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

Powering Business Worldwide

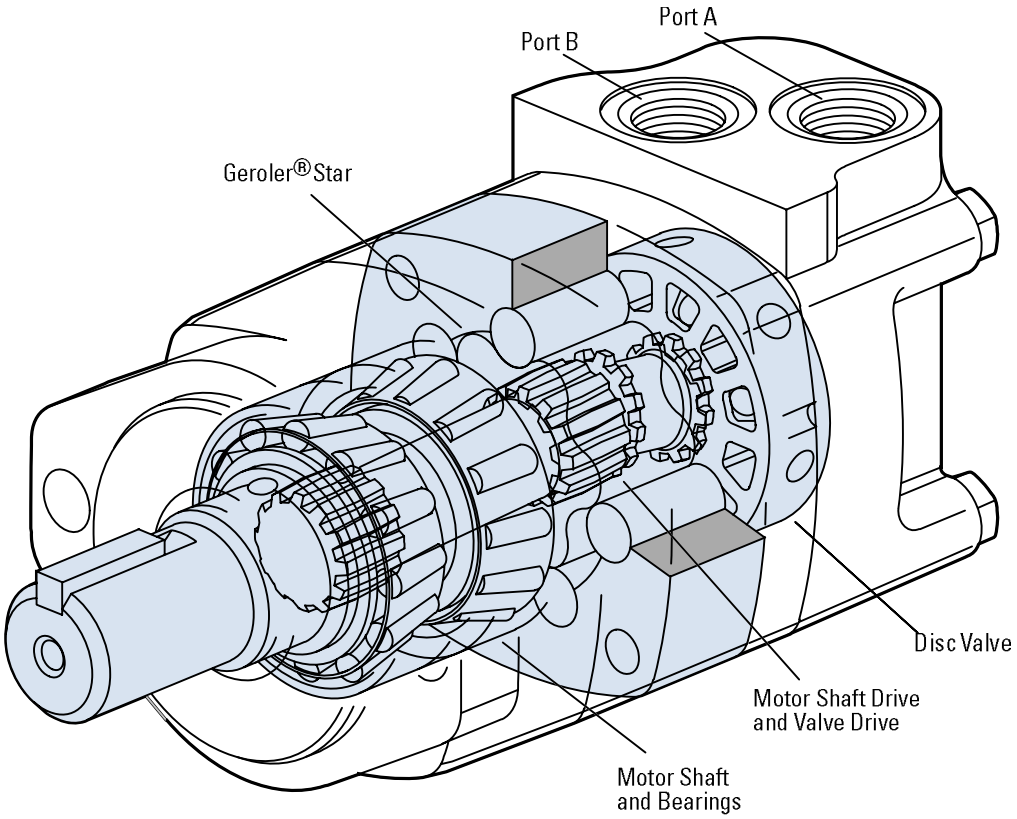
Disc Valve Hydraulic Motors

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:

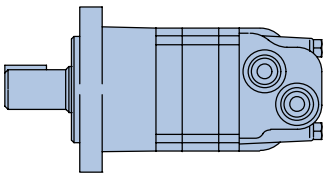
- Displacement (Geroler size)
- Output Shaft
- No Shaft and Bearing Assembly (Bearingless Motor)
- Port Configuration
- Mounting Flange
- Other Special Features

Benefits

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

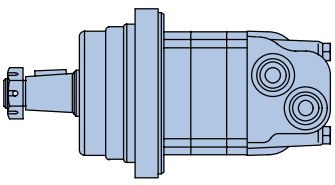
Applications

- 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



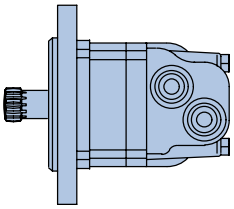
Standard Motor

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.



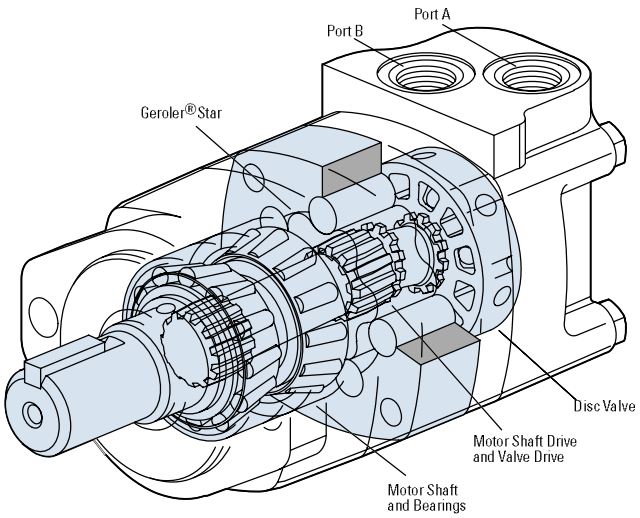
Bearingless Motor

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.

Table of Contents

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
- Reliablity and performance in tough application
- Compact design of the integrated cross-over relief valve option

Applications

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

Description

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

2000 Series

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

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


Auger

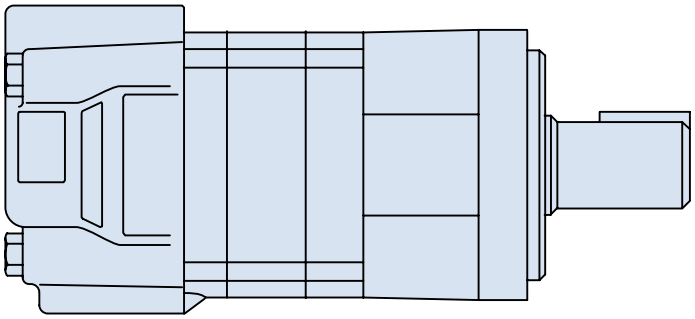

Boring


Plastic Injection


Oil and Gas Equipment

2000 Series

Specifications



SPECIFICATION DATA — 2000 SERIES MOTORS

Displ. cm³/r [in³/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) @ Flow	Continuous	908	836	742	576	477	385	308	246	191	153
	Intermittent	908	1042	924	720	713	577	462	365	287	230
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]

Flow LPM [GPM]

	[500] 35	[1000] 70	[1500] 105	[2000] 140	[2500] 170	[3000] 205	[3500] 240	[4000] 275	[4500] 310
[.25] ,95	[210] 25 **3**	[420] 45 **1**							
[.5] 1,9	[250] 30 **17**	[500] 50 **8**	[740] 85 **3**						
[1] 3,8	[330] 35 **44**	[670] 75 **40**	[990] 110 **37**	[1300] 145 **34**	[1550] 175 **28**	[1800] 205 **22**	[1950] 220 **14**	[2110] 240 **2**	
[2] 7,5	[330] 35 **90**	[670] 75 **85**	[995] 110 **81**	[1310] 150 **78**	[1580] 180 **72**	[1840] 210 **65**	[2100] 235 **57**	[2365] 265 **49**	[2630] 295 **42**
[4] 15	[325] 35 **182**	[670] 75 **176**	[1005] 115 **170**	[1330] 150 **166**	[1620] 185 **159**	[1920] 215 **152**	[2200] 250 **140**	[2480] 280 **128**	[2765] 310 **117**
[6] 23	[320] 35 **273**	[665] 75 **267**	[1010] 115 **259**	[1340] 150 **254**	[1655] 185 **246**	[1975] 225 **238**	[2270] 255 **223**	[2570] 290 **207**	[2880] 325 **192**
[8] 30	[310] 35 **365**	[660] 75 **375**	[1015] 115 **349**	[1345] 150 **341**	[1685] 190 **333**	[2020] 230 **325**	[2330] 265 **306**	[2640] 300 **286**	[2960] 335 **266**
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[16] 61	[255] 30 **729**	[610] 70 **720**	[975] 110 **714**	[1330] 150 **689**	[1690] 190 **679**	[2055] 230 **670**	[2385] 270 **635**	[2700] 305 **599**	[2995] 340 **564**
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[20] 76	[210] 25 **908**	[570] 65 **901**	[930] 105 **880**	[1290] 145 **861**	[1645] 185 **851**	[1985] 225 **842**	[2305] 260 **799**	[2600] 295 **755**	[2845] 320 **712**

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

90 cm³/r [5.5 in³/r]

Δ Pressure Bar [PSI]

Flow LPM [GPM]

	[250] 15	[500] 35	[1000] 70	[1500] 105	[2000] 140	[2500] 170	[3000] 205	[3500] 240	[4000] 275	[4500] 310
[.25] ,95	[124] 14 **5**	[233] 26 **2**	[471] 53 **1**							
[.5] 1,9	[133] 15 **15**	[273] 31 **13**	[555] 63 **6**	[832] 94 **2**						
[1] 3,8	[151] 17 **39**	[358] 40 **39**	[744] 84 **35**	[1091] 123 **32**	[1424] 161 **28**	[1697] 192 **21**	[1952] 221 **13**	[2189] 247 **12**	[2368] 268 **2**	
[2] 7,5	[151] 17 **82**	[358] 40 **80**	[744] 84 **76**	[1099] 124 **72**	[1439] 163 **68**	[1737] 196 **61**	[2015] 228 **50**	[2293] 259 **38**	[2570] 290 **29**	[2855] 323 **20**
[4] 15	[151] 17 **167**	[350] 40 **163**	[899] 102 **158**	[1113] 126 **152**	[1473] 166 **148**	[1800] 203 **139**	[2132] 241 **126**	[2454] 277 **115**	[2775] 314 **102**	[3100] 350 **90**
[6] 23	[142] 16 **250**	[348] 39 **245**	[736] 83 **240**	[613] 69 **233**	[1492] 169 **227**	[1851] 209 **218**	[2208] 249 **203**	[2552] 288 **191**	[2898] 327 **176**	[3249] 367 **161**
[8] 30	[133] 15 **35**	[338] 38 **328**	[729] 82 **329**	[1128] 127 **314**	[1509] 170 **306**	[1890] 214 **295**	[2269] 256 **281**	[2635] 298 **266**	[3000] 339 **249**	[3367] 380 **231**
[10] 38	[124] 14 **418**	[331] 37 **410**	[724] 82 **404**	[1130] 128 **395**	[1521] 172 **385**	[1912] 216 **373**	[2309] 261 **361**	[2670] 302 **342**	[3036] 343 **322**	[3398] 384 **302**
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[14] 53	[98] 11 **585**	[298] 34 **575**	[706] 80 **567**	[1115] 126 **559**	[1525] 172 **543**	[1924] 217 **529**	[2326] 263 **521**	[2707] 306 **493**	[3080] 348 **467**	[3450] 390 **431**
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[18] 68	[62] 7 **753**	[262] 30 **740**	[673] 76 **732**	[1087] 123 **719**	[1490] 168 **701**	[1892] 214 **685**	[2281] 258 **680**	[2662] 301 **643**	[3030] 342 **613**	[3381] 382 **583**
[20] 76	[53] 6 **836**	[242] 27 **822**	[644] 73 **814**	[1045] 118 **796**	[1447] 163 **780**	[1850] 209 **765**	[2246] 254 **748**	[2617] 296 **719**	[2988] 338 **686**	[3301] 373 **653**
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[25] 95		[195] 22 **1042**	[594] 67 **1033**	[994] 112 **1020**	[1384] 156 **1003**	[1765] 199 **984**	[2173] 246 **954**	[2564] 290 **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

