

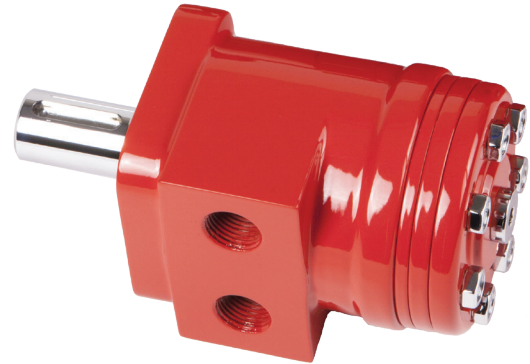
# MB SERIES

LOW SPEED HIGH TORQUE MOTORS



## EFFICIENT ROTARY POWER

The MB Series Low Speed High Torque Motor is available in 13 displacement sizes. The MB Series motor utilizes a spool valve design. This delivers high efficiencies across a broad speed and torque range. The MB Series motor is a compact, efficient solution to several industrial and mobile applications, including: food processing equipment, conveyors, agricultural equipment, and more.



## KEY FEATURES

- Shaft and Mounting options to match the most common SAE standards.\*\*
- Gerotor design provides an economical alternative to more complex roller designs.
- Low port profile is suitable for application with limited space.
- Built in check valves increase seal life and offer versatility.
- Spool valve design offers smooth operation over a wide range of speeds and torques.

## MOTOR SPECIFICATIONS

MODEL NUMBER	DISPLACEMENT IN <sup>3</sup> (CC)	MAX RPM* (CONTINUOUS)	MAX FLOW*		MAX TORQUE*		MAX PRESSURE*	
			GPM	LPM	LB.IN.	NM	PSI	BAR
MB025	1.5 (24.6)	1,361	9	35	301	34	1,450	100
MB032	1.9 (30.8)	1,244	11	40	372	42	1,450	100
MB040	2.4 (39.7)	1,124	12	45	584	66	1,800	124
MB050	2.9 (48.2)	900	12	45	805	91	2,000	138
MB060	3.6 (59.4)	880	14	53	974	136	2,000	138
MB080	4.9 (79.6)	752	16	60	1,248	141	2,000	138
MB100	5.9 (96.0)	628	16	60	1,505	170	2,000	138
MB125	7.5 (122.8)	483	16	60	1,991	225	2,000	138
MB160	9.6 (158.0)	383	16	60	2,513	284	2,000	138
MB200	12.0 (196.5)	308	16	60	2,761	312	1,800	124
MB250	14.7 (240.5)	248	16	60	2,806	317	1,500	103
MB315	18.5 (303.2)	199	16	60	3,505	396	1,500	103
MB400	23.5 (385.8)	150	16	60	4,248	480	1,400	97

\* Reference only, see performance data

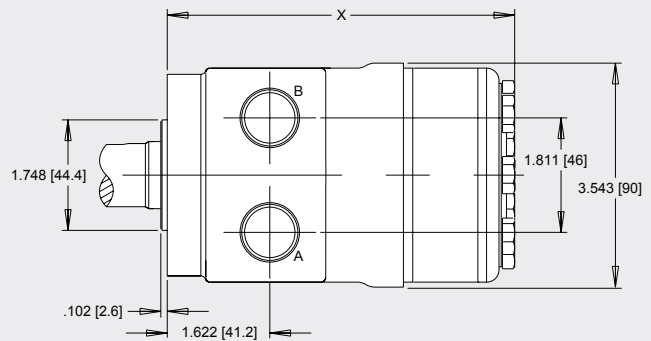
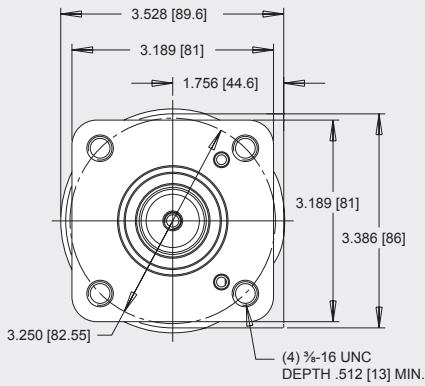
\*\* Other options available, call for information and availability

**Approximate Weights:** 11.4-15.2 lbs. (5.2-6.9 Kg.)

# DIMENSIONS

4-Bolt Square Flange - Code: "U"

Port Locations: 1/2" NPT - Code: "BN"  
 Dash Size: -8  
 7/8" O-Ring - Code: "FM"  
 Dash Size: -10

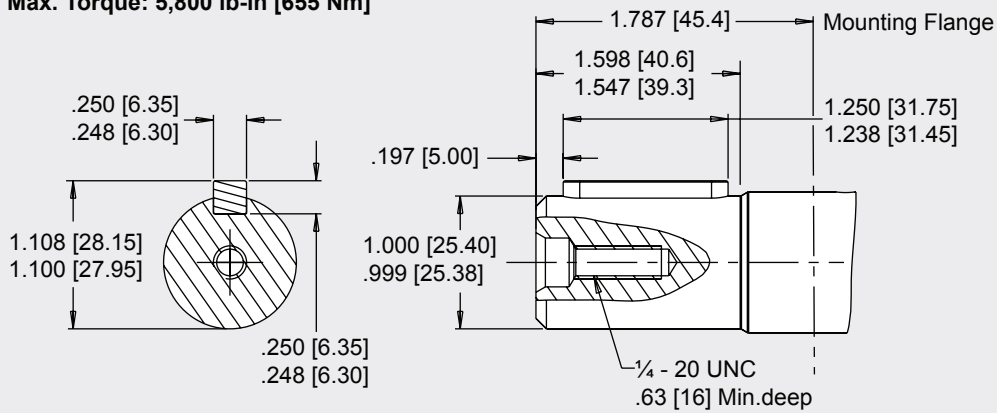


DIMENSION "X"								
MODEL	IN	MM	MODEL	IN	MM	MODEL	IN	MM
025	4.46	113.2	060	4.61	117.2	160	5.12	130
032	4.50	114.3	080	4.71	119.6	200	5.32	135.1
040	4.56	115.8	100	4.81	122.2	250	5.58	141.7
050	4.56	115.8	125	4.96	126	315	5.91	150.1
						400	6.35	161.2

