



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

**EATON**

*Powering Business Worldwide*

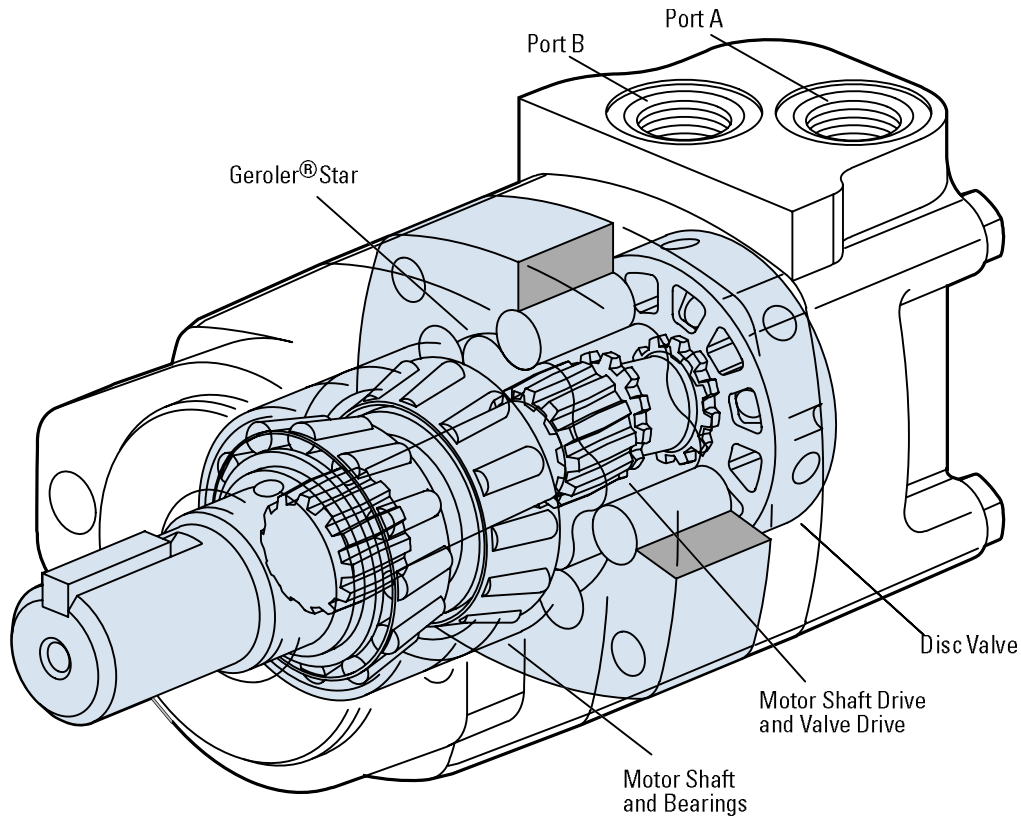
# Disc Valve Hydraulic Motors

## Highlights

### Product Description

In the late 1950's the original low speed, high torque hydraulic motor was developed from a pump Geroter 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:

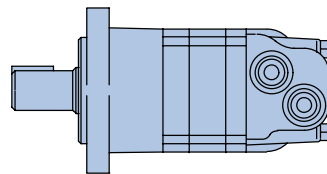
- Displacement (Geroler size)
- Output Shaft
- No Shaft and Bearing Assembly (Bearingless Motor)
- Port Configuration
- Mounting Flange
- Other Special Features

## Benefits

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

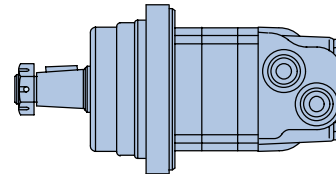
## Applications

- 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



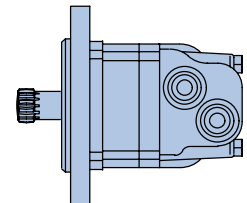
### Standard Motor

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

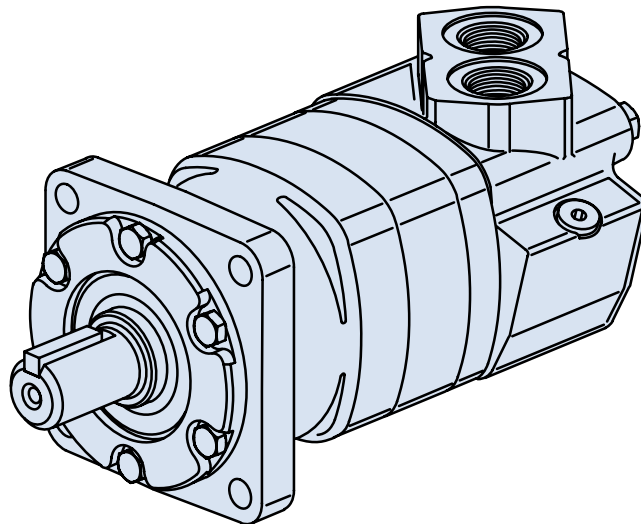
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## 6000 Series

### 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

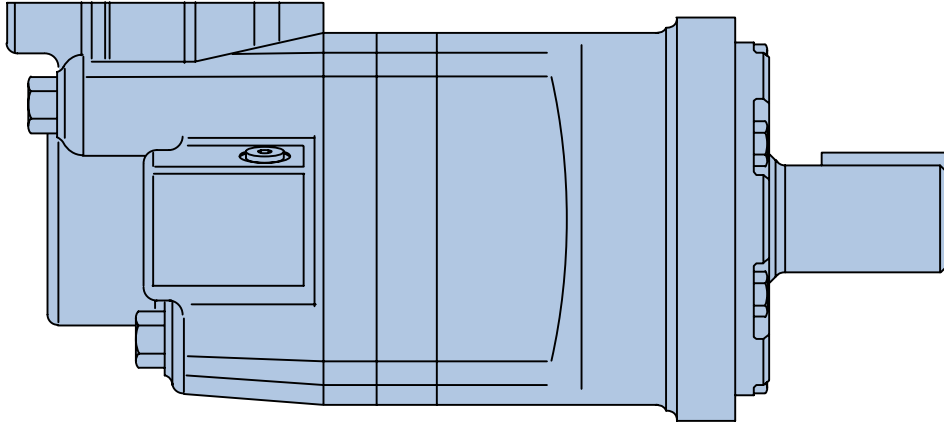


Sprayer



Trencher

# 6000 Series Specifications



## 6000 SERIES MOTORS

Displ. cm <sup>3</sup> /r [in <sup>3</sup> /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	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]
	Wheel Mount									
	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

195 cm<sup>3</sup>/r [11.9 in<sup>3</sup>/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.

