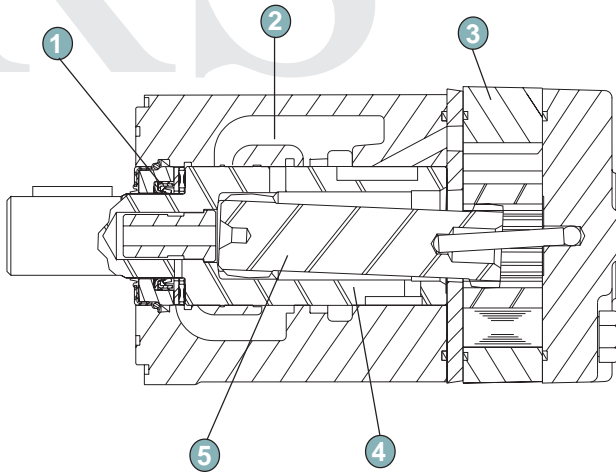


RS

FEATURES



- 1 **High Pressure Shaft Seal** offers superior seal life and performance and eliminates the need for case drain.
- 2 **Pressure Fed Bearing** surface receives positive flow of clean, cool oil.
- 3 **Roller Stator® Motor Design** increases efficiency and life by using roller contact versus solid, sliding contact design.
- 4 **Match Ground Shaft** is matched to housing bore to maintain highest volumetric efficiencies.
- 5 **Heavy-Duty Drive Link** receives full flow lubrication to provide long life.

RS Series motors are the most economical model in the White Hydraulics product line, but are not low-tech. Unlike competitive products using power robbing, two-piece rotor set designs with sliding contact points, RS Series motors utilize the patented Roller Stator® design. Seven precision rollers for the contact points reduce friction, providing more power and longer life for your application. Each output shaft is custom ground to maintain exact tolerances between the housing and shaft, producing high volumetric efficiencies. Industry standard mounting flanges and output shafts allow the RS Series motors to interchange with competitive designs.



SPECIFICATIONS

Code	Displacement (in ³ /rev)	Max. Speed (RPM) - 1)Cont 2)Inter.		Max. Torque (lb-in) - 1)Cont 2)Inter.		Max. Pressure (PSI) - 1)Cont 2)Inter. 3)Peak				
		1	2	1	2	1	2	3		
050	3.2	400	490	6	10	730	840	1750	2000	2250
080	4.6	460	540	10	12	1070	1230	1750	2000	2250
090	5.4	420	580	10	14	1300	1480	1750	2000	2250
100	6.3	510	570	14	16	1500	1725	1750	2000	2250
110	6.8	460	600	14	18	1630	1900	1750	2000	2250
125	7.7	410	530	14	18	1600	1850	1500	1750	2250
160	10.0	370	460	16	20	1970	2350	1500	1750	2250
200	12.5	300	370	16	20	2640	3050	1500	1750	2250
250	15.5	300	360	20	24	2540	3040	1250	1500	1750
300	17.9	300	310	20	24	2460	3100	1000	1250	1500
400	24.9	190	220	20	24	3350	4100	1000	1250	1500

050 3.2 in³/rev

Flow GPM (LPM)	Pressure psi (bars)								Max. Cont.	Max. Inter.	Theo. RPM
	250 (17)	500 (35)	750 (52)	1000 (69)	1250 (86)	1500 (104)	1750 (121)	2000 (138)			
0.5 (2)	89 (10)	133 (15)	223 (25)	290 (33)	375 (42)	435 (49)					37
1 (4)	92 (10)	163 (18)	253 (29)	348 (39)	438 (49)	523 (59)	483 (55)				73
2 (8)	90 (10)	181 (20)	274 (31)	366 (41)	464 (52)	556 (63)	653 (74)	690 (78)			145
4 (15)	85 (10)	154 (17)	251 (28)	355 (40)	465 (53)	572 (65)	669 (76)	764 (86)			289
Max. Cont.		168 (19)	243 (27)	342 (39)	445 (50)	549 (62)	656 (74)	755 (85)			434
6 (23)		433	432	430	429	408	380	346			578
8 (30)		148 (17)	243 (27)	318 (36)	417 (47)	526 (59)	631 (71)				722
Max. Inter.		576	574	570	568	554	535				
10 (38)		119 (13)	218 (25)	307 (35)	429 (48)	499 (56)	593 (67)				
		718	711	701	700	689	682				
	Theo. Torque	127 (14)	255 (29)	382 (43)	510 (58)	637 (72)	764 (86)	892 (101)	1019 (115)		

Areas within white represent maximum motor efficiencies.

Torque, lb-in (Nm)
Speed, RPM

080 4.6 in³/rev

Flow GPM (LPM)	Pressure psi (bars)								Max. Cont.	Max. Inter.	Theo. RPM
	250 (17)	500 (35)	750 (52)	1000 (69)	1250 (86)	1500 (104)	1750 (121)	2000 (138)			
0.5 (2)	107 (12)	227 (26)	341 (39)	456 (51)	509 (58)						26
1 (4)	110 (12)	252 (29)	381 (43)	522 (59)	661 (75)	720 (81)					51
2 (8)	122 (14)	260 (29)	405 (46)	560 (63)	707 (80)	848 (96)	973 (110)	1016 (115)			101
4 (15)		263 (30)	416 (47)	574 (65)	726 (82)	871 (98)	1046 (118)	1184 (134)			201
6 (23)		200	196	193	184	168	150	121			302
8 (30)		252 (28)	403 (46)	562 (64)	721 (82)	869 (98)	1020 (115)	1183 (134)			402
Max. Cont.		301	297	293	287	271	252	218			503
10 (38)		221 (25)	379 (43)	555 (63)	703 (79)	860 (97)	1014 (115)	1172 (132)			603
Max. Inter.		400	399	393	390	375	355	330			
12 (45)			341 (39)	502 (57)	657 (74)	819 (93)	980 (111)	1135 (128)			
			502	500	498	496	472	443			
			314 (35)	446 (50)	625 (71)	816 (92)	932 (105)				
			602	600	599	598	580				
	Theo. Torque	183 (21)	366 (41)	549 (62)	732 (83)	916 (103)	1099 (124)	1282 (145)	1465 (166)		

DO NOT operate at maximum pressure and maximum flow simultaneously.

090 5.4 in³/rev

Flow GPM (LPM)	Pressure psi (bars)								Max. Cont.	Max. Inter.	Theo. RPM
	250 (17)	500 (35)	750 (52)	1000 (69)	1250 (86)	1500 (104)	1750 (121)	2000 (138)			
0.5 (2)	206 (23)	376 (43)	559 (63)	743 (84)	864 (98)	933 (105)					22
1 (4)		20	17	14	10	1					43
2 (8)		383 (43)	566 (64)	760 (86)	953 (108)	1123 (127)	1225 (138)				86
4 (15)		41	40	37	32	25	12				172
6 (23)		388 (44)	561 (63)	739 (83)	937 (106)	1121 (127)	1336 (151)	1495 (169)			257
8 (30)		85	84	81	75	66	51	31			343
Max. Cont.			538 (61)	754 (85)	920 (104)	1134 (128)	1309 (148)	1484 (168)			428
10 (38)			169	166	159	149	133	115			514
12 (45)				720 (81)	902 (102)	1105 (125)	1275 (144)	1450 (164)			599
				251	244	229	213	191			
				686 (78)	867 (98)	1080 (122)	1251 (141)	1448 (164)			
				338	330	318	300	278			
					824 (93)	1004 (113)	1210 (137)	1422 (161)			
					417	406	386	365			
					715 (81)	766 (87)	998 (113)				
					504	491	478				
						845 (95)	1095 (124)				
						581	566				
	Theo. Torque	215 (24)	430 (49)	645 (73)	860 (97)	1075 (121)	1290 (146)	1505 (170)	1720 (194)		

Tested at 129°F with an oil viscosity of 213 SUS

Note: Performance data is typical. Performance of production units varies slightly from one motor to another.

PERFORMANCE



100 6.3 in³/rev

Flow GPM (LPM)	Pressure psi (bars)								Max. Cont.	Max. Inter.	Theo. RPM
	250 (17)	500 (35)	750 (52)	1000 (69)	1250 (86)	1500 (104)	1750 (121)	2000 (138)			
0.5 (2)	221 (25)	461 (52)	676 (76)	870 (98)	1020 (115)						19
1 (4)	233 (26)	449 (51)	680 (77)	914 (103)	1116 (126)	1295 (146)	1473 (166)	1336 (151)			37
2 (8)		433 (49)	682 (77)	893 (101)	1108 (125)	1331 (150)	1538 (174)	1758 (199)			74
4 (15)			648 (73)	873 (99)	1088 (123)	1291 (146)	1504 (170)	1721 (195)			147
6 (23)			606 (69)	830 (94)	1062 (120)	1279 (145)	1463 (165)	1717 (194)			220
8 (30)				789 (89)	999 (113)	1254 (142)	1429 (161)	1658 (187)			294
10 (38)				693 (78)	905 (102)	1124 (127)	1380 (156)	1612 (182)			367
12 (45)					755 (85)	1049 (119)	1299 (147)	1526 (172)			440
Max. Cont.					433 (84)	421 (118)	405 (135)	384 (141)			514
Max. Inter.					507 (108)	497 (135)	484 (135)	465 (135)			587
						957 (108)	1197 (135)				
						574 (135)	566 (135)				
Theo. Torque	251 (28)	502 (57)	752 (85)	1003 (113)	1254 (142)	1505 (170)	1756 (198)	2006 (227)			

Areas within white represent maximum motor efficiencies.

Torque, lb-in (Nm)
Speed, RPM

110 6.8 in³/rev

Flow GPM (LPM)	Pressure psi (bars)								Max. Cont.	Max. Inter.	Theo. RPM
	250 (17)	500 (35)	750 (52)	1000 (69)	1250 (86)	1500 (104)	1750 (121)	2000 (138)			
0.5 (2)	227 (26)	481 (54)	689 (78)	888 (100)	961 (109)						17
1 (4)	253 (29)	489 (55)	733 (83)	974 (110)	1183 (134)	1356 (153)					34
2 (8)		503 (57)	727 (82)	969 (110)	1199 (135)	1431 (162)	1631 (184)	1590 (180)			68
4 (15)		479 (54)	706 (80)	951 (107)	1190 (134)	1437 (162)	1643 (186)	1911 (216)			136
6 (23)			669 (76)	934 (106)	1144 (129)	1357 (153)	1636 (185)	1826 (206)			204
8 (30)			621 (70)	862 (97)	1092 (123)	1336 (151)	1569 (177)	1788 (202)			272
10 (38)				779 (88)	1025 (116)	1294 (146)	1505 (170)	1783 (201)			340
12 (45)				764 (86)	963 (109)	1226 (139)	1482 (168)	1683 (190)			408
Max. Cont.					901 (102)	1142 (129)	1378 (156)	1626 (184)			476
Max. Inter.					844 (95)	1075 (121)	1297 (147)				544
					535 (111)	523 (136)	505 (136)				612
						984 (111)	1205 (136)				
						595 (136)	579 (136)				
Theo. Torque	271 (31)	541 (61)	812 (92)	1083 (122)	1354 (153)	1624 (184)	1895 (214)	2166 (245)			

DO NOT operate at maximum pressure and maximum flow simultaneously.

Tested at 129°F with an oil viscosity of 213 SUS

Note: Performance data is typical. Performance of production units varies slightly from one motor to another.

125 7.7 in³/rev

Flow GPM (LPM)	Pressure psi (bars)						Max. Cont.	Max. Inter.	Theo. RPM
	250 (17)	500 (35)	750 (52)	1000 (69)	1250 (86)	1500 (104)			
0.5 (2)	255 (29) 14	534 (60) 12	758 (86) 10	990 (112) 7	1145 (129) 2			15	
1 (4)	251 (28) 29	545 (62) 28	819 (93) 26	1073 (121) 23	1319 (149) 18	1531 (173) 10	1559 (176) 1	30	
2 (8)		537 (61) 58	816 (92) 57	1103 (125) 54	1356 (153) 49	1609 (182) 41	1856 (210) 29	60	
4 (15)		538 (61) 118	797 (90) 115	1084 (123) 108	1338 (151) 99	1602 (181) 84	1860 (210) 65	120	
6 (23)			771 (87) 177	1032 (117) 168	1321 (149) 158	1566 (177) 145	1838 (208) 123	180	
8 (30)			722 (82) 234	987 (112) 229	1257 (142) 215	1548 (175) 203	1781 (201) 186	240	
10 (38)				927 (105) 290	1214 (137) 277	1474 (167) 263	1720 (194) 244	300	
12 (45)				859 (97) 349	1066 (120) 339	1386 (157) 322	1622 (183) 306	360	
Max. Cont. 14 (53)				787 (89) 409	1051 (119) 385	1295 (146) 376	1536 (174) 367	420	
Max. Inter. 16 (61)					879 (99) 471	1163 (131) 459		480	
Max. Inter. 18 (68)					885 (100) 528	1053 (119) 512		540	
Theo. Torque	307 (35)	613 (69)	920 (104)	1226 (139)	1533 (173)	1839 (208)	2146 (242)		

Areas within white represent maximum motor efficiencies.

Torque, lb-in (Nm)
Speed, RPM

160 10.0 in³/rev

Flow GPM (LPM)	Pressure psi (bars)						Max. Cont.	Max. Inter.	Theo. RPM
	250 (17)	500 (35)	750 (52)	1000 (69)	1250 (86)	1500 (104)			
0.5 (2)	281 (32) 11	630 (71) 10	908 (103) 8	1247 (141) 6	1481 (167) 2			12	
1 (4)	308 (35) 22	677 (76) 21	983 (111) 20	1245 (141) 20	1615 (182) 16	1867 (211) 11	2070 (234) 3	24	
2 (8)	320 (36) 45	694 (78) 45	1023 (116) 44	1403 (159) 42	1707 (193) 39	1974 (223) 34	2279 (257) 27	47	
4 (15)		633 (72) 91	1007 (114) 90	1375 (155) 86	1679 (190) 80	1998 (226) 71	2319 (262) 56	93	
6 (23)		608 (69) 138	961 (109) 137	1318 (149) 132	1667 (188) 125	1979 (224) 114	2359 (267) 101	139	
8 (30)		573 (65) 184	921 (104) 183	1233 (139) 180	1597 (181) 171	1941 (219) 161	2284 (258) 148	185	
10 (38)			837 (95) 230	1184 (134) 229	1531 (173) 221	1874 (212) 211	2220 (251) 197	231	
12 (45)			736 (83) 276	1095 (124) 275	1432 (162) 270	1796 (203) 259	2133 (241) 245	278	
14 (53)			643 (73) 322	1010 (114) 321	1366 (154) 320	1714 (194) 310	2045 (231) 295	324	
Max. Cont. 16 (61)				901 (102) 369	1255 (142) 368	1585 (179) 362	1936 (219) 345	370	
Max. Inter. 18 (68)				824 (93) 415	1121 (127) 414	1447 (164) 410		416	
Max. Inter. 20 (76)					980 (111) 460	1348 (152) 460		462	
Theo. Torque	398 (45)	796 (90)	1194 (135)	1592 (180)	1990 (225)	2389 (270)	2787 (315)		

DO NOT operate at maximum pressure and maximum flow simultaneously.

Tested at 129°F with an oil viscosity of 213 SUS

Note: Performance data is typical. Performance of production units varies slightly from one motor to another.

PERFORMANCE

200 12.5 in³/rev

Flow GPM (LPM)	Pressure psi (bars)						Max. Cont.	Max. Inter.	Theo. RPM
	250 (17)	500 (35)	750 (52)	1000 (69)	1250 (86)	1500 (104)			
0.5 (2)	414 (47) 8	846 (96) 7	1250 (141) 6	1621 (183) 5	1983 (224) 3			10	
1 (4)	432 (49) 17	865 (98) 17	1360 (154) 15	1732 (196) 14	2136 (241) 11	2517 (284) 9	2811 (318) 5	19	
2 (8)	416 (47) 36	927 (105) 36	1386 (157) 34	1809 (204) 31	2166 (245) 29	2642 (299) 23	3019 (341) 17	37	
4 (15)	380 (43) 73	849 (96) 73	1349 (152) 72	1798 (203) 68	2204 (249) 65	2641 (298) 60	3094 (350) 52	74	
6 (23)		795 (90) 110	1322 (149) 110	1721 (194) 106	2207 (249) 103	2634 (298) 96	3007 (340) 90	111	
8 (30)		734 (83) 147	1228 (139) 146	1697 (192) 144	2102 (238) 142	2621 (296) 133	2997 (339) 126	148	
10 (38)		666 (75) 184	1134 (128) 183	1546 (175) 183	2013 (227) 181	2482 (280) 172	2910 (329) 166	185	
12 (45)			1026 (116) 221	1475 (167) 220	1924 (217) 218	2322 (262) 214	2795 (316) 205	222	
14 (53)			862 (97) 258	1358 (153) 257	1811 (205) 256	2218 (251) 252	2656 (300) 249	259	
Max. Cont.			752 (85) 295	1212 (137) 295	1687 (191) 294	2127 (240) 291	2583 (292) 284	296	
18 (68)				1079 (122) 332	1541 (174) 331	1981 (224) 330		333	
Max. Inter.				924 (104) 369	1366 (154) 368	1833 (207) 367		370	
Theo. Torque	498 (56)	995 (112)	1493 (169)	1990 (225)	2488 (281)	2986 (337)	3483 (394)		

Areas within white represent maximum motor efficiencies.

Torque, lb-in (Nm)
Speed, RPM

250 15.5 in³/rev

Flow GPM (LPM)	Pressure psi (bars)					Max. Cont.	Max. Inter.	Theo. RPM
	250 (17)	500 (35)	750 (52)	1000 (69)	1500 (104)			
0.5 (2)	457 (52) 6	919 (104) 4	1327 (150) 2					8
1 (4)	458 (52) 14	988 (112) 12	1491 (168) 10	1966 (222) 7	2361 (267) 4	2658 (300) 1		15
2 (8)	490 (55) 29	1018 (115) 27	1512 (171) 24	2041 (231) 20	2547 (288) 14	2856 (323) 9		30
4 (15)	437 (49) 59	1028 (116) 58	1517 (171) 56	2064 (233) 51	2551 (288) 44	3040 (344) 34		60
6 (23)	398 (45) 88	930 (105) 88	1440 (163) 87	1966 (222) 82	2512 (284) 76	3051 (345) 62		90
8 (30)		795 (90) 118	1305 (147) 117	1649 (186) 115	2372 (268) 106	2918 (330) 96		120
10 (38)		676 (76) 148	1253 (142) 147	1738 (196) 146	2263 (256) 140	2754 (311) 133		150
12 (45)		225 (25) 178	1098 (124) 177	1642 (186) 176	2071 (234) 173	2499 (282) 163		179
14 (53)			784 (89) 208	1386 (157) 206	1962 (222) 204	2460 (278) 194		209
16 (61)			722 (82) 237	1256 (142) 236	1786 (202) 234	2306 (261) 228		239
18 (68)				1096 (124) 266	1618 (183) 264	2126 (240) 259		269
Max. Cont.				842 (95) 297	1387 (157) 295	1919 (217) 293		299
22 (83)					1147 (130) 327			328
Max. Inter.					874 (99) 356			358
Theo. Torque	617 (70)	1234 (139)	1851 (209)	2468 (279)	3085 (349)	3702 (418)		

DO NOT operate at maximum pressure and maximum flow simultaneously.

Tested at 129°F with an oil viscosity of 213 SUS

Note: Performance data is typical. Performance of production units varies slightly from one motor to another.

300 17.9 in³/rev

Flow GPM (LPM)	Pressure psi (bars)			Max. Cont.	Max. Inter.	Theo. RPM
	250 (17)	500 (35)	750 (52)	1000 (69)	1250 (86)	
0.5 (2)	516 (58) 5	1111 (126) 5	1638 (185) 5			7
1 (4)	563 (64) 12	1096 (124) 12	1673 (189) 11	2325 (263) 10	2912 (329) 9	13
2 (8)	564 (64) 25	1180 (133) 25	1758 (199) 24	2375 (268) 23	3033 (343) 21	26
4 (15)	524 (59) 51	1193 (135) 51	1773 (200) 50	2384 (269) 50	3145 (355) 47	52
6 (23)	468 (53) 76	1116 (126) 76	1728 (195) 75	2463 (278) 75	3096 (350) 74	78
8 (30)		954 (108) 102	1650 (186) 101	2218 (251) 101	3000 (339) 100	104
10 (38)		887 (100) 128	1503 (170) 128	2132 (241) 127	2824 (319) 126	130
12 (45)		698 (79) 154	1381 (156) 154	1944 (220) 153	2660 (301) 152	155
14 (53)		558 (63) 180	1206 (136) 180	1780 (201) 179	2512 (284) 179	181
16 (61)			1000 (113) 205	1630 (184) 204	2213 (250) 203	207
18 (68)				1382 (156) 231	1915 (216) 230	233
Max. Cont.				1054 (119) 257	1679 (190) 256	259
Max. Inter.				738 (83) 283		284
						310
Theo. Torque	713 (81)	1425 (161)	2138 (242)	2850 (322)	3563 (403)	

Areas within white represent maximum motor efficiencies.

Torque, lb-in (Nm)
Speed, RPM

400 24.9 in³/rev

Flow GPM (LPM)	Pressure psi (bars)			Max. Cont.	Max. Inter.	Theo. RPM
	250 (17)	500 (35)	750 (52)	1000 (69)	1250 (86)	
0.5 (2)	767 (87) 3	1656 (187) 2				5
1 (4)	793 (90) 8	1597 (180) 8	2425 (274) 6	3270 (369) 6	3951 (446) 3	10
2 (8)	777 (88) 18	1550 (175) 17	2528 (286) 16	3309 (374) 15	4124 (466) 12	19
4 (15)	753 (85) 37	1565 (177) 36	2540 (287) 35	3384 (382) 33	4153 (469) 29	38
6 (23)	631 (71) 55	1498 (169) 55	2477 (280) 54	3273 (370) 52	4122 (466) 49	56
8 (30)	516 (58) 73	1396 (158) 71	2274 (257) 70	3119 (352) 69	3901 (441) 68	75
10 (38)		1247 (141) 92	2103 (238) 91	2906 (328) 90	3837 (434) 87	93
12 (45)		1042 (118) 110	1989 (225) 109	2682 (303) 108	3613 (408) 107	112
14 (53)		792 (89) 129	1670 (189) 128	2463 (278) 126	3251 (367) 124	130
16 (61)		520 (59) 147	1359 (154) 146	2204 (249) 144	2954 (334) 143	149
18 (68)			1027 (116) 166	1934 (219) 165	2746 (310) 164	167
Max. Cont.			790 (89) 185	1663 (188) 184	2336 (264) 183	186
Max. Inter.				1242 (140) 204		205
				824 (93) 222		223
Theo. Torque	991 (112)	1982 (224)	2974 (336)	3965 (448)	4956 (560)	

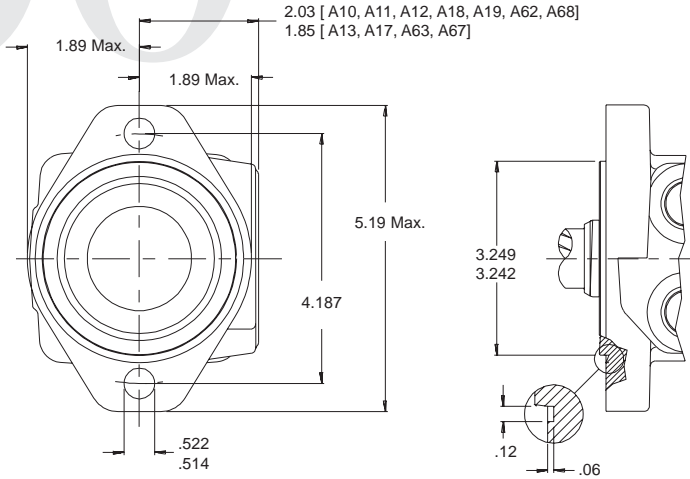
DO NOT operate at maximum pressure and maximum flow simultaneously.