# SHAFT DIMENSIONS

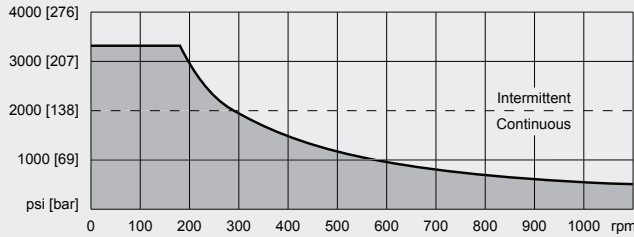
1" Straight - Code: "01"

Max. Torque: 5,800 lb-in [655 Nm]

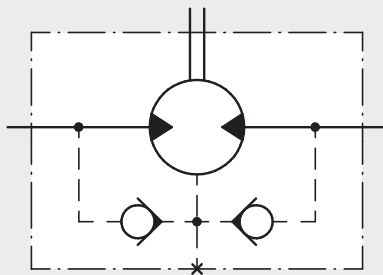


# TECHNICAL SPECIFICATIONS

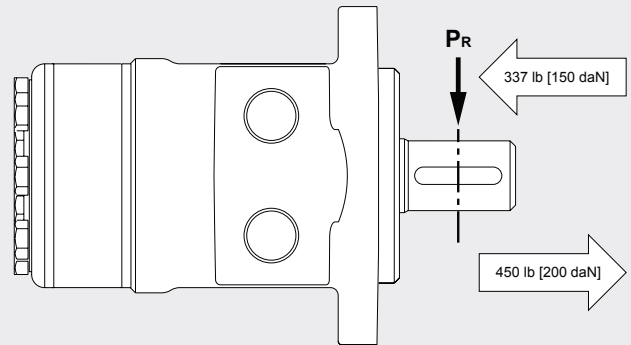
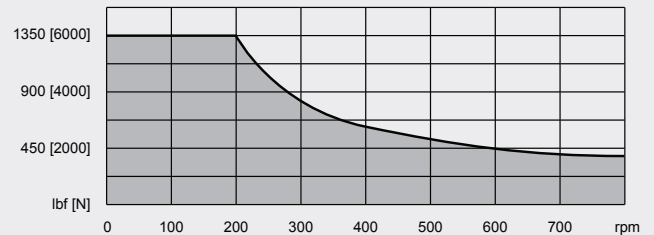
The curve below represents allowable seal pressure at various speeds. Operation in the gray area results in maintaining the rated life of the shaft seal. Actual shaft seal pressure depends on motor configuration.



\*With check valves and drain connection, the shaft seal pressure equals pressure in the drain line. With check valves and no drain connection, shaft seal pressure is identical to output pressure. No check valves and no drain connection, the shaft seal pressure is identical to the average value of input and output pressure.



The bearing curve below represents the side load capacity of the motor at the centerline of the key for various motor speeds. Operating conditions within the shaded area will maintain acceptable oil film lubrication with recommended fluids. Operating conditions outside the shaded area are susceptible to motor failure due to oil starvation and/or excessive heat generation. Fluids with low lubricity or low viscosity may require the maximum load and speed ratings to be derated to provide acceptable motor life and performance.



## MODEL NUMBER CONSTRUCTION

**M-B-100-01-U-FM XXX-RR**

**Type:**

M (Motor)

**Series B**

DISPLACEMENT			
MODEL CODE	IN <sup>3</sup> (CC)	MODEL CODE	IN <sup>3</sup> (CC)
025	1.5 (24.6)	100	5.9 (96.0)
032	1.9 (30.8)	125	7.5 (122.8)
040	2.4 (39.7)	160	9.6 (158.0)
050	2.9 (48.2)	200	12.0 (196.5)
060	3.6 (59.4)	250	14.7 (240.5)
080	4.9 (79.6)	315	18.5 (303.2)
		400	23.5 (385.8)

**Special Features:**

RR - Red Paint

**Product Attributes:**

XXX - None

**Ports:**

FM - 7/8"-14 O-Ring

BN - 1/2" NPT

**Mounting Flange:**

U - 4-Bolt Square

**Shaft:**

01 - 1" Straight (SAE B-B)

# PERFORMANCE DATA

**025**

Pressure - PSI [BAR]			Max. Cont.	Max. Inter.	
435 [30]	870 [60]	1,160 [80]	1,450 [100]	1,740 [120]	2,030 [140]

1.5 in<sup>3</sup>/rev [25 cc]

Flow - GPM [LPM]  
Max. Max. Inter. Cont.

