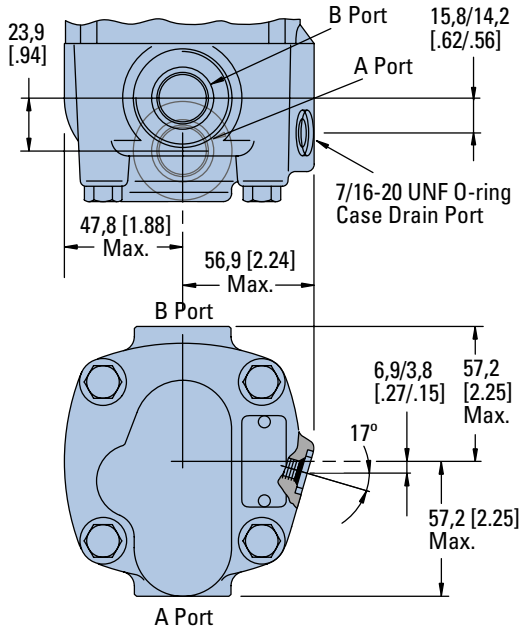


4000 Compact Series

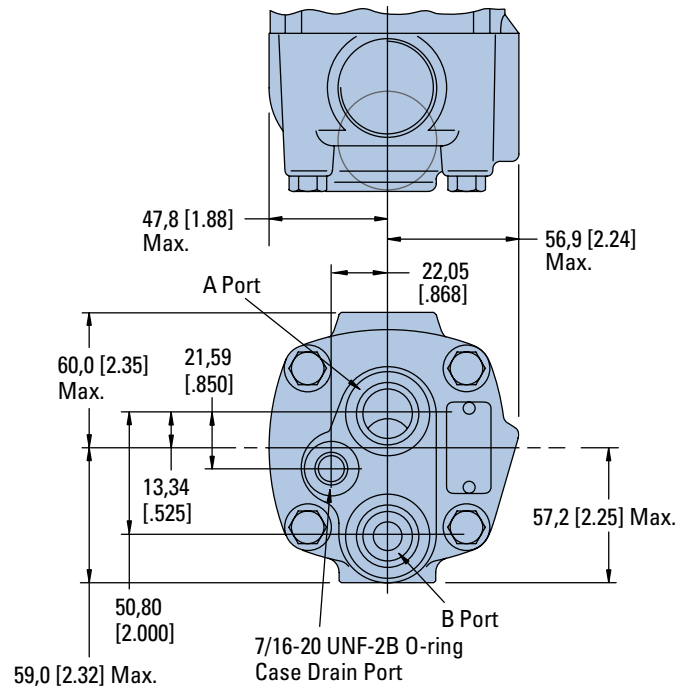
Dimensions

Ports

1-1/16-12 O-ring Ports (2) Positioned 180° Apart



7/8-14 O-ring End Ports (2)

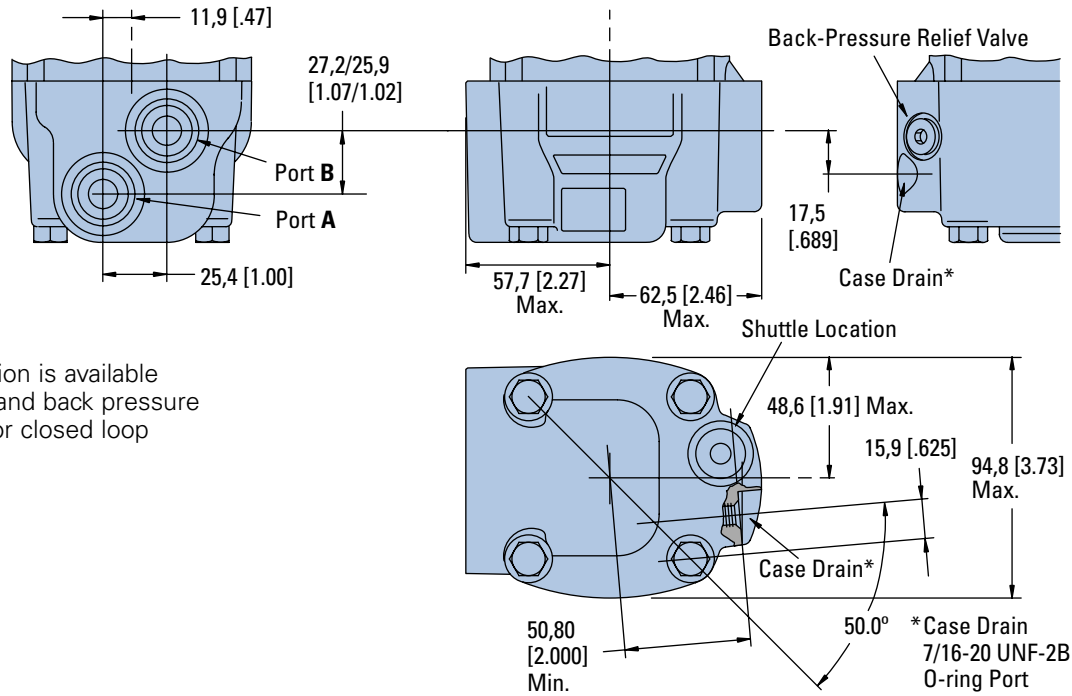


4000 Compact Series

Dimensions

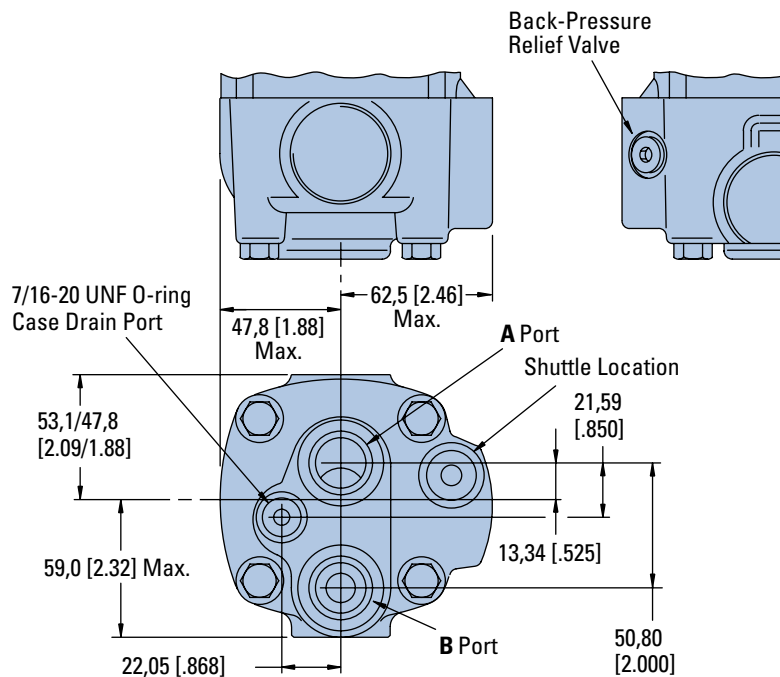
Ports with Shuttle

7/8-14 O-ring Ports (2) or G 1/2 (BSP) Ports (2)



This port option is available with shuttle and back pressure relief valve for closed loop applications.

7/8-14 O-ring End Ports (2)

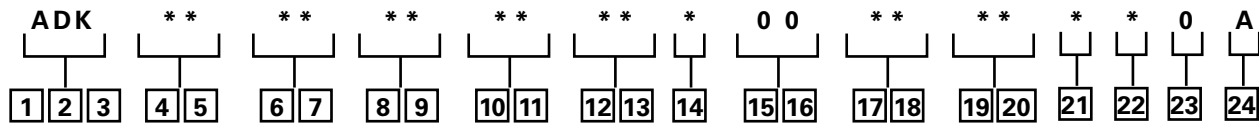


This port option is available with shuttle and back pressure relief valve for closed loop applications.

4000 Compact Series

Model Code

The following 24-digit coding system has been developed to identify all of the configuration options for the 4000 Compact Series motor. Use this model code to specify a motor with the desired features. All 24 digits of the code must be present when ordering. You may want to photocopy the matrix below to ensure that each number is entered in the correct box.



1, 2, 3 **Product Series**
ADK – 4000 Compact Series Motor

4, 5 **Displacement**
cm³/r [in³/r]

10 – 160 [9.8]
12 – 200 [12.3]
15 – 250 [15.4]
20 – 325 [19.8]
25 – 405 [24.6]
30 – 490 [29.8]

6, 7 **Mounting Type**
AB – 4 Bolt (Wheel) 108,0 [4.25] Pilot Dia. and 13,59 [5.35] Dia. Mounting Holes on 147,6 [5.81] Dia. B.C. 127,0 [5.00] Dia. Rear Mount Pilot

AC – 2 Bolt SAE A (Std.) 82,5 [3.25] Pilot Dia. and 13,59 [5.35] Dia. Mtg. Holes on 106,4 [4.19] Dia. B.C.

AE – 4 Bolt (Bearingless) 101,6 [4.00] Pilot Dia. and 13,59 [5.35] Dia. Mounting Holes on 127,0 [5.00] Dia. B.C.

AF – 2 Bolt SAE B (Std.) 101,6 [4.00] Pilot Dia. and 14,35 [5.65] Dia. Mtg. Holes on 146,0 [5.75] Dia. B.C.

AH – 4 Bolt (Standard) 82,5 [3.25] Pilot Dia. and 14,59 [5.35] Dia. Mounting Holes on 106,4 [4.19] Dia. B.C.

AJ – 4 Bolt Magneto (Std.) 82,6 [3.25] Pilot Dia. and 13,59 [5.35] Dia. Mtg. Holes on 106,4 [4.19] Dia. B.C. 2,79 [1.10] Pilot Length

AP – 4 Bolt (wheel compatible for Hayes Brake) 107,9 [4.25] Pilot Dia. and 13,59 [5.35] Dia. Mounting Holes on 147,6 [5.81] Dia. B.C. with Turned Down Housing to 88,9 [3.50] Dia.

AG – 4 Bolt (Wheel - Short) 91,9 [3.62] Pilot Dia. 14,35 [5.65] Dia. Holes on 147,6 [5.81] Dia. Bolt Circle with O-ring Groove

AT – 2 Bolt (Standard) 101,6 [4.00] Pilot Dia. 13,59 [5.35] Dia. Holes on 146,0 [5.75] Dia. Bolt Circle (Similar to SAE B)

BB* – 4 Bolt (SAE B) (Standard) 101,6 [4.00] Pilot Dia. and 14,7 [5.8] Dia. Mounting Slots on 127,0 [5.00] Dia. Bolt Circle

BE* – 4 Bolt (Wheel) 139,7 [5.50] Front and Rear Pilot Dia. and 13,49 [5.31] Dia. Mounting Holes on 165,1 [6.50] Dia. Bolt Circle

BG* – 4 Bolt (Wheel-Short) 127,0 [5.00] Front and Rear Pilot Dia. and 13,59 [5.35] Dia. Mounting Holes on 147,62 [5.812] Dia. Bolt Circle

8, 9 **Output Shaft**
00 – None (Bearingless)
02 – 1 1/4 inch Dia. Straight with 3/8 -16 Thread in end, 7,938 [3.125] Sq. x 31,75 [1.250] Straight Key

03 – 1 1/4 inch Dia. .125 : 1 Tapered Shaft Per SAE J501 with 1-20 UNEF -2A Threaded Shaft end, and slotted Hex Nut, 7,938 [3.125] Sq. x 25,40 [1.000] Straight Key

04 – 31,75 [1.250] Dia. Flat Root Side Fit, 14 tooth, 12/24 DP 30° Involute Spline with .375-16 UNC-2B Thread in End, 33,0 [1.30] Minimum Full Spline Length

06 – 1 1/4 inch Dia. Splined 14T with 38,1 [1.50] Min. Full Spline Length and 53,1 [2.09] Max. Coupling Length

08 – 40 mm Dia. Straight (with Straight Key) M12 x 1,75 - 6H Thread in end

10 – 32 mm dia. Straight (with Straight Key) M8 x 1,25 -6H Thread in end, and 56,4 [2.22] Max. Coupling Length

11 – 1 1/2 inch Dia. Straight (with Straight Key) 3/8 -16 Thread in end

17 – 28,22 [1.111] Dia. Flat Root Side Fit, 17 Tooth, 16/32 DP 30° Involute Spline, 28,58 [1.125] Minimum Full Spline Length

98 – 1 5/8 inch Dia. Tapered with Straight Key and 1 1/4 -18 UNEF Slotted Hex. Nut

99 – 1 1/2 inch Dia. Splined 17T with 31,2 [1.23] Min. Full Spline Length

10, 11 **Ports**

AA – 7/8 -14 UNF -2B SAE O-ring (Staggered)

AB – 12,70 [5.00] and 15,88 [6.25] Dia. Ports (Manifold) and 3x 3/8 -16 UNC Port Block Mounting Holes

AD – 7/8 -14 UNF -2B SAE O-ring (End Ports)

AE – 12,70 [5.00] and 15,88 [6.25] Dia. Ports (Manifold) and 3 x M10 x 1,5-6H Port Block Mounting Holes

AG – G 1/2 BSP Straight Thread ports (Staggered)

AH – 1 1/16 - 12 UN-2B O-Ring ports (Positioned 180° Apart)

AJ – .750-16 UNF-2B SAE O-ring Ports – Ports Oriented 180° to each other

BA – .875-14 UNF-2B SAE O-ring Ports – Port B Recessed 11.4 [4.5] from Port A – End Ports – Cast Boss Removed

12, 13 **Case Flow Options**
00 – None

01 – 7/16 -20 UNF -2B SAE O-ring Port (Case Drain)

02 – G 1/4 (BSP) Straight Thread Port (Case Drain)

14 – Reverse Flow Shuttle Valve with G 1/4 (BSP) Straight Thread Port (Case Drain)

14 **Back-Pressure Relief Valve**

0 – None

A – Set at 4,5 bar [65 PSI] (for Manual Pumps)

15, 16 **Valve Options**
00 – None

17, 18 **Accessories**

00 – None

AA – Seal Guard

AF – M12 Threaded Connector Digital Speed Sensor (Two 30 Pulse per rev. signals in quadrature)

AG – M12 Threaded Connector Digital Speed Sensor (One 60 Pulse per rev. speed signal and one directional signal)

19, 20 **Special Features (Hardware)**

00 – None

01 – Viton Seals

21 **Special Features (Assembly)**

0 – None

A – Flange Rotated 90°

B – Reverse Rotation

22 **Paint/ Special Packaging**

0 – No Paint, Individual Box

A – Painted Low Gloss Black, Individual Box

23 **Eaton Assigned Code when Applicable**

0 – None

24 **Eaton Assigned Design Code**

A – First Code

* These mounting options are available with shaft options 08, 11, 98 and 99.

Feature in **bold** are preferred and allow for shorter lead time.

Delta Series

Highlights



Description

This wheel motor is the latest addition to the Char Lynn product line. The Delta motor provides torques up to 11,100 in-lbs. Eaton has packed this motor with many “best in class” features: the optimized geroler profile ensures smooth operation; the disc valve technology has the best performance and the bearing capacity is the highest in the industry for very demanding applications.

Delta Series

Geroler Element	12 Displacements
Flow l/min [GPM]	75 [20] Continuous**
	115 [30] Intermittent*
Speed RPM	668 Cont.**
	831 Inter.*
Pressure bar [PSI]	205 [3000] Cont.**
	275 [4000] Inter.*
Torque Nm [lb-in]	1039 [9200] Cont**.
	1253 [11100] Inter.*

** Continuous— (Cont.) Continuous rating, motor may be run continuously at these ratings.
 * Intermittent— (Inter.) Intermittent operation, 10% of every minute.

Features:

- Excellent reliability with time proven Char-Lynn components
- Proven disc valve technology with the highest efficiencies in its class
- Leak resistant motor with the front bearing protecting the shaft seal
- Torque up to 11,100 lb-in intermittent duty / Flow up to 30 GPM intermittent
- 12 displacements available from 6.9 to 46 CID
- Shaft sizes up to 1-5/8 inch
- 3-1/4 inch front pilot and 5 inch rear pilot

Benefits:

- Perfect replacement for Parker® TF-TG and White™ RE motors
- Lowest no load pressure drop which leads to longer life and lower temperature operation
- Highest overall efficiency: more available HP to the system than competitive motors
- The highest side load capacity with 4,500 lbs at 3” from the wheel mount face

Applications:

- Scissor Lift
- Boom Lift
- Industrial Sweeper
- Mower

Parker is a registered trademark of Parker Intangibles LLC.

White is a trademark of White Drive Products, Inc.



Boom Lift



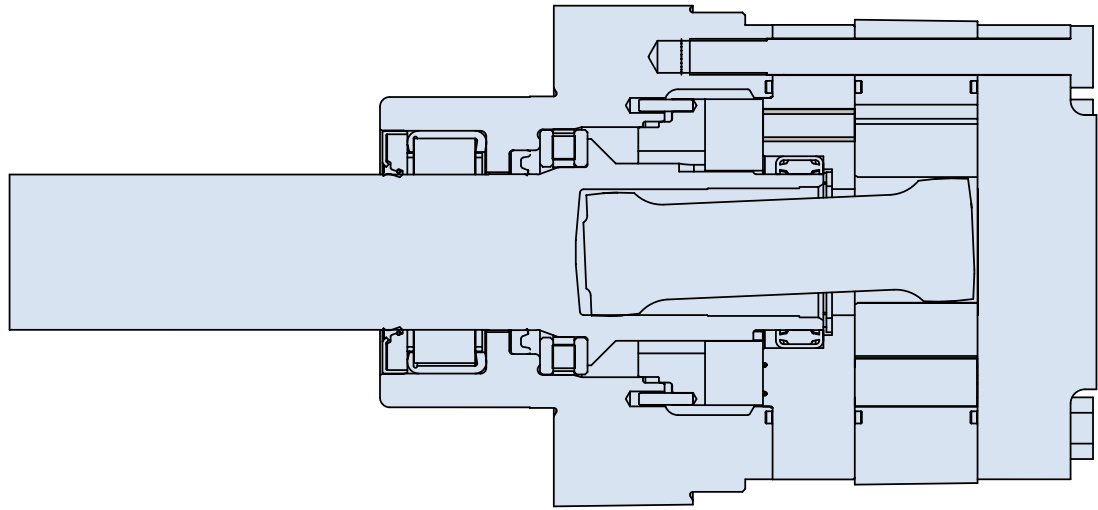
Sweeper



Mower

Delta Series

Specifications



DELTA SERIES MOTORS

Displ. cm ³ /r [in ³ /r]		110 [6.9]	142 [8.9]	194 [12.1]	229 [14.3]	246 [15.4]	293 [18.3]	340 [21.2]	386 [24.1]	459 [28.7]	530 [33.1]	634 [39.6]	736 [46.0]
Max. Speed (RPM) @Flow	Continuous	668	519	382	323	300	252	218	192	161	140	117	100
	Intermittent	831	778	516	485	450	379	327	288	241	209	175	151
Flow l/min [GPM]	Continuous	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]
	Intermittent	95 [25]	115 [30]	115 [30]	115 [30]	115 [30]	115 [30]	115 [30]	115 [30]	115 [30]	115 [30]	115 [30]	115 [30]
Torque Nm [lb-in]	Continuous	320 [2834]	429 [3800]	554 [4904]	651 [5763]	712 [6311]	844 [7472]	933 [8260]	972 [8607]	1039 [9199]	994 [8809]	1028 [9102]	985 [8721]
	Intermittent	417 [3697]	563 [4984]	725 [6421]	852 [7543]	930 [8236]	1087 [9629]	1208 [10698]	1206 [10684]	1222 [10824]	1202 [10644]	1253 [11100]	1232 [10910]
Pressure Δ bar [Δ PSI]	Continuous	205 [3000]	205 [3000]	205 [3000]	205 [3000]	205 [3000]	205 [3000]	205 [3000]	190 [2750]	170 [2500]	140 [2000]	120 [1750]	105 [1500]
	Intermittent	275 [4000]	275 [4000]	275 [4000]	275 [4000]	275 [4000]	275 [4000]	275 [4000]	240 [3500]	205 [3000]	170 [2500]	155 [2250]	140 [2000]
Weight kg [lb]		12,7 [28.0]	12,9 [28.5]	13,8 [30.5]	14,3 [31.5]	15,0 [33.0]	15,0 [33.0]	15,4 [34.0]	16,1 [35.5]	16,8 [37.0]	17,5 [38.5]	18,4 [40.5]	19,1 [42.0]

Note:

Top assure best motor life, run motor for approximately one hour at 30% of rated pressure before application to full load. Be sure motor is filled with fluid prior to any load applications.

Maximum Inlet Pressure:

310 bars (4500 PSI)
Do not exceed Δ pressure rating (see chart above).

Recommended Fluids:

Premium quality, anti wear type hydraulic oil with a viscosity of no less than 70 SUS at operating temperature.

Recommended Maximum System Operating Temperature:

82°C (180°F)

Recommended Filtration:

Per ISO cleanliness Code 4406: 20/18/13

Delta Series

113 cm³/r [6.9 in³/r]

Δ Pressure Bar [PSI]

Performance Data

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

Performance data is typical at 120 SUS. Actual data may vary slightly from unit to unit in production.

	Continuous
	Intermittent
	No operation

	17	34	52	69	86	103	121	138	155	172	190	207	224	241	259	276
	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000	3250	3500	3750	4000
2	204	450	686	915	1140	1355	1593	1814	2018	2197	2349	2573	2776	2975	3182	3362
7.6	23	51	77	103	129	153	180	205	228	248	265	290	313	336	359	380
	65	64	63	62	60	60	59	57	56	55	56	54	52	48	49	44
4	210	457	706	950	1194	1436	1677	1906	2129	2351	2571	2790	3010	3231	3454	3660
15	24	52	80	107	135	162	189	215	240	265	290	315	340	365	390	413
	132	131	130	129	128	127	126	125	123	122	120	118	115	113	112	110
6	196	445	696	942	1186	1432	1674	1914	2144	2367	2587	2805	3027	3252	3476	3695
23	22	50	79	106	134	162	189	216	242	267	292	317	342	367	392	417
	199	196	196	195	193	192	191	190	189	185	183	182	180	177	174	172
8	176	425	677	921	1168	1420	1666	1906	2152	2386	2616	2834	3051	3265	3481	3697
30	20	48	76	104	132	160	188	215	243	269	295	320	344	369	393	417
	266	264	263	261	261	259	257	257	255	252	250	248	246	244	241	237
10	160	407	659	901	1149	1398	1650	1894	2134	2370	2601	2823	3044	3258	3457	3654
38	18	46	74	102	130	158	186	214	241	268	294	319	344	368	390	413
	333	333	329	326	324	323	321	320	318	314	312	309	306	303	301	295
12	134	382	632	876	1122	1372	1621	1868	2111	2353	2589	2821	3046	3270	3479	3680
45	15	43	71	99	127	155	183	211	238	266	292	319	344	369	393	415
	399	398	396	393	392	389	387	386	383	381	377	374	372	370	367	364
14	111	357	608	855	1102	1350	1599	1847	2090	2330	2569	2800	3024	3250	3455	3614
53	13	40	69	97	124	152	181	208	236	263	290	316	341	367	390	408
	466	465	462	460	457	455	453	451	449	446	442	438	436	433	429	415
16	81	325	577	822	1071	1321	1572	1817	2063	2307	2549	2781	3011	3237	3436	3578
61	9	37	65	93	121	149	177	205	233	260	288	314	340	365	388	404
	533	532	529	527	524	522	520	517	516	513	509	506	503	500	496	477
18	48	295	543	790	1036	1283	1535	1781	2027	2271	2512	2751	2984	3214	3431	3597
68	5	33	61	89	117	145	173	201	229	256	284	311	337	363	387	406
	601	600	597	593	591	587	586	583	581	577	573	570	568	564	559	542
20	14	263	510	758	1005	1249	1499	1746	1988	2231	2474	2712	2945	3176	3395	3597
76	2	30	58	86	113	141	169	197	224	252	279	306	332	359	383	406
	668	666	664	661	658	654	652	649	646	644	640	637	634	630	628	621
22		228	477	725	972	1218	1468	1712	1957	2201	2447	2686	2917	3149	3350	3523
83		26	54	82	110	138	166	193	221	249	276	303	329	355	378	398
		733	731	728	724	721	718	715	713	710	705	704	700	697	688	664
25		170	416	663	913	1153	1402	1646	1891	2136	2382	2622	2856	3081	3273	3452
95		19	47	75	103	130	158	186	214	241	269	296	322	348	369	390
		831	829	827	825	821	818	815	812	809	805	803	800	794	776	745

170 } Torque lb-in
19 } Nm
831 } Speed RPM

146 cm³/r [8.9 in³/r]

Δ Pressure Bar [PSI]

	17	34	52	69	86	103	121	138	155	172	190	207	224	241	259	276
	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000	3250	3500	3750	4000
2	288	596	907	1184	1445	1718	1992	2247	2537	2810	3039	3290	3595	3846	3996	4265
7.6	32	67	102	134	163	194	225	254	286	317	343	371	406	434	451	482
	50	48	46	42	44	43	40	39	38	37	36	34	32	31	25	28
4	289	619	947	1267	1593	1914	2227	2482	2755	3042	3295	3615	3916	4135	4456	4680
15	33	70	107	143	180	216	251	280	311	343	372	408	442	467	503	528
	102	100	98	96	95	95	94	93	91	88	84	81	79	76	74	70
6	275	604	934	1259	1588	1908	2232	2552	2869	3181	3497	3800	4102	4397	4680	4955
23	31	68	105	142	179	215	252	288	324	359	395	429	463	496	528	559
	154	151	149	148	146	145	144	143	141	137	135	133	130	128	125	123
8	256	580	909	1235	1566	1887	2209	2528	2845	3160	3475	3783	4091	4397	4692	4984
30	29	66	103	139	177	213	249	285	321	357	392	427	462	496	530	563
	206	204	201	200	198	198	196	195	190	187	185	182	179	179	176	173
10	227	553	879	1204	1535	1861	2184	2504	2820	3133	3447	3757	4061	4369	4667	4963
38	26	62	99	136	173	210	247	283	318	354	389	424	459	493	527	560
	258	256	253	251	250	249	248	246	241	238	236	233	231	229	228	225
12	199	521	850	1172	1501	1825	2148	2469	2780	3091	3402	3714	4017	4324	4627	4922
45	23	59	96	132	170	206	243	279	314	349	384	419	454	488	522	556
	310	308	305	303	301	300	299	297	292	290	287	284	282	281	278	276
14	157	480	809	1130	1458	1784	2104	2426	2743	3057	3369	3679	3983	4291	4593	4892
53	18	54	91	128	165	201	238	274	310	345	380	415	450	484	519	552
	362	360	356	354	353	352	351	346	344	341	339	337	335	332	331	329
16	132	457	780	1102	1429	1753	2081	2397	2714	3025	3335	3645	3947	4255	4558	4857
61	15	52	88	124	161	198	235	271	306	342	377	412	446	480	515	548
	414	412	408	406	405	403	402	398	395	392	389	387	384	382	380	377
18	98	414	742	1065	1390	1715	2039	2360	2675	2986	3295	3605	3906	4213	4518	4817
68	11	47	84	120	157	194	230	266	302	337	372	407	441	476	510	544
	467	465	461	459	457	456	453	450	447	444	442	439	437	435	432	430
20	42	373	700	1020	1347	1670	1989	2308	2628	2944	3255	3568	3866	4172	4475	4774
76	5	42	79	115	152	189	225	261	297	332	368	403	436	471	505	539
	519	517	514	511	509	507	503	500	498	495	492	489	488	485	484	482
22	16	328	659	978	1306	1628	1950	2268	2586	2900	3211	3522	3823	4128	4429	4732
83	2	37	74	110	147	184	220	256	292	327	362	398	432	466	500	534
	571	569	565	562	559	559	555	552	549	546	544	541	538	536	534	531
25		253	576	899	1221	1544	1864	2179	2500	2811	3120	3433	3736	4036	4337	4639
95		29	65	102	138	174	210	246	282	317	352	388	422	456	490	524
		647	645	641	639	637	633	629	626	624	621	618	616	613	612	609
30		114	429	755	1076	1400	1725	2047	2368	2687	3003	3323	3635	3942	4249	4552
114		13	48	85	122	158	195	231	267	303	339	375	410	445	480	514
		778	777	773	770	765	759	756	753	749	746	744	742	740	737	735

Delta Series

Performance Data

198 cm³/r [12.1 in³/r]

Δ Pressure Bar [PSI]

	17 250	34 500	52 750	69 1000	86 1250	103 1500	121 1750	138 2000	155 2250	172 2500	190 2750	207 3000	224 3250	241 3500	259 3750	276 4000
2	313	732	1113	1480	1870	2249	2668	3059	3447	3822	4189	4544	4875	5194	5508	5948
7.6	35	83	126	167	211	254	301	345	389	432	473	513	550	586	622	671
4	367	809	1228	1640	2038	2437	2844	3234	3623	4010	4398	4779	5164	5545	5917	6275
15	41	91	139	185	230	275	321	365	409	453	497	540	583	626	668	708
6	365	799	1231	1654	2066	2473	2878	3270	3665	4056	4446	4833	5215	5598	5975	6347
23	41	90	139	187	233	279	325	369	414	458	502	546	589	632	675	717
8	343	782	1219	1648	2069	2484	2898	3300	3702	4093	4482	4865	5237	5607	5976	6349
30	39	88	138	186	234	280	327	373	418	462	506	549	591	633	675	717
10	322	759	1201	1633	2063	2483	2904	3316	3726	4125	4515	4904	5290	5672	6048	6421
38	36	86	136	184	233	280	328	374	421	466	510	554	597	640	683	725
12	283	719	1158	1590	2020	2448	2868	3279	3691	4096	4492	4883	5265	5644	6015	6385
45	32	81	131	180	228	276	324	370	417	462	507	551	594	637	679	721
14	238	671	1110	1538	1970	2396	2816	3228	3644	4050	4451	4846	5231	5613	5982	6357
53	27	76	125	174	222	271	318	364	411	457	503	547	591	634	675	718
16	191	625	1063	1493	1923	2345	2768	3182	3596	4003	4403	4801	5191	5576	5947	6316
61	22	71	120	169	217	265	312	359	406	452	497	542	586	630	671	713
18	139	567	1006	1438	1871	2299	2720	3133	3547	3956	4359	4760	5128	5492	5871	6247
68	16	64	114	162	211	260	307	354	400	447	492	537	579	620	663	705
20	99	457	886	1315	1745	2168	2590	3006	3418	3822	4224	4622	5018	5418	5816	6208
76	11	52	100	148	197	245	292	339	386	432	477	522	567	612	657	701
22	15	383	810	1243	1676	2096	2520	2938	3351	3759	4161	4558	4953	5339	5722	6095
83	2	43	91	140	189	237	284	332	378	424	470	515	559	603	646	688
25		272	700	1131	1559	1985	2408	2823	3231	3639	4042	4443	4842	5229	5617	5992
95		31	79	128	176	224	272	319	365	411	456	502	547	590	634	677
30		163	600	1037	1474	1902	2315	2723	3134	3536	3933	4338	4737	5125	5516	5899
114		18	68	117	166	215	261	307	354	399	444	490	535	579	623	666
		516	506	494	487	484	488	494	501	506	511	514	515	516	515	514

163 } Torque lb-in
18 } Nm
516 } Speed RPM

234 cm³/r [14.3 in³/r]

Δ Pressure Bar [PSI]

	17 250	34 500	52 750	69 1000	86 1250	103 1500	121 1750	138 2000	155 2250	172 2500	190 2750	207 3000	224 3250	241 3500	259 3750	276 4000
2	470	971	1457	1921	2414	2877	3348	3821	4275	4730	5164	5630	5997	6446	6863	7217
7.6	53	110	164	217	273	325	378	431	483	534	583	636	677	728	775	815
4	468	988	1504	1989	2482	2964	3447	3916	4384	4843	5302	5763	6213	6668	7113	7543
15	53	112	170	225	280	335	389	442	495	547	599	651	701	753	803	852
6	449	966	1484	1980	2470	2953	3445	3922	4397	4851	5304	5750	6197	6643	7085	7524
23	51	109	168	224	279	333	389	443	496	548	599	649	700	750	800	849
8	416	931	1446	1954	2458	2948	3438	3909	4381	4835	5280	5714	6150	6584	7015	7445
30	47	105	163	221	277	333	388	441	495	546	596	645	694	743	792	841
10	380	896	1410	1917	2425	2919	3412	3890	4373	4831	5280	5716	6148	6586	7017	7452
38	43	101	159	216	274	330	385	439	494	545	596	645	694	744	792	841
12	341	856	1366	1876	2384	2880	3370	3843	4319	4782	5229	5665	6102	6537	6962	7392
45	39	97	154	212	269	325	380	434	488	540	590	640	689	738	786	835
14	290	804	1312	1813	2320	2821	3315	3793	4268	4732	5181	5623	6057	6485	6907	7327
53	33	91	148	205	262	318	374	428	482	534	585	635	684	732	780	827
16	239	743	1249	1756	2264	2759	3255	3735	4207	4669	5122	5568	6004	6432	6845	7268
61	27	84	141	198	256	312	367	422	475	527	578	629	678	726	773	820
18	176	688	1187	1694	2203	2698	3195	3676	4146	4603	5055	5497	5930	6358	6774	7194
68	20	78	134	191	249	305	361	415	468	520	571	621	669	718	765	812
20	108	614	1121	1623	2124	2620	3118	3603	4077	4541	4990	5430	5865	6301	6720	7139
76	12	69	127	183	240	296	352	407	460	513	563	613	662	711	759	806
22	28	535	1081	1582	2082	2579	3071	3550	4018	4483	4943	5406	5855	6300	6723	7139
83	3	60	122	179	235	291	347	401	454	506	558	610	661	711	759	806
25		410	956	1460	1959	2454	2941	3419	3892	4356	4806	5251	5683	6117	6531	6939
95		46	108	165	221	277	332	386	439	492	543	593	642	691	737	783
30		404	404	402	401	399	398	397	394	392	391	390	390	389	389	389
114		171	700	1297	1735	2226	2718	3204	3689	4162	4623	5079	5519	5959	6377	6781
		19	79	146	196	251	307	362	417	470	522	573	623	673	720	766
		485	485	485	483	481	480	478	476	474	472	472	471	471	471	471

Delta Series

Performance Data

252 cm³/r [15.4 in³/r]

Δ Pressure Bar [PSI]

	17	34	52	69	86	103	121	138	155	172	190	207	224	241	259	276
	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000	3250	3500	3750	4000
2	485	1011	1520	2032	2564	3059	3569	4065	4561	5085	5589	6054	6536	6891	7388	7872
7.6	55	114	172	229	289	345	403	459	515	574	631	683	738	778	834	889
4	504	1062	1609	2145	2684	3213	3744	4263	4780	5294	5804	6311	6811	7308	7787	8236
15	57	120	182	242	303	363	423	481	540	598	655	712	769	825	879	930
6	478	1031	1585	2132	2670	3195	3717	4222	4726	5222	5721	6211	6700	7179	7658	8118
23	54	116	179	241	301	361	420	477	534	590	646	701	756	810	865	917
8	453	1012	1571	2115	2664	3191	3717	4224	4725	5215	5706	6194	6678	7161	7628	8076
30	51	114	177	239	301	360	420	477	533	589	644	699	754	808	861	912
10	398	957	1516	2063	2609	3137	3668	4181	4678	5157	5636	6116	6589	7059	7522	7974
38	45	108	171	233	295	354	414	472	528	582	636	690	744	797	849	900
12	370	914	1468	2011	2557	3085	3614	4125	4622	5102	5577	6059	6538	7017	7497	7966
45	42	103	166	227	289	348	408	466	522	576	630	684	738	792	846	899
14	290	842	1399	1948	2496	3024	3552	4065	4571	5066	5525	5987	6445	6905	7359	7813
53	33	95	158	220	282	341	401	459	516	571	624	676	728	780	831	882
16	239	795	1346	1891	2434	2962	3494	4003	4511	4995	5461	5919	6382	6841	7292	7743
61	27	90	152	213	275	334	395	452	509	564	616	668	720	772	823	874
18	157	716	1265	1810	2355	2881	3408	3921	4431	4924	5401	5860	6310	6749	7184	7627
68	18	81	143	204	266	325	385	443	500	556	610	662	712	762	811	861
20	96	650	1203	1750	2294	2820	3345	3857	4366	4865	5340	5801	6242	6686	7122	7553
76	11	73	136	198	259	318	378	435	493	549	603	655	705	755	804	853
22	26	569	1111	1656	2195	2725	3250	3763	4268	4769	5259	5733	6182	6609	7030	7459
83	3	64	125	187	248	308	367	425	482	538	594	647	698	746	794	842
25	425	967	1508	2042	2574	3093	3605	4110	4602	5084	5561	6028	6482	6899	7316	
95	48	109	170	231	291	349	407	464	520	574	628	681	732	779	826	
30	179	723	1266	1800	2330	2852	3364	3868	4368	4856	5338	5811	6269	6701	7096	
114	20	82	143	203	263	322	380	437	493	548	603	656	708	757	801	
	450	450	450	449	447	443	439	436	433	430	430	430	431	434	437	438

Flow LPM [GPM]

179 } Torque lb-in
20 } Nm
450 } Speed RPM

300 cm³/r [18.3 in³/r]

Δ Pressure Bar [PSI]

	17	34	52	69	86	103	121	138	155	172	190	207	224	241	259	276
	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000	3250	3500	3750	4000
2	608	1257	1919	2553	3196	3824	4475	5087	5707	6307	6901	7472	8015	8484	8962	9413
7.6	69	142	217	288	361	432	505	574	644	712	779	844	905	958	1012	1063
4	612	1283	1940	2587	3227	3856	4483	5094	5693	6293	6881	7462	8024	8574	9113	9629
15	69	145	219	292	364	435	506	575	643	710	777	842	906	968	1029	1087
6	570	1248	1906	2547	3178	3800	4420	5025	5619	6203	6773	7345	7899	8449	8992	9525
23	64	141	215	288	359	429	499	567	634	700	765	829	892	954	1015	1075
8	540	1210	1871	2522	3152	3781	4404	5008	5607	6186	6749	7319	7879	8433	8977	9512
30	61	137	211	285	356	427	497	565	633	698	762	826	890	952	1013	1074
10	496	1161	1825	2471	3110	3733	4362	4968	5574	6157	6721	7274	7811	8356	8887	9416
38	56	131	206	279	351	421	492	561	629	695	759	821	882	943	1003	1063
12	443	1108	1768	2418	3059	3688	4307	4918	5526	6114	6681	7239	7786	8338	8876	9411
45	50	125	200	273	345	416	486	555	624	690	754	817	879	941	1002	1062
14	387	1034	1701	2346	2985	3610	4227	4839	5452	6050	6622	7184	7723	8269	8816	9362
53	44	117	192	265	337	408	477	546	615	683	748	811	872	934	995	1057
16	366	961	1620	2264	2903	3530	4147	4753	5366	5960	6540	7098	7642	8189	8685	9211
61	41	109	183	256	328	399	468	537	606	673	738	801	863	922	980	1040
18	291	893	1546	2187	2829	3450	4067	4678	5283	5873	6451	7005	7537	8064	8580	9103
68	33	101	175	247	319	390	459	528	596	663	728	791	851	910	969	1028
20	204	797	1444	2094	2736	3361	3974	4585	5184	5775	6353	6907	7448	7974	8489	8992
76	23	90	163	236	309	380	449	518	585	652	717	780	841	900	958	1015
22	102	710	1366	2013	2651	3270	3885	4496	5096	5689	6271	6831	7362	7877	8375	8880
83	12	80	154	227	299	369	439	508	575	642	708	771	831	889	945	1003
25	553	1208	1851	2489	3114	3726	4335	4930	5523	6108	6670	7220	7783	8298	8777	
95	62	136	209	281	352	421	489	557	624	690	753	815	879	937	991	
30	233	941	1539	2179	2811	3430	4028	4625	5217	5802	6385	6957	7522	8060	8565	
114	26	106	174	246	317	387	455	522	589	655	721	785	849	910	967	
	379	379	379	377	374	371	367	365	363	362	361	364	368	374	376	376

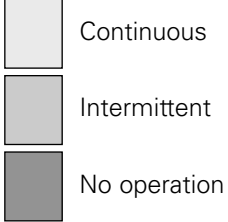
Flow LPM [GPM]

Delta Series

Performance Data

347 cm³/r [21.2 in³/r]

Δ Pressure Bar [PSI]