Tested at 129°F with an oil viscosity of 213 SUS

Note: Performance data is typical. Performance of production units varies slightly from one motor to another.

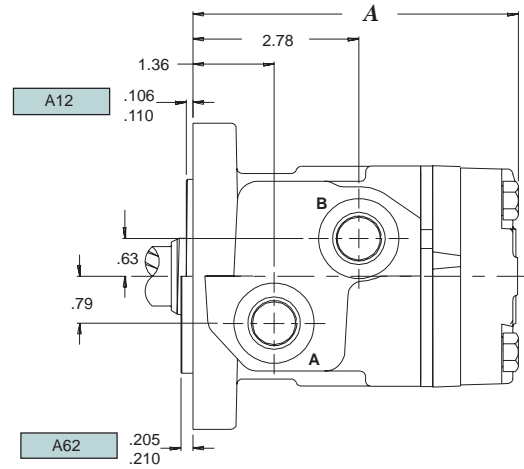
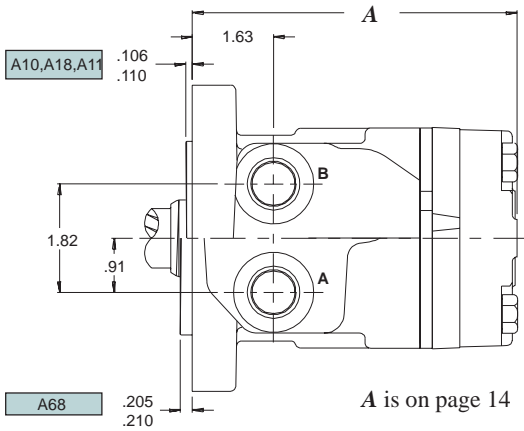
2000

HOUSINGS SAE A FLANGE



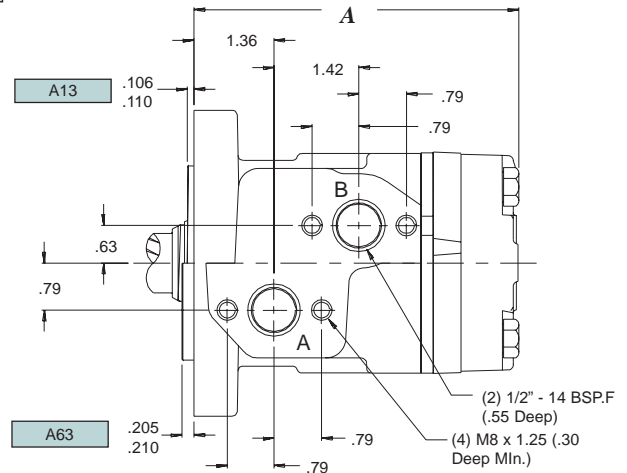
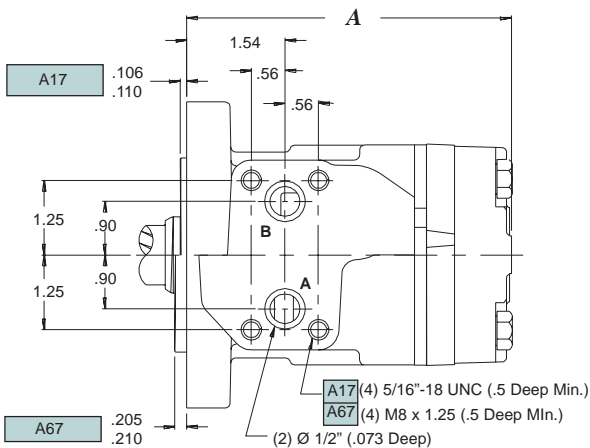
- A10** 2-Hole Aligned Ports 1/2" NPT
- A18** 2-Hole Aligned Ports 1/2" BSP.F
- A68** 2-Hole Aligned Ports 1/2" BSP.F
- A11** 2-Hole Aligned Ports 7/8" O-Ring

- A12** 2-Hole Front Ports 1/2" BSP.F
- A62** 2-Hole Front Ports 1/2" BSP.F

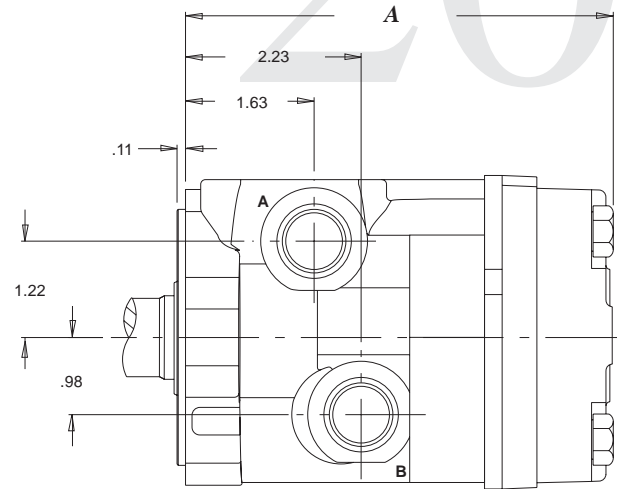


- A17** 2-Hole Manifold Ports
- A67** 2-Hole Manifold Ports

- A13** 2-Hole Manifold Ports 1/2" BSP.F
- A63** 2-Hole Manifold Ports 1/2" BSP.F

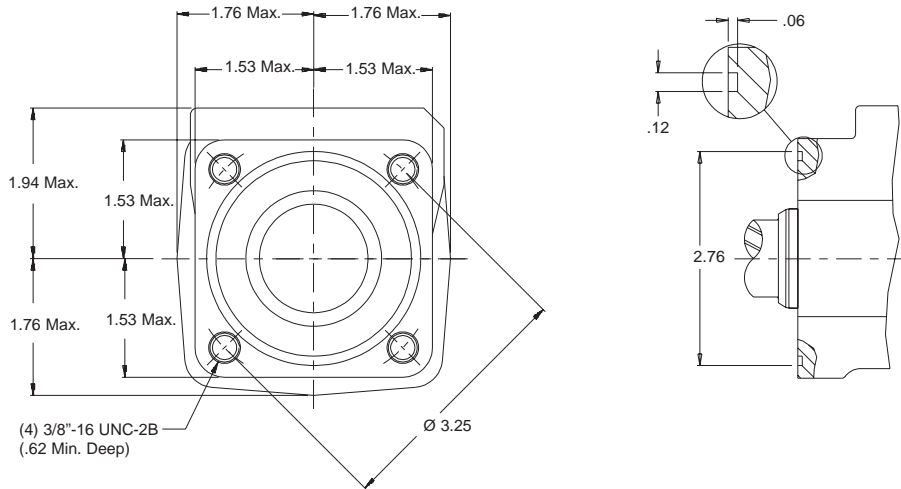


- A70** 2-Hole Side Ports 1/2" NPT
- A71** 2-Hole Side Ports 7/8" O-Ring
- A72** 2-Hole Side Ports 1/2" BSP.F

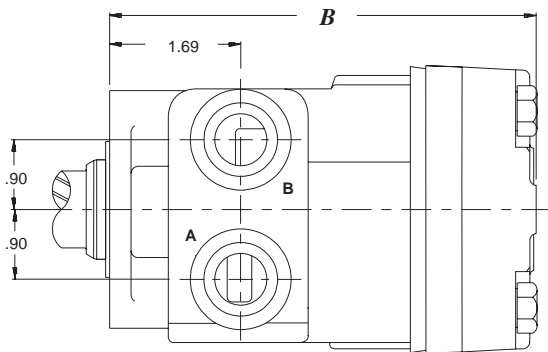


A is on page 14

4-HOLE FLANGE

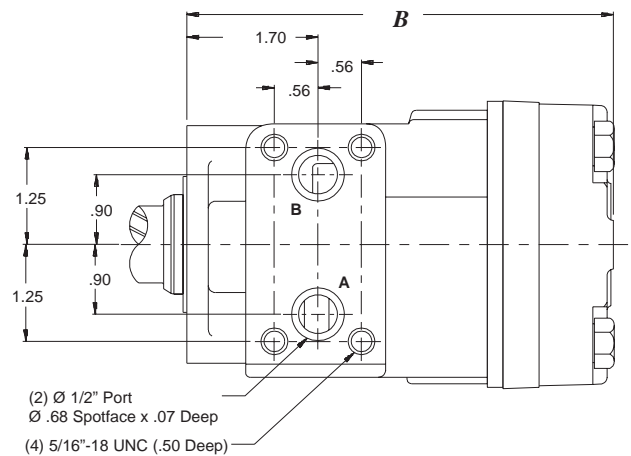


- F30** 4-Hole Aligned Ports 1/2" NPT
- F31** 4-Hole Aligned Ports 7/8" O-Ring



B is on page 14

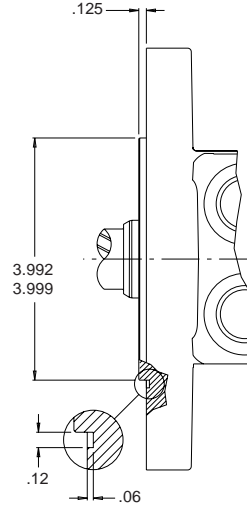
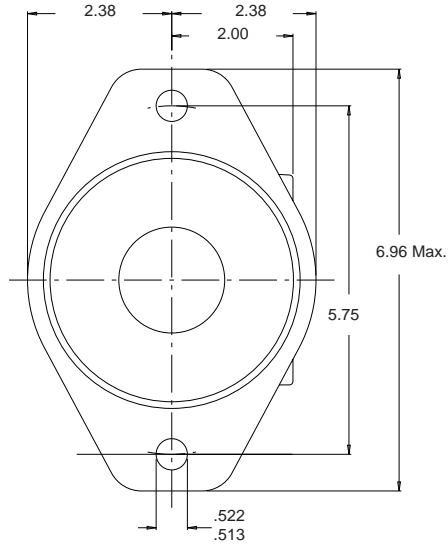
- F37** 4-Hole Front Manifold Ports



2000

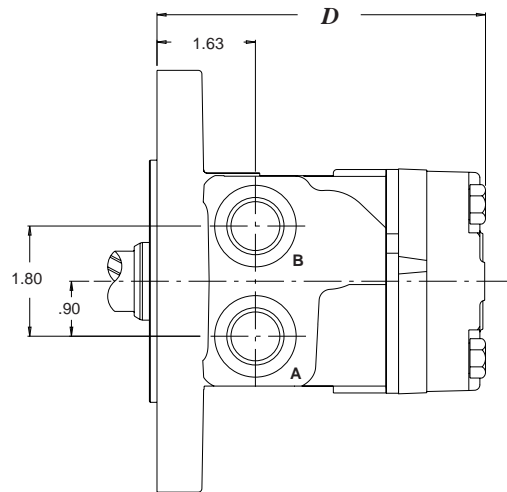
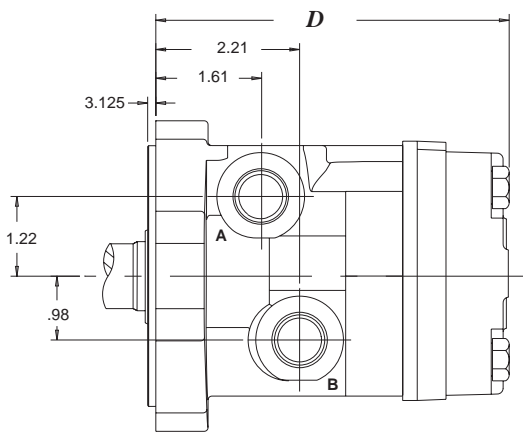
HOUSINGS

SAE B FLANGE



- B70** 2-Hole Side Ports 1/2" NPT
- B71** 2-Hole Side Ports 7/8" O-Ring
- B78** 2-Hole Side Ports 1/2" BSP.F

- B18** 2-Hole Aligned Ports 1/2" BSP.F
- B10** 2-Hole Aligned Ports 1/2" NPT
- B11** 2-Hole Aligned Ports 7/8" O-ring



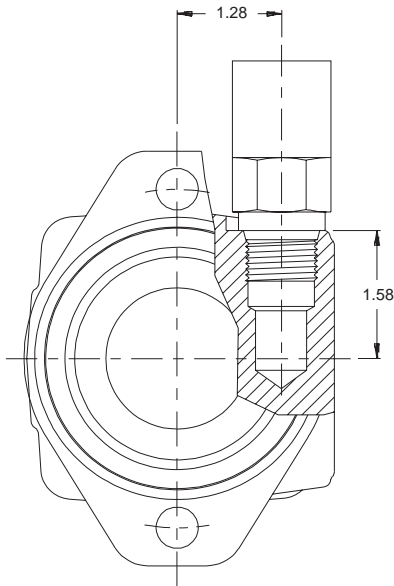
D is on page 14

VALVE CAVITY HOUSINGS

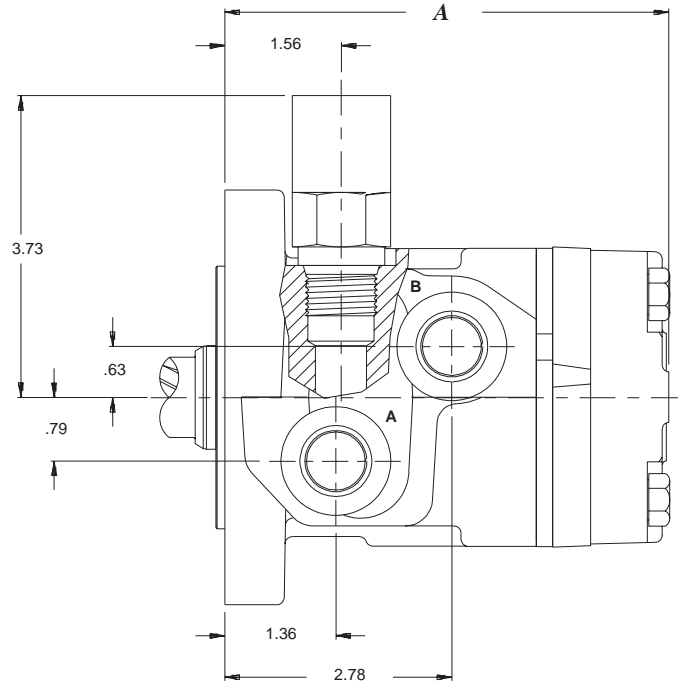
A19 2-Hole Offset Ports 7/8" O-Ring

The mounting dimensions are shown on on page 10.

Both housings shown on this page are only available with valve cavities.



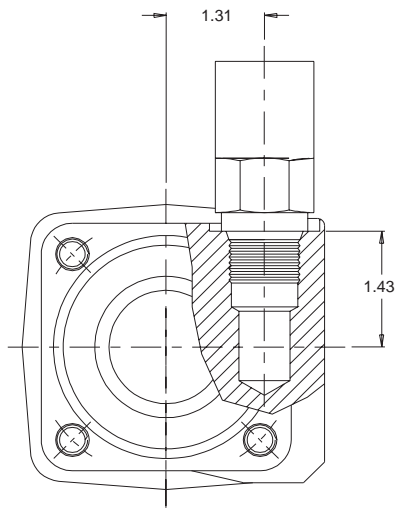
A is on page 14



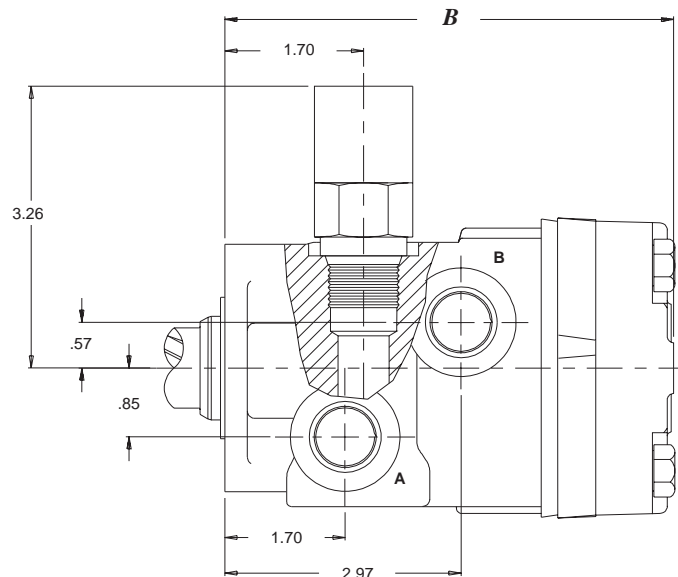
F39 4-Hole Front Offset Ports 7/8" O-Ring

The mounting dimensions are shown on on page 11.

Optional Relief Cartridge Shown Installed



Valve Cavity - 10 Series/2-way (7/8"-14 UNF-2B)



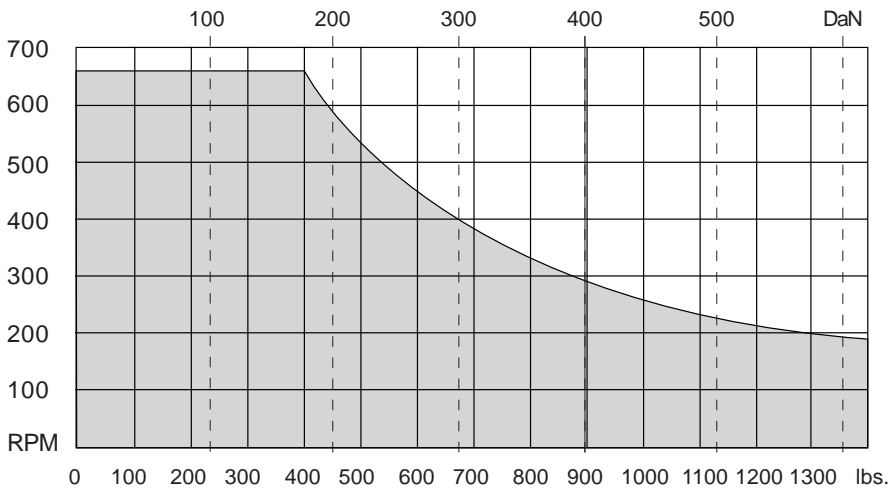
B is on page 14

TECHNICAL

ALLOWABLE SIDE LOAD

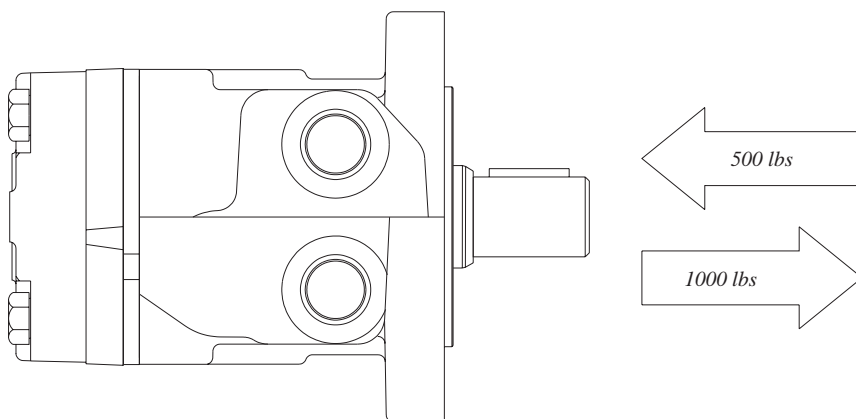
Operating conditions within the shaded area will maintain acceptable oil film lubrication with recommended fluids. Operating conditions outside the shaded area are susceptible to motor failure due to oil starvation and/or excessive heat generation. Fluids with low lubricity or low viscosity may require the maximum load and speed ratings to be derated to provide acceptable motor life and performance.

RS SERIES MOTOR



Bearing Curve: The bearing curve above represents the side load capacity of the motor at the centerline of the key for various motor speeds.

THRUST LOAD



RS motor weights vary ± 1 lb depending upon motor configuration.

LENGTH AND WEIGHT TABLES

SAE "A" Flange

Code	A in	Weight lbs
050	5.29	16.1
080	5.44	16.5
090	5.51	16.8
100	5.75	17.7
110	5.65	17.2
125	5.75	17.7
160	5.97	18.2
200	6.22	18.8
250	6.53	19.8
300	6.76	20.5
400	7.47	22.7

For Speed Sensor motors add .82 to A

4-Hole Flange

Code	B in	Weight lbs
050	5.36	13.4
080	5.50	13.9
090	5.58	14.1
100	5.82	15.1
110	5.72	14.6
125	5.82	15.1
160	6.04	15.4
200	6.29	16.0
250	6.59	17.1
300	6.83	17.9
400	7.54	20.2

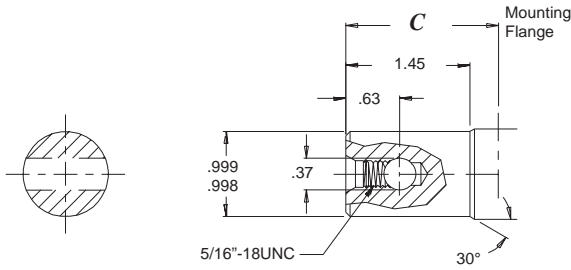
For Speed Sensor motors add .67 to B

SAE "B" Flange

Code	D in	Weight lbs
050	5.29	18.6
080	5.44	19.0
090	5.51	19.3
100	5.75	20.2
110	5.65	19.7
125	5.75	20.2
160	5.97	20.7
200	6.22	21.3
250	6.53	22.3
300	6.76	23.0
400	7.47	25.2

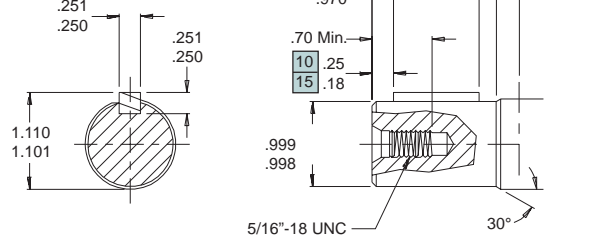
05 1" Pinhole

Max. Torque: 6000 lb-in



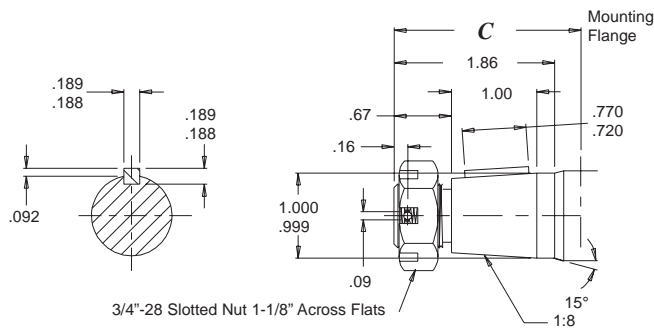
10 1" Straight *15 1" Straight Ext.