Peak

Intermittent

No Operation

100 cm³/r [6.2 in³/r]

Δ Pressure Bar [PSI]

Flow LPM [GPM]

	[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**
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[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**	
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[1560] 175 **890** } Torque [lb-in] Nm **Speed RPM**

130 cm³/r [8.0 in³/r]

Δ Pressure Bar [PSI]

Flow LPM [GPM]

	[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**
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[12] 45	[160] 20 **345**	[460] 50 **344**	[1060] 120 **338**	[1640] 185 **333**	[2230] 250 **327**	[2800] 315 **317**	[3350] 380 **307**	[3910] 440 **295**	[4440] 500 **284**	[4960] 560 **272**
[14] 53	[150] 15 **403**	[440] 50 **402**	[1030] 115 **395**	[1620] 185 **391**	[2220] 250 **385**	[3000] 340 **373**	[3350] 380 **360**	[3910] 440 **348**	[4440] 500 **336**	
[16] 61	[130] 15 **461**	[420] 45 **460**	[1010] 115 **452**	[1600] 180 **447**	[2200] 250 **443**	[2780] 315 **430**	[3330] 375 **411**	[3890] 440 **397**	[4440] 500 **384**	
[18] 68	[110] 10 **518**	[400] 45 **517**	[990] 110 **509**	[1580] 180 **504**	[2160] 245 **500**	[2750] 310 **484**	[3300] 375 **471**	[3860] 435 **456**	[4410] 500 **440**	
[20] 76	[90] 10 **576**	[380] 45 **575**	[960] 110 **568**	[1550] 175 **560**	[2130] 240 **551**	[2710] 305 **539**	[3280] 370 **524**	[3840] 435 **508**		
[22] 83	[60] 5 **634**	[350] 40 **633**	[940] 105 **624**	[1520] 170 **619**	[2100] 235 **604**	[2680] 305 **597**	[3250] 365 **579**	[3820] 430 **560**		
[24] 91	[40] 5 **692**	[325] 35 **691**	[920] 105 **682**	[1490] 170 **676**	[2070] 235 **665**	[2650] 300 **651**	[3220] 365 **633**	[3780] 425 **616**		
[25] 95	[20] 1,0 **720**	[310] 35 **719**	[900] 100 **712**	[1480] 165 **705**	[2050] 230 **692**	[2630] 295 **679**	[3200] 360 **682**	[3700] 420 **656**		

2000 Series

Performance Data

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

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

Continuous

Peak

Intermittent

No Operation

160 cm³/r [9.6 in³/r]

Δ Pressure Bar [PSI]

Flow LPM [GPM]

	[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 **713** } Torque [lb-in] Nm **Speed RPM**

195 cm³/r [11.9 in³/r]

Δ Pressure Bar [PSI]

Flow LPM [GPM]

	[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] 130 **34**	[1470] 165 **33**	[1860] 210 **32**	[2195] 250 **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**	[810] 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]

Flow LPM [GPM]

	[250] 15	[500] 35	[750] 50	[1000] 70	[1250] 85	[1500] 105	[1750] 120	[2000] 140	[2250] 155	[2500] 170	[2750] 190	[3000] 205	[3250] 225	[3500] 240	[3750] 260
[.5] **1,9**	[410] 45 **4**	[850] 95 **2**													
[1] **3,8**	[450] 50 **14**	[930] 105 **13**	[1420] 160 **12**	[1850] 210 **11**	[2320] 260 **10**	[2780] 315 **9**	[3250] 365 **8**	[3650] 410 **6**	[4100] 465 **5**	[4540] 515 **4**	[4980] 560 **4**	[5430] 615 **3**	[5870] 665 **2**	[6310] 715 **1**	
[2] **7,5**	[460] 50 **29**	[960] 110 **28**	[1460] 165 **27**	[1900] 215 **26**	[2400] 270 **25**	[2860] 325 **23**	[3340] 375 **22**	[3780] 425 **20**	[4320] 490 **19**	[4770] 540 **18**	[5210] 590 **17**	[5660] 640 **15**	[6110] 690 **14**	[6570] 740 **12**	[6950] 785 **10**
[4] **15**	[470] 55 **60**	[1000] 115 **59**	[1540] 175 **58**	[1980] 225 **56**	[2510] 285 **54**	[3010] 340 **53**	[3480] 395 **51**	[3980] 450 **49**	[4450] 505 **48**	[4910] 555 **47**	[5380] 610 **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] 560 **135**	[5720] 645 **133**	[6230] 705 **103**			
[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] 580 **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**

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

Flow LPM [GPM]

	[250] 15	[500] 35	[750] 50	[1000] 70	[1250] 85	[1500] 105	[1750] 120	[2000] 140	[2250] 155	[2500] 170	[2750] 190	[3000] 205	[3250] 225	[3500] 240
[.5] **1,9**	[500] 55 **4**	[1050] 120 **2**												
[1] **3,8**	[610] 70 **12**	[1180] 135 **11**	[1750] 200 **11**	[2330] 260 **10**	[2870] 325 **10**	[3440] 390 **9**	[3930] 445 **8**	[4410] 500 **6**	[4900] 555 **3**	[5380] 610 **1**				
[2] **7,5**	[620] 70 **24**	[1210] 135 **24**	[1800] 205 **23**	[2400] 270 **22**	[2970] 335 **22**	[3510] 395 **20**	[4050] 460 **19**	[4600] 520 **18**	[5140] 580 **17**	[5680] 640 **15**	[6220] 705 **13**	[6750] 765 **11**	[7290] 825 **8**	[7820] 885 **6**
[4] **15**	[680] 75 **49**	[1250] 140 **49**	[1880] 210 **48**	[2500] 280 **47**	[3120] 355 **47**	[3690] 415 **45**	[4260] 480 **43**	[4840] 545 **42**	[5410] 610 **40**	[5980] 675 **38**	[6550] 740 **36**	[7120] 805 **34**	[7690] 870 **33**	
[6] **23**	[620] 70 **74**	[1270] 145 **74**	[1920] 215 **72**	[2560] 290 **72**	[3230] 365 **71**	[3810] 430 **69**	[4390] 495 **66**	[4970] 560 **64**	[5560] 630 **61**	[6130] 695 **58**	[6710] 760 **55**	[7290] 825 **52**		
[8] **30**	[600] 70 **98**	[1270] 145 **98**	[1940] 220 **97**	[2600] 295 **96**	[3290] 370 **95**	[3880] 440 **93**	[4470] 505 **90**	[5070] 575 **86**	[5660] 640 **83**	[6250] 705 **80**	[6840] 775 **77**			
[10] **38**	[570] 65 **123**	[1250] 140 **122**	[1940] 220 **121**	[2610] 295 **120**	[3310] 375 **119**	[3920] 440 **117**	[4530] 510 **113**	[5150] 580 **110**	[5760] 650 **106**	[6370] 720 **102**				
[12] **45**	[530] 60 **148**	[1220] 140 **147**	[1920] 215 **145**	[2600] 295 **144**	[3300] 375 **143**	[3920] 440 **142**	[4530] 510 **138**	[5150] 580 **133**	[5760] 650 **128**	[6370] 720 **124**				
[14] **53**	[480] 55 **172**	[1180] 135 **172**	[1870] 210 **170**	[2560] 290 **168**	[3260] 370 **167**	[3900] 440 **165**	[4510] 510 **160**	[5120] 580 **156**	[5730] 645 **152**					
[16] **61**	[430] 50 **196**	[1120] 125 **196**	[1820] 205 **194**	[2500] 280 **192**	[3210] 365 **191**	[3870] 440 **188**	[4480] 505 **183**	[5080] 575 **178**	[5690] 645 **174**					
[18] **68**	[370] 40 **221**	[1060] 120 **221**	[1760] 200 **218**	[2440] 275 **217**	[3140] 355 **215**	[3800] 440 **212**	[4420] 500 **207**	[5050] 570 **202**						
[20] **76**	[320] 35 **246**	[980] 110 **245**	[1680] 190 **243**	[2360] 265 **241**	[3050] 345 **239**	[3710] 420 **236**	[4370] 495 **231**	[5020] 565 **226**						
[22] **83**	[240] 25 **271**	[920] 105 **270**	[1620] 185 **268**	[2300] 260 **266**	[2990] 340 **263**	[3560] 400 **260**	[4190] 475 **258**	[4820] 545 **255**						
[24] **91**	[180] 20 **296**	[870] 100 **294**	[1550] 175 **293**	[2240] 255 **290**	[2920] 330 **288**	[3420] 385 **285**	[4020] 455 **283**	[4630] 525 **280**						
[25] **95**	[150] 15 **308**	[840] 95 **307**	[1520] 170 **305**	[2200] 250 **303**	[2890] 325 **300**	[3340] 375 **298**	[3930] 445 **295**	[4520] 510 **293**						
[30] **114**		[680] 75 **365**	[1360] 155 **362**	[2040] 230 **360**	[2720] 305 **357**	[3140] 355 **356**	[3810] 430 **352**							

2000 Series

Performance Data

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Intermittent

No Operation

490 cm³/r [29.8 in³/r]

Δ Pressure Bar [PSI]

