Char-Lynn®

Hydraulic Motors

No. 11-104
October 1998

General Purpose Motors
J-2 Series

Hydraulics Industry

We Manufacture Solutions

Solutions

J-2 Series Features

Integrated Check Valves
Helps extend seal life

Extends seal life, decreasing the fluid pressure acting on the shaft seal and reducing case pressure to return pressure by as much as 60% of full system pressure. Case drain option is recommended for some series applications (see page 13).

Self-Lubricating Bushing

Reduces shaft friction under radial side loads to ensure adequate lubrication and support under all rated conditions.

Lengthened Spool Valve Lands
Higher-efficiency operation

Reduces internal leakage into the motor case resulting in improved efficiencies and increased shaft turns per liter/gallon.

More Rigid Components
Helps reduce internal leakage

Resists deformation and subsequent leaks at higher pressures using more rigid components such as the wear plate.

Shaft Seal
Withstand high back pressures

Time proven shaft seal design and construction allow motors to withstand high back pressures without an external case drain. The motors can be connected together in series, or parallel to one another, see page 12 for more infomation.

Corrosion Protected
Resist corrosion in hosile environments

J-2 Series motors are available with a corrosion resistant coating for use in an hostile environment. Such as salt, water, and various chemicals. It is especially effective in marine, food processing, car wash, fishing, and agricultural applications. Shaft plating helps eliminate seal damage caused by these caustic or acid materials in the shaft sealing area. Corrosion protected motors are available with just the output shaft plated, or protected with an entire motor exterior coating.

Catalog Contents

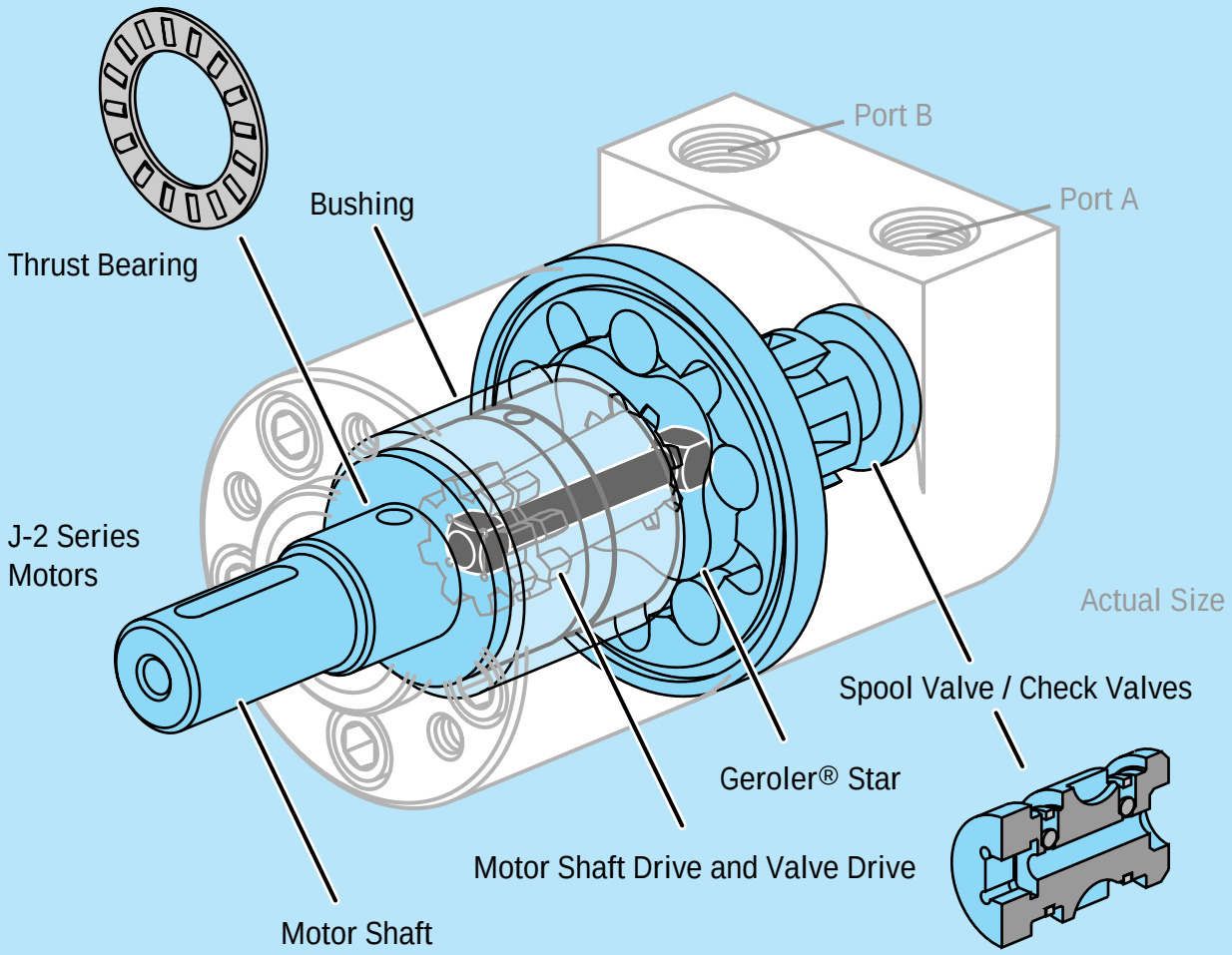
* Contact your Eaton Representative

General Purpose Spool Valve J-2 Series Hydraulic Motors from One of the World's Leading Manufacturers of Off Highway Mobile Components — Eaton Corporation

Char-Lynn J-2 Series motors provide a lot of power from a very small package, indeed, up to 5 kW [6 1/2 HP] of power. These motors are 61 millimeters [2.4 inches] in diameter and 104 to 130 millimeters [4.1 to 5.1 inches] in length.

J-2 Series motors are the smallest of Eaton's line of Char-Lynn motors. These motors have high starting and running torque, and operate with equal torque in either direction.

With this new 4:1 Geroler element, the five rollers provide support with rolling contact as the Geroler four lobe star rotates, minimizing friction and providing high efficiencies especially at start-up and at low speeds.



J-2 Series

J-2

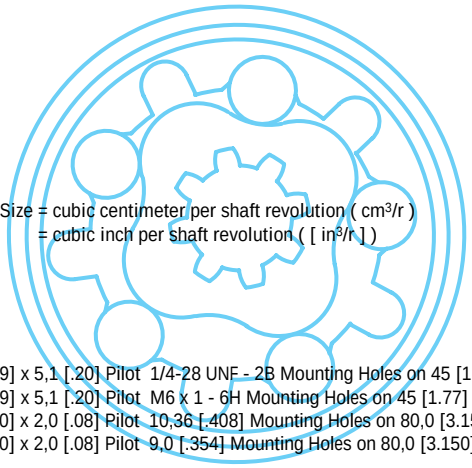
J-2 Series

Geroler® Element	5 Displacements
Flow LPM [GPM]	21 [5.5] Continuous**
	25 [6.5] Intermittent*
Speed	Up to 1992 RPM Cont.
	Up to 2458 RPM Inter.
Pressure Bar [PSI] ...	140 [2030] Cont.
	165 [2400] Inter.
Torque Nm [lb-in]	62 [549] Cont.
	84 [743] Inter.

These compact J-2 Series motors have an hydrodynamic output shaft bearing. This hydrodynamic shaft bearing will accept high radial shaft loads, as well as high thrust loads common on sprocket and chain, or pulley and belt drive applications. The new bushing design reduces friction even further.

The J-2 Series motor shaft seal allows a high case pressure of up to 76 Bar [1100 PSI] return line pressure without case drain line. When a case drain line is used a 220 Bar [3190 PSI] peak pressure is allowed in the return line.

These small motors can be mounted in any orientation that would suit the application. The driving device, sprocket, pulley, etc., can be mounted directly onto the motor shaft.