Max. Torque: 5800 lb-in



13 1" Tapered

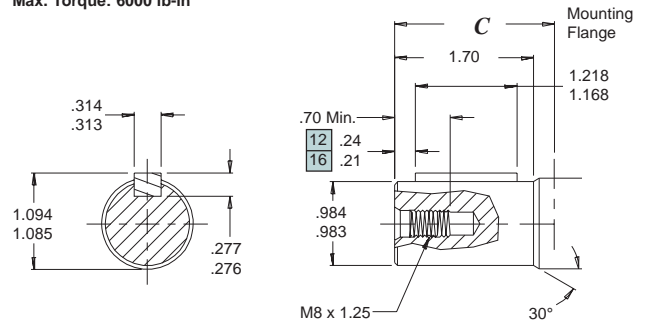
Max. Torque: 5800 lb-in



Note: A slotted nut is standard on this shaft.

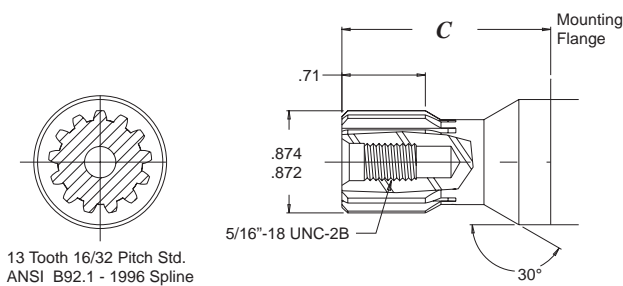
12 25mm Straight *16 25mm Straight Ext.

Max. Torque: 6000 lb-in



01 13 Tooth Spline

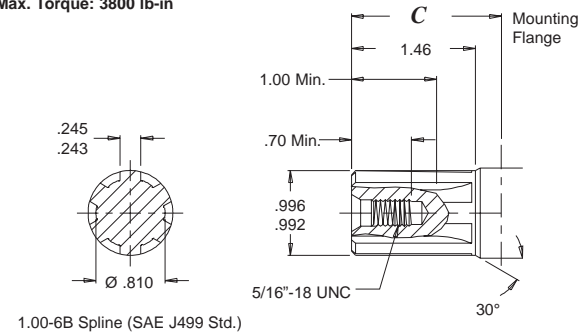
Max. Torque: 1500 lb-in



13 Tooth 16/32 Pitch Std.
ANSI B92.1 - 1996 Spline

02 6-B Spline

Max. Torque: 3800 lb-in



SHAFT LENGTHS

Code	SAE "A" Flange (in)	4-Hole Flange (in)	SAE "B" Flange (in)
05	1.77	1.70	1.77
10	1.77	1.70	1.77
02	1.77	1.70	1.77
12	2.20	2.09	2.20
13	2.28	2.17	2.28
15	1.61	1.57	1.61
16	1.61	1.57	1.61
01	1.70	1.57	1.70

* The #15 and #16 shafts are only to be used with speed sensor motors.

Shaft lengths vary ± .030 in

ORDERING INFORMATION

SERIES
201 — REVERSED TIMING
200

DISPLACEMENT **HOUSING** **SHAFT** **OPTIONS** **MISCELLANEOUS**

Code	Displacements
050	3.2 in ³ /rev
080	4.6 in ³ /rev
090	5.4 in ³ /rev
100	6.3 in ³ /rev
110	6.8 in ³ /rev
125	7.7 in ³ /rev
160	10.0 in ³ /rev
200	12.5 in ³ /rev
250	15.5 in ³ /rev
300	17.9 in ³ /rev
400	24.9 in ³ /rev

Code	Housings
A10	2-Hole 1/2" NPT Aligned Ports (S)
A11	2-Hole 7/8" O-ring Aligned Ports (S)
A12	2-Hole 1/2" BSP.F Offset Ports (S)
A13	2-Hole 1/2" BSP.F Offset Manifold (S)
A17	2-Hole Manifold Ports (S)
A18	2-Hole 1/2" BSP.F Aligned (S)
A19	2-Hole 7/8" O-ring With Valve Cavity (S)
A62	2-Hole 1/2" BSP.F Offset w/.200 Pilot
A63	2-Hole 1/2" BSP.F Offset Manifold w/.200 Pilot
A67	2-Hole Manifold Ports w/.200 Pilot
A68	2-Hole 1/2" BSP.F Aligned w/.200 Pilot
A70	2-Hole 1/2" NPT Side Ports
A71	2-Hole 7/8" O-ring Side Ports
A72	2-Hole 1/2" BSP.F Side Ports
B10	2-Hole SAE B Flange 1/2" NPT Aligned
B11	2-Hole SAE B Flange 7/8" O-ring Aligned
B18	2-Hole SAE B Flange 1/2" BSP.F Aligned
B70	2-Hole SAE B Flange 1/2" NPT Side Ports
B71	2-Hole SAE B Flange 7/8" O-ring Side Ports
B78	2-Hole SAE B Flange 1/2" BSP.F Side Ports
F30	4-Hole 1/2" NPT Aligned Ports (S)
F31	4-Hole 7/8" O-ring Aligned Ports (S)
F37	4-Hole Manifold Ports (S)
F39	4-Hole 7/8" O-Ring W/Valve Cavity (S)

Code	Shafts
01	7/8" 13 Tooth
02	1" 6-B Spline
05	1" Pinhole
10	1" Straight
12	25mm Straight
13	1" Tapered
15	1" Straight Ext. (S)
16	25mm Ext. (S)

Code	Options
AA	None
AC	Freeturning Rotor

ADD ONS

Code	Options
A	Standard
B	Lock Nut
C	Solid Hex Nut
**W	4-Pin Male Weatherpack Connector (Dual) (S)
**X	4-Pin M12 Male Connector (Dual) (S)
**Y	3-Pin Male Weatherpack Connector (Single) (S)
**Z	4-Pin M12 Male Connector (Single) (S)

PAINT

Code	Options
A	Dark Metallic Gray
B	Dark Metallic Gray (Unpainted Flange Face)
C	Black
D	Black (Unpainted Flange Face)
Z	No Paint

CAVITY

Code	Options
A	None
*B	Relief Valve Cavity
*C	1000 psi Relief Valve Installed
*D	1250 psi Relief Valve Installed
*E	1500 psi Relief Valve Installed
*F	1750 psi Relief Valve Installed
*G	2000 psi Relief Valve Installed

* Available with A19 and F39 housings
 ** Available with A10, A11, A12, A13, A17, A18, A19, F30, F31, F37, and F39 housings and must use the 15 or 16 shaft
 (S) Speed sensor components

200

201

ROTATION

For applications requiring the motor to rotate in only one direction, shaft seal life may be prolonged by pressurizing the “B” port of the motor. To obtain the desired direction of shaft rotation, use the graphic above to determine the rotation code for the motor. For bi-directional applications, the 200 series is recommended. Preferred rotation is based on rotor timing. Changing preferred direction requires no additional parts.



whitedriveproducts

- Affordable performance
- Superior Roller Stator[®] design
- For medium duty applications where side load is present

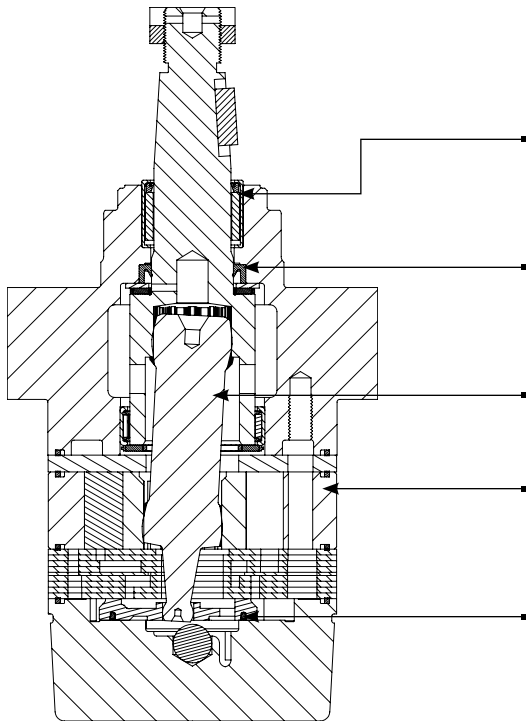


THE **NEW**
WVG

WG

OVERVIEW

The White Drive Products tradition of providing motors that excel in demanding applications continues with the WG series. WG motors provide an exceptionally solid platform for any medium-duty application where sideload may present a concern. The WG incorporates our Roller Stator® design which reduces friction and extends motor life. With displacements ranging from 41 - 404 cc [2.5 - 24.4 in³/rev.] and a choice of mounting, shaft, and port options, this motor is made to satisfy a variety of applications. The WG is a perfect fit when you require improved performance and long motor life at an affordable price. Applications include, but are not limited to, light to medium duty wheel drives, feed rollers, augers, brush drives, and conveyors.



KEY FEATURES

Needle Roller Bearing is in optimum location to allow load to be placed as close to the center line of bearing as possible.

High Pressure Buna® Shaft Seal offers superior seal life and performance and eliminates the need for a case drain.

Heavy-Duty Drive Link receives full flow lubrication to provide long life.

Roller Stator® Motor Design increases efficiency and life by using roller contact versus solid, sliding contact design.

Rubber Energized Steel Face Seal does not extrude or melt under high pressure or high temperature.

SPECIFICATIONS

CODE	Displacement cc [in ³ /rev]	Max. Speed rpm		Max. Flow lpm [gpm]		Max. Torque Nm [lb-in]		Max. Pressure bar [psi]		
		cont.	inter.	cont.	inter.	cont.	inter.	cont.	inter.	peak
040	41 [2.5]	830	1020	34 [9]	42 [11]	71 [630]	100 [870]	138 [2000]	190 [2750]	207 [3000]
045	44 [2.7]	770	940	34 [9]	42 [11]	78 [685]	108 [955]	138 [2000]	190 [2750]	207 [3000]
060	60 [3.6]	760	950	45 [12]	57 [15]	107 [950]	150 [1320]	138 [2000]	190 [2750]	207 [3000]
070	70 [4.3]	650	810	45 [12]	57 [15]	127 [1120]	176 [1560]	138 [2000]	190 [2750]	207 [3000]
090	88 [5.4]	520	650	45 [12]	57 [15]	162 [1430]	224 [1985]	138 [2000]	190 [2750]	207 [3000]
100	100 [6.1]	450	570	45 [12]	57 [15]	185 [1640]	257 [2275]	138 [2000]	190 [2750]	207 [3000]
130	129 [7.9]	350	440	45 [12]	57 [15]	241 [2135]	334 [2960]	138 [2000]	190 [2750]	207 [3000]
160	161 [9.8]	280	350	45 [12]	57 [15]	304 [2690]	421 [3730]	138 [2000]	190 [2750]	207 [3000]
200	200 [12.2]	220	280	45 [12]	57 [15]	379 [3350]	525 [4650]	138 [2000]	190 [2750]	207 [3000]
230	231 [14.1]	240	330	57 [15]	76 [20]	380 [3380]	529 [4680]	121 [1750]	165 [2400]	200 [2900]
320	322 [19.7]	175	235	57 [15]	76 [20]	458 [4050]	600 [5300]	103 [1500]	134 [1950]	169 [2450]
400	404 [24.4]	140	185	57 [15]	76 [20]	548 [4850]	758 [6710]	100 [1450]	135 [1960]	170 [2460]



040	Pressure - bars [psi]					Max. Cont.	Max. Inter.
	35 [500]	69 [1000]	104 [1500]	138 [2000]	190 [2750]		

41 cc [2.5 in³]/rev.]

Max. Cont.	2 [0.5]	13 [117]	29 [259]	45 [401]			Theoretical rpm					
	4 [1]	14 [126]	31 [276]	48 [427]	65 [577]							
	8 [2]	15 [134]	33 [293]	51 [453]	69 [612]	96 [852]						
	11 [3]	15 [136]	34 [299]	52 [462]	71 [625]	98 [869]						
	15 [4]	15 [136]	34 [300]	52 [464]	71 [628]	99 [874]						
	19 [5]	15 [134]	34 [298]	52 [462]	71 [626]	98 [872]						
	27 [7]	15 [129]	33 [291]	51 [454]	70 [617]	97 [861]						
	34 [9]	14 [122]	32 [283]	50 [445]	69 [607]	96 [849]						
	42 [11]	13 [115]	31 [276]	49 [437]	68 [599]							
	Max. Inter.	1021	939	835	650	464		372	279	186	93	47

Torque - Nm [lb-in], Speed rpm

22 [198]	45 [396]	67 [595]	90 [793]	123 [1090]
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Theoretical Torque - Nm [lb-in]

045	Pressure - bars [psi]					Max. Cont.	Max. Inter.
	35 [500]	69 [1000]	104 [1500]	138 [2000]	190 [2750]		

44 cc [2.7 in³]/rev.]

Max. Cont.	2 [0.5]	15 [131]	32 [285]	50 [438]			Theoretical rpm					
	4 [1]	16 [140]	34 [303]	53 [467]	71 [631]							
	8 [2]	17 [148]	36 [322]	56 [496]	76 [669]	105 [930]						
	11 [3]	17 [151]	37 [328]	57 [506]	77 [683]	107 [950]						
	15 [4]	17 [150]	37 [329]	57 [508]	77 [687]	107 [955]						
	19 [5]	17 [147]	37 [326]	57 [505]	77 [685]	108 [953]						
	27 [7]	16 [140]	36 [318]	56 [496]	76 [674]	106 [942]						
	34 [9]	15 [131]	35 [308]	55 [485]	75 [662]	105 [928]						
	42 [11]	14 [121]	34 [298]	54 [475]	74 [652]							
	Max. Inter.	942	866	770	599	428		343	257	172	86	43

Torque - Nm [lb-in], Speed rpm

24 [215]	49 [430]	73 [645]	97 [860]	134 [1182]
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Theoretical Torque - Nm [lb-in]

060	Pressure - bars [psi]					Max. Cont.	Max. Inter.
	35 [500]	69 [1000]	104 [1500]	138 [2000]	190 [2750]		

60 cc [3.6 in³]/rev.]

Max. Cont.	2 [0.5]	22 [191]	45 [400]	69 [608]			Theoretical rpm				
	4 [1]	23 [203]	48 [425]	73 [648]	98 [870]						
	8 [2]	24 [213]	51 [450]	78 [687]	104 [924]	145 [1280]					
	11 [3]	24 [214]	52 [458]	79 [702]	107 [945]	148 [1310]					
	15 [4]	24 [211]	52 [458]	80 [704]	107 [950]	149 [1320]					
	19 [5]	23 [205]	51 [453]	79 [700]	107 [948]	149 [1319]					
	27 [7]	21 [190]	49 [437]	77 [685]	105 [932]	147 [1304]					
	34 [9]	19 [170]	47 [417]	75 [664]	103 [912]	145 [1282]					
	45 [12]	15 [136]	43 [384]	71 [632]	99 [879]	141 [1251]					
	57 [15]	11 [98]	39 [349]	68 [599]	96 [850]						
	Max. Inter.	952	893	762	572	445		318	254	191	127

Torque - Nm [lb-in], Speed rpm

33 [952]	65 [580]	98 [869]	131 [1159]	180 [1594]
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Theoretical Torque - Nm [lb-in]

070	Pressure - bars [psi]					Max. Cont.	Max. Inter.
	35 [500]	69 [1000]	104 [1500]	138 [2000]	190 [2750]		

70 cc [4.3 in³]/rev.]

Max. Cont.	2 [0.5]	26 [231]	54 [474]	81 [718]			Theoretical rpm				
	4 [1]	28 [244]	57 [504]	86 [765]	116 [1025]						
	8 [2]	29 [255]	60 [534]	92 [812]	123 [1090]	170 [1507]					
	11 [3]	29 [256]	61 [542]	94 [829]	126 [1115]	175 [1544]					
	15 [4]	28 [251]	61 [541]	94 [831]	127 [1121]	176 [1557]					
	19 [5]	27 [243]	60 [535]	93 [827]	126 [1119]	176 [1556]					
	27 [7]	25 [222]	58 [514]	91 [807]	124 [1100]	174 [1539]					
	34 [9]	22 [196]	55 [488]	88 [781]	121 [1073]	171 [1512]					
	45 [12]	17 [149]	50 [443]	83 [736]	116 [1030]	166 [1470]					
	57 [15]	11 [96]	44 [393]	78 [690]	111 [986]						
	Max. Inter.	816	765	653	490	381		272	218	164	109

Torque - Nm [lb-in], Speed rpm

38 [338]	76 [677]	115 [1015]	153 [1354]	210 [1861]
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Theoretical Torque - Nm [lb-in]



NOTE:

Areas within white represent maximum motor efficiencies. DO NOT operate at maximum pressure and maximum flow simultaneously. Tested at 54°C [129°F] with an oil viscosity of 46 cSt [213 SUS]. Performance data is typical. Performance of production units varies slightly from one motor to another. This note applies to all performance charts on this page and pages to follow



Flow - lpm [gpm]	Pressure - bars [psi]					Max. Cont.	Max. Inter.	Theoretical rpm
	35 [500]	69 [1000]	104 [1500]	138 [2000]	190 [2750]			
2 [0.5]	34 [301]	69 [609]	104 [917]					22
4 [1]	36 [318]	73 [647]	110 [976]	147 [1305]				44
8 [2]	37 [331]	77 [684]	117 [1036]	157 [1388]	217 [1917]			87
11 [3]	37 [331]	78 [694]	120 [1058]	161 [1421]	222 [1966]			130
15 [4]	37 [323]	78 [692]	120 [1061]	162 [1430]	224 [1984]			173
19 [5]	35 [312]	77 [683]	119 [1055]	161 [1427]	224 [1984]			216
27 [7]	32 [280]	74 [654]	116 [1028]	158 [1402]	222 [1962]			303
34 [9]	27 [242]	70 [616]	112 [990]	154 [1365]	218 [1926]			389
45 [12]	20 [173]	62 [549]	105 [925]	147 [1301]	211 [1864]			519
57 [15]	11 [94]	53 [473]	96 [853]	139 [1232]				648

Torque - Nm [lb-in], Speed rpm				
48 [426]	96 [852]	144 [1278]	193 [1704]	265 [2343]

Theoretical Torque - Nm [lb-in]

Flow - lpm [gpm]	Pressure - bars [psi]					Max. Cont.	Max. Inter.	Theoretical rpm
	35 [500]	69 [1000]	104 [1500]	138 [2000]	190 [2750]			
2 [0.5]	40 [350]	79 [701]	119 [1052]					19
4 [1]	42 [369]	84 [744]	127 [1120]	169 [1496]				38
8 [2]	43 [383]	89 [786]	134 [1189]	180 [1592]	248 [2196]			76
11 [3]	43 [382]	90 [798]	137 [1214]	184 [1630]	255 [2254]			114
15 [4]	42 [372]	90 [795]	138 [1218]	185 [1641]	257 [2275]			152
19 [5]	40 [358]	89 [784]	137 [1211]	185 [1637]	257 [2276]			190
27 [7]	36 [320]	85 [749]	133 [1178]	182 [1607]	254 [2251]			266
34 [9]	31 [273]	79 [703]	128 [1133]	177 [1564]	250 [2209]			341
45 [12]	21 [190]	70 [622]	119 [1053]	168 [1485]	241 [2133]			455
57 [15]	10 [93]	60 [528]	109 [964]	158 [1399]				569

Torque - Nm [lb-in], Speed rpm				
55 [486]	110 [971]	165 [1457]	220 [1943]	302 [2671]

Theoretical Torque - Nm [lb-in]

Flow - lpm [gpm]	Pressure - bars [psi]					Max. Cont.	Max. Inter.	Theoretical rpm
	35 [500]	69 [1000]	104 [1500]	138 [2000]	190 [2750]			
2 [0.5]	52 [463]	104 [917]	155 [1370]					15
4 [1]	55 [487]	110 [972]	165 [1458]	220 [1943]				30
8 [2]	57 [505]	116 [1026]	175 [1548]	234 [2069]	322 [2851]			59
11 [3]	57 [502]	118 [1041]	179 [1580]	240 [2120]	331 [2929]			89
15 [4]	55 [488]	117 [1037]	179 [1586]	241 [2134]	334 [2958]			118
19 [5]	53 [467]	115 [1021]	178 [1576]	241 [2130]	335 [2961]			147
27 [7]	47 [413]	110 [972]	173 [1531]	236 [2091]	331 [2929]			206
34 [9]	39 [347]	103 [908]	166 [1469]	229 [2030]	325 [2872]			265
45 [12]	26 [228]	89 [792]	153 [1355]	217 [1919]	312 [2764]			353
57 [15]	10 [89]	74 [657]	138 [1224]	202 [1792]				441

Torque - Nm [lb-in], Speed rpm				
71 [626]	141 [1252]	212 [1877]	283 [2503]	389 [3442]

Theoretical Torque - Nm [lb-in]

Flow - lpm [gpm]	Pressure - bars [psi]					Max. Cont.	Max. Inter.	Theoretical rpm
	35 [500]	69 [1000]	104 [1500]	138 [2000]	190 [2750]			
2 [0.5]	67 [590]	131 [1158]	195 [1726]					12
4 [1]	70 [620]	139 [1228]	207 [1836]	276 [2445]				24
8 [2]	72 [641]	146 [1295]	220 [1949]	294 [2604]	405 [3585]			47
11 [3]	72 [636]	148 [1313]	225 [1991]	301 [2668]	416 [3684]			71
15 [4]	70 [617]	148 [1307]	226 [1997]	304 [2687]	421 [3722]			94
19 [5]	67 [590]	145 [1287]	224 [1984]	303 [2682]	421 [3728]			118
27 [7]	59 [518]	138 [1222]	218 [1927]	297 [2631]	417 [3688]			165
34 [9]	49 [429]	128 [1137]	208 [1845]	288 [2552]	408 [3614]			212
45 [12]	31 [271]	111 [982]	191 [1693]	272 [2404]	392 [3471]			282
57 [15]	10 [85]	90 [800]	171 [1516]	252 [2231]				353

Torque - Nm [lb-in], Speed rpm				
88 [783]	177 [1565]	265 [2348]	354 [3131]	486 [4305]

Theoretical Torque - Nm [lb-in]



200	Pressure - bars [psi]				Max. Cont.	Max. Inter.
	35 [500]	69 [1000]	104 [1500]	138 [2000]	190 [2750]	

200 cc [12.2 in³/rev.]