	17	34	52	69	86	103	121	138	155	172	190	207	224	241	259	276
	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000	3250	3500	3750	4000
2	687	1415	2128	2824	3532	4248	4947	5633	6298	6964	7575	8182	8743	9209	9624	10081
7.6	78	160	240	319	399	480	558	636	711	786	855	924	987	1040	1087	1138
	20	19	18	18	17	17	17	17	16	15	14	13	12	9	8	4
4	689	1443	2179	2891	3606	4302	4986	5653	6316	6965	7615	8260	8891	9515	10120	10698
15	78	163	246	326	407	486	563	638	713	786	860	933	1004	1074	1143	1208
	42	41	41	40	39	37	38	38	39	38	38	37	37	35	33	31
6	648	1406	2154	2866	3580	4276	4970	5641	6290	6921	7563	8190	8812	9427	10029	10630
23	73	159	243	324	404	483	561	637	710	781	854	925	995	1064	1132	1200
	64	64	63	61	60	58	57	57	59	60	60	59	58	57	56	55
8	606	1356	2105	2825	3545	4241	4943	5621	6274	6899	7522	8144	8768	9388	9998	10598
30	68	153	238	319	400	479	558	635	708	779	849	919	990	1060	1129	1196
	87	86	85	84	82	81	79	78	79	81	82	81	81	80	78	77
10	550	1295	2041	2765	3488	4188	4891	5585	6264	6899	7505	8091	8672	9238	9885	10488
38	62	146	230	312	394	473	552	631	707	779	847	913	979	1048	1116	1184
	109	108	107	106	104	103	100	98	97	98	100	103	103	103	102	101
12	478	1227	1976	2698	3411	4108	4802	5479	6146	6782	7396	7992	8585	9176	9767	10345
45	54	139	223	305	385	464	542	619	694	766	835	902	969	1036	1103	1168
	131	130	130	129	127	125	122	119	117	115	115	119	123	125	125	124
14	409	1151	1896	2624	3344	4048	4742	5418	6083	6722	7339	7939	8541	9142	9738	10318
53	46	130	214	296	378	457	535	612	687	759	829	896	964	1032	1099	1165
	153	153	152	152	149	147	145	142	140	139	139	143	147	148	147	147
16	339	1033	1774	2494	3209	3907	4605	5280	5956	6610	7243	7850	8438	9014	9592	10166
61	38	117	200	282	362	441	520	596	672	746	818	886	953	1018	1083	1148
	174	174	174	174	172	169	166	164	162	159	159	160	165	168	170	170
18	245	943	1676	2401	3113	3809	4500	5175	5837	6477	7107	7711	8308	8895	9466	10040
68	28	106	189	271	351	430	508	584	659	731	802	871	938	1004	1069	1133
	196	196	196	195	193	192	189	187	185	183	181	182	185	188	192	193
20	143	832	1571	2290	3003	3697	4386	5050	5715	6351	6968	7569	8147	8721	9297	9855
76	16	94	177	259	339	417	495	570	645	717	787	855	920	985	1050	1113
	218	218	218	218	216	214	212	209	207	205	203	203	205	210	214	215
22	34	715	1454	2175	2896	3594	4280	4950	5602	6236	6854	7449	8027	8590	9150	9705
83	4	81	164	246	327	406	483	559	632	704	774	841	906	970	1033	1096
	240	240	240	240	240	238	236	233	230	228	226	226	228	231	237	240
25		523	1251	1969	2693	3395	4081	4756	5414	6057	6687	7296	7882	8457	9011	9534
95		59	141	222	304	383	461	537	611	684	755	824	890	955	1017	1076
		272	272	272	272	272	269	266	263	261	259	259	261	265	270	272
30		152	1072	1749	2434	3123	3802	4468	5114	5763	6400	7018	7633	8232	8819	9397
114		327	121	197	275	353	429	504	577	651	723	792	862	929	996	1061
			327	327	327	327	323	319	315	314	313	315	319	323	327	327

152 } Torque lb-in
17 } N/m
327 } Speed RPM

395 cm³/r [24.1 in³/r]

Δ Pressure Bar [PSI]

	17	34	52	69	86	103	121	138	155	172	190	207	224	241
	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000	3250	3500
2	782	1622	2436	3237	4034	4837	5650	6428	7213	7911	8607	9235	9798	10439
7.6	88	183	275	365	455	546	638	726	814	893	972	1043	1106	1179
	18	17	17	16	16	16	17	16	15	15	15	14	13	12
4	770	1643	2476	3287	4088	4860	5617	6357	7103	7838	8566	9285	9990	10684
15	87	186	280	371	462	549	634	718	802	885	967	1048	1128	1206
	38	37	36	35	33	33	35	36	36	35	35	34	34	33
6	746	1609	2460	3280	4083	4867	5644	6384	7103	7811	8520	9232	9930	10616
23	84	182	278	370	461	549	637	721	802	882	962	1042	1121	1199
	58	57	55	54	52	51	50	51	53	54	55	54	53	53
8	699	1561	2430	3249	4062	4852	5638	6398	7126	7820	8506	9198	9884	10565
30	79	176	274	367	459	548	637	722	805	883	960	1038	1116	1193
	77	76	75	74	72	70	68	67	69	72	74	74	74	73
10	630	1489	2345	3180	4008	4819	5622	6397	7142	7856	8525	9142	9776	10438
38	71	168	265	359	453	544	635	722	806	887	962	1032	1104	1178
	96	96	95	93	91	90	87	85	83	83	88	93	93	93
12	556	1412	2264	3090	3898	4689	5473	6225	6976	7710	8415	9081	9681	10304
45	63	159	256	349	440	529	618	703	788	870	950	1025	1093	1163
	115	115	115	113	111	109	107	105	102	100	100	105	110	113
14	469	1325	2178	2999	3819	4611	5391	6137	6867	7581	8270	8942	9598	10234
53	53	150	246	339	431	521	609	693	775	856	934	1010	1084	1155
	134	134	134	133	131	128	126	124	122	120	119	123	133	134
16	360	1220	2069	2894	3715	4506	5290	6048	6782	7495	8190	8873	9534	10181
61	41	138	234	327	419	509	597	683	766	846	925	1002	1076	1149
	153	153	153	153	151	148	145	143	140	138	138	139	145	151
18	334	1098	1951	2777	3591	4386	5172	5924	6665	7387	8087	8763	9418	10048
68	38	124	220	314	405	495	584	669	752	834	913	989	1063	1134
	173	173	173	173	171	169	166	162	161	159	157	158	162	169
20	221	993	1837	2660	3479	4259	5030	5780	6518	7238	7939	8613	9258	9892
76	25	112	207	300	393	481	568	653	736	817	896	972	1045	1117
	192	192	192	192	191	189	186	183	181	179	177	178	182	188
22	115	862	1698	2521	3337	4135	4895	5641	6366	7067	7752	8414	9062	9702
83	13	97	192	285	377	467	553	637	719	798	875	950	1023	1095
	211	211	211	211	211	209	206	203	201	200	199	200	204	209
25		637	1473	2296	3117	3909	4687	5434	6163	6861	7536	8192	8829	9475
95		72	166	259	352	441	529	613	696	775	851	925</		

Delta Series

Performance Data

470 cm³/r [28.7 in³/r]

Δ Pressure Bar [PSI]

Continuous
 Intermittent
 No operation

	17 250	34 500	52 750	69 1000	86 1250	103 1500	121 1750	138 2000	155 2250	172 2500	190 2750	207 3000
2	925 104	1885 213	2820 318	3727 421	4639 524	5526 624	6404 723	7270 821	8129 918	8978 1014	9794 1106	10551 1191
7.6	14	14	13	12	12	11	11	10	9	9	8	7
4	942 106	1942 219	2917 329	3849 435	4776 539	5692 643	6594 744	7488 845	8352 943	9199 1039	10014 1131	10824 1222
15	31	30	29	29	28	27	27	26	25	24	23	23
6	906 102	1921 217	2892 327	3833 433	4772 539	5676 641	6572 742	7440 840	8309 938	9152 1033	9974 1126	10786 1218
23	47	46	45	45	44	43	43	42	42	41	41	40
8	856 97	1866 211	2853 322	3795 428	4730 534	5634 636	6520 736	7379 833	8230 929	9075 1025	9895 1117	10693 1207
30	63	62	62	61	60	58	57	57	58	58	57	56
10	780 88	1799 203	2800 316	3745 423	4685 529	5594 632	6479 731	7337 828	8177 923	9009 1017	9843 1111	10638 1201
38	79	79	78	77	76	75	74	72	72	74	74	74
12	699 79	1709 193	2711 306	3661 413	4597 519	5508 622	6403 723	7258 819	8101 915	8916 1007	9719 1097	10506 1186
45	96	95	94	93	92	91	90	89	89	90	90	91
14	596 67	1612 182	2609 295	3561 402	4490 507	5390 608	6268 708	7112 803	7941 897	8743 987	9519 1075	10282 1161
53	112	111	111	110	109	107	106	104	103	101	102	104
16	467 53	1486 168	2480 280	3440 388	4371 493	5268 595	6152 695	6992 789	7810 882	8601 971	9370 1058	10118 1142
61	129	128	127	126	125	123	122	120	119	117	116	116
18	332 37	1353 153	2357 266	3317 375	4256 481	5157 582	6043 682	6892 778	7713 871	8501 960	9270 1047	10026 1132
68	145	145	144	143	142	140	138	136	135	134	132	133
20	304 34	1226 138	2218 250	3172 358	4102 463	4994 564	5873 663	6731 760	7557 853	8365 944	9147 1033	9922 1120
76	161	161	160	159	158	157	155	153	152	150	149	150
22	137 15	1059 120	2048 231	3004 339	3945 445	4840 546	5727 647	6576 742	7399 835	8198 926	8967 1012	9715 1097
83	177	177	177	176	175	174	172	170	169	167	166	166
25		833 94	1816 205	2765 312	3680 415	4575 517	5455 616	6313 713	7133 805	7928 895	8691 981	9436 1065
95		201	201	201	200	198	196	194	193	191	191	192
30		491 55	1318 149	2295 259	3232 365	4142 468	5022 567	5881 664	6721 759	7522 849	8300 937	9320 1052
114		241	241	241	241	240	237	236	236	233	232	227

491 } Torque lb-in
 55 } N/m
 241 } Speed RPM

542 cm³/r [33.1 in³/r]

Δ Pressure Bar [PSI]




	17 250	34 500	52 750	69 1000	86 1250	103 1500	121 1750	138 2000	155 2250	172 2500
2	1131 128	2304 260	3433 388	4558 515	5668 640	6725 759	7732 873	8683 980	9645 1089	10457 1181
7.6	13	12	11	11	11	11	10	8	8	7
4	1139 129	2352 266	3515 397	4638 524	5735 648	6781 766	7819 883	8809 994	9752 1101	10644 1202
15	27	26	25	25	25	25	24	23	23	22
6	1063 120	2267 256	3433 388	4549 514	5645 637	6694 756	7697 869	8675 979	9630 1087	10557 1192
23	41	40	39	38	38	38	39	38	37	36
8	992 112	2186 247	3354 379	4475 505	5578 630	6646 750	7665 865	8608 972	9535 1076	10449 1180
30	56	55	54	53	52	52	51	52	52	51
10	897 101	2090 236	3259 368	4378 494	5482 619	6555 740	7602 858	8578 968	9482 1071	10343 1168
38	70	69	68	67	67	65	64	64	64	65
12	807 91	1980 224	3138 354	4256 481	5365 606	6440 727	7494 846	8481 957	9403 1062	10275 1160
45	84	83	83	81	80	79	78	77	76	77
14	693 78	1873 211	3028 342	4138 467	5218 589	6268 708	7318 826	8304 937	9235 1043	10105 1141
53	98	98	97	96	95	93	91	90	91	92
16	554 63	1732 196	2882 325	3993 451	5083 574	6107 689	7118 804	8089 913	9032 1020	9928 1121
61	112	112	111	110	109	108	106	104	104	106
18	409 46	1582 179	2738 309	3844 434	4924 556	5952 672	6956 785	7928 895	8874 1002	9772 1103
68	126	126	126	125	124	123	121	119	119	121
20	355 40	1428 161	2587 292	3696 417	4767 538	5804 655	6813 769	7786 879	8732 986	9624 1087
76	140	140	140	139	138	137	136	134	134	135
22	310 35	1259 142	2412 272	3518 397	4595 519	5619 634	6618 747	7589 857	8536 964	9438 1065
83	154	154	154	154	152	151	150	148	148	149
25		958 108	2107 238	3215 363	4281 483	5310 599	6305 712	7264 820	8204 926	9110 1029
95		174	174	174	174	173	171	170	168	169
30		521 59	1599 181	2696 304	3769 425	4804 542	5809 656	6776 765	7705 870	8617 973
114		209	209	209	209	208	207	207	205	205

Delta Series

Performance Data

649 cm³/r [39.6 in³/r]

Δ Pressure Bar [PSI]

-  Continuous
-  Intermittent
-  No operation

Flow LPM [GPM]	649 cm ³ /r [39.6 in ³ /r]									
	17 250	34 500	52 750	69 1000	86 1250	103 1500	121 1750	138 2000	155 2250	
2	1365	2787	4156	5488	6775	7949	9102	10174	11100	
7.6	154 10	315 10	469 10	620 9	765 9	897 8	1028 7	1149 6	1253 3	
4	1326	2770	4113	5400	6632	7819	8973	10030	11015	
15	150 22	313 22	464 21	610 20	749 21	883 20	1013 19	1132 19	1244 18	
6	1258	2663	3998	5270	6521	7692	8774	9808	10809	
23	142 35	301 34	451 33	595 32	736 32	868 32	991 32	1107 32	1220 31	
8	1154	2558	3902	5195	6455	7659	8775	9770	10708	
30	130 47	289 46	441 45	587 44	729 42	865 42	991 42	1103 43	1209 43	
10	1045	2442	3787	5076	6331	7541	8691	9685	10573	
38	118 58	276 58	428 57	573 56	715 55	851 53	981 53	1093 54	1194 55	
12	928	2321	3662	4939	6193	7385	8536	9577	10469	
45	105 70	262 70	413 70	558 68	699 67	834 66	964 65	1081 65	1182 66	
14	740	2127	3469	4746	5989	7188	8352	9433	10439	
53	84 82	240 82	392 82	536 81	676 80	812 79	943 77	1065 76	1179 76	
16	614	1990	3318	4588	5795	6942	8081	9154	10141	
61	69 93	225 93	375 93	518 93	654 92	784 91	912 90	1033 89	1145 90	
18	448	1830	3158	4414	5619	6754	7853	8890	9873	
68	51 105	207 105	356 105	498 105	634 104	763 103	887 102	1004 102	1115 104	
20	281	1618	2944	4198	5410	6551	7653	8689	9676	
76	32 117	183 117	332 117	474 117	611 117	740 116	864 114	981 114	1092 115	
22	276	1518	2842	4099	5313	6453	7554	8596	9576	
83	31 128	171 128	321 128	463 128	600 128	728 128	853 126	970 125	1081 126	
25		1079	2393	3646	4834	5969	7071	8112	9105	
95		122 146	270 146	412 146	546 146	674 146	798 145	916 144	1028 144	
30		436	1747	3013	4225	5356	6454	7489	8479	
114		49 175	197 175	340 175	477 175	605 175	729 174	845 174	957 175	

754 cm³/r [46.0 in³/r]

Δ Pressure Bar [PSI]

8479
957
175 } Torque lb-in
Nm
Speed RPM

Flow LPM [GPM]	754 cm ³ /r [46.0 in ³ /r]									
	17 250	34 500	52 750	69 1000	86 1250	103 1500	121 1750	138 2000	155 2250	
2	1561	3128	4605	6014	7422	8721	9978	10910		
7.6	176 9	353 8	520 8	679 8	838 7	985 7	1127 6	1232 5		
4	1548	3142	4650	6029	7350	8605	9785	10892		
15	175 19	355 18	525 18	681 18	830 18	971 18	1105 17	1230 17		
6	1470	3084	4608	6022	7346	8555	9722	10850		
23	166 30	348 29	520 28	680 27	829 27	966 27	1098 27	1225 27		
8	1359	2975	4504	5925	7263	8488	9638	10694		
30	153 40	336 39	509 38	669 38	820 37	958 36	1088 37	1207 38		
10	1240	2844	4364	5815	7185	8458	9603	10584		
38	140 50	321 50	493 49	656 48	811 47	955 46	1084 46	1195 47		
12	1079	2686	4207	5641	7008	8248	9390	10400		
45	122 60	303 60	475 60	637 59	791 58	931 57	1060 57	1174 57		
14	932	2512	4038	5477	6850	8124	9274	10286		
53	105 70	284 70	456 70	618 70	773 69	917 68	1047 67	1161 67		
16	753	2328	3834	5246	6577	7831	8999	10040		
61	85 80	263 80	433 80	592 80	742 80	884 79	1016 78	1133 78		
18	547	2119	3632	5024	6320	7551	8706	9721		
68	62 90	239 90	410 90	567 90	714 90	852 90	983 90	1097 90		
20	310	1919	3430	4826	6126	7339	8466	9430		
76	35 100	217 100	387 100	545 100	692 100	829 100	956 100	1065 100		
22	248	1666	3172	4571	5878	7102	8254	9269		
83	28 110	188 110	358 110	516 110	664 110	802 110	932 110	1046 110		
25		1261	2784	4191	5504	6727	7873	8911		
95		142 126	314 126	473 126	621 126	759 126	889 126	1006 126		
30		545	2055	3474	4800	6036	7175	8231		
114		62 151	232 151	392 151	542 151	681 151	810 151	929 151		

Delta Series

Dimensions

Wheel Mount

Ports

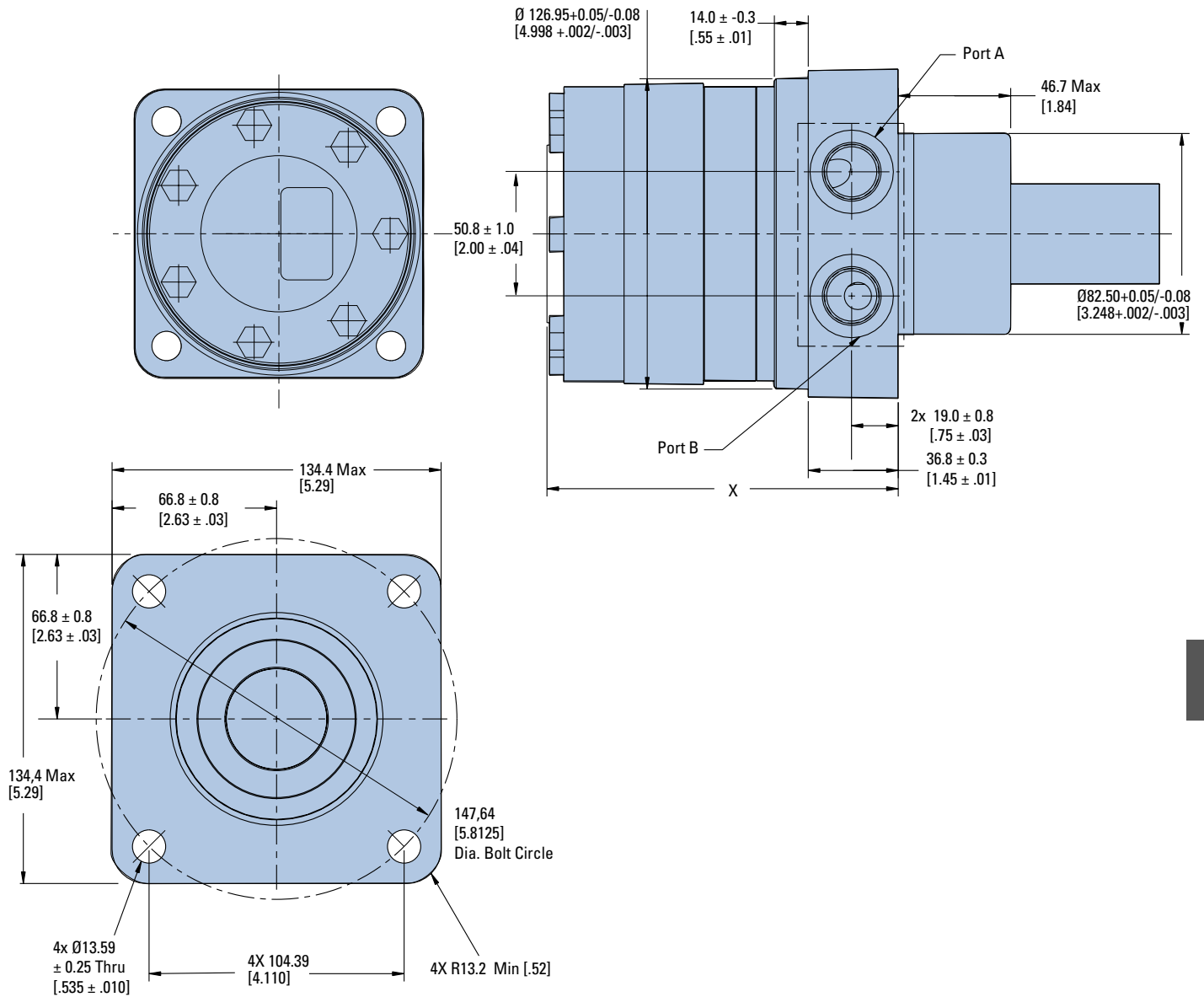
7/8 -14 UNF-2B SAE O-ring Ports

G 1/2 (BSP) Ports

Standard Rotation Viewed from Shaft End

Port A Pressurized — CCW

Port B Pressurized — CW



DISPLACEMENT CODE	X MAX	CODE	MAX
069	130.6 [5.14]	212	156.5 [6.16]
089	135.9 [5.35]	241	162.6 [6.40]
121	144.3 [5.68]	287	172.5 [6.79]
143	150.4 [5.92]	331	181.9 [7.16]
154	153.2 [6.03]	396	195.6 [7.70]
183	150.4 [5.92]	460	209.0 [8.23]

Delta Series

Dimensions

Standard Mount

Ports

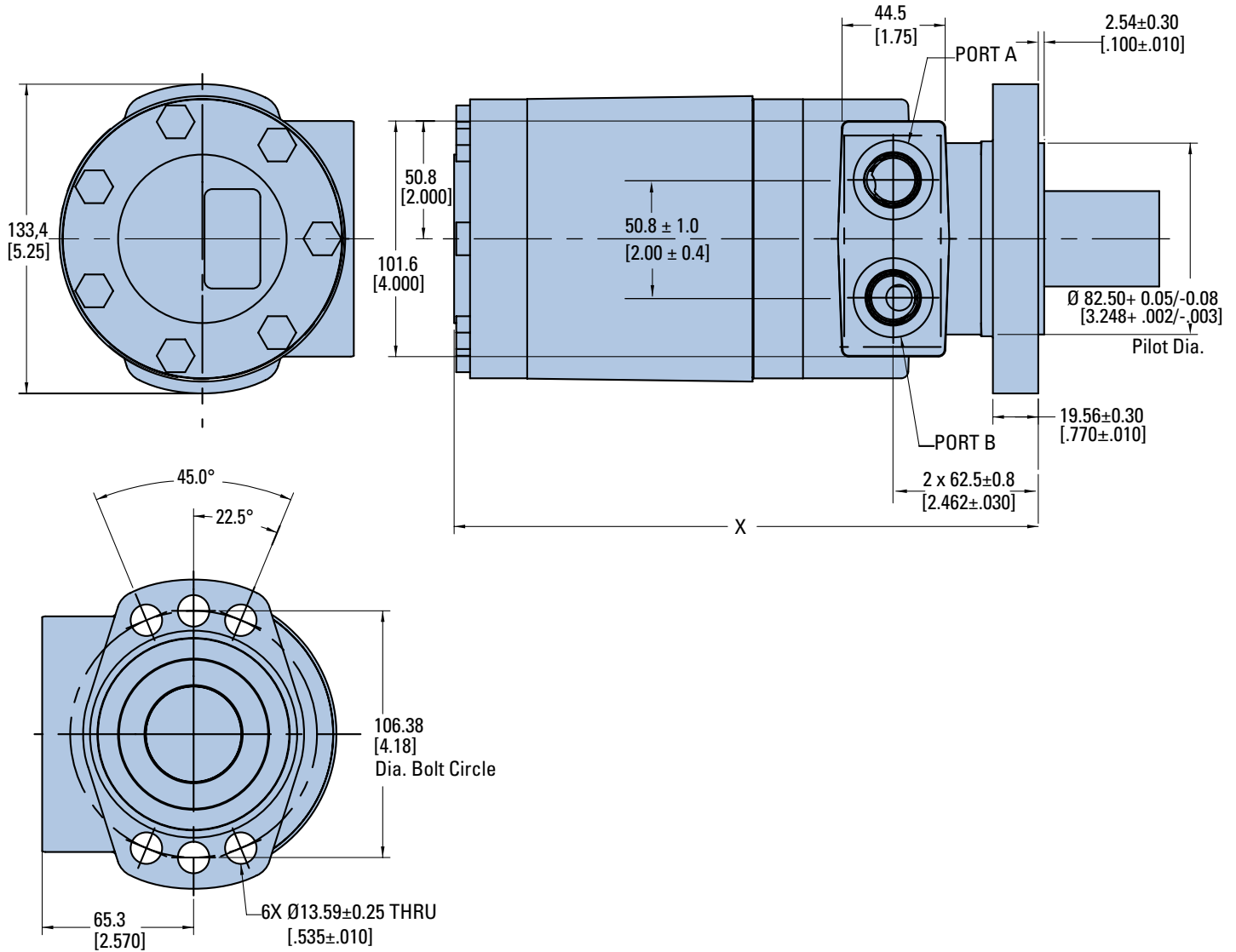
7/8 -14 UNF-2B SAE O-ring Ports

G 1/2 (BSP) Ports

Standard Rotation Viewed from Shaft End

Port A Pressurized — CCW

Port B Pressurized — CW



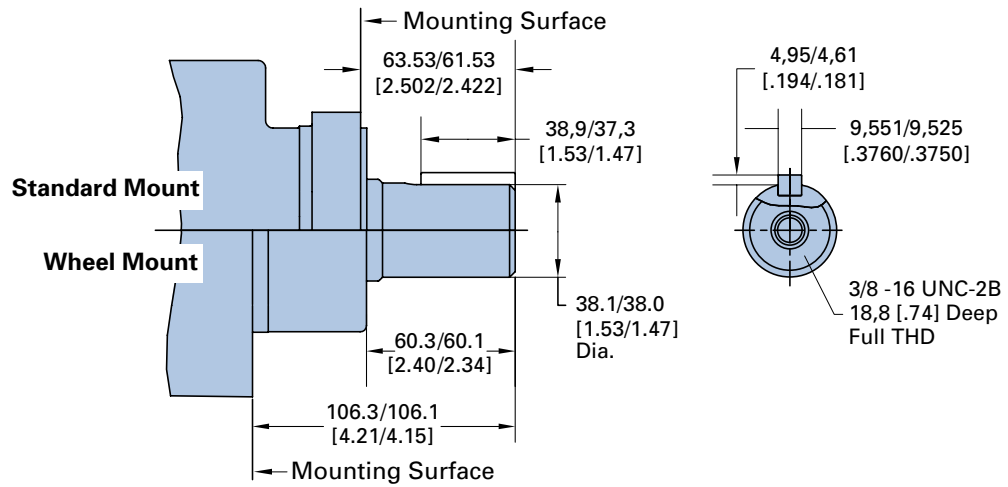
DISPLACEMENT CODE	X MAX	CODE	MAX
069	173.8 [6.84]	212	199.8 [7.87]
089	179.7 [7.08]	241	206.0 [8.11]
121	187.7 [7.39]	287	215.8 [8.50]
143	193.7 [7.63]	331	225.1 [8.86]
154	196.5 [7.74]	396	238.8 [9.40]
183	193.7 [7.63]	460	252.3 [9.93]

Delta Series

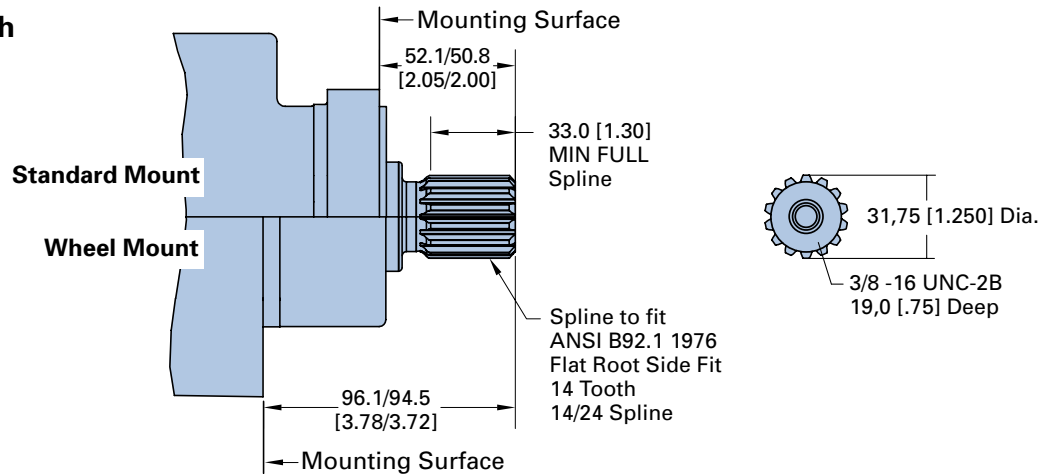
Dimensions

Shafts

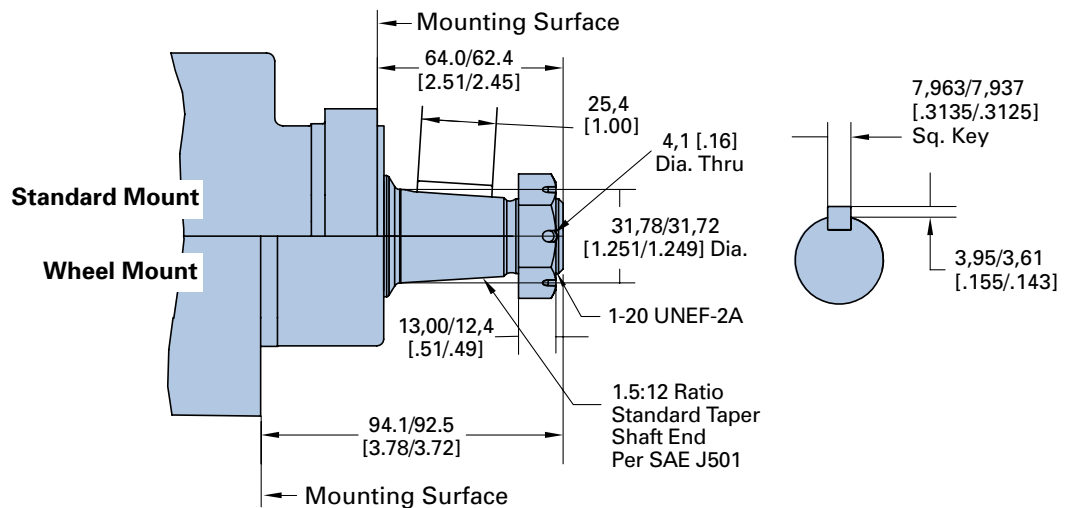
1 1/2 Inch Straight



1 1/4 Inch 14 Tooth Splined



1 1/4 Inch Tapered



Delta Series

Shaft Side Load Capacity

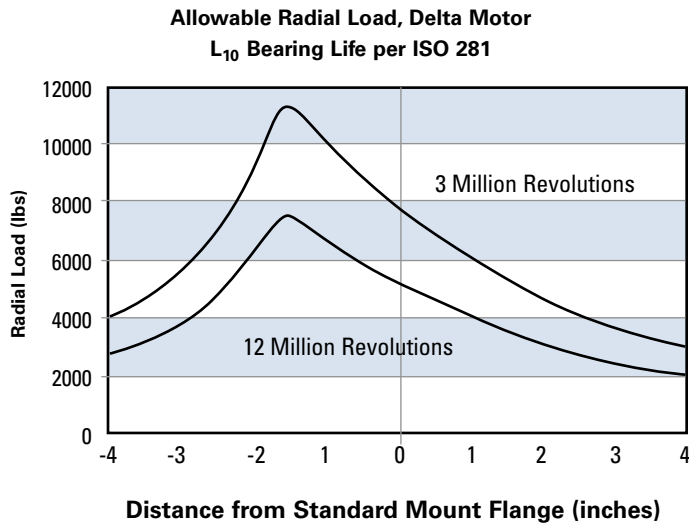
These curves indicate the radial load capacity on the motor shaft(s) at various locations.

Each curve is based on B 10 bearing life (2000 hours of 12,000,000 shaft revolutions at 100 RPM) at rated output torque.

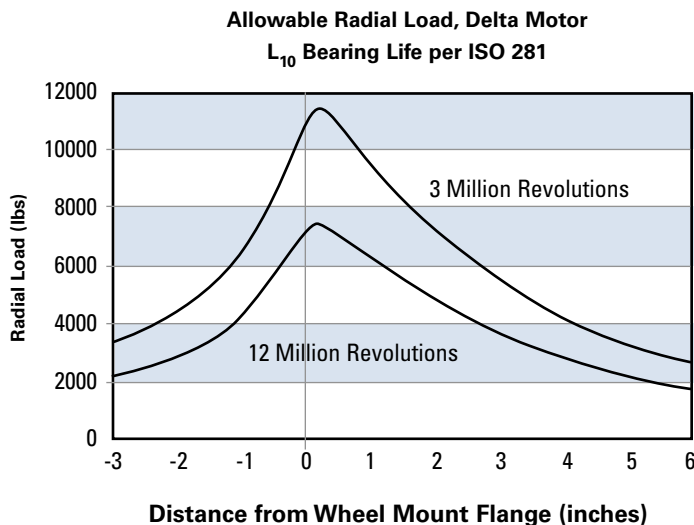
To determine radial load at speeds other than 100 RPM, multiply the load values given on the bearing curve by the factors in the chart below.

RPM	Multiplication Factor
50	1.23
100	1.00
200	0.81
300	0.72
400	0.66
500	0.62
600	0.58
700	0.56
800	0.54

Side Load Chart for Standard Mount



Side Load Chart for Wheel Mount



Delta Series

Product Numbers

Note:

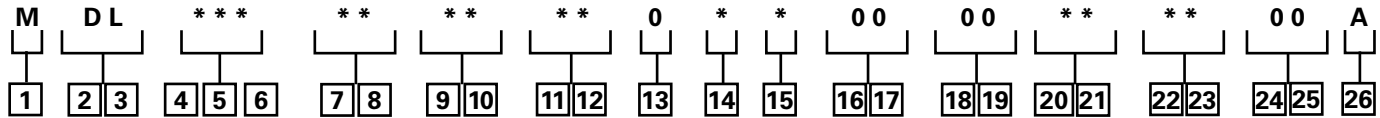
For Delta Series Motors with a configuration **Not Shown** in the charts below contact your Eaton Representative.

MOUNTING	SHAFT	PORT SIZE	TIMING	DISPLACEMENT cm^3/r [in^3/r] / PRODUCT NUMBER			
				113 [6.9]	146 [8.9]	198 [12.1]	234 [14.3]
Wheel Motor	1-1/4 Inch	7/8" O-ring	Standard -CCW	184-0005-001	184-0006-001	184-0002-001	184-0001-001
	Tapered		Standard -CW	184-0025-001	184-0026-001	184-0027-001	184-0028-001
	1-1/2 Inch	7/8" O-ring	Standard -CCW	184-0013-001	184-0014-001	184-0015-001	184-0016-001
	17 T Splined		Standard -CW	184-0037-001	184-0038-001	184-0039-001	184-0040-001
				252 [15.4]	300 [18.3]	347 [21.2]	395 [24.1]
	1-1/4 Inch	7/8" O-ring	Standard -CCW	184-0003-001	184-0004-001	184-0007-001	184-0008-001
	Tapered		Standard -CW	184-0029-001	184-0030-001	184-0031-001	184-0032-001
	1-1/2 Inch	7/8" O-ring	Standard -CCW	184-0017-001	184-0018-001	184-0019-001	184-0020-001
	17 T Splined		Standard -CW	184-0041-001	184-0042-001	184-0043-001	184-0044-001
				470 [28.7]	542 [33.1]	649 [39.6]	754 [46.0]
	1-1/4 Inch	7/8" O-ring	Standard -CCW	184-0009-001	184-0010-001	184-0011-001	184-0012-001
	Tapered		Standard -CW	184-0033-001	184-0034-001	184-0035-001	184-0036-001
	1-1/2 Inch	7/8" O-ring	Standard -CCW	184-0021-001	184-0022-001	184-0023-001	184-0024-001
	17 T Splined		Standard -CW	184-0045-001	184-0046-001	184-0047-001	184-0048-001

Delta Series

Model Code

The following 26-digit coding system has been developed to identify all of the configuration options for the Delta Low Speed High Torque motor. Use this model code to specify a motor with the desired features. All 26 digits of the code must be present when ordering. You may want to photocopy the matrix below to ensure that each number is entered in the correct box.



1 Product

M – Motor

2, 3 Series

DL – Delta Series

4, 5, 6 Displacement cm³/r [in³/r]

069 – 113 [6.9]

089 – 146 [8.9]

121 – 198 [12.1]

143 – 234 [14.3]

154 – 252 [15.4]

183 – 300 [18.3]

212 – 347 [21.2]

241 – 395 [24.1]

287 – 470 [28.7]

331 – 542 [33.1]

396 – 649 [39.6]

460 – 754 [46.0]

7, 8 Mounting Type

AA – Wheel, 4 Bolt: 82.6 [3.25] Pilot Dia. 13.59 [.535] Dia. Holes On 147.6 [5.81] Dia. Bolt Circle. 127.0 [5.00] Dia. Rear Mount Pilot

AB – Standard, 6 Bolt: 82.6 [3.25] Pilot Dia. 13.59 [.535] Dia. Holes on 106.4 [4.19] Dia. Bolt Circle. .100 [2.54] Pilot Length. Sae A, Magneto

AC – Standard, 6 Bolt: 82.6 [3.25] Pilot Dia. 13.59 [.535] Dia. Holes on 106.4 [4.19] Dia. Bolt Circle. .250 [6.35] Pilot Length. SAE A, Magneto

9, 10 Output Shaft

01 – 38.10 [1.500] Dia. Straight with .375-16 UNC-2B Thread, and 9.52 [.375] Sq x 25.40 [1.000] Straight Key

02 – 31.75 [1.250] Dia. .125:1 Tapered Shaft per SAE J501 with 1.000-20 UNEF-2A Threaded Shaft End and Slotted Hex Nut, 7.938 [.3125] Sq x 25.40 [1.000] Straight Key

03 – 41.30 [1.626] Dia. .125:1 Tapered Shaft per SAE J501 with 1.250-18 UNEF-2A Threaded Shaft End and Slotted Hex Nut, 11.125 [.4380] Sq x 34.04 [1.340] Straight Key

04 – 31.75 [1.250] Dia. Flat Root Side Fit, 14 Tooth, 12/24 DP 30 Deg. Involute Spline with .375-16 UNC-2B Thread in End, 33.0 [1.30] Minimum Full Spline Length

05 – 38.10 [1.500] Dia. Flat Root Side Fit, 17 Tooth, 12/24 DP 30 Deg. Involute Spline, 31.8 [1.25] Minimum Full Spline Length, with .375-16 UNC-2B Thread in End

06 – 38.10 [1.500] Dia. Tapered Shaft per SAE J501 with 1.125-18 UNEF-2A Thread in End, 7.938 [.3125] Sq x 31.75 [1.250] Key

11, 12 Ports

AA – .875-14 UNF-2B SAE O-Ring

AC – G 1/2 BSP Straight Thread

13 Pressure/Flow Option

0 – None

14 Geroler Option

0 – Standard

B – Tight Fitting Geroler

15 Seal Option

0 – Standard

1 – Viton

4 – Seal Guard

16, 17 Accessories

00 – None

18, 19 Special Features (Hardware)

00 – None

20, 21 Special Features (Assembly)

00 – Standard Rotation - CCW

01 – Standard Rotation - CW

22, 23 Paint/Packaging

AA - No Paint, Individual Box

AB - Painted Low Gloss Black, Individual Box

AC - Epoxy Coated (Frost Gray), Individual Box

AE - No Paint, Bulk Box

AF - Painted Low Gloss Black, Bulk Box

24, 25 Customer Identification

00 – None

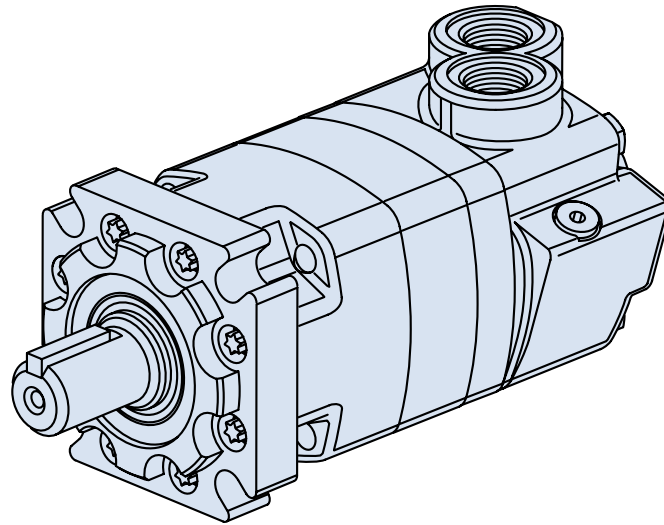
26 Design Code

A – One (1)

Feature in **bold** are preferred and allow for shorter lead time.