Flow LPM [GPM]	[250] 15	[500] 35	[750] 50	[1000] 70	[1250] 85	[1500] 105	[1750] 120	[2000] 140
[.5] 1,9	[670] 75 **2**	[1600] 180 **1**						
[1] 3,8	[920] 105 **7**	[2000] 225 **6**	[2990] 340 **5**	[3900] 440 **4**	[4880] 550 **2**			
[2] 7,5	[950] 105 **14**	[2060] 235 **13**	[3110] 350 **12**	[4080] 460 **10**	[5110] 575 **9**	[6320] 715 **7**		
[4] 15	[980] 110 **30**	[2130] 240 **29**	[3230] 365 **28**	[4270] 480 **27**	[5350] 605 **26**	[6370] 720 **24**	[7380] 835 **22**	[7980] 900 **20**
[6] 23	[980] 110 **45**	[2120] 240 **44**	[3230] 365 **43**	[4300] 485 **42**	[5370] 605 **41**	[6420] 725 **39**	[7470] 845 **37**	[8225] 930 **35**
[8] 30	[980] 110 **61**	[2110] 240 **60**	[3220] 365 **59**	[4330] 490 **58**	[5400] 610 **57**	[6470] 730 **55**	[7550] 855 **52**	
[10] 38	[920] 105 **76**	[2050] 230 **75**	[3170] 360 **74**	[4300] 485 **73**	[5390] 610 **72**	[6460] 730 **70**	[7550] 855 **68**	
[12] 45	[860] 95 **91**	[1990] 225 **90**	[3120] 355 **90**	[4260] 480 **89**	[5370] 605 **87**	[6460] 730 **85**	[7560] 855 **84**	
[14] 53	[790] 90 **106**	[1930] 220 **105**	[3055] 345 **105**	[4185] 475 **104**	[5300] 600 **102**	[6400] 725 **100**		
[16] 61	[720] 80 **122**	[1870] 210 **121**	[2990] 340 **120**	[4110] 465 **119**	[5230] 590 **118**	[6340] 715 **116**		
[18] 68	[630] 70 **137**	[1770] 200 **136**	[2890] 325 **135**	[4020] 455 **134**	[5140] 580 **133**	[6260] 705 **131**		
[20] 76	[550] 60 **153**	[1670] 190 **152**	[2800] 315 **151**	[3940] 445 **150**	[5060] 570 **149**	[6180] 700 **146**		
[22] 83	[450] 50 **168**	[1570] 175 **168**	[2700] 305 **167**	[3830] 435 **165**	[4960] 560 **164**	[6070] 685 **161**		
[24] 91	[360] 40 **184**	[1480] 165 **184**	[2600] 295 **183**	[3730] 420 **181**	[4860] 550 **179**	[5970] 675 **177**		
[26] 98	[270] 30 **199**	[1390] 155 **195**	[2510] 285 **194**	[3640] 410 **192**	[4770] 540 **190**			
[28] 106		[1260] 140 **212**	[2370] 270 **211**	[3520] 400 **209**	[4630] 525 **207**			
[30] 114		[1130] 125 **230**	[2240] 255 **229**	[3400] 385 **277**	[4500] 510 **224**			

395 cm³/r [24.0 in³/r]

Δ Pressure Bar [PSI]

Flow LPM [GPM]	[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 **4**	[1310] 150 **3**									
[1] 3,8	[770] 85 **9**	[1540] 175 **9**	[2290] 260 **9**	[3080] 350 **8**	[3780] 430 **8**	[4480] 505 **7**	[5170] 585 **7**	[5880] 665 **6**	[6580] 745 **5**	[7270] 820 **4**	[7980] 900 **3**
[2] 7,5	[790] 90 **18**	[1580] 180 **18**	[2360] 265 **18**	[3180] 360 **17**	[3930] 445 **17**	[4680] 530 **16**	[5430] 615 **15**	[6180] 700 **14**	[6840] 775 **13**	[7500] 845 **11**	[8170] 925 **10**
[4] 15	[810] 90 **37**	[1660] 190 **37**	[2480] 280 **37**	[3320] 375 **36**	[4130] 465 **36**	[4940] 560 **35**	[5740] 650 **34**	[6550] 740 **33**	[7230] 815 **31**	[7880] 890 **28**	
[6] 23	[820] 90 **57**	[1700] 190 **56**	[2550] 290 **56**	[3420] 385 **55**	[4250] 480 **54**	[5080] 575 **52**	[5920] 670 **50**	[6750] 765 **49**	[7420] 840 **47**	[8000] 905 **45**	
[8] 30	[820] 90 **76**	[1700] 190 **75**	[2580] 290 **75**	[3460] 390 **74**	[4300] 485 **73**	[5130] 580 **71**	[5960] 675 **69**	[6800] 770 **68**			
[10] 38	[800] 90 **95**	[1700] 190 **94**	[2590] 295 **94**	[3480] 395 **93**	[4320] 490 **92**	[5160] 585 **90**	[6000] 680 **88**	[6840] 775 **86**			
[12] 45	[770] 85 **114**	[1680] 190 **113**	[2570] 290 **113**	[3470] 390 **112**	[4310] 485 **111**	[5150] 580 **109**	[5990] 675 **106**	[6830] 770 **103**			
[14] 53	[740] 85 **133**	[1640] 185 **132**	[2530] 285 **132**	[3430] 390 **131**	[4280] 485 **129**	[5120] 580 **127**	[5960] 675 **124**				
[16] 61	[690] 80 **153**	[1590] 180 **152**	[2480] 280 **152**	[3370] 380 **150**	[4220] 475 **149**	[5060] 570 **146**	[5910] 670 **144**				
[18] 68	[640] 70 **172**	[1530] 170 **171**	[2420] 275 **171**	[3310] 375 **170**	[4160] 470 **169**	[5010] 565 **167**	[5870] 665 **164**				
[20] 76	[580] 65 **191**	[1470] 165 **190**	[2370] 270 **190**	[3260] 370 **189**	[4110] 465 **188**	[4960] 560 **186**	[5820] 660 **184**				
[22] 83	[510] 60 **210**	[1390] 155 **209**	[2290] 260 **209**	[3170] 360 **208**	[4030] 455 **207**	[4880] 550 **206**					
[24] 91	[440] 50 **230**	[1330] 150 **229**	[2220] 250 **228**	[3100] 350 **227**	[3950] 445 **225**	[4800] 540 **224**					
[26] 98	[350] 40 **249**	[1240] 140 **248**	[2130] 240 **247**	[3020] 340 **246**	[3880] 440 **244**	[4730] 535 **242**					
[28] 106	[270] 30 **268**	[1150] 130 **267**	[2050] 230 **265**	[2930] 330 **264**	[3790] 430 **261**	[4650] 525 **259**					
[30] 114	[180] 20 **287**	[1060] 120 **286**	[1960] 220 **284**	[2850] 320 **283**	[3710] 420 **281**	[4570] 515 **277**					
[35] 132		[840] 95 **335**	[1760] 200 **334**	[2640] 300 **333**	[3480] 395 **332**						

[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

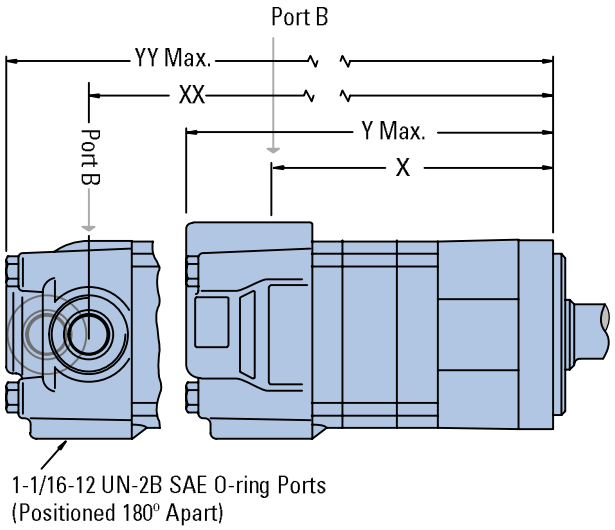
G 1/2 (BSP) Staggered Ports (2)
G 1/4 (BSP) Case Drain Port (1) or

Manifold Mount
7/16 -20 UNF-2B SAE O-ring Case Drain Port (1)

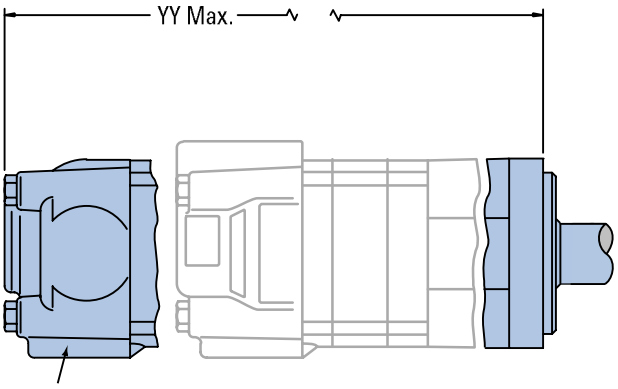
Standard Rotation Viewed from Shaft End

Port A Pressurized — CW
Port B Pressurized — CCW

Standard Mount



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



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

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

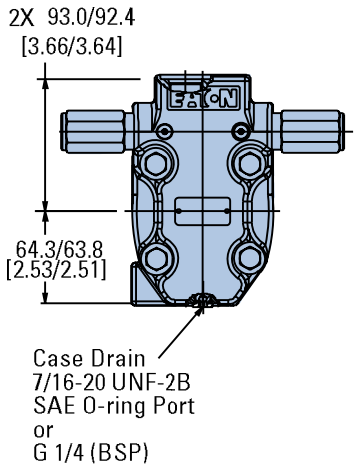
Ports

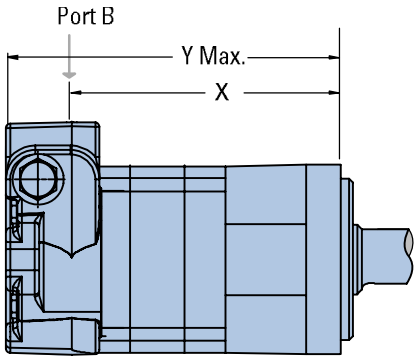
7/8 -14 UNF-2B SAE O-ring Staggered Ports (2)
7/16 -20 UNF-2B SAE O-ring Case Drain Port (1) or
G 1/2 (BSP) Staggered Ports (2)
G 1/4 (BSP) Case Drain Port (1)

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 cm³/r [in³/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