J-2 Series Displacement Size = cubic centimeter per shaft revolution (cm^3/r)
= cubic inch per shaft revolution ([in^3/r])

- 8,2 [.50]
- 12,9 [.79]
- 19,8 [1.21]
- 31,6 [1.93]
- 50,0 [3.00]

Mounting Flange
- 5 Bolt: Dia. 31,47 [1.239] x 5,1 [.20] Pilot 1/4-28 UNF - 2B Mounting Holes on 45 [1.77] Dia. Bolt Circle
- 5 Bolt: Dia. 31,47 [1.239] x 5,1 [.20] Pilot M6 x 1 - 6H Mounting Holes on 45 [1.77] Dia. Bolt Circle
- 2 Bolt: Dia. 62,99 [2.480] x 2,0 [.08] Pilot 10,36 [.408] Mounting Holes on 80,0 [3.150] Dia. Bolt Circle
- 2 Bolt: Dia. 62,99 [2.480] x 2,0 [.08] Pilot 9,0 [.354] Mounting Holes on 80,0 [3.150] Dia. Bolt Circle

Output Shaft
- 5/8 inch Dia. Straight with 4,72 [.186] Square Key and 1/4-28 UNF - 2B Threaded Hole
- 16 mm Dia. Straight with 5,00 [.197] Square Key with M6 x 1 - 6H Threaded Hole
- 11/16 inch Dia. Straight with 4,72 [.186] Square Key and 1/4-28 UNF - 2B Threaded Hole
- 18 mm Dia. Straight with 5,92 [.233] Square Key with M6 x 1 - 6H Threaded Hole
- Involute 9T Splined—Metric 16,5 [.650] Dia. (B 17 x 14 DIN 5482) M6 x 1 Threaded Hole
- 5/8 inch Dia. Straight with 4,75 [.187] Dia. Crosshole
- 3/4 inch Tapered with woodruff Key and Nut

Port Type
- 9/16-18 UNF - 2B O-ring End Ported
- G 1/4 (BSP) End Ported
- M14 x 1,5 - 6H O-ring Port, End Ported
- 9/16-18 UNF - 2B O-ring Side Ported
- G 3/8 (BSP) Side Ported
- G 1/4 (BSP) Side Ported
- G 3/8 (BSP) End Ported

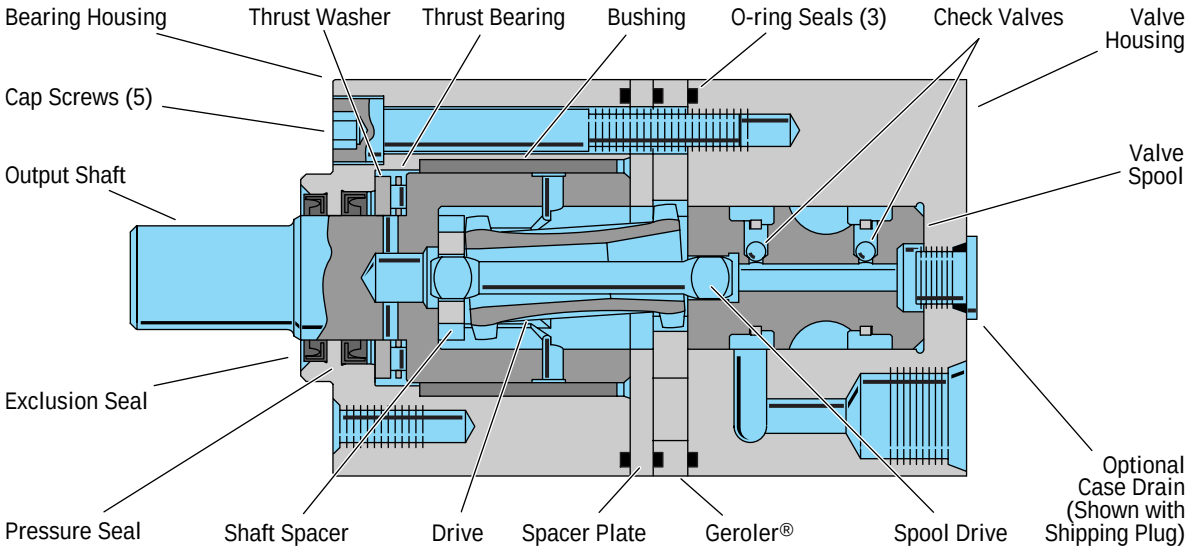
Case Drain
- No Case Drain
- 3/8-24 UNF - 2B O-ring
- G 1/8 (BSP)
- M10 x 1 - 6H O-ring

Special Features Available
- Reverse Rotation
- Painted Low Gloss Black
- Corrosion Protected

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

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

Specifications
J-2 Series



Specification Data—J-2 Series

Displacement cm³/r [in³/r]		8,2 [.50]	12,9 [.79]	19,8 [1.21]	31,6 [1.93]	50,0 [3.00]
Max. Speed (RPM) @ Continuous Flow		1992	1575	1043	650	393
Flow LPM [GPM]	Continuous	17 [4.5]	21 [5.5]	21 [5.5]	21 [5.5]	21 [5.5]
	Intermittent	21 [5.5]	25 [6.5]	25 [6.5]	25 [6.5]	25 [6.5]
Torque Nm [in-lb]	Continuous	16 [141]	25 [225]	38 [333]	50 [446]	62 [549]
	Intermittent	19 [164]	30 [263]	46 [405]	62 [546]	84 [743]
	Peak	22 [193]	36 [321]	48 [425]	83 [733]	86 [765]
Pressure* Δ Bar [Δ PSI]	Continuous	140 [2030]	140 [2030]	140 [2030]	121 [1750]	97 [1400]
	Intermittent	165 [2400]	165 [2400]	165 [2400]	150 [2175]	140 [2030]
	Peak	220 [3190]	220 [3190]	220 [3190]	190 [2756]	150 [2175]
Weight kg [lbs]		2 [4.4]	2,1 [4.6]	2,2 [4.8]	2,3 [5.0]	2,4 [5.4]

* Maximum intermittent pressure at motor inlet port of 220 Bar [3190 PSI] without regard to Δ Bar [Δ PSI] and/or back pressure ratings or combination thereof.

Δ Bar [Δ PSI]— True pressure difference between inlet port and outlet port.

See individual shafts for maximum torque recommendation. Splined shafts are recommended for those applications subject to frequent reversals.

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 (see page 14).

Recommended Max. System Operating Temp. — -34°C to 82°C [-30°F to180°F]

Recommended Filtration — per ISO Cleanliness Code, level 18/13

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.

Performance Data
J-2 Series

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

8,2 cm³/r [.50 in³/r]
Δ Pressure Bar [PSI]
Continuous

Flow LPM [GPM]	[200] 14	[400] 28	[500] 34	[600] 41	[700] 48	[800] 55	[1000] 69	[1400] 97	[1500] 103	[2000] 138	Max. Continuous [2030] 140	Max. Intermittent [2400] 165
[1] **3,8**	[11] 1 **456**	[25] 3 **444**	[33] 4 **437**	[40] 5 **429**	[47] 5 **422**	[55] 6 **412**	[69] 8 **394**	[96] 11 **347**	[102] 12 **332**	[130] 15 **250**	[132] 15 **239**	[146] 16 **170**
[2] **7,6**	[9] 1 **897**	[24] 3 **886**	[31] 4 **877**	[38] 4 **867**	[46] 5 **860**	[53] 6 **847**	[68] 8 **823**	[97] 11 **768**	[105] 12 **749**	[139] 16 **657**	[141] 16 **647**	[163] 18 **557**
[3] **11,4**	[6] 1 **1349**	[20] 2 **1331**	[28] 3 **1318**	[35] 4 **1309**	[44] 5 **1296**	[51] 6 **1285**	[65] 7 **1261**	[94] 11 **1198**	[102] 12 **1176**	[137] 15 **1070**	[139] 16 **1060**	[164] 19 **959**
[4.25] **16,0**		[16] 2 **1902**	[23] 3 **1885**	[30] 3 **1873**	[36] 4 **1858**	[44] 5 **1846**	[60] 7 **1817**	[90] 10 **1750**	[97] 11 **1721**	[133] 15 **1599**	[135] 15 **1585**	[160] 18 **1475**
Max. Continuous [4.5] **17,0**		[16] 2 **1992**	[23] 3 **1979**	[29] 3 **1964**	[36] 4 **1947**	[43] 5 **1929**	[59] 7 **1900**	[89] 10 **1833**	[96] 11 **1808**	[131] 15 **1684**	[134] 15 **1673**	[160] 18 **1553**
Max. Intermittent [5.5] **20,8**		[12] 1 **2458**	[18] 2 **2437**	[26] 3 **2420**	[33] 4 **2405**	[40] 5 **2387**	[54] 6 **2353**	[83] 9 **2272**	[92] 10 **2255**	[124] 14 **2134**	[129] 15 **2115**	[154] 17 **1994**