4000 Series

Highlights



Features

- 10 displacements, a variety of mounting flanges and output shafts
- Reliable, proven design
- High efficiency
- Environmental protection options

Benefits

- Flexibility in designing this motor into a system
- Options that fit well into tough applications

Applications

- Mowing
- Snow Removal
- Sprayer
- Trencher
- Wood Products

Description

The 4000 Series offers up to 8600 in-lb of torque and 25 gpm (continuous ratings). This is the corner stone of the Char-Lynn line.

4000 Series Motors

Geroler Element	10 Displacements
Flow l/min [GPM]	95 [25] Continuous**
	150 [40] Intermittent*
Speed RPM	722 Cont.**
	868 Inter.*
Pressure bar [PSI]	200 [3000] Cont.**
	300 [4500] Inter.*
Torque Nm [lb-in]	970 [8600] Cont.**
	1180 [10450] Inter.*

** Continuous— (Cont.) Continuous rating, motor may be run continuously at these ratings

* Intermittent— (Inter.) Intermittent operation, 10% of every minute.



Mowing



Snow Removal



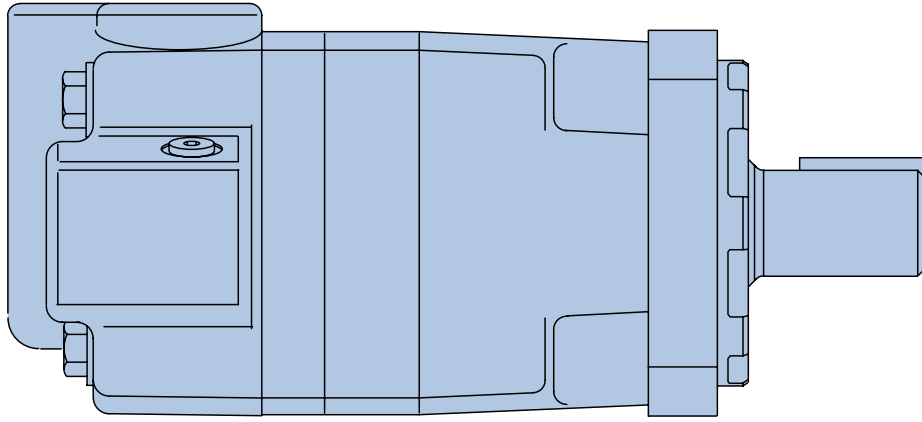
Sprayer



Trencher

4000 Series

Specifications



4000 SERIES MOTORS

Displ. cm ³ /r [in ³ /r]		110 [6.7]	130 [7.9]	160 [9.9]	205 [12.5]	245 [15.0]	280 [17.1]	310 [19.0]	395 [24.0]	495 [30.0]	625 [38.0]
Max. Speed (RPM)	Continuous	697	722	582	459	383	336	303	239	191	151
	Intermittent	868	862	693	546	532	488	422	376	305	241
@ Flow											
Flow l/min [GPM]	Continuous	75 [20]	95 [25]	95 [25]	95 [25]	95 [25]	95 [25]	95 [25]	95 [25]	95 [25]	95 [25]
	Intermittent	95 [25]	115 [30]	115 [30]	115 [30]	130 [35]	130 [35]	130 [35]	150 [40]	150 [40]	150 [40]
Torque* Nm [lb-in]	Continuous	320 [2850]	375 [3330]	485 [4290]	600 [5300]	705 [6240]	753 [6666]	850 [7530]	930 [8240]	945 [8375]	970 [8605]
	Intermittent	470 [4160]	560 [4940]	705 [6240]	800 [7100]	845 [7470]	957 [8471]	1065 [9420]	1185 [10470]	1170 [10350]	1180 [10450]
Pressure Δ bar [Δ PSI]	Continuous	205 [3000]	205 [3000]	205 [3000]	205 [3000]	205 [3000]	205 [3000]	205 [3000]	190 [2750]	140 [2000]	115 [1700]
	Intermittent Peak	310 [4500]	310 [4500]	310 [4500]	310 [4500]	310 [4500]	310 [4500]	310 [4500]	240 [3500]	170 [2500]	140 [2000]
Weight kg [lb]	Standard or Wheel Mount	17.9 [39.5]	18.1 [40.0]	18.1 [40.0]	18.4 [40.5]	18.6 [41.0]	19.1 [42.0]	19.5 [43.0]	20.4 [45.0]	21.8 [48.0]	23.1 [51.0]
	Bearingless	14.1 [31.0]	14.3 [31.5]	14.1 [31.0]	14.5 [32.0]	14.7 [32.5]	15.2 [33.5]	15.6 [34.5]	16.6 [36.5]	17.9 [39.5]	19.3 [42.5]

Maximum Case Pressure: See case pressure seal limitation graph.

*See shaft torque ratings for limitations..

Note:

To assure best motor life, run motor for approximately one hour at 30% of rated pressure before application to full load. Be sure motor is filled with fluid prior to any load applications.

Maximum Inlet Pressure:

310 bar [4500 PSI]
Do not exceed Δ pressure rating (see chart above).

Maximum Return Pressure:

310 bar [4500 PSI] with case drain line installed.
Do not exceed Δ pressure rating (see chart above).

Δ bar [Δ PSI] :

The true pressure difference between inlet port and outlet port

Continuous Rating:

Motor may be run continuously at these ratings

Intermittent Operation:

10% of every minute

Peak Operation:

1% of every minute

Recommended Fluids:

Premium quality, anti-wear type hydraulic oil with a viscosity of not less than 70 SUS at operating temperature.

Recommended Maximum System Operating Temp.:

82° C [180° F]

Recommended Filtration:

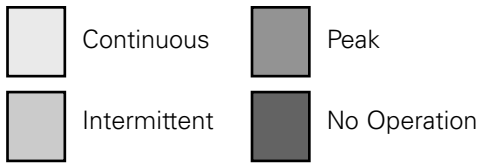
per ISO Cleanliness Code, 4406: 20/18/13

4000 Series

Performance Data

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

Performance data is typical at 120 SUS. Actual data may vary slightly from unit to unit in production.

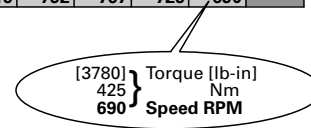


130 cm³/r [7.9 in³/r] Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[1000] 70	[1500] 105	[2000] 140	[2500] 170	[3000] 205	[3500] 240	[4000] 275	[4500] 310
[.5] 1,9	[310] 35 12	[510] 60 9	[1060] 120 5	[1590] 180 2						
[1] 3,8	[290] 35 30	[530] 60 28	[1080] 120 25	[1600] 180 19	[2110] 240 14	[2640] 300 13	[3060] 345 12	[3450] 390 4		
[2] 7,5	[280] 30 57	[530] 60 56	[1100] 125 53	[1620] 185 47	[2140] 240 42	[2660] 300 40	[3180] 360 38	[3600] 405 29	[4020] 455 20	[4080] 460 12
[4] 15	[260] 30 116	[520] 60 114	[1100] 125 111	[1650] 185 105	[2200] 250 100	[2700] 305 95	[3210] 365 90	[3660] 415 70	[4100] 465 50	[4560] 515 37
[6] 23	[240] 25 173	[510] 60 170	[1100] 125 167	[1650] 185 161	[2200] 250 156	[2720] 305 149	[3240] 365 142	[3710] 420 123	[4180] 470 104	[4660] 525 91
[8] 30	[230] 25 228	[510] 60 225	[1080] 120 222	[1640] 185 216	[2210] 250 210	[2740] 310 202	[3270] 370 194	[3770] 425 176	[4270] 480 158	[4750] 535 145
[10] 38	[210] 25 283	[510] 60 281	[1080] 120 278	[1640] 185 272	[2210] 250 266	[2750] 310 256	[3300] 375 246	[3820] 430 229	[4350] 490 212	[4840] 545 189
[12] 45	[200] 25 341	[500] 55 338	[1070] 120 335	[1640] 185 329	[2220] 250 323	[2750] 310 312	[3300] 375 300	[3840] 435 282	[4370] 495 263	[4870] 550 237
[14] 53	[180] 20 400	[490] 55 396	[1060] 120 392	[1640] 185 386	[2220] 250 380	[2750] 310 368	[3310] 375 355	[3860] 435 335	[4390] 495 315	[4890] 550 286
[16] 61	[160] 20 457	[490] 55 453	[1050] 120 449	[1630] 185 443	[2220] 250 437	[2760] 310 424	[3310] 375 410	[3860] 435 388	[4400] 495 366	[4920] 555 335
[18] 68	[130] 15 516	[480] 55 511	[1050] 120 506	[1630] 185 500	[2220] 250 494	[2760] 310 480	[3320] 375 465	[3870] 435 442	[4420] 500 418	[4940] 560 384
[20] 76	[110] 10 574	[470] 55 569	[1040] 120 564	[1620] 185 559	[2210] 250 551	[2760] 310 536	[3330] 375 520	[3890] 440 495	[4440] 500 470	
[22] 83	[70] 10 633	[450] 50 628	[1020] 115 624	[1610] 180 615	[2190] 245 606	[2750] 310 590	[3320] 375 573	[3880] 440 547	[4440] 500 520	
[25] 95	[50] 5 722	[430] 50 718	[1000] 115 714	[1580] 180 702	[2160] 245 690	[2720] 305 672	[3300] 375 653	[3860] 435 625	[4430] 500 595	
[30] 114		[400] 45 862	[940] 105 855	[1500] 170 842	[2080] 235 827	[2670] 300 806	[3200] 360 783	[3740] 425 749		

110 cm³/r [6.7 in³/r] Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[1000] 70	[1500] 105	[2000] 140	[2500] 170	[3000] 205	[3500] 240	[4000] 275	[4500] 310
[.5] 1,9	[150] 15 14	[390] 45 10	[850] 95 5	[1290] 145 2						
[1] 3,8	[170] 20 34	[440] 50 33	[900] 100 31	[1380] 155 28	[1860] 210 25	[2270] 255 22	[2680] 305 18	[3110] 350 11		
[2] 7,5	[180] 20 68	[450] 50 67	[910] 105 62	[1390] 155 56	[1860] 210 50	[2280] 260 44	[2700] 305 36	[3120] 355 28	[3450] 390 18	
[4] 15	[190] 20 138	[460] 50 136	[940] 105 123	[1400] 160 110	[1870] 210 97	[2310] 260 84	[2730] 310 70	[3140] 355 56	[3560] 400 42	[3880] 440 28
[6] 23	[200] 25 207	[470] 55 204	[960] 110 200	[1420] 160 193	[1880] 210 184	[2320] 260 174	[2760] 310 163	[3160] 360 150	[3640] 410 136	[3950] 455 121
[8] 30	[190] 20 277	[460] 50 274	[950] 105 270	[1420] 160 262	[1880] 210 253	[2340] 265 241	[2790] 315 228	[3230] 365 213	[3670] 415 196	[4010] 455 179
[10] 38	[180] 20 347	[460] 50 344	[950] 105 340	[1420] 160 331	[1890] 215 322	[2350] 265 308	[2820] 320 292	[3260] 370 274	[3700] 420 255	[4070] 460 236
[12] 45	[160] 20 417	[450] 50 414	[940] 105 410	[1420] 160 400	[1880] 210 390	[2350] 265 374	[2820] 320 355	[3260] 370 335	[3710] 420 313	[4080] 460 292
[14] 53	[140] 15 487	[440] 50 484	[930] 105 480	[1420] 160 469	[1880] 210 458	[2350] 265 440	[2830] 320 419	[3280] 370 446	[3730] 420 471	[4110] 465 348
[16] 61	[130] 15 556	[440] 50 553	[920] 105 549	[1410] 160 537	[1870] 210 525	[2350] 265 505	[2840] 320 482	[3300] 375 455	[3750] 425 428	[4120] 465 404
[18] 68	[100] 10 626	[440] 50 622	[910] 105 618	[1400] 160 606	[1870] 210 593	[2350] 265 570	[2840] 320 545	[3300] 375 516	[3770] 425 485	[4140] 465 460
[20] 76	[80] 10 697	[430] 50 694	[900] 100 690	[1370] 155 677	[1860] 210 664	[2350] 265 638	[2850] 320 611	[3320] 375 579	[3790] 430 545	[4160] 470 518
[25] 95		[400] 45 868	[860] 95 861	[1350] 155 838	[1850] 210 816	[2320] 260 792	[2830] 320 767	[3300] 375 729	[3780] 425 690	

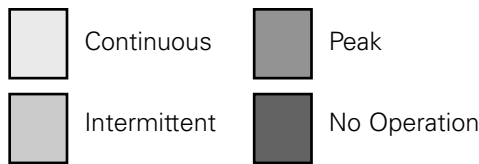


4000 Series

Performance Data

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

Performance data is typical at 120 SUS. Actual data may vary slightly from unit to unit in production.

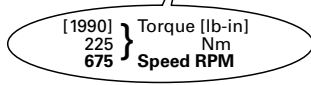


205 cm³/r [12.5 in³/r] Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[1000] 70	[1500] 105	[2000] 140	[2500] 170	[3000] 205	[3500] 240	[4000] 275	[4500] 310
[.5] 1.9	[400] 45 8	[810] 90 5	[1500] 170 1							
[1] 3.8	[410] 45 17	[830] 95 17	[1590] 180 16	[2220] 250 15	[2860] 325 14	[3860] 435 12	[4560] 515 11	[5390] 610 9	[5510] 625 3	
[2] 7.5	[420] 45 36	[850] 95 35	[1680] 190 34	[2410] 270 32	[3140] 355 29	[4060] 460 27	[4800] 540 25	[5420] 610 22	[6000] 680 16	[6210] 700 8
[4] 15	[430] 50 73	[870] 100 73	[1770] 200 71	[2590] 295 70	[3410] 385 68	[4260] 480 61	[5040] 570 57	[5730] 645 45	[6340] 715 35	[6740] 760 23
[6] 23	[430] 50 107	[880] 100 106	[1800] 205 105	[2620] 295 103	[3530] 400 101	[4370] 495 98	[5170] 585 90	[5900] 665 81	[6590] 745 74	[7100] 800 65
[8] 30	[410] 45 144	[870] 100 143	[1820] 205 142	[2660] 300 138	[3560] 400 136	[4410] 500 132	[5240] 590 125	[6020] 680 116	[6770] 765 109	
[10] 38	[390] 45 182	[860] 95 180	[1820] 205 179	[2700] 305 174	[3580] 405 170	[4460] 505 166	[5300] 600 160	[6110] 690 152	[6890] 780 143	
[12] 45	[350] 40 217	[850] 95 216	[1810] 205 215	[2690] 305 211	[3570] 405 202	[4440] 500 200	[5300] 600 194	[6120] 690 185		
[14] 53	[330] 35 256	[840] 95 254	[1790] 200 252	[2670] 300 248	[3560] 400 243	[4430] 500 237	[5290] 600 229	[6120] 690 219		
[16] 61	[290] 35 291	[820] 95 290	[1770] 200 289	[2650] 300 284	[3540] 400 280	[4410] 500 272	[5280] 595 264	[6120] 690 253		
[18] 68	[270] 30 329	[810] 90 327	[1750] 200 325	[2640] 300 321	[3520] 400 316	[4400] 495 308	[5270] 595 298	[6120] 690 287		
[20] 76	[230] 25 366	[800] 90 364	[1730] 195 362	[2620] 295 358	[3510] 395 353	[4380] 495 345	[5270] 595 334	[6120] 690 321		
[22] 83	[190] 20 402	[780] 90 400	[1690] 190 398	[2600] 295 394	[3500] 395 389	[4370] 495 380	[5260] 595 368			
[25] 95	[150] 15 459	[750] 85 456	[1640] 185 453	[2560] 290 448	[3480] 395 442	[4360] 495 434	[5240] 590 421			
[30] 114		[710] 80 546	[1540] 175 542	[2510] 285 537	[3350] 380 529	[4190] 475 520	[5030] 570 504			

160 cm³/r [9.9 in³/r] Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[1000] 70	[1500] 105	[2000] 140	[2500] 170	[3000] 205	[3500] 240	[4000] 275	[4500] 310
[.5] 1.9	[300] 35 8	[680] 75 7	[1320] 150 5	[2050] 230 3	[2750] 310 1					
[1] 3.8	[320] 35 23	[700] 80 22	[1350] 155 20	[2070] 235 19	[2780] 315 18	[3300] 375 16	[3940] 445 15	[4410] 500 8	[4950] 560 2	
[2] 7.5	[330] 35 46	[700] 80 45	[1360] 155 41	[2080] 235 40	[2790] 315 37	[3340] 375 32	[3970] 450 29	[4530] 510 27	[5090] 575 25	[5590] 630 13
[4] 15	[320] 35 93	[710] 80 92	[1400] 160 90	[2100] 240 88	[2820] 320 84	[3420] 385 76	[4020] 455 73	[4620] 520 62	[5220] 590 51	[5730] 645 35
[6] 23	[300] 35 137	[710] 80 135	[1420] 160 134	[2140] 240 131	[2850] 320 126	[3510] 395 120	[4180] 470 114	[4760] 540 90	[5340] 605 75	[5870] 665 57
[8] 30	[280] 30 184	[720] 80 182	[1450] 165 180	[2180] 245 176	[2900] 330 171	[3560] 400 163	[4230] 480 154	[4850] 550 138	[5470] 620 122	[6010] 680 100
[10] 38	[260] 30 232	[720] 80 229	[1480] 165 226	[2220] 250 221	[2950] 335 216	[3610] 410 206	[4290] 485 194	[4920] 555 182	[5560] 630 169	[6160] 695 142
[12] 45	[240] 25 277	[700] 80 274	[1450] 165 272	[2190] 245 266	[2920] 330 260	[3590] 405 250	[4280] 485 238	[4920] 555 224	[5570] 630 209	[6180] 700 182
[14] 53	[220] 25 321	[680] 75 319	[1420] 160 318	[2160] 245 311	[2890] 325 304	[3570] 405 294	[4270] 480 282	[4920] 555 266	[5580] 630 249	[6200] 700 222
[16] 61	[200] 25 366	[670] 75 364	[1400] 160 362	[2130] 240 356	[2860] 325 348	[3550] 400 338	[4260] 480 326	[4920] 555 308	[5590] 630 289	[6220] 705 262
[18] 68	[180] 20 410	[650] 75 409	[1360] 155 407	[2100] 235 401	[2830] 320 392	[3530] 400 382	[4250] 480 370	[4910] 555 350	[5600] 635 329	[6240] 705 302
[20] 76	[150] 15 460	[630] 70 458	[1340] 150 456	[2070] 235 448	[2800] 315 440	[3510] 395 429	[4240] 480 417	[4910] 555 396	[5610] 635 373	
[22] 83	[120] 15 509	[620] 70 506	[1330] 150 502	[2060] 235 494	[2790] 315 484	[3500] 395 473	[4220] 475 461	[4910] 555 438	[5600] 635 413	
[25] 95	[70] 10 582	[600] 70 578	[1320] 150 573	[2050] 230 563	[2780] 315 552	[3480] 395 540	[4210] 475 526	[4900] 555 501	[5590] 630 474	
[30] 114		[560] 65 693	[1280] 145 687	[1990] 225 675	[2700] 305 661	[3430] 390 647	[3970] 450 630	[4640] 525 600		







4000 Series

245 cm³/r [15.0 in³/r]
Δ Pressure Bar [PSI]

Performance Data

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

Performance data is typical at 120 SUS. Actual data may vary slightly from unit to unit in production.

	Continuous		Peak
	Intermittent		No Operation

	[250] 15	[500] 35	[750] 50	[1000] 70	[1250] 85	[1500] 105	[1750] 120	[2000] 140	[2250] 155	[2500] 170	[2750] 190	[3000] 205	[3250] 225	[3500] 240	[3750] 260
[.5] 1.9	[460] 50 5	[980] 110 2													
[1] 3.8	[480] 55 14	[990] 110 14	[1490] 170 14	[1990] 225 13	[2480] 280 13	[2970] 335 12	[3400] 385 12	[3830] 435 11	[4250] 480 11	[4680] 530 10	[5020] 565 4				
[2] 7.5	[500] 55 30	[1000] 115 30	[1520] 170 29	[2040] 230 29	[2540] 285 28	[3050] 345 27	[3420] 385 26	[3930] 445 24	[4440] 500 23	[4900] 555 22	[5320] 600 20	[5740] 650 18	[6160] 695 16	[6640] 750 14	[7150] 810 11
[4] 15	[510] 60 61	[1030] 115 61	[1560] 175 60	[2080] 235 60	[2600] 295 59	[3130] 355 59	[3630] 415 58	[4130] 465 56	[4630] 525 53	[5120] 580 49	[5570] 630 47	[6030] 680 44	[6480] 730 42	[6870] 775 39	[7340] 830 36
[6] 23	[510] 60 91	[1040] 120 90	[1570] 175 90	[2100] 235 89	[2620] 295 88	[3160] 355 88	[3660] 415 86	[4200] 475 83	[4710] 530 80	[5220] 590 75	[5690] 645 72	[6150] 695 70	[6620] 750 67	[7050] 795 63	[7430] 840 59
[8] 30	[500] 55 121	[1020] 115 121	[1560] 175 120	[2100] 240 118	[2630] 295 118	[3150] 355 117	[3680] 415 115	[4210] 475 113	[4740] 535 111	[5250] 595 106	[5740] 645 103	[6200] 700 99	[6700] 755 96	[7090] 795 91	[7470] 845 87
[10] 38	[470] 55 152	[1000] 115 151	[1540] 175 150	[2100] 235 148	[2620] 295 148	[3150] 355 147	[3690] 415 145	[4230] 480 143	[4770] 540 141	[5290] 600 137	[5760] 650 133	[6240] 705 129	[6710] 750 125	[7140] 805 120	
[12] 45	[450] 50 183	[980] 110 182	[1530] 175 180	[2080] 235 179	[2610] 295 178	[3140] 355 178	[3680] 415 176	[4220] 475 173	[4760] 540 170	[5280] 595 166	[5750] 650 161	[6230] 705 157	[6700] 755 152		
[14] 53	[420] 45 213	[960] 110 212	[1520] 170 211	[2060] 235 210	[2600] 295 209	[3130] 355 208	[3670] 415 206	[4200] 475 203	[4740] 535 200	[5260] 595 195	[5740] 650 190	[6220] 705 185			
[16] 61	[400] 45 244	[950] 105 243	[1500] 170 242	[2040] 230 241	[2580] 290 240	[3120] 355 239	[3660] 415 236	[4190] 475 232	[4730] 535 229	[5250] 595 225	[5730] 650 219	[6210] 700 213			
[18] 68	[380] 45 275	[930] 105 274	[1480] 165 273	[2020] 230 272	[2560] 290 270	[3100] 350 269	[3650] 415 266	[4180] 475 262	[4710] 530 259	[5230] 595 254	[5720] 645 248	[6200] 700 241			
[20] 76	[350] 40 305	[910] 105 305	[1460] 165 304	[2000] 225 302	[2550] 290 300	[3100] 350 296	[3640] 410 292	[4170] 470 288	[4700] 530 282	[5220] 590 276	[5710] 645 275				
[22] 83	[310] 35 337	[870] 100 336	[1420] 160 335	[1970] 225 334	[2500] 280 332	[3050] 345 330	[3590] 405 326	[4140] 465 323	[4680] 530 319	[5200] 590 313	[5680] 640 306				
[25] 95	[260] 30 383	[820] 95 382	[1380] 155 381	[1930] 220 380	[2460] 280 378	[2980] 335 376	[3540] 400 372	[4090] 460 369	[4640] 525 365	[5180] 585 357					
[30] 114		[680] 75 457	[1250] 140 456	[1860] 210 455	[2390] 270 453	[2900] 330 445	[3430] 390 442	[3960] 445 437	[4460] 505 427	[4950] 560 427					
[35] 132			[1110] 125 532	[1740] 195 531	[2270] 270 528	[2790] 315 525	[3340] 375 519	[3910] 440 515	[4400] 495 509						

280 cm³/r [17.1 in³/r]
Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[750] 50	[1000] 70	[1250] 85	[1500] 105	[1750] 120	[2000] 140	[2250] 155	[2500] 170	[2750] 190	[3000] 205	[3250] 225	[3500] 240	[3750] 260
[.5] 1.9	[533] 60 4	[1074] 121 2													
[1] 3.8	[553] 62 12	[1136] 128 12	[1714] 194 12	[2287] 258 11	[2841] 321 11	[3394] 384 10	[3868] 437 10	[4389] 496 10	[4895] 553 8	[6080] 685 6	[5870] 663 6	[368] 720 6	[6811] 770 6	[7239] 818 5	[7654] 865 4
[2] 7.5	[568] 64 26	[1146] 130 26	[1740] 197 25	[2328] 263 25	[2902] 328 24	[3461] 391 24	[3955] 447 23	[4524] 511 22	[5092] 566 21	[6360] 713 20	[6146] 694 19	[6666] 753 17	[7191] 813 17	[7749] 876 15	[8323] 940 13
[4] 15	[579] 65 53	[1167] 132 53	[1771] 200 52	[2374] 268 52	[2962] 335 51	[3557] 402 51	[4139] 468 50	[4712] 532 49	[5285] 597 47	[5848] 661 45	[6395] 722 44	[6946] 785 42	[7502] 848 41	[8020] 906 40	[8471] 957 38
[6] 23	[583] 66 79	[1177] 133 79	[1781] 201 78	[2395] 271 78	[2987] 338 77	[3601] 407 77	[4193] 474 76	[4793] 542 74	[5376] 607 72	[5959] 673 69	[6521] 737 67	[7082] 800 66	[7607] 859 65	[8097] 915 64	
[8] 30	[573] 65 106	[167] 130 106	[1780] 201 105	[2404] 272 105	[3007] 340 104	[3610] 408 104	[4218] 477 102	[4812] 544 101	[5411] 611 99	[5994] 677 96	[6556] 741 94	[7022] 793 92	[7518] 849 90		
[10] 38	[547] 62 134	[1146] 130 133	[1765] 199 133	[2395] 271 131	[2997] 339 131	[3629] 410 130	[4238] 479 129	[4837] 547 127	[5442] 615 126	[6035] 682 122	[6601] 746 119	[7022] 793 115	[7518] 849 111		
[12] 45	[527] 60 161	[1126] 127 160	[1745] 197 186	[2369] 268 158	[2991] 338 157	[3609] 408 157	[4228] 478 156	[4832] 546 154	[5441] 615 152	[6034] 682 148	[6586] 744 144	[6940] 784 141			
[14] 53	[497] 56 187	[1106] 125 187	[1730] 195 186	[2344] 265 186	[2972] 336 185	[3585] 405 184	[4213] 476 182	[4816] 544 180	[5430] 614 178	[6028] 681 174	[6511] 736 170	[6940] 784 166			
[16] 61	[472] 53 214	[1096] 124 214	[1715] 194 213	[2324] 263 212	[2947] 333 211	[3565] 403 210	[4203] 475 208	[4811] 544 206	[5420] 612 203	[5919] 669 199	[6436] 727 195				
[18] 68	[437] 39 241	[1075] 121 241	[1690] 191 240	[2299] 260 239	[2917] 330 237	[3541] 400 236	[4188] 473 234	[4801] 542 231	[5400] 610 229	[5919] 669 224	[6362] 719 219				
[20] 76	[402] 45 268	[1055] 119 268	[1669] 189 268	[2274] 257 267	[2898] 327 266	[3521] 398 264	[4178] 472 261	[4791] 541 258	[5394] 609 255	[5851] 661 249					
[22] 83	[366] 41 296	[1005] 114 295	[1629] 184 295	[2257] 255 294	[2856] 323 292	[3480] 393 290	[4136] 467 288	[4756] 537 285	[5205] 588 279						
[25] 95	[301] 34 336	[940] 106 336	[1588] 179 335	[2231] 252 334	[2825] 319 333	[3419] 386 331	[4086] 462 328	[4710] 532 325	[5205] 588 314						
[30] 114		[845] 96 402	[1480] 167 401	[2151] 243 400	[2759] 312 398	[3328] 376 396	[3984] 450 392	[4573] 517 389	[5021] 567 377						
[35] 132			[1348] 152 468	[2057] 232 466	[2623] 296 464	[3183] 360 463	[3883] 439 457	[4354] 492 449							

{ [3340]
375
519 } Torque [lb-in]
Nm
Speed RPM





4000 Series

310 cm³/r [19.0 in³/r]
 Δ Pressure Bar [PSI]

Performance Data

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

Performance data is typical at 120 SUS. Actual data may vary slightly from unit to unit in production.

	Continuous		Peak
	Intermittent		No Operation

	[250] 15	[500] 35	[750] 50	[1000] 70	[1250] 85	[1500] 105	[1750] 120	[2000] 140	[2250] 155	[2500] 170	[2750] 190	[3000] 205	[3250] 225	[3500] 240	[3750] 260
[.5]	[600] 70	[1150] 130													
1.9	4	2													
[1]	[620] 70	[1270] 145	[1920] 215	[2560] 290	[3170] 360	[3780] 425	[4290] 485	[4900] 555	[5490] 620	[6080] 685	[6670] 755	[7270] 820	[7880] 890	[8490] 960	[9080] 1025
3.8	11	11	11	10	10	10	9	9	9	8	8	7	7	6	5
[2]	[630] 70	[1280] 145	[1940] 220	[2590] 295	[3230] 365	[3830] 435	[4450] 505	[5070] 575	[5680] 640	[6300] 710	[6910] 780	[7530] 850	[8160] 920	[8790] 995	[9420] 1065
7.5	23	23	22	22	21	21	20	20	19	18	18	17	17	16	15
[4]	[640] 70	[1290] 145	[1960] 220	[2640] 300	[3290] 370	[3940] 445	[4600] 520	[5240] 590	[5880] 665	[6510] 735	[7150] 810	[7790] 880	[8450] 955	[9100] 1030	
15	47	47	46	46	45	45	44	44	43	42	42	41	41	40	
[6]	[650] 75	[1300] 145	[1970] 225	[2660] 300	[3320] 375	[4000] 450	[4680] 530	[5330] 600	[5980] 675	[6630] 750	[7280] 825	[7940] 895			
23	71	71	70	70	69	69	68	67	66	64	64	63			
[8]	[640] 70	[1300] 145	[1980] 225	[2670] 300	[3350] 380	[4030] 455	[4710] 530	[5360] 605	[6020] 680	[6670] 755	[7320] 830				
30	96	96	95	95	94	94	93	92	91	89	88				
[10]	[620] 70	[1280] 145	[1970] 225	[2660] 300	[3340] 375	[4070] 460	[4740] 535	[5390] 610	[6050] 685	[6710] 760	[7370] 835				
38	121	120	120	119	119	118	117	116	115	112	109				
[12]	[600] 70	[1260] 140	[1940] 220	[2630] 295	[3340] 375	[4040] 455	[4730] 535	[5390] 610	[6060] 685	[6720] 760					
45	145	144	144	143	142	142	141	140	139	135					
[14]	[570] 65	[1240] 140	[1920] 215	[2600] 295	[3310] 375	[4000] 450	[4710] 530	[5380] 610	[6060] 685	[6730] 760					
53	169	169	168	168	167	167	165	164	163	159					
[16]	[540] 60	[1230] 140	[1900] 215	[2580] 290	[3280] 370	[3970] 450	[4700] 530	[5380] 610	[6050] 685						
61	193	193	192	192	190	189	188	187	185						
[18]	[490] 55	[1210] 135	[1880] 210	[2550] 290	[3240] 365	[3930] 445	[4680] 530	[5370] 605	[6040] 680						
68	217	217	216	216	214	213	211	209	207						
[20]	[450] 50	[1190] 135	[1860] 210	[2520] 285	[3210] 365	[3900] 440	[4670] 530	[5360] 605	[6030] 680						
76	242	242	242	241	240	238	236	234	232						
[22]	[420] 45	[1130] 130	[1820] 205	[2520] 285	[3180] 360	[3870] 440	[4640] 525	[5320] 600							
83	267	266	266	265	264	262	260	258							
[25]	[340] 40	[1050] 120	[1780] 200	[2510] 285	[3160] 355	[3820] 430	[4590] 520	[5280] 595							
95	303	303	302	301	300	299	296	293							
[30]		[1010] 115	[1700] 190	[2420] 275	[3100] 350	[3720] 420	[4500] 510	[5140] 580							
114		363	362	360	359	358	354	351							
[35]			[1580] 180	[2360] 265	[2950] 335	[3540] 400	[4390] 495								
132			422	420	419	418	413								

395 cm³/r [24.0 in³/r]
 Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[750] 50	[1000] 70	[1250] 85	[1500] 105	[1750] 120	[2000] 140	[2250] 155	[2500] 170	[2750] 190	[3000] 205	[3250] 225	[3500] 240
[.5]	[700] 80	[1340] 150												
1.9	4	2												
[1]	[750] 85	[1430] 160	[2110] 240	[2770] 315	[3460] 390	[4170] 470	[4890] 550	[5610] 635	[6310] 715	[7010] 790	[7700] 870			
3.8	9	9	8	8	8	7	7	7	5	4	2			
[2]	[800] 90	[1500] 170	[2290] 260	[3030] 340	[3850] 435	[4620] 520	[5310] 600	[6000] 680	[6750] 765	[7490] 845	[8240] 930	[8990] 1015	[9730] 1100	[10470] 1185
7.5	18	18	17	16	16	15	15	14	13	13	12	11	10	8
[4]	[860] 95	[1630] 185	[2470] 280	[3310] 375	[4120] 465	[4900] 555	[5640] 635	[6390] 720	[7190] 810	[7890] 890	[8780] 990			
15	38	38	37	36	36	35	35	34	34	33	32			
[6]	[860] 95	[1690] 190	[2540] 285	[3410] 385	[4180] 470	[4980] 565	[5780] 655	[6580] 745	[7400] 835	[8220] 930				
23	57	57	56	55	54	53	52	50	49	47				
[8]	[840] 95	[1680] 190	[2550] 290	[3400] 385	[4260] 480	[5090] 575	[5870] 665	[6650] 750	[7480] 845					
30	76	76	75	74	73	72	70	68	66					
[10]	[800] 90	[1680] 190	[2550] 290	[3400] 385	[4260] 480	[5100] 575	[5920] 670	[6730] 760	[7560] 855					
38	95	95	94	93	92	91	89	86	84					
[12]	[760] 85	[1660] 190	[2520] 285	[3380] 380	[4270] 480	[5110] 575	[5900] 665	[6690] 755						
45	114	114	113	112	111	110	108	105						
[14]	[740] 85	[1640] 185	[2490] 280	[3370] 380	[4260] 480	[5100] 575	[5880] 665	[6650] 750						
53	133	133	132	131	130	129	127	124						
[16]	[710] 80	[1620] 185	[2460] 280	[3350] 380	[4240] 480	[5080] 575	[5840] 660							
61	153	153	152	151	149	147	145							
[18]	[680] 75	[1600] 180	[2430] 275	[3340] 375	[4220] 475	[5060] 570	[5810] 655							
68	172	172	171	170	168	166	164							
[20]	[610] 70	[1580] 180	[2400] 270	[3320] 375	[4210] 475	[5040] 570	[5780] 655							
76	192	191	190	189	187	185	183							
[22]	[570] 65	[1490] 170	[2340] 265	[3220] 365	[4160] 470	[5010] 565	[5740] 650							
83	211	210	209	208	206	204	201							
[25]	[490] 55	[1350] 155	[2250] 255	[3080] 350	[4070] 460	[4960] 560	[5700] 645							
95	239	238	237	236	235	233	230							
[30]		[1080] 120	[1650] 185	[2270] 255	[3020] 340	[3850] 435								
114		285	284	282	281	279								
[35]			[1520] 170	[2120] 240	[2870] 325	[3760] 425								
132			331	330	328	325								
[40]				[2050] 230	[2790] 315	[3620] 410								
151				376	374	371								





[4390] Torque [lb-in]
 495 Nm
 413 Speed RPM

4000 Series

Performance Data

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

Performance data is typical at 120 SUS. Actual data may vary slightly from unit to unit in production.