1.3 [5]
2.6 [10]
4.0 [15]
5.3 [20]
6.6 [25]
7.9 [30]
9.2 [35]
10.6 [40]

Torque - lb.in. [Nm], Speed RPM

80 [9]	159 [18]	221 [25]	283 [32]	310 [35]	
<b>186</b>	<b>167</b>	<b>138</b>	<b>115</b>	<b>106</b>	
80 [9]	177 [20]	230 [26]	301 [34]	327 [37]	407 [46]
<b>388</b>	<b>350</b>	<b>316</b>	<b>285</b>	<b>255</b>	<b>217</b>
71 [8]	168 [19]	239 [27]	292 [33]	336 [38]	416 [47]
<b>568</b>	<b>536</b>	<b>206</b>	<b>485</b>	<b>447</b>	<b>402</b>
71 [8]	168 [19]	230 [26]	292 [33]	336 [38]	416 [47]
<b>780</b>	<b>736</b>	<b>688</b>	<b>658</b>	<b>628</b>	<b>598</b>
62 [7]	159 [18]	230 [26]	292 [33]	327 [37]	407 [46]
<b>970</b>	<b>922</b>	<b>885</b>	<b>855</b>	<b>830</b>	<b>780</b>
53 [6]	142 [16]	212 [24]	283 [32]	319 [36]	398 [45]
<b>1,172</b>	<b>1,120</b>	<b>1,086</b>	<b>1,046</b>	<b>1,026</b>	<b>981</b>
44 [5]	115 [13]	195 [22]	266 [30]	319 [36]	381 [43]
<b>1,361</b>	<b>1,318</b>	<b>1,285</b>	<b>1,248</b>	<b>1,212</b>	<b>1,172</b>
	97 [11]	177 [20]	248 [28]	310 [35]	372 [42]
	<b>1,502</b>	<b>1,477</b>	<b>1,439</b>	<b>1,404</b>	<b>1,365</b>

Intermittent Ratings - 10% of Operation

203
407
610
813
1,016
1,220
1,423
1,626

Overall Efficiency - 70 - 100%  40 - 69%  0 - 39%

Theoretical Torque - lb.in. [Nm]

104 [12]	208 [24]	277 [31]	347 [39]	416 [47]	485 [55]
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Displacement tested at 113°F [45°C] with an oil viscosity of 213 SUS [46cSt]

**032**

Pressure - PSI [BAR]			Max. Cont.	Max. Inter.	
435 [30]	870 [60]	1,160 [80]	1,450 [100]	1,740 [120]	2,030 [140]

1.9 in<sup>3</sup>/rev [31 cc]

Flow - GPM [LPM]  
Max. Max. Inter. Cont.

1.3 [5]
2.6 [10]
4.0 [15]
5.3 [20]
6.6 [25]
7.9 [30]
9.2 [35]
10.6 [40]
11.9 [45]

Torque - lb.in. [Nm], Speed RPM

106 [12]	212 [24]	283 [32]	354 [40]		
<b>150</b>	<b>133</b>	<b>100</b>	<b>68</b>		
106 [12]	221 [25]	292 [33]	372 [42]	425 [48]	487 [55]
<b>300</b>	<b>276</b>	<b>253</b>	<b>236</b>	<b>203</b>	<b>186</b>
97 [11]	212 [24]	292 [33]	372 [42]	434 [49]	504 [57]
<b>460</b>	<b>433</b>	<b>415</b>	<b>398</b>	<b>375</b>	<b>346</b>
80 [9]	212 [24]	283 [32]	363 [41]	434 [49]	496 [56]
<b>616</b>	<b>586</b>	<b>566</b>	<b>543</b>	<b>520</b>	<b>500</b>
71 [8]	204 [23]	283 [32]	354 [40]	425 [48]	496 [56]
<b>780</b>	<b>754</b>	<b>736</b>	<b>712</b>	<b>688</b>	<b>658</b>
62 [7]	195 [22]	274 [31]	354 [40]	416 [47]	496 [56]
<b>928</b>	<b>910</b>	<b>882</b>	<b>860</b>	<b>824</b>	<b>806</b>
62 [7]	186 [21]	274 [31]	336 [38]	407 [46]	487 [55]
<b>1,090</b>	<b>1,077</b>	<b>1,057</b>	<b>1,035</b>	<b>1,008</b>	<b>980</b>
53 [6]	168 [19]	257 [29]	327 [37]	407 [46]	478 [54]
<b>1,244</b>	<b>1,214</b>	<b>1,198</b>	<b>1,177</b>	<b>1,155</b>	<b>1,130</b>
	150 [17]	248 [28]	327 [37]	398 [45]	478 [54]
	<b>1,388</b>	<b>1,362</b>	<b>1,342</b>	<b>1,326</b>	<b>1,300</b>

Intermittent Ratings - 10% of Operation

162
325
487
649
812
974
1,136
1,299
1,461

Overall Efficiency - 70 - 100%  40 - 69%  0 - 39%

Theoretical Torque - lb.in. [Nm]

130 [15]	260 [29]	347 [39]	434 [49]	521 [59]	608 [69]
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Displacement tested at 113°F [45°C] with an oil viscosity of 213 SUS [46cSt]

**040**

Pressure - PSI [BAR]				Max. Cont.	Max. Inter.
300 [21]	600 [41]	900 [62]	1,200 [83]	1,500 [103]	1,800 [124] 2,250 [155]

2.4 in<sup>3</sup>/rev. [40 cc]

Flow - GPM [LPM]  
Max. Max. Inter. Cont.