Max. Inter. Cont.	2 [0.5]	84 [742]	164 [1447]	243 [2152]			Theoretical rpm	
	4 [1]	88 [778]	173 [1534]	259 [2289]	344 [3045]			
	8 [2]	91 [804]	183 [1617]	275 [2430]	367 [3244]	504 [4464]		
	11 [3]	90 [796]	185 [1639]	280 [2482]	376 [3325]	519 [4589]		
	15 [4]	87 [772]	184 [1631]	281 [2490]	378 [3349]	524 [4638]		
	19 [5]	83 [736]	181 [1605]	280 [2474]	378 [3343]	525 [4646]		
	27 [7]	73 [643]	172 [1522]	271 [2400]	371 [3279]	519 [4597]		
	34 [9]	60 [528]	159 [1411]	259 [2295]	359 [3178]	509 [4503]		
	45 [12]	36 [322]	137 [1210]	237 [2098]	337 [2985]	488 [4317]		
	57 [15]	9 [80]	110 [973]	211 [1865]	312 [2758]			
								10
								19
								38
								57
								76
						95		
						133		
						171		
						228		
						285		

Torque - Nm [lb-in], Speed rpm				
110 [971]	219 [1941]	329 [2912]	439 [3882]	603 [5338]

Theoretical Torque - Nm [lb-in]

230	Pressure - bars [psi]				Max. Cont.	Max. Inter.
	35 [500]	69 [1000]	104 [1500]	121 [1750]	138 [2000]	166 [2400]

231 cc [14.1 in³/rev.]

Max. Inter. Cont.	2 [0.5]	98 [864]	190 [1678]	282 [2493]			Theoretical rpm	
	4 [1]	102 [905]	201 [1779]	300 [2652]	349 [3089]	398 [3526]		
	8 [2]	106 [934]	212 [1875]	318 [2816]	371 [3286]	425 [3757]		
	11 [3]	104 [925]	215 [1900]	325 [2876]	380 [3363]	435 [3851]		
	15 [4]	101 [895]	214 [1890]	326 [2885]	382 [3382]	438 [3880]		
	19 [5]	96 [853]	210 [1860]	324 [2866]	381 [3369]	438 [3872]		
	27 [7]	84 [743]	199 [1761]	314 [2780]	372 [3289]	429 [3798]		
	34 [9]	69 [607]	184 [1631]	300 [2655]	358 [3167]	416 [3679]		
	45 [12]	41 [364]	157 [1393]	274 [2422]	332 [2936]	390 [3451]		
	57 [15]	9 [76]	125 [1111]	242 [2145]	301 [2662]	359 [3180]		
								9
								17
								33
								50
								66
						83		
						115		
						148		
						197		
						247		
						329		

Torque - Nm [lb-in], Speed rpm					
127 [1121]	253 [2242]	380 [3363]	443 [3924]	507 [4484]	608 [5381]

Theoretical Torque - Nm [lb-in]

320	Pressure - bars [psi]			Max. Cont.	Max. Inter.
	35 [500]	69 [1000]	104 [1500]	135 [1950]	

322 cc [19.7 in³/rev.]

Max. Inter. Cont.	4 [1]	145 [1280]	283 [2501]			Theoretical rpm		
	8 [2]	149 [1319]	298 [2635]	447 [3951]	580 [5136]			
	11 [3]	147 [1304]	302 [2670]	456 [4036]	595 [5265]			
	15 [4]	142 [1260]	300 [2654]	457 [4049]	599 [5303]			
	19 [5]	135 [1199]	295 [2610]	454 [4021]	598 [5291]			
	27 [7]	117 [1039]	279 [2468]	440 [3897]	586 [5184]			
	34 [9]	95 [841]	258 [2279]	420 [3717]	566 [5012]			
	45 [12]	55 [485]	218 [1931]	382 [3377]	529 [4678]			
	57 [15]	7 [64]	171 [1517]	336 [2970]	483 [4277]			
	76 [20]		78 [692]	244 [2160]				
								12
								24
								36
								48
								59
						83		
						106		
						142		
						177		
						236		

Torque - Nm [lb-in], Speed rpm			
177 [1564]	354 [3129]	530 [4693]	689 [6102]

Theoretical Torque - Nm [lb-in]

400	Pressure - bars [psi]			Max. Cont.	Max. Inter.
	35 [508]	70 [1015]	100 [1450]	135 [1958]	

404 cc [24.4 in³/rev.]

Max. Inter. Cont.	2 [0.5]	171 [1513]	341 [3004]			Theoretical rpm		
	5 [1]	210 [1858]	353 [3124]	537 [4752]	687 [6080]			
	10 [3]	211 [1867]	373 [3301]	548 [4850]	693 [6133]			
	15 [4]	207 [1832]	386 [3416]	546 [4832]	732 [6478]			
	20 [5]	192 [1699]	377 [3336]	531 [4699]	753 [6664]			
	25 [7]	188 [1664]	370 [3274]	545 [4823]	758 [6708]			
	30 [8]	176 [1558]	365 [3230]	534 [4726]	737 [6522]			
	40 [11]	144 [1274]	327 [2894]	513 [4540]	719 [6363]			
	50 [12]	112 [991]	293 [2593]	476 [4212]	688 [6088]			
	57 [15]	85 [752]	266 [2354]	433 [3832]	643 [5690]			
								5
								12
								25
								37
								50
						62		
						74		
						99		
						124		
						141		
						186		

Torque - Nm [lb-in], Speed rpm			
225 [1991]	450 [3982]	643 [5690]	868 [7681]

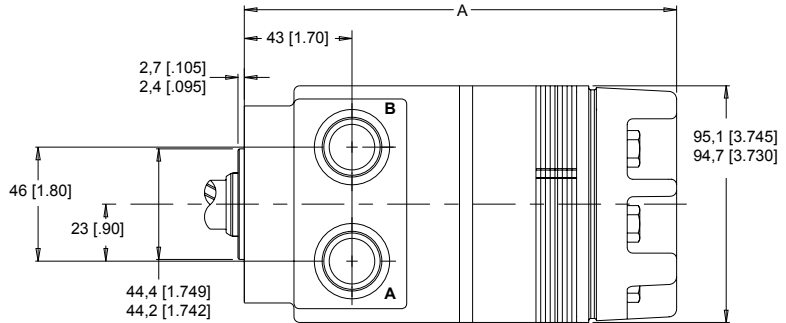
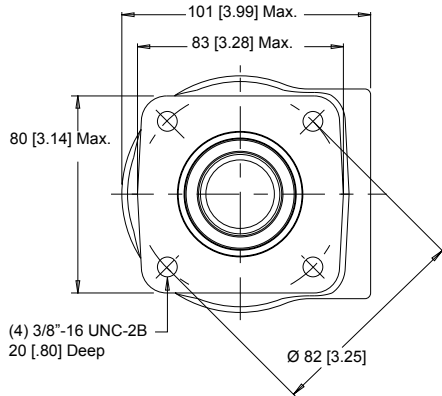
Theoretical Torque - Nm [lb-in]



275 & 276 SERIES HOUSINGS

- F30** 4-Hole 1/2" NPT Front Ports
- F31** 4-Hole 7/8" O-Ring Front Ports

- F38** 4-Hole 1/2" BSP.F Front Ports
- F26** 4-Hole 3/4" O-Ring End Ports

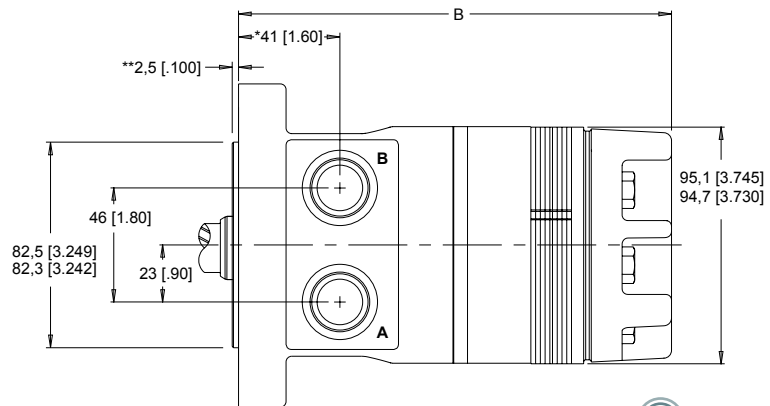
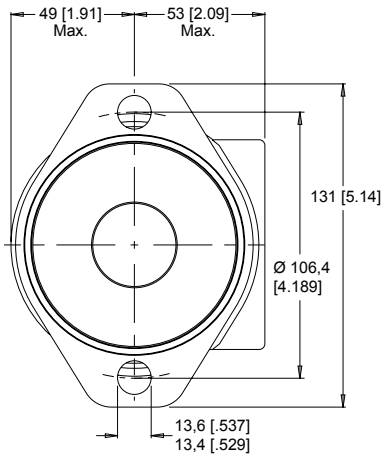


A is on page 7

- A10** 2-Hole 1/2" NPT Front Ports
- A11** 2-Hole 7/8" O-Ring Front Ports

- A18** 2-Hole 1/2" BSP.F Front Ports
- A06** 2-Hole 3/4" O-Ring End Ports

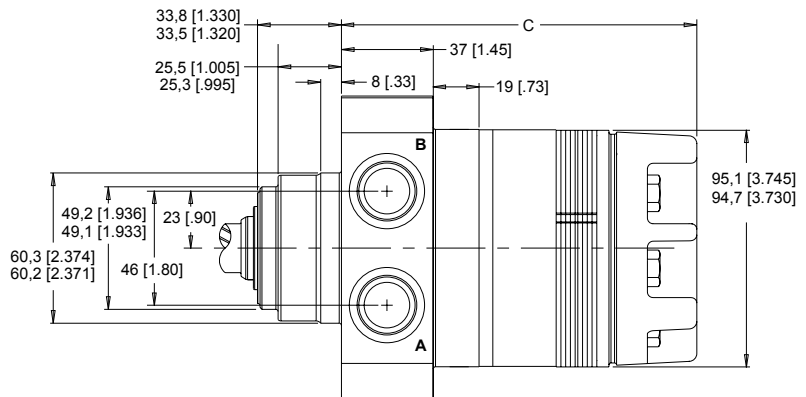
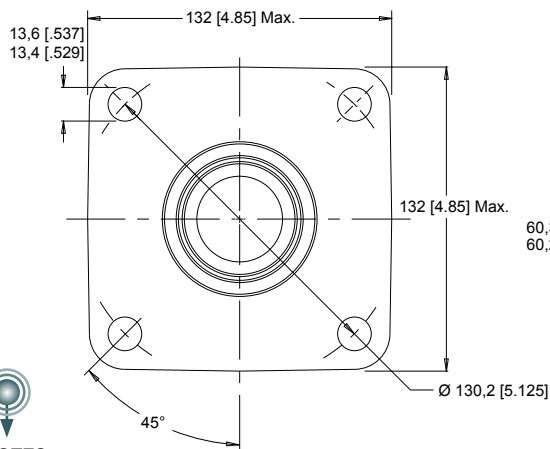
- A68** 2-Hole 1/2" BSP.F Front Ports With Tall Pilot



B is on page 7

- W30** 4-Hole 1/2" NPT Front Ports
- W31** 4-Hole 7/8" O-Ring Front Ports

- W38** 4-Hole 1/2" BSP.F Front Ports
- W26** 4-Hole 3/4" O-Ring End Ports



C is on page 8

NOTES:

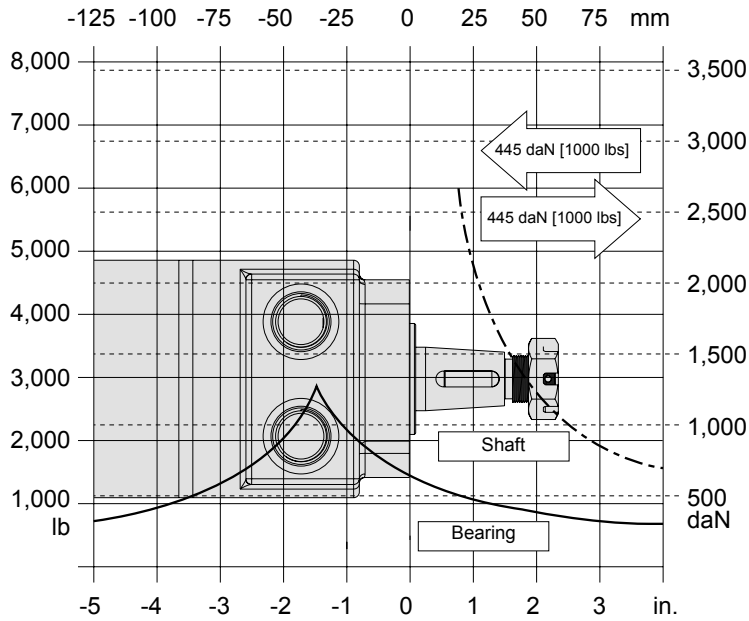
For end ported motors also reference porting dimensions on page 7. * Subtract 4.5 [1.178] to this dimension for the A68 housing. ** Add 4.5 [1.178] to this dimension for the A68 housing.



275 & 276 SERIES TECHNICAL INFORMATION

Bearing Curve: The bearing curve represents allowable bearing loads based on ISO 281 bearing capacity for an L₁₀ life of 2,000 hours at 100 rpm. Radial loads for speeds other than 100 rpm may be calculated using the multiplication factor table on page 8.

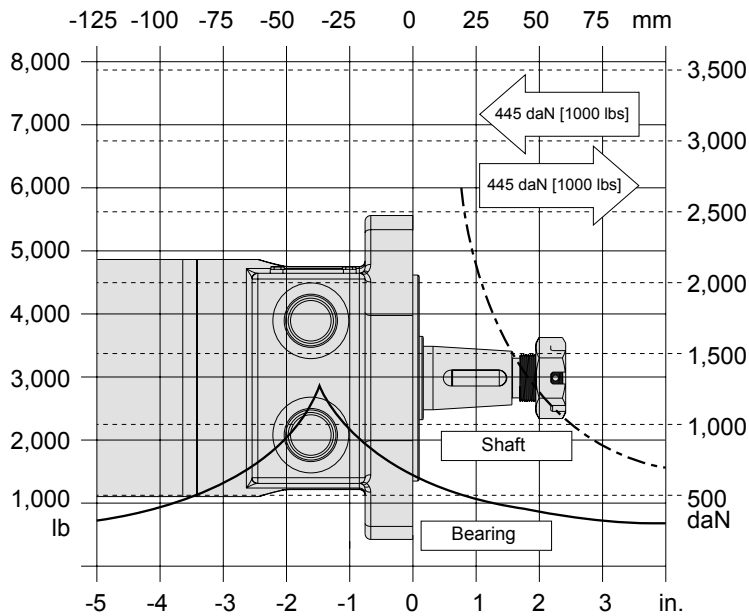
4-HOLE



LENGTH / WEIGHT CHART
4-Hole Mount - Dimension A

Code	mm [in]	kg [lb]
040	156 [6.16]	6,9 [15.2]
045	157 [6.19]	7,0 [15.3]
060	160 [6.31]	7,1 [15.6]
070	162 [6.38]	7,1 [15.7]
090	166 [6.52]	7,3 [16.1]
100	168 [6.62]	7,4 [16.3]
130	174 [6.84]	7,6 [16.8]
160	180 [7.09]	7,9 [17.3]
200	188 [7.39]	8,2 [18.0]
230	194 [7.63]	8,4 [18.5]
320	212 [8.34]	9,1 [20.1]
400	212 [8.34]	9,1 [20.1]

SAE A FLANGE



LENGTH / WEIGHT CHART
SAE A Mount - Dimension B

Code	mm [in]	kg [lb]
040	156 [6.16]	7,3 [15.9]
045	157 [6.19]	7,3 [16.0]
060	160 [6.31]	7,4 [16.3]
070	162 [6.38]	7,5 [16.4]
090	166 [6.52]	7,6 [16.8]
100	168 [6.62]	7,7 [17.0]
130	174 [6.84]	8,0 [17.5]
160	180 [7.09]	8,2 [18.0]
200	188 [7.39]	8,5 [18.7]
230	194 [7.63]	8,7 [19.2]
320	212 [8.34]	9,5 [20.8]
400	212 [8.34]	9,5 [20.8]



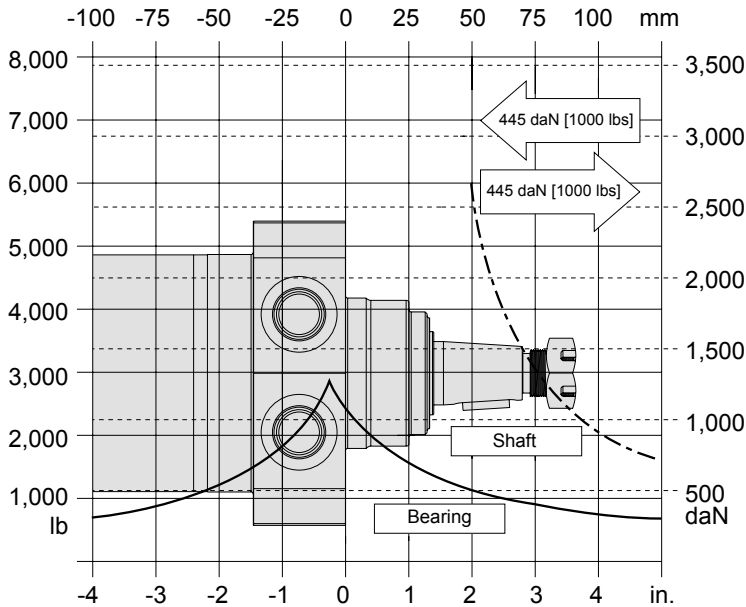
NOTE: WG motor weights vary ± 0,5 kg [1 lbs] depending upon motor configuration. Subtract 4,5 [1,178] from Dimension B for the A68 housing.



275 & 276 SERIES TECHNICAL INFORMATION

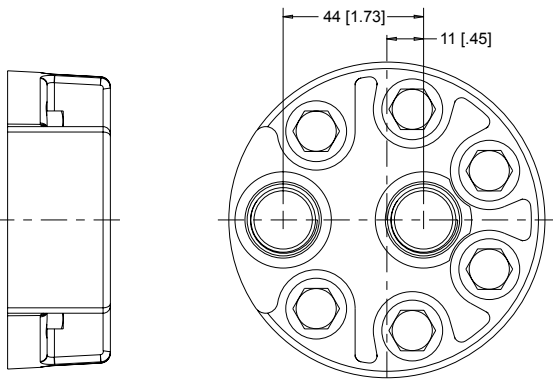
Bearing Curve: The bearing curve represents allowable bearing loads based on ISO 281 bearing capacity for an L_{10} life of 2,000 hours at 100 rpm. Radial loads for speeds other than 100 rpm may be calculated using the multiplication factor table located below.

WHEEL MOUNT



LENGTH / WEIGHT CHART Wheel Mount - Dimension C		
Code	mm [in]	kg [lb]
040	125 [4.93]	7,6 [16.7]
045	125 [4.95]	7,6 [16.8]
060	129 [5.07]	7,7 [17.0]
070	131 [5.15]	7,8 [17.2]
090	134 [5.29]	8,0 [17.5]
100	137 [5.39]	8,0 [17.7]
130	142 [5.61]	8,3 [18.2]
160	149 [5.86]	8,5 [18.8]
200	156 [6.16]	8,9 [19.5]
230	163 [6.40]	9,1 [20.0]
320	181 [7.11]	9,8 [21.6]
400	181 [7.11]	9,8 [21.6]

PORTING DIMENSIONS - REAR PORTED MOTOR



BEARING LOAD MULTIPLICATION FACTOR TABLE			
RPM	FACTOR	RPM	FACTOR
50	1.23	500	0.62
100	1.00	600	0.58
200	0.81	700	0.56
300	0.72	800	0.50
400	0.66		



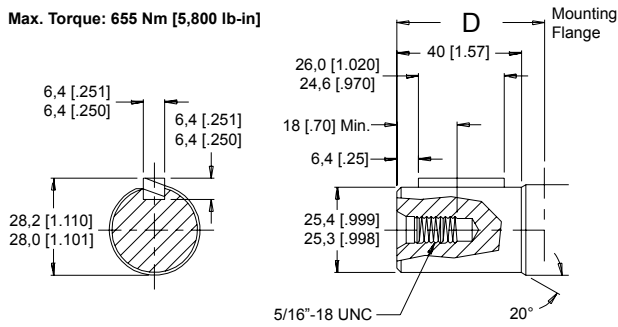
NOTE:
WG motor weights vary $\pm 0,5$ kg [1 lbs] depending upon motor configuration.



275 & 276 SERIES SHAFTS

10 1" Straight

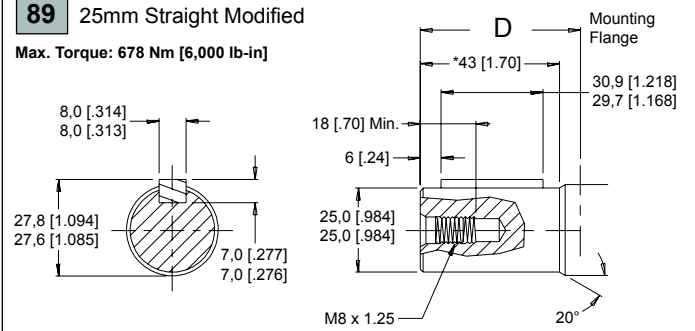
Max. Torque: 655 Nm [5,800 lb-in]



12 25mm Straight

89 25mm Straight Modified

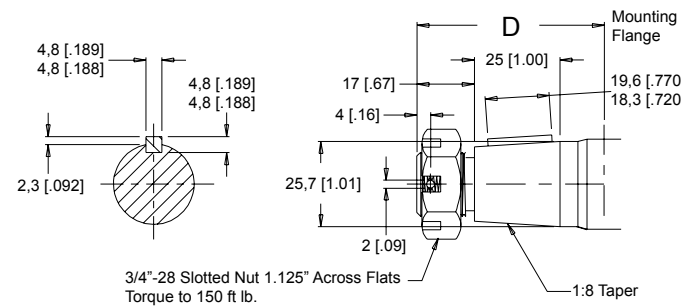
Max. Torque: 678 Nm [6,000 lb-in]



* For the 89 Shaft add 1 [.04] to this dimension.