	Continuous		Peak
	Intermittent		No Operation

625 cm³/r [38.0 in³/r]
 Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[750] 50	[1000] 70	[1250] 85	[1500] 105	[1600] 100	[1700] 115	[1800] 125	[2000] 140
[.5] 1,9	[1000] 115 2									
[1] 3,8	[1080] 120 5	[2340] 265 5	[3600] 405 5	[4850] 550 4	[6100] 690 4	[7350] 830 3	[7820] 885 3	[8290] 935 2	[8760] 990 2	
[2] 7,5	[1085] 125 14	[2380] 270 14	[3675] 415 14	[5010] 565 13	[6350] 715 12	[7625] 860 11	[8115] 915 10	[8605] 970 9	[9095] 1030 8	[10075] 1140 7
[4] 15	[1090] 125 23	[2420] 275 23	[3750] 425 23	[5175] 585 22	[6600] 745 21	[7900] 895 19	[8410] 950 18	[9000] 1015 17	[9590] 1085 16	[10450] 1180 14
[6] 23	[1095] 125 35	[2460] 280 35	[3825] 430 35	[5220] 590 34	[6620] 750 33	[7950] 900 31	[8430] 950 30	[8910] 1005 29	[9490] 1070 28	
[8] 30	[1100] 125 48	[2500] 280 48	[3900] 440 47	[5270] 595 46	[6640] 750 45	[7990] 905 43	[8460] 955 43	[8925] 1010 42		
[10] 38	[1130] 130 60	[2550] 290 60	[3975] 450 59	[5320] 600 58	[6670] 755 57	[8045] 910 54	[8595] 970 53	[9150] 1035 52		
[12] 45	[1160] 130 72	[2600] 295 72	[4050] 460 71	[5375] 605 70	[6700] 755 69	[8100] 915 65	[8660] 980 64			
[14] 53	[1105] 125 84	[2535] 285 84	[3965] 450 83	[5325] 600 82	[6685] 755 81	[8065] 910 77	[8620] 975 76			
[16] 61	[1050] 120 96	[2465] 280 95	[3880] 440 95	[5275] 595 94	[6670] 755 93	[8035] 910 89	[8580] 970 88			
[18] 68	[990] 110 108	[2405] 270 107	[3825] 430 107	[5240] 590 105	[6655] 750 104	[7345] 830 100				
[20] 76	[930] 105 121	[2350] 265 120	[3770] 425 120	[5205] 590 118	[6640] 750 116					
[25] 95	[750] 85 151	[2175] 245 150	[3600] 405 149	[5000] 565 147	[6400] 725 146					
[30] 114	[550] 60 181	[1975] 225 180	[3400] 385 179	[4800] 530 177	[6200] 700 176					
[35] 132			[3125] 355 210	[4545] 515 208						
[40] 151			[2850] 320 241	[4295] 485 239						

495 cm³/r [30.0 in³/r]
 Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[750] 50	[1000] 70	[1250] 85	[1500] 105	[1750] 120	[2000] 140	[2250] 155	[2500] 170
[.5] 1,9	[800] 90 3	[1750] 200 1								
[1] 3,8	[880] 100 7	[1875] 210 6	[2875] 325 6	[3825] 430 5	[4775] 540 4	[5720] 645 3	[6670] 755 2	[7600] 860 1		
[2] 7,5	[905] 100 18	[1940] 220 17	[2975] 335 17	[3990] 450 16	[5010] 565 15	[6010] 680 12	[7010] 790 11	[8000] 905 10	[8980] 1015 8	
[4] 15	[935] 105 30	[2005] 225 29	[3075] 345 28	[4160] 470 27	[5245] 595 26	[6300] 710 23	[7355] 830 21	[8375] 945 19	[9400] 1060 17	[10350] 1170 14
[6] 23	[920] 105 45	[2010] 225 44	[3100] 350 43	[4185] 475 42	[5265] 595 40	[6345] 715 37	[7420] 840 35	[8445] 955 32	[9465] 1070 30	
[8] 30	[905] 100 61	[2015] 230 60	[3125] 355 59	[4205] 475 57	[5290] 600 55	[6385] 720 52	[7485] 845 49	[8510] 960 46		
[10] 38	[880] 100 76	[1995] 225 75	[3095] 350 74	[4205] 475 72	[5295] 600 70	[6390] 720 66	[7480] 845 63	[8525] 960 59		
[12] 45	[860] 95 91	[1975] 225 90	[3095] 350 89	[4200] 475 87	[5305] 600 85	[6390] 720 81	[7475] 845 77			
[14] 53	[830] 95 106	[1945] 220 105	[3055] 345 104	[4165] 470 102	[5275] 595 100	[6360] 720 96	[7445] 840 92			
[16] 61	[805] 90 122	[1910] 215 120	[3020] 340 119	[4130] 465 117	[5245] 595 115	[6330] 715 111	[7420] 840 107			
[18] 68	[740] 85 137	[1860] 210 136	[2980] 335 134	[4105] 465 132	[5235] 590 130	[6305] 715 125	[7380] 835 121			
[20] 76	[680] 75 153	[1810] 205 152	[2940] 330 150	[4085] 460 147	[5225] 590 145	[6285] 710 140				
[25] 95	[570] 65 191	[1665] 190 189	[2800] 315 187	[4005] 455 184	[5210] 590 182	[6135] 695 177				
[30] 114		[1520] 170 228	[2645] 300 226	[3765] 425 223	[4885] 550 220	[5985] 675 215				
[35] 132			[2400] 270 265	[3510] 395 263						
[40] 151			[2155] 245 305	[3260] 370 303						

[2850]
320
241 } Torque [lb-in]
 Nm
 Speed RPM

4000 Series

Dimensions

Standard Mount

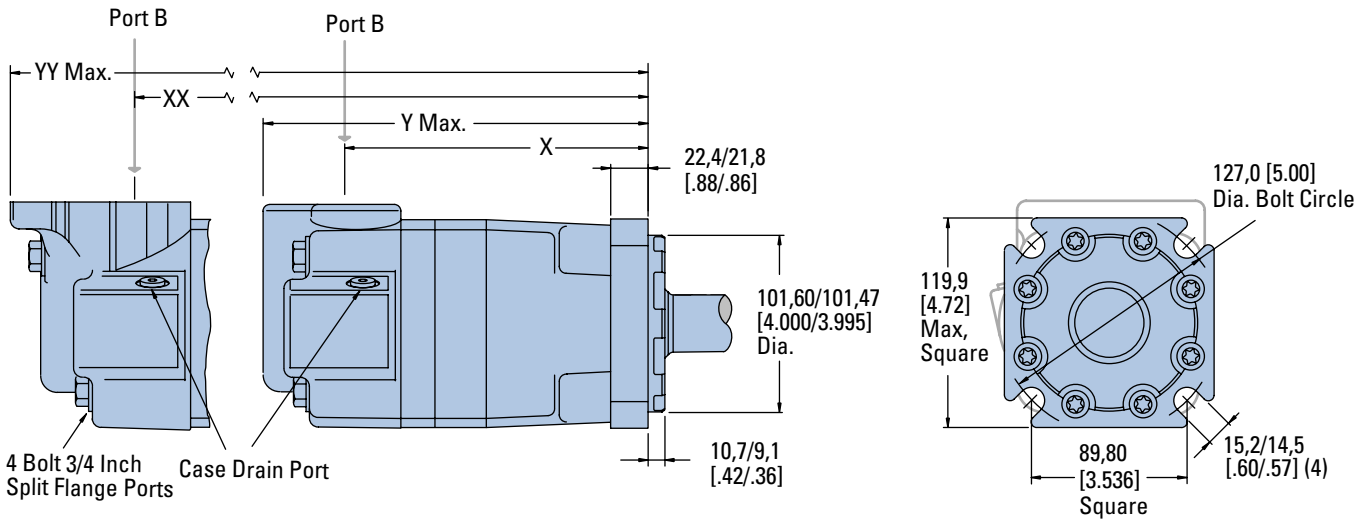
Ports

- 1 1/16 -12 UN-2B SAE O-ring Staggered Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- 4 Bolt 3/4 inch Split Flange Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- G 3/4 (BSP) Staggered Ports (2)
- G 1/4 (BSP) Case Drain Port (1)

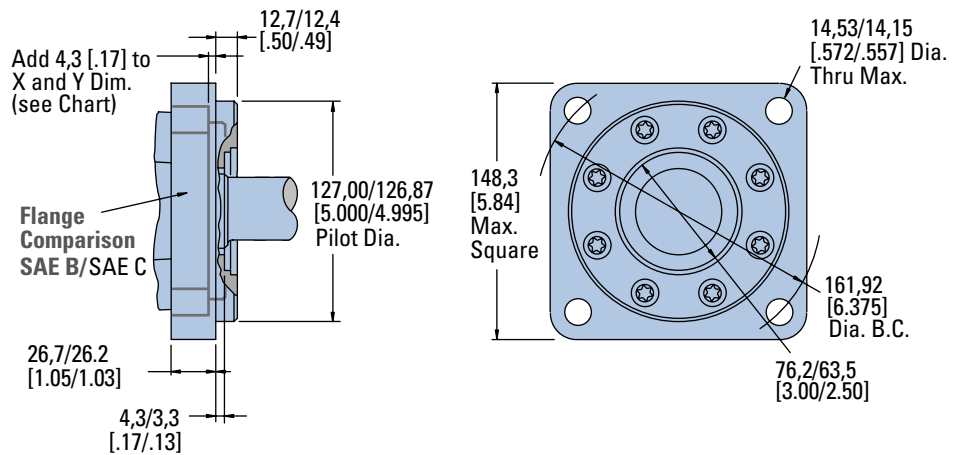
Standard Rotation Viewed from Shaft End

- Port A Pressurized — CW
- Port B Pressurized — CCW

Standard Mount



SAE C Flange



STANDARD MOUNT MOTOR DIMENSIONS

Displacement cm ³ /r [in ³ /r]	X mm [inch]	Y mm [inch]	XX mm [inch]	YY mm [inch]
110 [6.7]	158,3 [6.23]	214,4 [8.44]	167,3 [6.59]	246,3 [9.70]
130 [7.9]	162,3 [6.39]	218,4 [8.60]	171,3 [6.75]	250,4 [9.86]
160 [9.9]	168,7 [6.64]	224,7 [8.85]	177,7 [7.00]	256,7 [10.11]
205 [12.5]	177,2 [6.98]	233,2 [9.18]	186,2 [7.33]	265,2 [10.44]
245 [15.0]	168,7 [6.64]	224,7 [8.85]	177,7 [7.00]	256,7 [10.11]
310 [19.0]	177,2 [6.98]	233,2 [9.18]	186,2 [7.33]	265,2 [10.44]
395 [24.0]	187,9 [7.40]	243,9 [9.60]	196,9 [7.75]	275,9 [10.86]
495 [30.0]	200,7 [7.90]	256,8 [10.11]	209,7 [8.26]	288,8 [11.37]
625 [38.0]	217,8 [8.58]	273,9 [10.78]	226,7 [8.93]	305,9 [12.04]

4000 Series

Dimensions

Wheel Mount

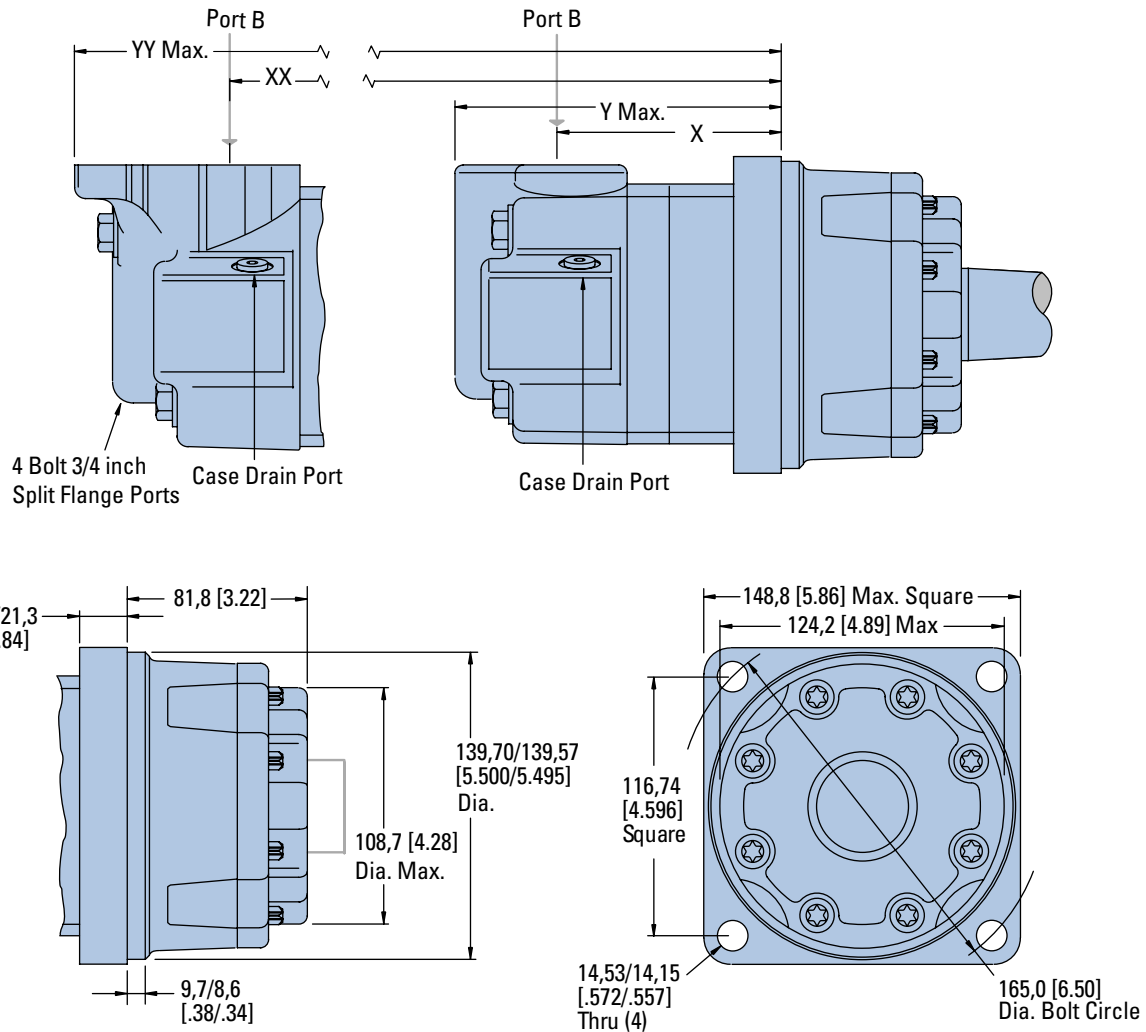
Wheel Mount

Ports

- 1 1/16 -12 UN-2B SAE O-ring Staggered Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- 4 Bolt 3/4 inch Split Flange Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- G 3/4 (BSP) Staggered Ports (2)
- G 1/4 (BSP) Case Drain Port (1)

Standard Rotation Viewed from Shaft End

- Port A Pressurized — CW
- Port B Pressurized — CCW



WHEEL MOUNT MOTOR DIMENSIONS

Displacement cm ³ /r [in ³ /r]	X mm [inch]	Y mm [inch]	XX mm [inch]	YY mm [inch]
110 [6.7]	87,5 [3.45]	143,3 [5.64]	96,4 [3.80]	175,3 [6.90]
130 [7.9]	91,6 [3.61]	147,3 [5.80]	100,5 [3.96]	179,3 [7.06]
160 [9.9]	97,8 [3.85]	153,7 [6.05]	106,8 [4.21]	185,7 [7.31]
205 [12.5]	106,4 [4.19]	162,3 [6.39]	115,4 [4.55]	194,3 [7.65]
245 [15.0]	97,8 [3.85]	153,7 [6.05]	106,8 [4.21]	185,7 [7.31]
310 [19.0]	106,4 [4.19]	162,3 [6.39]	115,4 [4.55]	194,3 [7.65]
395 [24.0]	117,1 [4.61]	173,0 [6.81]	126,1 [4.97]	205,0 [8.07]
495 [30.0]	129,9 [5.12]	185,7 [7.31]	138,8 [5.47]	217,7 [8.57]
625 [38.0]	146,9 [5.79]	202,9 [7.99]	156,0 [6.14]	235,0 [9.25]

4000 Series

Dimensions

Bearingless

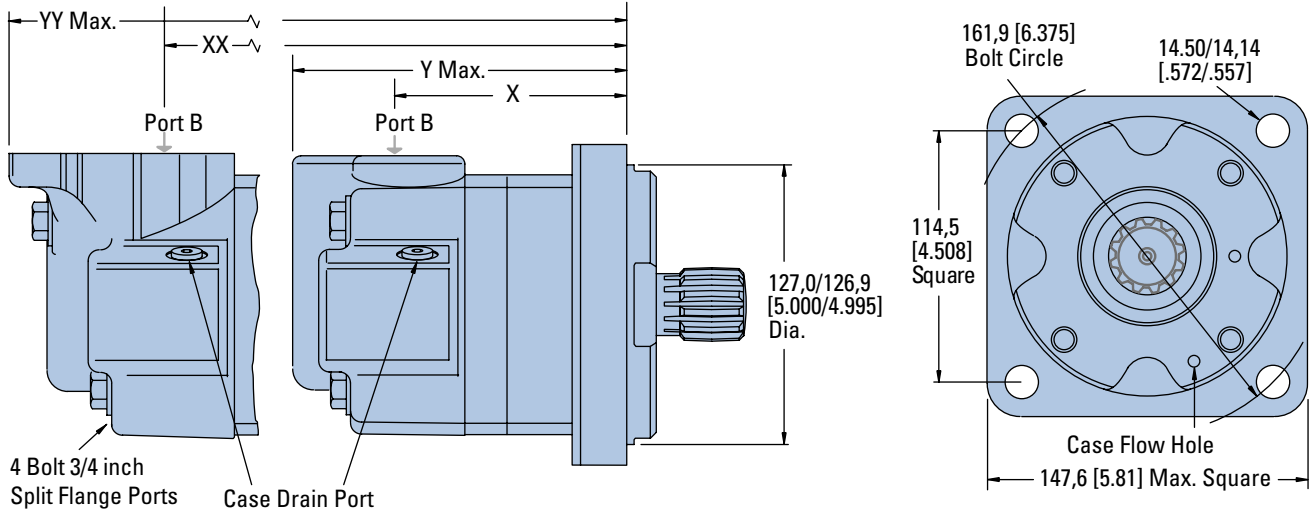
Bearingless

Ports

- 1 1/16 -12 UN-2B SAE O-ring Staggered Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- 4 Bolt 3/4 inch Split Flange Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- G 3/4 (BSP) Staggered Ports (2)
- G 1/4 (BSP) Case Drain Port (1)

Standard Rotation Viewed from Shaft End

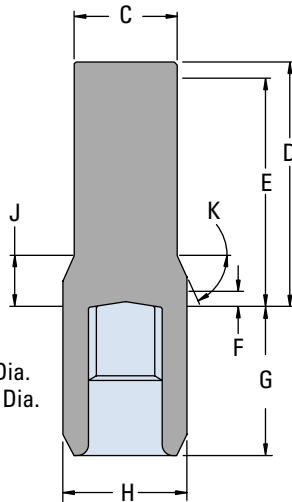
- Port A Pressurized — CW
- Port B Pressurized — CCW



For 4000 Series Bearingless Motor application information contact your Eaton representative (mating coupling blanks available from Eaton Hydraulics).

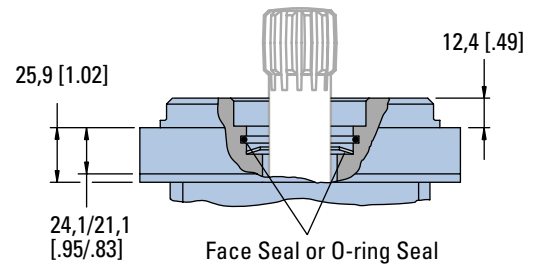
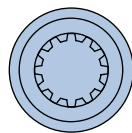
Note:

After machining blank, part must be hardened per Eaton specification.



- C 47,2 [1.86] Dia.
- D 112,5 [4.43] Max.
- E 107,4 [4.23] Full Form Dia.
- F 7,4 [.29] Min. Full Form Dia.
- G 68,8 [2.71] Max.
- H 56,9 [2.24] Dia.
- J 18,29 [.720]
- K 38°

Mating Coupling Blank
Eaton Part No. 12745-003



BEARINGLESS MOTOR DIMENSIONS

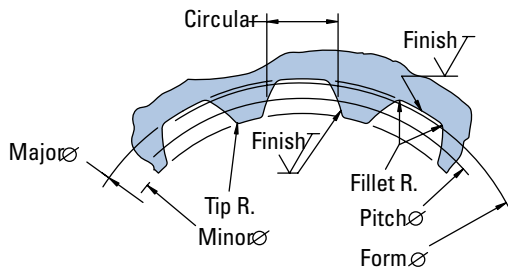
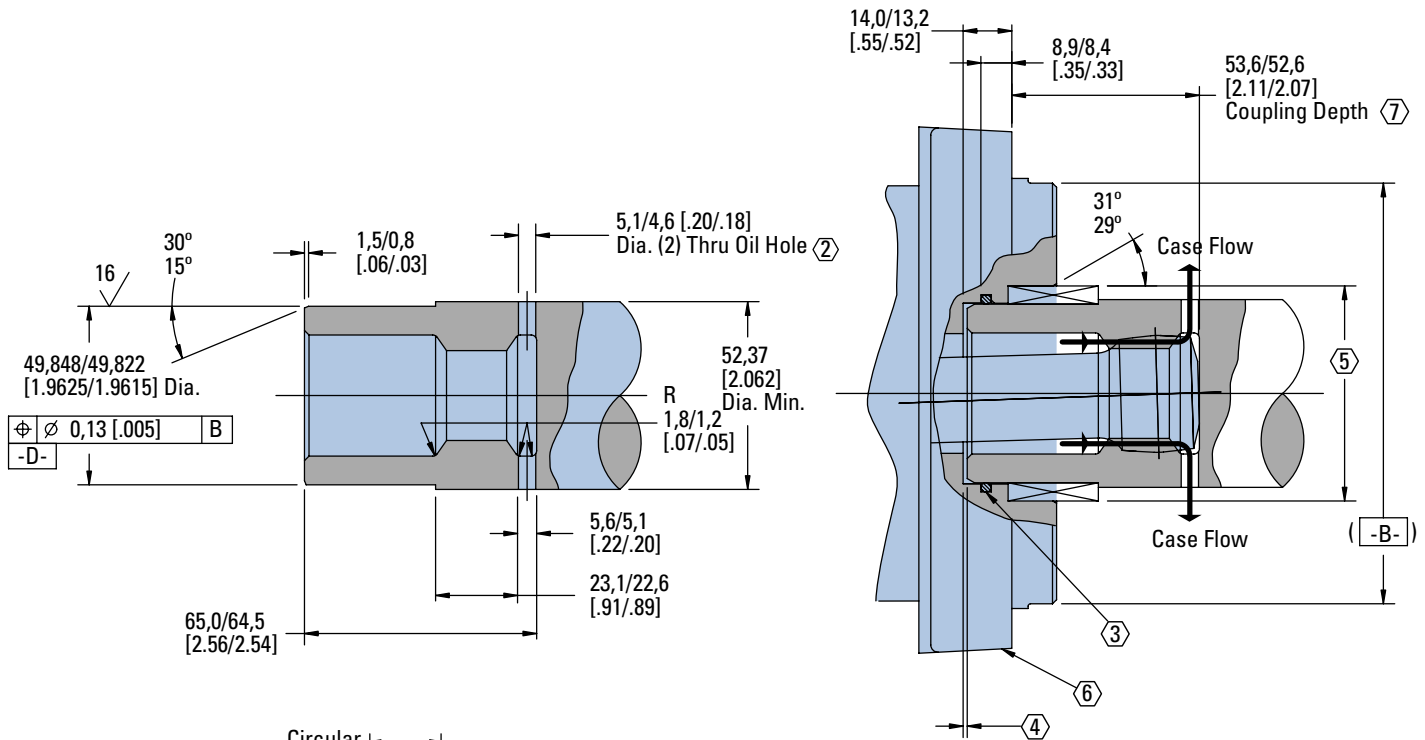
Displacement cm ³ /r [in ³ /r]	X mm [inch]	Y mm [inch]	XX mm [inch]	YY mm [inch]
110 [6.7]	91,0 [3.58]	146,8 [5.78]	100,1 [3.94]	178,8 [7.04]
130 [7.9]	95,0 [3.74]	150,8 [5.94]	104,1 [4.10]	182,9 [7.20]
160 [9.9]	101,4 [4.00]	157,1 [6.19]	110,5 [4.35]	189,2 [7.45]
205 [12.5]	109,9 [4.33]	165,7 [6.52]	118,9 [4.68]	197,6 [7.78]
245 [15.0]	101,4 [4.00]	157,1 [6.19]	110,5 [4.35]	189,2 [7.45]
310 [19.0]	109,9 [4.33]	165,7 [6.52]	118,9 [4.68]	197,6 [7.78]
395 [24.0]	120,6 [4.75]	176,3 [6.94]	129,5 [5.10]	208,3 [8.20]
495 [30.0]	133,5 [5.26]	189,2 [7.45]	142,5 [5.61]	221,2 [8.71]
625 [38.0]	150,5 [5.93]	206,3 [8.12]	159,5 [6.28]	238,3 [9.38]

4000 Series

Installation Information

Bearingless

- 1 Internal spline in mating part to be as follows: Material to be ASTM A304, 8620H. Carbonize to a hardness of 60-64 HRc with case depth (to 50HRc) of 0,076 - 1,27 [.030 - .050] (dimensions apply after heat treat).
- 2 Mating part to have critical dimensions as shown. Oil holes must be provided and open for proper oil circulation.
- 3 Seal to be furnished with motor for proper oil circulation thru splines.
- 4 Some means of maintaining clearance between shaft and mounting flange must be provided.
- 5 Counterbore designed to adapt to a standard sleeve bearing 50,010 - 50,040 [1.9689 - 1.9700] ID by 60,050 - 60,080 [2.3642 - 2.3653] (Oilite bronze sleeve bearing).
- 6 Similar to SAE "C" Four Bolt Flange.
- 7 52,8 [2.08] Max. dimension to be maintained when assembling shipping and installing unit to insure valve drive engagement with valve (this is required on displacement code number 24 only).



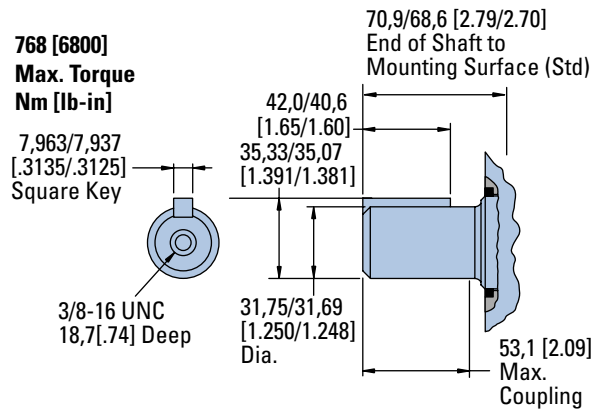
Spline Pitch.....	10/20
Pressure Angle.....	30°
Number of teeth.....	12
Class of Fit.....	Ref. 5
Type of Fit.....	Side
Pitch Diameter.....	Ref. 30,480000 [1.2000000] $\begin{matrix} \nearrow \\ \searrow \end{matrix}$ 0,20 [.008] D
Base Diameter.....	Ref. 26,396455 [1.0392305]
Major Diameter.....	33,43 [1.316] Max. 33,23 [1.308] Min.
Min. Minor Diameter.....	28,40 - 28,58 [1.118 - 1.125]
Form Diameter, Min.....	32,59 [1.283]
Fillet Radius.....	0,63 - 0,76 [.025 - .030]
Tip Radius.....	0,26 - 0,51 [.010 - .020]
Finish.....	1,6 (63)
Involute Profile Variation.....	+0,000 -0,025 [+ .0000 - .0010]
Total Index Variation.....	0,038 [.0015]
Lead Variation.....	0,013 [.0005]
Circular Space Width:	
Maximum Actual.....	5,045 [1.986]
Minimum Effective.....	4,995 [1.951]
Maximum Effective.....	Ref. 5,009 [1.972]
Minimum Actual.....	Ref. 4,986 [1.963]
Dimension Between Two Pins.....	Ref. 22,783 - 22,929 [.8970 - .9027]
Pin Diameter.....	5,334 [.2100] Pins to Have 3,73 [.147]
	Wide Flat for Root Clearance

4000 Series

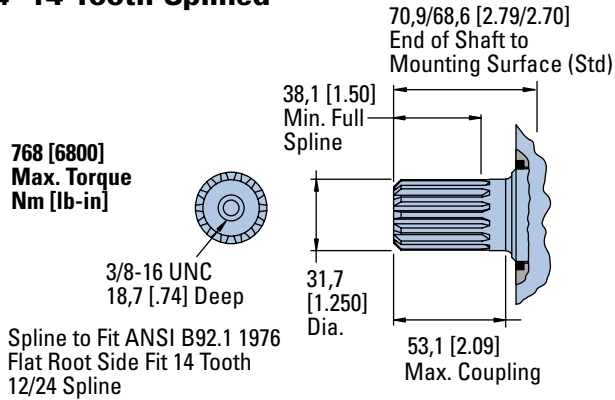
Dimensions

Shafts

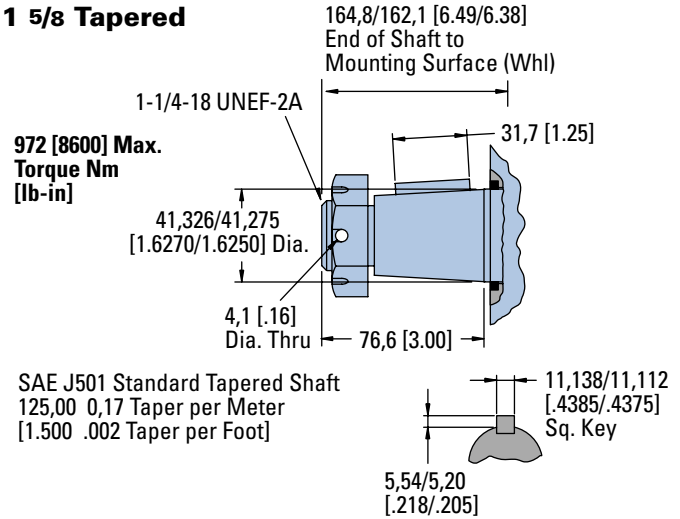
1 1/4 Inch Straight



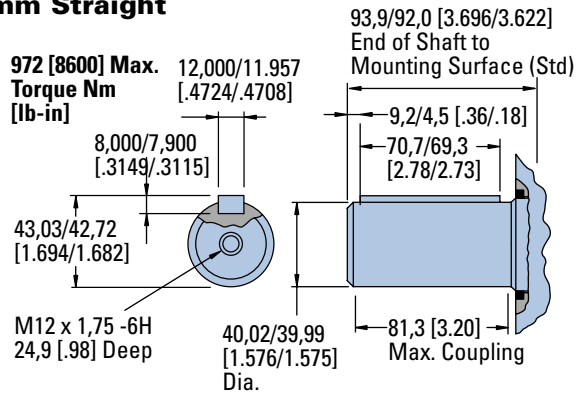
1 1/4 -14 Tooth Splined



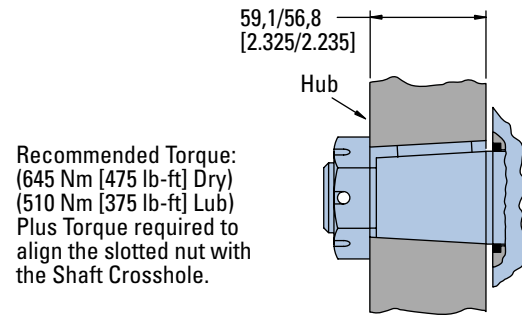
1 5/8 Tapered



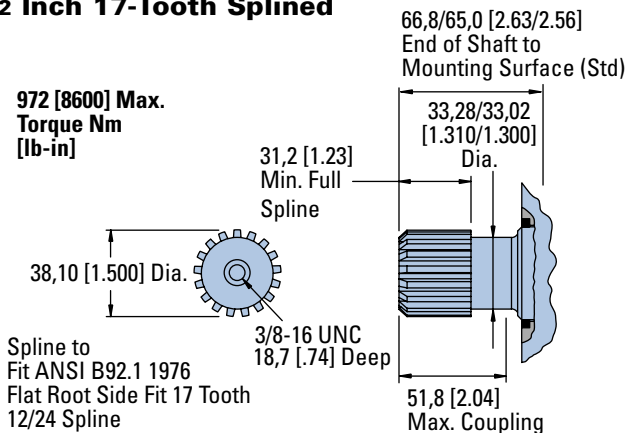
40 mm Straight



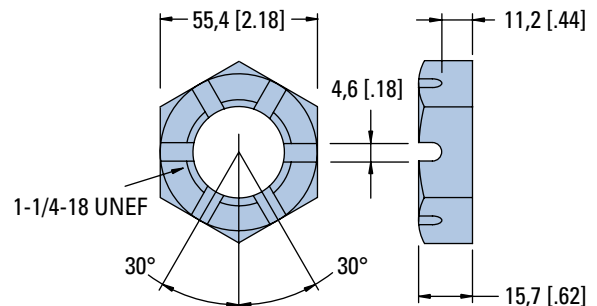
Tapered Shaft Hub Data



1 1/2 Inch 17-Tooth Splined



Slotted Hexagon Nut



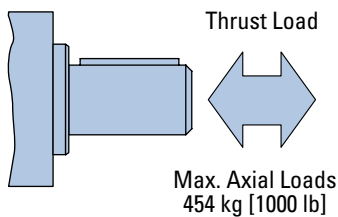
4000 Series

Shaft Side Load Capacity

These curves indicate the radial load capacity on the motor shaft(s) at various locations with an allowable external thrust load of 454 kg [1000 lb].

Note:

Case pressure will increase the allowable Inward thrust load and decrease the allowable outward thrust load. Case pressure will push outward on the shaft at 94 kg/7 Bar [208 lb/100 PSI].



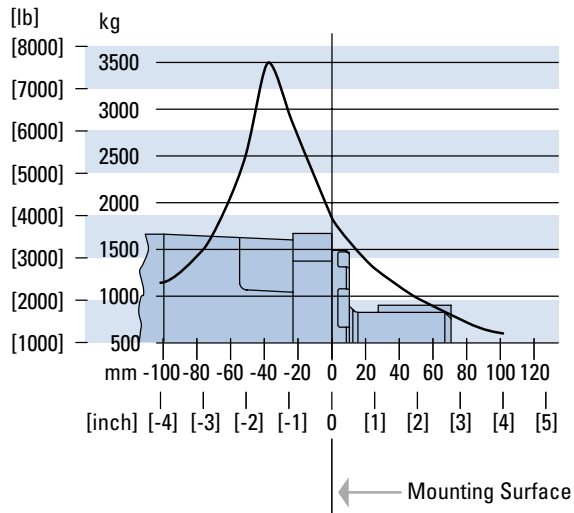
Each curve is based on B 10 bearing life (2000 hours of 12,000,000 shaft revolutions at 100 RPM) at rated output torque.

To determine radial load at speeds other than 100 RPM, multiply the load values given on the bearing curve by the factors in the chart below.

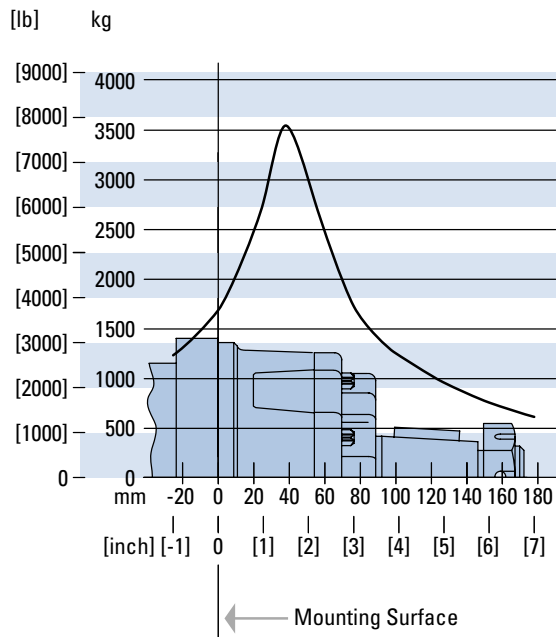
RPM	Multiplication Factor
50	1.23
100	1.00
200	0.81
300	0.72
400	0.66
500	0.62
600	0.58
700	0.56
800	0.54

For 3,000,000 shaft revolutions or 500 hours—Increase these shaft loads 52%.

Standard Motor
Straight and Splined Shafts



Wheel Motor Tapered Shaft



4000 Series

Case Pressure and Case Port

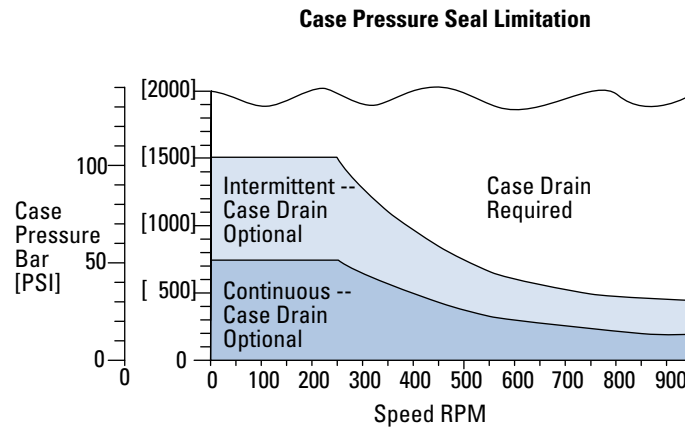
Char-Lynn 4000 Series motors are durable and have long life as long as the recommended case pressure is not exceeded. Allowable case pressure is highest at low shaft speeds. Consequently, motor life will be shortened if case pressure exceeds these ratings (acceptability may vary with application). Determine if an external case drain is required from the case pressure seal limitation chart.

Case Porting Advantage

Contamination Control — flushing the motor case.

Cooler Motor — exiting oil draws motor heat away.

Extend Motor Seal Life — maintain low case pressure with a preset restriction in the case drain line.

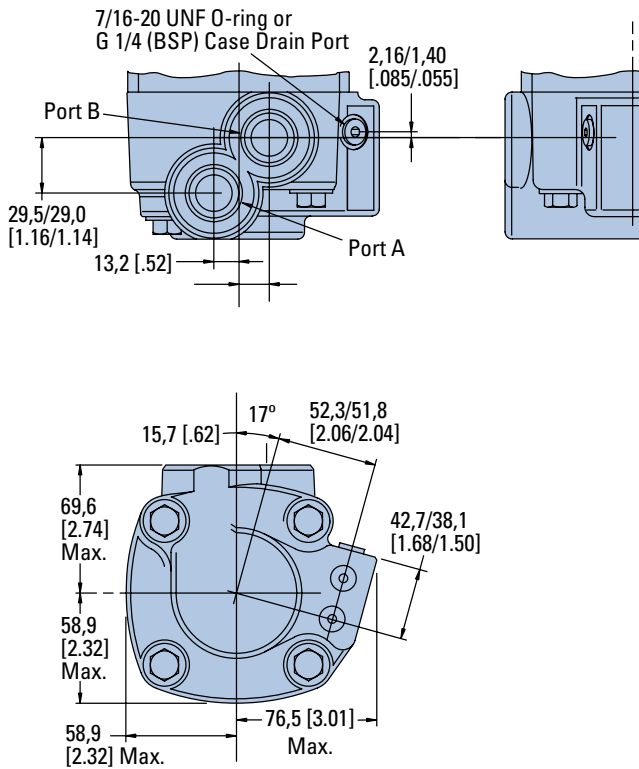


4000 Series

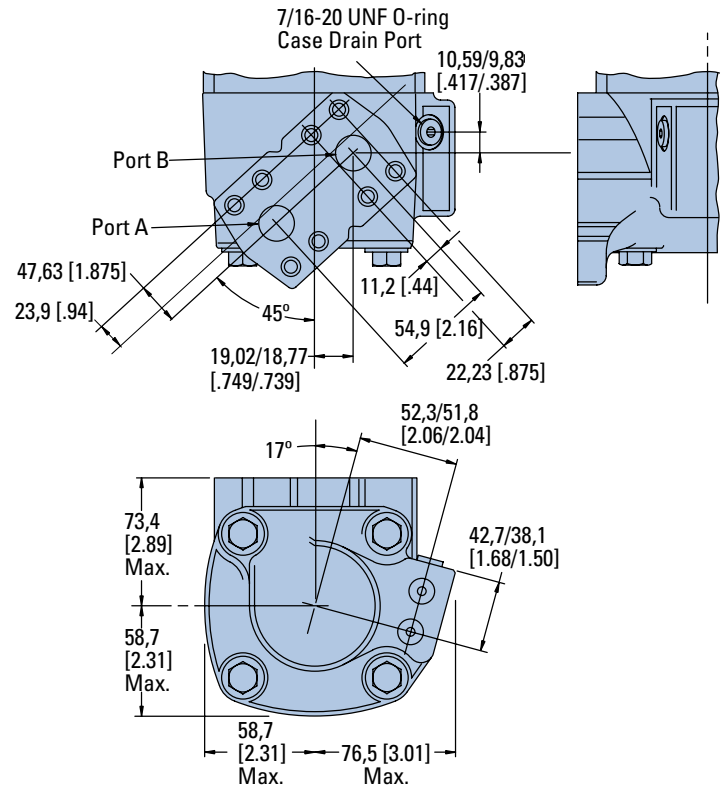
Dimensions

Ports

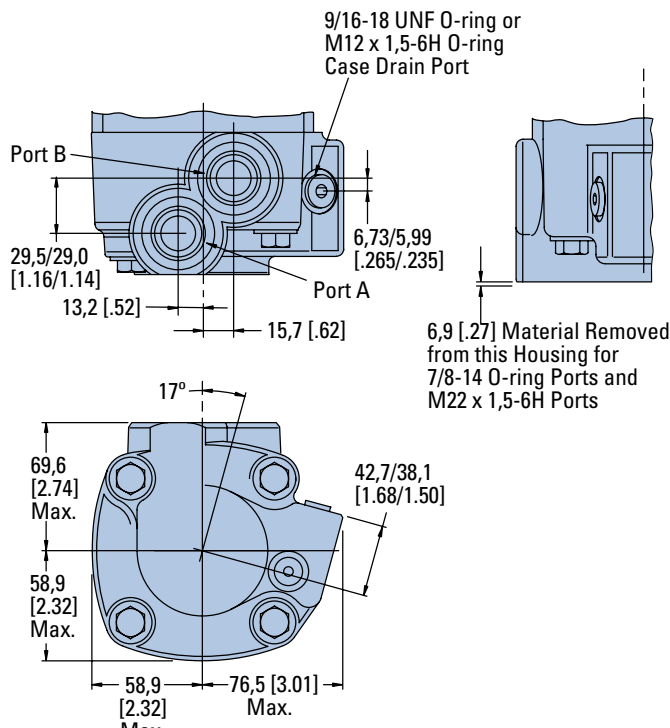
1-1/16-12 O-ring Ports (2) or G 3/4 (BSP) Ports (2)



4 Bolt 3/4 Inch Split Flange Ports to Fit SAE J518 c (2)



7/8-14 O-ring Ports (2) or M22 x 1,5-6H Ports (2)



4000 Series

Product Numbers

Note:

For 4000 Series Motors with a configuration **Not Shown** in the charts below: Use model code number system on the next page to specify product in detail.

Use digit prefix —109-, 110-, or 111- plus four digit number from charts for complete product number— Example 111-1057.

Orders will not be accepted without three digit prefix.

MOUNTING	SHAFT	PORT SIZEDISPL. cm ³ /r [in ³ /r] / PRODUCT NUMBER										
		110 [6.7]	130 [7.9]	160 [9.9]	205 [12.5]	245 [15.0]	280* [17.1]	310 [19.0]	395 [24.0]	495 [30.0]	625 [38.0]	
Standard SAE B-Mount	1 1/4 Inch Straight	1 1/16 O-ring	109-1100	-1101	-1102	-1103	-1104	-1094	-1105	-1106	-1212	-1215
		3/4 inch Split Flange	109-1001	-1054	-1002	-1003	-1055	—	-1056	-1057	—	—
	1 5/8 Inch Tapered	1 1/16 O-ring	109-1107	-1108	-1109	-1110	-1111	—	-1112	-1113	-1479	-1455
		3/4 inch Split Flange	109-1006	-1058	-1007	-1008	-1059	—	-1402	-1061	—	—
	1 1/4 Inch 14 T Splined	1 1/16 O-ring	109-1114	-1115	-1116	-1117	-1118	—	-1119	-1120	—	—
		3/4 inch Split Flange	109-1011	-1062	-1012	-1013	-1063	—	-1064	-1065	—	—
Standard SAE C-Mount	40 mm Straight	G 3/4 (BSP)	109-1184	-1185	-1227	-1224	-1225	—	-1189	-1190	—	—
	1 1/4 Inch 17 T Splined	G 3/4 (BSP)	109-1191	-1192	-1193	-1194	-1195	—	-1196	-1197	—	—
Wheel Motor	1 1/4 Inch Straight	1 1/16 O-ring	110-1074	-1075	-1076	-1077	-1078	—	-1079	-1080	—	-1122
		3/4 inch Split Flange	110-1001	-1040	-1002	-1003	-1041	—	-1042	-1043	—	—
	40 mm Straight	G 3/4 (BSP)	110-1108	-1109	-1110	-1111	-1112	—	-1113	-1125	—	—
	1 5/8 Inch Tapered	1 1/16 O-ring	110-1081	-1082	-1083	-1084	-1085	—	-1086	-1087	1116	-1117
		3/4 inch Split Flange	110-1006	-1044	-1007	-1008	-1045	—	-1046	-1047	—	—
	1 1/4 Inch 14 T Splined	1 1/16 O-ring	110-1088	-1089	-1090	-1091	-1092	—	-1093	-1094	—	—
3/4 inch Split Flange		110-1011	-1048	-1012	-1013	-1049	—	-1050	-1051	—	—	
Bearingless	1 1/4 Inch Straight	1 1/16 O-ring	111-1033	-1034	-1035	-1036	-1037	—	-1038	-1039	-1062	-1063
		3/4 inch Split Flange	111-1044	-1015	-1045	-1046	-1016	—	-1017	-1018	—	—
		G 3/4 (BSP)	111-1052	-1053	-1054	-1055	-1056	—	-1057	-1058	—	—

* New Release

111-1057

4000 Series

Model Code

The following 30-digit coding system has been developed to identify all of the configuration options for the 4000 Series motor. Use this model code to specify a motor with the desired features. All 30 digits of the code must be present when ordering. You may want to photocopy the matrix below to ensure that each number is entered in the correct box.