[16] 2 **1992** } Torque [lb-in] Nm / Speed RPM

12,9 cm³/r [0.79 in³/r]
Δ Pressure Bar [PSI]
Continuous

Flow LPM [GPM]	[200] 14	[400] 28	[500] 34	[600] 41	[700] 48	[800] 55	[1000] 69	[1400] 97	[1450] 100	[1500] 103	[2000] 138	Max. Continuous 2030 140	Max. Intermittent [2400] 165
[1] **3,8**	[19] 2 **290**	[43] 5 **285**	[54] 6 **281**	[65] 7 **277**	[76] 9 **273**	[88] 10 **268**	[109] 12 **260**	[154] 17 **237**	[159] 18 **234**	[164] 19 **230**	[214] 24 **194**	[217] 25 **189**	[250] 28 **151**
[2] **7,6**	[16] 2 **573**	[39] 4 **566**	[51] 6 **561**	[63] 7 **555**	[74] 8 **549**	[86] 10 **544**	[109] 12 **534**	[155] 18 **501**	[160] 18 **496**	[165] 19 **490**	[221] 25 **442**	[225] 25 **437**	[263] 30 **396**
[3] **11,4**	[11] 1 **859**	[35] 4 **849**	[47] 5 **843**	[58] 7 **838**	[70] 8 **832**	[82] 9 **825**	[105] 12 **810**	[152] 17 **777**	[157] 18 **771**	[163] 18 **763**	[219] 25 **708**	[223] 25 **701**	[263] 30 **652**
[4] **15,1**	[6] 1 **1153**	[30] 3 **1140**	[41] 5 **1135**	[53] 6 **1129**	[64] 7 **1124**	[76] 9 **1117**	[99] 11 **1101**	[146] 16 **1060**	[152] 17 **1051**	[157] 18 **1044**	[214] 24 **982**	[217] 25 **975**	[260] 29 **924**
Max. Continuous [5.5] **20,8**		[19] 2 **1575**	[30] 3 **1566**	[42] 5 **1556**	[54] 6 **1547**	[65] 7 **1539**	[89] 10 **1521**	[136] 15 **1473**	[142] 16 **1466**	[148] 17 **1457**	[205] 23 **1396**	[209] 24 **1387**	[251] 28 **1330**
Max. Intermittent [6.5] **24,6**		[11] 1 **1859**	[23] 3 **1851**	[35] 4 **1842**	[46] 5 **1831**	[56] 6 **1820**	[81] 9 **1804**	[130] 15 **1755**	[135] 15 **1743**	[140] 16 **1734**	[198] 22 **1670**	[202] 23 **1663**	[243] 27 **1599**

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

Performance Data
J-2 Series

19.8 cm³/r [1.21 in³/r]

Δ Pressure Bar [PSI]
Continuous

Flow LPM [GPM]	[200] 14	[400] 28	[500] 34	[600] 41	[700] 48	[800] 55	[1000] 69	[1400] 97	[1450] 100	[1500] 103	[2000] 138	[2030] 140	Max. Continuous	Max. Intermittent
[1] **3,8**	[32] 4 **189**	[67] 8 **187**	[85] 10 **186**	[102] 12 **185**	[119] 13 **183**	[136] 15 **182**	[170] 19 **179**	[236] 27 **172**	[244] 28 **170**	[253] 29 **169**	[321] 36 **141**	[325] 37 **138**		[374] 42 **114**
[2] **7,6**	[30] 3 **379**	[65] 7 **375**	[83] 9 **373**	[101] 11 **370**	[119] 13 **368**	[136] 15 **366**	[172] 19 **361**	[223] 25 **351**	[248] 28 **349**	[257] 29 **347**	[328] 37 **312**	[333] 38 **309**		[388] 44 **285**
[3] **11,4**	[21] 2 **569**	[57] 6 **565**	[75] 8 **563**	[93] 11 **560**	[111] 13 **558**	[128] 14 **556**	[163] 18 **551**	[231] 26 **529**	[240] 27 **526**	[248] 28 **523**	[325] 37 **487**	[330] 37 **484**		[405] 46 **459**
[4] **15,1**	[12] 1 **761**	[47] 5 **758**	[65] 7 **754**	[83] 9 **751**	[101] 11 **749**	[119] 13 **746**	[154] 17 **741**	[221] 25 **717**	[230] 26 **711**	[239] 27 **707**	[316] 36 **660**	[320] 36 **656**		[382] 43 **628**
Max. Continuous [5.5] **20,8**		[31] 4 **1043**	[49] 6 **1040**	[67] 8 **1035**	[84] 9 **1033**	[101] 11 **1028**	[137] 15 **1021**	[202] 23 **997**	[211] 24 **993**	[218] 25 **990**	[295] 33 **938**	[299] 34 **934**		[365] 41 **899**
Max. Intermittent [6.5] **24,6**		[21] 2 **1226**	[38] 4 **1222**	[56] 6 **1219**	[74] 8 **1215**	[91] 10 **1211**	[126] 14 **1204**	[189] 21 **1179**	[196] 22 **1174**	[206] 23 **1169**	[278] 31 **1121**	[283] 32 **1117**		[347] 39 **1079**

31,6 cm³/r [1.93 in³/r]

Δ Pressure Bar [PSI]
Continuous

Flow LPM [GPM]	[200] 14	[400] 28	[500] 34	[600] 41	[700] 48	[800] 55	[1000] 69	[1400] 97	[1450] 100	[1500] 103	[1750] 121	Max. Continuous	Max. Intermittent
[1] **3,8**	[51] 6 **118**	[106] 12 **116**	[133] 15 **115**	[160] 18 **113**	[187] 21 **112**	[213] 24 **111**	[265] 30 **107**	[362] 41 **91**	[372] 42 **85**	[383] 43 **81**	[439] 50 **70**		
[2] **7,6**	[46] 5 **236**	[103] 12 **234**	[132] 15 **232**	[159] 18 **230**	[187] 21 **228**	[214] 24 **225**	[269] 30 **221**	[362] 41 **187**	[374] 42 **179**	[387] 44 **175**	[446] 50 **165**		[546] 62 **145**
[3] **11,4**	[36] 4 **355**	[94] 11 **352**	[122] 14 **349**	[149] 17 **347**	[177] 20 **345**	[205] 23 **342**	[259] 29 **336**	[351] 40 **296**	[364] 41 **292**	[377] 43 **287**	[440] 50 **273**		[542] 61 **245**
[4] **15,1**	[24] 3 **474**	[79] 9 **472**	[107] 12 **469**	[135] 15 **466**	[162] 18 **462**	[190] 21 **460**	[246] 28 **452**	[337] 38 **404**	[349] 39 **397**	[362] 41 **393**	[425] 48 **373**		[528] 60 **346**
Max. Continuous [5.5] **20,8**		[55] 6 **650**	[83] 9 **647**	[111] 13 **645**	[139] 16 **640**	[167] 19 **636**	[221] 25 **629**	[307] 35 **584**	[320] 36 **580**	[334] 38 **575**	[400] 45 **550**		[505] 57 **513**
Max. Intermittent [6.5] **24,6**		[35] 4 **767**	[64] 7 **764**	[93] 11 **760**	[121] 14 **755**	[150] 17 **751**	[204] 23 **742**	[279] 32 **712**	[294] 33 **707**	[308] 35 **701**	[378] 43 **675**		[485] 55 **637**

