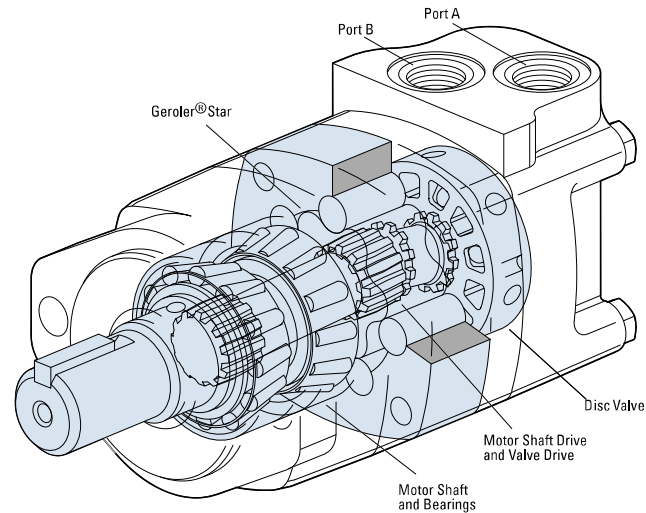


2000 Series

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

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.

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

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



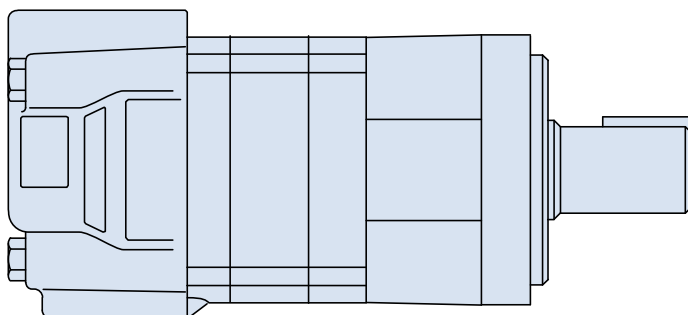
Plastic Injection



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

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

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]							
	14	26	53							
.95	5	2	1							
[.5]	[133]	[273]	[555]	[832]						
	15	31	63	94						
1.9	15	13	6	2						
[1]	[151]	[358]	[744]	[1091]	[1424]	[1697]	[1952]	[2189]	[2368]	
	17	40	84	123	161	192	221	247	268	
3.8	39	39	35	32	28	21	13	12	2	
[2]	[151]	[358]	[744]	[1099]	[1439]	[1737]	[2015]	[2293]	[2570]	[2855]
	17	40	84	124	163	196	228	259	290	323
7.5	82	80	76	72	68	61	50	38	29	20
[4]	[151]	[350]	[899]	[1113]	[1473]	[1800]	[2132]	[2454]	[2775]	[3100]
	17	40	102	126	166	203	241	277	314	350
15	167	163	158	152	148	139	126	115	102	90
[6]	[142]	[348]	[736]	[613]	[1492]	[1851]	[2208]	[2552]	[2898]	[3249]
	16	39	83	69	169	209	249	288	327	367
23	250	245	240	233	227	218	203	191	176	161
[8]	[133]	[338]	[729]	[1128]	[1509]	[1890]	[2269]	[2635]	[3000]	[3367]
	15	38	82	127	170	214	256	298	339	380
30	35	328	329	314	306	295	281	266	249	231
[10]	[124]	[331]	[724]	[1130]	[1521]	[1912]	[2309]	[2670]	[3036]	[3398]
	14	37	82	128	172	216	261	302	343	384
38	418	410	404	395	385	373	361	342	322	302
[12]	[106]	[315]	[714]	[1127]	[1525]	[1924]	[2326]	[2704]	[3082]	[3458]
	12	36	81	127	172	217	263	306	348	391
45	502	493	485	477	464	451	441	417	394	372
[14]	[98]	[298]	[706]	[1115]	[1525]	[1924]	[2326]	[2707]	[3080]	[3450]
	11	34	80	126	172	217	263	306	348	390
53	585	575	567	559	543	529	521	493	467	431
[16]	[80]	[285]	[688]	[1107]	[1510]	[1907]	[2311]	[2697]	[3070]	[3432]
	9	32	78	125	171	215	261	305	347	388
61	670	658	650	641	622	607	610	568	541	513
[18]	[62]	[262]	[673]	[1087]	[1490]	[1892]	[2281]	[2662]	[3030]	[3381]
	7	30	76	123	168	214	258	301	342	382
68	753	740	732	719	701	685	680	643	613	583
[20]	[53]	[242]	[644]	[1045]	[1447]	[1850]	[2246]	[2617]	[2988]	[3301]
	6	27	73	118	163	209	254	296	338	373
76	836	822	814	796	780	765	748	719	686	653
[22]	[35]	[231]	[639]	[1047]	[1437]	[1836]	[2218]	[2599]	[2981]	
	4	26	72	118	162	207	251	294	337	
83	920	916	907	895	876	854	749	803	774	
[24]	[18]	[204]	[612]	[1011]	[1366]	[1792]	[2182]	[2573]	[2963]	
	2	23	69	114	154	202	247	291	335	
91	1003	1000	991	978	960	940	918	882	850	
[25]		[195]	[594]	[994]	[1384]	[1765]	[2173]	[2564]		
		22	67	112	156	199	246	290		
95		1042	1033	1020	1003	984	954	921		

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

Intermittent

Peak

No Operation

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		

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] 230 887	[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		

[1560]
175
890 } Torque [lb-in]
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.

	Continuous		Peak
	Intermittent		No Operation

160 cm³/r [9.6 in³/r]
Δ Pressure Bar [PSI]

	[250] 15	[500] 35	[1000] 70	[1500] 105	[2000] 140	[2500] 170	[3000] 205	[3500] 240	[3750] 260
[.25] .95	[200] 25 3								
[.5] 1.9	[240] 25 9	[490] 55 7	[990] 110 5	[1570] 175 3	[2140] 240 1				
[1] 3.8	[280] 30 23	[590] 65 21	[1170] 130 19	[1730] 195 17	[2290] 260 13	[2830] 320 8	[3330] 375 3	[3820] 430 2	[4070] 460 1
[2] 7.5	[300] 35 46	[610] 70 45	[1210] 135 42	[1790] 200 39	[2350] 265 35	[2920] 330 34	[3480] 395 33	[4050] 460 28	[4330] 490 22
[4] 15	[320] 35 93	[630] 70 92	[1260] 140 89	[1890] 215 85	[2530] 285 79	[3170] 360 77	[3820] 430 75	[4460] 505 59	[4780] 540 43
[6] 23	[320] 35 142	[650] 75 140	[1300] 145 137	[1960] 220 131	[2620] 295 124	[3280] 370 118	[3940] 445 113	[4600] 520 104	[4930] 560 96
[8] 30	[310] 35 190	[650] 75 187	[1330] 150 184	[2010] 225 178	[2670] 300 170	[3330] 375 166	[4000] 450 164	[4660] 525 153	[4990] 565 142
[10] 38	[290] 35 237	[640] 70 235	[1340] 150 231	[2030] 230 226	[2850] 320 217	[3410] 385 212	[4030] 455 205	[4700] 530 193	[5030] 570 187
[12] 45	[270] 30 286	[620] 70 283	[1320] 150 279	[2030] 230 274	[2700] 305 265	[3370] 380 254	[4040] 455 246	[4710] 530 235	[5040] 570 224
[14] 53	[240] 25 334	[590] 65 331	[1300] 145 326	[2020] 230 322	[2690] 305 312	[3360] 380 305	[4030] 455 297	[4700] 530 286	
[16] 61	[220] 25 382	[570] 65 378	[1270] 145 374	[1980] 225 369	[2660] 300 360	[3330] 375 349	[4010] 455 339	[4680] 530 326	
[18] 68	[190] 20 429	[540] 60 426	[1240] 140 422	[1960] 220 416	[2640] 300 407	[3320] 375 394	[3990] 450 387		
[20] 76	[170] 20 477	[510] 60 474	[1210] 135 469	[1920] 215 462	[2630] 300 451	[3310] 375 440	[3940] 445 430		
[22] 83	[150] 15 525	[480] 55 522	[1170] 130 517	[1880] 210 510	[2600] 295 501	[3290] 370 484	[3920] 445 473		
[24] 91	[120] 15 572	[450] 50 569	[1150] 130 564	[1860] 210 556	[2570] 290 546	[3260] 370 531	[3900] 440 522		
[25] 95	[90] 10 596	[440] 50 593	[1140] 130 587	[1840] 210 580	[2560] 290 566	[3230] 365 553	[3880] 440 544		
[30] 114		[330] 35 713	[1040] 120 706	[1750] 200 696	[2470] 280 682	[3140] 355 672	[3800] 430 658		