M	0	4	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

1 Product
M - Motor

2, **3** Series
04 - 4000 Series

4, **5**, **6** Displacement
cm³/r [in³/r]

067 - 109.8 cm³/r [6.70 in³/r]
080 - 130.3 cm³/r [7.95 in³/r]
099 - 162.2 cm³/r [9.90 in³/r]
125 - 205.5 cm³/r [12.54 in³/r]
150 - 246.3 cm³/r [15.03 in³/r]
 171 - 280.1 cm³/r [17.09 in³/r]
190 - 311.8 cm³/r [19.03 in³/r]
 225 - 369.0 cm³/r [22.52 in³/r]
240 - 393.9 cm³/r [24.04 in³/r]
301 - 492.6 cm³/r [30.06 in³/r]
 342 - 560.2 cm³/r [34.18 in³/r]
 381 - 623.9 cm³/r [38.07 in³/r]

7, **8** Mounting Type
AA - Bearingless, 4 Bolt: 127.00 [5.000] Pilot Dia. 14.27 [.562] Dia. Holes on 161.92 [6.375] Dia. Bolt Circle
AB - Standard, 4 Bolt: 101.60 [4.000] Pilot Dia. 14.7 [.58] Slots on 127.00 [5.000] Dia. Bolt Circle. (SAE B)
AC - Wheel, 4 Bolt: 139.70 [5.500] Pilot Dia. 14.27 [.562] Dia. Holes on 165.10 [6.500] Dia. Bolt Circle.

AD - Wheel, 4 Bolt: 127.00 [5.000] Pilot Dia. .500-13 UNC-2B Threaded Holes on 147.62 [5.812] Dia. Bolt circle.

AF - Standard, 4 Bolt: 127.00 [5.000] Pilot Dia. 14.27 [.562] Dia. Holes on 161.92 [6.375] Dia. Bolt Circle. (SAE C)

AH - Standard: ISO Flange 125 B4hw (ISO 3019/2) 124.97 [4.920] Pilot Dia. 14.27 [.562] Dia. Holes on 160.00 [6.299] Dia. Bolt Circle

AP - Wheel, 4 Bolt: 160.0 [6.30] Pilot Dia. with 5.8 [.23] Pilot Length and 18.00 [.709] Dia Holes on 200.00 [7.874] Bolt Circle (ISO Compatible)

9, **10** Output Shaft
00 - None (Bearingless)
01 - 31.75 [1.250] Dia. Straight With .375-16UNC-2B Thread, 53.1 [2.09] Max Coupling Length, 7.938 [.3125] Sq x 41.27 [1.625] Straight Key

02 - 41.28 [1.625] Dia. Tapered with 11.112 [.4375] Sq x 31.75 [1.250] Straight Key, 1.250-18UNEF-2A Thread with Slotted Hex Nut

03 - 31.75 [1.250] Dia. Flat Root Side Fit, 14 Tooth, 12/24 DP 30° Involute Spline, 38.1 [1.50] Minimum Full Spline Length with .375-16UNC-2B Thread

10 - 38.10 [1.500] Dia. Flat Root Side Fit, 17 Tooth, 12/24 DP 30°. Involute Spline, 31.2 [1.23] Minimum Full Spline Length, with .375-16 UNC-2B Thread in End

11 - 40.00 [1.575] Dia. Straight with M12 x 1.75-6H Thread, 7.955 [.3132] x 11.979 [.4716] Wide X 69.98 [2.755] Straight Key

21 - 40.00 [1.575] Dia. 10:1 Tapered Shaft per ISO R775 with .750-16 UNF-2B Threaded in End, 12W x 8H 70L [.472W x .313H x 2.76L] Key

22 - None (Bearingless) European Spline

25 - 42.00 [1.654] Dia. 10:1 Tapered Shaft per ISO R775 with .750-16 UNF-2B Thread in End, 12W x 8H X 63L [.472W X .313H X 2.48L] Key

11, **12** Ports
AA - .875-14 UNF-2B SAE O-Ring Ports - Staggered Ports

AB - 1.0625-12 UN-2B SAE O-Ring Ports - Staggered Ports

AC - G 3/4 Ports - Staggered Ports

AD - 19.05 [.750] 4 Bolt Split Flange Staggered Ports Standard Pressure Series (Code 61)

AE - M22 X 1.5-6H O-Ring Port - Staggered Ports

AG - 12.70 [.500] Dia. Manifold Ports

AJ - Dash 12 Stc Type II+ (Snap to Connect) Ports - Staggered Ports

13, **14** Case Flow Options
00 - None

01 - .5625-18 UNF-2B SAE O-Ring Port with Shuttle

02 - .4375-20 UNF-2B SAE O-ring Port with Check Valve

03 - G 1/4 BSP Straight Thread with Check Valve

06 - .4375-20 UNF-2B SAE O-ring Port with Reverse Flow Shuttle

10 - Dash 6 Stc Type II + (Snap to Connect) Port

15 Low Pressure Relief
0 - None

A - Set at 4.5 Bar [65 lbf/in²]

B - Set at 15.2 Bar [220 lbf/in²]

16, **17** Pressure/Flow Option
00 - None

18 Geroler Option
0 - Standard

19 Seal Option
0 - Standard
 1 - Viton
4 - Seal Guard

20, **21** Accessories
00 - None

AC - M 12 Threaded Connector, Long Body Digital Speed and Direction Pickup (Two 36 Pulse Signals in Quadrature per Revolution Pin 1=Power Supply, Pin 2=Output Signal 1, Pin 3=Common, Pin 4=Output Signal 2)

AD - M 12 Threaded Connector, Digital Speed And Direction Pickup (One 72 Pulse per Rev Speed Signal and One Directional Signal (Pin 1=Power, Pin 2=Direction, Pin 2=Common, Pin 4=Speed))

22, **23** Special Features (Hardware)
00 - None

17 - Low Noise Valve Plate

24, **25** Special Features (Assembly)
00 - None

26, **27** Paint/Packaging
00 - No Paint, Individual Box

AA - Painted Low Gloss Black, Individual Box
AB - Epoxy Coated (Frost Gray), Individual Box

28, **29** Customer Identification
00 - None

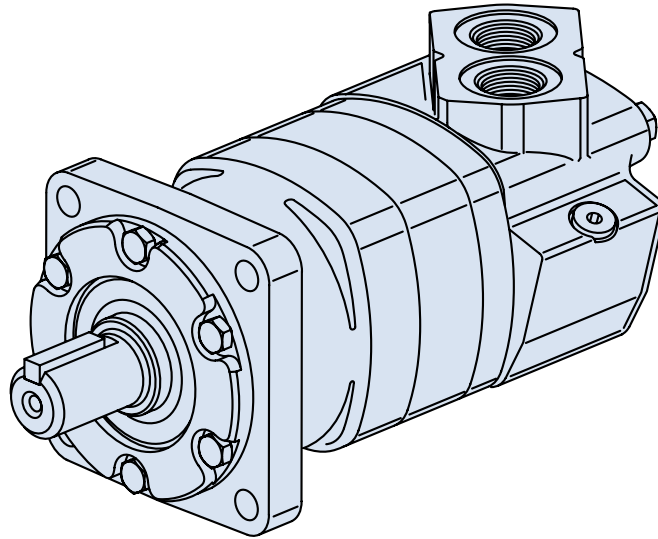
30 Design Code
F - Sixth

Feature in **bold** are preferred and allow for shorter lead time.

Notes

6000 Series

Highlights



Features

- 9 displacements available
- Presents a multitude of options that make this motor very “smart” and flexible to apply

Benefits

- Very tough motor for demanding applications
- Can be used in a multitude of industries
- Very easy/flexible to integrate in a system

Applications

- Mobile equipment
- Snow Removal, mowing
- Spayer, trencher
- Wood products

Description

With torque up to 15,000 in-lb and 40 gpm continuous, this motor is packed with power operates very smoothly.

Specifications

Geroler Element	9 Displacements
Flow l/min [GPM]	150 [40] Continuous** 225 [60] Intermittent*
Speed RPM	775 Cont.** 866 Inter.*
Pressure bar [PSI]	200 [3000] Cont.** 300 [4500] Inter.*
Torque Nm [lb-in]	1685 [14920] Cont.** 1875 [16580] Inter.*

** Continuous — (Cont.) Continuous rating, motor may be run continuously at these ratings.

* Intermittent — (Inter.) Intermittent operation, 10% of every minute.



Mowing



Snow Removal



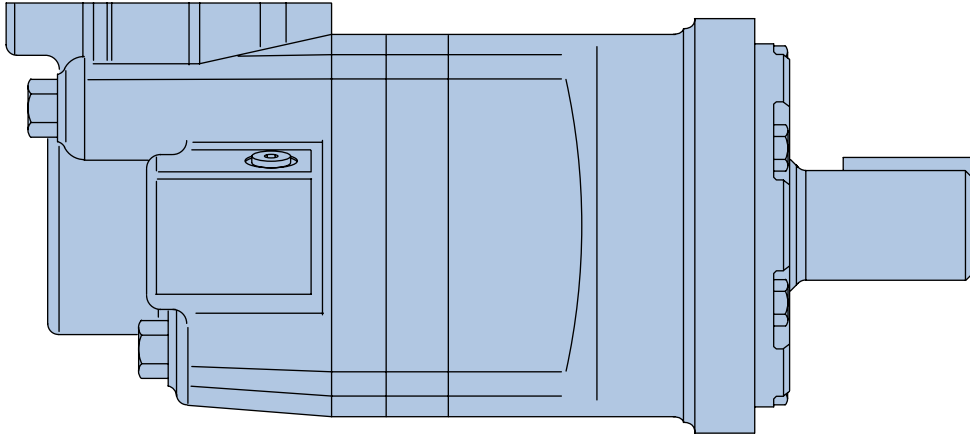
Sprayer



Trencher

6000 Series

Specifications



6000 SERIES MOTORS

Displ. cm ³ /r [in ³ /r]		195 [11.9]	245 [15.0]	310 [19.0]	390 [23.9]	490 [30.0]	625 [38.0]	735 [45.0]	805 [49.0]	985 [60.0]
Max. Speed (RPM)	Continuous	775	615	485	387	307	241	203	187	153
	Intermittent	866	834	698	570	454	355	303	280	230
@ Flow										
Flow l/min [GPM]	Continuous	150 [40]	150 [40]	150 [40]	150 [40]	150 [40]	150 [40]	150 [40]	150 [40]	150 [40]
	Intermittent	170 [45]	210 [55]	225 [60]	225 [60]	225 [60]	225 [60]	225 [60]	225 [60]	225 [60]
Torque* Nm [lb-in]	Continuous	575 [5100]	735 [6510]	930 [8230]	1155 [10230]	1445 [12800]	1480 [13100]	1378 [12192]	1582 [14004]	1685 [14920]
	Intermittent	860 [7620]	1100 [9740]	1355 [11990]	1635 [14490]	1885 [16670]	1898 [16800]	1699 [15040]	1850 [16377]	1875 [16580]
Pressure Δ bar [Δ PSI]	Continuous	205 [3000]	205 [3000]	205 [3000]	205 [3000]	205 [3000]	170 [2500]	140 [2000]	140 [2000]	140 [2000]
	Intermittent	310 [4500]	310 [4500]	310 [4500]	310 [4500]	275 [4000]	221 [3200]	170 [2500]	170 [2500]	140 [2000]
	Peak	310 [4500]	310 [4500]	310 [4500]	310 [4500]	310 [4500]	240 [3500]	205 [3000]	170 [2500]	170 [2250]
Weight kg [lb]	Standard or Wheel Mount	24,9 [55.0]	25,2 [55.5]	25,6 [56.5]	26,3 [58.0]	27,0 [59.5]	27,9 [61.5]	28,6 [63.0]	29 [64.0]	30,4 [67.0]
	Bearingless	20,2 [44.5]	20,4 [45.0]	20,9 [46.0]	21,5 [47.5]	22,2 [49.0]	23,1 [51.0]	28,3 [52.5]	28,8 [53.5]	30,2 [56.5]

Maximum Case Pressure: See case pressure seal limitation graph.

*See shaft torque ratings for limitations..

Note:

To assure best motor life, run motor for approximately one hour at 30% of rated pressure before application to full load. Be sure motor is filled with fluid prior to any load applications.

Maximum Inlet Pressure:

310 bar [4500 PSI]
Do not exceed Δ pressure rating (see chart above).

Maximum Return Pressure:

310 bar [4500 PSI] with case drain line installed.
Do not exceed Δ pressure rating (see chart above).

Δ bar [Δ PSI] :

The true pressure difference between inlet port and outlet port

Continuous Rating:

Motor may be run continuously at these ratings

Intermittent Operation:

10% of every minute

Peak Operation:

1% of every minute

Recommended Fluids:

Premium quality, anti-wear type hydraulic oil with a viscosity of not less than 70 SUS at operating temperature.

Recommended Maximum System Operating Temp.:

82° C [180° F]

Recommended Filtration:





per ISO Cleanliness Code, 4406: 20/18/13

6000 Series

Performance Data

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

Performance data is typical at 120 SUS. Actual data may vary slightly from unit to unit in production.

	Continuous		Peak
	Intermittent		No Operation

195 cm³/r [11.9 in³/r]
 Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[1000] 70	[1500] 105	[2000] 140	[2500] 170	[3000] 205	[3500] 240	[4000] 275	[4500] 310
[.5] 1,9	[280] 30 9	[650] 75 7	[1450] 165 5	[2290] 260 2						
[2] 7,5	[290] 35 38	[680] 75 37	[1500] 170 35	[2340] 265 34	[3100] 350 30	[3880] 440 26	[4140] 470 18			
[4] 15	[300] 35 77	[710] 80 76	[1500] 175 74	[2390] 270 72	[3210] 365 66	[4030] 455 62	[4600] 520 46	[5200] 590 32	[5790] 655 18	
[8] 30	[310] 35 154	[740] 85 153	[1590] 180 148	[2450] 275 144	[3280] 370 131	[4120] 465 119	[4810] 545 116	[5530] 625 99	[6250] 705 83	[6900] 780 65
[12] 45	[320] 35 232	[750] 85 230	[1610] 180 225	[2480] 280 221	[3330] 375 212	[4190] 475 203	[4990] 565 186	[5810] 655 167	[6630] 750 148	[7320] 825 118
[16] 61	[300] 35 309	[730] 80 307	[1600] 180 303	[2470] 280 300	[3340] 375 291	[4210] 475 283	[5090] 575 258	[5900] 665 236	[6710] 760 214	[7470] 845 181
[20] 76	[270] 30 387	[720] 80 384	[1590] 180 379	[2460] 280 374	[3350] 380 365	[4240] 480 356	[5100] 575 332	[5950] 670 306	[6800] 770 280	[7620] 860 247
[24] 91	[240] 25 465	[700] 80 462	[1570] 175 456	[2440] 275 450	[3330] 375 440	[4220] 475 429	[5080] 575 413	[5940] 670 388	[6810] 770 363	
[28] 106	[190] 20 542	[660] 75 539	[1530] 175 532	[2400] 275 526	[3300] 375 514	[4200] 475 502	[5060] 570 476	[5940] 670 448	[6810] 770 421	
[32] 121	[160] 20 620	[630] 70 617	[1500] 170 609	[2370] 270 602	[3270] 370 589	[4160] 470 576	[5040] 570 542	[5920] 670 511	[6790] 765 480	
[36] 136	[120] 15 697	[620] 70 692	[1480] 165 683	[2350] 265 674	[3240] 365 659	[4130] 465 645	[5000] 565 601	[5880] 665 564	[6760] 765 527	
[40] 151	[80] 10 775	[610] 70 770	[1450] 165 759	[2320] 260 749	[3210] 365 733	[4100] 465 718	[4960] 560 666	[5840] 660 624		
[45] 170		[590] 65 866	[1410] 160 854	[2280] 260 843	[3170] 360 825	[4060] 460 808	[4920] 555 749	[5790] 655 702		

245 cm³/r [15.0 in³/r]
 Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[1000] 70	[1500] 105	[2000] 140	[2500] 170	[3000] 205	[3500] 240	[4000] 275	[4500] 310
[.5] 1,9	[430] 50 7	[860] 95 4	[1890] 215 1							
[2] 7,5	[440] 50 30	[900] 100 29	[1940] 220 26	[2990] 340 24	[3960] 445 21	[4920] 555 17	[5040] 570 11	[5930] 670 6		
[4] 15	[460] 50 61	[940] 105 60	[2000] 225 56	[3060] 345 54	[4080] 460 48	[5090] 575 42	[5680] 640 39	[6630] 750 30	[7570] 855 12	[8520] 965 6
[8] 30	[470] 55 122	[960] 110 120	[2060] 235 116	[3150] 355 113	[4210] 475 104	[5260] 595 95	[6180] 700 81	[7100] 800 67	[8020] 905 53	[9020] 1020 37
[12] 45	[480] 55 183	[970] 110 182	[2080] 235 178	[3180] 360 174	[4270] 480 165	[5360] 605 157	[6390] 720 141	[7420] 840 125	[8450] 955 109	[9510] 1075 92
[16] 61	[450] 50 245	[960] 110 244	[2070] 235 240	[3180] 360 236	[4290] 485 228	[5420] 610 221	[6480] 730 202	[7490] 845 184	[8480] 960 165	[9540] 1180 145
[20] 76	[420] 45 307	[940] 105 306	[2050] 230 301	[3160] 355 297	[4290] 485 287	[5440] 615 277	[6510] 735 257	[7580] 855 238	[8660] 980 218	[9740] 1100 197
[24] 91	[380] 45 368	[920] 105 365	[2020] 230 361	[3120] 355 358	[4260] 480 348	[5400] 610 338	[6490] 735 316	[7590] 860 294	[8680] 980 271	
[28] 106	[330] 35 430	[870] 100 426	[1980] 225 421	[3100] 350 416	[4240] 480 404	[5380] 610 376	[6480] 730 358	[7580] 855 340	[8670] 980 322	
[32] 121	[290] 35 491	[800] 90 489	[1920] 215 481	[3050] 345 475	[4170] 470 461	[5290] 600 448	[6410] 725 423	[7520] 850 398	[8640] 975 373	
[36] 136	[250] 30 556	[730] 80 549	[1850] 210 543	[2980] 335 537	[4060] 460 524	[5150] 580 509	[6300] 710 482	[7440] 840 456		
[40] 151	[200] 25 615	[690] 80 612	[1790] 200 606	[2940] 330 599	[4010] 455 585	[5130] 580 570	[6190] 700 540	[7100] 800 510		
[45] 170		[570] 65 688	[1760] 200 682	[2860] 325 674	[3960] 445 658	[5070] 575 641	[6080] 685 608	[6690] 755 574		
[50] 189			[1720] 195 758	[2800] 315 749	[3890] 440 731	[4920] 555 712	[5940] 670 676			
[55] 208			[1670] 190 834	[2740] 310 824	[3820] 430 804	[4890] 550 783	[5880] 665 744			





[5790]
655 } Torque [lb-in]
702 } Nm
Speed RPM

6000 Series

Performance Data

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

Performance data is typical at 120 SUS. Actual data may vary slightly from unit to unit in production.

	Continuous		Peak
	Intermittent		No Operation

310 cm³/r [19.0 in³/r]
Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[1000] 70	[1500] 105	[2000] 140	[2500] 170	[3000] 205	[3500] 240	[4000] 275	[4500] 310
[.5] 1,9	[530] 60 6	[1120] 125 4	[2440] 275 1							
[2] 7,5	[540] 60 24	[1150] 130 23	[2460] 280 22	[3620] 410 20	[4780] 540 17	[5690] 645 14	[6670] 755 10	[7780] 880 4		
[4] 15	[550] 60 48	[1180] 135 47	[2560] 290 45	[3800] 430 42	[5030] 570 38	[6050] 685 32	[7070] 800 24	[8260] 935 17	[9070] 1025 10	[9530] 1075 3
[8] 30	[560] 65 96	[1250] 140 95	[2650] 300 91	[3970] 450 87	[5280] 595 81	[6480] 730 73	[7710] 870 64	[8740] 1045 55	[9770] 1185 46	[10990] 1240 35
[12] 45	[570] 65 144	[1260] 140 143	[2690] 305 140	[4050] 460 135	[5420] 610 129	[6730] 760 121	[8040] 910 111	[9260] 1045 99	[10490] 1185 88	[11800] 1335 76
[16] 61	[540] 60 193	[1230] 140 192	[2660] 300 188	[4060] 460 184	[5450] 615 178	[6800] 770 167	[8150] 920 156	[9400] 1060 141	[10660] 1205 126	[11990] 1355 109
[20] 76	[510] 60 242	[1200] 135 241	[2630] 295 236	[4040] 455 232	[5450] 615 226	[6820] 770 216	[8190] 925 201	[9520] 1075 184	[10840] 1225 167	
[24] 91	[480] 55 290	[1160] 130 289	[260] 295 282	[4020] 455 279	[5440] 615 273	[6840] 775 260	[8230] 930 248	[9560] 1080 232	[10900] 1230 215	
[28] 106	[420] 45 339	[1130] 130 336	[2570] 290 333	[3990] 450 328	[5420] 610 320	[6820] 770 308	[8220] 930 295	[9520] 1075 276	[10840] 1225 257	
[32] 121	[360] 40 388	[1100] 125 384	[2510] 285 381	[3920] 445 375	[5330] 600 368	[6750] 765 354	[8170] 920 341	[9440] 1065 320		
[36] 136	[300] 35 436	[1060] 120 430	[2440] 275 421	[3830] 435 416	[5220] 590 410	[6660] 750 396	[8100] 915 383	[9330] 1055 360		
[40] 151	[270] 30 485	[1020] 115 478	[2400] 270 466	[3780] 425 461	[5150] 580 456	[6580] 745 441	[8020] 905 427	[9220] 1040 403		
[50] 189		[982] 110 597	[2180] 245 582	[3420] 385 576	[4660] 525 570	[6050] 685 551	[7440] 840 534			
[60] 227			[1960] 220 698	[3250] 365 691	[4540] 515 684	[5750] 650 661	[7080] 800 641			

390 cm³/r [23.9 in³/r]
Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[1000] 70	[1500] 105	[2000] 140	[2500] 170	[3000] 205	[3500] 240	[4000] 275	[4500] 310
[1] 3,8	[760] 85 4	[1570] 175 2	[3230] 365 1							
[2] 7,5	[780] 90 19	[1610] 180 18	[3270] 370 17	[4910] 555 16	[6440] 730 14	[7760] 875 12	[9080] 1025 9	[10590] 1195 4		
[4] 15	[800] 90 38	[1640] 185 38	[3300] 375 37	[4970] 560 35	[6570] 740 33	[8160] 920 29	[9570] 1080 22	[11270] 1275 14	[12120] 1370 5	[14490] 1635 1
[8] 30	[810] 90 77	[1650] 185 76	[3370] 380 74	[5080] 575 72	[6740] 760 68	[8430] 950 65	[10050] 1135 55	[11620] 1315 45	[12880] 1455 33	[14480] 1635 21
[12] 45	[800] 90 115	[1620] 185 115	[3390] 385 112	[5130] 580 109	[6810] 770 105	[8520] 965 100	[10190] 1150 91	[11860] 1340 81	[13640] 1540 79	
[16] 61	[750] 85 154	[1600] 180 154	[3380] 380 151	[5120] 580 147	[6820] 770 143	[8560] 965 132	[10230] 1155 126	[11920] 1345 116		
[20] 76	[680] 75 193	[1580] 180 193	[3360] 380 189	[5120] 580 187	[6840] 775 182	[8590] 970 175	[10280] 1160 162	[11980] 1355 152		
[24] 91	[620] 70 232	[1520] 170 230	[3280] 370 229	[5060] 570 225	[6780] 765 220	[8530] 965 212	[10240] 1155 204			
[28] 106	[570] 65 270	[1460] 165 268	[3210] 365 266	[5000] 565 261	[6730] 760 256	[8480] 960 248	[10200] 1150 236			
[32] 121	[530] 60 309	[1420] 160 306	[3140] 355 304	[4930] 555 299	[6640] 750 292	[8380] 945 282	[10120] 1145 269			
[36] 136	[450] 50 348	[1370] 155 346	[3010] 340 340	[4840] 545 336	[6500] 730 329	[8250] 930 317	[10000] 1130 301			
[40] 151	[380] 45 387	[1320] 150 386	[2880] 325 380	[4740] 535 375	[6460] 730 368	[8120] 915 359				
[50] 189		[1140] 130 482	[2650] 300 475	[4540] 515 469	[6440] 730 460	[8050] 910 449				
[60] 227			[2460] 280 570	[4430] 500 562	[6360] 720 552	[7860] 890 538				

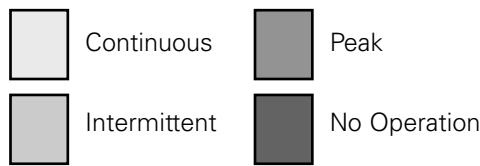
[5750]
650
661 } Torque [lb-in]
Nm
Speed RPM

6000 Series

Performance Data

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

Performance data is typical at 120 SUS. Actual data may vary slightly from unit to unit in production.



490 cm³/r [30.0 in³/r]
 Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[1000] 70	[1500] 105	[2000] 140	[2500] 170	[3000] 205	[3500] 240	[4000] 275
[1] 3,8	[1010] 115 7	[1200] 235 7	[4260] 480 5	[6140] 695 3					
[2] 7,5	[1020] 115 15	[2110] 240 14	[4270] 480 13	[6280] 710 12	[8350] 945 11	[10420] 1175 8	[12140] 1370 3		
[4] 15	[1030] 115 30	[2100] 235 30	[4280] 485 29	[6410] 725 28	[8500] 960 27	[10590] 1195 25	[12500] 1410 21	[14580] 1645 17	[16670] 1885 12
[8] 30	[1020] 115 60	[2090] 235 60	[4290] 485 59	[6490] 735 57	[8620] 975 54	[10740] 1215 51	[12800] 1445 45	[14930] 1685 38	
[12] 45	[1000] 115 91	[2080] 235 91	[4290] 485 89	[6500] 735 87	[8650] 975 84	[10800] 1220 79	[12890] 1455 71		
[16] 61	[110] 960 122	[2060] 235 122	[4260] 480 121	[6480] 730 118	[8650] 975 114	[10820] 1220 109	[12900] 1460 100		
[20] 76	[900] 100 153	[1980] 225 152	[4180] 470 150	[6420] 725 147	[8620] 975 144	[10820] 1220 139			
[24] 91	[850] 95 184	[1930] 220 184	[4150] 470 181	[6390] 720 180	[8580] 970 176	[10770] 1215 171			
[28] 106	[740] 85 215	[1840] 210 214	[4070] 460 211	[6290] 710 208	[8500] 960 204	[10720] 1210 198			
[32] 121	[690] 80 245	[1710] 195 244	[3970] 450 241	[6190] 700 237	[8420] 950 232	[10660] 1205 226			
[36] 136	[670] 75 276	[1560] 175 275	[3860] 435 272	[6080] 685 265	[8340] 940 260	[10420] 1175 255			
[40] 151	[570] 65 307	[1400] 160 306	[3750] 425 303	[5970] 675 295	[8140] 920 290	[10180] 1150 284			
[50] 189		[1140] 130 382	[3240] 365 379	[5220] 590 369	[7620] 860 362				
[60] 227			[2860] 325 454	[4860] 550 442	[7140] 805 435				

Flow LPM [GPM]

625 cm³/r [38.0 in³/r]
 Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[1000] 70	[1500] 105	[2000] 140	[2500] 170	[3000] 205	[3200] 221
[1] 3,8	[1060] 120 5	[2205] 250 5	[4515] 510 4	[6690] 755 2				
[2] 7,5	[1090] 125 12	[2300] 260 12	[4720] 535 13	[7025] 795 10	[9360] 1060 6			
[4] 15	[1145] 130 24	[2450] 275 24	[5052] 570 24	[7520] 850 21	[9410] 1065 16	[12700] 1434 13		
[8] 30	[1195] 135 45	[2600] 295 45	[5350] 605 44	[8195] 925 42	[11220] 1270 37	[13100] 1480 35	[15800] 1785 32	[16800] 1898 30
[12] 45	[1200] 135 72	[2600] 295 72	[5390] 610 71	[8145] 920 68	[11770] 1330 64	[13000] 1469 60	[15700] 1774 56	
[16] 61	[1120] 125 94	[2530] 285 94	[5340] 605 92	[8105] 915 89	[11740] 1325 85	[13000] 1469 83		
[20] 76	[1050] 120 120	[2465] 280 119	[5285] 595 117	[8080] 915 115	[11725] 1325 110			
[24] 91	[950] 105 144	[2365] 265 143	[5180] 585 140	[7990] 905 138	[11705] 1320 132			
[28] 106	[855] 95 169	[2255] 255 168	[5080] 575 165	[7915] 895 162	[11640] 1315 156			
[32] 121	[730] 80 193	[2140] 240 192	[4960] 560 188	[7775] 880 185	[11505] 1300 179			
[36] 136	[555] 65 217	[1965] 220 216	[4780] 540 213	[7585] 855 210				
[40] 151	[380] 45 241	[1790] 200 240	[4600] 520 238	[7395] 835 236				
[50] 189			[4180] 470 296	[6985] 790 290				
[60] 227			[3800] 430 353	[6600] 745 345				

Flow LPM [GPM]

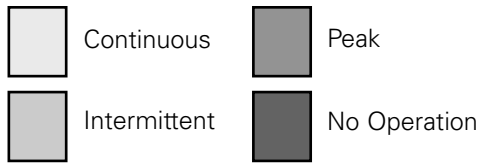


6000 Series

Performance Data

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

Performance data is typical at 120 SUS. Actual data may vary slightly from unit to unit in production.

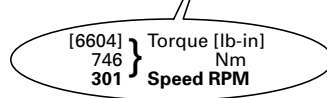


735 cm³/r [45.0 in³/r]
 Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[750] 50	[1000] 70	[1250] 85	[1500] 105	[1750] 120	[2000] 140	[2250] 155	[2500] 170
[1] 3,8	[1311] 148 4	[2775] 314 4	[4200] 475 3	[5480] 619 3	[7000] 791 2					
[2] 7,5	[1340] 151 10	[2856] 323 10	[4535] 512 10	[5809] 656 10	[7551] 853 9	[8685] 981 7	[10182] 1150 6	[11211] 1257 5		
[4] 15	[1253] 142 20	[2854] 322 20	[4363] 493 19	[5813] 657 18	[7272] 822 17	[8714] 985 16	[10135] 1145 14	[11537] 1303 13	[12970] 1465 11	[15040] 1699 11
[8] 30	[1290] 146 40	[2889] 326 39	[4540] 513 38	[6130] 693 38	[7703] 870 37	[9202] 1040 37	[10666] 1205 35	[12192] 1378 33	[13713] 1549 32	
[12] 45	[1277] 144 61	[2821] 319 60	[4528] 512 59	[6180] 698 58	[7795] 881 57	[9338] 1055 56	[10877] 1229 54	[12419] 1403 52		
[16] 61	[1196] 135 82	[2753] 311 80	[4478] 506 79	[6148] 695 78	[7768] 878 77	[9376] 1059 76	[10984] 1241 74			
[20] 76	[1092] 123 102	[2794] 316 101	[4320] 488 101	[6021] 680 99	[7697] 870 97	[9311] 1052 96	[10907] 1232 93			
[24] 91	[1206] 136 123	[2556] 289 122	[4162] 470 120	[5871] 663 119	[7564] 855 118	[9289] 1049 116				
[28] 106	[1083] 122 145	[2338] 264 142	[4040] 456 141	[5666] 640 139	[7365] 832 137	[9022] 1019 135				
[32] 121	[950] 107 163	[2110] 238 162	[3795] 429 162	[5457] 617 159	[7122] 805 159	[8828] 997 156				
[36] 136	[726] 82 184	[1845] 208 183	[3517] 397 182	[5223] 590 181	[6853] 774 179					
[40] 151	[515] 58 203	[2227] 252 202	[3270] 369 202	[4965] 561 201	[6672] 754 199					
[50] 189			[3869] 437 254	[4148] 469 252	[5850] 661 250					
[60] 227				[4856] 549 303	[6604] 746 301					

805 cm³/r [49.0 in³/r]
 Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[750] 50	[1000] 70	[1250] 85	[1500] 105	[1750] 120	[2000] 140	[2250] 155	[2500] 170
[1] 3,8	[1455] 164 4	[3100] 350 4	[4680] 529 2	[6031] 681 2	[7799] 881 1					
[2] 7,5	[1483] 168 9	[3173] 359 9	[5121] 579 9	[6432] 727 8	[8510] 961 7	[9633] 1088 6	[11319] 1279 5	[12127] 1370 5		
[4] 15	[1547] 175 19	[3331] 376 19	[5292] 598 18	[6744] 762 17	[8714] 984 16	[10075] 1138 15	[11352] 1283 14	[12539] 1417 12	[14564] 1645 11	[16377] 1850 10
[8] 30	[1599] 181 35	[3473] 392 35	[5415] 612 34	[7039] 795 33	[8934] 1009 32	[10629] 1201 31	[11842] 1338 29	[14004] 1582 29	[15441] 1745 28	
[12] 45	[1599] 181 56	[3469] 392 56	[5415] 612 55	[7093] 801 53	[9024] 1020 53	[10658] 1204 52	[12283] 1388 50	[13726] 1551 50		
[16] 61	[1543] 174 73	[3395] 384 73	[5357] 605 72	[7032] 794 70	[8983] 1015 69	[10640] 1202 68	[12010] 1357 67			
[20] 76	[1457] 165 93	[3312] 374 92	[5292] 598 91	[6968] 787 89	[8943] 1010 88	[10583] 1196 87	[12146] 1372 86			
[24] 91	[1352] 153 112	[3183] 360 112	[5088] 575 111	[6811] 769 110	[8812] 996 108	[10411] 1176 106				
[28] 106	[1213] 137 131	[3055] 345 131	[5047] 570 131	[6713] 758 129	[8681] 981 128	[10411] 1176 127				
[32] 121	[1075] 121 150	[2907] 328 149	[4884] 552 149	[6546] 740 146	[8395] 949 145	[10060] 1137 144				
[36] 136	[823] 93 168	[2692] 304 168	[4663] 527 168	[6320] 714 167	[8118] 917 165					
[40] 151	[592] 67 187	[2477] 280 186	[4426] 500 186	[6085] 688 185	[7832] 885 184					
[50] 189		[2730] 308 234	[4214] 476 233	[5849] 661 231	[7603] 859 230					
[60] 227			[3806] 430 280	[5459] 617 277	[7407] 837 275					







6000 Series

Performance Data

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

Performance data is typical at 120 SUS. Actual data may vary slightly from unit to unit in production.