50.0 cm³/r [3.00 in³/r]

Δ Pressure Bar [PSI]
Continuous

Flow LPM [GPM]	[200] 14	[400] 28	[500] 34	[600] 41	[700] 48	[800] 55	[1000] 69	[1100] 76	[1200] 83	[1300] 90	[1400] 97	[2030] 140	Max. Continuous	Max. Intermittent
[1] **3,8**	[82] 9 **75**	[167] 19 **72**	[211] 24 **72**											
[2] **7,6**	[70] 8 **149**	[156] 18 **147**	[201] 23 **145**	[243] 28 **144**	[286] 32 **143**	[327] 37 **142**								
[3] **11,4**	[53] 6 **221**	[140] 16 **220**	[184] 21 **218**	[227] 26 **217**	[271] 31 **215**	[311] 35 **213**	[396] 45 **209**	[441] 50 **205**	[484] 55 **201**	[521] 59 **200**	[549] 62 **191**			
[4] **15,1**	[30] 3 **296**	[120] 14 **292**	[162] 18 **289**	[204] 23 **286**	[250] 28 **284**	[292] 33 **282**	[374] 42 **273**	[419] 47 **270**	[460] 52 **265**	[501] 57 **263**	[541] 61 **259**		[743] 84 **213**	
Max. Continuous [5.5] **20,8**		[81] 9 **393**	[127] 14 **392**	[170] 19 **389**	[214] 24 **387**	[254] 29 **383**	[339] 38 **377**	[379] 43 **372**	[422] 48 **369**	[463] 52 **364**	[506] 57 **358**		[702] 79 **302**	
Max. Intermittent [6.5] **24,6**		[47] 5 **465**	[90] 10 **462**	[133] 15 **460**	[176] 20 **458**	[219] 25 **455**	[307] 35 **448**	[345] 39 **445**	[385] 43 **440**	[429] 48 **435**	[467] 53 **430**		[685] 77 **364**	

[81] 9 **393** } Torque [lb-in] Nm
Speed RPM

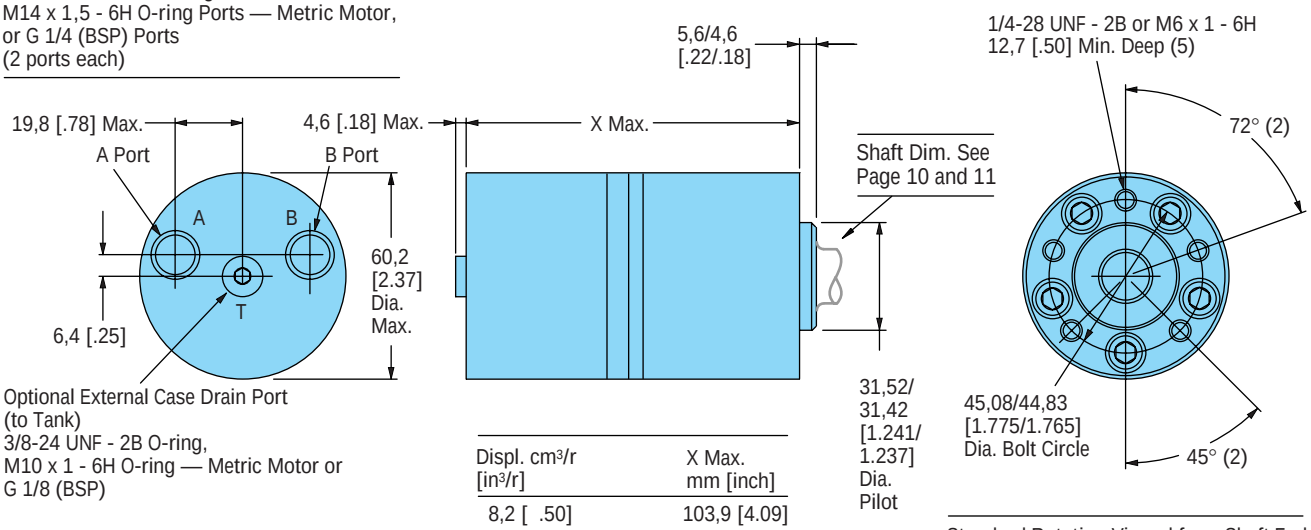
Motors run with high efficiency in all areas designated with a number for torque and speed, however for best motor life select a motor to run with a torque and speed range shown in the light blue area.

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

Dimensions
J-2 Series

End Port Motors

9/16-18 UNF - 2B O-ring Ports,
M14 x 1,5 - 6H O-ring Ports — Metric Motor,
or G 1/4 (BSP) Ports
(2 ports each)

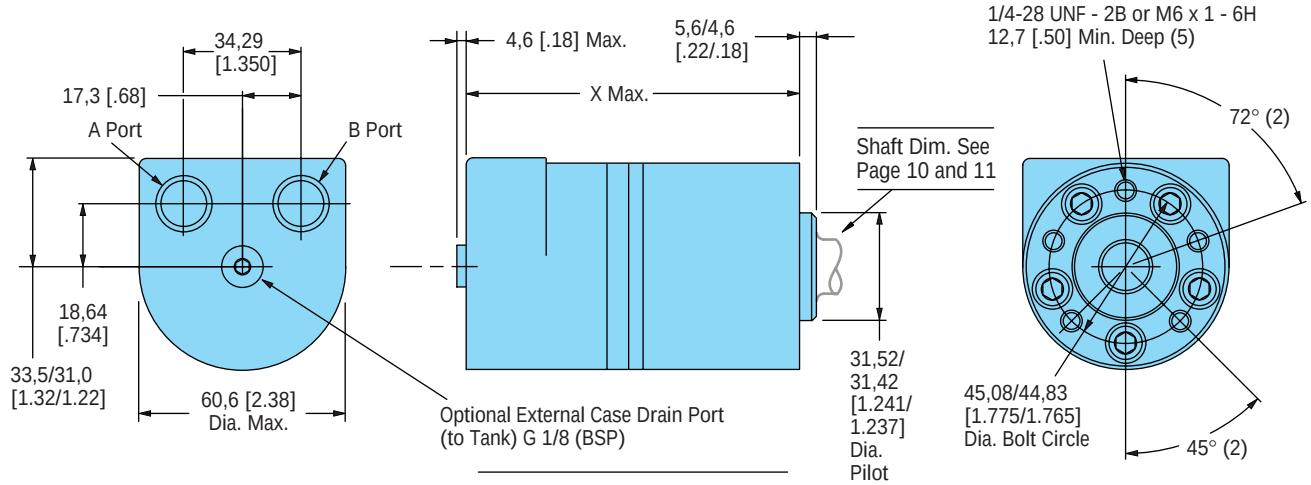


Displ. cm³/r [in³/r]	X Max. mm [inch]
8,2 [.50]	103,9 [4.09]
12,9 [.79]	106,9 [4.21]
19,8 [1.21]	112,5 [4.38]
31,6 [1.93]	118,9 [4.68]
50,0 [3.00]	130,3 [5.13]

Standard Rotation Viewed from Shaft End
Port A Pressurized — Clockwise
Port B Pressurized — Counterclockwise

End Port Motors

G 3/8 (BSP) Ports
(2 ports each)