2 [8]
4 [15]
6 [23]
8 [30]
10 [38]
12 [45]
14 [53]

Torque - lb.in. [Nm], Speed RPM

89 [10]	177 [20]	257 [29]	354 [40]			
<b>182</b>	<b>169</b>	<b>128</b>	<b>90</b>			
97 [11]	186 [21]	274 [31]	381 [43]	478 [54]	575 [65]	690 [78]
<b>362</b>	<b>344</b>	<b>334</b>	<b>320</b>	<b>304</b>	<b>284</b>	<b>254</b>
89 [10]	177 [20]	283 [32]	372 [42]	469 [53]	584 [66]	699 [79]
<b>548</b>	<b>535</b>	<b>519</b>	<b>502</b>	<b>488</b>	<b>468</b>	<b>428</b>
62 [7]	168 [19]	274 [31]	363 [41]	460 [52]	566 [64]	690 [78]
<b>738</b>	<b>729</b>	<b>706</b>	<b>688</b>	<b>670</b>	<b>648</b>	<b>614</b>
53 [6]	142 [16]	266 [30]	354 [40]	451 [51]	549 [62]	681 [77]
<b>932</b>	<b>914</b>	<b>896</b>	<b>878</b>	<b>856</b>	<b>834</b>	<b>798</b>
27 [3]	124 [14]	248 [28]	336 [38]	434 [49]	531 [60]	673 [76]
<b>1,124</b>	<b>1,102</b>	<b>1,084</b>	<b>1,062</b>	<b>1,043</b>	<b>1,014</b>	<b>976</b>
	124 [14]	221 [25]	336 [38]	425 [48]	531 [60]	673 [76]
	<b>1,312</b>	<b>1,290</b>	<b>1,266</b>	<b>1,242</b>	<b>1,218</b>	<b>1,168</b>

Intermittent Ratings - 10% of Operation

191
380
572
763
955
1,144
1,335

Overall Efficiency - 70 - 100%  40 - 69%  0 - 39%

Theoretical Torque - lb.in. [Nm]

117 [13]	229 [26]	347 [39]	464 [52]	576 [65]	694 [78]	867 [98]
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Displacement tested at 113°F [45°C] with an oil viscosity of 213 SUS [46cSt]

**050**

Pressure - PSI [BAR]					Max. Cont.	Max. Inter.
300 [21]	600 [41]	900 [62]	1,200 [83]	1,500 [103]	1,800 [124]	2,000 [138]   2,500 [173]

2.9 in<sup>3</sup>/rev. [48 cc]

Flow - GPM [LPM]  
Max. Max. Inter. Cont.

		Torque - lb.in. [Nm], Speed RPM							Intermittent Ratings - 10% of Operation	
2 [8]	124 [14] 148	230 [26] 143	354 [40] 130	354 [55] 116	575 [65] 102	726 [82] 86	779 [88] 75		158	Theoretical RPM
4 [15]	124 [14] 298	239 [27] 289	372 [42] 276	381 [56] 260	593 [67] 245	735 [83] 229	788 [89] 214	1009 [114] 166	313	
6 [23]	106 [12] 450	212 [24] 438	363 [41] 423	372 [54] 406	602 [68] 388	743 [84] 374	805 [91] 352	991 [112] 314	471	
8 [30]	80 [9] 602	186 [21] 590	336 [38] 580	363 [52] 555	575 [65] 540	717 [81] 523	779 [88] 508	974 [110] 475	629	
10 [38]	18 [2] 750	168 [19] 732	327 [37] 722	354 [51] 713	558 [63] 693	681 [77] 681	752 [85] 669	947 [107] 635	786	
12 [45]		150 [17] 900	292 [33] 885	336 [46] 875	531 [60] 860	646 [73] 848	735 [83] 830	929 [105] 794	942	
14 [53]			248 [28] 1,012	336 [42] 1,000	513 [58] 986	620 [70] 972	708 [80] 960	885 [100] 924	1,100	

Overall Efficiency - 70 - 100%  40 - 69%  0 - 39%

Theoretical Torque - lb.in. [Nm]						
143 [16]	278 [31]	422 [48]	564 [64]	700 [79]	842 [95]	937 [106]   1,175 [133]

Displacement tested at 113°F [45°C] with an oil viscosity of 213 SUS [46cSt]

**060**

Pressure - PSI [BAR]					Max. Cont.	Max. Inter.
300 [21]	600 [41]	900 [62]	1,200 [83]	1,500 [103]	1,800 [124]	2,000 [138]   2,500 [173]

3.6 in<sup>3</sup>/rev. [59 cc]

Flow - GPM [LPM]  
Max. Max. Inter. Cont.

		Torque - lb.in. [Nm], Speed RPM							Intermittent Ratings - 10% of Operation	
2 [8]	150 [17] 122	266 [30] 119	407 [46] 113	558 [63] 107	726 [82] 94	876 [99] 77	965 [109] 65		128	Theoretical RPM
4 [15]	142 [16] 247	283 [32] 243	425 [48] 236	575 [65] 223	726 [82] 209	903 [102] 192	974 [110] 180	1,204 [136] 142	254	
6 [23]	133 [15] 371	257 [29] 367	416 [47] 360	584 [66] 347	717 [81] 330	876 [99] 315	947 [107] 304	1,195 [135] 266	382	
8 [30]	106 [12] 496	230 [26] 492	389 [44] 484	549 [62] 470	699 [79] 457	850 [96] 436	929 [105] 425	1,151 [130] 386	510	
10 [38]	71 [8] 626	204 [23] 618	354 [40] 608	531 [60] 596	681 [77] 582	832 [94] 567	920 [104] 558	1,133 [128] 500	638	
12 [45]	18 [2] 752	177 [20] 744	327 [37] 735	513 [58] 727	664 [75] 716	805 [91] 696	885 [100] 680	1,124 [127] 628	764	
14 [53]		133 [15] 880	274 [31] 870	425 [48] 862	628 [71] 847	770 [87] 830	858 [97] 800	1,071 [121] 740	892	
16 [61]		71 [8] 970	239 [27] 958	398 [45] 944	566 [64] 932	726 [82] 924	823 [93] 902	1,035 [117] 842	1,020	