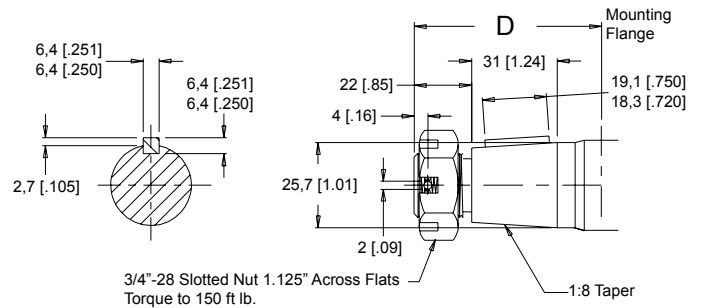
13 1" Tapered

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



14 1" Tapered Extended

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



SHAFT LENGTHS

MOUNTING FLANGE TO SHAFT END - Dimension D			
Code	4-Hole Mount	SAE A Mount	Wheel Mount
10	45 [1.77]	45 [1.77]	76 [2.99]
12	49 [1.94]	49 [1.94]	80 [3.16]
13	56 [2.20]	56 [2.20]	87 [3.43]
14	61 [2.40]	61 [2.40]	92 [3.63]
89	51 [2.00]	51 [2.00]	82 [3.22]

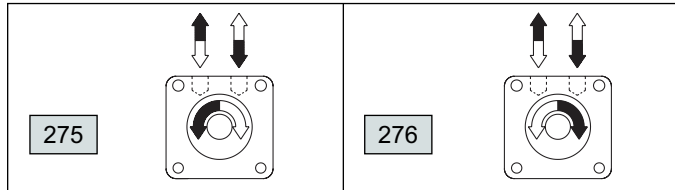


275 & 276 SERIES MODEL CODE BUILDER

SERIES	DISPLACEMENT	HOUSING	SHAFT	PAINT	CAVITY	ADD ON	MISCELLANEOUS
STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6	STEP 7	STEP 8

STEP 1 - Select a series

- 275 Counterclockwise Rotation
- 276 Clockwise Rotation



STEP 2 - Select a displacement option

040	41 cc	[2.5 in ³ /rev]	130	129 cc	[7.9 in ³ /rev]
045	44 cc	[2.7 in ³ /rev]	160	161 cc	[9.8 in ³ /rev]
060	60 cc	[3.6 in ³ /rev]	200	200 cc	[12.2 in ³ /rev]
070	70 cc	[4.3 in ³ /rev]	230	231 cc	[14.1 in ³ /rev]
090	88 cc	[5.4 in ³ /rev]	320	322 cc	[19.7 in ³ /rev]
100	100 cc	[6.1 in ³ /rev]	400	404 cc	[24.4 in ³ /rev]

STEP 3 - Select a housing option

- A06 2-Hole 3/4" O-Ring End Ports
- A10 2-Hole 1/2" NPT Front Ports
- A11 2-Hole 7/8" O-Ring Front Ports
- A18 2-Hole 1/2" BSP.F Front Ports
- A68 2-Hole 1/2" BSP.F Front Ports With Tall Pilot
- F26 4-Hole 3/4" O-Ring End Ports
- F30 4-Hole 1/2" NPT Front Ports
- F31 4-Hole 7/8" O-Ring Front Ports
- F38 4-Hole 1/2" BSP.F Front Ports
- W26 4-Hole 3/4" O-Ring End Ports
- W30 4-Hole 1/2" NPT Front Ports
- W31 4-Hole 7/8" O-Ring Front Ports
- W38 4-Hole 1/2" BSP.F Front Ports

STEP 4 - Select a shaft option

- 10 1" Straight
- 12 25mm Straight
- 13 1" Tapered
- 14 1" Tapered Extended
- 89 25mm Straight Modified

STEP 5 - Select a paint option

- A Black
- B Black (unpainted flange face)
- Z No Paint

STEP 6 - Select a valve cavity option

- A None

STEP 7 - Select an add on option

- A Standard
- B Lock Nut
- C Solid Hex Nut

STEP 8 - Select a miscellaneous option

- AA None
- AC Freeturning Rotor



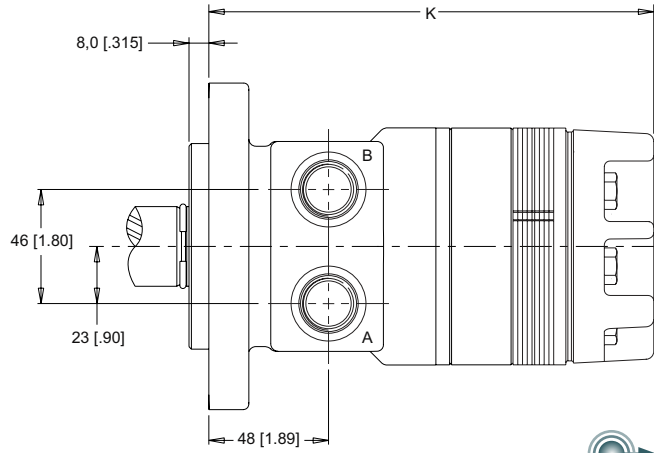
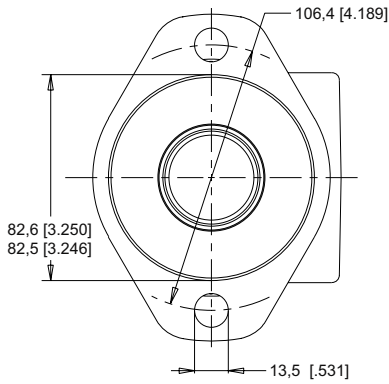
NOTE:

For applications requiring the motor to rotate in only one direction, shaft seal life may be prolonged by pressurizing the "A" port of the motor. To obtain the desired direction of shaft rotation, use the graphic at the left to determine the rotation code for the motor. For bi-directional applications, the 275 series is recommended. Preferred rotation is determined by internal valving design.



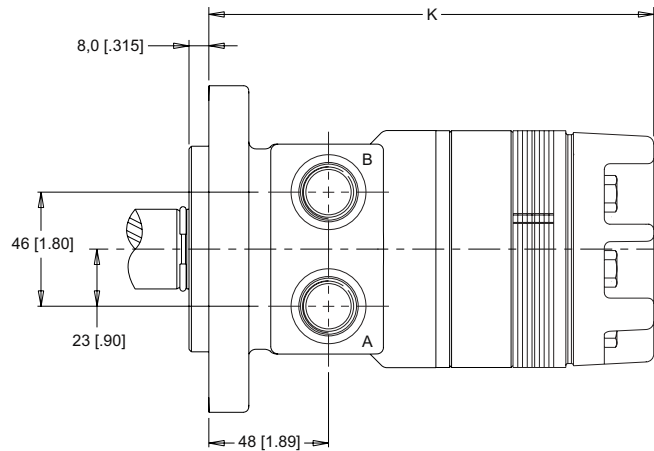
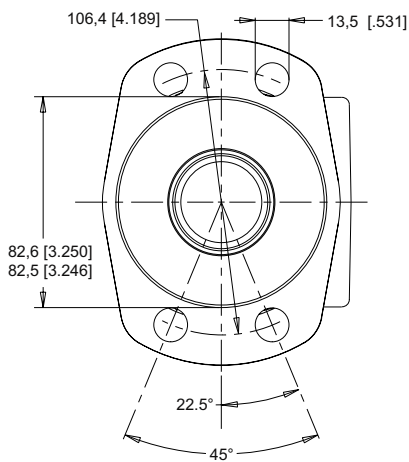
280 & 281 SERIES HOUSINGS

A68 2-Hole 1/2" BSP.F Front Ports



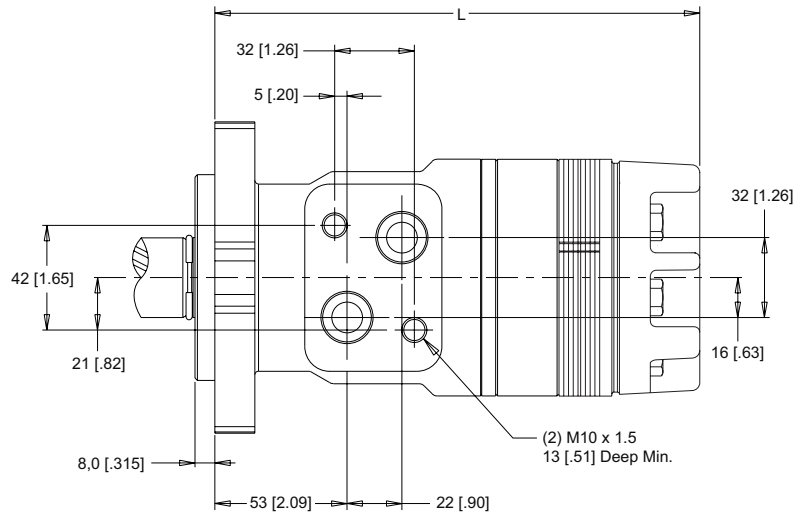
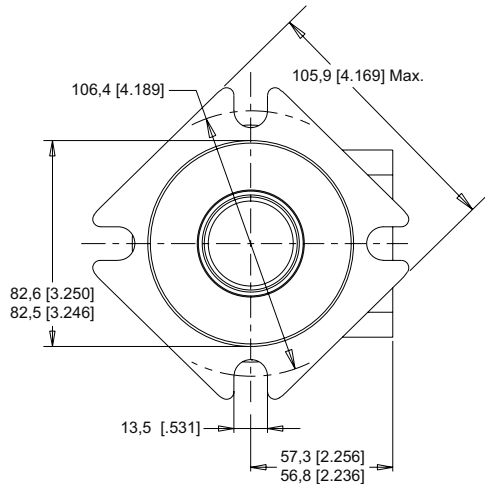
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AC8 4-Hole 1/2" BSP.F Front Ports



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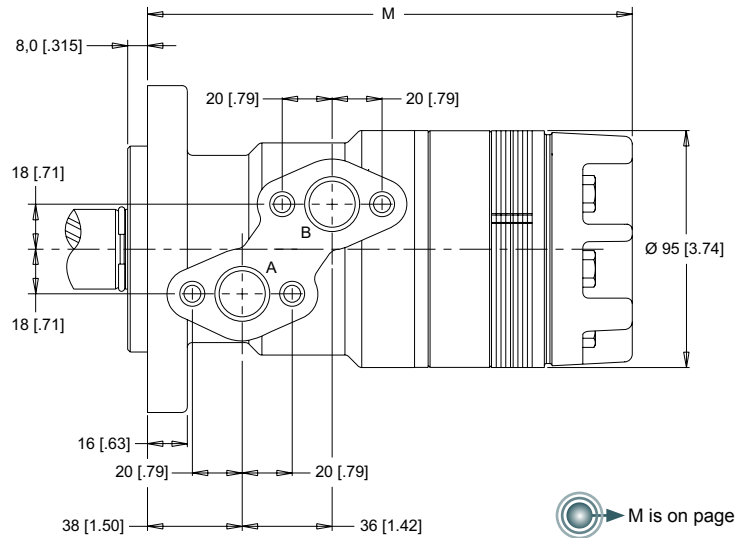
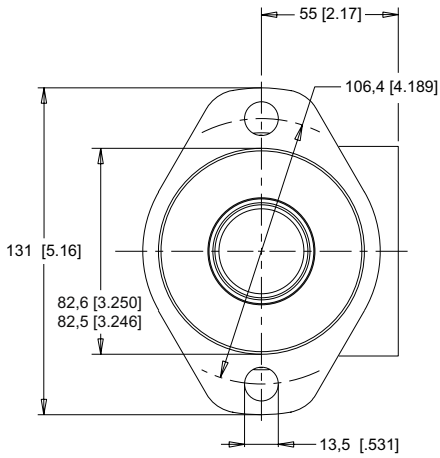
AG3 4-Hole 1/2" BSP.F Front Ports



L is on page 13

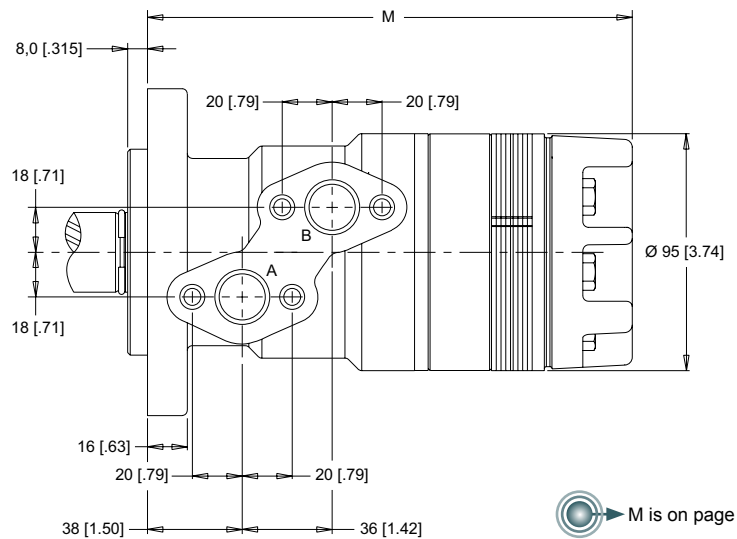
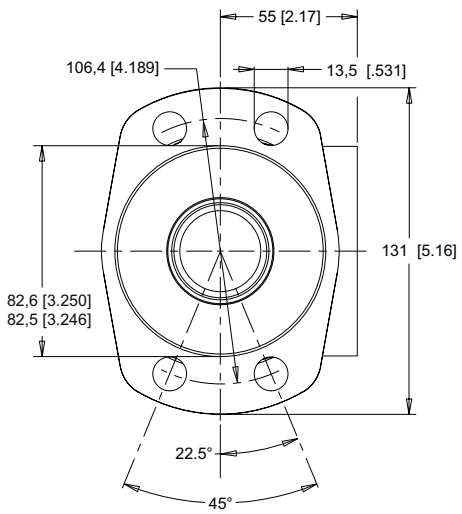


A63 2-Hole 1/2" BSP.F Offset Manifold



M is on page 13

AC3 4-Hole 1/2" BSP.F Offset Manifold



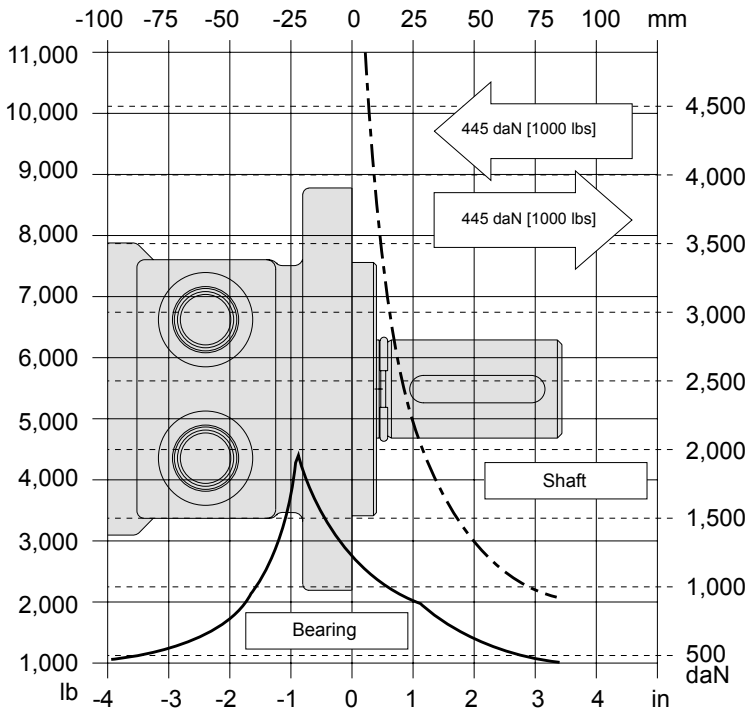
M is on page 13



280 & 281 SERIES TECHNICAL INFORMATION

Bearing Curve: The bearing curve represents allowable bearing loads based on ISO 281 bearing capacity for an L_{10} life of 2,000 hours at 100 rpm. Radial loads for speeds other than 100 rpm may be calculated using the multiplication factor table located on page 8.

SAE "A" MOUNT



LENGTH / WEIGHT CHART
SAE A & Magneto - Dimension K

Code	mm [in]	kg [lb]
040	160 [6.30]	6,2 [13.6]
045	161 [6.34]	6,2 [13.6]
060	164 [6.46]	6,4 [14.1]
070	166 [6.54]	6,5 [14.3]
090	169 [6.65]	6,7 [14.7]
100	172 [6.77]	6,8 [15.0]
130	178 [7.01]	7,1 [15.6]
160	184 [7.24]	7,4 [16.3]
200	192 [7.56]	7,7 [16.9]
230	198 [7.80]	8,8 [19.4]
320	216 [8.50]	8,8 [19.4]
400	216 [8.50]	8,8 [19.4]

NOTE:
WG motor weights vary $\pm 0,5$ kg [1 lbs] depending upon motor configuration. Add 0,03 kg [.06 lb] to motor weight for Magneto mount.

LENGTH / WEIGHT CHART
Square SAE A - Dimension L

Code	mm [in]	kg [lb]
040	176 [6.93]	7,0 [15.4]
045	177 [6.97]	7,0 [15.4]
060	180 [7.09]	7,2 [15.8]
070	182 [7.17]	7,3 [16.1]
090	185 [7.28]	7,5 [16.5]
100	188 [7.40]	7,6 [16.7]
130	194 [7.64]	7,8 [17.2]
160	200 [7.87]	8,1 [17.8]
200	208 [8.19]	8,5 [18.7]
230	214 [8.43]	8,8 [19.4]
320	232 [9.13]	9,6 [21.1]
400	232 [9.13]	9,6 [21.1]

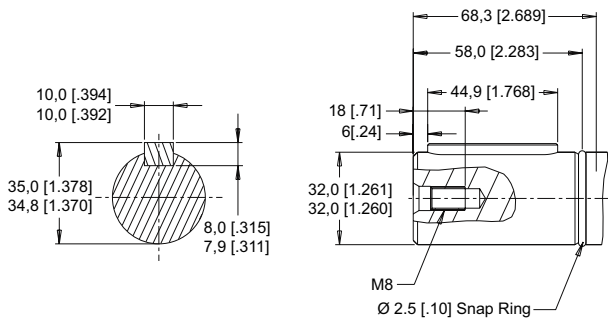
NOTE:
WG motor weights vary $\pm 0,5$ kg [1 lbs] depending upon motor configuration.

LENGTH / WEIGHT CHART
SAE A Offset Ports - Dimension M

Code	mm [in]	kg [lb]
040	176 [6.93]	6,7 [14.7]
045	177 [6.97]	6,8 [15.0]
060	180 [7.09]	6,9 [15.2]
070	182 [7.17]	7,0 [15.4]
090	185 [7.28]	7,2 [15.8]
100	188 [7.40]	7,3 [16.1]
130	194 [7.64]	7,6 [16.7]
160	200 [7.87]	7,9 [17.4]
200	208 [8.19]	8,2 [18.0]
230	214 [8.43]	8,5 [18.7]
320	232 [9.13]	9,4 [20.7]
400	232 [9.13]	9,4 [20.7]

NOTE:
WG motor weights vary $\pm 0,5$ kg [1 lbs] depending upon motor configuration. Add 0,14 kg [.31 lb] to motor weight for 2 Hole Offset Manifold

21 32mm Straight



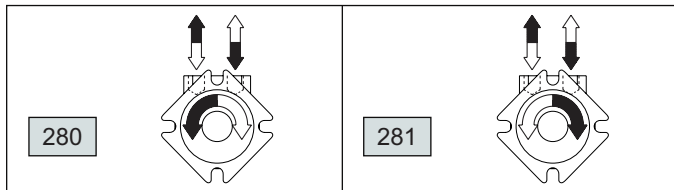


280 & 281 SERIES MODEL CODE BUILDER

SERIES	DISPLACEMENT	HOUSING	SHAFT	PAINT	CAVITY	ADD ON	MISCELLANEOUS
STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6	STEP 7	STEP 8

STEP 1 - Select a series

- 280 Counterclockwise Rotation
- 281 Clockwise Rotation



STEP 2 - Select a displacement option

040	41 cc	[2.5 in ³ /rev]	130	129 cc	[7.9 in ³ /rev]
045	44 cc	[2.7 in ³ /rev]	160	161 cc	[9.8 in ³ /rev]
060	60 cc	[3.6 in ³ /rev]	200	200 cc	[12.2 in ³ /rev]
070	70 cc	[4.3 in ³ /rev]	230	231 cc	[14.1 in ³ /rev]
090	88 cc	[5.4 in ³ /rev]	320	322 cc	[19.7 in ³ /rev]
100	100 cc	[6.1 in ³ /rev]	400	404 cc	[24.4 in ³ /rev]

STEP 3 - Select a housing option

- A68 2-Hole 1/2" BSP.F Aligned Ports
- AC8 4-Hole 1/2" BSP.F Aligned Ports
- AG3 4-Hole 1/2" BSP.F Offset Ports
- A63 2-Hole 1/2" BSP.F Offset Manifold Ports
- AC3 4-Hole 1/2" BSP.F Offset Manifold Ports

STEP 4 - Select a shaft option

- 21 32mm Straight

STEP 5 - Select a paint option

- A Black
- B Black (unpainted flange face)
- Z No Paint

STEP 6 - Select a valve cavity option

- A None

STEP 7 - Select an add on option

- A Standard

STEP 8 - Select a miscellaneous option

- AA None
- AC Freeturning Rotor



NOTE:

For applications requiring the motor to rotate in only one direction, shaft seal life may be prolonged by pressurizing the "A" port of the motor. To obtain the desired direction of shaft rotation, use the graphic at the left to determine the rotation code for the motor. For bi-directional applications, the 280 series is recommended. Preferred rotation is determined by internal valving design.

Important Information

Before selecting or using a White Drive Products' product, it is important that all information concerning the product warranty, limitation of liability and responsibility of the customer be reviewed. This information is located below. Please direct any questions regarding this information to your White Drive Products representative.

Disclaimer

This catalog provides product options for further investigation by customers having technical expertise with respect to the use of such products. It is the responsibility of the customer to thoroughly analyze all aspects of the customer's application and to review the information concerning the product in the current product catalog. Due to the diversity of possible applications, the customer is solely responsible for making the final selection of the product(s) to be used and to assure that all performance, safety and warning requirements of the application are met. The customer is further responsible for all testing to verify acceptable life and performance of White Drive Products' products under actual operating conditions.

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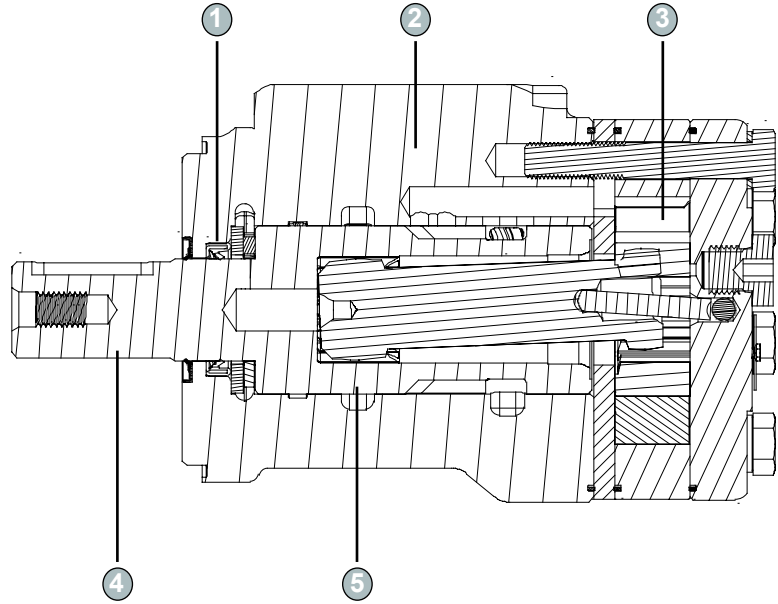
INTRODUCING
THE **NEW**
WR
SERIES HYDRAULIC MOTOR



Superior Roller Stator[®] design
incorporating the latest advancements
for smooth performance and reliability.



The WR Series motor incorporates the latest advances for smooth performance, efficiency and durability. It features an optimized Roller Stator[®] geometry with seven precision rollers to eliminate sliding friction and provide rolling contact between the rotor and stator. This increases motor efficiency. A three-zone spool valve, integral check valves and a provision for a case drain reduce pressure on internal seals to improve product life. A wide variety of mounting, shaft, motor displacement and porting options are available to meet all application needs.