	Continuous		Peak
	Intermittent		No Operation

	[250]	[500]	[1000]	[1500]	[2000]	[2500]	[3000]	[3500]	[4000]	[4500]
	15	35	70	105	140	170	205	240	275	310
[.5]	[280]	[650]	[1450]	[2290]						
<b>1.9</b>	30 9	75 7	165 5	260 2						
[2]	[290]	[680]	[1500]	[2340]	[3100]	[3880]	[4140]			
<b>7.5</b>	35 38	75 37	170 35	265 34	350 30	440 26	470 18			
[4]	[300]	[710]	[1500]	[2390]	[3210]	[4030]	[4600]	[5200]	[5790]	
<b>15</b>	35 77	80 76	175 74	270 72	365 66	455 62	520 46	590 32	655 18	
[8]	[310]	[740]	[1590]	[2450]	[3280]	[4120]	[4810]	[5530]	[6250]	[6900]
<b>30</b>	35 154	85 153	180 148	275 144	370 131	465 119	545 116	625 99	705 83	780 65
[12]	[320]	[750]	[1610]	[2480]	[3330]	[4190]	[4990]	[5810]	[6630]	[7320]
<b>45</b>	35 232	85 230	180 225	280 221	375 212	475 203	565 186	655 167	750 148	825 118
[16]	[300]	[730]	[1600]	[2470]	[3340]	[4210]	[5090]	[5900]	[6710]	[7470]
<b>61</b>	35 309	80 307	180 303	280 300	375 291	475 283	575 258	665 236	760 214	845 181
[20]	[270]	[720]	[1590]	[2460]	[3350]	[4240]	[5100]	[5950]	[6800]	[7620]
<b>76</b>	30 387	80 384	180 379	280 374	380 365	480 356	575 332	670 306	770 280	860 247
[24]	[240]	[700]	[1570]	[2440]	[3330]	[4220]	[5080]	[5940]	[6810]	
<b>91</b>	25 465	80 462	175 456	275 450	375 440	475 429	575 413	670 388	770 363	
[28]	[190]	[660]	[1530]	[2400]	[3300]	[4200]	[5060]	[5940]	[6810]	
<b>106</b>	20 542	75 539	175 532	270 526	375 514	475 502	570 476	670 448	770 421	
[32]	[160]	[630]	[1500]	[2370]	[3270]	[4160]	[5040]	[5920]	[6790]	
<b>121</b>	20 620	70 617	170 609	270 602	370 589	470 576	570 542	670 511	765 480	
[36]	[120]	[620]	[1480]	[2350]	[3240]	[4130]	[5000]	[5880]	[6760]	
<b>136</b>	15 697	70 692	165 683	265 674	365 659	465 645	565 601	665 564	765 527	
[40]	[80]	[610]	[1450]	[2320]	[3210]	[4100]	[4960]	[5840]		
<b>151</b>	10 775	70 770	165 759	260 749	365 733	465 718	560 666	660 624		
[45]	[590]	[1410]	[2280]	[3170]	[4060]	[4920]	[5790]			
<b>170</b>	65 866	160 854	310 843	460 843	610 825	760 808	910 749	1060 702		

245 cm<sup>3</sup>/r [15.0 in<sup>3</sup>/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
[.5]	[430]	[860]	[1890]							
<b>1.9</b>	50 7	95 4	215 1							
[2]	[440]	[900]	[1940]	[2990]	[3960]	[4920]	[5040]	[5930]		
<b>7.5</b>	50 30	100 29	220 26	340 24	445 21	555 17	670 11	770 6		
[4]	[460]	[940]	[2000]	[3060]	[4080]	[5090]	[5680]	[6630]	[7570]	[8520]
<b>15</b>	50 61	105 60	225 56	345 54	460 48	575 42	640 39	750 30	855 12	965 6
[8]	[470]	[960]	[2060]	[3150]	[4210]	[5260]	[6180]	[7100]	[8020]	[9020]
<b>30</b>	55 122	110 120	235 116	355 113	475 104	595 95	700 81	800 67	905 53	1020 37
[12]	[480]	[970]	[2080]	[3180]	[4270]	[5360]	[6390]	[7420]	[8450]	[9510]
<b>45</b>	55 183	110 182	235 178	360 174	480 165	605 157	720 141	840 125	955 109	1075 92
[16]	[450]	[960]	[2070]	[3180]	[4290]	[5420]	[6480]	[7490]	[8480]	[9540]
<b>61</b>	50 245	110 244	235 240	360 236	485 228	610 221	730 202	845 184	960 165	1180 145
[20]	[420]	[940]	[2050]	[3160]	[4290]	[5440]	[6510]	[7580]	[8660]	[9740]
<b>76</b>	45 307	105 306	230 301	355 297	485 287	615 277	735 257	855 238	980 218	1100 197
[24]	[380]	[920]	[2020]	[3120]	[4260]	[5400]	[6490]	[7590]	[8680]	
<b>91</b>	45 368	105 365	230 361	355 358	485 348	615 338	735 316	855 294	980 271	
[28]	[330]	[870]	[1980]	[3100]	[4240]	[5380]	[6480]	[7580]	[8670]	
<b>106</b>	35 430	100 426	225 421	350 416	480 404	610 376	730 358	855 340	980 322	
[32]	[290]	[800]	[1920]	[3050]	[4170]	[5290]	[6410]	[7520]	[8640]	
<b>121</b>	35 491	90 489	215 481	345 475	470 461	600 448	725 423	850 398	975 373	
[36]	[250]	[730]	[1850]	[2980]	[4060]	[5150]	[6300]	[7440]		
<b>136</b>	30 556	80 549	210 543	335 537	460 524	580 509	710 482	840 456		
[40]	[200]	[690]	[1790]	[2940]	[4010]	[5130]	[6190]	[7100]		
<b>151</b>	25 615	80 612	200 606	330 599	455 585	580 570	700 540	800 510		
[45]		[570]	[1760]	[2860]	[3960]	[5070]	[6080]	[6690]		
<b>170</b>		65 688	200 682	325 674	445 658	575 641	685 608	755 574		
[50]			[1720]	[2800]	[3890]	[4920]	[5940]			
<b>189</b>			195 758	315 749	440 731	555 712	670 676			
[55]			[1670]	[2740]	[3820]	[4890]	[5880]			
<b>208</b>			190 834	310 824	430 804	550 783	665 744			

[5790] } Torque [lb-in]  
 655 } Nm  
 702 } 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 cm<sup>3</sup>/r [19.0 in<sup>3</sup>/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] <b>1.9</b>	[530] 60 6	[1120] 125 4	[2440] 275 1							
[2] <b>7.5</b>	[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] <b>15</b>	[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] <b>30</b>	[560] 65 96	[1250] 140 95	[2650] 300 91	[3970] 450 87	[5280] 595 81	[6480] 730 73	[7710] 870 64	[8740] 985 55	[9770] 1105 46	[10990] 1240 35
[12] <b>45</b>	[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] <b>61</b>	[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] <b>76</b>	[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] <b>91</b>	[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] <b>106</b>	[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] <b>121</b>	[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] <b>136</b>	[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] <b>151</b>	[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] <b>189</b>		[982] 110 597	[2180] 245 582	[3420] 385 576	[4660] 525 570	[6050] 685 551	[7440] 840 534			
[60] <b>227</b>			[1960] 220 698	[3250] 365 691	[4540] 515 684	[5750] 650 661	[7080] 800 641			