	Continuous		Peak
	Intermittent		No Operation

985 cm³/r [60.0 in³/r]
D Pressure Bar [PSI]

	[250] 15	[500] 35	[750] 50	[1000] 70	[1250] 85	[1500] 105	[1750] 120	[2000] 140
[1] 3,8	[1890] 215 3	[4110] 465 3	[5730] 645 2	[7640] 865 2	[9550] 1080 1			
[2] 7,5	[1910] 215 8	[4140] 470 8	[6270] 710 7	[8300] 940 7	[10420] 1175 6	[12500] 1410 5	[13860] 1565 4	[14920] 1685 3
[4] 15	[1980] 225 15	[4290] 485 15	[6480] 775 15	[8540] 965 14	[10670] 1205 14	[12800] 1445 13	[13900] 1570 13	[15850] 1790 12
[8] 30	[2030] 230 30	[4400] 495 30	[6630] 750 30	[8790] 995 29	[10940] 1235 28	[13090] 1480 27	[14500] 1640 26	[16580] 1875 25
[12] 45	[2020] 230 45	[4390] 495 45	[6630] 750 45	[8860] 1000 44	[11050] 1250 43	[13240] 1495 42	[15040] 1700 41	
[16] 61	[2010] 225 61	[4320] 490 61	[6560] 740 61	[8790] 995 60	[11000] 1245 59	[13260] 1500 58		
[20] 76	[1910] 215 77	[4220] 475 77	[6480] 730 76	[8720] 985 76	[10950] 1235 75	[13160] 1485 74		
[24] 91	[1810] 205 92	[4060] 460 92	[6230] 705 92	[8500] 960 91	[10790] 1220 90	[12990] 1470 89		
[28] 106	[1620] 185 107	[3920] 445 107	[6180] 700 107	[8420] 950 106	[10630] 1200 105	[12820] 1450 103		
[32] 121	[1480] 165 123	[3740] 425 123	[5980] 675 122	[8200] 925 121	[10280] 1160 120			
[36] 136	[1140] 130 138	[3490] 395 138	[5710] 645 138	[7930] 895 137	[9940] 1125 135			
[40] 151	[850] 95 153	[3240] 365 153	[5420] 610 152	[7640] 865 151	[9590] 1085 150			
[50] 189		[2960] 325 191	[5160] 585 190	[7350] 830 189	[9310] 1050 188			
[60] 227			[4660] 525 230	[7160] 810 229	[9070] 1025 226			

[7160]
810
229 } Torque [lb-in]
Nm
Speed RPM

6000 Series

Dimensions

Standard Mount

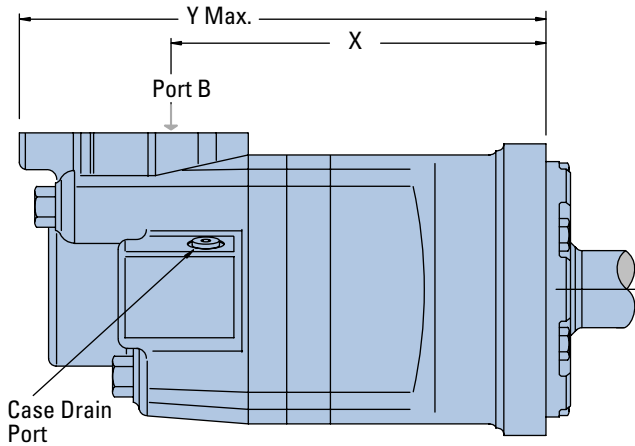
Ports

- 1 5/16 -12 UN-2B SAE O-ring Staggered Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- 4 Bolt 3/4 inch Split Flange Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- G 1 (BSP) Staggered Ports (2)
- G 1/4 (BSP) Case Drain Port (1) or
- 1 5/16 UN-2B SAE O-ring Staggered Ports (2) with Shuttle
- 9/16 -20 UNF-2B SAE O-ring Case Drain Port (1)

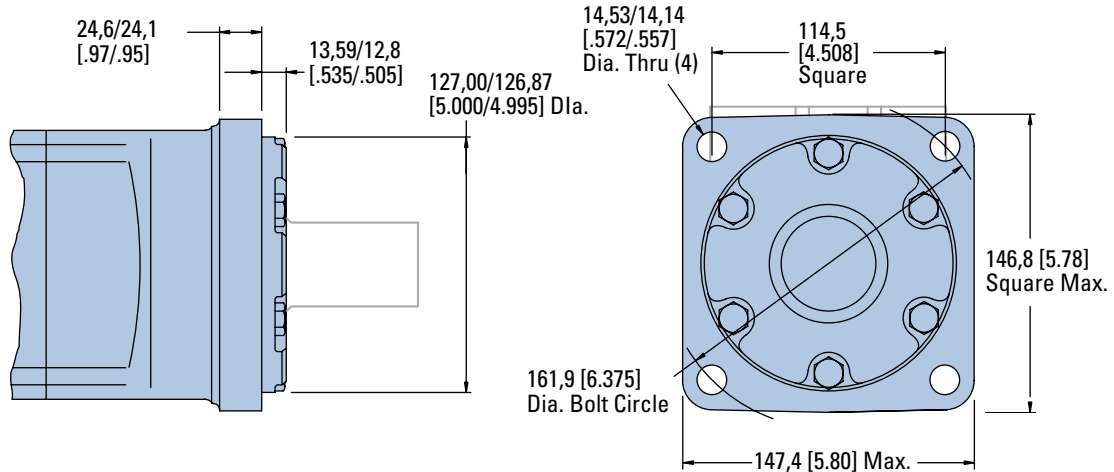
Standard Rotation Viewed from Shaft End

- Port A Pressurized — CW
- Port B Pressurized — CCW

Standard Mount



Standard SAE CC Flange



STANDARD MOTOR MOUNT DIMENSIONS

Displacement cm ³ /r [in ³ /r]	X mm [inch]	Y mm [inch]
195 [11.9]	187,5 [7.38]	270,0 [10.63]
245 [15.0]	193,0 [7.60]	275,6 [10.85]
310 [19.0]	200,4 [7.89]	283,0 [11.14]
390 [23.9]	209,0 [8.23]	291,6 [11.48]
490 [30.0]	220,2 [8.67]	302,8 [11.92]
625 [38.0]	235,0 [9.25]	317,5 [12.50]
985 [60.0]	274,6 [10.81]	357,1 [14.06]

6000 Series

Dimensions

Wheel Mount

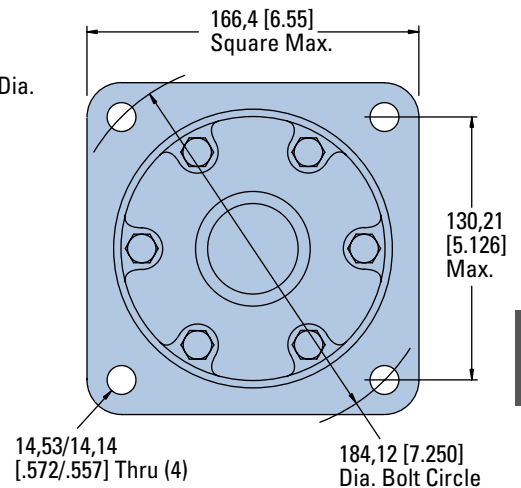
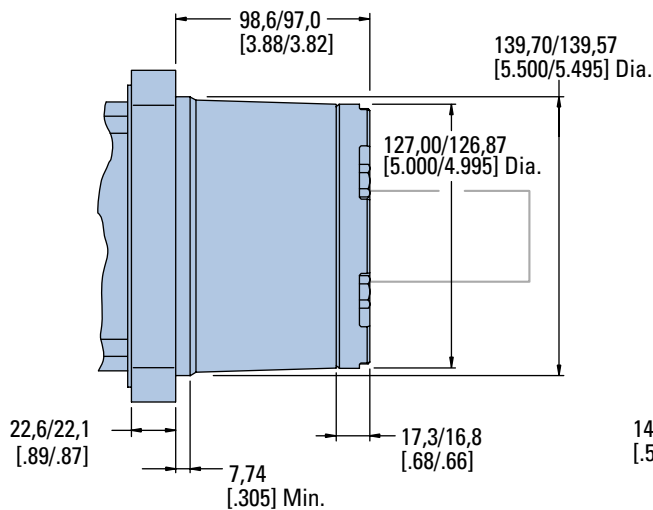
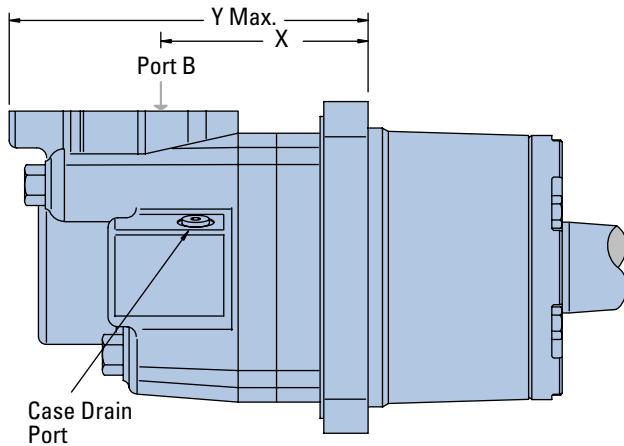
Ports

- 1 5/16 -12 UN-2B SAE O-ring Staggered Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- 4 Bolt 3/4 inch Split Flange Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- G 1 (BSP) Staggered Ports (2)
- G 1/4 (BSP) Case Drain Port (1) or
- 1 5/16 UN-2B SAE O-ring Staggered Ports (2) with Shuttle
- 9/16 -20 UNF-2B SAE O-ring Case Drain Port (1)

Standard Rotation Viewed from Shaft End

- Port A Pressurized — CW
- Port B Pressurized — CCW

Wheel Mount



WHEEL MOUNT MOTOR DIMENSIONS

Displacement cm ³ /r [in ³ /r]	X mm [inch]	Y mm [inch]
195 [11.9]	102,6 [4.04]	185,2 [7.29]
245 [15.0]	108,2 [4.26]	190,8 [7.51]
310 [19.0]	115,6 [4.55]	198,1 [7.80]
390 [23.9]	124,5 [4.90]	207,1 [8.15]
490 [30.0]	135,4 [5.33]	217,9 [8.58]
625 [38.0]	150,1 [5.91]	232,7 [9.16]
985 [60.0]	189,7 [7.47]	272,5 [10.73]

6000 Series

Dimensions

Global Mount (ISO)

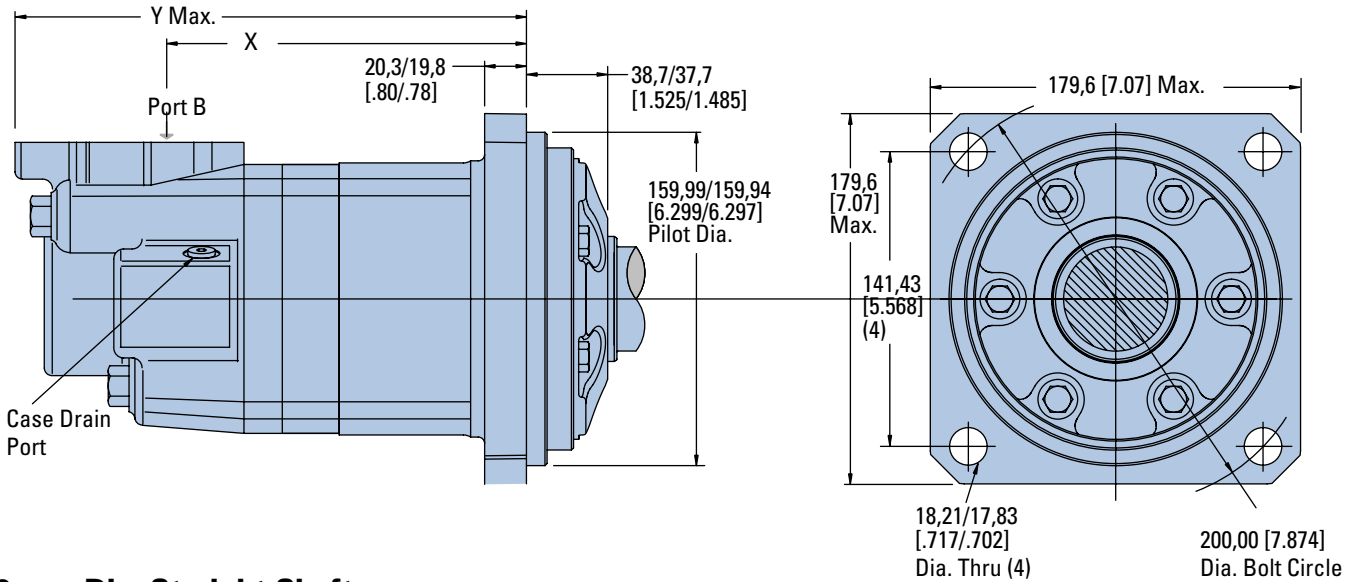
Ports

- 1 5/16 -12 UN-2B SAE O-ring Staggered Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- 4 Bolt 3/4 inch Split Flange Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- G 1 (BSP) Staggered Ports (2)
- G 1/4 (BSP) Case Drain Port (1) or
- 1 5/16 UN-2B SAE O-ring Staggered Ports (2) with Shuttle
- 9/16 -20 UNF-2B SAE O-ring Case Drain Port (1)

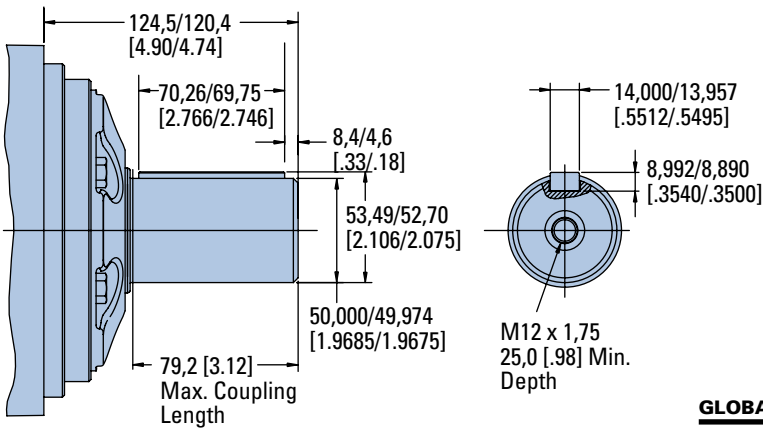
Standard Rotation Viewed from Shaft End

- Port A Pressurized — CW
- Port B Pressurized — CCW

Global Mount (ISO)



50 mm Dia. Straight Shaft



GLOBAL MOUNT MOTOR DIMENSIONS

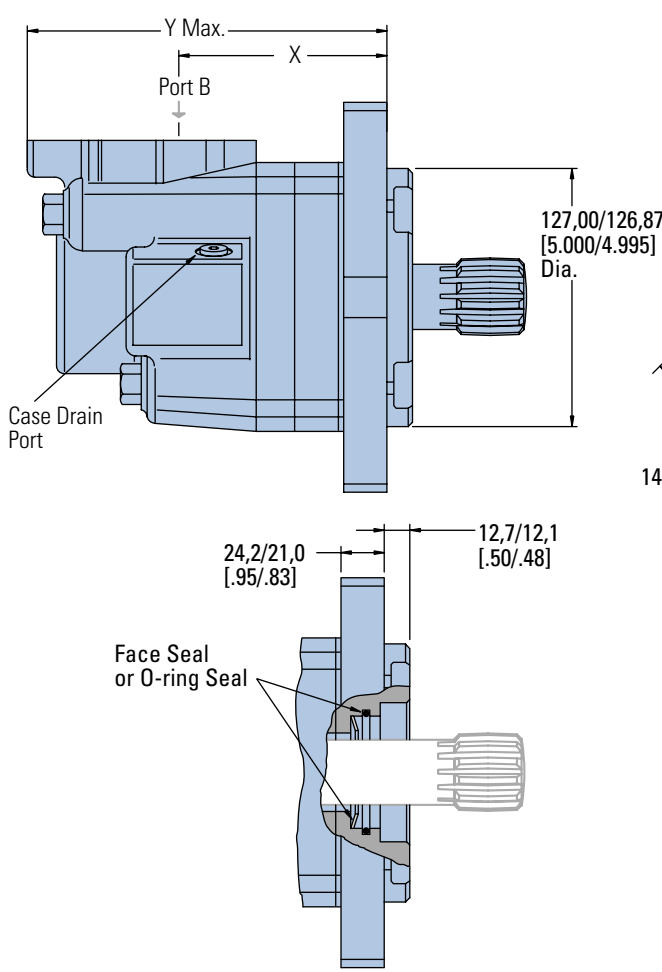
Displacement cm ³ /r [in ³ /r]	X mm [inch]	Y mm [inch]
310 [19.0]	182,4 [7.18]	264,9 [10.43]
390 [24.0]	191,0 [7.52]	273,6 [10.77]
490 [30.0]	202,2 [7.96]	284,7 [11.21]
625 [38.0]	216,9 [8.54]	299,5 [11.79]
800 [45.0]	229,4 [9.03]	312,2 [12.29]
800 [49.0]	236,7 [9.32]	319,3 [12.57]
985 [60.0]	256,5 [10.10]	339,1 [13.35]

6000 Series

Dimensions

Bearingless

Bearingless

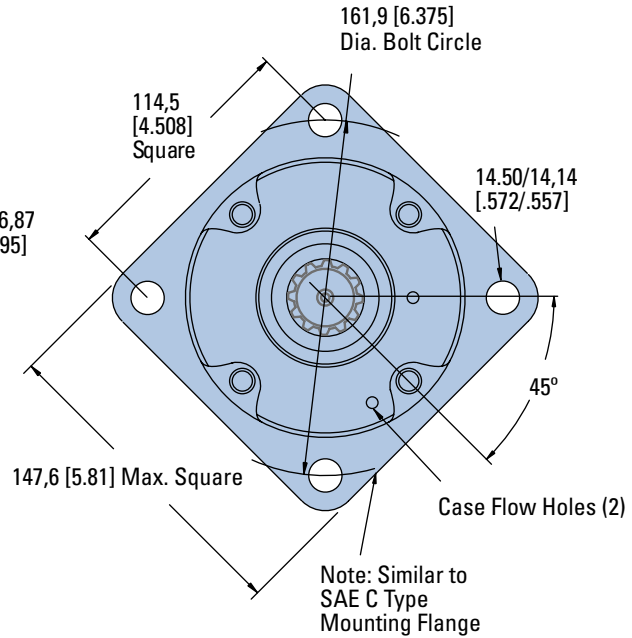


Ports

- 1 5/16 -12 UN-2B SAE O-ring Staggered Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- 4 Bolt 3/4 inch Split Flange Ports (2)
- 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
- G 1 (BSP) Staggered Ports (2)
- G 1/4 (BSP) Case Drain Port (1) or
- 1 5/16 UN-2B SAE O-ring Staggered Ports (2) with Shuttle
- 9/16 -20 UNF-2B SAE O-ring Case Drain Port (1)

Standard Rotation Viewed from Shaft End

- Port A Pressurized — CW
- Port B Pressurized — CCW

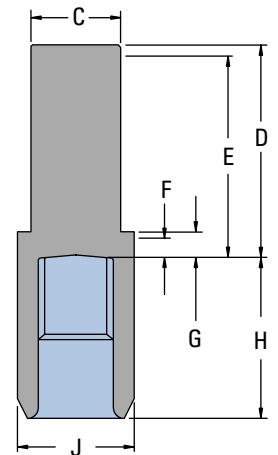


For 6000 bearingless motor application information, contact your Eaton representative (mating coupling blanks available from Eaton Hydraulics).

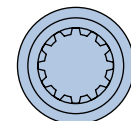
Note:

After machining blank, part must be hardened per Eaton specification.

- C 47,2 [1.86] Dia.
- D 111,5 [4.39] Max.
- E 106,4 [4.19] Full Form Dia.
- F 6,9 [.27] Min. Full Form Dia.
- G 10,2 [.40] Min.
- H 86,1 [3.39] Max.
- J 66,5 [2.62] Dia.



Mating Coupling Blank
Eaton Part No. 12778-002



BEARINGLESS MOTOR DIMENSIONS

Displacement cm ³ /r [in ³ /r]	X mm [inch]	Y mm [inch]
195 [11.9]	105,4 [4.15]	188,0 [7.40]
245 [15.0]	111,0 [4.37]	193,5 [7.62]
310 [19.0]	118,4 [4.66]	200,9 [7.91]
390 [23.9]	127,3 [5.01]	209,6 [8.25]
490 [30.0]	138,2 [5.44]	220,7 [8.69]
625 [38.0]	152,9 [6.02]	235,5 [9.27]
985 [60.0]	192,8 [7.59]	275,1 [10.83]

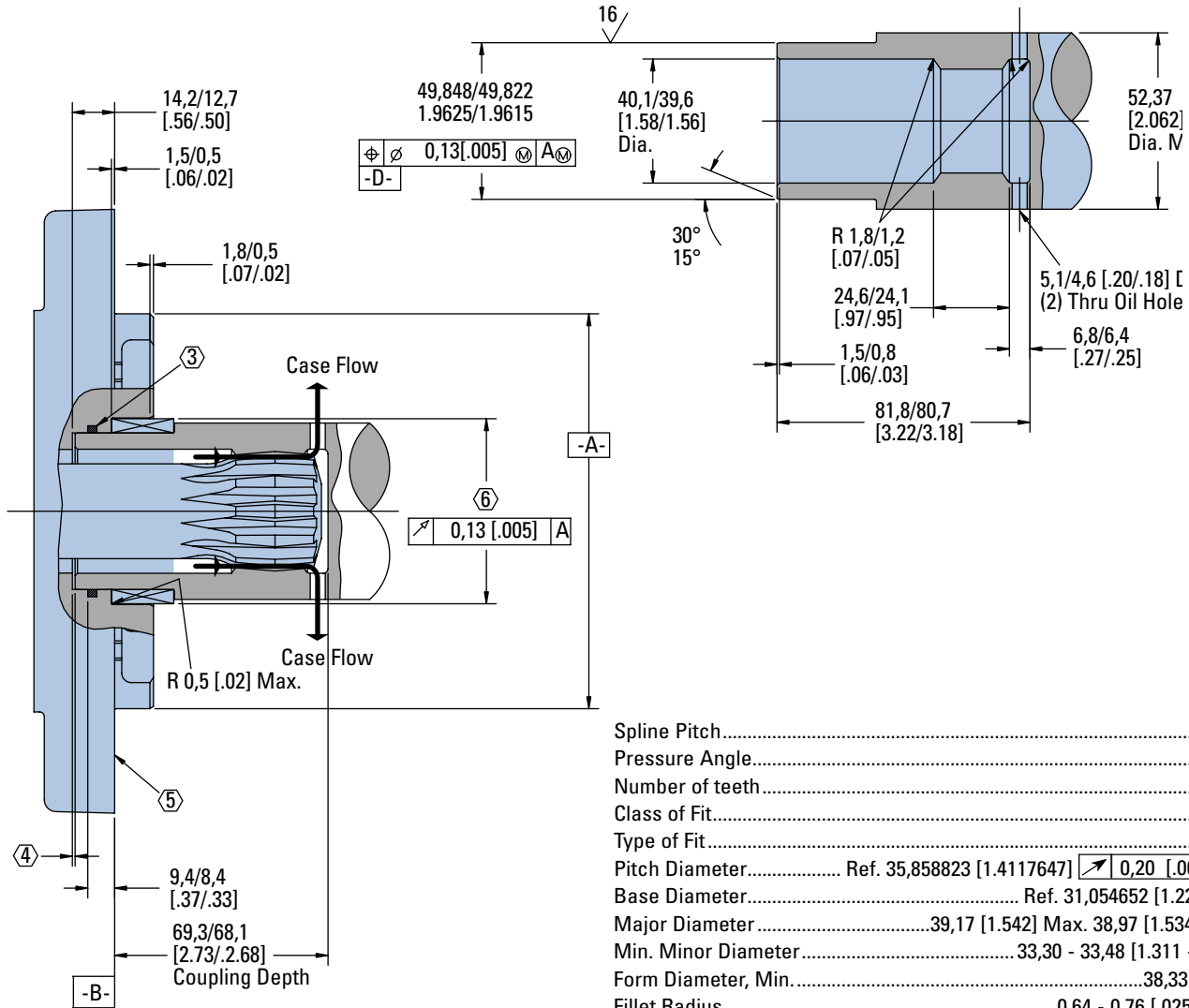
6000 Series

Installation Information

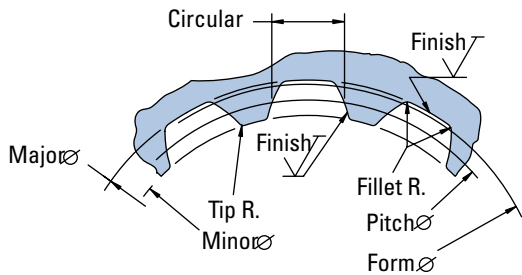
Bearingless

- 1 Internal spline in mating part to be as follows: Material to be ASTM A304, 8620H. Carbonize to a hardness of 60-64 HRc with case depth (to 50HRc) of 0,076 - 1,02 [.030 - .040] (dimensions apply after heat treat).
- 2 Mating part to have critical dimensions as shown. Oil holes must be provided and open for proper oil circulation.
- 3 Seal to be furnished with motor for proper oil circulation thru splines.

- 4 Some means of maintaining clearance between shaft and mounting flange must be provided.
- 5 Similar to SAE "C" Four Bolt Flange..
- 6 Counterbore designed to adapt to a standard sleeve bearing 50,010 - 50,038 [1.9689 - 1.9700] ID by 60,051 - 60,079 [2.3642 - 2.3653] O.D. (Oilite bronze sleeve bearing).



Spline Pitch.....	8.5/17
Pressure Angle.....	30°
Number of teeth.....	12
Class of Fit.....	Ref. 5
Type of Fit.....	Side
Pitch Diameter.....	Ref. 35,858823 [1.4117647] $\sqrt{0,20 [.008] D}$
Base Diameter.....	Ref. 31,054652 [1.2226241]
Major Diameter.....	39,17 [1.542] Max. 38,97 [1.534] Min..
Min. Minor Diameter.....	33,30 - 33,48 [1.311 - 1.318]
Form Diameter, Min.....	38,33 [1.509]
Fillet Radius.....	0,64 - 0,76 [.025 - .030]
Tip Radius.....	0,25 - 0,51 [.010 - .020]
Finish.....	1,6 (63)
Involute Profile Variation.....	+0,000 -0,025 [+0.000 - .0010]
Total Index Variation	0,038 [.0015]
Lead Variation	0,013 [.0005]
Circular Space Width:	
Maximum Actual	5,898 [.2322]
Minimum Effective	5,804 [.2285]
Maximum Effective	Ref. 5,857 [.2306]
Minimum Actual	Ref. 5,834 [.2297]
Dimension Between Two Pins	Ref. 26,929 - 27,084 [1.0602 - 1.0663]
Pin Diameter	6,223 [.2450] Pins to Have 4,0 [.160]
	Wide Flat for Root Clearance

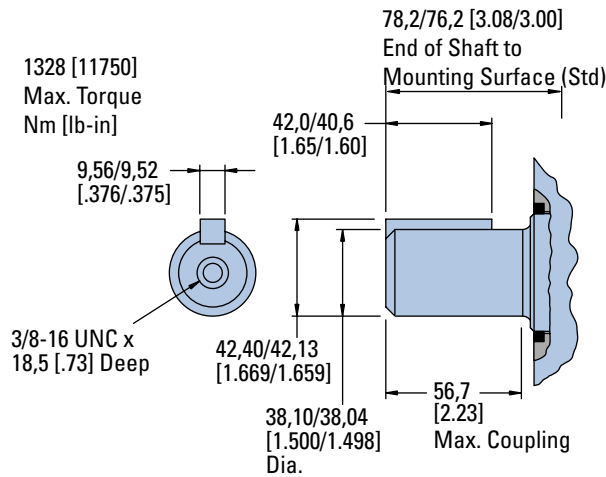


6000 Series

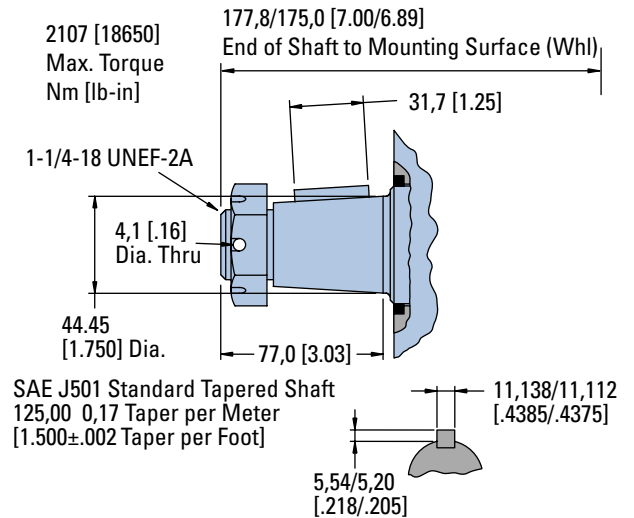
Dimensions

Shafts Splined

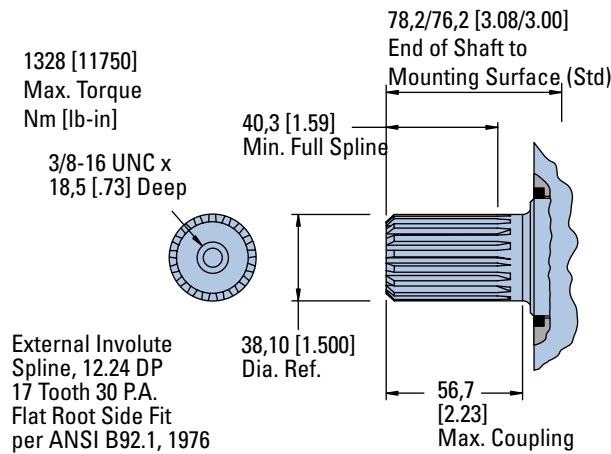
1 1/2 Inch Straight



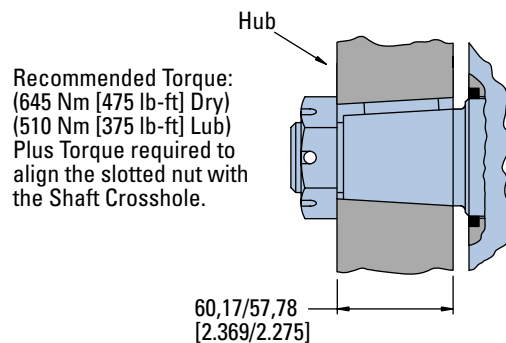
1 3/4 Inch Tapered



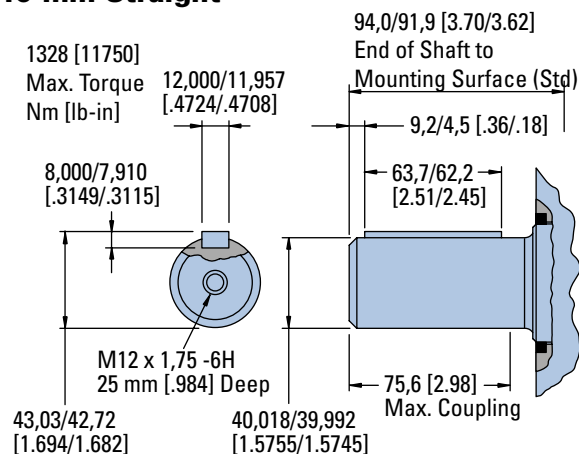
1 1/2 Inch 17 Tooth Splined



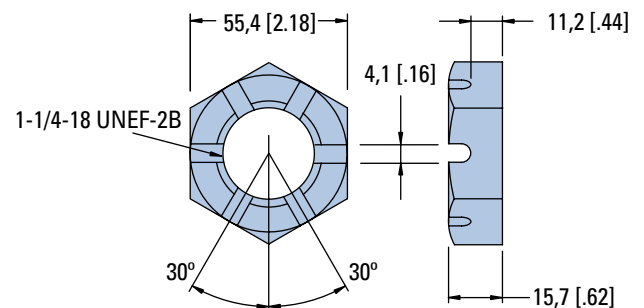
Tapered Shaft Hub Data



40 mm Straight



Slotted Hexagon Nut



6000 Series

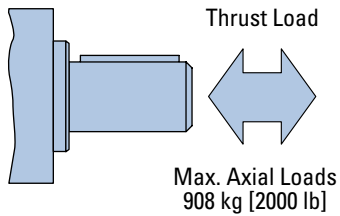
Shaft Side Load Capacity

These curves indicate the radial load capacity on the motor shaft(s) at various locations with an external thrust load of 454 kg [1000 lb]. The maximum allowable thrust load is 908 kg [2000 lb].

Note:

Case pressure will increase the allowable inward thrust load and decrease the allowable outward thrust load. Case pressure will push outward on the shaft at 109 kg/7 Bar [241 lb/100 PSI].

Each curve is based on



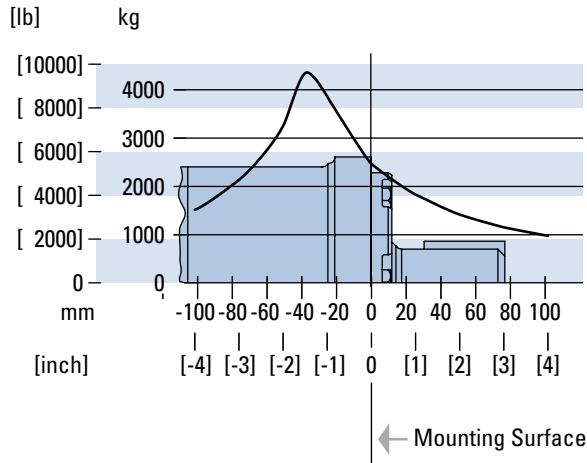
B 10 bearing life (2000 hours of 12,000,000 shaft revolutions at 100 RPM) at rated output torque.

To determine radial load at speeds other than 100 RPM, multiply the load values given on the bearing curve by the factors in the chart below.

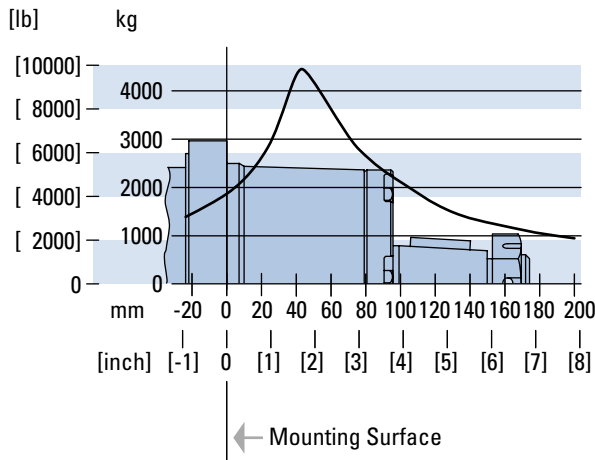
RPM	Multiplication Factor
50	1.23
100	1.00
200	0.81
300	0.72
400	0.66
500	0.62
600	0.58
700	0.56
800	0.54

For 3,000,000 shaft revolutions or 500 hours—Increase these shaft loads 52%.

Standard Motor
Straight and Splined Shafts



Wheel Motor Tapered Shaft



6000 Series

Case Pressure and Case Port

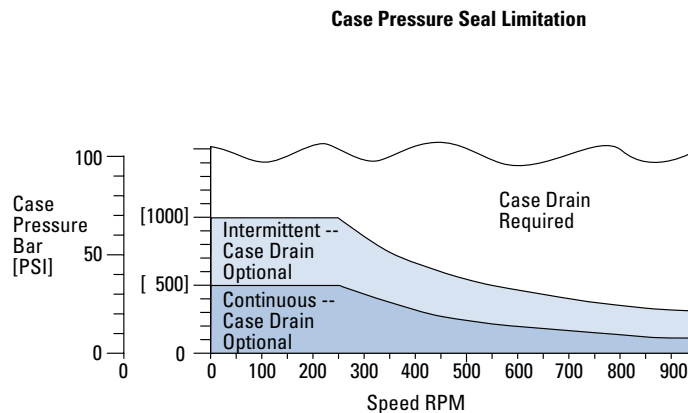
Char-Lynn 6000 Series motors are durable and have long life as long as the recommended case pressure is not exceeded. Allowable case pressure is highest at low shaft speeds. Consequently, motor life will be shortened if case pressure exceeds these ratings (acceptability may vary with application). Determine if an external case drain is required from the case pressure seal limitation chart.

Case Porting Advantage

Contamination Control — flushing the motor case.

Cooler Motor — exiting oil draws motor heat away.

Extend Motor Seal Life — maintain low case pressure with a preset restriction in the case drain line.

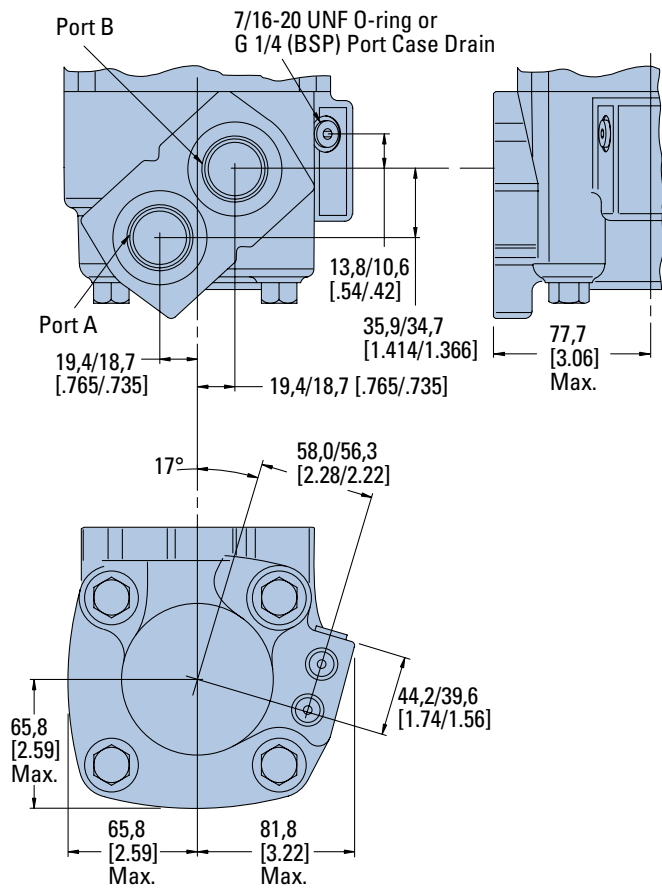


6000 Series

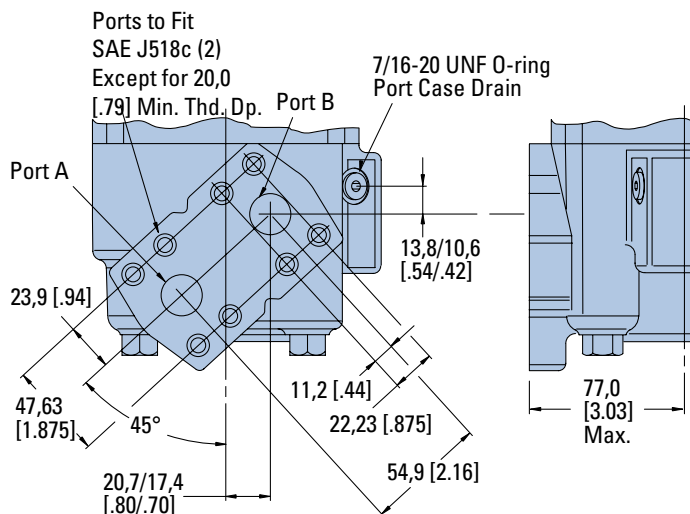
Dimensions

Ports

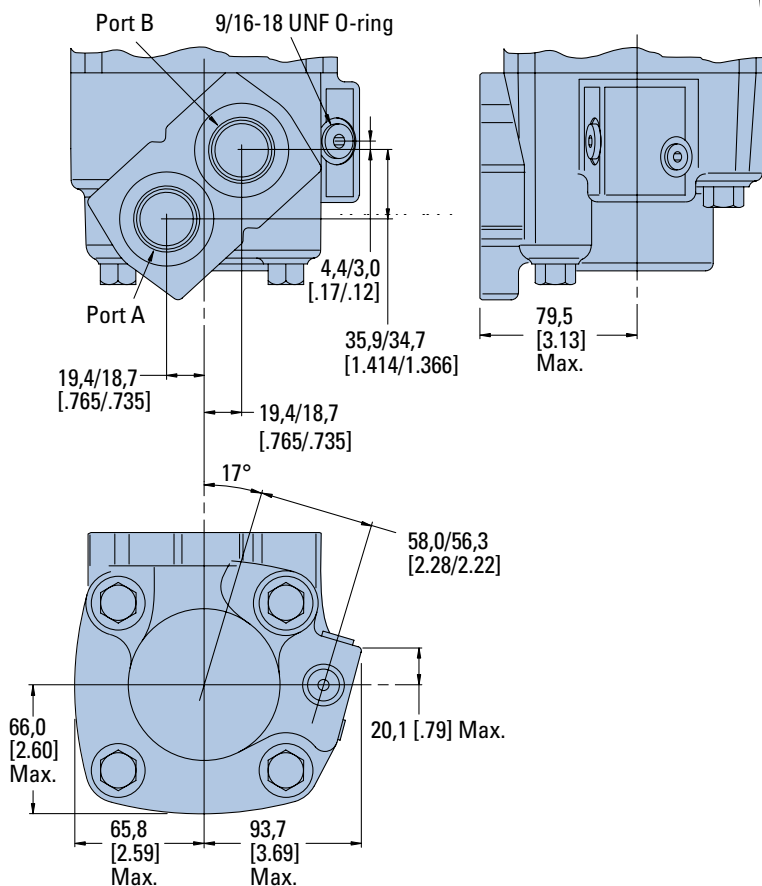
1 5/16 -12 O-ring Ports (2) or G 1 (BSP) Ports (2)



4 Bolt 3/4 Inch Split Flange



1 5/16 -12 O-ring Ports (2) with Shuttle



6000 Series

Product Numbers

Note:

For 6000 Series Motors with a configuration **Not Shown** in the charts above: Use model code number system on the next page to specify product in detail.

Use digit prefix — 112-, 113-, or 114 - plus four digit number from charts for complete product number— Example 114-1047.

Orders will not be accepted without three digit prefix.

MOUNTING	SHAFT	PORT SIZE	DISPL. cm ³ /r [in ³ /r] / PRODUCT NUMBER								
			195 [11.9]	245 [15.0]	310 [19.0]	390 [23.9]	490 [30.0]	625 [38.0]	735* [45.0]	805* [49.0]	985 [60.0]
Standard	1 1/2 inch Straight	1 5/16 O-ring	112-1064	-1065	-1066	-1067	-1068	-1107	-1145	—	-1069
	40 mm Straight	G 1 (BSP)	112-1094	-1095	-1096	-1097	-1098	—	—	—	-1099
	1 1/2 Inch 17 T Splined	1 5/16 O-ring	112-1058	-1059	-1060	-1061	-1062	-1109	1163	—	-1063
G 1 (BSP)		112-1088	-1089	-1090	-1091	-1092	—	—	—	-1093	
Wheel Motor	40 mm Straight	G 1 (BSP)	113-1082	-1083	-1084	-1085	-1086	-1100	—	—	-1087
	1-3/4 Inch Tapered	1 5/16 O-ring	113-1070	-1071	-1072	-1073	-1074	-1093	—	—	-1075
Bearingless		1 5/16 O-ring	114-1031	-1032	-1033	-1034	-1035	-1055	—	—	-1036
		G 1 (BSP)	114-1043	-1044	-1045	-1046	-1047	—	—	—	-1048

*New release

114-1047

Mounting Type - Standard (Code H), 4 Bolt:

- 160,0 [6.30] Pilot Dia.
- 18,01 [.709] Dia. Mounting Holes
- 200,0 [7.87] Dia. Bolt Circle

Output Shaft - Straight (Code 21)

Ports - G1 (BSP) Staggered G 1/4 Case Drain (Code C)

Paint - Low Gloss Black (Code A)

Use digit prefix — 112- plus four digit number from charts for complete product number— Example 112-1215.

Orders will not be accepted without three digit prefix.

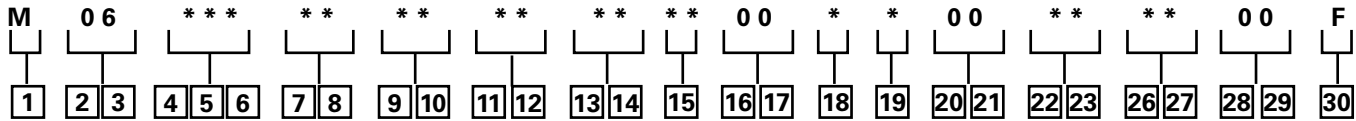
MOUNTING	SHAFT	PORT SIZE	DISPL. cm ³ /r [in ³ /r] / PRODUCT NUMBER						
			310 [19.0]	390 [23.9]	490 [30.0]	625 [38.0]	735 [45.0]	805 [49.0]	985 [60.0]
Standard	50 mm Straight	G 1 (BSP)	112-1217	-1218	-1215	-1216	-1247	-1219	-1220

112-1215

6000 Series

Model Code

The following 30-digit coding system has been developed to identify all of the configuration options for the 6000 Series motor. Use this model code to specify a motor with the desired features. All 30-digits of the code must be present when ordering. You may want to photocopy the matrix below to ensure that each number is entered in the correct box.