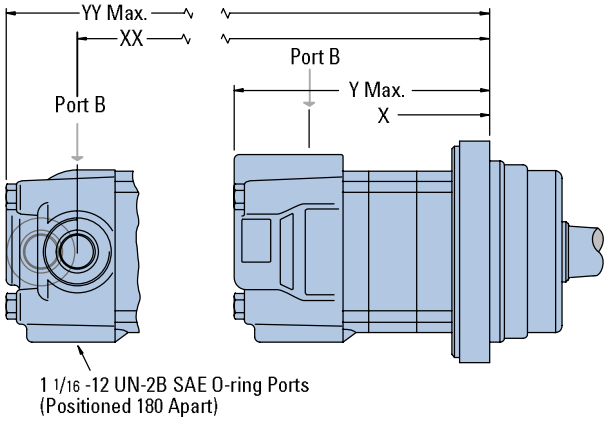
G 1/2 (BSP) Staggered Ports (2)
G 1/4 (BSP) Case Drain Port (1) or

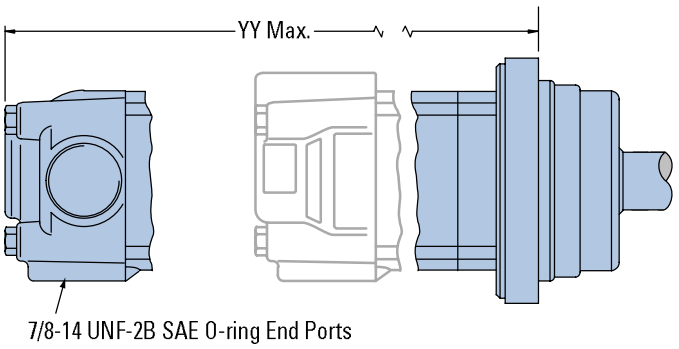
Manifold Mount
7/16 -20 UNF-2B SAE O-ring Case Drain Port (1)

Standard Rotation Viewed from Shaft End

Port A Pressurized — CW
Port B Pressurized — CCW

Wheel Mount





WHEEL MOUNT MOTOR DIMENSIONS

Displacement cm^3/r [in^3/r]	X mm [inch]	Y mm [inch]	XX mm [inch]	YY 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 Intergal Relief Valve

Ports

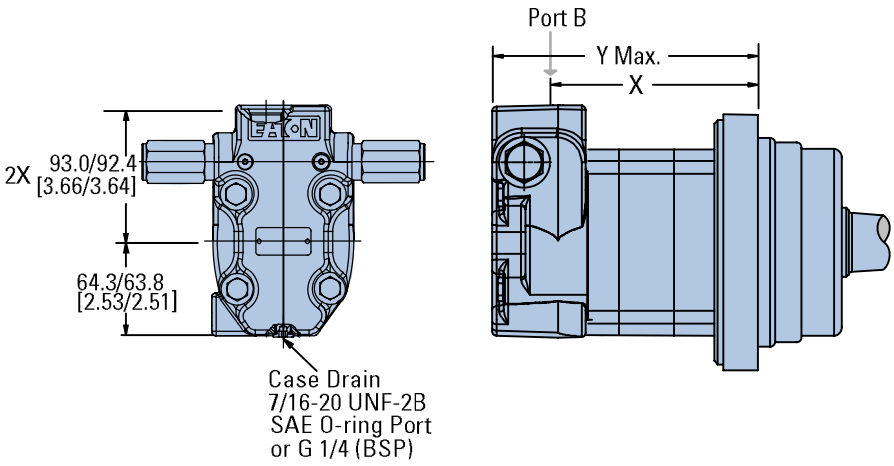
7/8 -14 UNF-2B SAE O-ring Staggered Ports (2)
7/16 -20 UNF-2B SAE O-ring Case Drain Port (1)

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

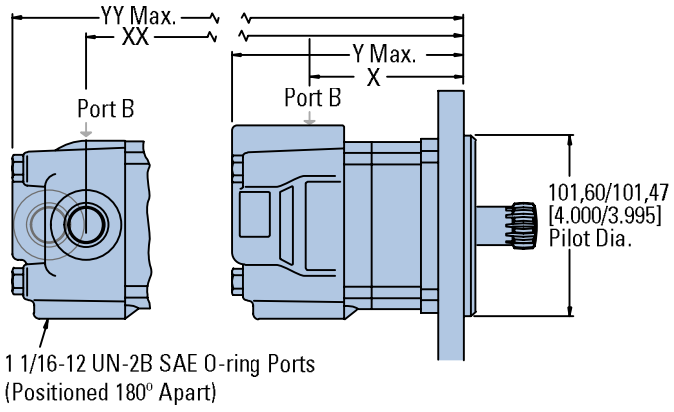
Displacement cm³/r [in³/r]	X mm [inch]	Y mm [inch]
80 [4.9]	96,9 [3.82]	144,3 [5.68]
100 [6.2]	101,4 [4.00]	148,9 [5.86]
130 [8.0]	107,8 [4.25]	155,2 [6.11]
160 [9.6]	107,8 [4.25]	155,2 [6.11]
195 [11.9]	114.6 [4.52]	162,1 [6.38]
245 [14.9]	123,5 [4.87]	171,0 [6.73]
305 [18.7]	135,0 [5.32]	182,4 [7.18]
395 [24.0]	151,0 [5.95]	198,4 [7.81]
490 [29.8]	168,2 [6.63]	215,7 [8.49]

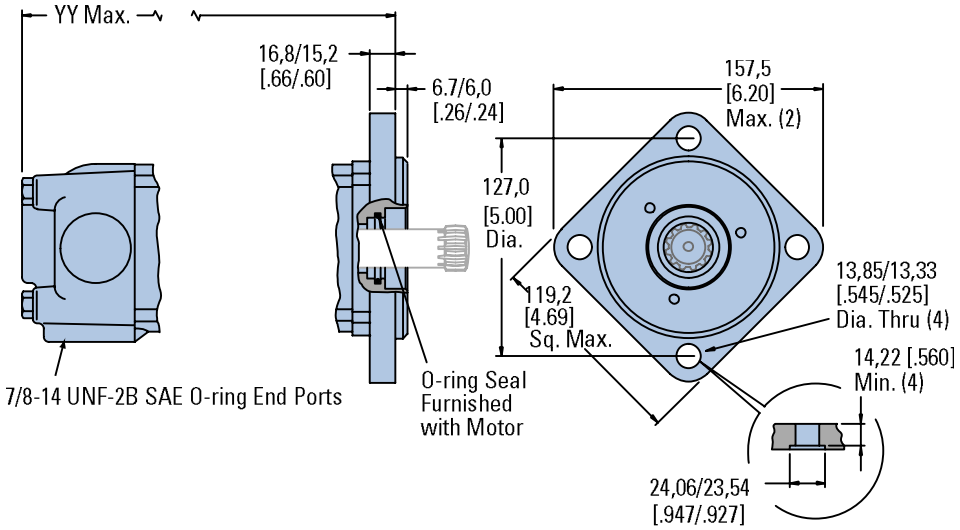
2000 Series

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

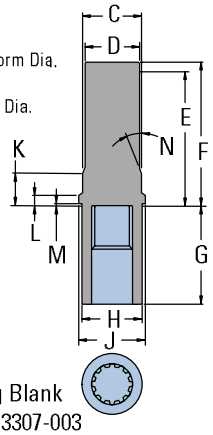
Manifold Mount
7/16 -20 UNF-2B SAE O-ring Case Drain Port (1)

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

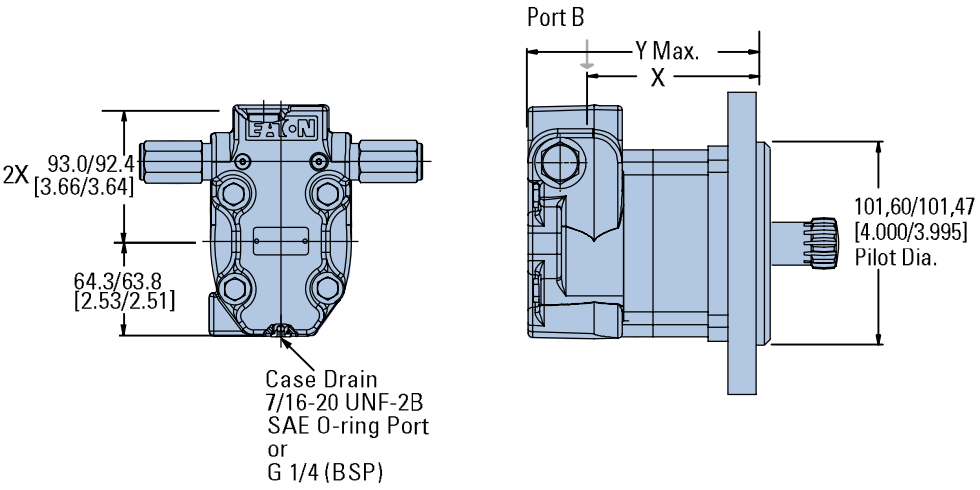
Ports

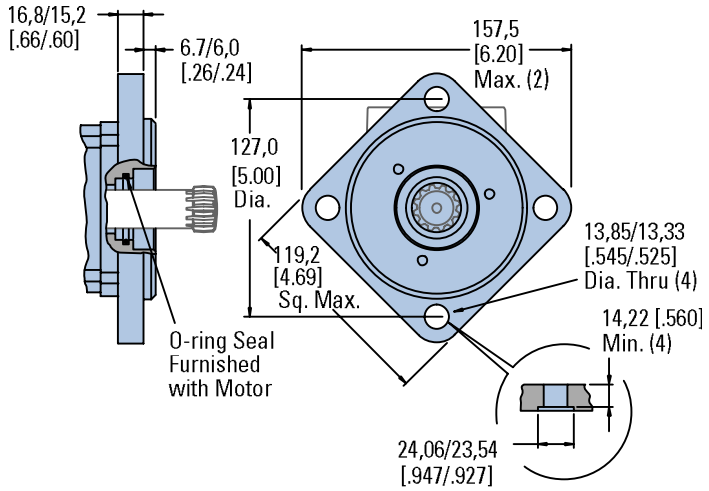
7/8-14 UNF-2B SAE O-ring Staggered Ports (2)
7/16-20 UNF-2B SAE O-ring Case Drain Port (1)
G 1/2 (BSP) Staggered Ports (2)
G 1/4 (BSP) Case Drain Port (1)

Standard Rotation Viewed from Shaft End

Port A Pressurized — CW
Port B Pressurized — CCW

Bearingless with Integral Relief Valve





BEARINGLESS MOTORS DIMENSIONS

Displacement cm³/r [in³/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

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.