[330]
35 } Torque [lb-in]
713 } Speed RPM

195 cm³/r [11.9 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
[.25] .95	[240] 25 4	[590] 65 2													
[.5] 1.9	[290] 35 8	[640] 70 6	[990] 110 5	[1340] 150 2											
[1] 3.8	[380] 45 17	[730] 80 16	[1100] 125 15	[1430] 160 14	[1790] 200 13	[2120] 200 11	[2450] 275 9	[2720] 305 7	[2990] 340 5	[3260] 370 4	[3540] 400 3	[3810] 430 2	[4080] 460 2	[4350] 490 1	[4620] 520 1
[2] 7.5	[390] 45 37	[755] 85 35	[1135] 135 34	[1470] 165 33	[1860] 210 32	[2195] 225 31	[2535] 285 28	[2880] 325 26	[3120] 355 24	[3680] 415 21	[4090] 460 20	[4500] 510 19	[4800] 540 17	[5100] 575 14	[5400] 610 14
[4] 15	[405] 45 76	[795] 90 74	[1185] 135 73	[1540] 175 72	[1970] 225 71	[2310] 260 70	[2675] 300 66	[3040] 345 64	[3420] 385 62	[3790] 430 61	[4160] 470 59	[4520] 510 57	[4890] 550 55	[5260] 595 51	[5630] 635 45
[6] 23	[405] 45 115	[815] 90 113	[1220] 140 111	[1590] 180 110	[2035] 230 109	[2395] 270 108	[2780] 315 104	[3170] 360 102	[3560] 400 100	[3940] 445 99	[4320] 490 96	[4700] 530 94	[5070] 570 91	[5450] 615 87	[5830] 660 81
[8] 30	[400] 45 154	[820] 90 151	[1230] 140 149	[1625] 185 148	[2065] 235 147	[2450] 275 146	[2850] 320 143	[3260] 370 140	[3670] 415 137	[4040] 455 135	[4410] 500 132	[4780] 540 130	[5150] 580 127	[5520] 625 123	[5890] 665 117
[10] 38	[380] 45 193	[780] 95 190	[1230] 140 188	[1645] 185 187	[2095] 235 186	[2480] 280 184	[2895] 325 181	[3310] 375 177	[3730] 420 175	[4100] 465 173	[4470] 505 170	[4840] 545 168	[5210] 590 164	[5590] 630 160	
[12] 45	[355] 40 231	[790] 90 229	[1215] 135 227	[1650] 185 226	[2100] 235 224	[2485] 280 221	[2915] 330 219	[3340] 375 218	[3760] 425 215	[4120] 465 211	[4480] 505 208	[4850] 550 204			
[14] 53	[320] 35 269	[765] 85 267	[1190] 135 267	[1645] 185 264	[2090] 235 261	[2475] 280 260	[2915] 330 257	[3350] 380 254	[3770] 425 250	[4130] 465 248	[4480] 505 245	[4860] 550 241			
[16] 61	[290] 30 308	[730] 80 306	[1160] 130 305	[1625] 185 303	[2070] 235 299	[2455] 275 296	[2900] 330 294	[3340] 375 290	[3760] 425 286	[4130] 465 283	[4490] 505 279	[4860] 550 276			
[18] 68	[290] 30 346	[690] 80 345	[1120] 125 345	[1590] 180 342	[2035] 230 337	[2420] 270 334	[2870] 325 333	[3310] 375 327	[3730] 420 321	[4100] 465 315	[4480] 505 308				
[20] 76	[210] 25 385	[650] 75 384	[1080] 120 383	[1550] 175 380	[1995] 225 375	[2380] 270 372	[2830] 320 371	[3270] 370 367	[3690] 415 363	[4070] 460 359	[4450] 500 355				
[22] 83	[170] 20 424	[610] 70 423	[1040] 120 422	[1500] 170 418	[1955] 220 414	[2340] 265 410	[2785] 315 408	[3220] 365 404	[3640] 410 399	[4050] 460 395					
[24] 91	[135] 15 462	[570] 65 461	[1000] 115 460	[1440] 165 457	[1910] 215 453	[2300] 260 449	[2740] 310 446	[3170] 360 441	[3590] 405 436	[3980] 450 432					
[25] 95	[120] 15 484	[550] 60 482	[980] 110 479	[1410] 160 476	[1890] 215 473	[2280] 260 469	[2720] 305 464	[3150] 355 459	[3570] 405 454	[3960] 445 449					
[30] 114		[420] 45 577	[860] 95 575	[1290] 145 571	[1700] 190 567	[2120] 240 562	[2530] 285 556	[2940] 330 550	[3400] 385 542						

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	
Flow LPM [GPM]	[.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	[2360] 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 47	[5850] 660 46	[6320] 715 45	[6780] 765 44	[7250] 820 42	
	[6] 23	[460] 50 91	[1020] 115 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] 690 101	[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] 590 135	[5720] 645 133	[6230] 705 130				
	[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] 470 232	[4660] 525 227	[5140] 585 223						
	[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								

[3260]
370
450

Torque [lb-in]
Nm
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
Flow LPM [GPM]	[.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							

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] 1.9	[670] 75	[1600] 180						
[1] 3.8	[920] 105	[2000] 225	[2990] 340	[3900] 440	[4880] 550			
[2] 7.5	[950] 105	[2060] 235	[3110] 350	[4080] 460	[5110] 575	[6320] 715		
[4] 15	[980] 110	[2130] 240	[3230] 365	[4270] 480	[5350] 605	[6370] 720	[7380] 835	[7980] 900
[6] 23	[980] 110	[2120] 240	[3230] 365	[4300] 485	[5370] 605	[6420] 725	[7470] 845	[8225] 930
[8] 30	[980] 110	[2110] 240	[3220] 365	[4330] 490	[5400] 610	[6470] 730	[7550] 855	
[10] 38	[920] 105	[2050] 230	[3170] 360	[4300] 485	[5390] 610	[6460] 730	[7550] 855	
[12] 45	[860] 95	[1990] 225	[3120] 355	[4260] 480	[5370] 605	[6460] 730	[7560] 855	
[14] 53	[790] 90	[1930] 220	[3055] 345	[4185] 475	[5300] 600	[6400] 725		
[16] 61	[720] 80	[1870] 210	[2990] 340	[4110] 465	[5230] 590	[6340] 715		
[18] 68	[630] 70	[1770] 200	[2890] 325	[4020] 455	[5140] 580	[6260] 705		
[20] 76	[550] 60	[1670] 190	[2800] 315	[3940] 445	[5060] 570	[6180] 700		
[22] 83	[450] 50	[1570] 175	[2700] 305	[3830] 435	[4960] 560	[6070] 685		
[24] 91	[360] 40	[1480] 165	[2600] 295	[3730] 420	[4860] 550	[5970] 675		
[26] 98	[270] 30	[1390] 155	[2510] 285	[3640] 410	[4770] 540			
[28] 106		[1260] 140	[2370] 270	[3520] 400	[4630] 525			
[30] 114		[1130] 125	[2240] 255	[3400] 385	[4500] 510			

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] 1.9	[560] 65	[1310] 150									
[1] 3.8	[770] 85	[1540] 175	[2290] 260	[3080] 350	[3780] 430	[4480] 505	[5170] 585	[5880] 665	[6580] 745	[7270] 820	[7980] 900
[2] 7.5	[790] 90	[1580] 180	[2360] 265	[3180] 360	[3930] 445	[4680] 530	[5430] 615	[6180] 700	[6840] 775	[7500] 845	[8170] 925
[4] 15	[810] 90	[1660] 190	[2480] 280	[3320] 375	[4130] 465	[4940] 560	[5740] 650	[6550] 740	[7230] 815	[7880] 890	
[6] 23	[820] 90	[1700] 190	[2550] 290	[3420] 385	[4250] 480	[5080] 575	[5920] 670	[6750] 765	[7420] 840	[8000] 905	
[8] 30	[820] 90	[1700] 190	[2580] 290	[3460] 390	[4300] 485	[5130] 580	[5960] 675	[6800] 770			
[10] 38	[800] 90	[1700] 190	[2590] 295	[3480] 395	[4320] 490	[5160] 585	[6000] 680	[6840] 775			
[12] 45	[770] 85	[1680] 190	[2570] 290	[3470] 390	[4310] 485	[5150] 580	[5990] 675	[6830] 770			
[14] 53	[740] 85	[1640] 185	[2530] 285	[3430] 390	[4280] 485	[5120] 580	[5960] 675				
[16] 61	[690] 80	[1590] 180	[2480] 280	[3370] 380	[4220] 475	[5060] 570	[5910] 670				
[18] 68	[640] 70	[1530] 170	[2420] 275	[3310] 375	[4160] 470	[5010] 565	[5870] 665				
[20] 76	[580] 65	[1470] 165	[2370] 270	[3260] 370	[4110] 465	[4960] 560	[5820] 660				
[22] 83	[510] 60	[1390] 155	[2290] 260	[3170] 360	[4030] 455	[4880] 550					
[24] 91	[440] 50	[1330] 150	[2220] 250	[3100] 350	[3950] 445	[4800] 540					
[26] 98	[350] 40	[1240] 140	[2130] 240	[3020] 340	[3880] 440	[4730] 535					
[28] 106	[270] 30	[1150] 130	[2050] 230	[2930] 330	[3790] 430	[4650] 525					
[30] 114	[180] 20	[1060] 120	[1960] 220	[2850] 320	[3710] 420	[4570] 515					
[35] 132		[840] 95	[1760] 200	[2640] 300	[3480] 395						

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

2000 Series

Dimensions

Standard Mount

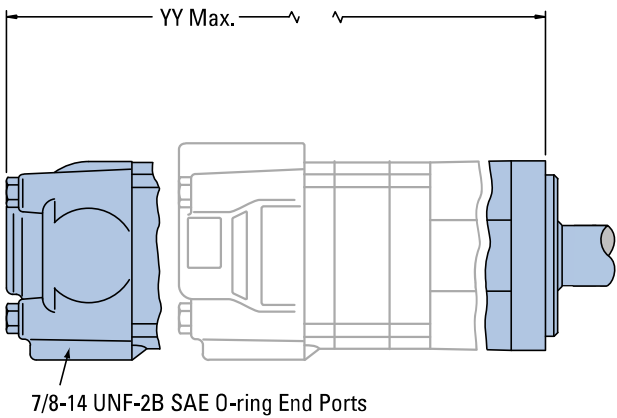
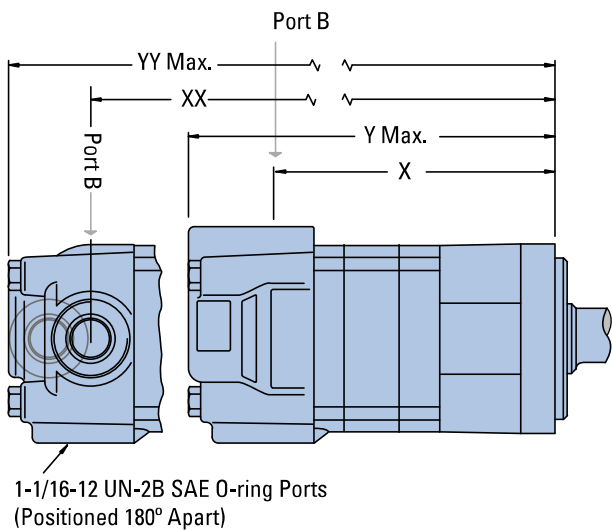
Ports