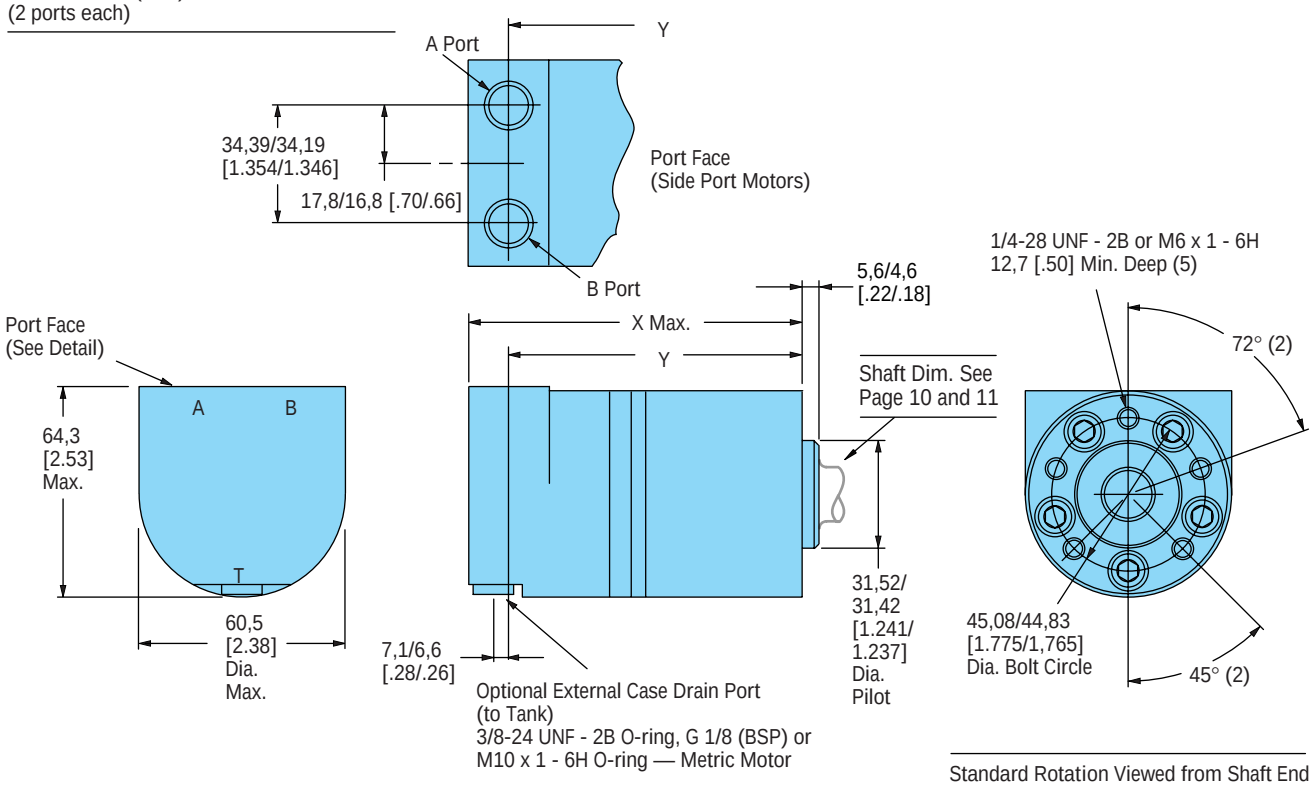
Displ. cm³/r [in³/r]	X Max. mm [inch]
8,2 [.50]	103,9 [4.09]
12,9 [.79]	106,9 [4.21]
19,8 [1.21]	112,5 [4.38]
31,6 [1.93]	118,9 [4.68]
50,0 [3.00]	130,0 [5.12]

Standard Rotation Viewed from Shaft End
Port A Pressurized — Clockwise
Port B Pressurized — Counterclockwise

Dimensions
J-2 Series

Side Port Motors

9/16-18 UNF - 2B O-ring Ports,
M14 x 1,5 -6H O-ring Ports — Metric Motor,
G 3/8 or G 1/4 (BSP) Ports
(2 ports each)

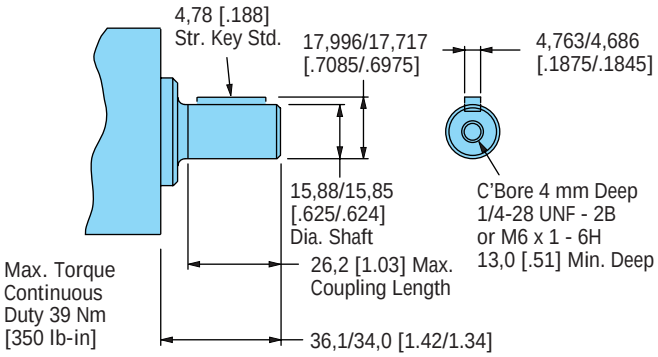


Displ. cm³/r [in³/r]	X Max. mm [inch]	Y mm [inch]
8,2 [.50]	103,9 [4.09]	89,4/ 87,4 [3.52/3.44]
12,9 [.79]	106,9 [4.21]	92,5/ 90,4 [3.64/3.56]
19,8 [1.21]	112,5 [4.38]	96,8/ 94,7 [3.81/3.73]
31,6 [1.93]	118,9 [4.68]	104,4/102,4 [4.11/4.03]
50,0 [3.00]	130,0 [5.12]	115,7/113,9 [4.56/4.48]

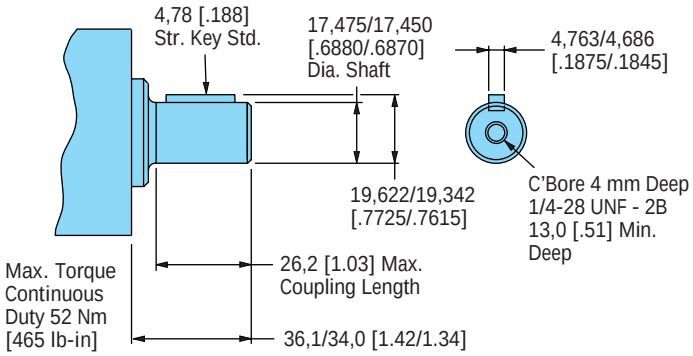
Standard Rotation Viewed from Shaft End
Port A Pressurized — Clockwise
Port B Pressurized — Counterclockwise

Dimensions — Shafts
J-2 Series

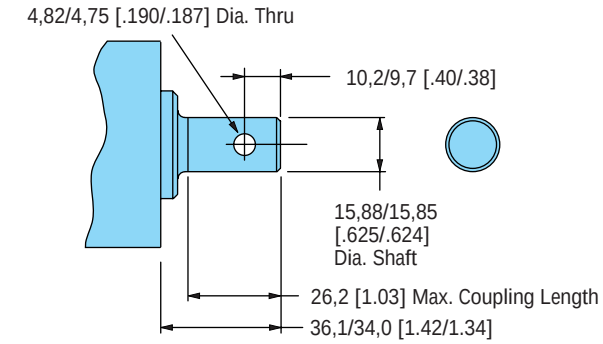
5/8 Inch Straight Keyed



11/16 Inch Straight Keyed

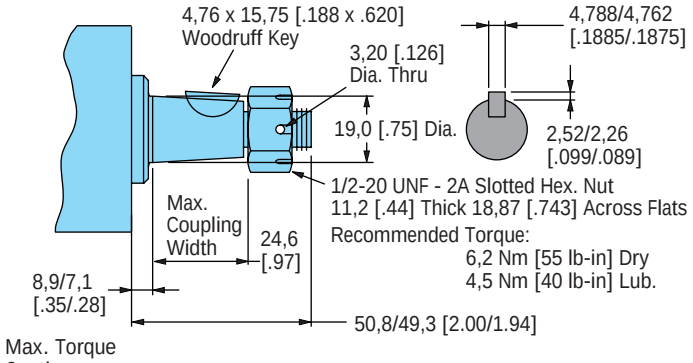


5/8 Inch Straight Keyed w/Crosshole



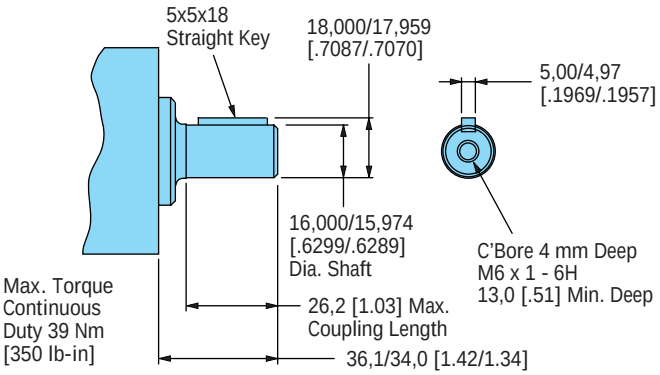
3/4 Inch Tapered

(Tapered Shaft End Per SAE J744
Except as Specified — 1.5 : 12 Ratio)