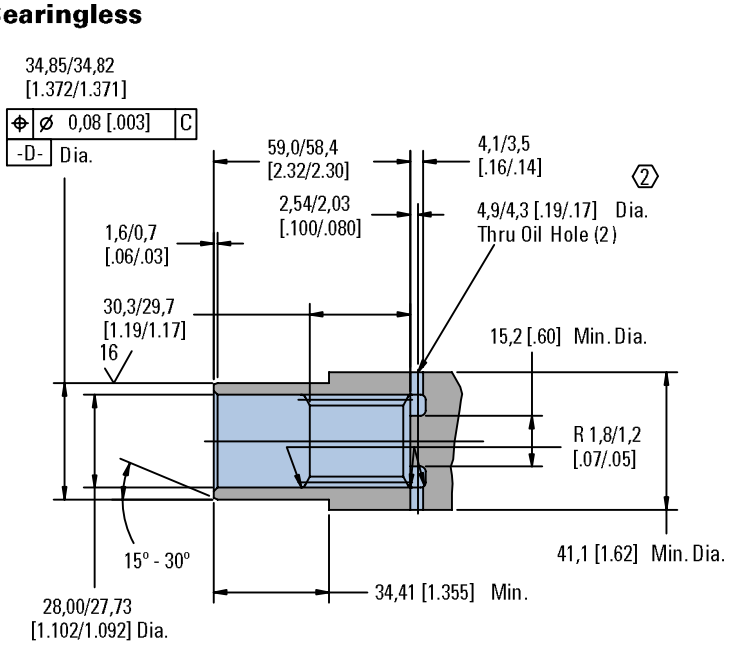
② Mating part to have critical dimensions as shown. Oil holes must be provided and open for proper oil circulation.

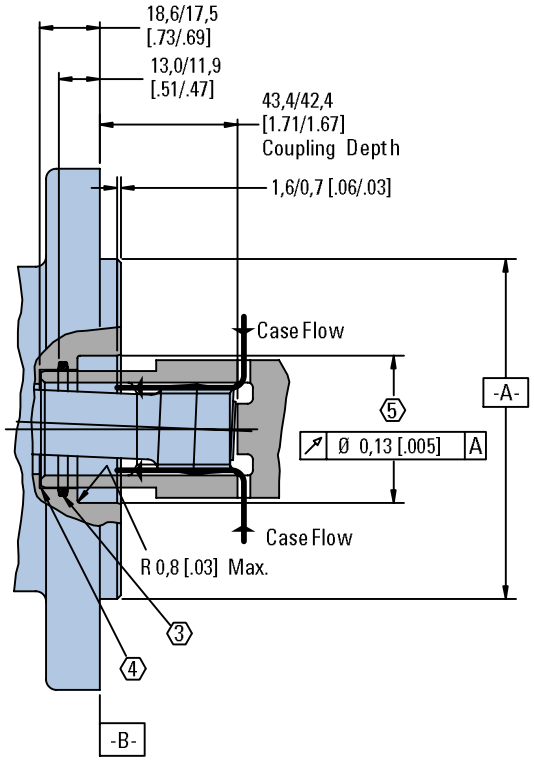
③ Seal to be furnished with motor for proper oil circulation thru splines.

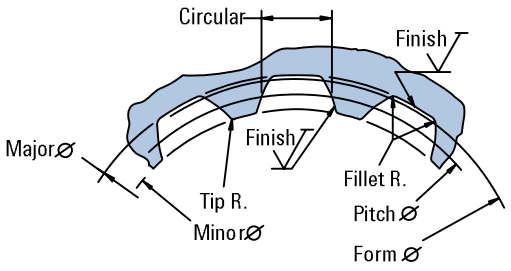
④ Some means of maintaining clearance between shaft and mounting flange must be provided.

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).

Bearingless







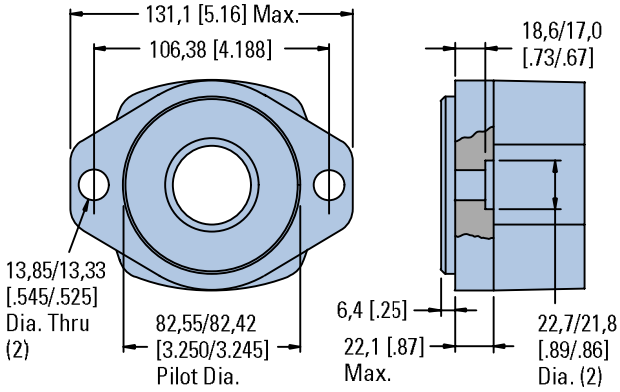
Spline Pitch	12/24
Pressure Angle	30°
Number of teeth	12
Class of Fit	Ref. 5
Type of Fit	Side
Pitch Diameter	Ref. 25,400000 [1.0000000]
Base Diameter	Ref. 21,997045 [.8660254] ◎ 0,21 [.008] D
Major Diameter	(27,74 [1.092] Max. 27,59 [1.086] Min.)
Minor Diameter	23,097 - 23,224 [.9093 - .9143]
Form Diameter, 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 [+.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

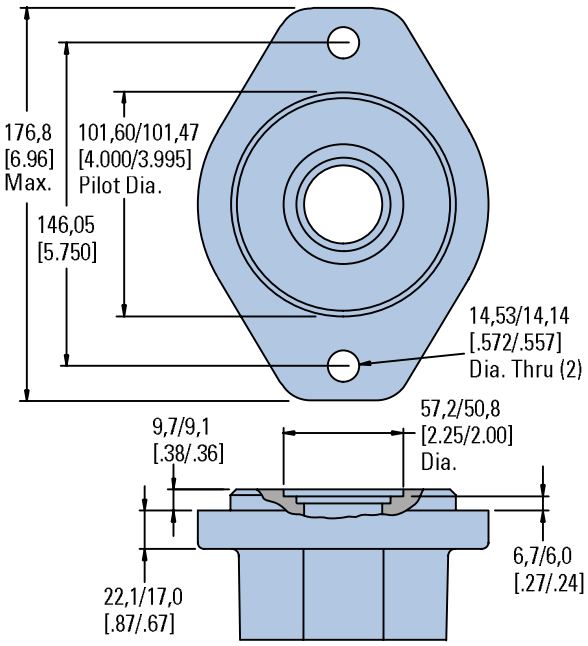
Dimensions

Mounting Options

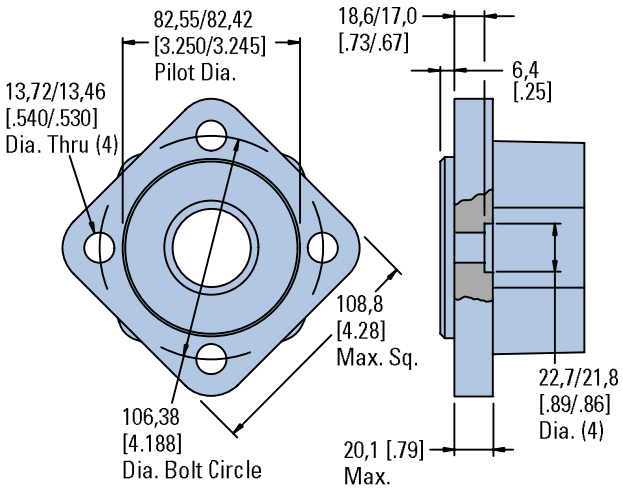
SAE A — Two Bolt (Standard Motor)



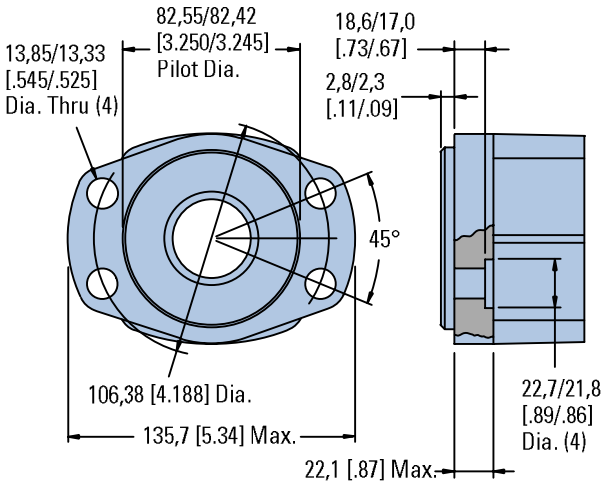
SAE B — Two Bolt



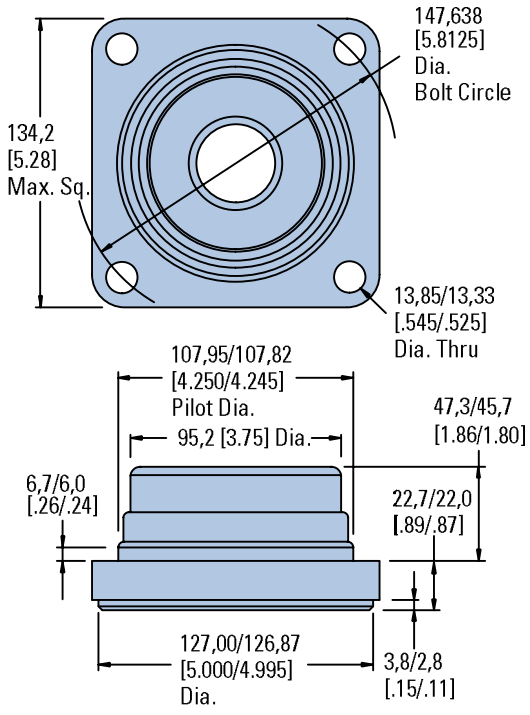
Four Bolt



Four Bolt Magneto



Four Bolt (Wheel Motor)