- 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

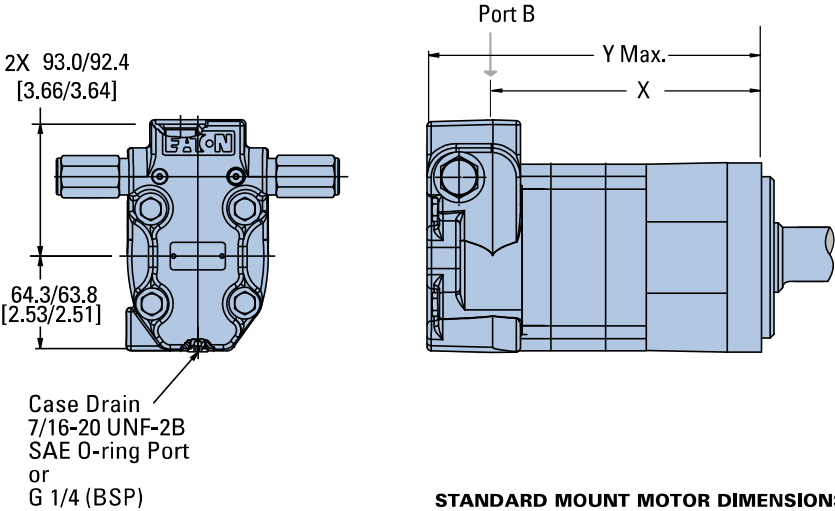
Ports

- 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

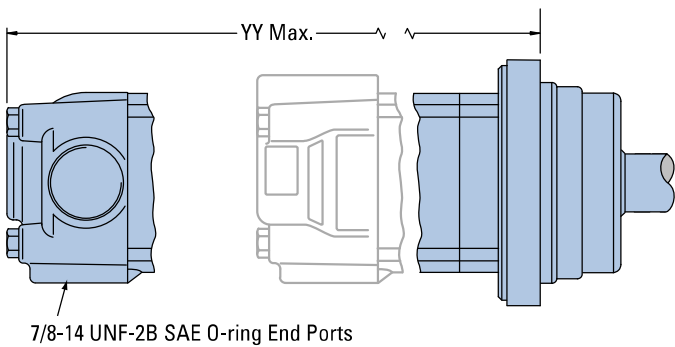
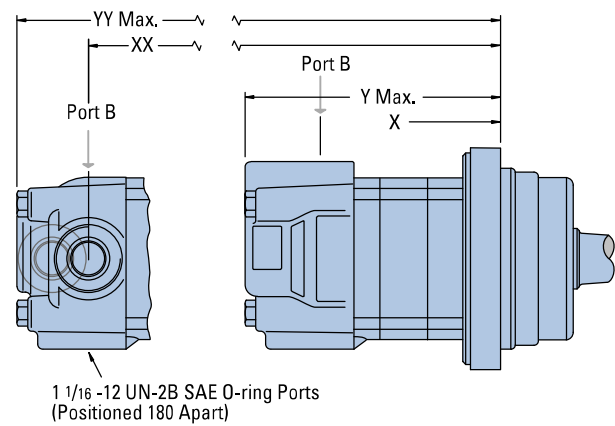
Ports

- 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

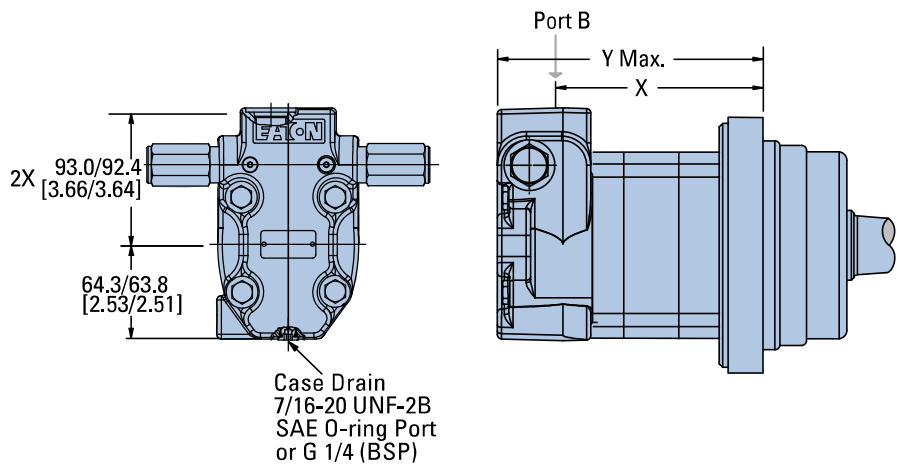
Ports

- 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

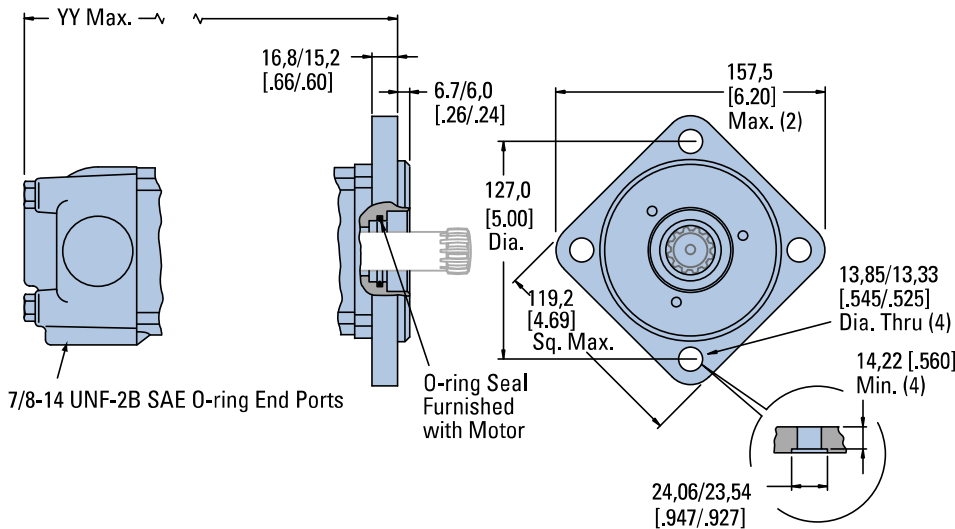
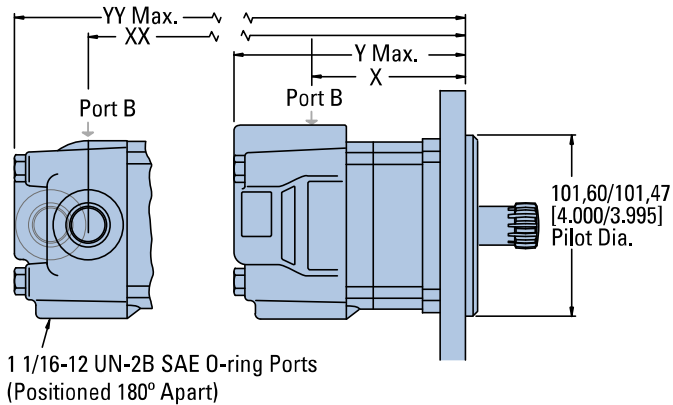
Displacement cm ³ /r [in ³ /r]	X mm [inch]	Y mm [inch]
80 [4.9]	96,9 [3.82]	144,3 [5.68]
100 [6.2]	101,4 [4.00]	148,9 [5.86]
130 [8.0]	107,8 [4.25]	155,2 [6.11]
160 [9.6]	107,8 [4.25]	155,2 [6.11]
195 [11.9]	114,6 [4.52]	162,1 [6.38]
245 [14.9]	123,5 [4.87]	171,0 [6.73]
305 [18.7]	135,0 [5.32]	182,4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

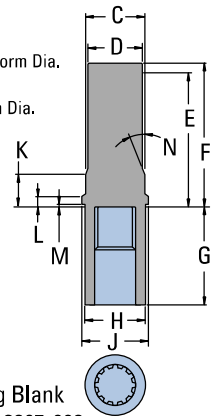
7/8 -14 UNF-2B SAE O-ring Staggered Ports (2)
 7/16-20 UNF-2B SAE O-ring Case Drain Port (1) or
 1 1/16 -12 UN-2B SAE O-ring Ports (Positioned 180° Apart) (2)
 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
 7/8 -14 UNF-2B SAE O-ring End Ports (2)
 7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or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