1 Product

M – Motor

2, 3 Series

06 – 6000 Series

4, 5, 6 Displacement

cm³/r [in³/r]

120 – 195.8 [11.95]
 150 – 246.5 [15.04]
 190 – 312.0 [19.04]
 239 – 391.7 [23.90]
 300 – 491.4 [29.99]
 381 – 624.2 [38.09]
 450 – 737.4 [45.00]
 490 – 803.4 [49.03]
 600 – 982.7 [59.97]

7, 8 Mounting Type

AA – Bearingless, 4 Bolt: 127,0 [5.00] Pilot Dia. and 14,35 [.565] Dia. Holes
 162,0 [6.38] Dia. Bolt Circle
AB – Standard, 4 Bolt (SAE CC): 127,0 [5.00] Pilot Dia. and 14,35 [.565] Dia. Holes on 162,0 [6.38] Dia. B.C.
AC – Wheel, 4 Bolt 139,7 [5.50] Pilot Dia. and 14,35 [.565] Dia. Holes on 184,2 [7.25] Dia. Bolt Circle
AD – Standard, 4 Bolt, (SAE D): 152,4 [6.00] Pilot Dia. 15,24 [.600] Dia. Holes on 228,6 [9.00] Dia. Bolt Circle (SAE D) with O-Ring Groove to Accept ARP-163 O-Ring
AH – Standard, 4 Bolt: 10,0 [6.30] Pilot Dia. 18,01 [.709] Dia. Holes on 200,0 [7.87] Dia. Bolt Circle.

9, 10 Output Shaft Description

00 – None (Bearingless)
 01 – 38,10 [1.50] Dia. Straight Shaft with .375-16 UNC-2B Thread in End, 9,52 [.375] Sq. x 41,28 [1.625] Straight Key
 02 – 44,45 [1.75] Dia. .125:1 Tapered Shaft per SAE J501 with 1.25-18 UNEF-2A Threaded Shaft End, 11,11 [.4375] Sq. x 31,8 [1.25] Straight Key
 03 – 38,10 [1.50] Dia. Flat Root Side Fit, 17 Tooth, 12/24 DP 30 DEG. Involute Spline with .375-16 UNC-2B Thread in end 40,4 [1.59] Minimum Full Spline Length
 04 – 40,00 [1.575] Dia. Straight Shaft with M12 x 1.75-6H Thread in End, 12W x 8H x 63L [.472W x .313H x 2.480L] Key
 12 – 49,99 [1.968] Dia. Straight Shaft with M12 x 1.75-6H Thread in End, 14W x 9H x 70L [.550W x .354H x 2.756L] Key
 15 – 60mm Dia. 10:1 Tapered Shaft per ISO R775 with M42 x 3-6H Threaded Shaft End, 16W x 10H x 32L [.630W x .394H x 1.26L] Key
 16 – 53,98 [2.125] Dia. Flat Root Side Fit, 16 Tooth, 8/16 DP 30 Deg. Involute Spline with M12 x 1.75-6H Thread in End, 55,9 [2.20] Min Full Spline

11, 12 Port Description

AA – 1,3125-12 UN-2B SAE O-Ring Ports–Staggered Ports
AB – SAE 19.05 [.750] Dia. 4-Bolt Split Flange - Staggered Ports
AC – G 1 Staggered Ports
AG – .750-16 UNF-2B SAE O-ring Ports - Staggered

13, 14 Case Flow

02 – .4375-20 UNF-2B SAE O-Ring Port With Check Valve
 03 – G 1/4 BSP Straight Thread Port with Check Valve
 06 – .5625-18 UNF-2B SAE O-Ring Port with Shuttle Valve
 10 – .750-16 UNF-2B SAE O-ring Ports, External Lubrication Circuit Requires Case Drain must be Connected, .063 Shuttle Flow Orifice

15 Low Pressure Relief

0 – None
 A – Set at 4.5 [65 lbf/in²]
 B – Set at 15.2 [220 lbf/in²]

16, 17 Pressure/Flow Option

00 – None

18 Geroler Option

0 – Standard
 2 – Tight Fitting

19 Seal Option

0 – Standard
 1 – Viton
 3 – Seal Guard

20, 21 Accessories

00 – None

22, 23 Special Features (Hardware)

00 – None
 01 – Non-Masked Nameplate
 02 – Non-Masked Nameplate, Low Noise Valve Plate
 03 – Low Noise Valve Plate

24, 25 Special Features (Assembly)

00 – None
AA – Reverse Rotation

26, 27 Paint/Packaging

00 – No Paint, Individual Box
AA – Painted Low Gloss Black
AD – No Paint, Bulk Box Option
AE – Painted Low Gloss Black, Bulk Box Option

28, 29 Customer ID

00 – None

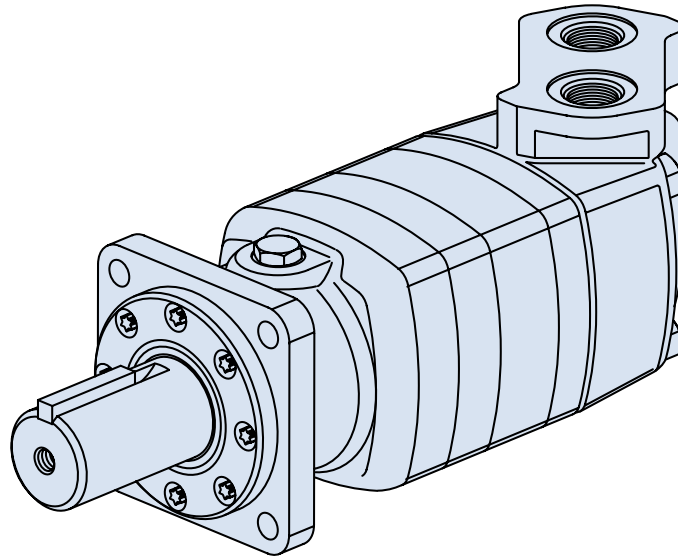
30 Design Code

F – Sixth

Feature in bold are preferred and allow for shorter lead time

10,000 Series

Highlights



Features

- High torque and flow
- Many options like 2 speed and speed sensors make this motor “smart”
- Low pressure loss even in higher flows

Benefits

- High power density for demanding mobile and industrial applications
- Many options to draw from

Applications

- Boring
- Industrial
- Metal Forming
- Port Equipment
- Saw Mill

Description

This is the biggest disc valve motor of our line with up to 45 GPM and 24,000 in-lb of torque in continuous mode, this motor is powerful and yet provides good efficiency.

Specifications

Geroler Element	4 Displacements
Flow l/min [GPM]	170 [45] Continuous**
	265 [70] Intermittent*
Speed RPM	501 Cont.**
	784 Inter.*
Pressure bar [PSI]	200 [3000] Cont.**
	270 [4000] Inter.*
Torque Nm [lb-in]	2700 [23910] Cont.**
	3440 [30460] Inter.*

** Continuous— (Cont.) Continuous rating, motor may be run continuously at these ratings.

* Intermittent— (Inter.) Intermittent operation, 10% of every minute.



Boring



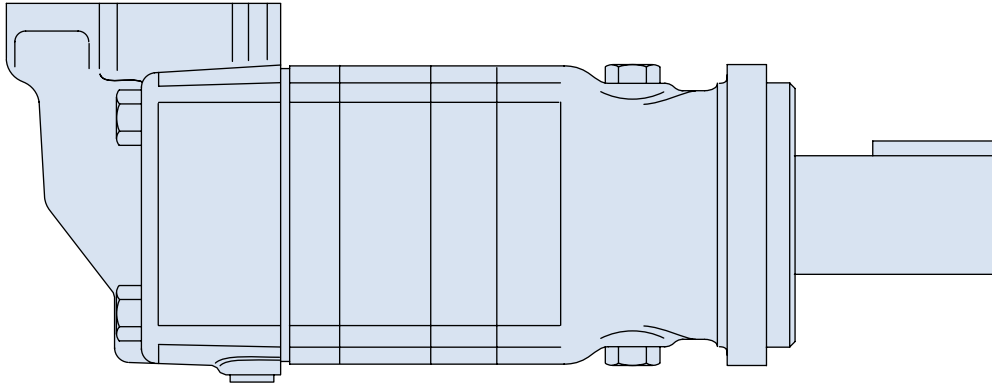
Metal Forming



Port Equipment

10,000 Series

Specifications



10,000 SERIES MOTORS

Displ. cm ³ /r [in ³ /r]		345 [21.0]	480 [29.3]	665 [40.6]	940 [57.4]
Max. Speed (RPM) @ Flow	Continuous	501	354	254	179
	Intermittent	784	552	396	279
Flow l/min [GPM]	Continuous	170 [45]	170 [45]	170 [45]	170 [45]
	Intermittent	265 [70]	265 [70]	265 [70]	265 [70]
Torque* Nm [lb-in]	Continuous	1040 [9220]	1475 [13050]	2085 [18450]	2700 [23910]
	Intermittent	1390 [12310]	1965 [17410]	2610 [23080]	3440 [30460]
Pressure Δ bar [Δ PSI]	Continuous	205 [3000]	205 [3000]	205 [3000]	190 [2750]
	Intermittent	275 [4000]	275 [4000]	260 [3750]	240 [3500]
	Peak	275 [4000]	275 [4000]	275 [4000]	260 [3750]
Weight kg [lb]	Standard or Wheel Mount	43,5 [96.0]	45,4 [100.0]	46,3 [100.0]	47,2 [104.0]
	Bearingless	31,3 [69.0]	33,1 [73.0]	33,1 [73.0]	34,9 [77.0]

*See shaft torque ratings for limitations..

Note:

To assure best motor life, run motor for approximately one hour at 30% of rated pressure before application to full load. Be sure motor is filled with fluid prior to any load applications.

Maximum Inlet Pressure:

275 bar [4000 PSI]
Do not exceed Δ pressure rating (see chart above).

Maximum Return Pressure:

275 bar [4000 PSI] with case drain line installed.
Do not exceed Δ pressure rating (see chart above).

Maximum Case Pressure:

20 bar [300 PSI]

Δ bar [Δ PSI] :

The true pressure difference between inlet port and outlet port

Continuous Rating:

Motor may be run continuously at these ratings

Intermittent Operation:

10% of every minute

Peak Operation:

1% of every minute

Recommended Fluids:

Premium quality, anti-wear type hydraulic oil with a viscosity of not less than 70 SUS at operating temperature.

Recommended Maximum System Operating Temp.:

82° C [180° F]

Recommended Filtration:

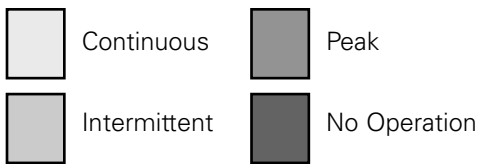
per ISO Cleanliness Code, 4406: 20/18/13

10,000 Series

Performance Data

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

Performance data is typical at 120 SUS. Actual data may vary slightly from unit to unit in production.

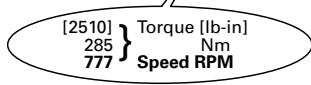


480 cm³/r [29.3 in³/r]
Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[1000] 70	[1500] 105	[2000] 140	[2500] 170	[3000] 205	[3500] 240	[4000] 275
[1] 3,8	[760] 85 6	[1540] 175 5	[3120] 355 4	[4640] 525 2					
[2] 7,5	[1040] 120 15	[2140] 240 13	[4320] 490 11	[6500] 735 8	[8690] 980 5	[10870] 1230 2			
[4] 15	[1040] 120 31	[2130] 240 29	[4310] 485 27	[6490] 735 24	[8680] 980 21	[10860] 1225 18	[13050] 1475 16	[15230] 1720 13	[17410] 1965 10
[8] 30	[1020] 115 62	[2110] 240 61	[4290] 485 58	[6480] 730 55	[8660] 980 53	[10840] 1225 50	[13030] 1470 47	[15210] 1720 44	[17390] 1965 42
[12] 45	[990] 110 94	[2080] 235 93	[4270] 480 90	[6450] 730 87	[8630] 975 84	[10820] 1220 81	[13000] 1470 78	[15180] 1715 75	[17370] 1965 73
[16] 61	[960] 110 125	[2060] 235 124	[4240] 480 122	[6420] 725 119	[8600] 970 116	[10790] 1220 113	[12970] 1465 110	[15150] 1710 107	[17340] 1960 104
[20] 76	[930] 105 157	[2020] 230 156	[4200] 475 154	[6390] 720 150	[8570] 970 147	[10750] 1215 144	[12940] 1460 141	[15120] 1710 138	[17300] 1955 135
[24] 91	[890] 100 189	[1980] 225 188	[4170] 470 185	[6350] 715 182	[8530] 965 179	[10720] 1210 175	[12900] 1460 172	[15080] 1705 169	
[28] 106	[850] 95 221	[1940] 220 220	[4130] 465 214	[6310] 715 214	[8490] 960 210	[10680] 1205 207	[12860] 1455 203	[15040] 1700 200	
[32] 121	[810] 90 252	[1900] 215 251	[4080] 460 249	[6270] 710 245	[8450] 955 242	[10630] 1200 238	[12820] 1450 235	[15000] 1695 231	
[36] 136	[760] 85 282	[1850] 210 281	[4040] 455 280	[6220] 705 277	[8400] 950 273	[10590] 1195 270	[12770] 1445 266		
[40] 151	[710] 80 318	[1800] 205 316	[3990] 450 312	[6170] 695 308	[8350] 945 305	[10540] 1190 301	[12720] 1440 297		
[45] 170	[647] 75 354	[1740] 195 353	[3920] 445 351	[6110] 690 348	[8290] 935 344	[10470] 1185 340	[12660] 1430 336		
[60] 227	[430] 50 474	[1520] 170 473	[3710] 420 471	[5890] 665 467	[8070] 910 462	[10260] 1160 458	[12440] 1405 454		
[70] 265		[1360] 155 552	[3540] 400 550	[5730] 645 546	[8070] 895 541	[10100] 1140 536	[12280] 1385 532		

345 cm³/r [21.0 in³/r]
Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[1000] 70	[1500] 105	[2000] 140	[2500] 170	[3000] 205	[3500] 240	[4000] 275
[1] 3,8	[600] 70 3	[1310] 150 1							
[2] 7,5	[740] 85 21	[1510] 170 19	[3050] 345 15	[4600] 520 11	[6140] 695 8	[7680] 865 4			
[4] 15	[730] 80 43	[1500] 170 41	[3040] 345 37	[4590] 520 33	[6140] 695 30	[7680] 870 26	[9220] 1040 22	[10770] 1215 18	[12310] 1390 14
[8] 30	[720] 80 87	[1490] 170 86	[3030] 340 82	[4580] 515 78	[6120] 690 74	[7670] 865 70	[9210] 1040 66	[10750] 1215 62	[12300] 1390 58
[12] 45	[700] 80 131	[1470] 165 130	[3020] 340 127	[4560] 515 123	[6100] 690 118	[7650] 865 114	[9190] 1040 110	[10740] 1215 106	[12280] 1385 102
[16] 61	[680] 75 176	[1450] 165 175	[3000] 340 172	[4540] 515 167	[6080] 685 163	[7630] 860 158	[9170] 1035 154	[10720] 1210 149	[12260] 1385 145
[20] 76	[660] 75 221	[1430] 160 220	[2970] 335 217	[4520] 510 212	[6060] 685 207	[7600] 860 202	[9150] 1035 198	[10690] 1210 193	[12230] 1380 189
[24] 91	[630] 70 266	[1400] 160 265	[2950] 335 261	[4490] 505 256	[6030] 680 252	[7580] 855 246	[9120] 1030 242	[10660] 1205 237	[12210] 1380 232
[28] 106	[600] 70 310	[1370] 155 309	[2920] 330 306	[4460] 505 301	[6000] 680 296	[7550] 851 291	[9090] 1025 286	[10640] 1200 280	[12180] 1375 275
[32] 121	[570] 65 356	[1340] 150 355	[2890] 325 351	[4430] 500 346	[5970] 675 340	[7520] 850 335	[9060] 1025 329	[10610] 1200 324	[12150] 1370 319
[36] 136	[540] 60 400	[1310] 150 399	[2850] 320 396	[4400] 495 390	[5940] 670 384	[7480] 845 379	[9030] 1020 373	[10570] 1195 368	[12120] 1370 362
[40] 151	[500] 55 445	[1270] 145 444	[2820] 320 441	[4360] 495 435	[5910] 670 429	[7450] 840 423	[8990] 1015 417	[10540] 1190 412	
[45] 170	[460] 50 501	[1220] 140 500	[2760] 310 498	[4300] 485 492	[5840] 660 486	[7380] 835 480	[8910] 1005 473	[10450] 1180 467	
[60] 227		[1080] 130 668	[2620] 295 665	[4160] 470 658	[5710] 645 651	[7250] 820 644	[8800] 995 637		
[70] 265		[960] 110 784	[2510] 285 777	[4050] 460 769	[5590] 630 761	[7140] 805 754	[8680] 980 746		

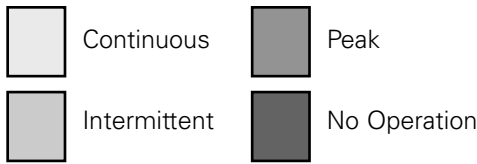


10,000 Series

Performance Data

Motors run with high efficiency in all areas designated with a number for torque and speed. For best motor life select a motor to run with a torque and speed range shown in the light shaded area.

Performance data is typical at 120 SUS. Actual data may vary slightly from unit to unit in production.



665 cm³/r [40.6 in³/r]
Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[750] 50	[1000] 70	[1250] 85	[1500] 105	[1750] 120	[2000] 140	[2250] 155	[2500] 170	[2750] 190	[3000] 205	[3250] 225	[3500] 240	[3750] 260
[1] 3.8	[1470] 165 4	[3010] 340 3	[4550] 515 3	[6100] 690 2	[7630] 860 1										
[2] 7.5	[1480] 165 10	[3020] 340 9	[4560] 515 8	[6110] 690 7	[7650] 865 7	[9200] 1040 6	[10740] 1215 5	[12280] 1385 4	[13830] 1565 3	[15370] 1735 2	[16910] 1910 1				
[4] 15	[1470] 165 22	[3010] 340 21	[4550] 515 20	[6100] 690 19	[7640] 865 18	[9190] 1040 17	[10730] 1210 16	[12270] 1385 15	[13820] 1560 14	[15360] 1735 13	[16900] 1910 12	[18450] 2085 11	[19990] 2260 10	[21540] 2435 9	[23080] 2610 8
[8] 30	[1440] 165 44	[2980] 335 43	[4530] 505 42	[6070] 685 41	[7610] 860 40	[9160] 1035 39	[10700] 1210 38	[12250] 1385 37	[13790] 1560 36	[15330] 1730 35	[16880] 1905 34	[18420] 2075 33	[19960] 2255 32	[21510] 2430 31	[23050] 2605 30
[12] 45	[1400] 160 67	[2950] 335 66	[4490] 505 65	[6040] 680 64	[7580] 855 63	[9120] 1030 62	[10670] 1205 61	[12210] 1380 60	[13750] 1555 59	[15300] 1730 58	[16840] 1905 57	[18380] 2075 56	[19930] 2255 55	[21470] 2425 54	[23020] 2600 53
[16] 61	[1360] 155 89	[2910] 330 88	[4450] 505 87	[6000] 675 86	[7540] 850 85	[9080] 1025 84	[10620] 1200 83	[12170] 1375 82	[13710] 1550 81	[15260] 1725 80	[16800] 1900 79	[18340] 2070 78	[19890] 2245 77	[21430] 2420 76	
[20] 76	[1310] 150 112	[2860] 325 111	[4400] 495 110	[5940] 670 109	[7490] 845 108	[9030] 1020 107	[10580] 1195 106	[12120] 1370 104	[13660] 1545 103	[15210] 1720 102	[16750] 1900 101	[18300] 2070 100	[19840] 2240 99		
[24] 91	[1260] 140 135	[2800] 315 134	[4350] 490 132	[5890] 665 131	[7440] 840 130	[8980] 1015 129	[10520] 1190 128	[12070] 1365 127	[13610] 1540 126	[15150] 1710 125	[16700] 1885 124	[18240] 2060 123			
[28] 106	[1200] 135 157	[2750] 310 156	[4290] 485 155	[5840] 660 154	[7380] 835 153	[8920] 1010 151	[10470] 1185 150	[12010] 1355 149	[13550] 1530 148	[15100] 1705 147	[16640] 1880 146				
[32] 121	[1140] 130 180	[2690] 305 179	[4230] 480 177	[5770] 650 176	[7320] 825 175	[8860] 1000 174	[10400] 1175 173	[11950] 1350 172	[13490] 1525 170	[15040] 1700 169	[16580] 1875 168				
[36] 136	[1080] 120 202	[2620] 295 201	[4160] 470 200	[5710] 645 199	[7250] 820 198	[8800] 995 196	[10340] 1170 195	[11880] 1340 194	[13430] 1515 193	[14970] 1690 191	[16510] 1865 190				
[40] 151	[1010] 115 225	[2550] 290 224	[4100] 465 222	[5640] 635 221	[7180] 810 220	[8730] 985 219	[10270] 1160 217	[11810] 1335 216	[13360] 1510 215	[14900] 1685 214	[16440] 1855 212				
[45] 170	[920] 105 254	[2460] 280 252	[4000] 450 251	[5550] 625 249	[7090] 800 248	[8630] 975 247	[10180] 1150 245	[11720] 1325 244	[13260] 1500 243	[14810] 1675 242					
[60] 227	[610] 70 338	[2150] 245 336	[3700] 420 335	[5240] 590 334	[6780] 765 332	[8330] 940 331	[9870] 1115 329	[11420] 1290 328	[12960] 1465 327						
[70] 265	[380] 45 279	[1930] 220 278	[3470] 390 276	[5010] 565 275	[6560] 740 274	[8100] 915 273	[9640] 1090 272	[11190] 1265 271							

940 cm³/r [57.4 in³/r]
Δ Pressure Bar [PSI]

[3470] Torque [lb-in]
390 Nm
391 Speed RPM

	[250] 15	[500] 35	[750] 50	[1000] 70	[1250] 85	[1500] 105	[1750] 120	[2000] 140	[2250] 155	[2500] 170	[2750] 190	[3000] 205	[3250] 225	[3500] 240
[1] 3.8	[2080] 235 3	[4260] 480 2	[6440] 730 1											
[2] 7.5	[2090] 235 7	[4270] 480 6	[6450] 730 5	[8640] 975 5	[10820] 1220 4	[13000] 1470 3	[15190] 1715 2	[17370] 1965 1						
[4] 15	[2080] 235 15	[4260] 480 14	[6440] 730 13	[8620] 975 13	[10810] 1220 12	[12990] 1470 11	[15170] 1715 10	[17360] 1960 9	[19540] 2210 8	[21720] 2455 7	[23910] 2700 7	[26090] 2950 6	[28270] 3195 5	[30460] 3440 4
[8] 30	[2040] 230 31	[4220] 475 30	[6400] 725 29	[8590] 970 28	[10770] 1215 28	[12950] 1465 27	[15140] 1710 26	[17320] 1955 25	[19500] 2200 24	[21690] 2450 23	[23870] 2695 22			
[12] 45	[1990] 225 47	[4170] 470 46	[6350] 715 45	[8540] 965 44	[10720] 1210 43	[12900] 1460 43	[15090] 1705 42	[17270] 1950 41	[19450] 2200 40	[21640] 2445 39				
[16] 61	[1930] 220 63	[4110] 465 62	[6290] 710 61	[8480] 960 60	[10660] 1205 59	[12840] 1450 58	[15030] 1700 57	[17210] 1945 56	[19390] 2190 55					
[20] 76	[1860] 210 79	[4040] 455 78	[6220] 705 77	[8410] 950 76	[10590] 1195 75	[12770] 1445 74	[14960] 1690 73	[17140] 1935 72	[19320] 2185 72					
[24] 91	[1780] 200 95	[3970] 450 94	[6150] 695 93	[8330] 940 92	[10520] 1190 91	[12700] 1435 90	[14880] 1680 89	[17070] 1930 88						
[28] 106	[1700] 190 111	[3890] 440 110	[6070] 685 109	[8250] 930 108	[10440] 1180 107	[12620] 1425 106	[14800] 1675 105	[16990] 1920 104						
[32] 121	[1620] 185 127	[3800] 430 126	[5980] 675 125	[8160] 920 124	[10350] 1170 123	[12530] 1415 122	[14720] 1665 121							
[36] 136	[1520] 170 143	[3710] 420 142	[5890] 665 141	[8070] 910 140	[10260] 1160 139	[12440] 1405 138	[14620] 1650 137							
[40] 151	[1420] 160 159	[3610] 410 158	[5790] 655 157	[7970] 900 156	[10160] 1150 155	[12340] 1395 154	[14520] 1640 153							
[45] 170	[1290] 145 179	[3480] 395 178	[5660] 640 177	[7840] 885 176	[10020] 1130 174	[12210] 1380 174	[14400] 1625 173							
[60] 227	[860] 95 239	[3040] 345 238	[5230] 590 236	[7410] 835 235	[9600] 1085 234	[11780] 1330 233								
[70] 265	[540] 60 279	[2720] 305 278	[4910] 555 276	[7090] 800 275	[9270] 1045 274	[11460] 1295 273								

10,000 Series

Dimensions

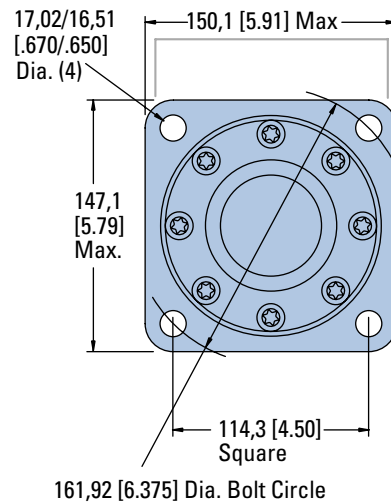
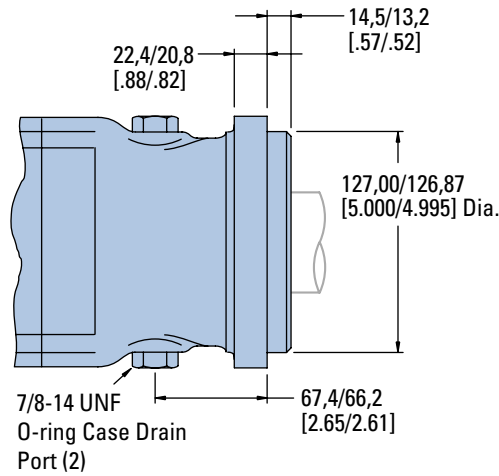
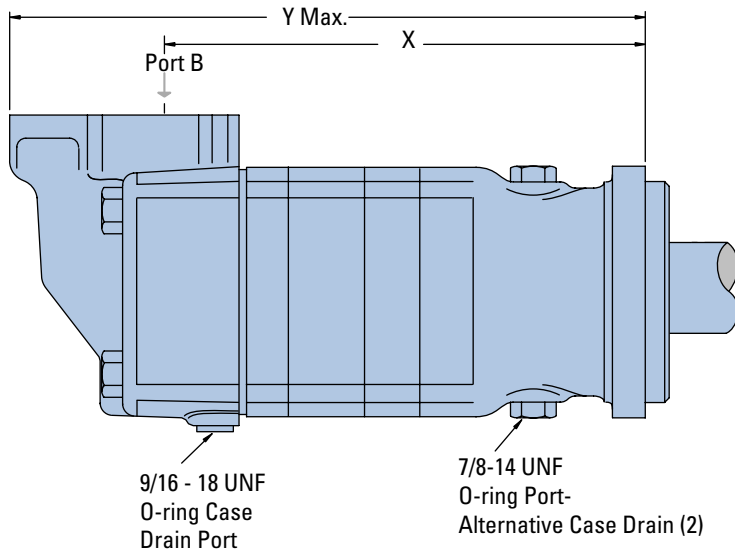
Ports

- 1 5/16 -12 UN-2B SAE O-ring Staggered Ports (2)
- 9/16 -18 UNF-2B SAE O-ring Case Drain Port (1) or
- 4 Bolt 1 1/4 inch Split Flange Ports (2)
- 9/16 -18 UNF-2B SAE O-ring Case Drain Port (1)

Standard Rotation Viewed from Shaft End

- Port A Pressurized — CW
- Port B Pressurized — CCW

Standard Mount



STANDARD MOUNT MOTOR DIMENSIONS

Displacement cm ³ /r [in ³ /r]	X mm [inch]	Y mm [inch]
345 [21.0]	282,4 [11.12]	380,7 [14.99]
480 [29.2]	295,1 [11.62]	393,4 [15.49]
665 [40.6]	295,1 [11.62]	393,4 [15.49]
940 [57.4]	313,4 [12.34]	411,7 [16.21]

10,000 Series

Dimensions

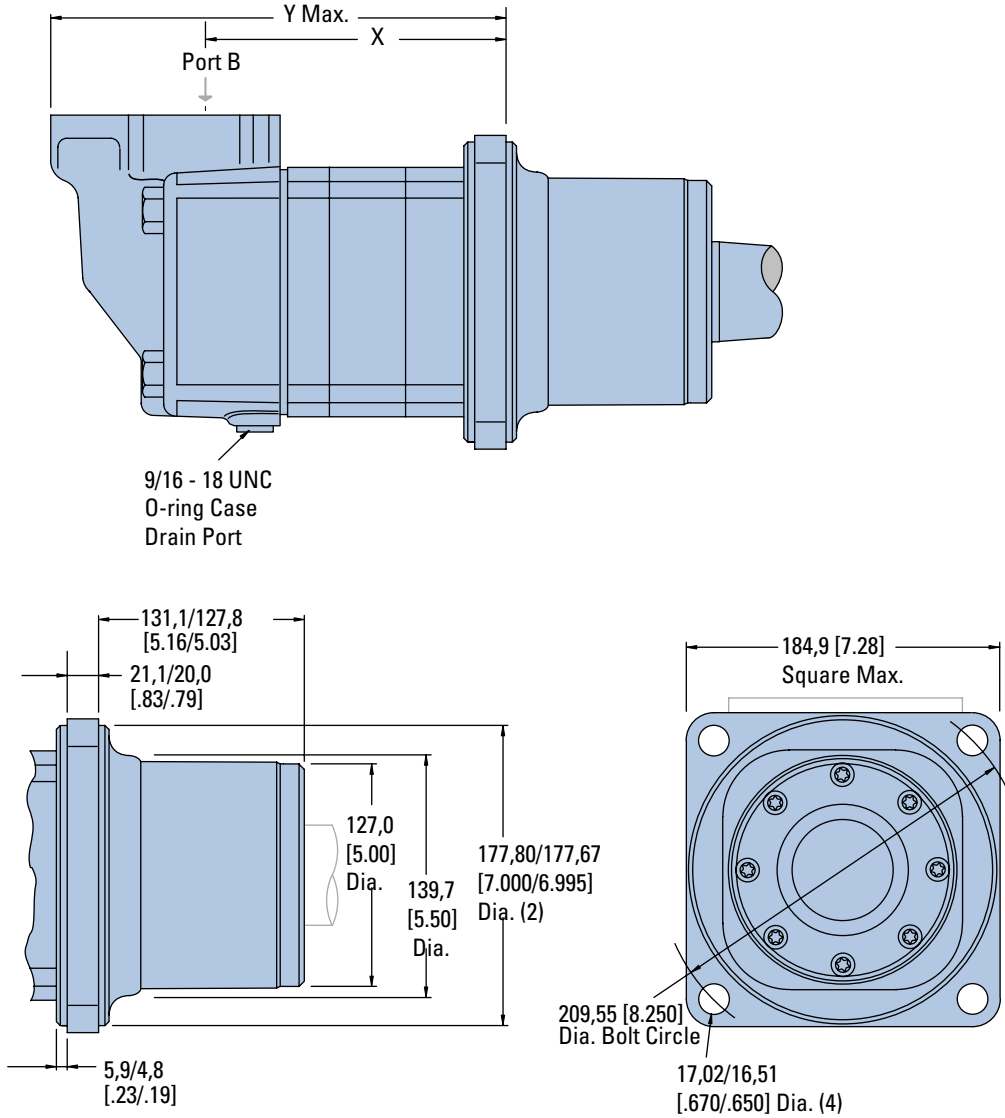
Ports

- 1 5/16 -12 UN-2B SAE O-ring Staggered Ports (2)
- 9/16 -18 UNF-2B SAE O-ring Case Drain Port (1) or
- 4 Bolt 1 1/4 inch Split Flange Ports (2)
- 9/16 -18 UNF-2B SAE O-ring Case Drain Port (1)

Standard Rotation Viewed from Shaft End

- Port A Pressurized — CW
- Port B Pressurized — CCW

Wheel Mount



WHEEL MOUNT MOTOR DIMENSIONS

Displacement cm ³ /r [in ³ /r]	X mm [inch]	Y mm [inch]
345 [21.0]	166,9 [6.57]	265,9 [10.47]
480 [29.2]	179,6 [7.07]	278,6 [10.97]
665 [40.6]	179,6 [7.07]	278,6 [10.97]
940 [57.4]	197,8 [7.79]	297,2 [11.70]

10,000 Series

Dimensions

Bearingless

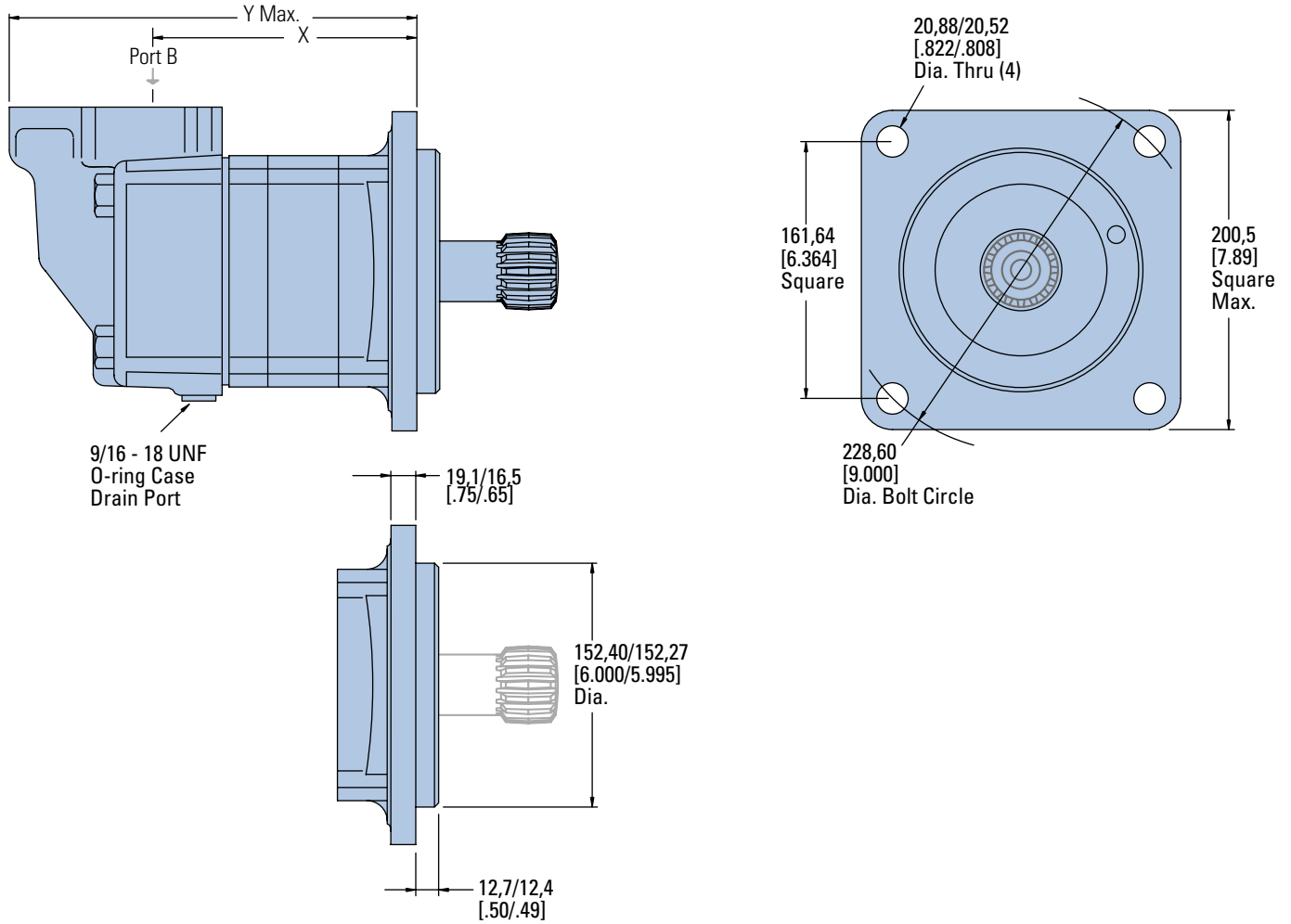
Ports

- 1 5/16 -12 UN-2B SAE O-ring Staggered Ports (2)
- 9/16 -18 UNF-2B SAE O-ring Case Drain Port (1) or
- 4 Bolt 1 1/4 inch Split Flange Ports (2)
- 9/16 -18 UNF-2B SAE O-ring Case Drain Port (1)

Standard Rotation Viewed from Shaft End

- Port A Pressurized — CW
- Port B Pressurized — CCW

Bearingless



BEARINGLESS MOTOR DIMENSIONS

Displacement cm ³ /r [in ³ /r]	X mm [inch]	Y mm [inch]
345 [21.0]	158,0 [6.22]	256,3 [10.09]
480 [29.2]	170,7 [6.72]	269,0 [10.59]
665 [40.6]	170,7 [6.72]	269,0 [10.59]
940 [57.4]	189,0 [7.44]	287,5 [11.32]

Mating Coupling Blank

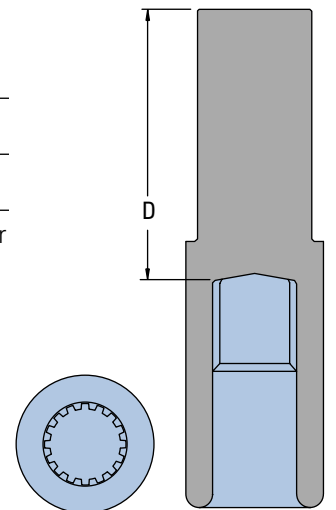
Dimension D mm [inch]
Eaton Part No.

13280-001	133,6/128,5 [5.26/5.06]
13280-002	156,0/150,9 [6.14/5.94]

For 10,000 bearingless motor application information, contact your Eaton representative (mating coupling blanks available from Eaton Hydraulics).

Note:

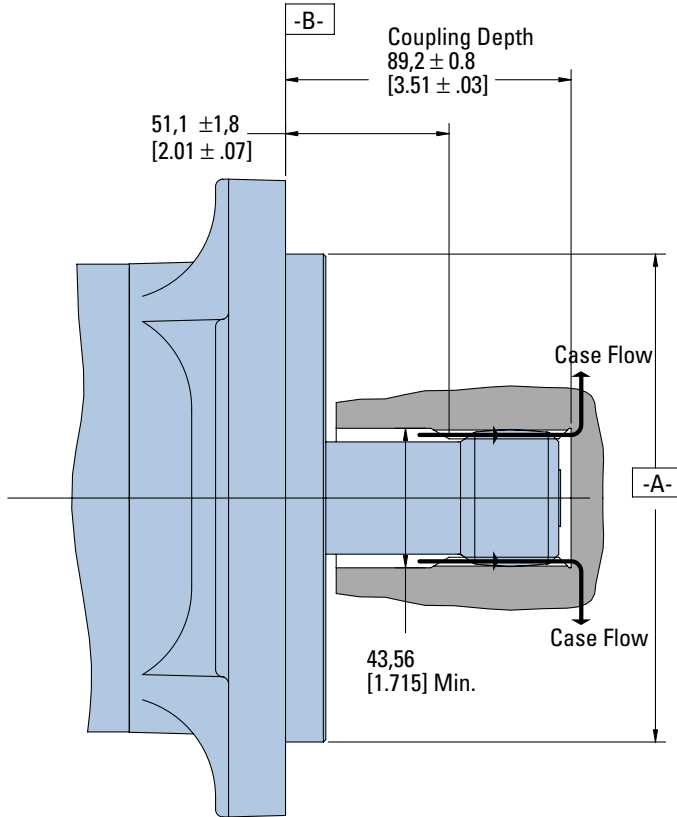
After machining blank, part must be hardened per Eaton specification.



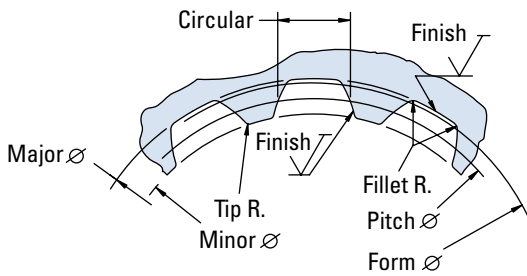
10,000 Series

Installation Information

Bearingless



1 Internal spline in mating part to be as follows: Material to be ASTM A304, 8620H. Carbonize to a hardness of 60-64 HRC with case depth (to 50HRC) of 0,076 - 1,02 [.030 - .040] (dimensions apply after heat treat).