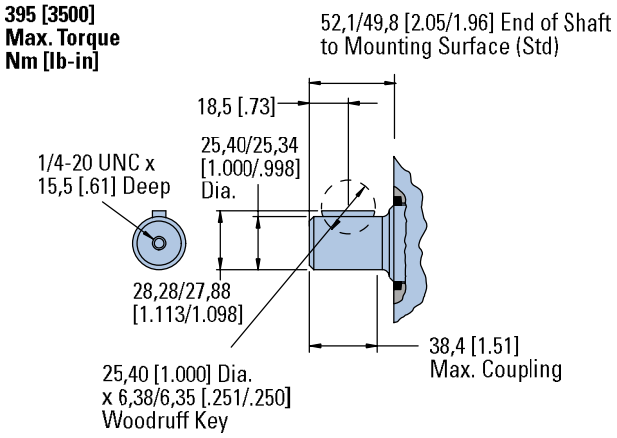


2000 Series

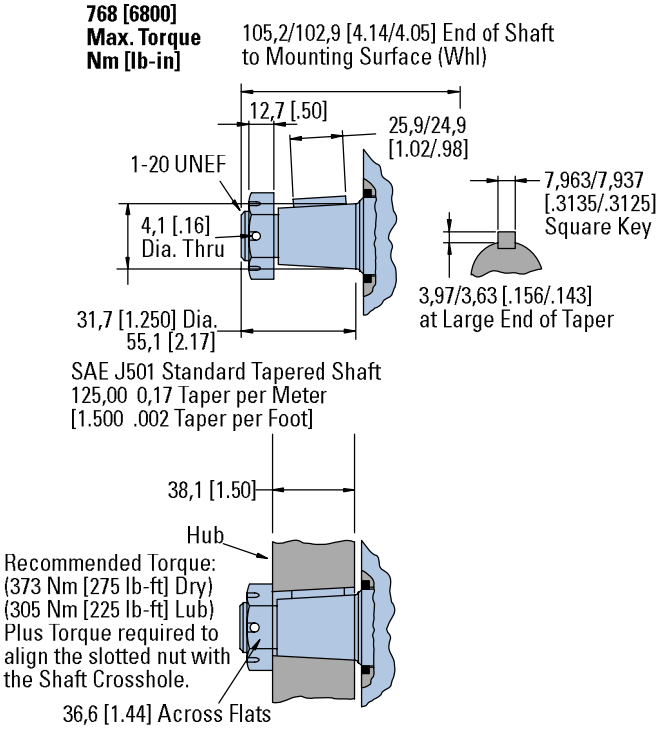
Dimensions

Shafts

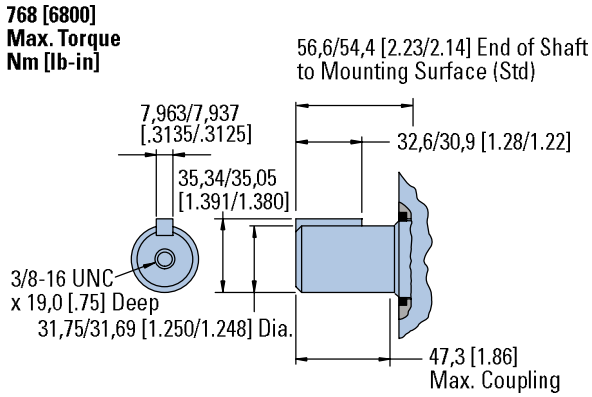
1 Inch Straight



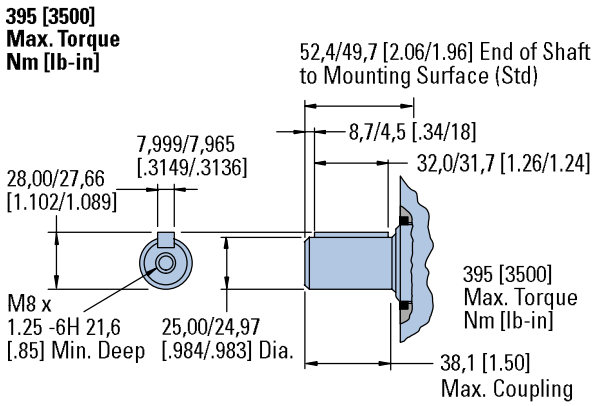
1 1/4 Inch Tapered



1 1/4 Inch Straight



25 mm Straight

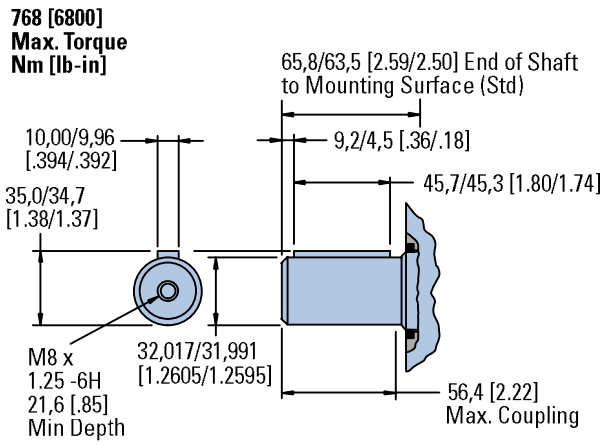


2000 Series

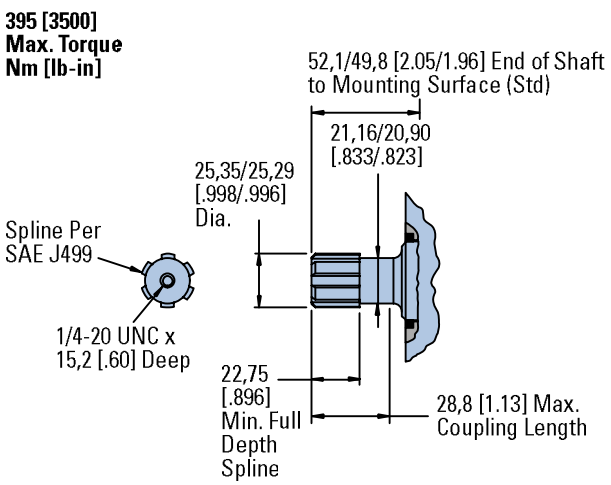
Dimensions

Shafts

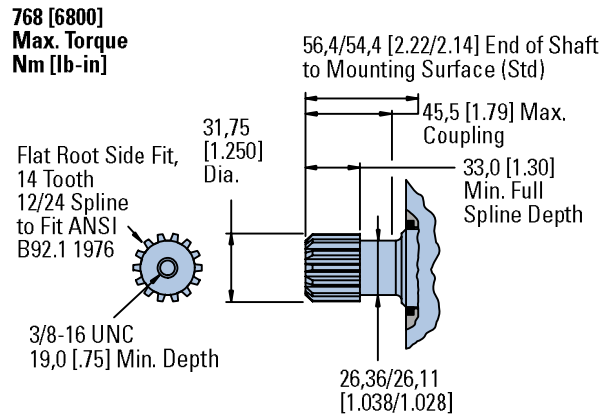
32 mm Straight



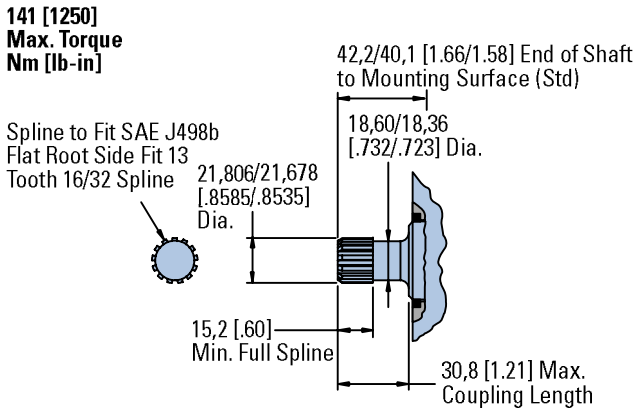
SAE 6B Splined



1 1/4 -14 Tooth Splined



13 Tooth Splined



2000 Series

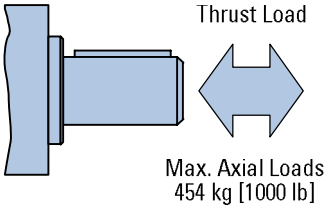
Shaft Side Load Capacity

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

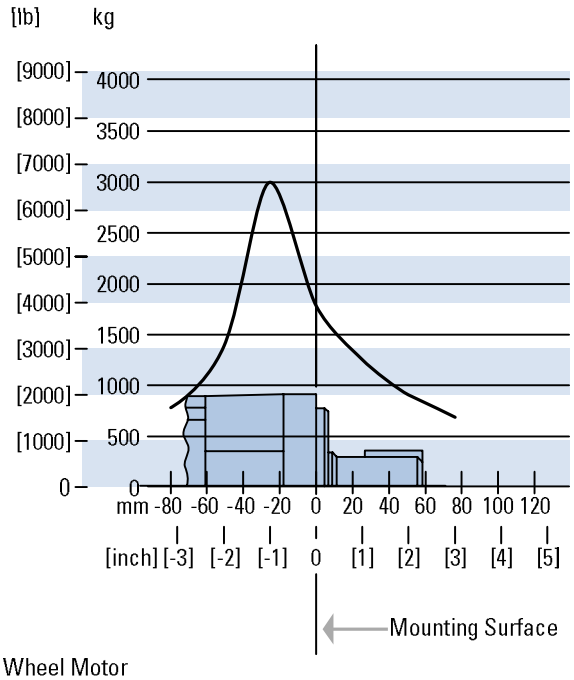


B 10 bearing life (2000 hours of 12,000,000 shaft revolutions at 100 RPM) at rated output torque.
To determine radial load at speeds other than 100 RPM, multiply the load values given on the bearing curve by the factors in the chart below.

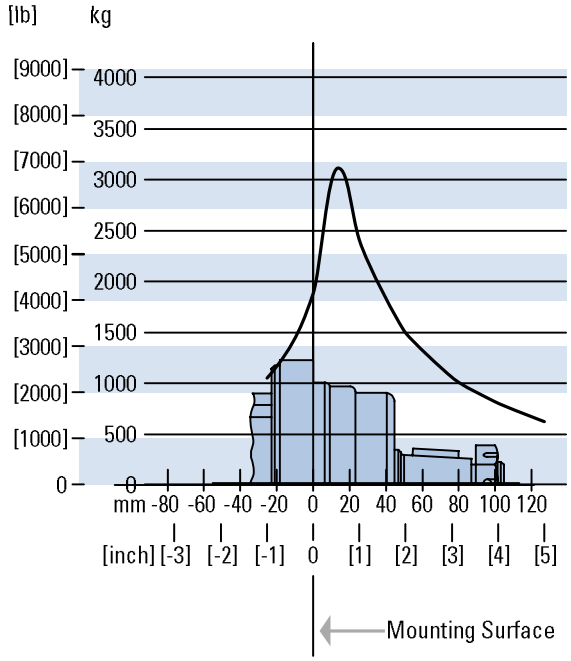
RPM	Multiplication Factor
50	1.23
100	1.00
200	0.81
300	0.72
400	0.66
500	0.62
600	0.58
700	0.56
800	0.54

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

Standard Motor
Straight and Splined Shafts



Wheel Motor
Tapered Shaft

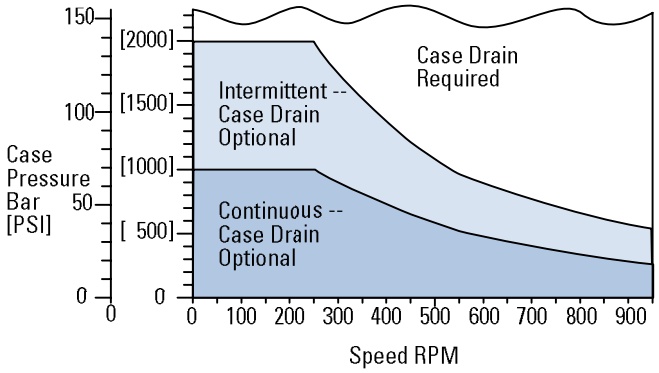


2000 Series

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 Pressure Seal Limitation



Case Porting Advantage

Contamination Control — flushing the motor case.