Mating Coupling Blank
 Eaton Part No. 13307-003

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

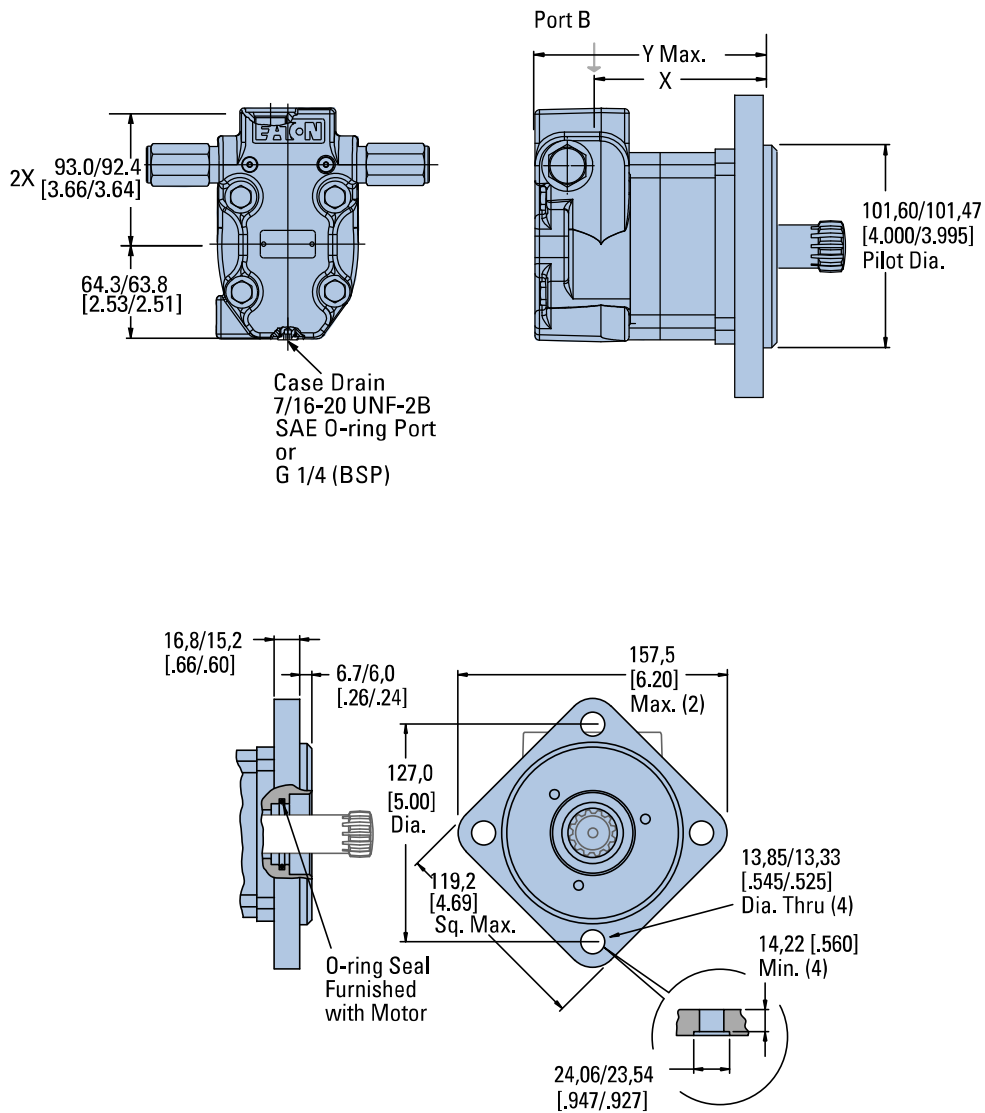
Ports

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



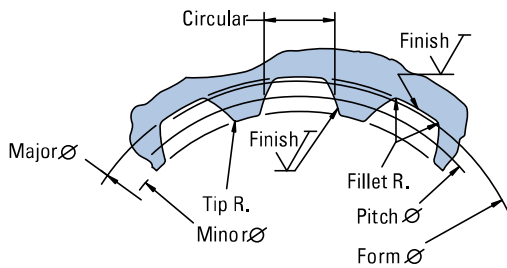
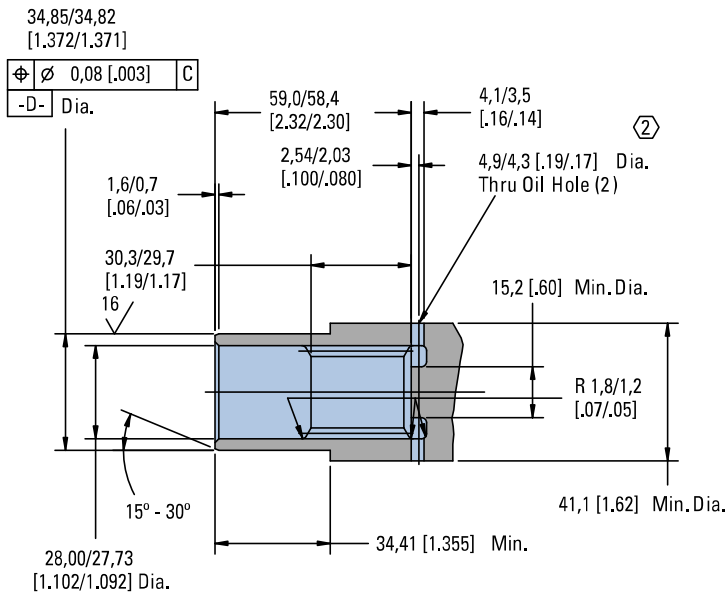
BEARINGLESS MOTORS DIMENSIONS

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]

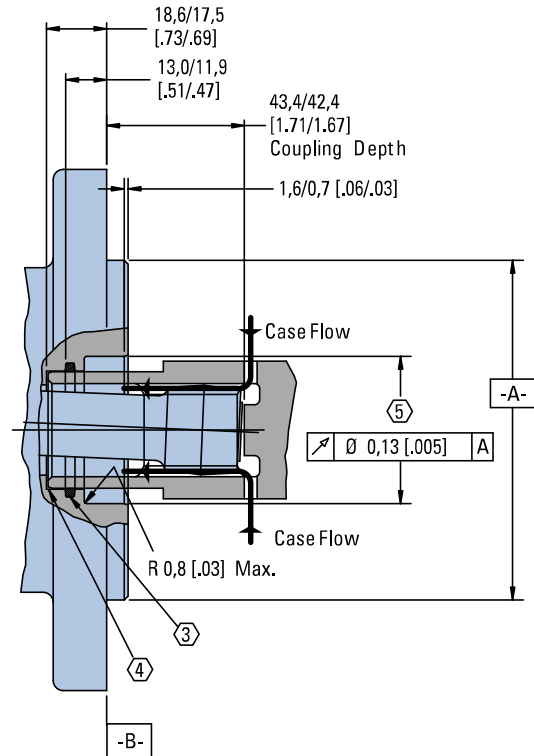
2000 Series

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 0,076 - 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 Counterbore designed to adapt a standard sleeve bearing 35,010 - 35,040 [1.3784 - 1.3795] I.D. by 44,040 - 44,070 [1.7339 - 1.7350] O.D. (Oilite Bronze Sleeve Bearing AAM3544-22).



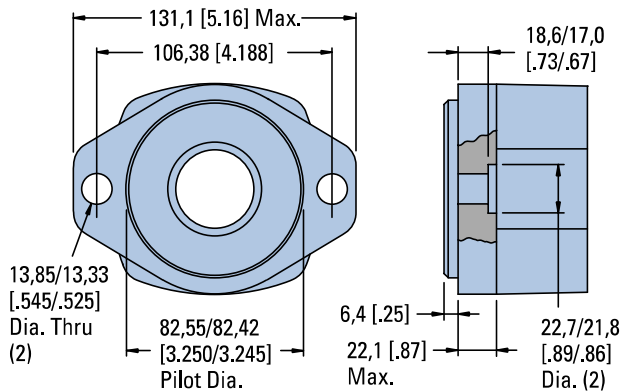
Spline Pitch.....	12/24
Pressure Angle.....	30°
Number of teeth.....	12
Class of Fit.....	Ref. 5
Type of Fit.....	Side
Side Pitch Diameter.....	Ref. 25,400000 [1.0000000]
Base Diameter.....	Ref. 21,997045 [.8660254] Ⓢ 0,21 [.008] D
Major Diameter.....	(27,74 [1.092] Max. 27,59 [1.086] Min.)
Minor Diameter.....	23,097 - 23,224 [.9093 - .9143]
Form Diameter, Min.	29,93 [1.060]
Fillet Radius.....	0,64 - 0,76 [.025 - .030]
Tip Radius.....	0,25 - 0,38 [.010 - .015]
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	4,318 [.1700]
Minimum Effective	4,216 [.1660]
Maximum Effective	Ref. 4,270 [.1681]
Minimum Actual	Ref. 4,247 [.1672]
Dimension Between Two Pins	Ref. 19,020 - 19,190 [.7488 - .7555]
Pin Diameter	4,496 [.1770] Pins to Have 3,38 [.133]
Wide Flat for Root Clearance	