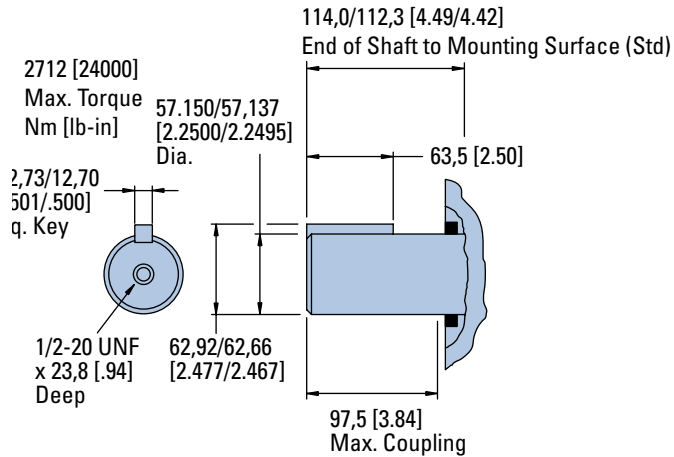
Spline Pitch.....	10/20
Pressure Angle.....	30°
Number of teeth.....	16
Class of Fit.....	Ref. 5
Type of Fit.....	Side
Pitch Diameter	Ref. 40,640000 [1.6000000] Ⓢ 0,25 [.010] D
Base Diameter.....	Ref. 35,195272 [1.3856406]
Major Diameter.....	43,56 [1.715] Max. 43,18 [1.700] Min.
Min. Minor Diameter.....	36,83 - 37,08 [1.450 - 1.460]
Form Diameter, Min.....	42,47 [1.672]
Fillet Radius.....	0,64 - 0,76 [.025 - .030]
Tip Radius.....	0,25 - 0,51 [.010 - .020]
Finish.....	1,6 (63)
Involute Profile Variation.....	+0,000 -0,028 [+0.0000 -0.0011]
Total Index Variation	0,041 [.0016]
Lead Variation	0,013 [.0005]
Circular Space Width:	
Maximum Actual	4,105 [.1616]
Minimum Effective	3,995 [.1573]
Maximum Effective	Ref. 4,056 [.1597]
Minimum Actual	Ref. 4,018 [.1582]
Dimension Between Two Pins	Ref. 26,929 - 27,084 [1.0602 - 1.0663]
Pin Diameter	Ref. 34,272 - 34,450 [1.3493 - 1.3563]
	Wide Flat for Root Clearance

10,000 Series

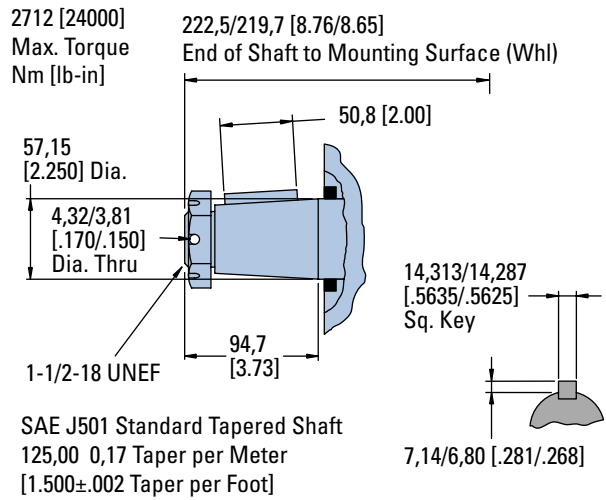
Dimensions

Shafts

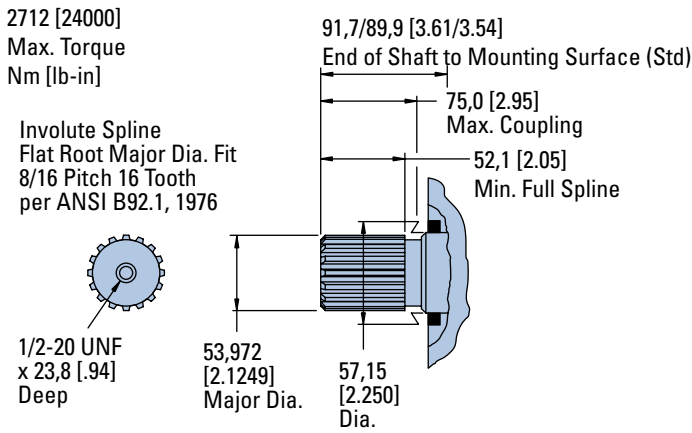
2 1/4 Inch Straight



2 1/4 Inch Tapered

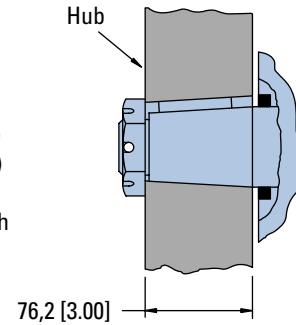


2 1/8 Inch 16 Tooth Splined

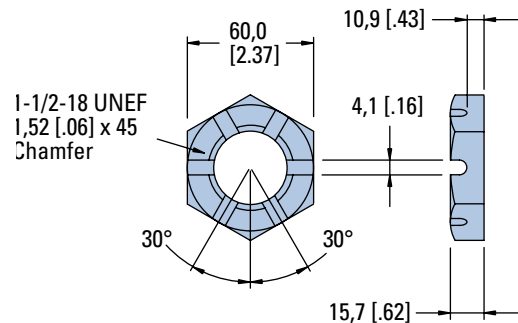


Tapered Shaft Hub Data

Recommended Torque:
(1150 Nm [850 lb-ft] Dry)
(880 Nm [650 lb-ft] Lub)
Plus Torque required to
align the slotted nut with
the Shaft Crosshole.



Slotted Hexagon Nut



10,000 Series

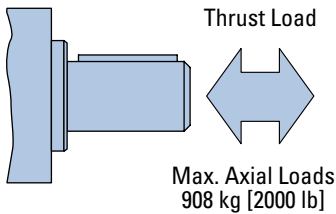
Side Shaft Load Capacity

These curves indicate the radial load capacity on the motor shaft at various locations with an external thrust load of 454 kg [1000 lb]. The maximum allowable thrust load is 908 kg [2000 lb].

Note:

Case pressure will increase the allowable inward thrust load and decrease the allowable outward thrust load. Case pressure will push outward on the shaft at 200 kg/7 Bar [441 lb/100 PSI].

Each curve is based on

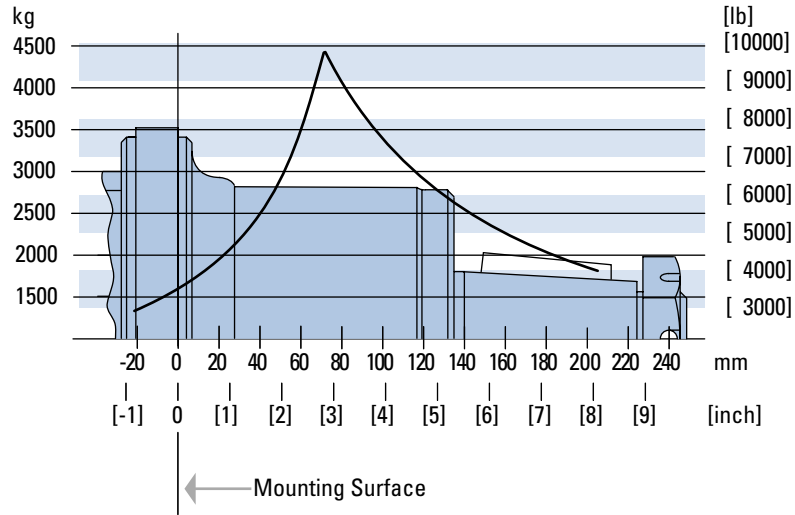
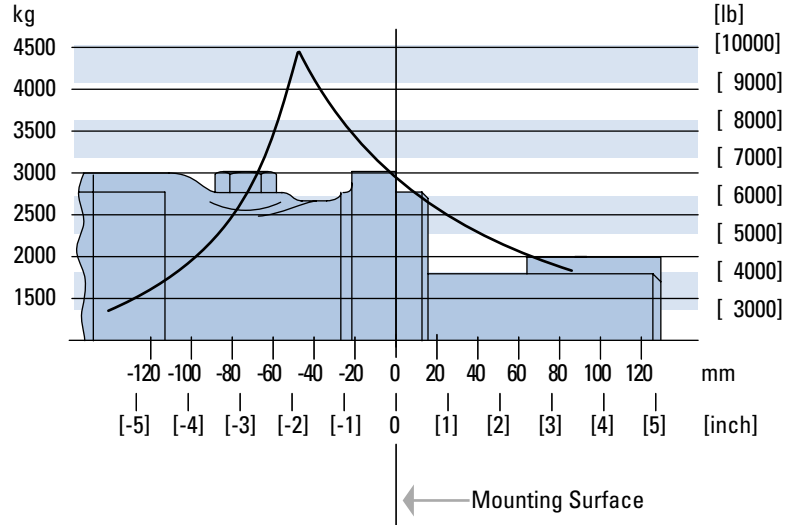


B 10 bearing life (2000 hours of 12,000,000 shaft revolutions at 100 RPM) at rated output torque.

To determine radial load at speeds other than 100 RPM, multiply the load values given on the bearing curve by the factors in the chart below.

RPM	Multiplication Factor
50	1.23
100	1.00
200	0.81
300	0.72
400	0.66
500	0.62
600	0.58
700	0.56
800	0.54

For 3,000,000 shaft revolutions or 500 hours—Increase these shaft loads 52%.

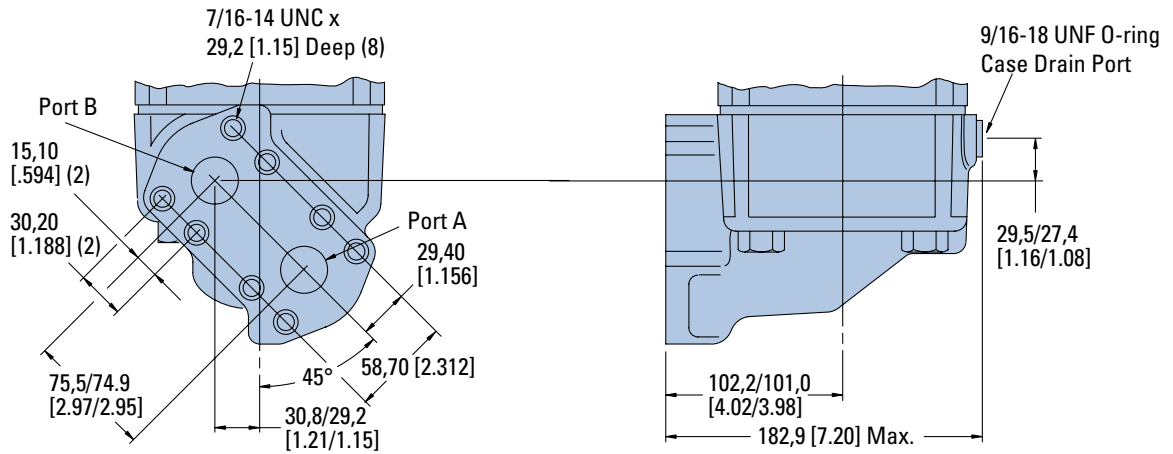


10,000 Series

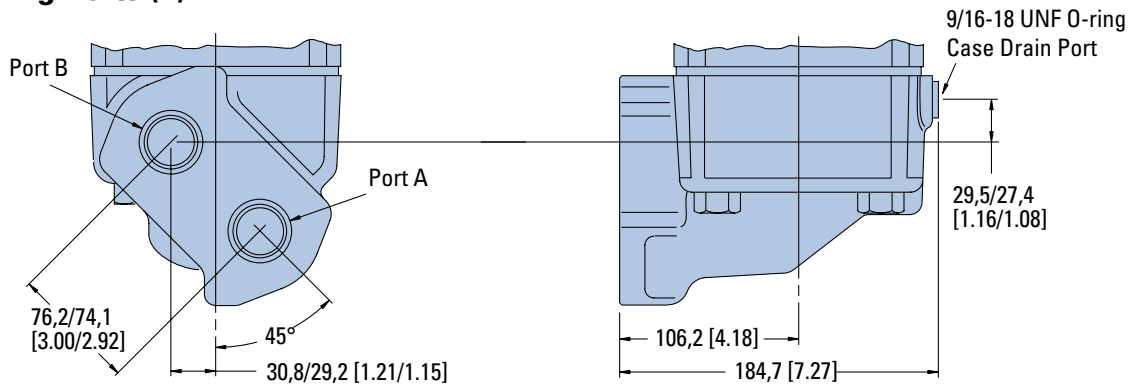
Dimensions

Ports

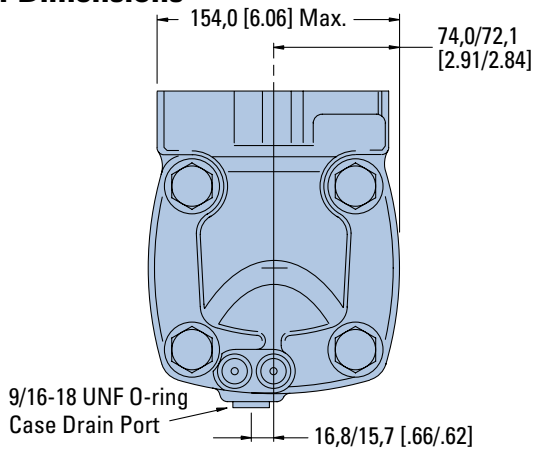
1 1/4 Inch Split Flange Ports (2)



1 5/16 -12 O-ring Ports (2)



End View Common Dimensions



10,000 Series

Product Numbers

Note:

For 10,000 Series Motors with a configuration **Not Shown** in the chart below: Use model code number system on the next page to specify product in detail.

Use digit prefix — 119-, 120-, or 121 - plus four digit number from charts for complete product number— Example 121-1014.

Orders will not be accepted without three digit prefix.

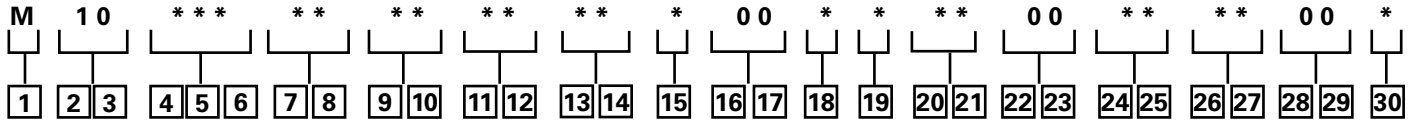
MOUNTING	SHAFT	PORT SIZE	DISPL. cm ³ /r [in ³ /r] / PRODUCT NUMBER			
			345 [21.0]	480 [29.3]	665 [40.6]	940 [57.4]
Standard SAE C-Mount	2 1/4 Inch Straight	1 5/16 O-ring	119-1028	-1029	-1030	-1031
		1 1/4 inch Split Flange	119-1040	-1041	-1042	-1043
	2 1/8 Inch 16 T Splined	1 5/16 O-ring	119-1032	-1033	-1034	-1035
		1 1/4 inch Split Flange	119-1044	-1045	-1046	-1047
	2 1/4 Inch Tapered	1 5/16 O-ring	119-1036	-1037	-1038	-1039
		1 1/4 inch Split Flange	119-1048	-1049	-1050	-1051
Wheel Motor	2 1/4 Inch Straight	1 5/16 O-ring	120-1005	-1006	-1007	-1008
		1 1/4 inch Split Flange	120-1017	-1018	-1019	-1020
	2 1/8 Inch 16 T Splined	1 5/16 O-ring	120-1009	-1010	-1011	-1012
		1 1/4 inch Split Flange	120-1021	-1022	-1023	-1024
	2 1/4 Inch Tapered	1 5/16 O-ring	120-1013	-1014	-1015	-1016
		1 1/4 inch Split Flange	120-1025	-1026	-1027	-1028
Bearingless		1 5/16 O-ring	121-1007	-1008	-1009	-1010
		1 1/4 inch Split Flange	121-1011	-1012	-1013	-1014

121-1014

10,000 Series

Model Code

The following 30-digit coding system has been developed to identify all of the configuration options for the 10,000 Series motor. Use this model code to specify a motor with the desired features. All 30-digits of the code must be present when ordering. You may want to photocopy the matrix below to ensure that each number is entered in the correct box.



1 Product
M – Motor

2, **3** Series
10 – 10,000 Series

4, **5**, **6** Displacement
cm³/r [in³/r]
210 – 343.8 [20.98]
293 – 479.5 [29.26]
406 – 665.3 [40.60]
574 – 940.8 [57.41]

7, **8** Mounting
Description

AA – Standard, 4 Bolt:
127,0 [5.00] Pilot Dia. 16,76
[.660] Dia. Holes on 161,92
[6.375] Dia. Bolt Circle
AB – Wheel, 4 Bolt: 16,76
[.660] Dia. Holes on 209,55
[8.250] Dia. Bolt Circle
AC – Bearingless, 4 Bolt:
152,4 [6.00] Pilot Dia. 20,70
[.815] Holes on 228,60 [9.00]
Dia. Bolt Circle

9, **10** Output Shaft
Description
00 – None (Bearingless)
01 – 57,15 [2.250] Dia.
Straight with .500-20 UNF-
2B Thread in End, 12.7
[.50] Square x 63,5 [2.50]
Straight End

02 – 57,15 [2.250] Dia.
.125:1 Tapered Shaft Per
SAE J512 with 1.500-18
UNEF-2A Threaded Shaft
End and Slotted Hex Nut,
14,288 [.5625] Square x
50,8 [2.00] Straight Key
03 – 53,98 [2.125] Dia. Flat
Root, Major Dia. Fit, 16
Tooth, 8/16 DP, 30 Degree
Involute Spline with .500-
20 UNF-20 Thread in End.
52,07 [2.050] Minimum
Full Spline Length

11, **12** Ports
AA – 1.3125-.12 UN O-Ring
Staggered Ports
AB – 31,75 [1.250] Dia.
4 Bolt Split Flange
Staggered Ports with
.4375-15 UNC-2B Tapped
Mounting Holes

13, **14** Case Flow Options
01 – .5625-18 UNF-2B Case
Drain SAE O-Ring Port

15 Low Pressure Relief
0 – None

16, **17** Pressure/Flow
Option
00 – None

18 Geroler Option
0 – Standard
1 - Free Running

19 Seal Option
0 – Standard
4 – Seal Guard

20, **21** Accessories
00 – None

22, **23** Special Features
(Hardware)
00 – None

24, **25** Special Features
(Assembly)

00 – None
AA – Reverse Rotation

26, **27** Paint / Packaging
00 – None
AA – Painted Low Gloss
Black

28, **29** Customer
Identification
00 – None

30 Design Code
C – Third (Standard and
Wheel Mounts)
D – Fourth (Bearingless
Mount)

Feature in **bold** are preferred and
allow for shorter lead time.

10,000 Series Two-Speed

Description

The Eaton 10,000 Series motors are available with an integral two speed feature that changes the displacement in a ratio of 1 to 2 and shifts the motor from a low speed high torque (LSHT) mode to a high speed low torque (HSLT) mode. The open center selector valve shifts the speed mode from low to high speed when pilot pressure of 6.9 Δ Bar [100 Δ PSI] minimum is applied to the pilot port (6.9 Bar [100 PSI] higher than case pressure). In the high speed mode torque values are approximately one half with twice the speed of the conventional 10,000 Series single speed motors.

An external two position three way valve is required for shifting the pilot pressure port between signal pressure (HSLT) and low pressure (LSHT)

Two speed motors are available with a return line closed center shuttle for closed circuit applications.

Low speed high torque mode is the normal position of the speed selector valve. When a differential pressure is supplied to the pilot port and 6,9 Bar [100 PSI] is reached, the selector valve overcomes the return spring force and the spool shifts to the high speed mode. The oil in the opposite side of the spool is drained internally. Pressure between the pilot supply and case drain or return line (depending on open or closed circuit system) must be maintained to keep the motor in the high speed mode.

When pilot pressure is removed from the pilot port the pressure in the pilot end of the spool valve is relieved and drained back through this three way valve, the spring force returns the spool valve to LSHT position.

Pilot pressure may come from any source that will provide uninterrupted pressure during the high speed mode operation. Pilot pressure 6,9 Δ Bar [100 Δ PSI] minimum, up to the full operating pressure of the motor.

In normal LSHT operation the Char-Lynn two speed motor will function with equal shaft output in either direction (CW or CCW), the same as the single speed Char-Lynn disc valve motors.

However, to prevent cavitation in the HSLT mode, the preferred direction of shaft rotation is counter clockwise (port B pressurized). This unique disc valve is not symmetrical in porting the fluid for the HSLT mode. Consequently, when the pressure is reversed for HSLT CW rotation, cavitation can occur. Installing a restriction (200 PSI or more depending on flow) in the hydraulic line that connects port B will prevent cavitation.

If you are operating in a critical area and a restriction in the hydraulic line causes concern, these two speed motors can be ordered timed with CW preferred HSLT shaft rotation. Hence, with this option port B will have to be pressurized for CW preferred HSLT shaft rotation. The restriction recommended for the line connecting port B remains unchanged. Finally in closed circuit applications a hydraulic line restriction is not required. Instead, the charge pump can be used to supply and maintain a minimum pressure of 14 Bar [200 PSI].

Note:

Be certain in closed loop applications that the charge pump when used for back pressure on the B port, has sufficient displacement to maintain charge pressure especially in dynamic braking or overrunning load conditions.

Important!

Due to potential problems in maintaining charge pump pressure at port B for uninterrupted back pressure during dynamic braking, Eaton does not recommend the two speed motor where overrunning conditions may exist.

Performance Data

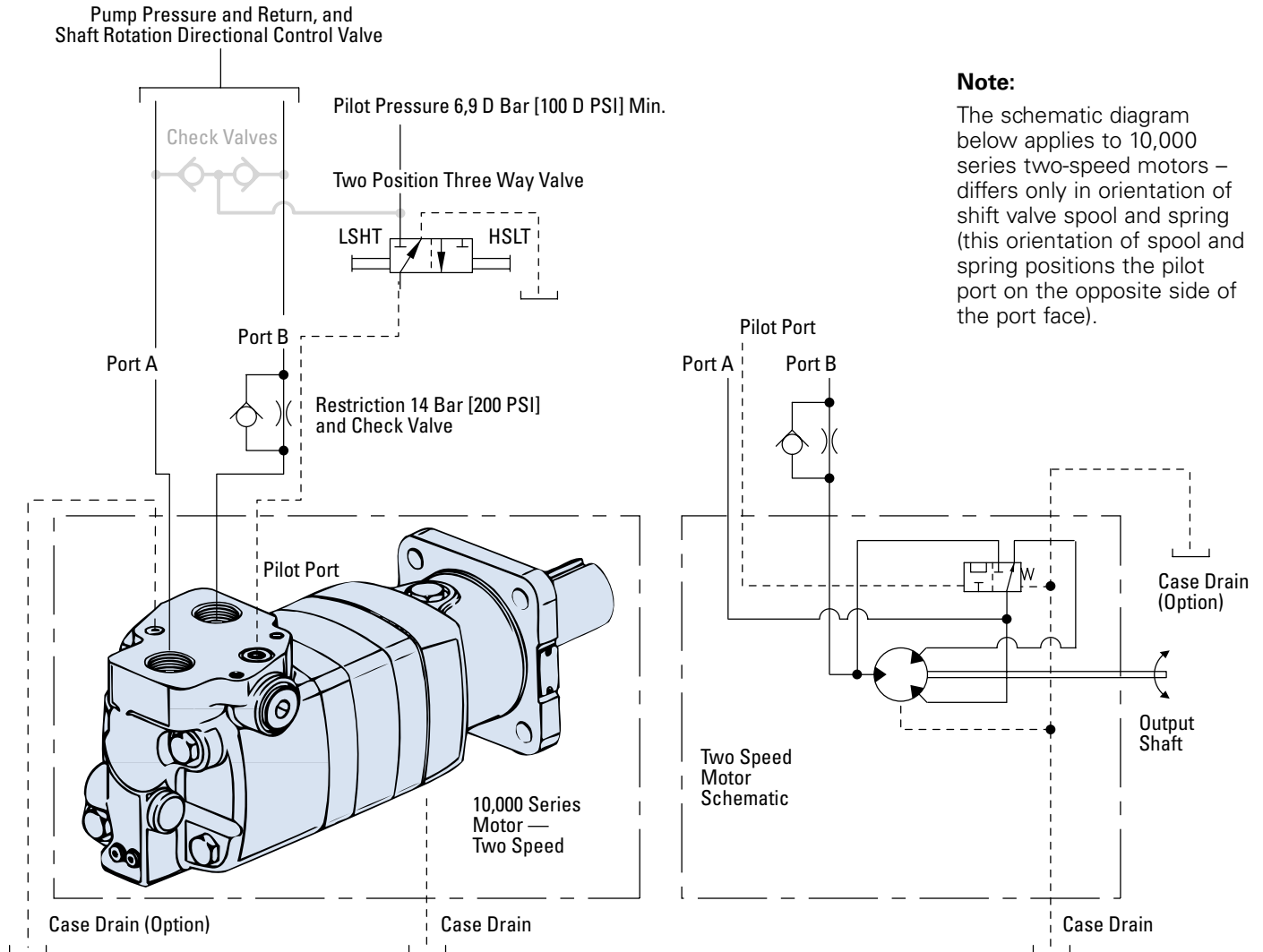
10,000 Series Two-Speed

In the high speed mode torque values are approximately one half with twice the speed of the conventional 10,000 Series single speed motors.

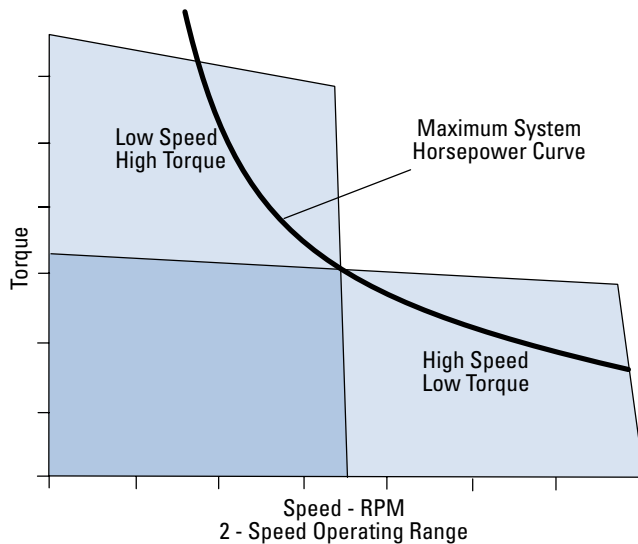
In the low speed mode torque and speed values are the same as the conventional 10,000 series single speed motors.

10,000 Series Two-Speed

Typical Hydraulic Circuit

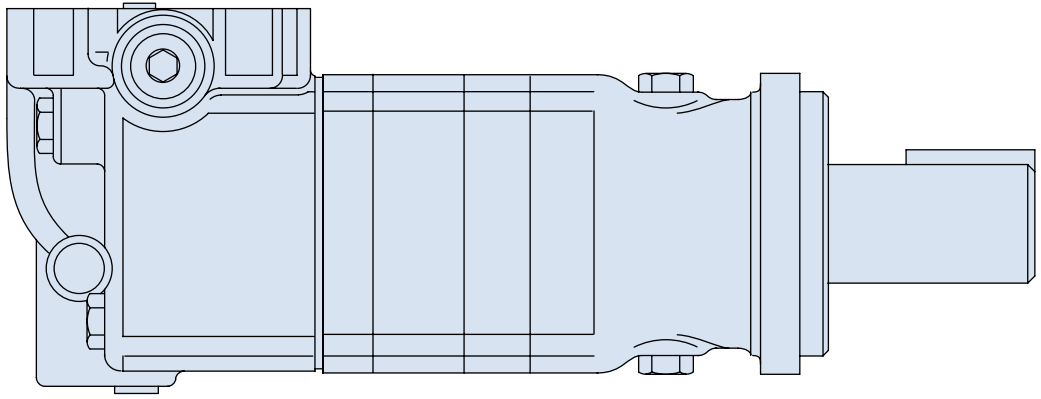


Note:
The schematic diagram below applies to 10,000 series two-speed motors – differs only in orientation of shift valve spool and spring (this orientation of spool and spring positions the pilot port on the opposite side of the port face).



10,000 Series Two-Speed

Specifications



10,000 SERIES TWO-SPEED MOTORS

Displ. cm ³ /r [in ³ /r]	High Speed Mode	169 [10.3]	239 [14.6]	332,7 [20.3]	470 [28.7]
	Low Speed Mode	345 [21.0]	480 [29.3]	665 [40.6]	940 [57.4]
Max. Speed (RPM) @ Continuous Flow	High Speed Mode	750	630	500	400
	Low Speed Mode	375	315	250	200
Flow l/min [GPM]	High Speed Mode	130 [35]	170 [45]	170 [45]	170 [45]
	Low Speed Mode	130 [35]	170 [45]	170 [45]	170 [45]
Torque* Nm [lb-in]	High Speed Mode				
	Continuous	440 [3900]	630 [5600]	905 [8000]	1175 [10400]
	Intermittent	585 [5200]	845 [7500]	1130 [10000]	1470 [13000]
Torque* Nm [lb-in]	Low Speed Mode				
	Continuous	1015 [9000]	1470 [13000]	2090 [18500]	2710 [24000]
	Intermittent	1355 [12000]	1965 [17400]	2600 [23000]	3445 [30500]
Pressure Δ bar [Δ PSI]	Continuous	205 [3000]	205 [3000]	205 [3000]	190 [2750]
	Intermittent	275 [4000]	275 [4000]	260 [3750]	240 [3500]
Weight kg [lb]	Standard or Wheel Mount	50,3 [111.0]	52,2 [115.0]	52,2 [115.0]	54,0 [119.0]
	Bearingless	38,1 [84.0]	39,9 [88.0]	39,9 [88.0]	41,7 [92.0]

*See shaft torque ratings for limitations.

Note:

To assure best motor life, run motor for approximately one hour at 30% of rated pressure before application to full load. Be sure motor is filled with fluid prior to any load applications.

High Speed Mode

(Reduced Motor Displacement)

Low Speed Mode

(Full Motor Displacement)

Maximum Inlet Pressure:

275 bar [4000 PSI]

Do not exceed Δ pressure rating (see chart above).

Maximum Return Pressure:

275 bar [4000 PSI] with case drain line installed.

Do not exceed Δ pressure rating (see chart above).

Δ bar [Δ PSI] :

The true pressure difference between inlet port and outlet port

Continuous Rating:

Motor may be run continuously at these ratings

Intermittent Operation:

10% of every minute

Peak Operation:

1% of every minute

Recommended Fluids:

Premium quality, anti-wear type hydraulic oil with a viscosity of not less than 70 SUS at operating temperature.

Recommended Maximum System Operating Temp.:

82° C [180° F]

Recommended Filtration:

per ISO Cleanliness Code, 4406: 20/18/13

10,000 Series Two-Speed

Dimensions

Standard and Wheel

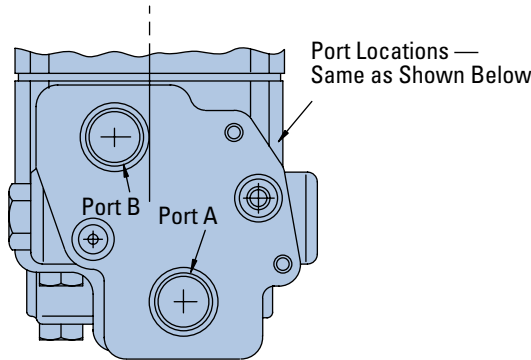
Ports

- 1 5/16 -12 UN-2B SAE O-ring Staggered Ports (2)
- 3/4 -16 UNF-2B SAE O-ring Case Drain Port (1)
- 7/16 -20 UNF-2B SAE O-ring Pilot Control Port (1) or
- 4 bolt 1 1/4 inch Split Flange Ports (2)
- 3/4 -16 UNF-2B SAE O-ring Case Drain Port (1)
- 7/16 -20 UNF-2B SAE O-ring Pilot Control Port (1)

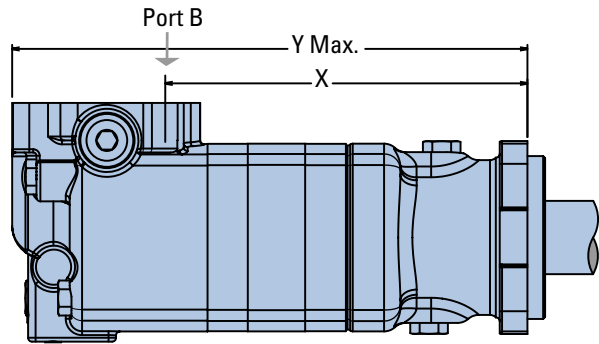
Standard Rotation Viewed from Shaft End

- Port A Pressurized — CW
- Port B Pressurized — CCW

1 5/16 -12 O-ring Staggered Ports



Two-Speed Standard Motors



STANDARD MOUNT MOTOR DIMENSIONS

Displacement cm ³ /r [in ³ /r]	X mm [inch]	Y mm [inch]
345 [21.0]	270,8 [10.66]	392,7 [15.46]
480 [29.2]	283,5 [11.16]	405,4 [15.96]
665 [40.6]	283,5 [11.16]	405,4 [15.96]
940 [57.4]	301,8 [11.88]	423,7 [16.68]

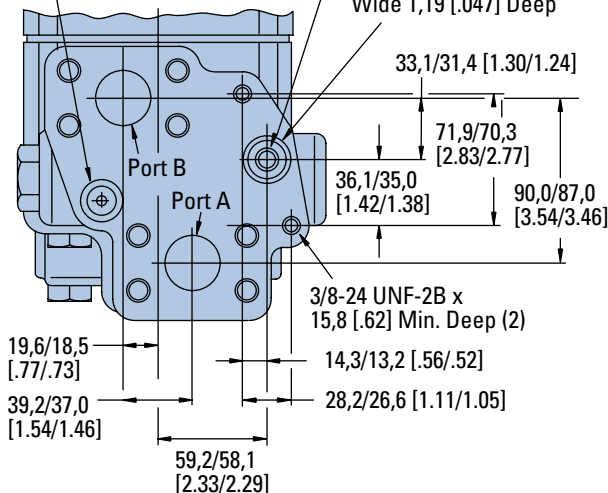
4 Bolt 1 1/4 Inch Split Flange Ports

7/16-20 UNF-2B O-ring Port — Pilot Control
Pilot Port Pressurized 6,9 Δ Bar [100 Δ PSI]
High Speed Low Torque (HSLT)

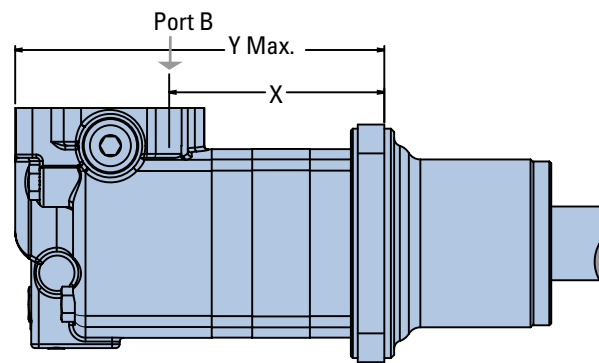
Pilot Port Depressurized (Tank)
Low Speed High Torque (LSHT)

1/2-20 UNF-2B
O-ring Case Drain Option
Port Size 5

Groove Provided for Seal
25,38 [.999] OD x 2,41 [.095]
Wide 1,19 [.047] Deep



Two-Speed Wheel Motors



WHEEL MOUNT MOTOR DIMENSIONS

Displacement cm ³ /r [in ³ /r]	X mm [inch]	Y mm [inch]
345 [21.0]	155,2 [6.11]	277,9 [10.94]
480 [29.2]	167,9 [6.61]	290,6 [11.44]
665 [40.6]	167,9 [6.61]	290,6 [11.44]
940 [57.4]	186,2 [7.33]	309,1 [12.17]

10,000 Series Two-Speed

Dimensions

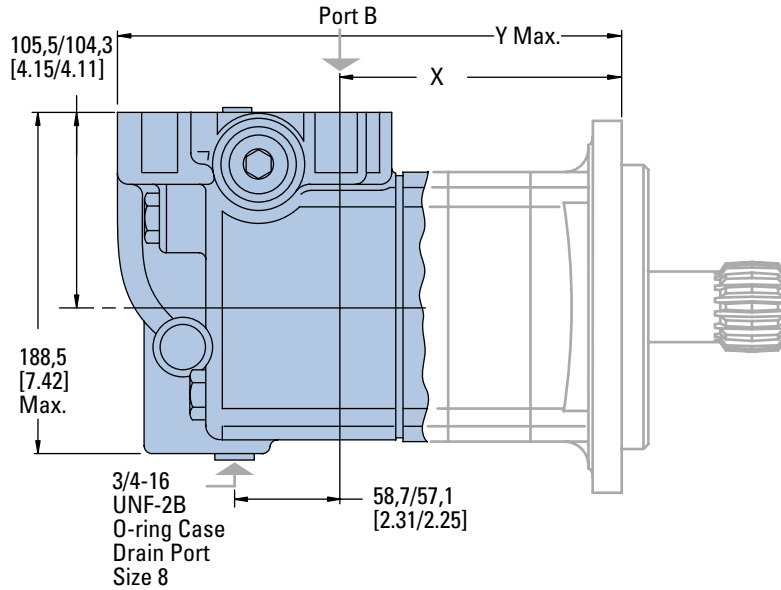
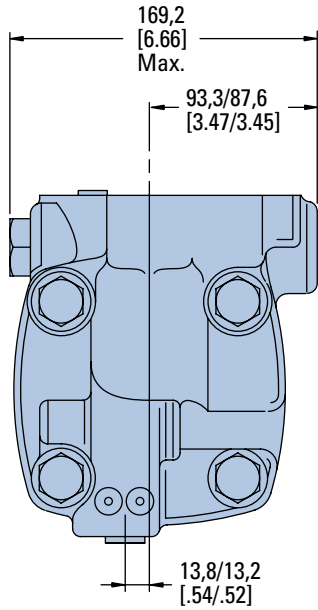
Bearingless

Ports

- 1 5/16 -12 UN-2B SAE O-ring Staggered Ports (2)
- 3/4 -16 UNF-2B SAE O-ring Case Drain Port (1)
- 7/16 -20 UNF-2B SAE O-ring Pilot Control Port (1) or
- 4 bolt 1 1/4 inch Split Flange Ports (2)
- 3/4 -16 UNF-2B SAE O-ring Case Drain Port (1)
- 7/16 -20 UNF-2B SAE O-ring Pilot Control Port (1)

Standard Rotation Viewed from Shaft End

- Port A Pressurized — CW
- Port B Pressurized — CCW



BEARINGLESS MOTOR DIMENSIONS

Displacement cm ³ /r [in ³ /r]	X mm [inch]	Y mm [inch]
345 [21.0]	146,3 [5.76]	268,2 [10.56]
480 [29.2]	159,0 [6.26]	280,9 [11.06]
665 [40.6]	159,0 [6.26]	280,9 [11.06]
940 [57.4]	177,3 [6.98]	299,5 [11.79]

10,000 Series Two-Speed

Product Numbers

Note:

For 10,000 Series Motors with a configuration **Not Shown** in the chart below: Use model code number system on the page C-6-13 to specify product in detail.

Use digit prefix — 119-, 120-, or 121 - plus four digit number from charts for complete product number— Example 121-2002.

Orders will not be accepted without three digit prefix.

MOUNTING	SHAFT	PORT SIZE	DISPL. cm ³ /r [in ³ /r] / PRODUCT NUMBER			
			345 [21.0]	480 [29.3]	665 [40.6]	940 [57.4]
Standard	2 1/4 Inch Straight	1 5/16 O-ring	119-2013	-2014	-2015	-2016
		1 1/4 inch Split Flange	119-2001	-2002	-2003	-2004
	2 1/8 Inch 16 T Splined	1 5/16 O-ring	119-2021	-2022	-2023	-2024
		1 1/4 inch Split Flange	119-2009	-2010	-2011	-2012
	2 1/4 Inch Tapered	1 5/16 O-ring	119-2017	-2018	-2019	-2020
		1 1/4 inch Split Flange	119-2005	-2006	-2007	-2008
Wheel Motor	2 1/4 Inch Straight	1 1/4 inch Split Flange	120-2005	-2006	-2007	-2008
	2 1/8 Inch 16 T Splined	1 1/4 inch Split Flange	120-2009	-2010	-2011	-2012
	2 1/4 Inch Tapered	1 5/16 O-ring	120-2013	-2014	-2015	-2016
		1 1/4 inch Split Flange	120-2001	-2002	-2003	-2004
Bearingless		1 5/16 O-ring	121-2005	-2006	-2007	-2008
		1 1/4 inch Split Flange	121-2001	-2002	-2003	-2004

121-2002

Notes