Cooler Motor — exiting oil draws motor heat away.

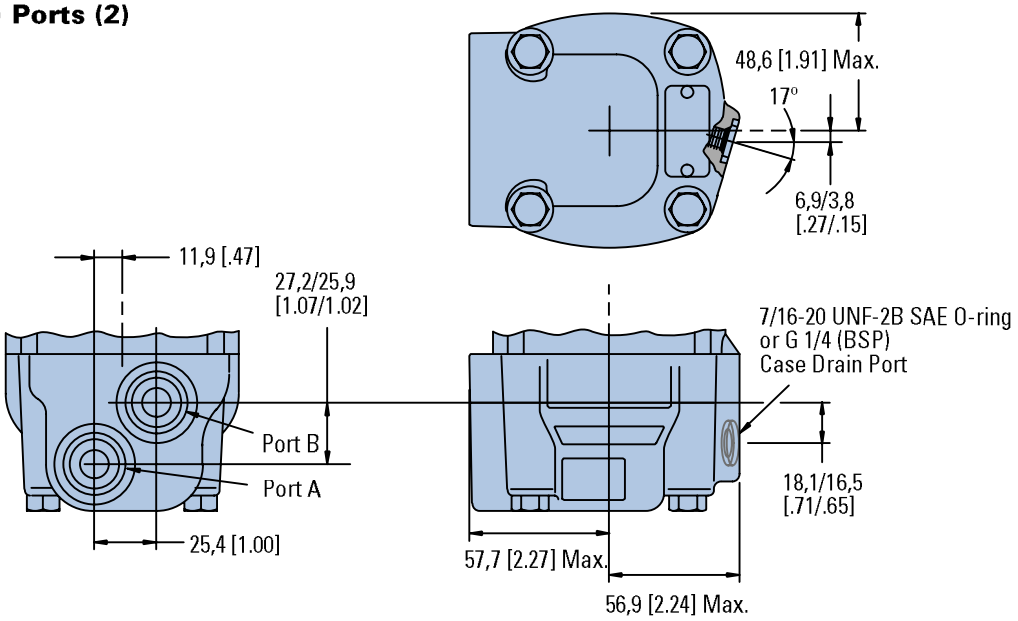
Extend Motor Seal Life — maintain low case pressure with a preset restriction in the case drain line.

2000 Series

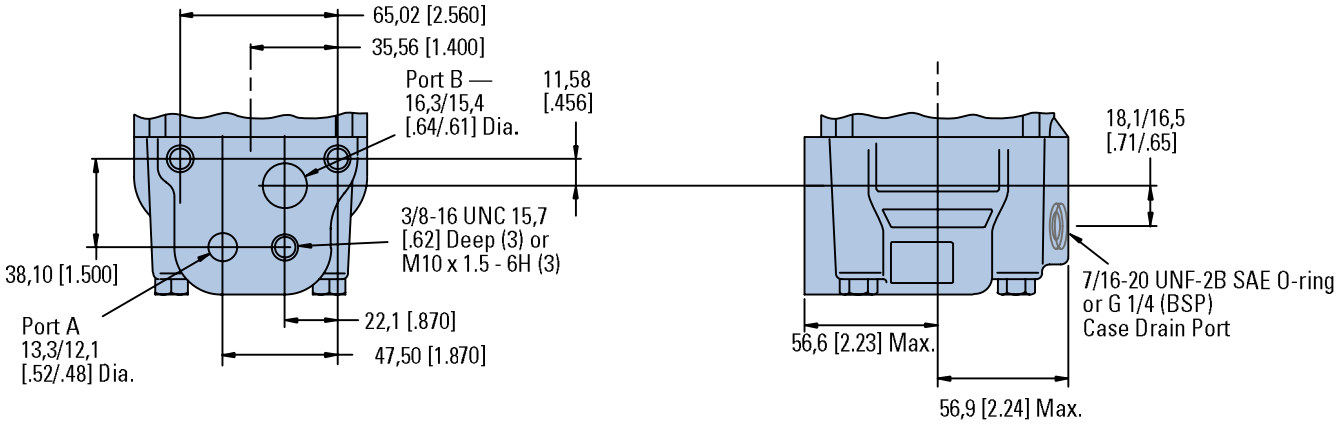
Dimensions

Ports

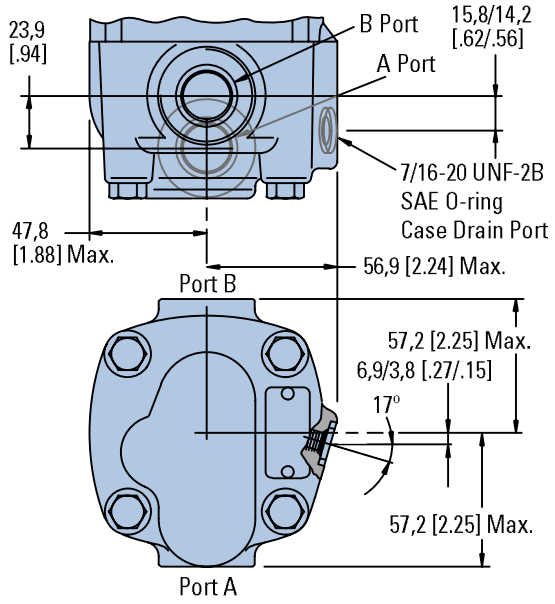
7/8-14 UNF-2B SAE O-ring Ports (2) or G 1/2 (BSP) Ports (2)



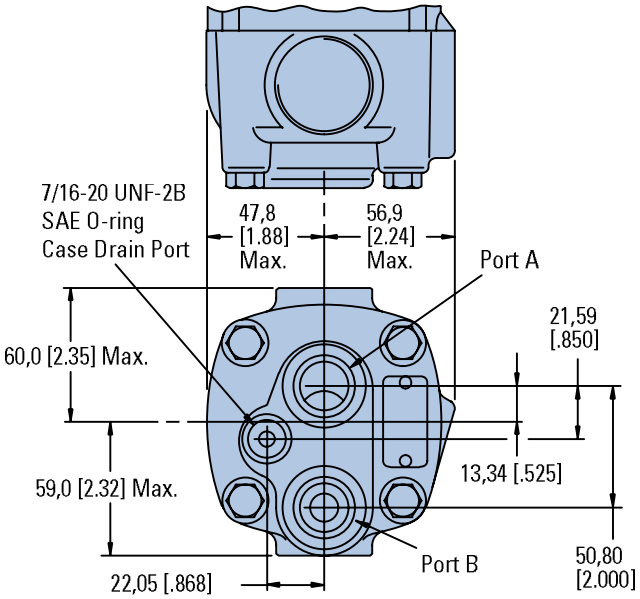
Manifold Mount



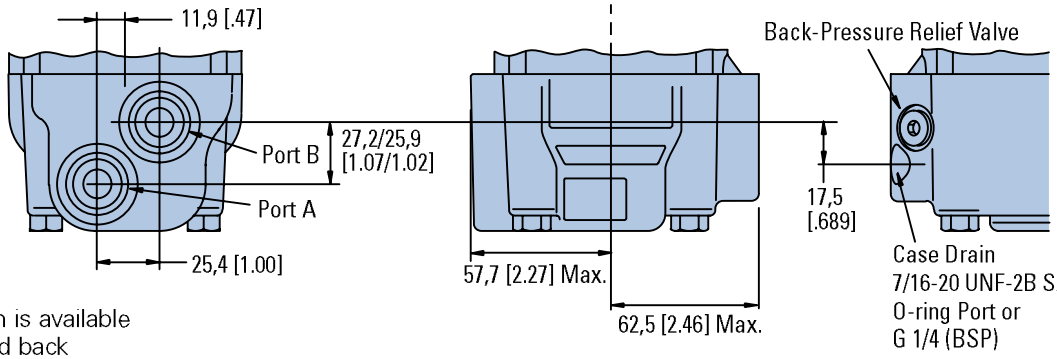
1-1/16-12 UN-2B SAE O-ring Ports (2) Positioned 180° Apart



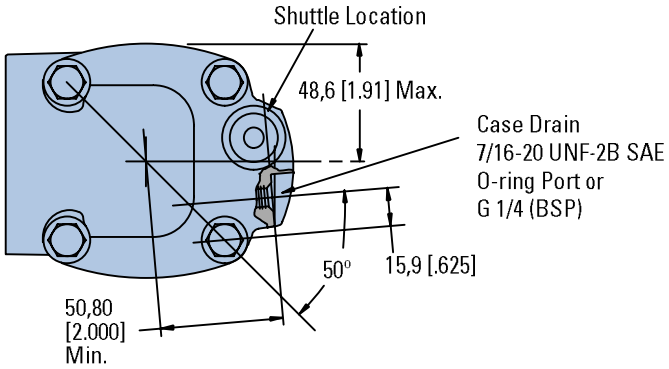
7/8-14 UNF-2B SAE O-ring End Ports (2)