2000 Series

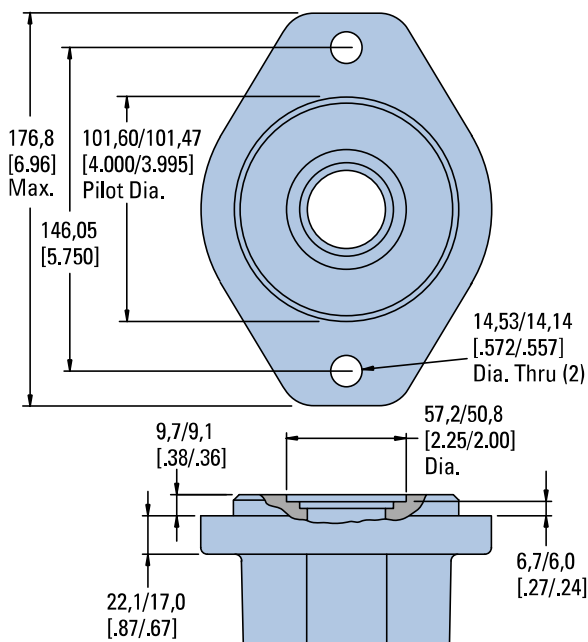
Dimensions

Mounting Options

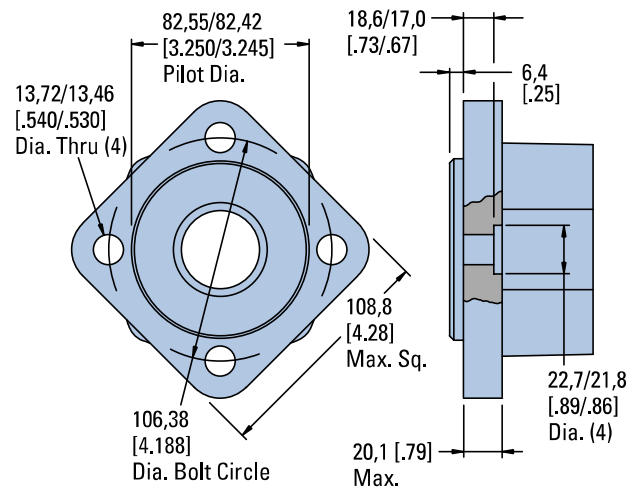
SAE A — Two Bolt (Standard Motor)



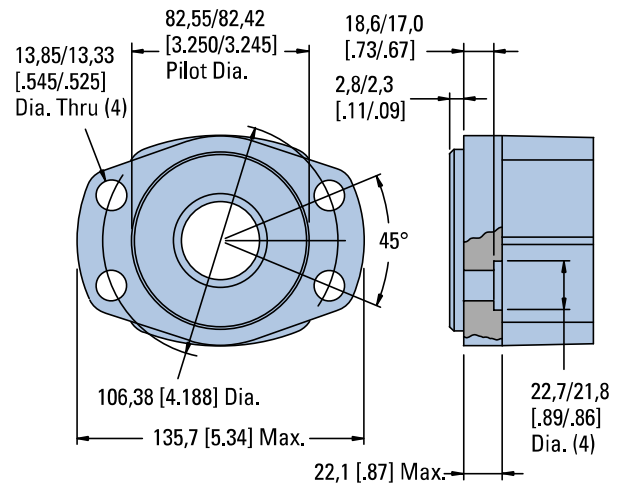
SAE B — Two Bolt



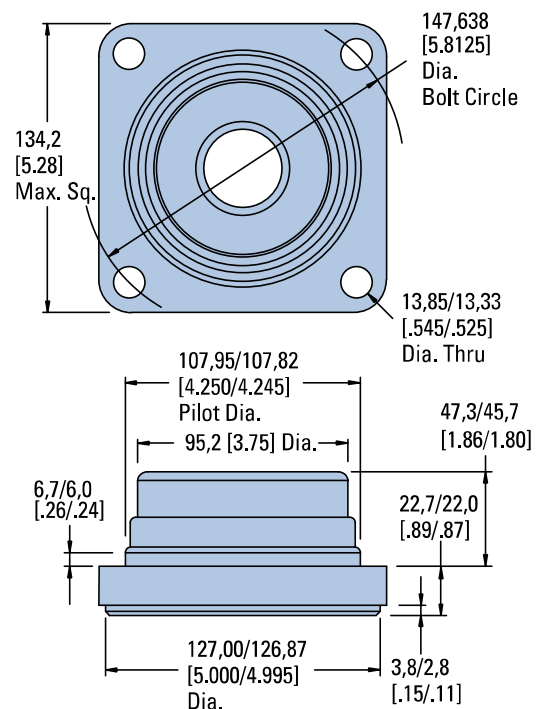
Four Bolt



Four Bolt Magneto



Four Bolt (Wheel Motor)

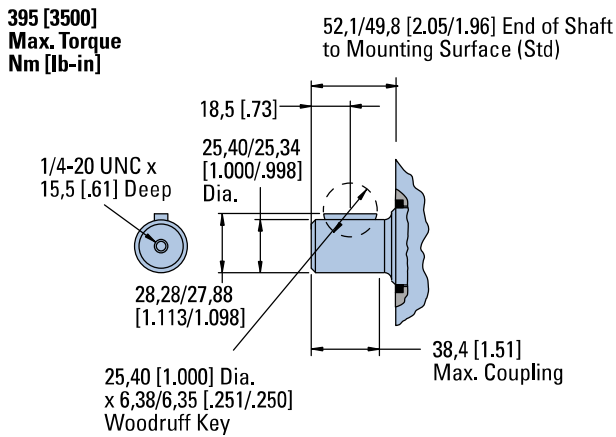


2000 Series

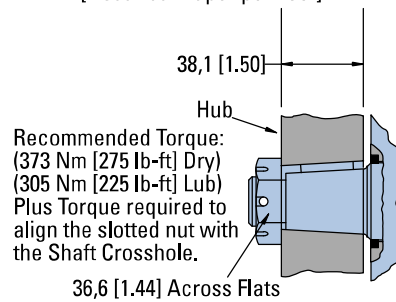
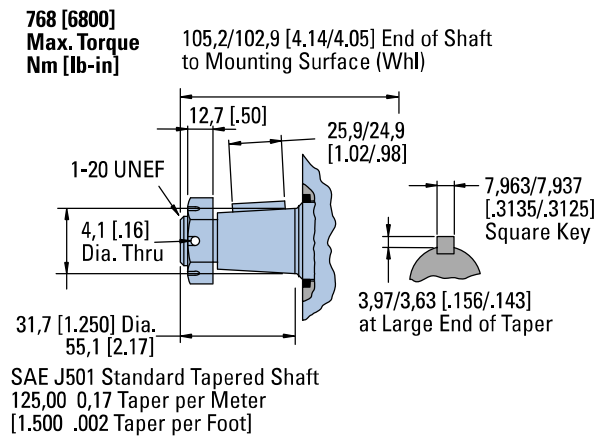
Dimensions