Overall Efficiency - 70 - 100%  40 - 69%  0 - 39%

Theoretical Torque - lb.in. [Nm]						
176 [20]	343 [39]	520 [59]	695 [79]	862 [97]	1,038 [117]	1,155 [131]   1,448 [164]

Displacement tested at 113°F [45°C] with an oil viscosity of 213 SUS [46cSt]

**080**

Pressure - PSI [BAR]					Max. Cont.	Max. Inter.
300 [21]	600 [41]	900 [62]	1,200 [83]	1,500 [103]	1,800 [124]	2,000 [138]   2,500 [173]

4.9 in<sup>3</sup>/rev. [80 cc]

Flow - GPM [LPM]  
Max. Max. Inter. Cont.

		Torque - lb.in. [Nm], Speed RPM							Intermittent Ratings - 10% of Operation	
2 [8]	195 [22] 90	372 [42] 85	540 [61] 78	726 [82] 70	903 [102] 62	1,097 [124] 52	1,221 [138] 42		95	Theoretical RPM
4 [15]	177 [20] 187	381 [43] 182	549 [62] 176	743 [84] 167	947 [107] 154	1,133 [128] 143	1,248 [141] 136	1,513 [171] 112	190	
6 [23]	168 [19] 286	363 [41] 276	558 [63] 268	735 [83] 257	920 [104] 248	1,106 [125] 237	1,230 [139] 227	1,549 [175] 202	285	
8 [30]	115 [13] 378	336 [38] 372	540 [61] 364	726 [82] 354	903 [102] 342	1,097 [124] 334	1,212 [137] 324	1,540 [174] 297	381	
10 [38]	71 [8] 474	310 [35] 469	513 [58] 460	708 [80] 448	894 [101] 440	1,089 [123] 430	1,195 [135] 416	1,460 [165] 370	476	
12 [45]	18 [2] 564	257 [29] 558	487 [55] 550	664 [75] 540	885 [100] 530	1,071 [121] 519	1,177 [133] 504	1,443 [163] 472	570	
14 [53]		230 [26] 662	425 [48] 658	620 [70] 648	850 [96] 637	1,018 [115] 633	1,151 [130] 609	1,425 [161] 576	666	
16 [61]		177 [20] 752	389 [44] 734	602 [68] 724	752 [85] 716	929 [105] 700	1,089 [123] 690	1,363 [154] 663	761	
20 [76]		97 [11] 934	283 [32] 929	478 [54] 914	655 [74] 904	832 [94] 890	956 [108] 876	1,310 [148] 814	951	

Overall Efficiency - 70 - 100%  40 - 69%  0 - 39%

Theoretical Torque - lb.in. [Nm]						
236 [27]	460 [52]	697 [79]	931 [105]	1,155 [131]	1,391 [157]	1,548 [175]   1,941 [219]

Displacement tested at 113°F [45°C] with an oil viscosity of 213 SUS [46cSt]

**100**

Pressure - PSI [BAR]				Max. Cont.		Max. Inter.	
300 [21]	600 [41]	900 [62]	1,200 [83]	1,500 [103]	1,800 [124]	2,000 [138]	2,500 [173]

5.9 in<sup>3</sup>/rev. [96 cc]Torque - lb.in. [Nm], Speed RPM Intermittent Ratings - 10% of Operation

Flow - GPM [LPM]	Torque - lb.in. [Nm], Speed RPM								Theoretical RPM
	2 [8]	4 [15]	6 [23]	8 [30]	10 [38]	12 [45]	14 [53]	16 [61]	
Max. Max. Inter. Cont.	248 [28] 76	504 [57] 71	726 [82] 65	956 [108] 54	1,168 [132] 45	1,398 [158] 33			79
	221 [25] 154	496 [56] 147	708 [80] 140	938 [106] 132	1,151 [130] 122	1,372 [155] 113	1,460 [165] 104	1,814 [205] 84	157
	204 [23] 235	443 [50] 226	673 [76] 219	920 [104] 212	1,133 [128] 203	1,354 [153] 193	1,505 [170] 185	1,876 [212] 162	236
	168 [19] 313	416 [47] 307	655 [74] 299	894 [104] 291	1,106 [125] 281	1,345 [152] 270	1,478 [167] 264	1,947 [220] 240	316
	133 [15] 392	381 [43] 389	628 [71] 384	858 [97] 375	1,080 [122] 364	1,319 [149] 353	1,478 [167] 346	1,929 [218] 314	395
	97 [11] 470	327 [37] 465	620 [70] 458	832 [94] 449	1,062 [120] 437	1,301 [147] 429	1,434 [162] 426	1,859 [210] 398	473
		292 [33] 550	531 [60] 545	770 [87] 532	1,044 [118] 518	1,266 [143] 510	1,416 [160] 500	1,832 [207] 473	552
		239 [27] 628	487 [55] 622	726 [82] 611	1,009 [114] 598	1,230 [139] 584	1,328 [150] 575	1,732 [196] 552	631
			327 [37] 786	593 [67] 770	823 [93] 758	1,089 [123] 732	1,221 [138] 716	1,682 [190] 670	789

Overall Efficiency - 70 - 100%  40 - 69%  0 - 39% 

Theoretical Torque - lb.in. [Nm]