**390 cm<sup>3</sup>/r [23.9 in<sup>3</sup>/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] <b>3.9</b>	[760] 85 4	[1570] 175 2	[3230] 365 1							
[2] <b>7.5</b>	[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] <b>15</b>	[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] <b>30</b>	[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] <b>45</b>	[800] 90 115	[1620] 185 115	[3390] 385 112	[5130] 580 109	[6810] 770 105	[8520] 965 105	[10190] 1150 91	[11860] 1340 81	[13640] 1540 79	
[16] <b>61</b>	[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] <b>76</b>	[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] <b>91</b>	[620] 70 232	[1520] 170 230	[3280] 370 229	[5060] 570 225	[6780] 765 220	[8530] 965 212	[10240] 1155 204			
[28] <b>106</b>	[570] 65 270	[1460] 165 268	[3210] 365 266	[5000] 565 261	[6730] 760 256	[8480] 960 248	[10200] 1150 236			
[32] <b>121</b>	[530] 60 309	[1420] 160 306	[3140] 355 304	[4930] 555 299	[6640] 750 292	[8380] 945 282	[10120] 1145 269			
[36] <b>136</b>	[450] 50 348	[1370] 155 346	[3010] 340 340	[4840] 545 336	[6500] 730 329	[8250] 930 317	[10000] 1130 301			
[40] <b>151</b>	[380] 45 387	[1320] 150 386	[2880] 325 380	[4740] 535 375	[6460] 730 368	[8120] 915 359				
[50] <b>189</b>		[1140] 130 482	[2650] 300 475	[4540] 515 469	[6440] 730 460	[8050] 910 449				
[60] <b>227</b>			[2460] 280 570	[4430] 500 562	[6360] 720 552	[7860] 890 538				

[5750]  
650 } Torque [lb-in]  
661 } 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

490 cm<sup>3</sup>/r [30.0 in<sup>3</sup>/r]  
Δ Pressure Bar [PSI]

	[250]	[500]	[1000]	[1500]	[2000]	[2500]	[3000]	[3500]	[4000]
	15	35	70	105	140	170	205	240	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				

625 cm<sup>3</sup>/r [38.0 in<sup>3</sup>/r]  
Δ Pressure Bar [PSI]

	[250]	[500]	[1000]	[1500]	[2000]	[2500]	[3000]	[3200]
	15	35	70	105	140	170	205	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				





[2860]  
325  
454 } 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.

	Continuous		Peak
	Intermittent		No Operation

**735 cm<sup>3</sup>/r [45.0 in<sup>3</sup>/r]**  
 $\Delta$  Pressure Bar [PSI]

	[250] 15	[500] 35	[750] 50	[1000] 70	[1250] 85	[1500] 105	[1750] 120	[2000] 140	[2250] 155	[2500] 170
[1] <b>3,8</b>	[1311] 148 4	[2775] 314 4	[4200] 475 3	[5480] 619 3	[7000] 791 2					
[2] <b>7,5</b>	[1340] 151 10	[2856] 323 10	[4535] 512 10	[5809] 656 10	[7551] 853 9	[8685] 981 7	[10182] 1150 6	[11121] 1257 5		
[4] <b>15</b>	[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] <b>30</b>	[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] <b>45</b>	[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] <b>61</b>	[1196] 135 82	[2753] 311 80	[4478] 506 79	[6148] 695 78	[7768] 878 77	[9376] 1059 76	[10984] 1241 74			
[20] <b>76</b>	[1092] 123 102	[2794] 316 101	[4320] 488 101	[6021] 680 99	[7697] 870 97	[9311] 1052 96	[10907] 1232 93			
[24] <b>91</b>	[1206] 136 123	[2556] 289 122	[4162] 470 120	[5871] 663 119	[7564] 855 118	[9289] 1049 116				
[28] <b>106</b>	[1083] 122 145	[2338] 264 142	[4040] 456 141	[5666] 640 139	[7365] 832 137	[9022] 1019 135				
[32] <b>121</b>	[950] 107 163	[2110] 238 162	[3795] 429 162	[5457] 617 159	[7122] 805 159	[8828] 997 156				
[36] <b>136</b>	[726] 82 184	[1845] 208 183	[3517] 397 182	[5223] 590 181	[6853] 774 179					
[40] <b>151</b>	[515] 58 203	[2227] 252 202	[3270] 369 202	[4965] 561 201	[6672] 754 199					
[50] <b>189</b>			[3869] 437 254	[4148] 469 252	[5850] 661 250					
[60] <b>227</b>				[4856] 549 303	[6604] 746 301					

**805 cm<sup>3</sup>/r [49.0 in<sup>3</sup>/r]**  
 $\Delta$  Pressure Bar [PSI]

	[250] 15	[500] 35	[750] 50	[1000] 70	[1250] 85	[1500] 105	[1750] 120	[2000] 140	[2250] 155	[2500] 170
[1] <b>3,8</b>	[1455] 164 4	[3100] 350 4	[4680] 529 2	[6031] 681 2	[7799] 881 1					
[2] <b>7,5</b>	[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] <b>15</b>	[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] <b>30</b>	[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] <b>45</b>	[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] <b>61</b>	[1543] 174 73	[3395] 384 73	[5357] 605 72	[7032] 794 70	[8983] 1015 69	[10640] 1202 68	[12010] 1357 67			
[20] <b>76</b>	[1457] 165 93	[3312] 374 92	[5292] 598 91	[6968] 787 89	[8943] 1010 88	[10583] 1196 87	[12146] 1372 86			
[24] <b>91</b>	[1352] 153 112	[3183] 360 112	[5088] 575 111	[6811] 769 110	[8812] 996 108	[10411] 1176 106				
[28] <b>106</b>	[1213] 137 131	[3055] 345 131	[5047] 570 131	[6713] 758 129	[8681] 981 128	[10411] 1176 127				
[32] <b>121</b>	[1075] 121 150	[2907] 328 149	[4884] 552 149	[6546] 740 146	[8395] 949 145	[10060] 1137 144				
[36] <b>136</b>	[823] 93 168	[2692] 304 168	[4663] 527 168	[6320] 714 167	[8118] 917 165					
[40] <b>151</b>	[592] 67 187	[2477] 280 186	[4426] 500 186	[6085] 688 185	[7832] 885 184					
[50] <b>189</b>		[2730] 308 234	[4214] 476 233	[5849] 661 231	[7603] 859 230					
[60] <b>227</b>			[3806] 430 280	[5459] 617 277	[7407] 837 275					

[6604]  
746  
301 } Torque [lb-in]  
Nm  
Speed RPM





# 6000 Series

## Performance Data

985 cm<sup>3</sup>/r [60.0 in<sup>3</sup>/r]  
 D 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.