Shafts

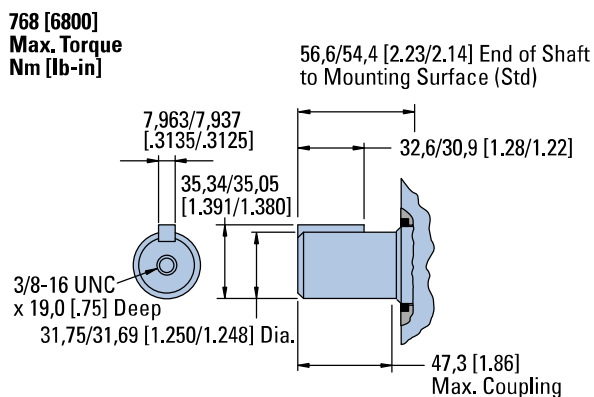
1 Inch Straight



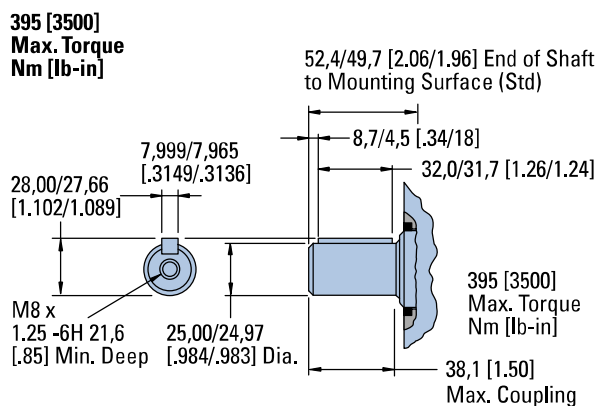
1 1/4 Inch Tapered



1 1/4 Inch Straight



25 mm Straight



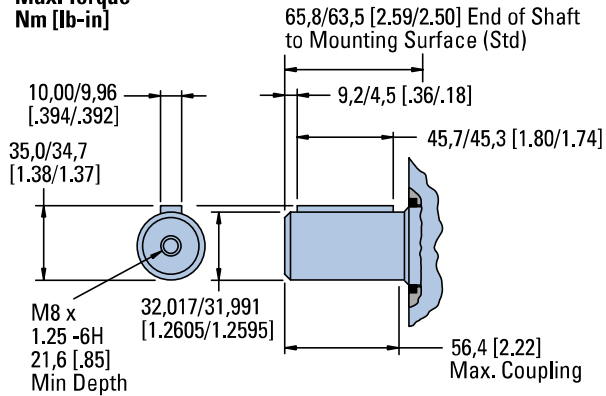
2000 Series

Dimensions

Shafts

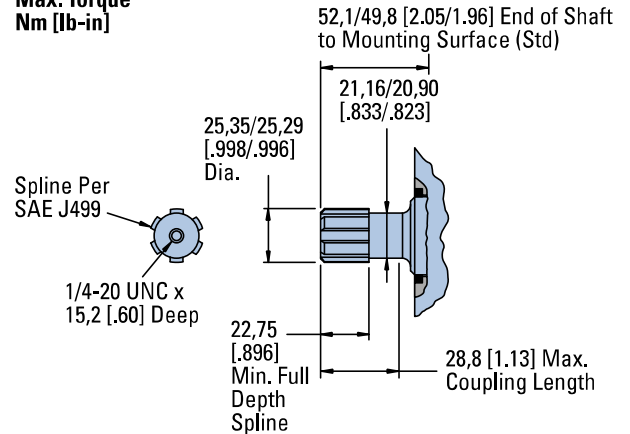
32 mm Straight

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



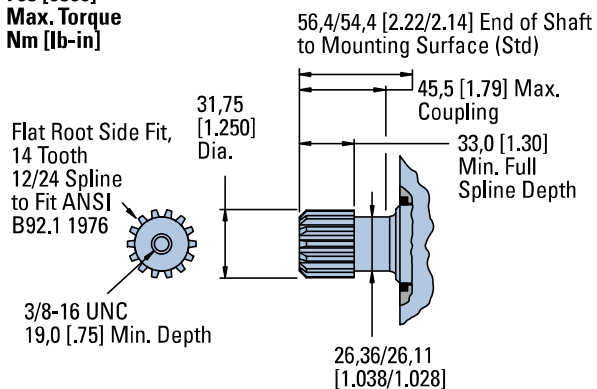
SAE 6B Splined

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



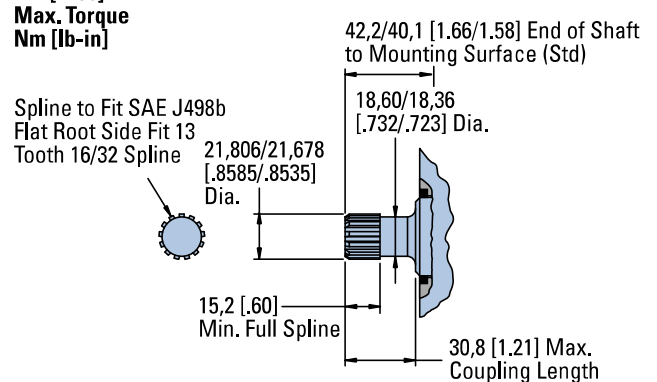
1 1/4 -14 Tooth Splined

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



13 Tooth Splined

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



2000 Series

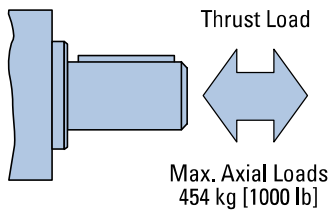
Shaft Side Load Capacity

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



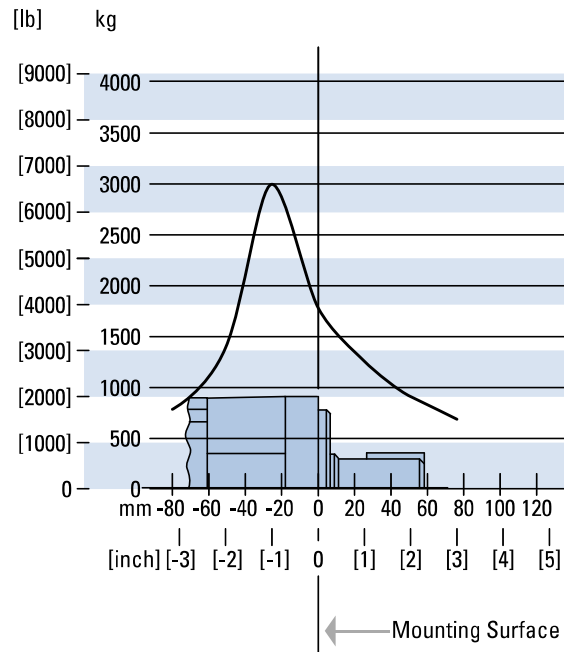
B 10 bearing life (2000 hours of 12,000,000 shaft revolutions at 100 RPM) at rated output torque.

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.

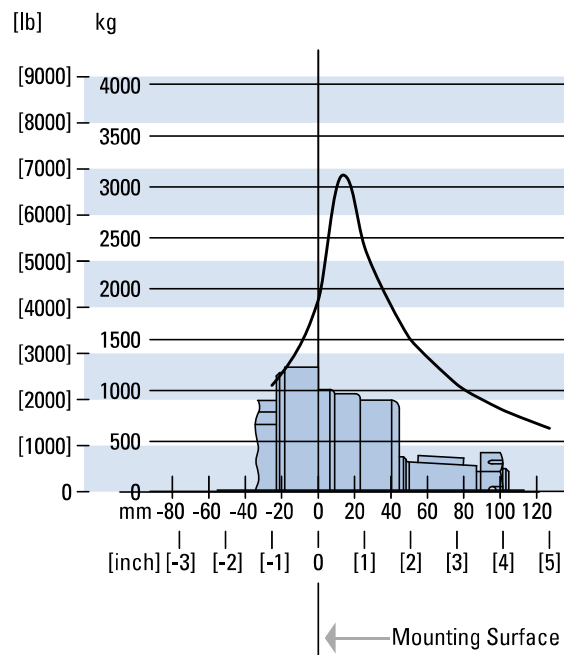
RPM	Multiplication Factor
50	1.23
100	1.00
200	0.81
300	0.72
400	0.66
500	0.62
600	0.58
700	0.56
800	0.54

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

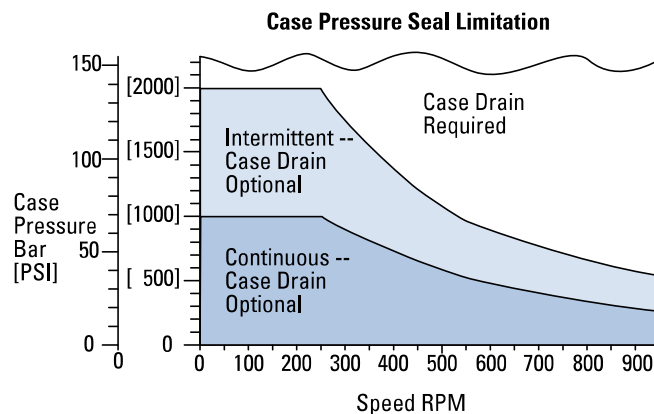
Char-Lynn 2000 Series motors are durable and have long life as long as the recommended case pressure is not exceeded. Allowable case pressure is highest at low shaft speeds. Consequently, motor life will be shortened if case pressure exceeds these ratings (acceptability may vary with application). Determine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