284 [32]	555 [63]	840 [95]	1,123 [127]	1,393 [157]	1,678 [190]	1,867 [211]	2,340 [264]
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Displacement tested at 113°F [45°C] with an oil viscosity of 213 SUS [46cSt]

**125**

Pressure - PSI [BAR]				Max. Cont.		Max. Inter.	
300 [21]	600 [41]	900 [62]	1,200 [83]	1,500 [103]	1,800 [124]	2,000 [138]	2,500 [173]

7.5 in<sup>3</sup>/rev. [123 cc]Torque - lb.in. [Nm], Speed RPM Intermittent Ratings - 10% of Operation

Flow - GPM [LPM]	Torque - lb.in. [Nm], Speed RPM								Theoretical RPM
	2 [8]	4 [15]	6 [23]	8 [30]	10 [38]	12 [45]	14 [53]	16 [61]	
Max. Max. Inter. Cont.	274 [31] 60	566 [64] 57	903 [102] 54	1,204 [136] 48	1,425 [161] 44	1,708 [193] 38	1,947 [220] 34		62
	266 [30] 120	558 [63] 118	894 [101] 115	1,221 [138] 109	1,487 [168] 102	1,779 [201] 94	1,991 [225] 87	2,425 [274] 61	123
	266 [30] 183	549 [62] 179	876 [99] 175	1,212 [137] 170	1,478 [167] 165	1,788 [202] 155	1,974 [223] 148	2,407 [272] 126	185
	248 [28] 242	522 [59] 240	850 [96] 237	1,186 [134] 233	1,460 [165] 228	1,761 [199] 219	1,947 [220] 205	2,381 [269] 174	247
	195 [22] 301	478 [54] 299	823 [93] 295	1,151 [130] 289	1,425 [161] 282	1,690 [191] 275	1,903 [215] 265	2,328 [263] 244	309
	133 [15] 362	425 [48] 360	761 [86] 356	1,097 [124] 351	1,381 [156] 345	1,628 [184] 340	1,850 [209] 329	2,274 [257] 301	370
	80 [15] 424	363 [41] 422	708 [80] 419	1,035 [117] 415	1,319 [149] 410	1,558 [176] 386	1,805 [204] 376	2,151 [243] 342	432
	18 [2] 483	283 [32] 477	620 [70] 470	920 [104] 463	1,204 [136] 454	1,460 [165] 444	1,717 [194] 437	2,062 [233] 412	493
		133 [15] 604	425 [48] 595	726 [82] 584	1,080 [122] 573	1,354 [153] 565	1,575 [178] 556	1,982 [224] 526	616

Overall Efficiency - 70 - 100%  40 - 69%  0 - 39% 

Theoretical Torque - lb.in. [Nm]

363 [41]	710 [80]	1,075 [121]	1,436 [162]	1,782 [201]	2,146 [242]	2,388 [270]	2,994 [338]
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Displacement tested at 113°F [45°C] with an oil viscosity of 213 SUS [46cSt]

**160**

Pressure - PSI [BAR]				Max. Cont.		Max. Inter.	
300 [21]	600 [41]	900 [62]	1,200 [83]	1,500 [103]	1,800 [124]	2,000 [138]	2,500 [173]

9.6 in<sup>3</sup>/rev. [158 cc]Torque - lb.in. [Nm], Speed RPM Intermittent Ratings - 10% of Operation

Flow - GPM [LPM]	Torque - lb.in. [Nm], Speed RPM								Theoretical RPM
	2 [8]	4 [15]	6 [23]	8 [30]	10 [38]	12 [45]	14 [53]	16 [61]	
Max. Max. Inter. Cont.	372 [42] 47	779 [88] 45	1,062 [120] 42	1,487 [168] 36	1,859 [210] 28	2,177 [246] 20			48
	345 [39] 94	752 [85] 92	1,106 [125] 89	1,505 [170] 85	1,867 [211] 79	2,221 [251] 72	2,513 [284] 64	3,053 [345] 35	96
	336 [38] 143	699 [79] 140	1,089 [123] 136	1,487 [168] 130	1,850 [209] 124	2,195 [248] 116	2,434 [275] 107	3,106 [351] 84	144
	292 [33] 191	655 [74] 188	1,044 [118] 184	1,451 [164] 178	1,832 [207] 171	2,168 [245] 162	2,390 [270] 154	2,991 [338] 134	192
	221 [25] 238	602 [68] 236	1,000 [113] 233	1,407 [159] 229	1,761 [199] 224	2,133 [241] 218	2,319 [262] 205	2,885 [326] 183	240
	124 [14] 287	522 [59] 285	929 [105] 283	1,328 [150] 281	1,699 [192] 276	2,062 [233] 270	2,239 [253] 261	2,717 [307] 235	287
	44 [5] 335	443 [50] 334	814 [92] 332	1,239 [140] 329	1,664 [188] 324	1,920 [217] 319	2,142 [242] 311	2,637 [298] 281	335
		310 [35] 383	664 [75] 382	1,062 [120] 378	1,416 [160] 372	1,814 [205] 363	2,062 [233] 358	2,558 [289] 333	384
		106 [12] 479	487 [55] 478	814 [92] 475	1,195 [135] 469	1,620 [183] 460	1,805 [204] 455	2,443 [276] 434	479

Overall Efficiency - 70 - 100%  40 - 69%  0 - 39% 

Theoretical Torque - lb.in. [Nm]

468 [53]	913 [103]	1,380 [156]	1,848 [209]	2,293 [259]	2,761 [312]	3,073 [347]	3,852 [435]
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Displacement tested at 113°F [45°C] with an oil viscosity of 213 SUS [46cSt]