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- ② **Built In Check Valves** in the housing offers versatility and increased seal life.
- ③ **Optimized Roller Stator[®]** geometry provides a smooth running high efficient product.
- ④ **Variety of Mounts and Shafts** provides flexibility in application design.
- ⑤ **Spool Valve Design** gives superior performance and smooth operation over a wide speed and torque range.

SPECIFICATIONS

CODE	Displacement cc [in ³ /rev]	Max. Speed rpm		Max. Flow lpm [gpm]		Max. Torque Nm [lb-in]		Max. Pressure bar [psi]		
		cont.	inter.	cont.	inter.	cont.	inter.	cont.	inter.	peak
040	40 [2.5]	1097	1275	45 [12]	53 [14]	80 [704]	99 [873]	138 [2000]	172 [2500]	224 [3250]
060	59 [3.6]	753	878	45 [12]	53 [14]	118 [1047]	146 [1289]	138 [2000]	172 [2500]	224 [3250]
070	70 [4.3]	860	1064	61 [16]	76 [20]	173 [1530]	207 [1836]	172 [2500]	207 [3000]	224 [3250]
090	87 [5.3]	601	746	61 [16]	76 [20]	244 [2159]	290 [2566]	172 [2500]	207 [3000]	224 [3250]
100	101 [6.1]	611	760	61 [16]	76 [20]	246 [2177]	289 [2558]	172 [2500]	207 [3000]	224 [3250]
115	113 [6.9]	535	665	61 [16]	76 [20]	271 [2402]	321 [2843]	172 [2500]	207 [3000]	224 [3250]
130	128 [7.8]	466	579	61 [16]	76 [20]	311 [2837]	369 [3267]	172 [2500]	207 [3000]	224 [3250]
160	163 [9.9]	347	402	61 [16]	76 [20]	390 [3451]	455 [4027]	172 [2500]	207 [3000]	224 [3250]
200	202 [12.3]	298	332	61 [16]	76 [20]	462 [4088]	544 [4814]	172 [2500]	207 [3000]	224 [3250]
240	236 [14.4]	249	311	61 [16]	76 [20]	548 [4846]	642 [5684]	172 [2500]	207 [3000]	224 [3250]
320	326 [19.8]	186	230	61 [16]	76 [20]	596 [5278]	712 [6299]	138 [2000]	172 [2500]	190 [2750]
400	404 [24.6]	149	186	61 [16]	76 [20]	631 [5587]	765 [6773]	121 [1750]	155 [2250]	172 [2500]



040 40 cc/rev [2.5 in³/rev]

Flow LPM [GPM]	Pressure, bars [psi]										Max. Cont.	Max. Inter.	Theo. RPM	
	17 [250]	35 [500]	52 [750]	69 [1000]	86 [1250]	104 [1500]	121 [1750]	138 [2000]	155 [2250]	173 [2500]				
2 [0.5]	8 [68] 30													47
4 [1]	9 [77] 78													93
8 [2]	9 [83] 174	20 [173] 162	30 [262] 148	39 [347] 133	50 [442] 123	60 [527] 118	68 [602] 97							186
15 [4]	9 [78] 360	19 [170] 348	30 [262] 333	40 [353] 317	50 [443] 298	60 [531] 276	70 [617] 252	79 [697] 221	89 [783] 191	97 [855] 173				372
23 [6]	8 [68] 544	18 [160] 531	28 [252] 516	39 [344] 499	49 [435] 480	59 [526] 458	70 [615] 433	80 [704] 404	89 [790] 358	99 [873] 320				557
30 [8]	6 [56] 729	17 [147] 716	27 [240] 701	37 [332] 683	48 [424] 663	58 [515] 641	69 [606] 614	79 [696] 585	89 [785] 526	99 [872] 491				743
38 [10]	5 [41] 913	15 [133] 900	25 [225] 884	36 [317] 866	46 [410] 845	57 [502] 821	67 [593] 792	77 [683] 760	88 [775] 703	98 [863] 668				928
Max. Cont. 45 [12]	3 [26] 1097	13 [118] 1080	24 [209] 1066	34 [301] 1047	44 [393] 1026	55 [484] 1002	65 [577] 970	75 [668] 940	86 [760] 882	96 [851] 848				1114
Max. Inter. 53 [14]	2 [18] 1275	11 [101] 1263	22 [191] 1247	32 [284] 1227	43 [377] 1202	53 [468] 1175	63 [560] 1145	74 [651] 1112						1299
Theo. Torque	11 [99]	22 [198]	34 [297]	45 [396]	56 [495]	67 [594]	78 [694]	90 [793]	101 [892]	112 [991]				

060 59 cc/rev [3.6 in³/rev]

Flow LPM [GPM]	Pressure, bars [psi]										Max. Cont.	Max. Inter.	Theo. RPM	
	17 [250]	35 [500]	52 [750]	69 [1000]	86 [1250]	104 [1500]	121 [1750]	138 [2000]	155 [2250]	173 [2500]				
8 [2]	14 [128] 121	29 [261] 114	44 [392] 106	59 [521] 98	73 [645] 86									128
15 [4]	13 [119] 248	29 [253] 240	44 [388] 231	59 [520] 220	74 [652] 208	88 [780] 193	102 [906] 171	118 [1047] 163	133 [1177] 145	146 [1289] 120				256
23 [6]	12 [105] 374	27 [240] 366	42 [375] 357	58 [511] 345	73 [643] 331	88 [775] 315	103 [907] 296	117 [1036] 276	131 [1161] 251	145 [1286] 226				383
30 [8]	10 [89] 502	25 [224] 494	40 [358] 484	56 [493] 472	71 [627] 458	86 [761] 440	101 [893] 424	116 [1025] 402	130 [1152] 367	144 [1276] 342				511
38 [10]	8 [72] 628	23 [204] 620	38 [339] 610	54 [474] 598	69 [608] 583	84 [742] 567	99 [876] 548	114 [1008] 528	129 [1139] 485	143 [1265] 461				639
Max. Cont. 45 [12]	6 [49] 753	21 [182] 745	36 [316] 735	51 [450] 723	66 [585] 709	81 [719] 695	96 [854] 676	112 [987] 652	126 [1119] 608	141 [1248] 581				766
Max. Inter. 53 [14]	3 [26] 878	18 [164] 867	33 [294] 856	48 [428] 843	63 [562] 828	78 [693] 812	94 [828] 792	109 [962] 769						894
Theo. Torque	16 [144]	33 [288]	49 [432]	65 [576]	81 [720]	98 [864]	114 [1008]	130 [1152]	146 [1296]	163 [1440]				

070 70 cc/rev [4.3 in³/rev]

Flow LPM [GPM]	Pressure, bars [psi]										Max. Cont.	Max. Inter.	Theo. RPM	
	17 [250]	35 [500]	52 [750]	69 [1000]	86 [1250]	104 [1500]	121 [1750]	138 [2000]	155 [2250]	173 [2500]				190 [2750]
2 [0.5]	15 [129] 16	29 [256] 9												28
4 [1]	16 [139] 47	32 [280] 39	47 [416] 27	62 [547] 8										55
8 [2]	16 [145] 101	34 [298] 94	51 [450] 86	67 [592] 77	83 [732] 70	101 [890] 70								109
15 [4]	16 [142] 210	34 [299] 202	52 [456] 194	69 [613] 184	86 [765] 173	103 [913] 159	119 [1052] 144	135 [1198] 132	154 [1366] 121	173 [1530] 120				217
23 [6]	15 [130] 317	32 [287] 309	51 [448] 300	68 [606] 290	86 [759] 279	103 [914] 267	121 [1067] 252	137 [1215] 234	153 [1358] 212	169 [1494] 188	192 [1699] 210	207 [1836] 191		325
30 [8]	13 [113] 425	31 [271] 416	48 [429] 408	67 [589] 398	84 [746] 387	102 [902] 373	120 [1059] 358	137 [1211] 340	154 [1362] 320	170 [1506] 296	187 [1656] 271	202 [1791] 243		433
38 [10]	10 [92] 533	28 [250] 524	46 [409] 515	64 [568] 505	82 [726] 495	100 [883] 482	117 [1040] 465	135 [1194] 447	152 [1347] 426	169 [1497] 404	186 [1645] 366	202 [1788] 342		541
45 [12]	7 [64] 642	25 [224] 633	43 [383] 624	61 [542] 614	79 [701] 603	97 [859] 589	115 [1016] 572	132 [1172] 553	150 [1327] 532	167 [1479] 507	184 [1629] 466	201 [1778] 445		650
53 [14]	4 [35] 750	22 [194] 741	40 [353] 732	58 [512] 721	76 [671] 710	94 [830] 696	112 [989] 680	129 [1146] 663	147 [1301] 642	164 [1455] 618	182 [1608] 574	199 [1759] 549		758
Max. Cont. 61 [16]	2 [15] 860	18 [161] 850	36 [320] 841	54 [480] 830	72 [639] 818	90 [798] 804	108 [956] 788	126 [1113] 770	144 [1270] 750	161 [1425] 726	179 [1581] 681	196 [1734] 652		866
68 [18]		15 [132] 954	32 [287] 943	51 [449] 931	69 [607] 918	86 [765] 903	104 [924] 887	122 [1082] 869	140 [1239] 849	157 [1394] 826				974
Max. Inter. 76 [20]		10 [89] 1064	28 [247] 1052	46 [401] 1046	64 [564] 1059	82 [722] 1015	99 [880] 1000	118 [1040] 981	135 [1198] 959	153 [1355] 935				1082
Theo. Torque	19 [170]	38 [340]	58 [510]	77 [680]	96 [849]	115 [1019]	134 [1189]	154 [1359]	173 [1529]	192 [1699]	211 [1869]	230 [2039]		

Torque, Nm [lb-in]
Speed, RPM

Areas within white represent maximum motor efficiencies. DO NOT operate at maximum pressure and maximum flow simultaneously. Tested at 54°C [129°F] with an oil viscosity of 46 cSt [213 SUS]. **Note:** Performance data is typical. Performance of production units varies slightly from one motor to another.



090 87 cc/rev [5.3 in³/rev]

Flow LPM [GPM]	Pressure, bars [psi]										Max. Cont.	Max. Inter.	Theo. RPM					
	17 [250]	35 [500]	52 [750]	69 [1000]	86 [1250]	104 [1500]	121 [1750]	138 [2000]	155 [2250]	173 [2500]				190 [2750]	207 [3000]			
2 [0.5]	60 [531]	60 [531]																
4 [1]	19 [168]	42 [372]	60 [531]	73 [646]	89 [788]	99 [876]	115 [1018]											46
8 [2]	22.5 [199]	41 [363]	62.5 [553]	84 [743]	105.5 [934]	127 [1124]	151 [1336]	170 [1504]										91
15 [4]	21 [186]	41.5 [367]	63.5 [562]	84.5 [748]	107 [947]	130 [1150]	151 [1336]	172 [1522]	194 [1717]	243 [2150]	275 [2434]							171
23 [6]	20 [177]	40.5 [358]	62.5 [553]	85 [752]	106.5 [942]	129.5 [1146]	155 [1372]	178 [1575]	200 [1770]	244 [2159]	267 [2363]	290 [2566]						262
30 [8]	18 [159]	41 [363]	64 [566]	87 [770]	107 [947]	131 [1159]	154 [1363]	174 [1540]	198 [1752]	241 [2133]	266 [2354]	289 [2558]						342
38 [10]	15 [133]	38 [336]	61 [540]	83 [735]	106 [938]	130 [1150]	150 [1327]	173 [1531]	193 [1708]	238 [2106]	261 [2310]	286 [2531]						433
45 [12]	13 [115]	36 [319]	56 [496]	82 [726]	106 [938]	125 [1106]	146 [1292]	188 [1664]	190 [1681]	233 [2062]	258 [2283]	283 [2504]						513
53 [14]	10 [88]	33 [292]	54 [478]	76 [673]	99 [876]	123 [1088]	144 [1274]	165 [1460]	187 [1655]	228 [2018]	254 [2248]	278 [2460]						604
61 [16]	2 [18]	25 [221]	52 [460]	72 [637]	95 [841]	121 [1071]	143 [1265]	163 [1442]	181 [1602]	223 [1973]	223 [1973]	223 [1973]						695
68 [18]	601	597	711	705	700	696	684	676	666	653								773
Max. Cont.	601	597	711	705	700	696	684	676	666	653								695
Max. Inter.	601	597	711	705	700	696	684	676	666	653								773
	76 [20]	14 [124]	39 [345]	65 [575]	90 [796]	116 [1027]	141 [1248]	166 [1469]	192 [1699]	217 [1920]								864
	746	740	733	725	717	708	697	683	669									864
Theo. Torque	24 [212]	49 [434]	73 [646]	96 [850]	120 [1062]	145 [1283]	169 [1496]	193 [1708]	217 [1920]	242 [2145]	266 [2356]	290 [2567]						

100 101 cc/rev [6.1 in³/rev]

Flow LPM [GPM]	Pressure, bars [psi]										Max. Cont.	Max. Inter.	Theo. RPM					
	17 [250]	35 [500]	52 [750]	69 [1000]	86 [1250]	104 [1500]	121 [1750]	138 [2000]	155 [2250]	173 [2500]				190 [2750]	207 [3000]			
2 [0.5]	18 [159]	37 [327]	56 [496]	77 [681]	91 [805]													20
4 [1]	27 [239]	49 [434]	69 [611]	84 [743]	106 [938]	120 [1062]	140 [1239]	160 [1416]										40
8 [2]	25 [221]	50 [442]	75 [664]	98 [867]	125 [1106]	150 [1327]	175 [1549]	199 [1761]										80
15 [4]	26 [230]	46 [407]	72 [637]	97 [858]	124 [1097]	148 [1310]	175 [1549]	198 [1752]	224 [1982]	245 [2168]	267 [2363]	289 [2558]						150
23 [6]	21 [186]	48 [425]	69 [611]	96 [850]	123 [1088]	148 [1310]	173 [1531]	200 [1770]	223 [1973]	246 [2177]	269 [2381]	286 [2531]						230
30 [8]	21 [186]	45 [398]	70 [619]	93 [823]	121 [1071]	146 [1292]	168 [1487]	195 [1726]	221 [1956]	244 [2159]	265 [2345]	284 [2513]						300
38 [10]	16 [142]	41 [363]	68 [602]	91 [805]	115 [1018]	141 [1248]	165 [1460]	189 [1673]	215 [1903]	238 [2106]	264 [2336]	282 [2496]						380
45 [12]	11 [97]	36 [319]	63 [558]	89 [788]	116 [1027]	140 [1239]	162 [1434]	188 [1664]	210 [1858]	234 [2071]	258 [2283]	280 [2478]						450
53 [14]	10 [88]	34 [301]	59 [522]	83 [735]	109 [965]	134 [1186]	157 [1389]	181 [1602]	205 [1814]	226 [2000]	256 [2248]	278 [2460]						531
61 [16]	531	530	529	528	518	499	489	480	466	452	442	430						611
68 [18]	28 [248]	55 [487]	79 [699]	103 [912]	129 [1142]	152 [1345]	172 [1522]	198 [1752]	223 [1973]	255 [2257]	276 [2442]							681
Max. Cont.	611	610	608	605	596	580	565	556	540	525	516							611
Max. Inter.	611	610	608	605	596	580	565	556	540	525	516							681
	76 [20]	15 [133]	41 [363]	63 [558]	85 [752]	112 [991]	133 [1177]	160 [1416]	185 [1637]	217 [1920]								761
	760	759	758	756	753	750	741	729	711									761
Theo. Torque	27 [239]	56 [496]	83 [735]	110 [973]	137 [1212]	165 [1460]	192 [1699]	220 [1947]	247 [2186]	274 [2425]	301 [2664]	330 [2920]						

115 113 cc/rev [6.9 in³/rev]

Flow LPM [GPM]	Pressure, bars [psi]										Max. Cont.	Max. Inter.	Theo. RPM					
	17 [250]	35 [500]	52 [750]	69 [1000]	86 [1250]	104 [1500]	121 [1750]	138 [2000]	155 [2250]	173 [2500]				190 [2750]	207 [3000]			
2 [0.5]	23 [202]	45 [401]																17
4 [1]	25 [224]	50 [440]	72 [641]															34
8 [2]	26 [234]	54 [478]	81 [717]	105 [926]	126 [1117]													68
15 [4]	26 [228]	54 [482]	83 [735]	111 [985]	139 [1232]	166 [1473]	191 [1688]	215 [1905]										136
23 [6]	24 [211]	52 [464]	81 [719]	110 [971]	138 [1222]	166 [1468]	194 [1712]	220 [1950]	247 [2185]	269 [2377]	303 [2684]							203
30 [8]	21 [182]	49 [437]	78 [690]	106 [937]	135 [1194]	163 [1444]	191 [1687]	218 [1927]	245 [2165]	271 [2402]	296 [2619]	321 [2843]						271
38 [10]	17 [147]	45 [401]	74 [657]	102 [906]	131 [1159]	159 [1411]	187 [1656]	215 [1899]	242 [2140]	268 [2375]	294 [2605]	320 [2835]						339
45 [12]	12 [106]	41 [360]	69 [614]	98 [867]	126 [1117]	154 [1367]	183 [1616]	210 [1860]	237 [2102]	264 [2338]	291 [2573]	318 [2814]						406
53 [14]	7 [62]	36 [315]	64 [568]	93 [820]	121 [1071]	149 [1319]	177 [1568]	204 [1809]	232 [2055]	259 [2294]	286 [2530]	312 [2765]						474
61 [16]	469	465	460	455	448	441	432	422	411	398	370	356						542
68 [18]	2 [21]	29 [259]	58 [513]	87 [765]	115 [1016]	143 [1266]	171 [1516]	199 [1763]	227 [2006]	254 [2247]	280 [2481]	307 [2715]						609
Max. Cont.	535	532	527	522	516	509	500	489	477	463	434	420						542
Max. Inter.	535	532	527	522	516	509	500	489	477	463	434	420						609
	76 [20]	16 [139]	45 [397]	73 [646]	101 [896]	130 [1148]	158 [1396]	186 [1642]	213 [1888]	240 [2127]								677
	665	659	653	645	637	627	617	603	590									677
Theo. Torque	31 [272]	61 [544]	92 [815]	123 [1087]	154 [1359]	184 [1631]	215 [1902]	246 [2174]	276 [2446]	307 [2718]	338 [2989]	369 [3261]						

Areas within white represent maximum motor efficiencies. DO NOT operate at maximum pressure and maximum flow simultaneously. Tested at 54°C [129°F] with an oil viscosity of 46 cSt [213 SUS]. **Note:** Performance data is typical. Performance of production units varies slightly from one motor to another.



130 128 cc/rev [7.8 in³/rev]

Flow LPM [GPM]	Pressure, bars [psi]										Max. Cont.	Max. Inter.	Theo. RPM			
	17 [250]	35 [500]	52 [750]	69 [1000]	86 [1250]	104 [1500]	121 [1750]	138 [2000]	155 [2250]	173 [2500]				190 [2750]	207 [3000]	
2 [0.5]																
4 [1]	26.5 [235]	50 [442]	75.5 [668]	98 [867]	121.5 [1075]	153 [1354]	178 [1575]									31
8 [2]	31 [274]	59 [522]	90 [792]	114 [1009]	135 [1195]	158 [1394]	181 [1597]	213 [1881]								62
15 [4]	29 [252]	58 [513]	92 [814]	123 [1088]	154 [1363]	186 [1642]	215 [1898]	246 [2177]	274 [2425]							116
23 [6]	29 [252]	56.5 [500]	91 [805]	122 [1075]	153 [1354]	186 [1642]	216 [1907]	245 [2168]	274 [2420]	311 [2837]						178
30 [8]	25 [221]	56 [491]	88 [774]	120 [1062]	152 [1341]	184 [1624]	215 [1898]	245 [2164]	274 [2420]	309 [2743]	341 [3017]	369 [3267]				232
38 [10]	21 [186]	52 [460]	84 [743]	116 [1027]	147 [1301]	180 [1593]	209 [1850]	240 [2119]	270 [2385]	308 [2727]	337 [2982]	368 [3253]				294
45 [12]	18 [159]	47 [416]	80 [708]	95 [841]	128 [1128]	158 [1394]	189 [1673]	219 [1934]	247 [2186]	305 [2698]	333 [2944]	364 [3219]				349
53 [14]	16 [142]	41 [358]	75 [659]	106 [934]	135 [1195]	167 [1473]	199 [1757]	227 [2009]	258 [2279]	298 [2634]	327 [2897]	358 [3172]				410
Max. Cont.	10 [88]	36 [319]	68 [597]	99 [876]	129 [1142]	161 [1420]	192 [1695]	221 [1951]	247 [2186]	291 [2573]	322 [2845]	352 [3112]				472
Max. Inter.	68 [18]	28 [248]	60 [530]	93 [821]	125 [1107]	158 [1396]	190 [1678]	222 [1960]	253 [2239]	274 [2513]						527
	76 [20]	20 [177]	52 [457]	84 [745]	117 [1036]	149 [1323]	181 [1605]	213 [1886]	245 [2166]	276 [2443]						589
Theo. Torque	35 [310]	72 [637]	107 [947]	142 [1257]	177 [1566]	214 [1894]	249 [2204]	284 [2513]	319 [2823]	355 [3145]	390 [3454]	425 [3763]				

Torque, Nm [lb-in]
Speed, RPM

160 163 cc/rev [9.9 in³/rev]

Flow LPM [GPM]	Pressure, bars [psi]										Max. Cont.	Max. Inter.	Theo. RPM			
	17 [250]	35 [500]	52 [750]	69 [1000]	86 [1250]	104 [1500]	121 [1750]	138 [2000]	155 [2250]	173 [2500]				190 [2750]	207 [3000]	
4 [1]	36 [319]	75 [664]	101 [894]	133 [1177]	160 [1416]	187 [1655]	204 [1805]									24
8 [2]	35 [305]	72 [633]	108 [951]	142 [1252]	177 [1566]	202 [1783]	228 [2018]	283 [2504]								49
15 [4]	37 [327]	74 [655]	114 [1009]	153 [1350]	192 [1695]	232 [2049]	267 [2363]	304 [2690]	342 [3027]	390 [3451]						92
23 [6]	33 [288]	73 [646]	110 [969]	149 [1314]	183 [1619]	222 [1965]	260 [2296]	292 [2584]	326 [2885]	388 [3434]	409 [3619]	455 [4027]				141
30 [8]	33 [288]	72 [633]	110 [969]	149 [1314]	186 [1646]	226 [2000]	258 [2283]	288 [2549]	323 [2858]	382 [3381]	396 [3504]	445 [3938]				183
38 [10]	29 [257]	67 [593]	106 [938]	144 [1274]	183 [1619]	224 [1978]	261 [2310]	298 [2633]	336 [2969]	380 [3363]	383 [3389]	432 [3823]				232
45 [12]	25 [221]	62 [544]	101 [894]	140.5 [1243]	180 [1588]	235 [2080]	257 [2274]	293 [351]	312 [351]	378 [3345]	376 [3327]	429 [3796]				275
53 [14]	18 [155]	52 [456]	88 [779]	124 [1097]	156 [1376]	194 [1712]	229 [2022]	262 [2314]	296 [2615]	376 [3327]	373 [3301]	417 [3690]				324
Max. Cont.	14 [119]	50 [438]	87 [770]	122 [1080]	154 [1363]	190 [1681]	223 [1973]	260 [2301]	288 [2549]	370 [3274]	355 [3142]	406 [3593]				373
Max. Inter.	68 [18]	45 [398]	85 [752]	121 [1071]	150 [132]	183 [1619]	221 [1956]	253 [2239]	284 [2513]	361 [3195]	343 [3035]				415	
76 [20]	40 [354]	82 [726]	119 [1053]	147 [1301]	176 [1558]	217 [1920]	250 [2212]	281 [2487]	356 [3150]	332 [2938]						463
Theo. Torque	45 [394]	92 [810]	136 [1199]	180 [1593]	224 [1982]	271 [2398]	316 [2792]	360 [3186]	404 [3575]	451 [3991]	496 [4389]	540 [4779]				