	Continuous		Peak
	Intermittent		No Operation

	[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

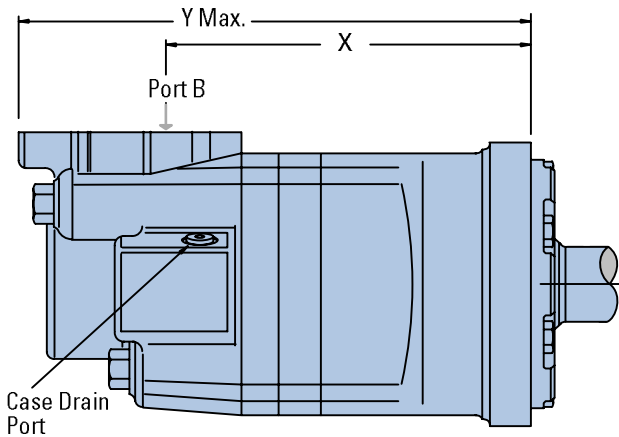
### Ports

- 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)

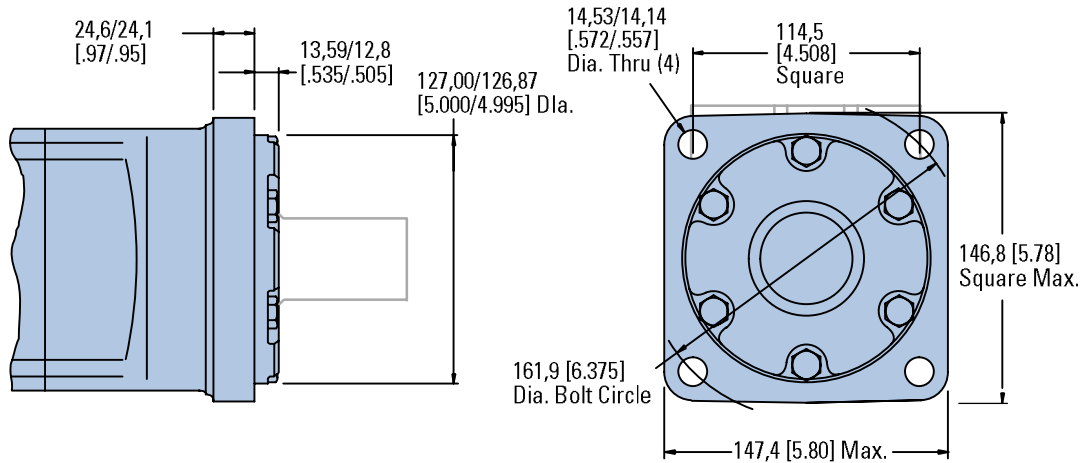
### Standard Rotation Viewed from Shaft End

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

### Standard Mount



### Standard SAE CC Flange



### STANDARD MOTOR MOUNT DIMENSIONS

Displacement cm <sup>3</sup> /r [in <sup>3</sup> /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

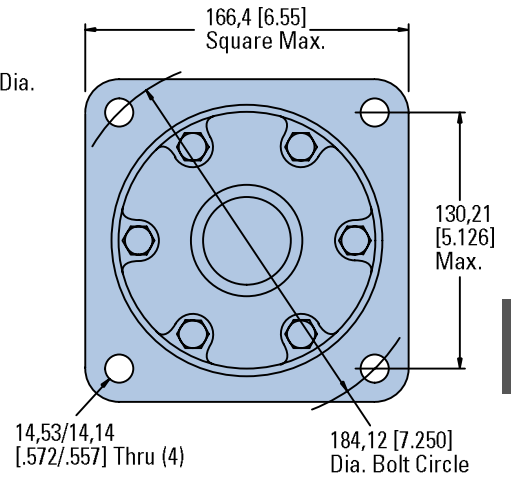
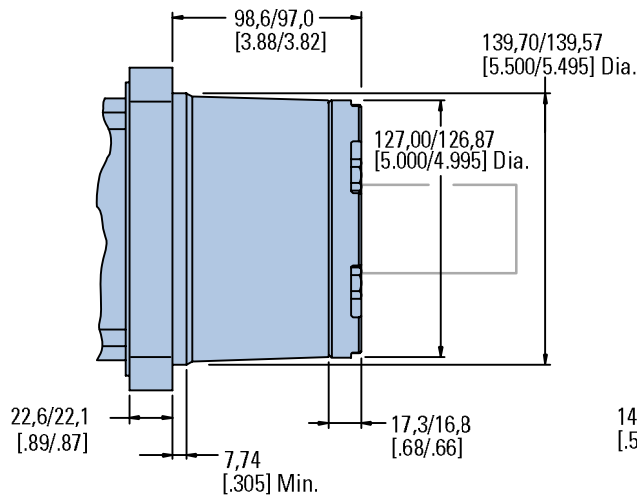
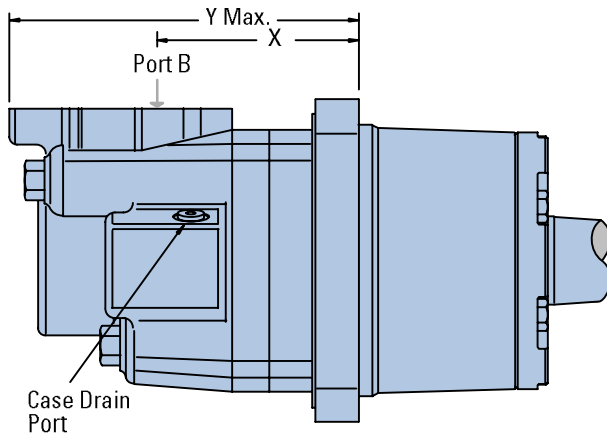
### Ports

- 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 <sup>3</sup> /r [in <sup>3</sup> /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)