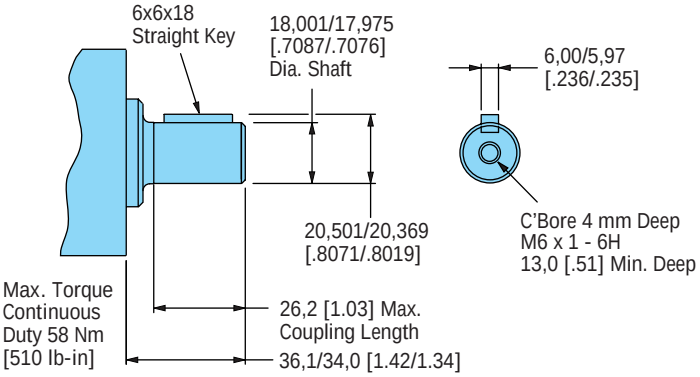


Dimensions — Shafts and Flange Kit
J-2 Series

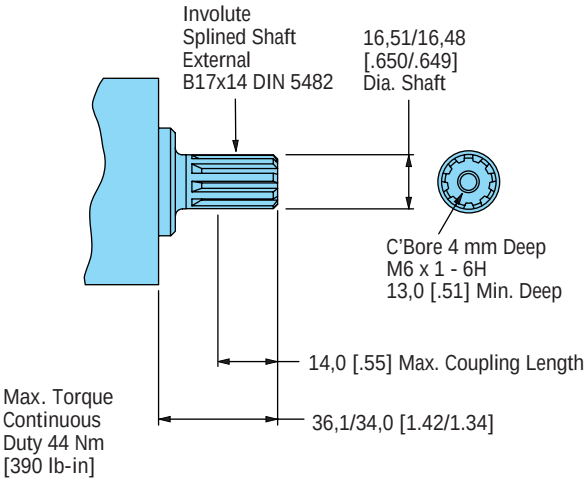
16 mm Straight Keyed



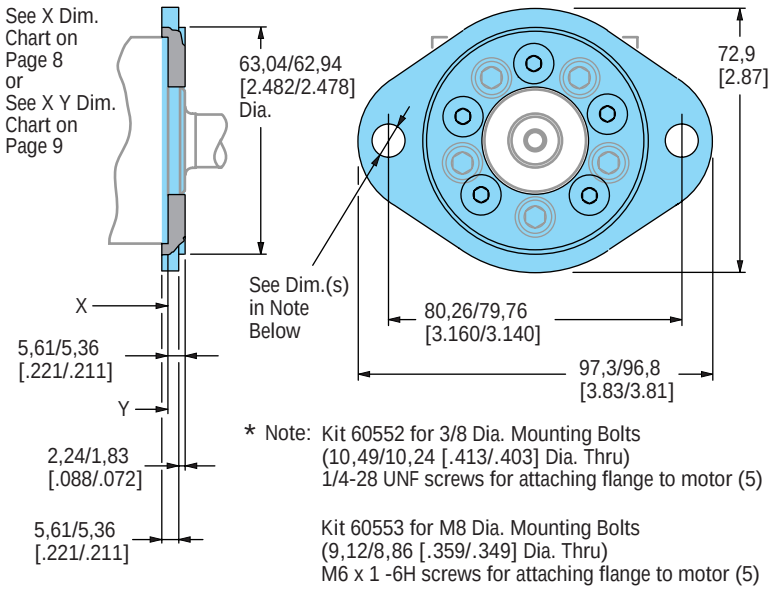
18 mm Straight Keyed



Involute 9T Splined — Metric



2 Bolt Flange Kits (2)*



* Note: Kit 60552 for 3/8 Dia. Mounting Bolts
(10,49/10,24 [.413/.403] Dia. Thru)
1/4-28 UNF screws for attaching flange to motor (5)

Kit 60553 for M8 Dia. Mounting Bolts
(9,12/8,86 [.359/.349] Dia. Thru)
M6 x 1 -6H screws for attaching flange to motor (5)

Product Numbers J-2 Series 129-xxxx

Add three digit prefix —129-to four digit number from chart for complete product number—Example 129-0382.
Orders will not be accepted without three digit prefix.

Port Location	Port Size	Mounting Holes (5)	Shaft	Displ. cm³/r [in³/r] / Product Number 129-xxxx				
				8,2 [.50]	12,9 [.79]	19,8 [1.21]	31,6 [1.93]	50,0 [3.00]
End Port Motors	9/16-18 UNF - 2B O-ring (2)	1/4-28 UNF 2B	5/8 inch Straight	129-0291	-0292	-0293	-0294	-0458
			11/16 inch Straight	129-0295	-0296	-0297	-0298	-0459
			Splined — Metric	129-0299	-0300	-0301	-0302	-0460
			3/4 inch Tapered					129-0480
	M14 x 1,5 - 6H O-ring (2)	M6 x 1 - 6H	16 mm Straight	129-0303	-0304	-0305	-0306	-0461
			18 mm Straight	129-0307	-0308	-0309	-0310	-0462
			Splined — Metric	129-0311	-0312	-0313	-0314	-0463
	G 1/4 (BSP) (2)	M6 x 1 - 6H	16 mm Straight	129-0315	-0316	-0317	-0318	-0464
			18 mm Straight	129-0319	-0320	-0321	-0322	-0465
			Splined — Metric	129-0323	-0324	-0325	-0326	-0466
End Port* Motors	G 3/8 (BSP) (2)	M6 x 1 - 6H	16 mm Straight	129-0327	-0328	-0329	-0330	-0467
			18 mm Straight	129-0331	-0332	-0333	-0334	-0468
			Splined — Metric	129-0335	-0336	-0337	-0338	-0469
Side Port Motors	9/16-18 UNF - 2B O-ring (2)	1/4-28 UNF 2B	5/8 inch Straight	129-0339	-0340	-0341	-0342	-0470
			11/16 inch Straight	129-0343	-0344	-0345	-0346	-0471
			Splined — Metric	129-0347	-0348	-0349	-0350	-0472
			3/4 inch Tapered					129-0481
	M14 x 1,5 - 6H O-ring (2)	M6 x 1 - 6H	16 mm Straight	129-0351	-0352	-0353	-0354	-0473
			18 mm Straight	129-0355	-0356	-0357	-0358	-0474
			Splined — Metric	129-0359	-0360	-0361	-0362	-0475
	G 1/4 (BSP) (2)	M6 x 1 - 6H	16 mm Straight	129-0363	-0364	-0365	-0366	-0476
			18 mm Straight					
			Splined — Metric	129-0367	-0368	-0369	-0370	-0477
	G 3/8 (BSP) (2)	M6 x 1 - 6H	16 mm Straight	129-0371	-0372	-0373	-0374	-0403
			18 mm Straight	129-0375	-0376	-0377	-0378	-0478
			Splined — Metric	129-0379	-0380	-0381	-0382	-0479

Two Bolt Mounting Flange Kit (for 3/8 inch Mounting Bolts) — Kit Number 60552 (includes 5 screws — 1/4-28 UNF - 2B)
Two Bolt Mounting Flange Kit (for M8 Mounting Bolts) — Kit Number 60553 (includes 5 screws — M6 x 1 - 6H)

129-0479

*Note: The Same Casting used for Side Ports is Required for G 3/8 (BSP) End Ports (see Dwg. Page 8 and 9)

For J-2 Series motors with a configuration *Not Shown* in the chart above: Use the model code number system on page 15 to specify the product in detail.