200 202 cc/rev [12.3 in³/rev]

Flow LPM [GPM]	Pressure, bars [psi]										Max. Cont.	Max. Inter.	Theo. RPM			
	17 [250]	35 [500]	52 [750]	69 [1000]	86 [1250]	104 [1500]	121 [1750]	138 [2000]	155 [2250]	173 [2500]				190 [2750]	207 [3000]	
4 [1]	45 [398]	81 [717]	113 [1000]	143 [1265]	201 [1779]	235 [2080]										20
8 [2]	48 [425]	88 [779]	126 [1115]	161 [1425]	194 [1717]	226 [2000]	252 [2230]	338 [2991]	443 [3920]	418 [3699]						40
15 [4]	47 [416]	91 [805]	129 [1142]	168 [1487]	206 [1823]	246 [2177]	281 [2487]	320 [2832]	467 [4133]	450 [3982]						74
23 [6]	30 [265]	79 [699]	128 [1133]	176 [1558]	217 [1920]	268 [2372]	312 [2761]	363 [3212]	409 [3619]	461 [4080]	494 [4372]	530 [4690]				114
30 [8]	44 [389]	85 [752]	124 [1097]	163 [1442]	202 [1788]	241 [2133]	278 [2460]	315 [2788]	356 [3150]	462 [4088]	505 [4469]	544 [4814]				149
38 [10]	36 [319]	78 [690]	119 [1053]	159 [1407]	190 [1726]	236 [2088]	274 [2425]	310 [2743]	351 [3106]	459 [4062]	504 [4460]	542 [4796]				188
45 [12]	30 [265]	73 [646]	112 [991]	152 [1345]	189 [173]	229 [2027]	266 [2354]	305 [2699]	342 [3027]	453 [4009]	498 [4407]	540 [4779]				223
53 [14]	22 [195]	64 [566]	104 [920]	144 [1274]	182 [1611]	222 [1965]	259 [2292]	292 [2584]	328 [2903]	444 [3929]	491 [4345]	533 [4717]				262
Max. Cont.	14 [124]	55 [487]	96 [850]	133 [1177]	179 [1584]	210 [1858]	244 [2159]	280 [2478]	312 [2761]	434 [3841]	483 [4274]	525 [4646]				302
Max. Inter.	68 [18]	45 [398]	81 [717]	121 [1071]	170 [1502]	208 [1841]	241 [2133]	279 [2469]	209 [1850]	420 [3717]	472 [4177]				337	
76 [20]	40 [354]	75 [664]	112 [991]	155 [1372]	196 [1735]	237 [2097]	277 [2451]	206 [1823]	409 [3619]	302						376
Theo. Torque	55 [487]	113 [1000]	167 [1478]	222 [1965]	277 [2451]	335 [2965]	369 [3265]	444 [3929]	499 [4416]	556 [4920]	611 [5407]	666 [5894]				

Areas within white represent maximum motor efficiencies. DO NOT operate at maximum pressure and maximum flow simultaneously. Tested at 54°C [129°F] with an oil viscosity of 46 cSt [213 SUS]. **Note:** Performance data is typical. Performance of production units varies slightly from one motor to another.



240 236 cc/rev [14.4 in³/rev]

Flow LPM [GPM]	Pressure, bars [psi]										Max. Cont.	Max. Inter.	Theo. RPM	
	17 [250]	35 [500]	52 [750]	69 [1000]	86 [1250]	104 [1500]	121 [1750]	138 [2000]	155 [2250]	173 [2500]				190 [2750]
2 [0.5]	47 [417] 7	98 [870] 6	148 [1306] 5	197 [1745] 3	247 [2188] 3									8
4 [1]	50 [446] 14	105 [932] 13	158 [1397] 12	210 [1855] 11	260 [2299] 9	307 [2720] 7	354 [3133] 4	404 [3572] 4						16
8 [2]	53 [466] 29	111 [986] 28	169 [1493] 27	224 [1979] 26	277 [2448] 24	327 [2894] 21	377 [3333] 19	424 [3753] 16	469 [4148] 11	511 [4521] 8	582 [5152] 8			32
15 [4]	52 [462] 60	113 [999] 59	174 [1536] 57	233 [2062] 56	291 [2572] 53	346 [3063] 50	399 [3535] 47	449 [3976] 44	496 [4386] 40	541 [4786] 36	598 [5295] 33	638 [5650] 28		63
23 [6]	47 [415] 93	108 [955] 91	168 [1485] 90	227 [2010] 88	285 [2526] 85	342 [3028] 81	397 [3510] 77	449 [3977] 71	500 [4421] 66	548 [4846] 60	595 [5267] 55	642 [5684] 52		95
30 [8]		102 [899] 123	162 [1432] 121	221 [1952] 119	279 [2469] 116	336 [2973] 111	391 [3461] 106	445 [3936] 100	497 [4395] 93	547 [4841] 87	593 [5247] 79	640 [5666] 73		126
38 [10]		94 [828] 155	154 [1360] 153	213 [1886] 150	271 [2399] 147	328 [2906] 142	384 [3396] 137	437 [3868] 131	489 [4330] 123	541 [4788] 115	587 [5193] 106	635 [5619] 99		158
45 [12]		85 [751] 186	144 [1277] 184	203 [1796] 182	262 [2315] 178	319 [2821] 173	375 [3314] 168	428 [3789] 160	480 [4248] 153	531 [4698] 145	575 [5091] 134	623 [5516] 125		189
53 [14]		74 [657] 218	134 [1183] 216	192 [1698] 214	250 [2212] 210	308 [2723] 205	374 [3311] 201	418 [3696] 191	470 [4159] 183	520 [4604] 174	564 [4992] 164	611 [5408] 154		220
Max. Cont.	61 [16]	67 [591] 249	122 [1078] 248	180 [1589] 245	238 [2106] 241	295 [2612] 236	351 [3105] 230	405 [3586] 222	458 [4049] 213	508 [4496] 205	551 [4879] 192	600 [5306] 183		252
Max. Inter.	76 [20]		107 [949] 279	165 [1464] 276	221 [1960] 272	279 [2468] 267	335 [2961] 260	388 [3438] 251	440 [3896] 241	490 [4335] 231				283
			93 [823] 311	152 [1342] 307	208 [1837] 303	264 [2336] 297	320 [2834] 290	374 [3310] 282	426 [3774] 272	477 [4219] 261				315
	Theo. Torque	66 [585]	132 [1171]	198 [1756]	265 [2341]	331 [2926]	397 [3512]	463 [4097]	529 [4682]	595 [5268]	661 [5853]	728 [6438]	794 [7024]	

320 326 cc/rev [19.8 in³/rev]

Flow LPM [GPM]	Pressure, bars [psi]										Max. Cont.	Max. Inter.	Theo. RPM	
	17 [250]	35 [500]	52 [750]	69 [1000]	86 [1250]	104 [1500]	121 [1750]	138 [2000]	155 [2250]	173 [2500]				
2 [0.5]	71 [630] 5	141 [1250] 5	210 [1855] 5	277 [2454] 4	344 [3043] 4	409 [3618] 3	477 [4220] 3							6
4 [1]	75 [661] 11	149 [1314] 11	221 [1952] 10	291 [2576] 10	358 [3168] 9	425 [3765] 8	488 [4320] 7	553 [4893] 6						12
8 [2]	77 [684] 22	157 [1385] 22	233 [2066] 21	306 [2711] 20	377 [3340] 20	446 [3944] 19	512 [4529] 18	575 [5092] 17						24
15 [4]	77 [680] 46	158 [1402] 45	239 [2116] 44	318 [2813] 43	394 [3484] 41	465 [4114] 39	532 [4712] 36	595 [5265] 35	657 [5811] 33	712 [6299] 33				48
23 [6]	71 [632] 70	153 [1353] 68	234 [2071] 67	313 [2774] 65	390 [3454] 62	464 [4103] 59	532 [4712] 55	596 [5278] 52	648 [5735] 48	707 [6253] 47				71
30 [8]		144 [1278] 92	226 [1996] 90	305 [2701] 88	382 [3381] 85	456 [4037] 81	537 [4748] 76	593 [5250] 71	640 [5663] 64	699 [6187] 61				95
38 [10]		134 [1182] 116	215 [1899] 114	294 [2601] 111	371 [3288] 108	446 [3948] 103	518 [4581] 98	585 [5176] 91	632 [5595] 82	689 [6101] 78				118
45 [12]		121 [1070] 139	202 [1788] 137	281 [2487] 134	358 [3171] 131	433 [3832] 127	506 [4477] 121	575 [5084] 114	620 [5483] 101	677 [5991] 95				142
53 [14]		107 [949] 163	187 [1657] 161	266 [2355] 158	343 [3037] 155	418 [3703] 150	491 [4344] 144	559 [4950] 137	606 [5362] 122	663 [5869] 115				165
Max. Cont.	61 [16]	90 [795] 186	170 [1508] 185	249 [2202] 182	326 [2884] 178	401 [3547] 174	474 [4192] 168	544 [4813] 160	591 [5227] 144	649 [5744] 136				189
Max. Inter.	68 [18]		147 [1302] 207	224 [1979] 203	299 [2644] 198	371 [3287] 193	442 [3914] 186	510 [4515] 178	575 [5088] 169	635 [5618] 160				213
76 [20]			128 [1133] 230	204 [1803] 227	278 [2460] 222	351 [3104] 217	421 [3727] 210	489 [4331] 202	555 [4908] 193	616 [5454] 183				236
	Theo. Torque	88 [780]	176 [1561]	265 [2341]	353 [3121]	441 [3901]	529 [4682]	617 [5462]	705 [6242]	794 [7022]	882 [7803]			

Torque, Nm [lb-in]
Speed, RPM

Areas within white represent maximum motor efficiencies. DO NOT operate at maximum pressure and maximum flow simultaneously. Tested at 54°C [129°F] with an oil viscosity of 46 cSt [213 SUS]. **Note:** Performance data is typical. Performance of production units varies slightly from one motor to another.



400 404 cc/rev [24.6 in³/rev]

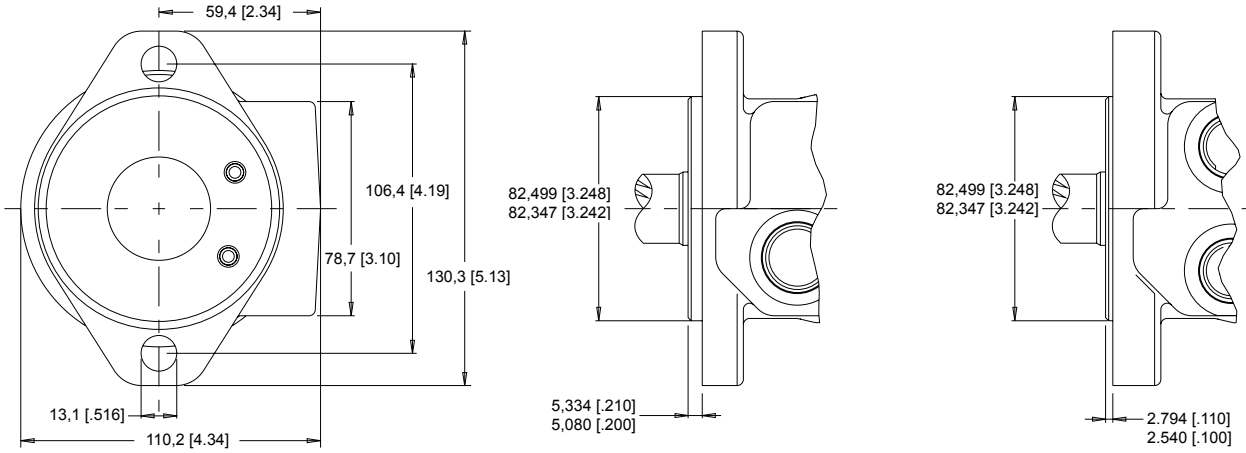
Flow LPM [GPM]	Pressure, bars [psi]								Max. Cont.	Max. Inter.	Theo. RPM
	17 [250]	35 [500]	52 [750]	69 [1000]	86 [1250]	104 [1500]	121 [1750]	138 [2000]			
2 [0.5]	82 [723] 4	165 [1459] 4	250 [2214] 3	329 [2911] 2	418 [3702] 2	497 [4399] 1					5
4 [1]	86 [761] 9	175 [1549] 8	262 [2317] 7	345 [3056] 7	427 [3776] 6	502 [4442] 4	577 [5108] 3	660 [5838] 2			10
8 [2]	89 [791] 18	185 [1637] 17	276 [2445] 17	364 [3219] 16	448 [3962] 15	529 [4679] 13	606 [5362] 11	682 [6032] 9	739 [6540] 6		19
15 [4]	87 [771] 36	187 [1653] 35	285 [2518] 34	378 [3346] 33	467 [4135] 32	551 [4873] 30	629 [5569] 28	698 [6180] 26	765 [6773] 25		38
23 [6]	79 [703] 56	180 [1597] 55	279 [2465] 53	373 [3305] 52	464 [4110] 49	550 [4868] 46	631 [5587] 43	695 [6147] 39	757 [6695] 37		56
30 [8]	70 [620] 75	171 [1511] 73	269 [2377] 72	364 [3217] 70	455 [4025] 67	541 [4787] 63	623 [5515] 58	677 [5991] 52	747 [6614] 48		75
38 [10]	59 [523] 93	157 [1394] 92	255 [2260] 91	351 [3103] 89	442 [3913] 85	529 [4684] 80	611 [5410] 75	663 [5864] 67	734 [6492] 62		93
45 [12]	46 [404] 112	142 [1260] 112	241 [2131] 110	335 [2968] 107	427 [3777] 103	513 [4543] 98	595 [5269] 92	645 [5705] 83	715 [6326] 77		112
53 [14]		125 [1110] 130	223 [1974] 129	318 [2813] 126	409 [3622] 122	496 [4393] 116	578 [5115] 110	625 [5531] 99	694 [6144] 93		130
Max. Cont. 61 [16]		107 [946] 149	203 [1800] 148	298 [2641] 145	390 [3448] 141	478 [4228] 135	560 [4959] 128	606 [5364] 117	673 [5956] 109		149
68 [18]		77 [684] 168	171 [1513] 166	263 [2328] 163	351 [3104] 158	436 [3855] 151	517 [4572] 143				167
Max. Inter. 76 [20]		63 [556] 186	147 [1305] 185	240 [2122] 181	327 [2895] 176	412 [3646] 170	493 [4365] 162				186
Theo. Torque	112 [992]	224 [1984]	336 [2976]	448 [3968]	560 [4960]	673 [5952]	785 [6944]	897 [7935]	1009 [8927]		

Torque, Nm [lb-in]
Speed, RPM

Areas within white represent maximum motor efficiencies. DO NOT operate at maximum pressure and maximum flow simultaneously. Tested at 54°C [129°F] with an oil viscosity of 46 cSt [213 SUS]. **Note:** Performance data is typical. Performance of production units varies slightly from one motor to another.

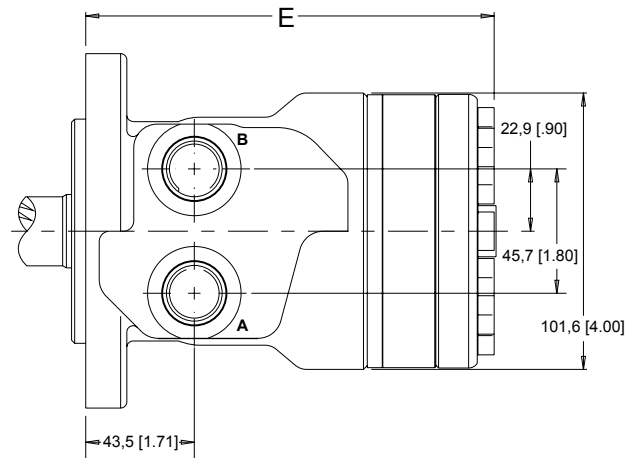
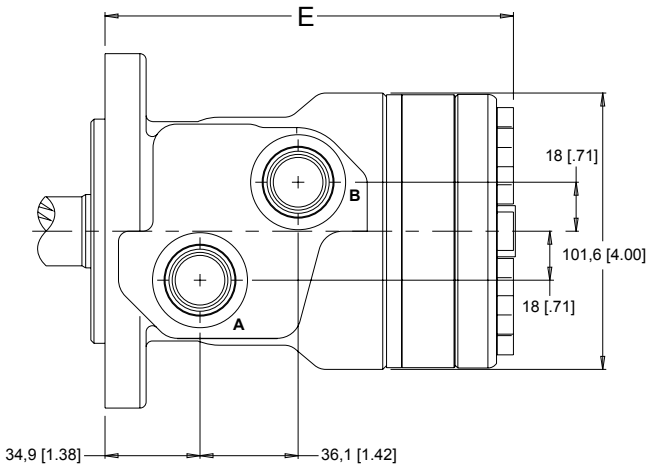


SAE A FLANGE



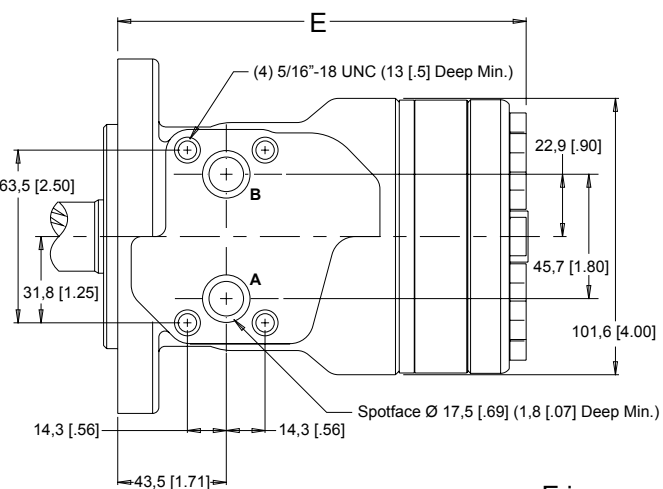
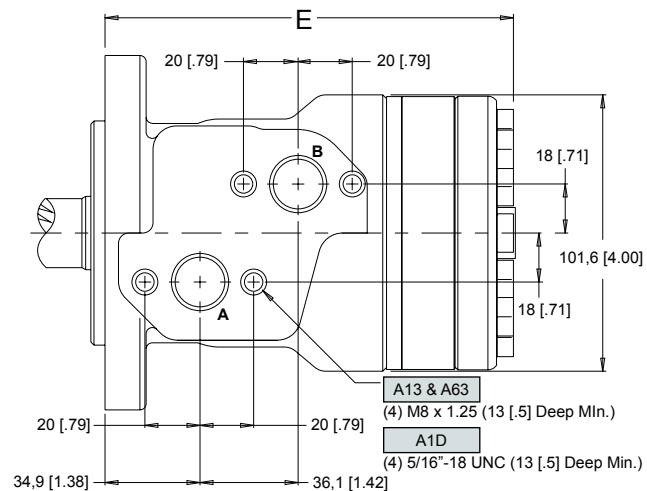
- A12** 2-Hole Offset Ports 1/2" BSP.F
- A19** 2-Hole Offset Ports 7/8" O-Ring
- A62** 2-Hole Offset Ports 1/2" BSP.F with Tall Pilot

- A10** 2-Hole Front Ports 1/2" NPT
- A11** 2-Hole Front Ports 7/8" O-Ring



- A13** 2-Hole Offset Manifold Ports 1/2" BSP.F
- A1D** 2-Hole Offset Manifold Ports 7/8" O-Ring
- A63** 2-Hole Offset Manifold Ports 1/2" BSP.F with Tall Pilot

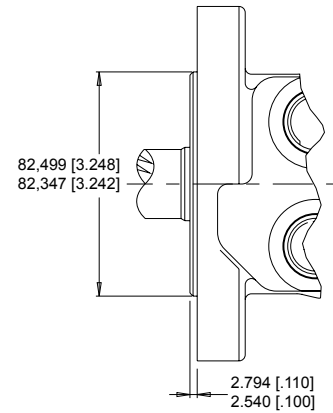
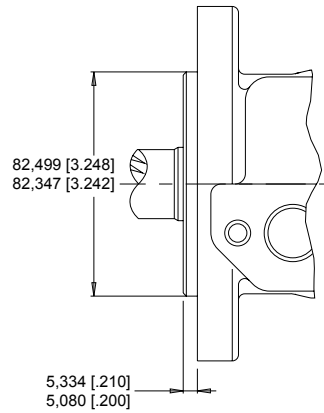
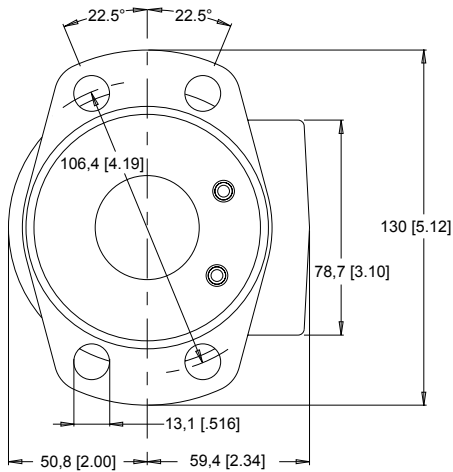
- A17** 2-Hole Manifold Ports 1/2" Drilled



E is on page 13



SAE A FLANGE



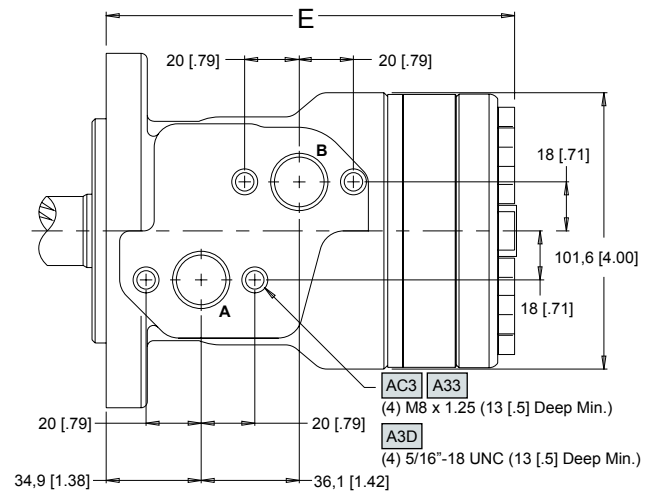
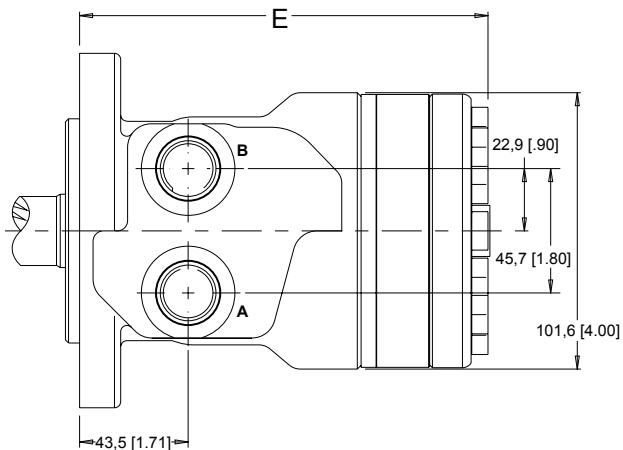
A30 4-Hole Front Ports 1/2" NPT