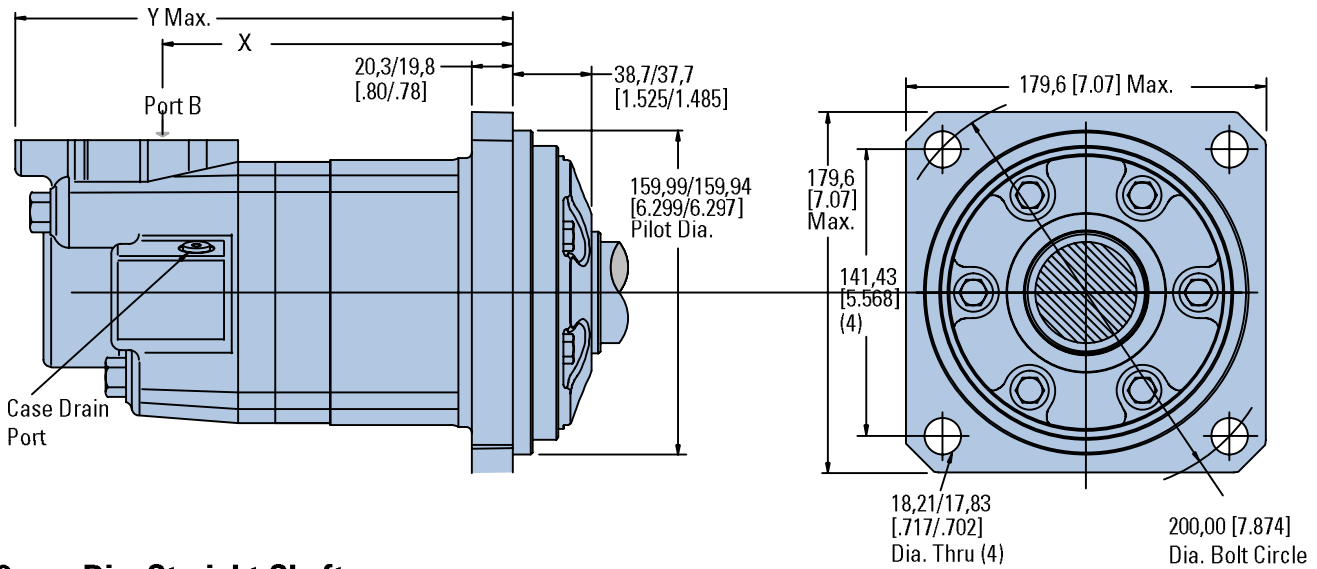
### Ports

- 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)

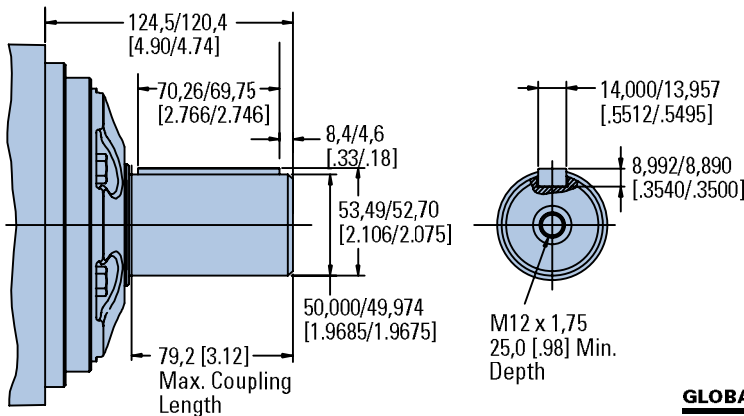
### Standard Rotation Viewed from Shaft End

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

### Global Mount (ISO)



### 50 mm Dia. Straight Shaft



### GLOBAL MOUNT MOTOR DIMENSIONS

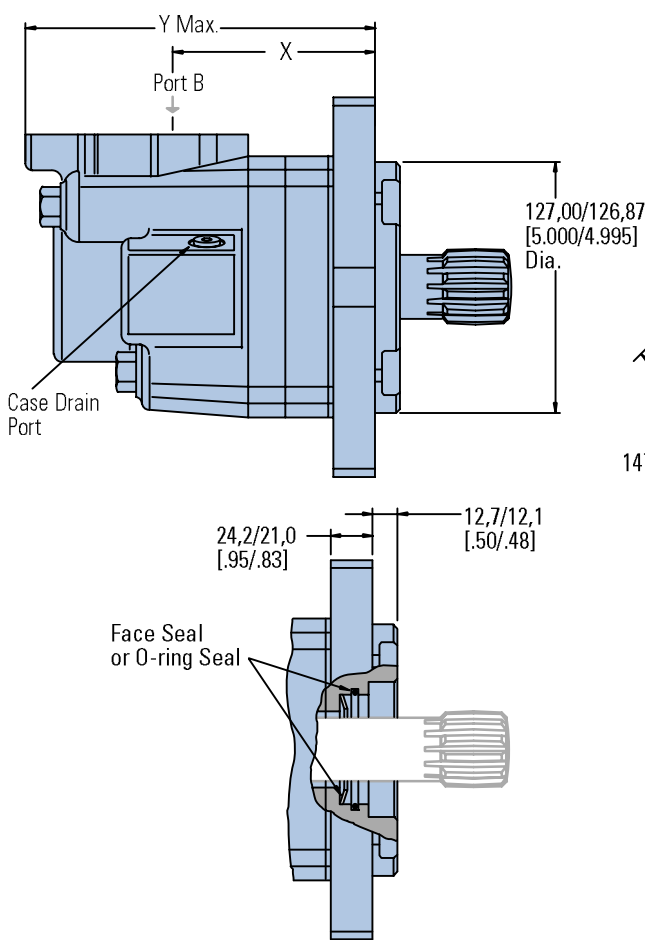
Displacement cm <sup>3</sup> /r [in <sup>3</sup> /r]	X mm [inch]	Y mm [inch]
310 [19.0]	182,4 [ 7.18]	264,9 [10.43]
390 [24.0]	191,0 [ 7.52]	273,6 [10.77]
490 [30.0]	202,2 [ 7.96]	284,7 [11.21]
625 [38.0]	216,9 [ 8.54]	299,5 [11.79]
800 [45.0]	229,4 [ 9.03]	312,2 [12.29]
800 [49.0]	236,7 [ 9.32]	319,3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

# 6000 Series

## Dimensions

Bearingless

### Bearingless

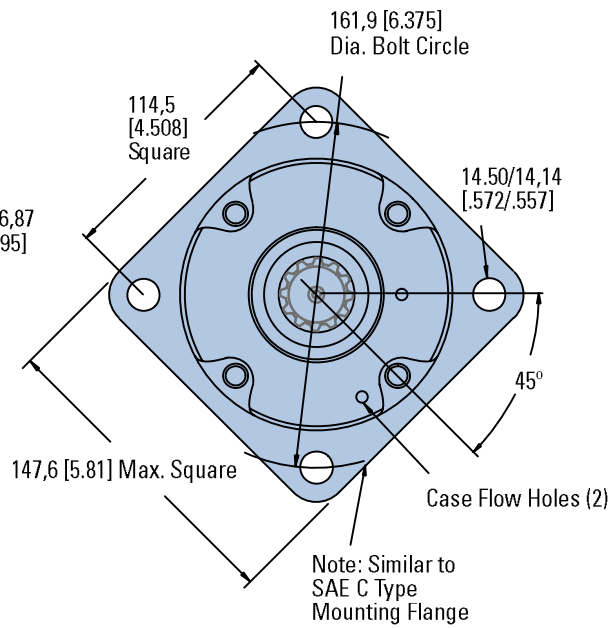


### Ports

- 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

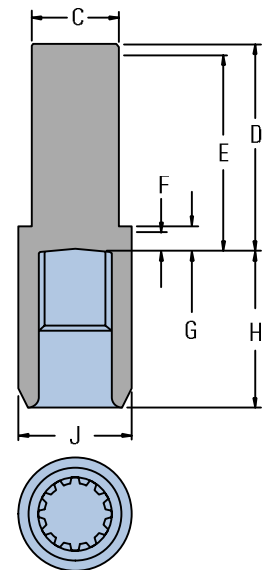


For 6000 bearingless motor application information, contact your Eaton representative (mating coupling blanks available from Eaton Hydraulics).