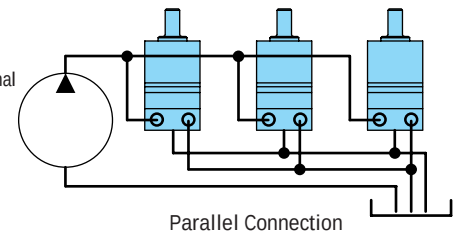
Series or Parallel Connection

Hydraulic lines bringing pressurized fluid from the pump to the motor and return flow from the motor back to tank can be flexible or ridged. One pump can be sized to supply a single motor or many motors. Furthermore, one pump and multiple motors can be connected in series or in parallel (see each type of connection shown below). When connecting the pump to the motors in series excess internal case pressure is created in the motor, this excess pressure must be ported back to tank. However, when making a parallel connection from the pump to the motors no excess case pressure will be added. Hence, using the case drain ports are not necessary. Meanwhile, take a look at the application and see if this optional case drain port can be connected to your advantage, whether it be a single motor to pump connection, multiple motors connected to pump in parallel, as well as multiple motors connected to pump in series...

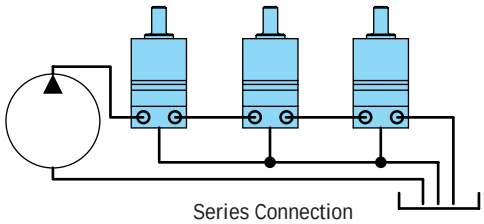
...Case Drain Advantage — In addition to providing lower case pressures for motors connected in series, there are advantages for adding an external case drain line to motors with normal case pressures as well. These advantages are: Contamination Control — flushing the motor case. Cooler System — exiting oil draws motor heat away. Extend Motor Seal Life — maintain low case pressure with a preset restriction installed in the case drain line (see page 13).

Motors ordered with case drain port will be shipped with steel hex socket plug installed in that end cap drain port.

Case Drain Optional



Parallel Connection



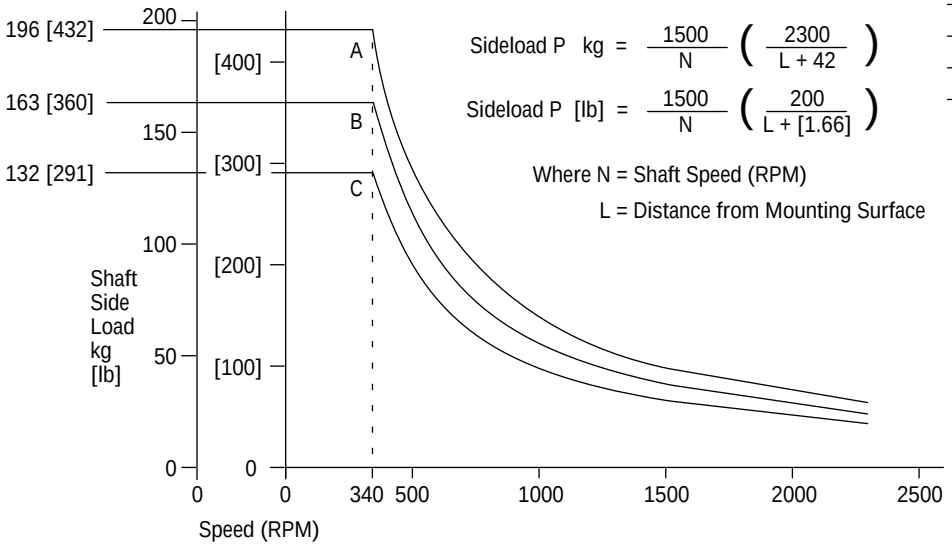
Series Connection

Shaft Side Load Capacity — J-2 Series

The hydrodynamic bearing has infinite life when shaft load ratings are not exceeded. Hence, the shaft side load capacity is more than adequate to handle most externally applied loads (such as belts, chains, etc.), providing the motor to shaft size is applied within its torque rating.

Allowable side load chart, shaft load location drawing (right) and load curves (below) are based on the side or radial loads being applied to shaft at locations A, B, and C, to determine the shaft side load capacity at locations other than those shown use the formula (shown below). For more information about shaft side loads on Char-Lynn motors contact your Eaton representative.

RPM	Allowable Side Load — kg [lb] A	B	C
2300	29 [64]	24 [53]	20 [43]
1500	44 [98]	37 [82]	30 [66]
1250	54 [118]	44 [98]	36 [79]
1000	67 [147]	55 [122]	45 [99]
750	89 [196]	74 [163]	60 [132]
600	111 [245]	93 [204]	75 [165]
500	133 [294]	111 [245]	90 [198]
400	167 [368]	139 [306]	112 [248]
340	196 [432]	163 [360]	132 [291]

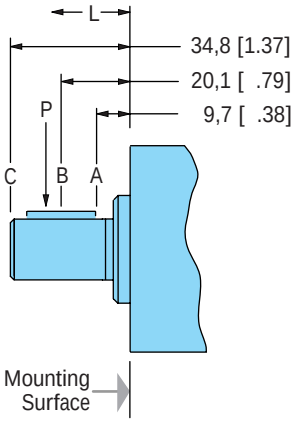


$$\text{Sideload P kg} = \frac{1500}{N}\left(\frac{2300}{L+42}\right)$$

$$\text{Sideload P [lb]} = \frac{1500}{N}\left(\frac{200}{L+[1.66]}\right)$$

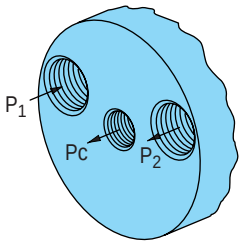
Where N = Shaft Speed (RPM)

L = Distance from Mounting Surface



Case Pressure and Case Drain — J-2 Series

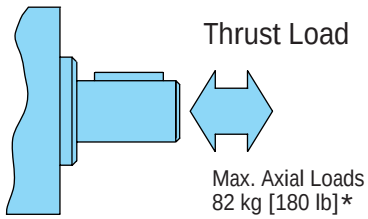
The J-2 Series now offers check valves in the motor as a standard feature. This addition reduces the case pressure in the motor to the return pressure of the system when the case drain is not used. For return pressures higher than the rated pressures (see chart) the external case drain can be connected. If the case drain line is needed, connect drain line to assure that the motor will always remain full of fluid.



Case Drain Advantage — In addition to providing lower case pressures for motors connected in series, there are advantages for adding an external case drain line to motors with normal case pressures as well. These advantages are: Contamination Control — flushing the motor case. Motor Cooler — exiting oil draws motor heat away. Extend Motor Seal Life — maintain low case pressure with a preset restriction installed in the case drain line.

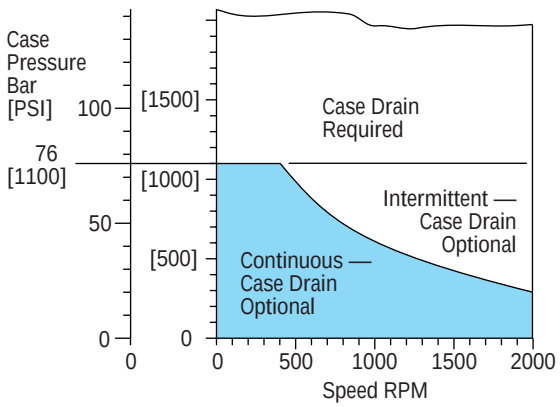
J-2 Series motors can be connected in parallel or in series. See Text page 12.

* Case pressure will add to the allowable compressive thrust load. Case pressure will push outward on the shaft at 20 kg/7 Bar [44 lb/100 PSI].



Example: A 14 Bar case pressure will cause a load of 40 kg, so the allowable thrust load will be 82 kg plus 40 = 120 kg pushing inward on shaft. Tension load is 82 kg under all case pressure conditions.

[Example:] A 200 PSI case pressure will cause a load of 88 lbs, so the allowable thrust load will be 180 lbs plus 88 = 268 lbs pushing inward on shaft. Tension load is 180 lb under all case pressure conditions.



Case Pressure Seal Limitation

Fluid Recommendations
J-2 Series

Introduction

The ability of Eaton hydraulic components to provide the desired performance and life expectancy depends largely on the fluid used. The purpose of this section is to provide readers with the knowledge required to select the appropriate fluids for use in systems that employ Eaton hydraulic components.