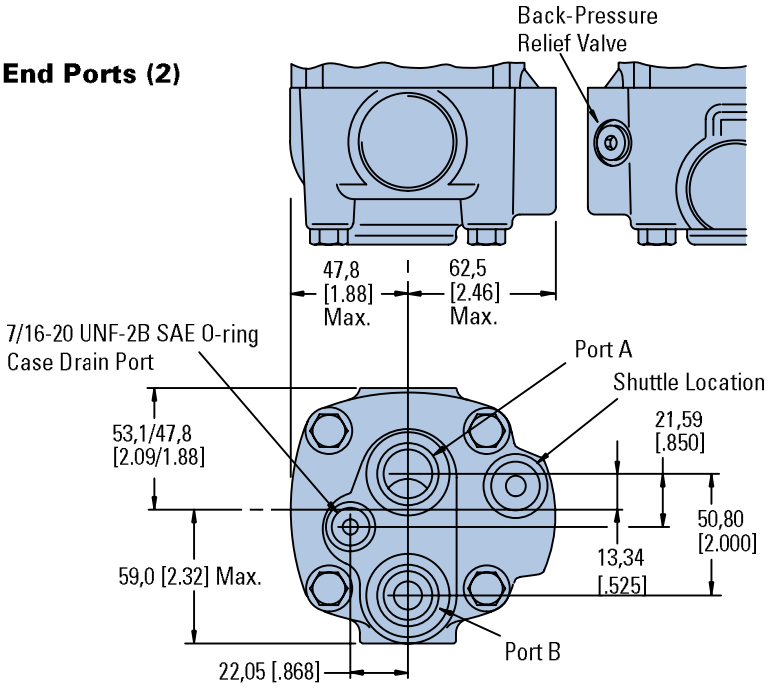
7/8 -14 UNF-2B SAE O-ring Ports (2) or G 1/2 (BSP) Ports (2)



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. cm³/r [in³/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. cm³/r [in³/r] / PRODUCT NUMBER									
			80 [4.9]	90* [5.5]	100 [6.2]	130 [8.0]	160 [9.6]	195 [11.9]	245 [14.9]	305 [18.7]	395 [24.0]	490 [29.8]
2 Bolt SAE A Flange	1 inch Straight	7/8 -14 O-ring Staggered	104-1528	—	-1529	-1530	-1531	-1532	-1533	-1534	-1519	-1535
	1 1/4 Inch Straight	7/8 -14 O-ring	104-1516	—	-1536	-1537	-1538	-1539	-1452	-1479	-1509	-1489

*New Release

2000 Series

Model Code

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

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

1 Product
M – 2000 Series Motor

2, 3 Product Series
02 – 2000 Series Motor

4, 5, 6 Displacement cm³/r [in³/r]
049 – 80.6 cm³/r [4.92]
055 – 90.6 cm³/r [5.53 in³/r]
062 – 101.6 cm³/r [6.20 in³/r]
080 – 130.6 cm³/r [7.97 in³/r]
096 – 158.1 cm³/r [9.65 in³/r]
119 – 194.8 cm³/r [11.89 in³/r]
149 – 244.3 cm³/r [14.91 in³/r]
187 – 306.6 cm³/r [18.71 in³/r]
240 – 393.8 cm³/r [24.03 in³/r
298 – 489.0 cm³/r [29.84 in³/r]

7, 8 Mounting Type
AB – Wheel, 4 Bolt: 108.0 [4.25] Pilot Dia. 13.59 [.535] Dia. Holes on 147.6 [5.81] Dia. Bolt Circle. 127.0 [5.00] Dia. Rear Mount Pilot
AC – Standard, 2 Bolt: 82.6 [3.25] Pilot Dia. 13.59 [.535] Dia. Holes on 106.4 [4.19] Dia. Bolt Circle. SAE A
AD – Bearingless (w/ Leakage Slots), 4 Bolt: 101.6 [4.00] Pilot Dia. 13.59 [.535] Dia. Holes on 127.0 [5.00] Dia. Bolt Circle
AF – Standard, 2 Bolt: 101.6 [4.00] Pilot Dia. 14.35 [.565] Dia. Holes on 146.0 [5.75] Dia. Bolt Circle. SAE B
AH – Standard, 4 Bolt: 82.6 [3.25] Pilot Dia. 13.59 [.535] Dia. Holes on 106.4 [4.19] Dia. Bolt Circle
AJ – Standard (Magneto), 4 Bolt: 82.6 [3.25] Pilot Dia. 13.59 [.535] Dia. Holes on 106.4 [4.19] Dia. Bolt Circle. 2.79 [.110] Pilot Length
AP – Wheel, 4 Bolt: 108.0 [4.25] Pilot Dia. 13.59 [.535] Dia. Holes on 147.6 [5.81] Dia. Bolt Circle. 127.0 [5.00] Dia. Rear Mount Pilot. Spigot Reduced to 88.9 [3.50] Dia. by 25.4 [1.00] Depth.
AZ – Bearingless (w/ Leakage Slots), 4 Bolt: 100.0 [3.94] Pilot Dia. 11.0 [.43] Dia. Holes on 125.0 [4.92] Dia Bolt Circle (European)

9, 10 Output Shaft
00 – None (Bearingless)
01 – 25.40 [1.000] Dia. Straight Shaft with 1/4-20UNC-2B Thread in End, 6.35 [.250] Wide x 25.40 [1.000] Dia. Woodruff Key
02 – 31.75 [1.250] Dia. Straight Shaft with .375-16UNC-2B Thread in End, 7.938 [.3125] Sq x 31.75 [1.250] Straight Key
03 – 31.75 [1.250] Dia. .125:1 Tapered Shaft per SAE J501 with/1.000-20 UNEF-2A Threaded Shaft End and Slotted Hex Nut, 7.938 [.3125] Sq x 25.40 [1.0] Straight Key
04 – 31.75 [1.250] Dia. Flat Root Side Fit, 14 Tooth, 12/24 DP 30° Involute Spline w/ .375-16UNC-2B Thread in End, 33.0 [1.30] Min. Full Spline Length
05 – 25.40 [1.000] Dia. 6B Spline per SAE J499 with .250-20UNC-2B Thread in End, 22.76 [.896] Min. Full Spline Length
07 – 22.22 [.875] Dia. Flat Root Side Fit, 13 Tooth, 16/32 DP 30° SAE B Involute Spline, 15.2 [.60] Min. Full Spline Length
16 – 32.00 [1.260] Dia. Straight Shaft with M8 x 1.25-6H Thread in End, 9.982 [.3930] W x 7.995 [.3132] H x 45.00 [1.772] L Key
17 – 31.75 [1.250] Dia. Straight Shaft With 3/8-16 UNC-2B Thread in End, 7.938 [.3125] Sq x 31.75 [1.250] Straight Key, Corrosion Resistant (Seal area to shaft end)
18 – 31.75 [1.250] Dia. .125:1 Tapered Shaft per SAE J501 with 1.000-20UNEF-2A Threaded Shaft End and Slotted Hex Nut, 7.938 [.3125] Sq x 25.40 [1.000] Straight Key, Corrosion Resistant (Under seal area only)
19 – 25.00 [.984] Dia. Straight Shaft with M8 x 1.25-6h Thread in End, 7.982 [.3142] W x 6.954 [.2738] H x 31.82 [1.254] L Key
28 – 32.00 [1.260] Dia. 10:1 Tapered Shaft Per ISO R775 with M10 X 1.50-6H Thread in End, 6.00 [.236] Sq. x 50.00 [1.968] Key
39 – None (Bearingless) European Spline
41 – 35.00 [1.378] Dia. 10:1 Tapered Shaft Per ISO R775 with M20 x 1.5-6g Threaded Shaft End and Slotted Hex Nut, 6.00 [.236] Sq. X 20.00 [.787] Key
42 – 35.00 [1.378] Dia. Straight Shaft with M8 x 1.25-6h Thread in End, 9.982 [.3930] W x 7.995 [.3132] H x 45.00 [1.772] L Key

11, 12 Ports
AA – .875-14 UNF-2B SAE O-ring Ports - Staggered Ports
AB –12.70 [.500] and 15.88 [.625] Dia. Manifold Ports with 3 x .375-16 UNC-2B Port Block Mounting Holes
AC –.875-14 UNF-2B SAE O-ring Ports - Ports Oriented 180° to each other
AE – 12.70 [.500] And 15.88 [.625] Dia. Manifold Ports with 3 x M10 x 1.5-6H Port Block Mounting Holes
AF – 1.0625-12 UN-2B SAE O-ring Ports - Ports Oriented 180° to each other
AG – G-1/2 BSP Straight THD Ports - Staggered Ports
AN – G-1/2 BSP Straight THD Ports - End Ported
AR – .875-14 UNF-2B SAE O-ring Ports - End Ported, Cast Boss Removed
AS – G-1/2 Bsp Straight THD Ports - Staggered Port with 2 x M10 x 1.5-6H Port Block Mounting Holes - European

13, 14 Case Flow Options
Shuttles available with port code AA only)
00 – None
01 – .4375-20 UNF-2B SAE O-Ring Port
02 – G 1/4 BSP Straight THD Port
09 – Reverse Flow Shuttle Valve w/ G-1/4 BSP Straight THD Port, .062 Dia. Shuttle Flow Orifice
13 – Reverse Flow Shuttle Valve w/ .4375-20 UNF-2B SAE O-Ring Port, .062 Dia. Shuttle Flow Orifice

15 Low Pressure Relief
0 – None
A – Set at 4.5 bar [65 lbf/in²]
B – Set at 15.2 bar [220 lbf/in²]
C – Set at 20.7 bar [300 lbf/in²]
E – Set at 11.03 bar [160 lbf/in²]

16, 17 Pressure/Flow Option
Integral Cross-Over Relief Valve:
00 – None
30 – Set at 103.4 bar [1500 lbf/in²]
31 – Set at 120.6 bar [1750 lbf/in²]
32 – Set at 137.9 bar [2000 lbf/in²]
33 – Set at 155.1 bar [2250 lbf/in²]
34 – Set at 172.4 bar [2500 lbf/in²]
35 – Set at 189.6 bar [2750 lbf/in²]
36 – Set at 206.8 bar [3000 lbf/in²]

18 Geroler Option
1 – Standard

19 Seal Options
0 – Standard
1 – Viton
2 – Viton Shaft Seal
4 – Seal Guard

20, 21 Accessories
00 – None
AD – M 12 Threaded Connector, Digital Speed Pickup (30 Pulse)
AE – M 12 Threaded Connector, Long Body Digital Speed and Direction Pickup (1 = Power Supply, Pin 2 = Output Signal 1, Pin 3 = Common, Pin 4 = Output Signal 2)

22, 23 Special Features (Hardware)
00 – None

24, 25 Special Features (Assembly)
00 – None
AB – Reverse Rotation

26, 27 Paint/Packaging
AA – No Paint, Indiv. Box
AB – Painted, Low Gloss Black, Indiv. Box
AC – Epoxy Coated (Frost Gray) Indiv. Box

28, 29 Customer ID
AA – None

30 Design Code
F – Sixth

Feature in bold are preferred and allow for shorter lead time

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.

Notes