### Note:

After machining blank 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

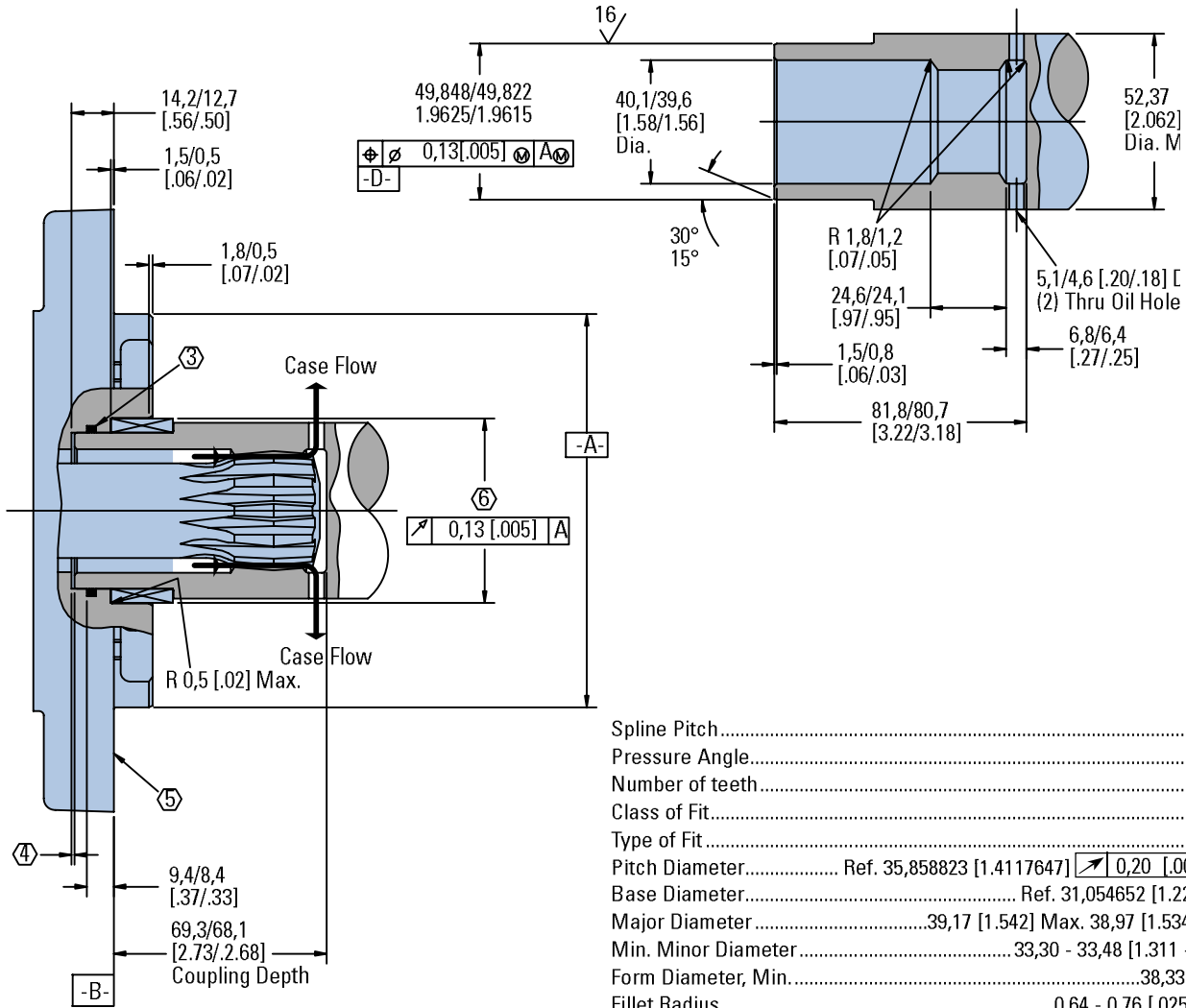
Displacement cm <sup>3</sup> /r [in <sup>3</sup> /r]	X mm [inch]	Y mm [inch]
195 [11.9]	105,4 [4.15]	188,0 [7.40]
245 [15.0]	111,0 [4.37]	193,5 [7.62]
310 [19.0]	118,4 [4.66]	200,9 [7.91]
390 [23.9]	127,3 [5.01]	209,6 [8.25]
490 [30.0]	138,2 [5.44]	220,7 [8.69]
625 [38.0]	152,9 [6.02]	235,5 [9.27]
985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

# 6000 Series

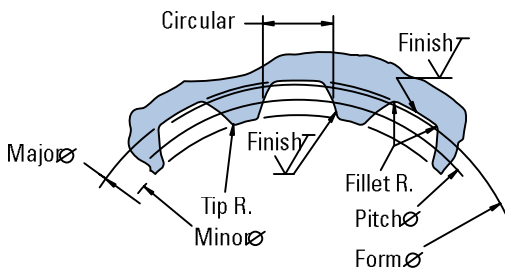
## Installation Information

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
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 [+ .0000 - .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