**200**

Pressure - PSI [BAR]				Max. Cont.	Max. Inter.	
300 [21]	600 [41]	900 [62]	1,200 [83]	1,500 [103]	1,800 [124]	2,400 [166]

12.0 in<sup>3</sup>/rev. [197 cc]

Max. Max. Inter. Cont.	Flow - GPM [LPM]	2 [8]
		4 [15]
		6 [23]
		8 [30]
		10 [38]
		12 [45]
		14 [53]
		16 [61]
20 [76]		

Torque - lb.in. [Nm], Speed RPM		Intermittent Ratings - 10% of Operation				
460 [52] 38	965 [109] 35	1,451 [164] 30	1,929 [218] 23			
443 [50] 76	991 [112] 74	1,478 [167] 70	1,947 [220] 64	2,390 [270] 56	2,744 [310] 48	
425 [48] 115	974 [110] 113	1,460 [165] 110	1,929 [218] 105	2,425 [274] 98	2,761 [312] 92	3,637 [411] 62
407 [46] 153	903 [102] 150	1,407 [159] 146	1,912 [216] 138	2,372 [268] 132	2,682 [303] 120	3,593 [406] 86
319 [36] 192	814 [92] 190	1,336 [151] 186	1,823 [206] 181	2,283 [258] 174	2,567 [290] 163	3,522 [398] 133
195 [22] 230	708 [80] 226	1,257 [142] 223	1,708 [193] 218	2,089 [236] 210	2,496 [282] 200	3,416 [386] 167
44 [5] 268	620 [70] 266	1,151 [130] 262	1,558 [176] 258	1,903 [215] 250	2,407 [272] 240	3,310 [374] 209
	513 [58] 308	1,044 [118] 305	1,381 [156] 299	1,752 [198] 292	2,239 [253] 284	3,186 [360] 256
	372 [42] 384	779 [88] 381	1,097 [124] 376	1,531 [173] 372	1,947 [220] 358	2,903 [328] 330

Theoretical RPM	39
	77
	116
	154
	193
	231
	270
	308
385	

Overall Efficiency - 70 - 100%  40 - 69%  0 - 39% 

Theoretical Torque - lb.in. [Nm]

582 [66]	1,135 [128]	1,717 [194]	2,298 [260]	2,852 [322]	3,434 [388]	4,597 [519]
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Displacement tested at 113°F [45°C] with an oil viscosity of 213 SUS [46cSt]

**250**

Pressure - PSI [BAR]				Max. Cont.	Max. Inter.	
300 [21]	600 [41]	900 [62]	1,200 [83]	1,400 [97]	1,500 [103]	2,000 [138]
						2,250 [155]

14.7 in<sup>3</sup>/rev. [241 cc]

Max. Max. Inter. Cont.	Flow - GPM [LPM]	2 [8]
		4 [15]
		6 [23]
		8 [30]
		10 [38]
		12 [45]
		14 [53]
		16 [61]
20 [76]		

Torque - lb.in. [Nm], Speed RPM		Intermittent Ratings - 10% of Operation				
513 [58] 31	1,044 [118] 30	1,708 [193] 28	2,292 [259] 23	2,655 [300] 19		
540 [61] 62	1,080 [122] 61	1,682 [190] 58	2,248 [254] 55	2,673 [302] 51	2,805 [317] 47	2,513 [414] 38
513 [58] 94	1,027 [116] 93	1,637 [185] 92	2,213 [250] 87	2,611 [295] 83	2,726 [308] 81	2,434 [412] 67
451 [51] 125	991 [112] 124	1,575 [178] 121	2,168 [245] 117	2,567 [290] 113	2,690 [304] 110	2,390 [406] 97
354 [40] 158	867 [98] 156	1,496 [169] 155	2,089 [236] 147	2,513 [284] 145	2,637 [298] 145	2,319 [390] 136
257 [29] 188	735 [83] 187	1,381 [156] 186	2,036 [230] 184	2,451 [277] 180	2,496 [282] 176	2,239 [372] 164
195 [22] 220	593 [67] 219	1,221 [138] 217	1,894 [214] 214	2,319 [262] 211	2,301 [260] 209	2,142 [355] 194
	460 [52] 248	1,089 [123] 244	1,682 [190] 241	2,062 [233] 237	2,159 [244] 235	2,062 [335] 223
	212 [24] 312	743 [84] 309	1,460 [165] 305	1,788 [202] 302	1,841 [208] 300	1,805 [298] 285

Theoretical RPM	32
	63
	94
	126
	158
	189
	220
	252
315	

Overall Efficiency - 70 - 100%  40 - 69%  0 - 39% 

Theoretical Torque - lb.in. [Nm]

712 [80]	1,390 [157]	2,101 [237]	2,813 [318]	3,288 [371]	3,491 [394]	4,677 [528]	5,253 [594]
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Displacement tested at 113°F [45°C] with an oil viscosity of 213 SUS [46cSt]

**315**

Pressure - PSI [BAR]			Max. Cont.	Max. Inter.	
300 [21]	600 [41]	900 [62]	1,300 [90]	1,500 [103]	2,000 [138]
					2,250 [155]

12.0 in<sup>3</sup>/rev. [197 cc]

Max. Max. Inter. Cont.	Flow - GPM [LPM]	2 [8]
		4 [15]
		6 [23]
		8 [30]
		10 [38]
		12 [45]
		14 [53]
		16 [61]
20 [76]		