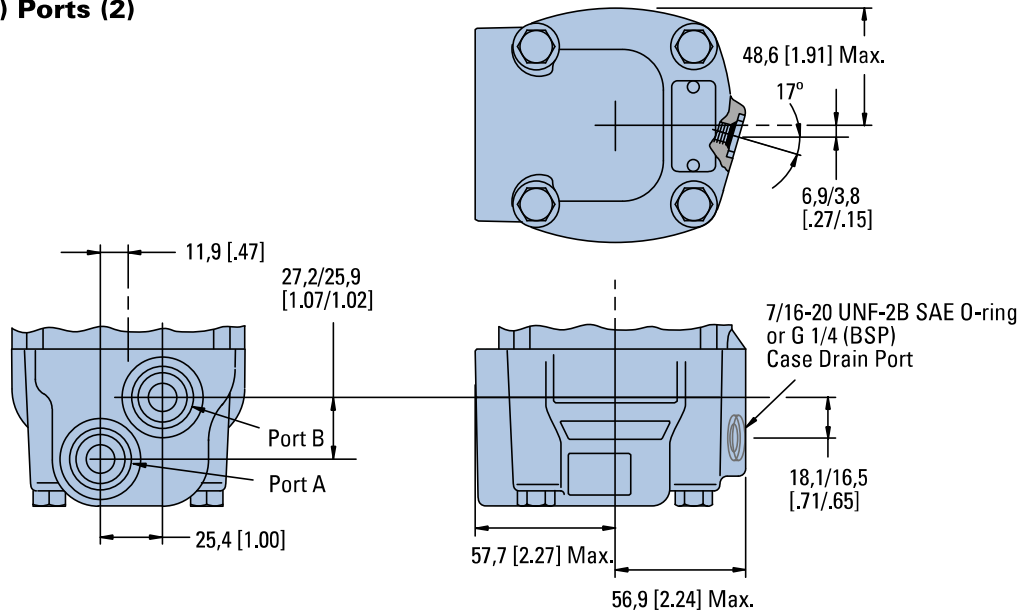


2000 Series

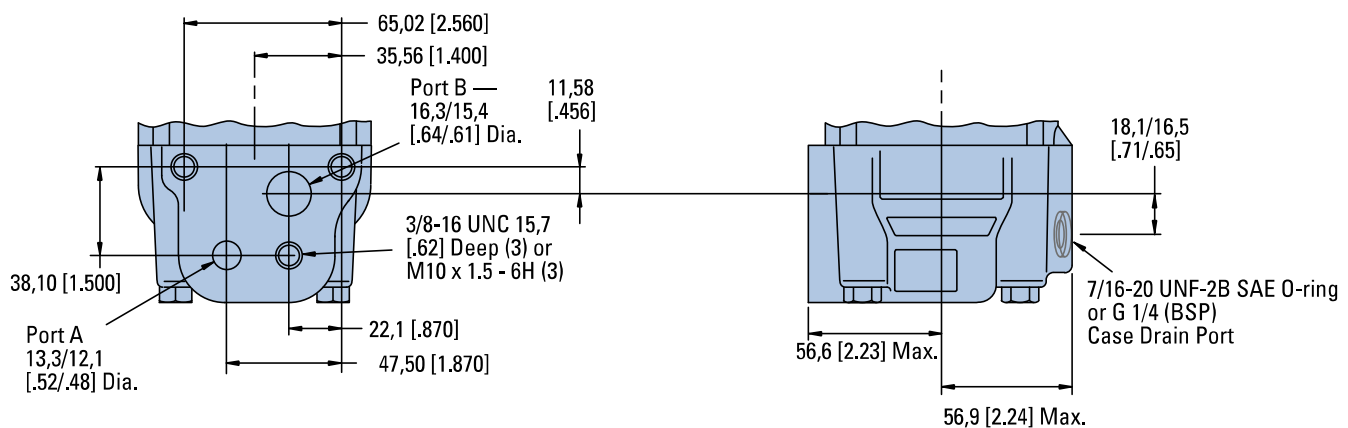
Dimensions

Ports

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



Manifold Mount

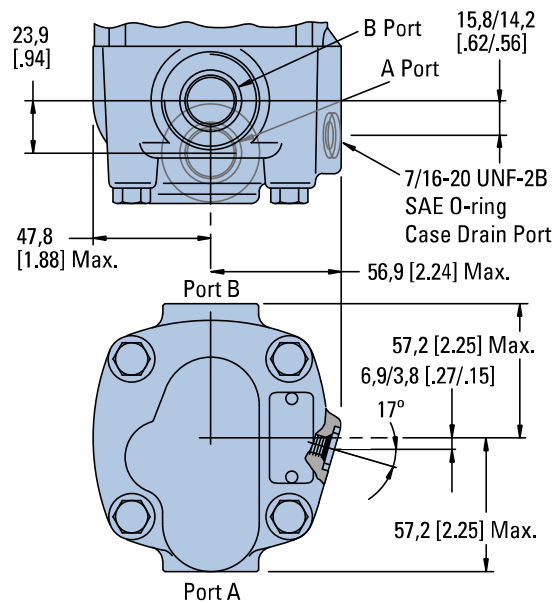


2000 Series

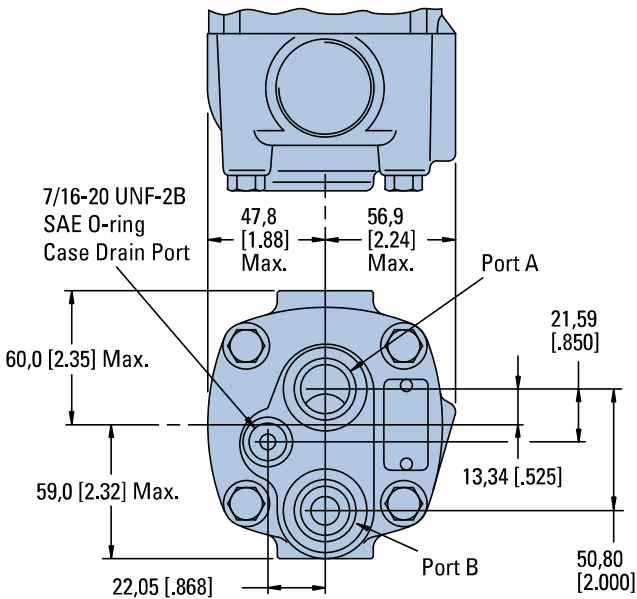
Dimensions

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)

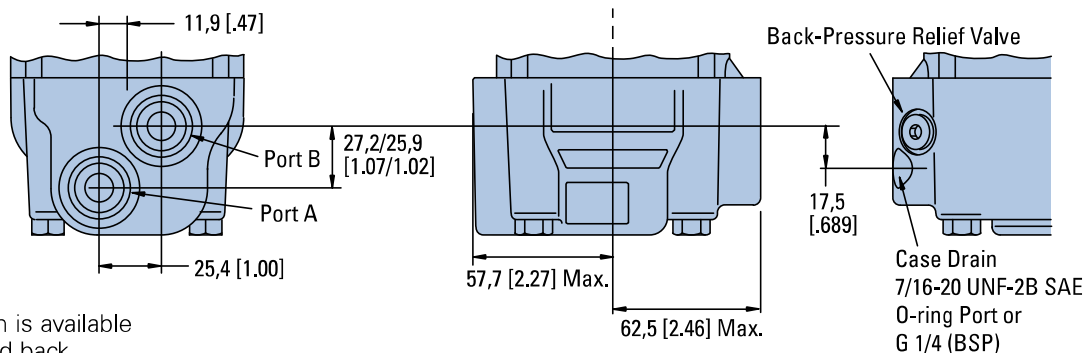


2000 Series

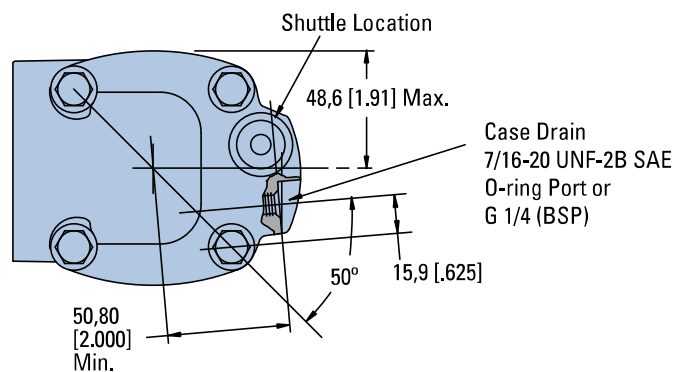
Dimensions

Ports with Shuttle

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

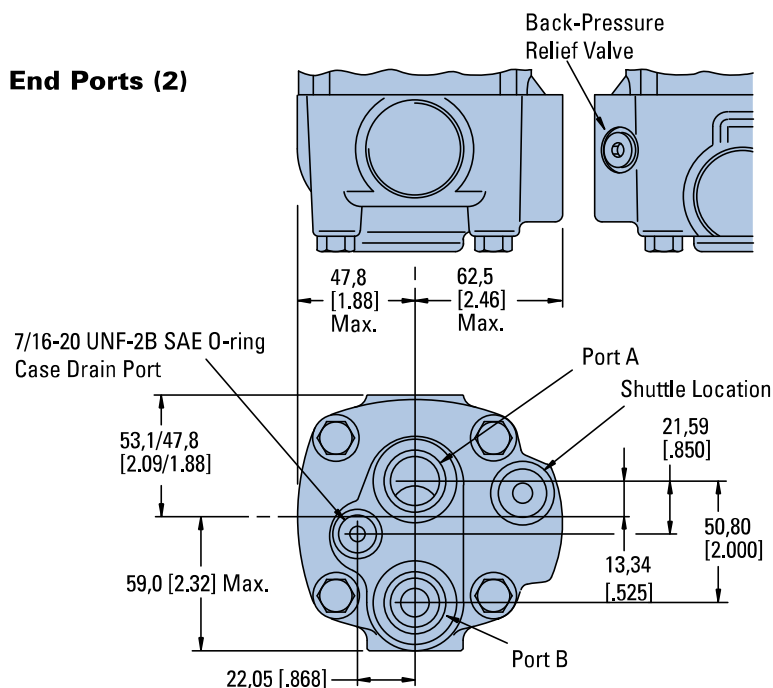


This port option is available with shuttle and back pressure relief valve for closed loop applications.



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	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 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.

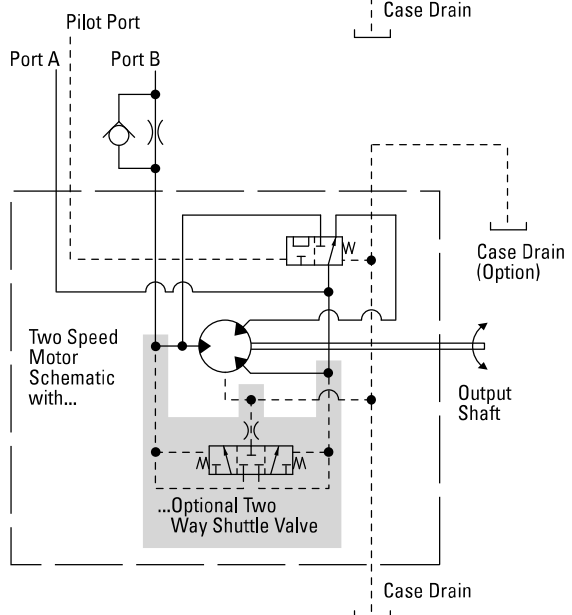
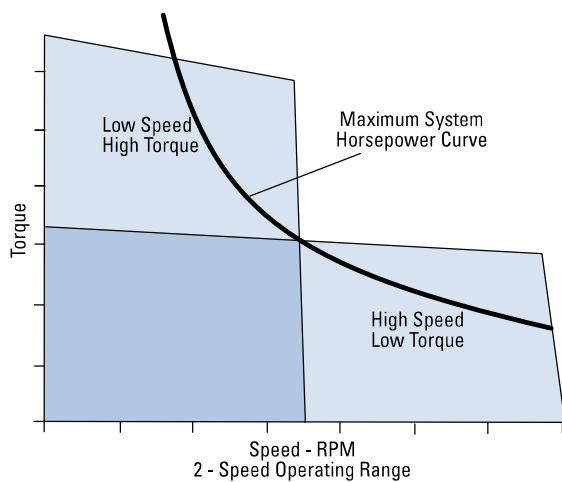
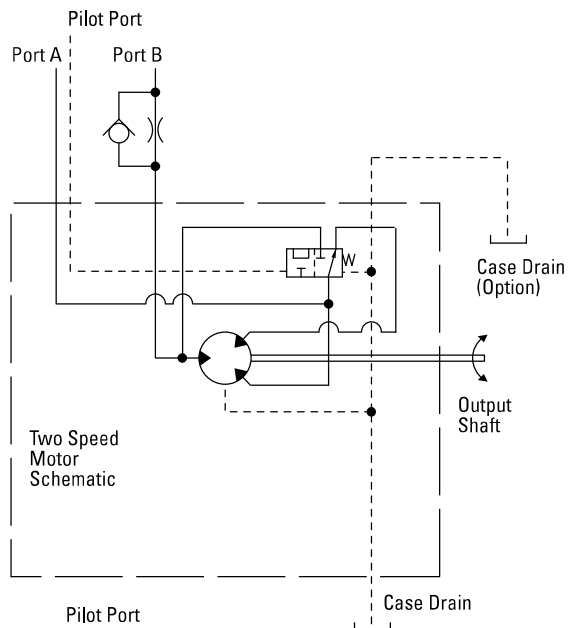
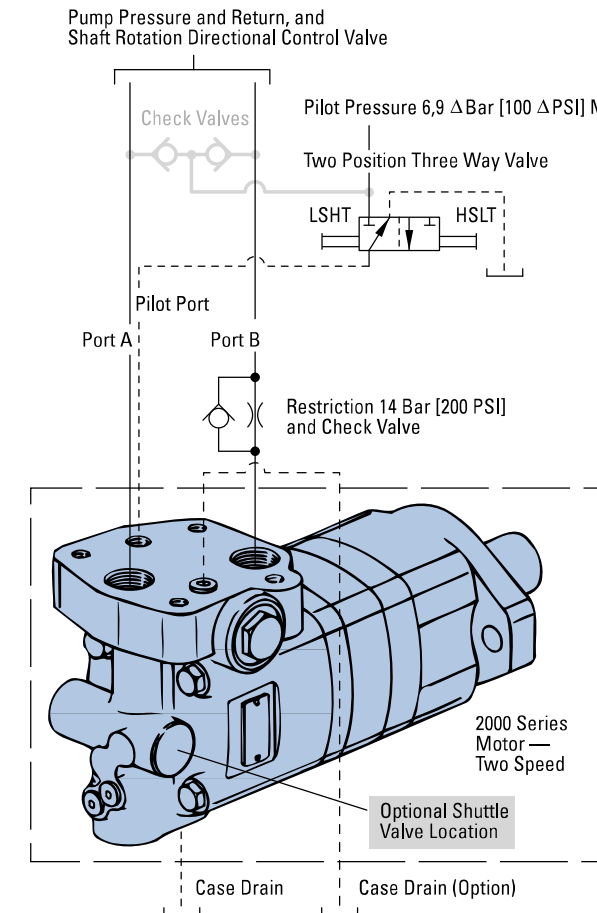
Be certain in closed loop applications that the charge pump when used for back pressure on the B port, has sufficient displacement to maintain charge pressure especially in dynamic braking or overrunning load conditions.