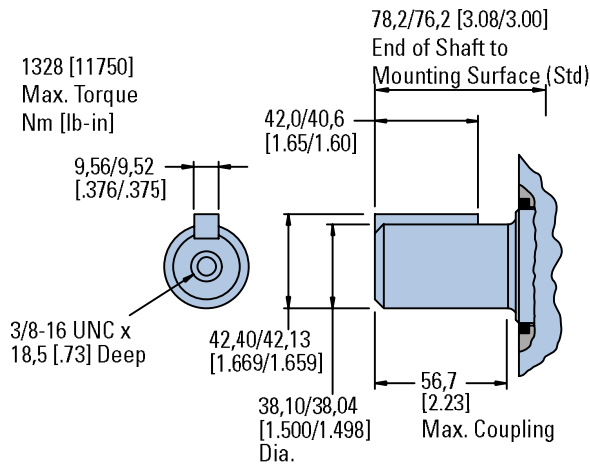


# 6000 Series

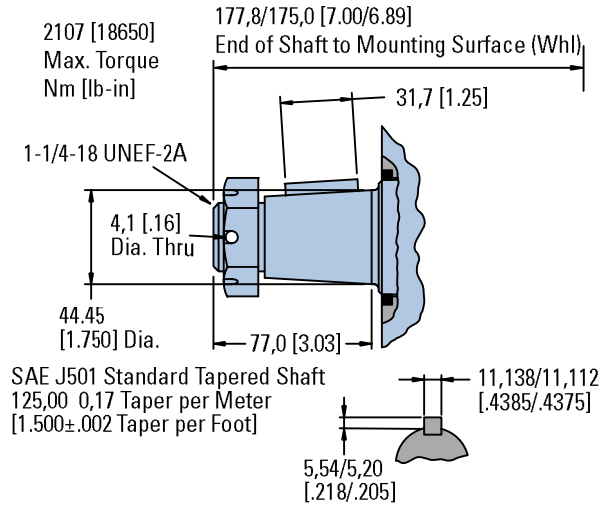
## Dimensions

Shafts Splined

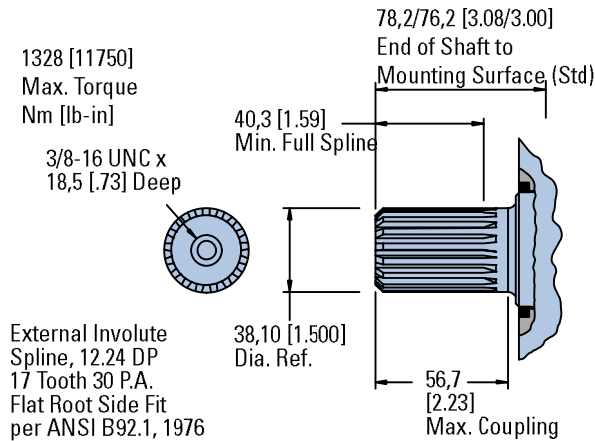
### 1 1/2 Inch Straight



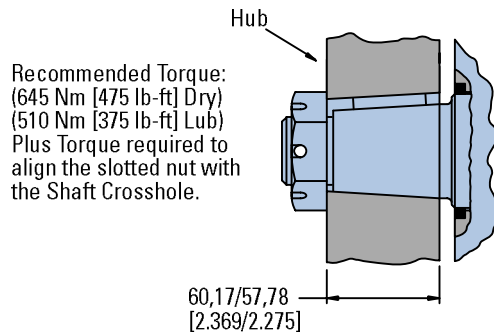
### 1 3/4 Inch Tapered



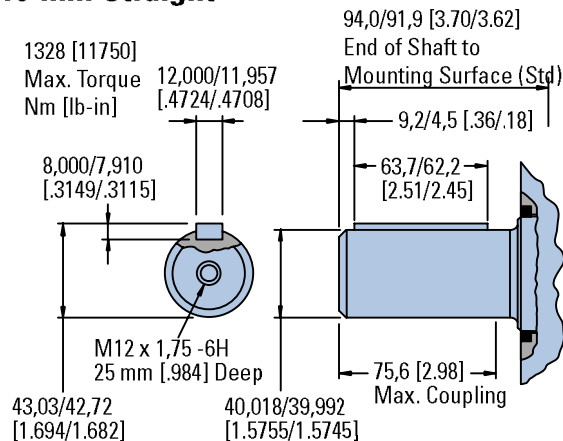
### 1 1/2 Inch 17 Tooth Splined



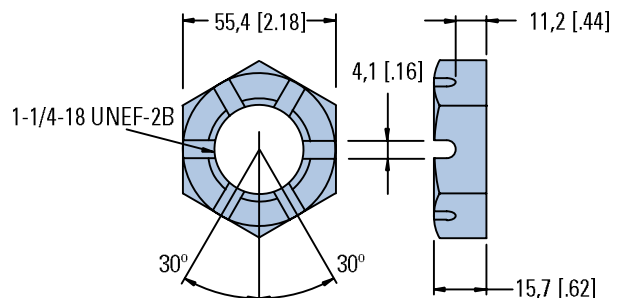
### Tapered Shaft Hub Data



### 40 mm Straight



### Slotted Hexagon Nut



# 6000 Series

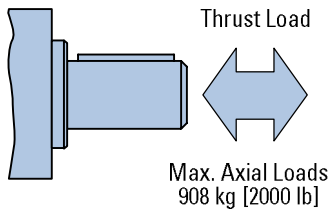
## Shaft Side Load Capacity

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



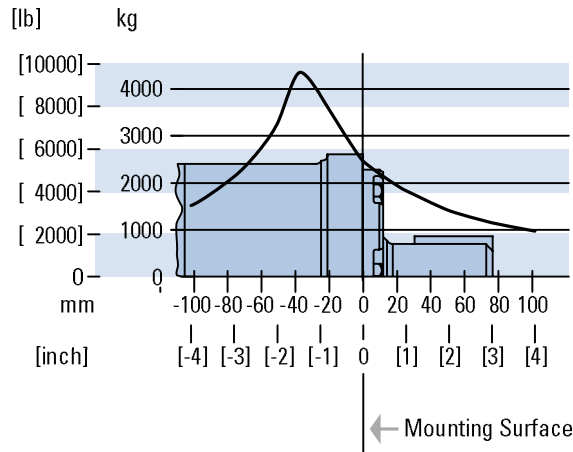
**B 10 bearing life (2000 hours of 12,000,000 shaft revolutions at 100 RPM) at rated output torque.**

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.

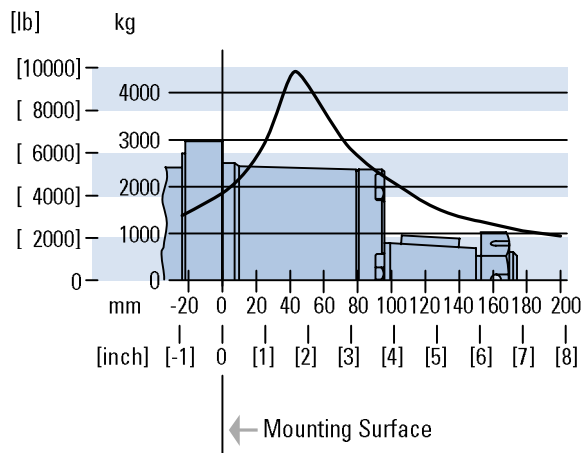
RPM	Multiplication Factor
50	1.23
100	1.00
200	0.81
300	0.72
400	0.66
500	0.62
600	0.58
700	0.56
800	0.54

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

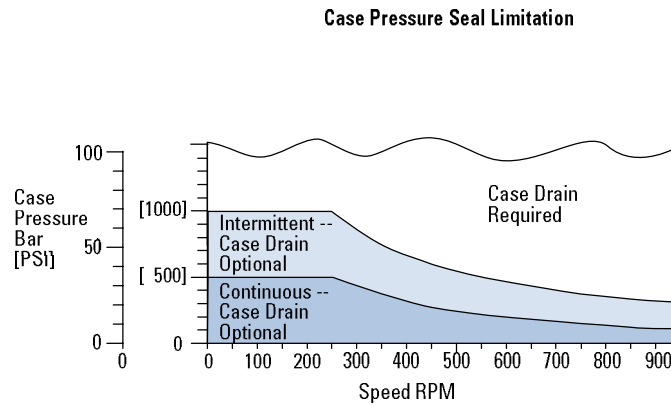
Char-Lynn 6000 Series motors are durable and have long life as long as the recommended case pressure is not exceeded. Allowable case pressure is highest at low shaft speeds. Consequently, motor life will be shortened if case pressure exceeds these ratings (acceptability may vary with application). Determine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