One of the most important characteristic to consider when choosing a fluid to be used in a hydraulic system is viscosity. Viscosity choice is always a compromise; the fluid must be thin enough to flow easily but thick enough to seal and maintain a lubricating film between bearing and sealing surfaces. Viscosity requirements, see chart below.

Viscosity and Temperature

Fluid temperature affects viscosity. In general, as the fluid warms it gets thinner and its viscosity decreases. The opposite is true when fluid cools. When choosing a fluid, it is important to consider the start-up and operating temperatures of the hydraulic system. Generally, the fluid is thick when the hydraulic system is started. With movement, the fluid warms to a point where a cooling system begins to operate.

From then on, the fluid is maintained at the temperature for which the hydraulic system was designed. In actual applications this sequence varies; hydraulic systems are used in many environments from very cold to very hot. Cooling systems also vary from very elaborate to very simple, so ambient temperature may affect operating temperature. Equipment manufacturers who use Eaton hydraulic components in their products should anticipate temperature in their designs and make the appropriate fluid recommendations to their customers.

Cleanliness

Cleanliness of the fluid in a hydraulic system is extremely important. Eaton recommends that the fluid used in its hydraulic components be maintained at ISO Cleanliness Code 18/13 per SAE J1165. This code allows a maximum of 2500 particles per milliliter greater than 5 µm and a maximum of 80 particles per milliliter greater than 15 µm. Cleanliness requirements for specific products are given in the table below.

OEM's and distributors who use Eaton hydraulic components in their products should provide for these requirements in their designs. A reputable filter supplier can supply filter information.

Fluid Maintenance

Maintaining correct fluid viscosity and cleanliness level is essential for all hydraulic systems. Since Eaton hydraulic components are used in a wide variety of applications it is impossible for Eaton to publish a fluid maintenance schedule that would cover every situation. Field testing and monitoring are the only ways to get accurate measurements of system cleanliness. OEM's and distributors who use Eaton hydraulic components should test and establish fluid maintenance schedules for their products. These maintenance schedules should be designed to meet the viscosity and cleanliness requirements laid out in this document.

Fluid Selection

Premium grade petroleum based hydraulic fluids will provide the best performance in Eaton hydraulic components. These fluids typically contain additives that are beneficial to hydraulic systems. Eaton recommends fluids that contain anti-wear agents, rust inhibitors, anti-foaming agents, and oxidation inhibitors. Premium grade petroleum based hydraulic fluids carry an ISO VG rating.

SAE grade crankcase oils may be used in systems that employ Eaton hydraulic components, but it should be noted that these oils may not contain all of the recommended additives. This means using crankcase oils may increase fluid maintenance requirements.

Hydraulic fluids that contain V.I. (viscosity index) improvers, sometimes called multi-viscosity oils, may be used in systems that employ Eaton hydraulic components. These V.I. improved fluids are known to "shear-down" with use. This means that their actual viscosity drops below the rated value. Fluid maintenance must be increased if V.I. improved fluids are used. Automotive automatic transmission fluids contain V.I. improvers.

Synthetic fluids may be used in Eaton hydraulic components. A reputable fluid supplier can provide information on synthetic fluids. Review applications that require the use of synthetic fluids with your Eaton representative.

Product Line	Viscosity		ISO Cleanliness Requirements
	Minimum	Best Range	
J-2 Series	70 SUS 13 cSt	100-200 SUS 20-43 cSt	18/13

Additional Notes:

- Fluids too thick to flow in cold weather start-ups will cause pump cavitation and possible damage. Motor cavitation is not a problem during cold start-ups.
- When choosing a hydraulic fluid, all the components in the system must be considered and the best viscosity range adjusted accordingly. For example, when a medium duty piston pump is combined with a Geroler motor the best viscosity range becomes 100 - 150 SUS [20 - 32 cSt] and viscosity should never fall below 70 SUS [13 cSt].
- If the natural color of the fluid has become black it is possible that an overheating problem exists.
- If the fluid becomes milky a water contamination problem may exist.
- Take fluid level reading when the system is cold.
- Contact your Eaton representative if you have specific questions about the fluid requirements of Eaton hydraulic components.

Model Code for J-2 Series Motors

The following 16-digit coding system has been developed to identify all of the configuration options for the J-2 Series Motor. Use this model code to specify a motor with the desired features. All 16-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.

Model Code — J-2 Series Spool Valve Motors

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
M	0	J								0	0			0	0

Position 1 Product Series

M ..... Motor

Position 2, 3 J-2 Series

0J ..... J-2 Series

Position 4, 5 Displacement cm^3/r [in^3/r]

05 ..... 8,2 [.50]

08 ..... 12,9 [.79]

12 ..... 19,8 [1.21]

19 ..... 31,6 [1.93]

30 ..... 50,0 [3.00]

Position 6 Mounting Flange

A ..... 5 Bolt: Dia. 31,47 [1.239] x 5,1 [.20] Pilot 1/4-28 UNF 2B Mounting Holes on 45 [1.77] Dia. Bolt Circle

B ..... 5 Bolt: Dia. 31,47 [1.239] x 5,1 [.20] Pilot M6 x 1- 6H Mounting Holes on 45 [1.77] Dia. Bolt Circle

C ..... 2 Bolt: Dia. 62,99 [2.480] x 2,0 [.08] Pilot 10,36 [.408] Mounting Holes on 80,0 [3.150] Dia. Bolt Circle

D ..... 2 Bolt: Dia. 62,99 [2.480] x 2,0 [.08] Pilot 9,0 [.354] Mounting Holes on 80,0 [3.150] Dia. Bolt Circle

Position 7, 8 Output Shaft

01 ..... 5/8 inch Dia. Straight with 4,72 [.186] Square Key and 1/4-28 UNF - 2B Threaded Hole

02 ..... 16mm Dia. Straight with 5,00 [.197] Square Key with M6 x 1 - 6H Threaded Hole

04 ..... 11/16 inch Dia. Straight with 4,72 [.186] Square Key and 1/4-28 UNF - 2B Threaded Hole

05 ..... 18mm Dia. Straight with 5,92 [.233] Square Key with M6 x 1 - 6H Threaded Hole

06 ..... Involute Splined 9T—Metric 16,50 [.650] Dia. (B17 x 14 DIN 5482) M6 x 1 - 6H Threaded Hole

07 ..... 5/8 inch Dia. Straight with 4,75 [.187] Dia. Crosshole

08 ..... 3/4 inch Tapered with Woodruff Key and Nut

09 ..... 5/8 inch Dia. Straight w/ 4,72 [.186] Sq. Key w/1/4-28 UNF -2B Threaded Hole (Plated for Corrosion Protection)

14 ..... 16mm Dia. Straight w/ 5,00 [.197] Sq. Key w/M6 x 1 - 6H Threaded Hole (Plated for Corrosion Protection)

Position 9 Port Type

A ..... 9/16-18 UNF - 2B O-ring End Ported

B ..... G 1/4 (BSP) End Ported

C ..... M14 x 1,5 - 6H O-ring Port, End Ported

D ..... 9/16-18 UNF - 2B O-ring Side Ported

E ..... G 3/8 (BSP) Side Ported

F ..... G 1/4 (BSP) Side Ported

H ..... G 3/8 (BSP) End Ported

Position 10 Case Drain

0 ..... No Case Drain

1 ..... 3/8-24 UNF - 2B O-ring

2 ..... G 1/8 (BSP)

3 ..... M10 x 1 - 6H O-ring

Position 11, 12 Special Features (Hardware)

00 ..... None

Position 13 Special Features (Assembly)

0 ..... None

1 ..... Reverse Rotation

Position 14 Paint/Special Packaging

0 ..... No Paint

A ..... Painted Low Gloss Black

B ..... Corrosion Protected (Black)

Position 15 Eaton Assigned Code when Applicable

Position 16 Eaton Assigned Design Code

0 ..... Design Code

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