Important!

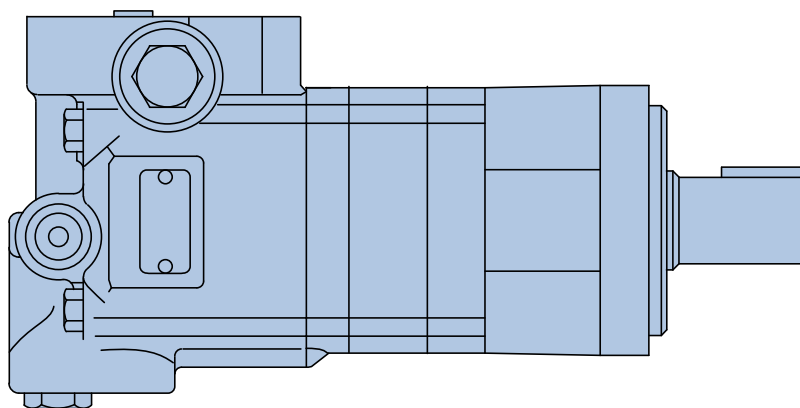
Due to potential problems in maintaining charge pump pressure at port B for uninterrupted back pressure during dynamic braking, Eaton does not recommend the two speed motor where overrunning conditions may exist.

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)	High Speed Mode	1000	1000	990	860	700	560	450	350	230
@ Continuous Flow	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

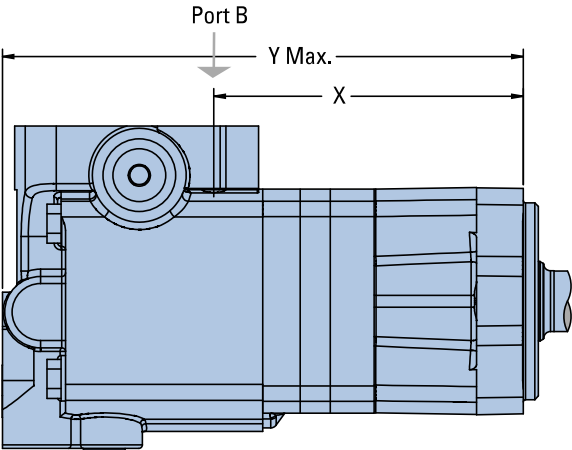
Ports

- 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

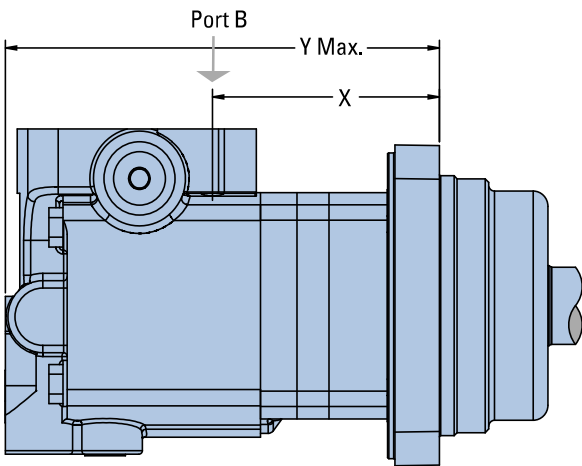
Two-Speed Standard Motors



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

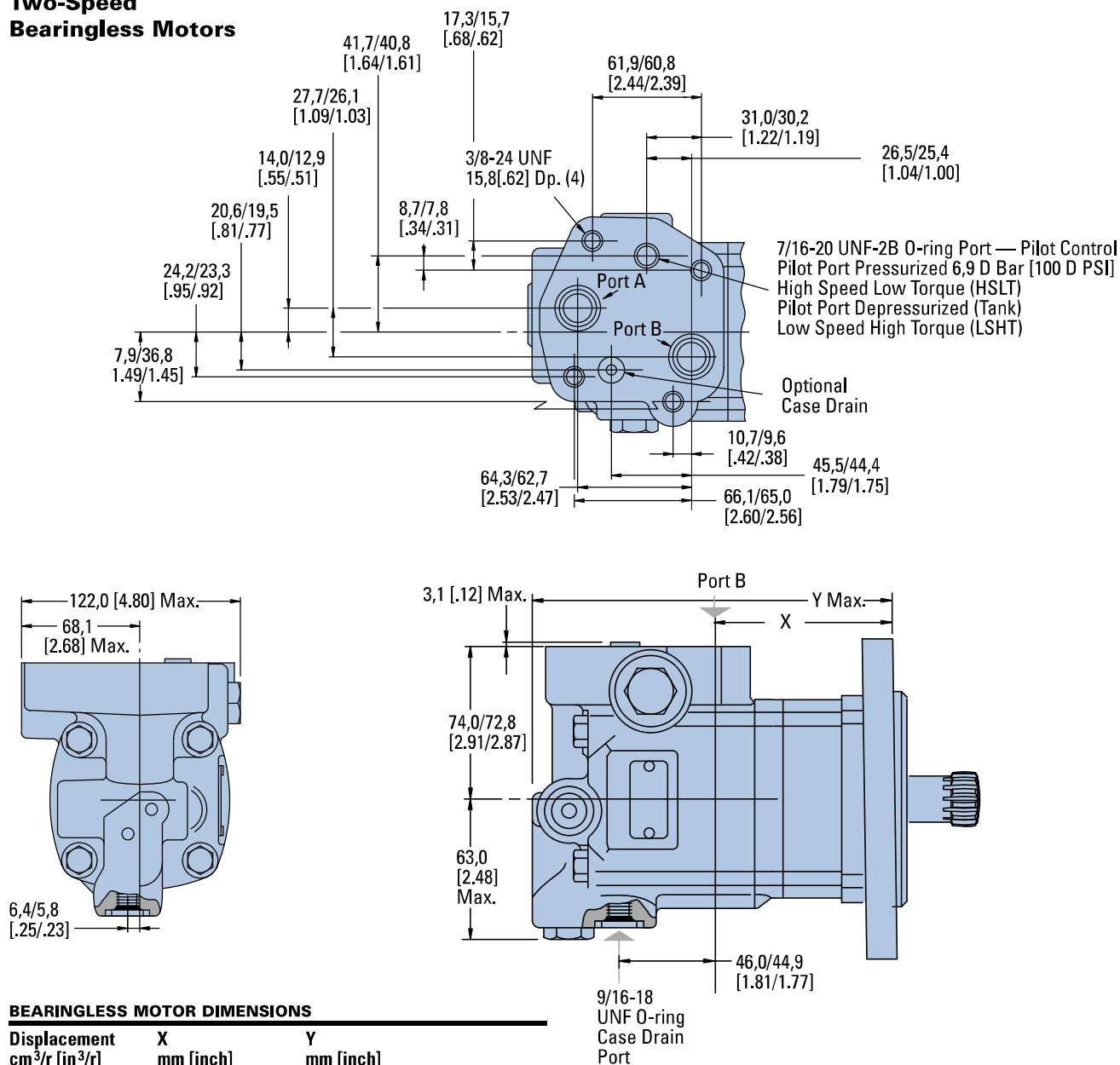
Two-Speed Bearingless Motors

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



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