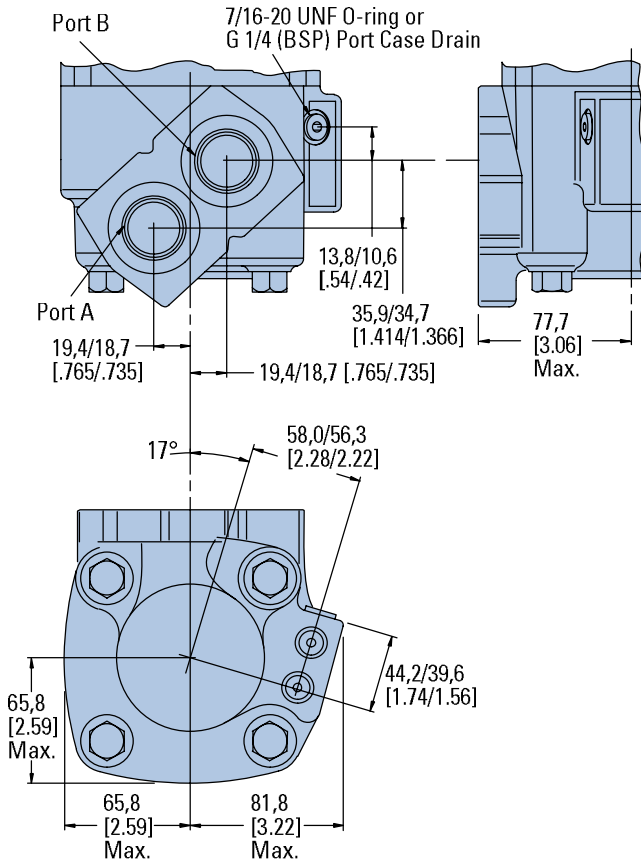


# 6000 Series

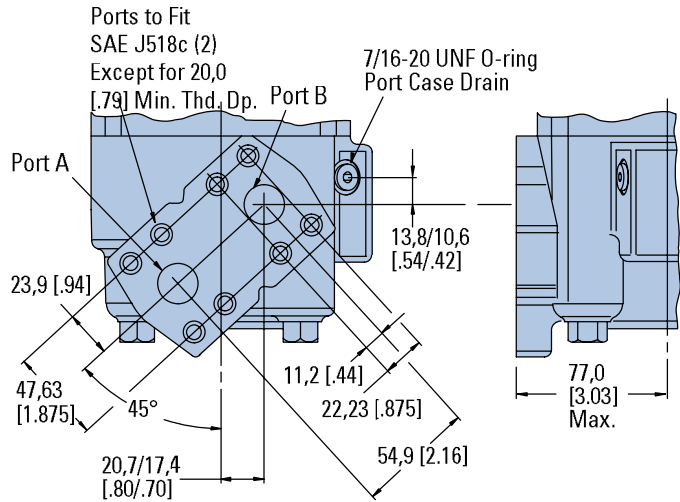
## Dimensions

Ports

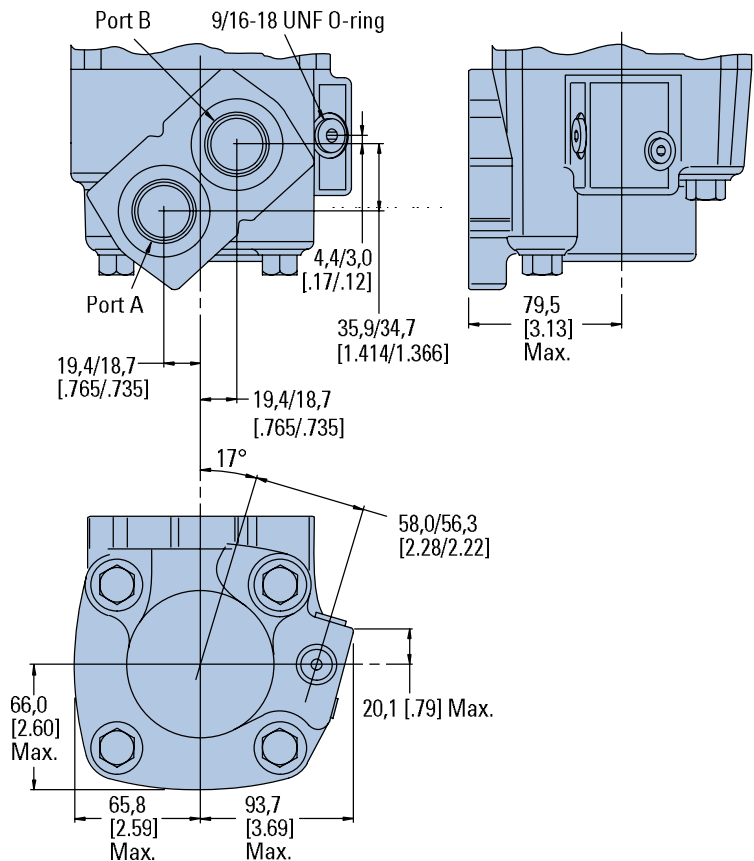
### 1 5/16 -12 O-ring Ports (2) or G 1 (BSP) Ports (2)



### 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 <sup>3</sup> /r [in <sup>3</sup> /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.**

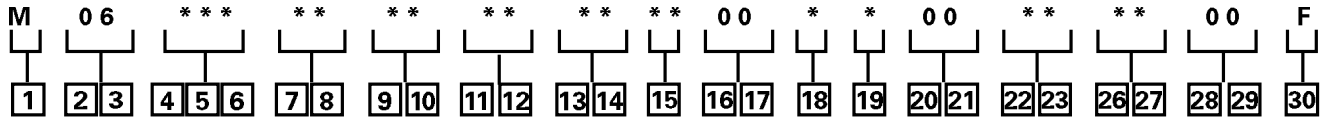
MOUNTING	SHAFT	PORT SIZE	DISPL. cm <sup>3</sup> /r [in <sup>3</sup> /r] / PRODUCT NUMBER						
			310 [19.0]	390 [23.9]	490 [30.0]	625 [38.0]	735 [45.0]	805 [49.0]	985 [60.0]
Standard	50 mm Straight	G 1 (BSP)	112-1217	-1218	-1215	-1216	-1247	-1219	-1220

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  
cm<sup>3</sup>/r [in<sup>3</sup>/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/in<sup>2</sup>]  
B – Set at 15.2 [220 lbf/in<sup>2</sup>]

**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