Torque - lb.in. [Nm], Speed RPM		Intermittent Ratings - 10% of Operation				
779 [88] 25	1,540 [174] 22	2,257 [255] 20				
788 [89] 49	1,505 [170] 47	2,328 [263] 43	3,115 [352] 35	3,505 [396] 30		
690 [78] 74	1,434 [162] 72	2,177 [246] 69	3,053 [345] 59	3,469 [392] 54	4,708 [532] 33	5,098 [576] 22
531 [60] 101	1,336 [151] 98	2,124 [240] 95	3,000 [339] 90	3,416 [386] 84	4,655 [526] 65	5,009 [566] 53
531 [60] 125	1,257 [142] 123	2,036 [230] 121	2,965 [335] 115	3,363 [380] 112	4,549 [514] 90	4,938 [558] 80
327 [37] 147	1,133 [128] 146	1,947 [220] 143	2,876 [325] 139	3,275 [370] 132	4,425 [500] 118	4,744 [536] 105
133 [15] 175	956 [108] 174	1,841 [208] 171	2,814 [318] 166	3,142 [355] 160	4,301 [486] 138	4,567 [516] 127
	779 [88] 199	1,735 [196] 197	2,655 [300] 187	3,009 [340] 182	4,115 [465] 166	4,372 [494] 152
	531 [60] 250	1,593 [180] 246	2,478 [280] 240	2,885 [326] 236	3,912 [442] 217	4,142 [494] 206

Theoretical RPM	25
	50
	75
	100
	125
	150
	175
	200
250	

Overall Efficiency - 70 - 100%  40 - 69%  0 - 39% 

Theoretical Torque - lb.in. [Nm]

897 [101]	1,752 [198]	2,649 [299]	3,846 [435]	4,401 [497]	5,896 [666]	6,623 [748]
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Displacement tested at 113°F [45°C] with an oil viscosity of 213 SUS [46cSt]

400		Pressure - PSI [BAR]					Max. Cont.	Max. Inter.
		300 [21]	600 [41]	1,000 [69]	1,200 [83]	1,400 [97]	1,750 [121]	
23.5 in <sup>3</sup> /rev. [386 cc]		Torque - lb.in. [Nm], <b>Speed RPM</b>					Intermittent Ratings - 10% of Operation	
Flow - GPM [LPM]	2 [8]	929 [105] <b>19</b>	1,929 [218] <b>18</b>	3,186 [360] <b>14</b>	3,960 [417] <b>11</b>			20
	4 [15]	876 [99] <b>39</b>	1,832 [207] <b>37</b>	3,044 [344] <b>33</b>	3,637 [411] <b>28</b>	4,248 [480] <b>25</b>	5,151 [582] <b>17</b>	39
	6 [23]	805 [91] <b>59</b>	1,726 [195] <b>57</b>	2,974 [336] <b>52</b>	3,567 [403] <b>43</b>	4,260 [478] <b>39</b>	5,089 [575] <b>32</b>	59
	8 [30]	637 [72] <b>77</b>	1,646 [186] <b>75</b>	2,876 [325] <b>73</b>	3,522 [398] <b>67</b>	4,124 [466] <b>60</b>	5,036 [569] <b>49</b>	79
	10 [38]	549 [62] <b>100</b>	1,575 [178] <b>97</b>	2,779 [314] <b>93</b>	3,487 [394] <b>89</b>	4,053 [458] <b>81</b>	4,956 [560] <b>70</b>	98
	12 [45]	451 [51] <b>120</b>	1,451 [164] <b>117</b>	2,744 [310] <b>113</b>	3,345 [378] <b>109</b>	3,965 [448] <b>97</b>	4,868 [550] <b>84</b>	118
	14 [53]	336 [38] <b>137</b>	1,257 [142] <b>134</b>	2,513 [284] <b>131</b>	3,186 [360] <b>129</b>	3,797 [429] <b>124</b>	4,708 [532] <b>113</b>	137
	16 [61]	177 [20] <b>150</b>	1,071 [121] <b>154</b>	2,301 [260] <b>151</b>	2,991 [338] <b>148</b>	3,629 [410] <b>138</b>	4,522 [511] <b>130</b>	157
	20 [76]		867 [98] <b>189</b>	2,071 [234] <b>187</b>	2,726 [308] <b>185</b>	3,398 [384] <b>182</b>	4,301 [486] <b>178</b>	196
Max. Max. Inter. Cont.								
		Overall Efficiency - 70 - 100% <input type="checkbox"/> 40 - 69% <input type="checkbox"/> 0 - 39% <input type="checkbox"/>						
		Theoretical Torque - lb.in. [Nm]						
		1,142 [129]	2,229 [252]	3,751 [424]	4,513 [510]	5,274 [596]	6,579 [743]	
		Displacement tested at 113°F [45°C] with an oil viscosity of 213 SUS [46cSt]						

To use charts, find the intersection point between 2 ratings (i.e. Pressure and Flow). This will give you the overall efficiency, as well as the actual torque & RPM for the given motor displacement. Intermittent Ratings are for motors that will be ran for less than 10% per minute. For motors that will be used longer, please refer to continuous use ratings.

## OIL RECOMMENDATIONS

A good quality anti-foaming petroleum based fluid with anti-emulsion and anti-wear additives is recommended. Muncie does not promote specific manufacturer's brands of oil. Oil Viscosity Reference: Between 100 - 200 S.U.S. [20 - 43 cSt] at operating temperature is recommended. Fluid temperature should also be maintained below 180deg F [85deg C]. During cold weather, oil may thicken and not flow properly. Allow oil to warm up at slow speed. Your oil supplier should be consulted for your application needs.