A31 4-Hole Front Ports 7/8" O-Ring

AC3 4-Hole Offset Manifold Ports 1/2" BSP.F with Tall Pilot

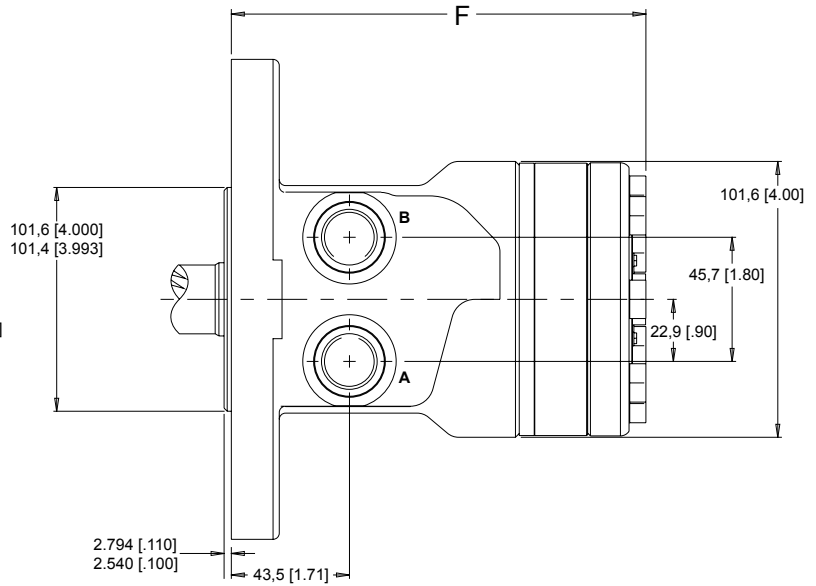
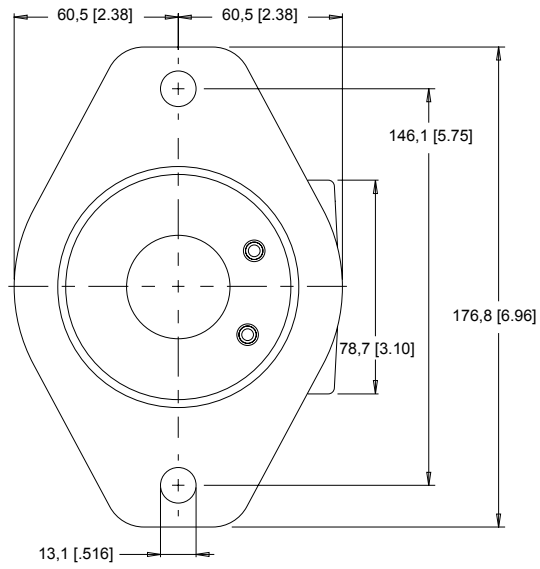
A33 4-Hole Offset Manifold Ports 1/2" BSP.F

A3D 4-Hole Offset Manifold Ports 7/8" O-Ring





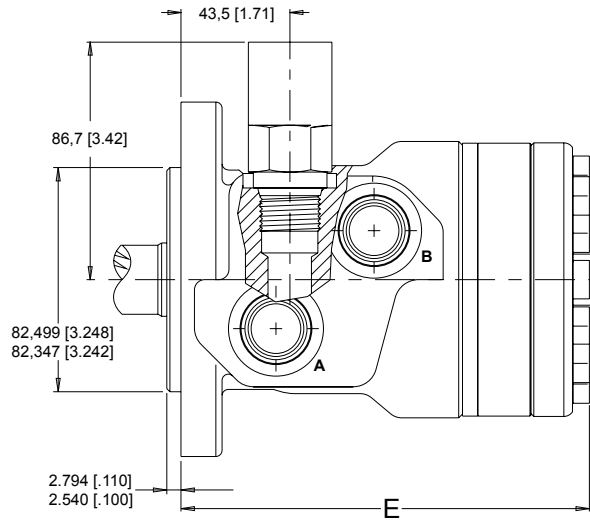
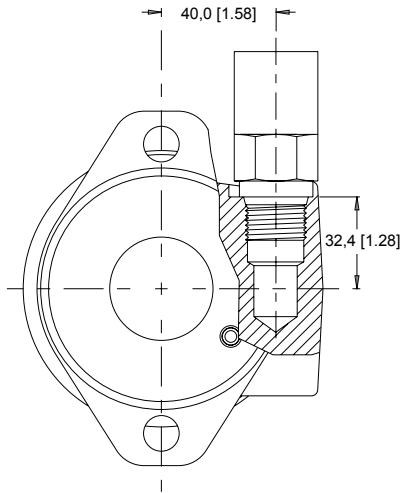
- B18** 2-Hole Aligned Ports 1/2" BSP.F
- B11** 2-Hole Aligned Ports 7/8" O-Ring



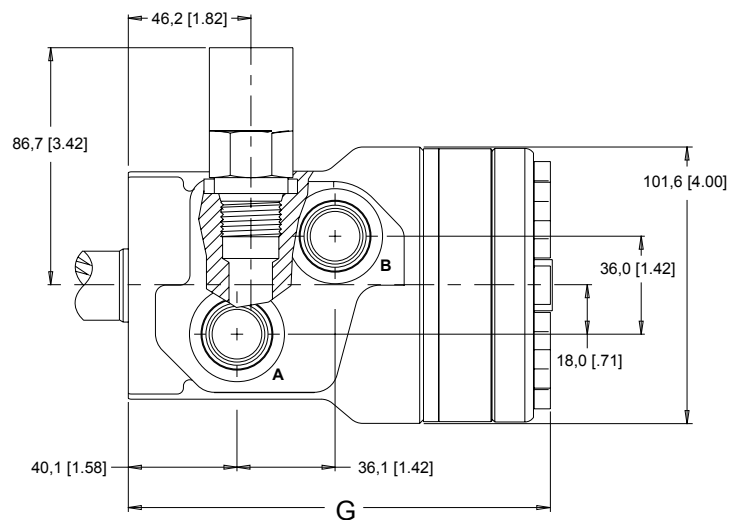
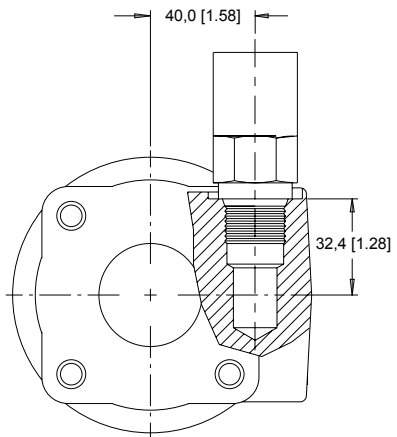


VALVE CAVITY HOUSINGS

A19 2-Hole Offset Ports 7/8" O-Ring



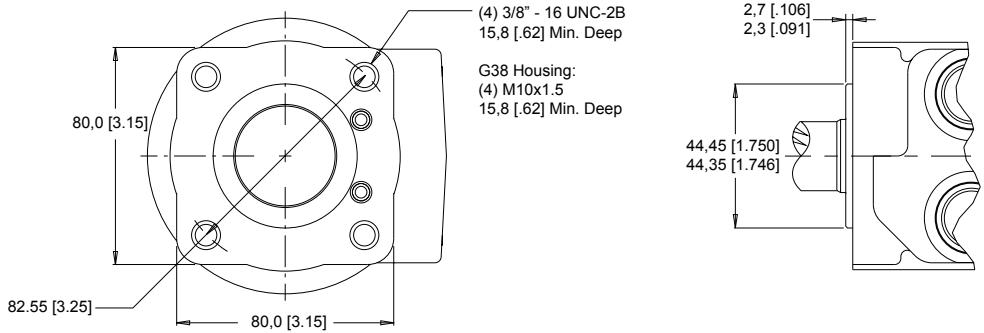
F39 4-Hole Offset Ports 7/8" O-Ring



G is on page 13

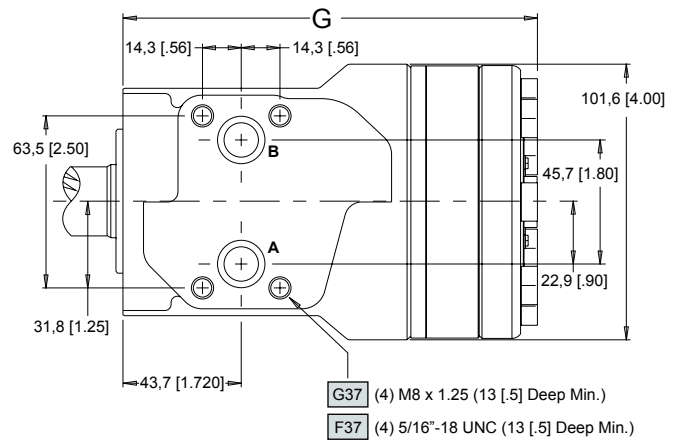
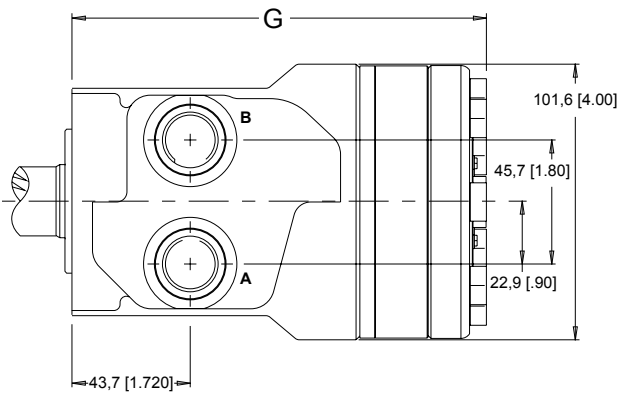


4 - HOLE FLANGE

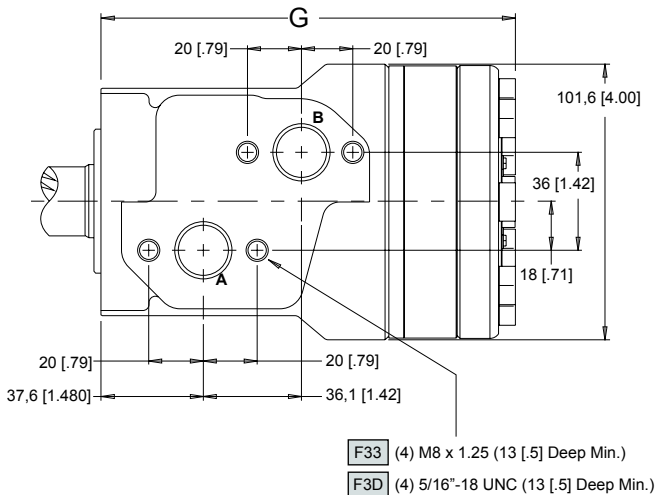


- F38** 4-Hole Aligned Ports 1/2" BSP.F
- F30** 4-Hole Aligned Ports 1/2" NPT
- F31** 4-Hole Aligned Ports 7/8" O-Ring
- G38** 4-Hole Aligned Ports 1/2" BSP.F with Metric Mounting Flange

- G37** 4-Hole Manifold Ports
- F37** 4-Hole Manifold Ports



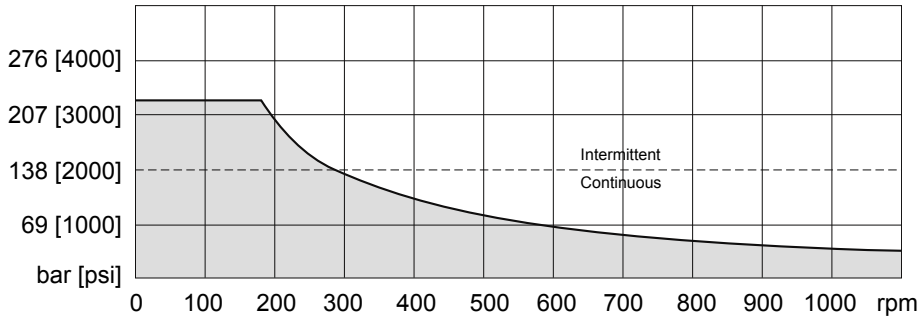
- F33** 4-Hole Offset Manifold Ports 1/2" BSP.F with Tall Pilot
- F3D** 4-Hole Offset Manifold Ports 7/8" O-Ring





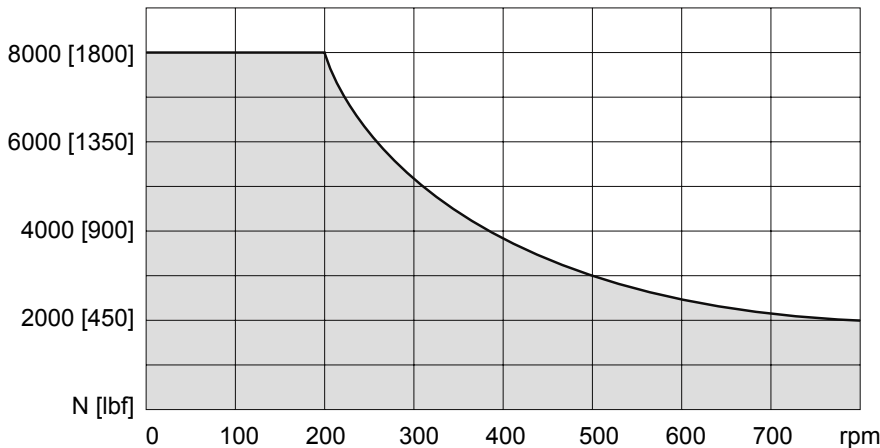
PERMISSIBLE SHAFT SEAL PRESSURE

The WR has built-in check valves. The pressure on the shaft seal is identical to the output pressure. The curve below represents seal pressure at various speeds.



ALLOWABLE SHAFT LOAD / BEARING CURVE

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.



SHAFT LENGTHS (DIMENSION H)

Code	SAE "A" Flange mm [in]	4-Hole Flange mm [in]	SAE "B" Flange mm [in]
01	40 [1.59]	40 [1.59]	40 [1.59]
02	48 [1.88]	48 [1.88]	48 [1.88]
04	48 [1.88]	48 [1.88]	48 [1.88]
05	48 [1.88]	48 [1.88]	48 [1.88]
10	48 [1.88]	48 [1.88]	48 [1.88]
11	48 [1.88]	48 [1.88]	48 [1.88]
12	53 [2.08]	48 [1.88]	53 [2.08]
13	64 [2.52]	64 [2.52]	64 [2.52]
15	64 [2.52]	64 [2.52]	64 [2.52]
16	64 [2.52]	64 [2.52]	64 [2.52]
53	48 [1.88]	48 [1.88]	48 [1.88]
66	51 [2.00]	48 [1.88]	51 [2.00]

For Tall Pilot Housings add 2,5 [.10] to distance.

LENGTH AND WEIGHT TABLES

SAE "A" Flange		
Code	E mm [in]	Weight kg [lb]
040	142 [5.60]	6,6 [14.5]
060	146 [5.74]	6,7 [14.7]
070	147 [5.80]	6,7 [14.7]
090	151 [5.96]	6,8 [15,0]
100	154 [6.06]	6,9 [15.2]
115	156 [6.15]	7,1 [15.6]
130	160 [6.28]	7,3 [16.1]
160	166 [6.53]	7,5 [16.5]
200	173 [6.83]	8,0 [17.6]
240	182 [7.15]	8,5 [18.7]
320	198 [7.78]	9,0 [19.8]
400	213 [8.39]	9,8 [21.6]

For Tall Pilot Housings subtract 2,5 [.10] from distance.

SAE "B" Flange		
Code	F mm [in]	Weight kg [lb]
040	142 [5.60]	7,8 [17.2]
060	146 [5.74]	7,9 [17.4]
070	147 [5.80]	7,9 [17.4]
090	151 [5.96]	8,0 [17.6]
100	154 [6.06]	8,1 [17.8]
115	156 [6.15]	8,3 [18.3]
130	160 [6.28]	8,5 [18.7]
160	166 [6.53]	8,7 [19.1]
200	173 [6.83]	9,2 [20.2]
240	182 [7.15]	9,7 [21.3]
320	198 [7.78]	10,2 [22.4]
400	213 [8.39]	11,0 [24.2]

4-Hole Square Flange		
Code	G mm [in]	Weight kg [lb]
040	142 [5.60]	5,3 [11.8]
060	146 [5.75]	5,4 [11.9]
070	147 [5.81]	5,4 [11.9]
090	151 [5.97]	5,5 [12.1]
100	153 [6.06]	5,6 [12.3]
115	156 [6.16]	5,8 [12.8]
130	159 [6.29]	6,0 [13.2]
160	166 [6.54]	6,2 [13.7]
200	174 [6.84]	6,7 [14.8]
240	181 [7.15]	7,2 [15.9]
320	198 [7.79]	7,7 [17.0]
400	213 [8.39]	8,5 [18.7]

WR motor weights vary ± 0,45 kg [1 lb] depending upon motor configuration.

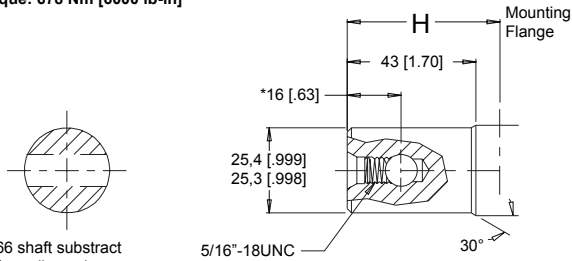


05 1" Pinhole with 9,5 [.375] thru hole

53 1" Pinhole with 10,3 [.406] thru hole

66 1" Pinhole with 8,0 [.315] thru hole

Max. Torque: 678 Nm [6000 lb-in]

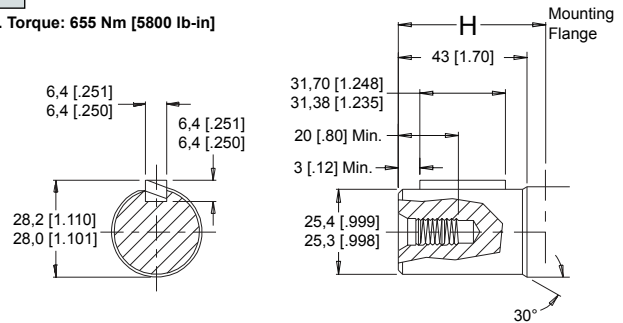


*For the 66 shaft subtract 4,7 [.19] from dimension

10 1" Straight with 5/16" - 18 UNC tap

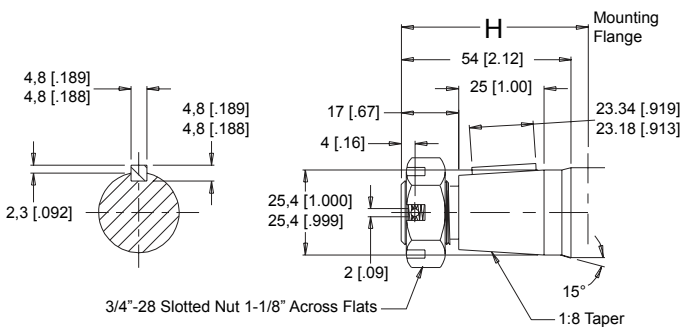
11 1" Straight with M8x1.25 tap

Max. Torque: 655 Nm [5800 lb-in]



13 1" Tapered

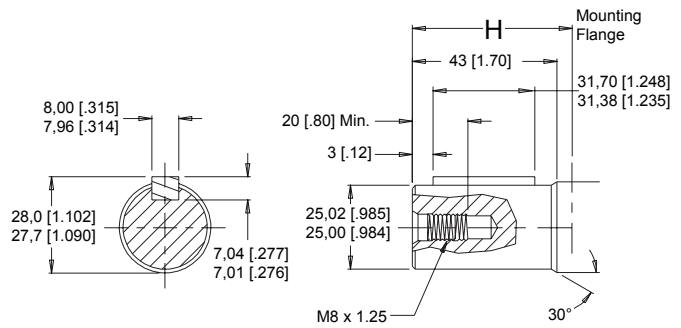
Max. Torque: 655 Nm [5800 lb-in]



Note: A slotted nut is standard on this shaft.

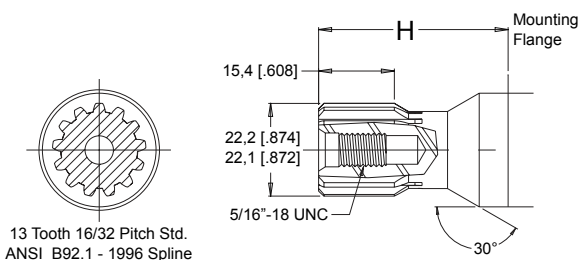
12 25mm Straight

Max. Torque: 678 Nm [6000 lb-in]



01 13 Tooth Spline

Max. Torque: 170 Nm [1500 lb-in]

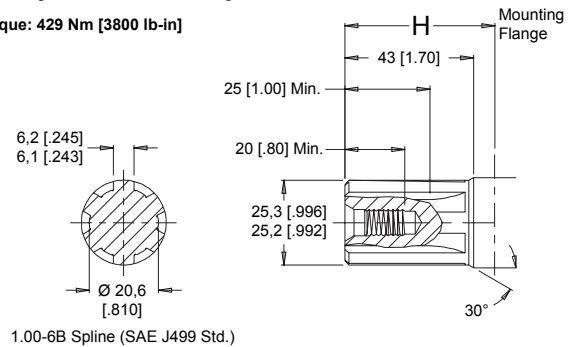


13 Tooth 16/32 Pitch Std.
ANSI B92.1 - 1996 Spline

02 6B Spline with 5/16" - 18 UNC tap

04 6B Spline with M8x1.25 tap

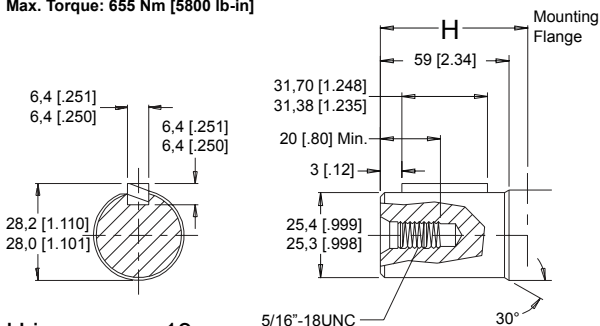
Max. Torque: 429 Nm [3800 lb-in]



1.00-6B Spline (SAE J499 Std.)

15 1" Straight Extended

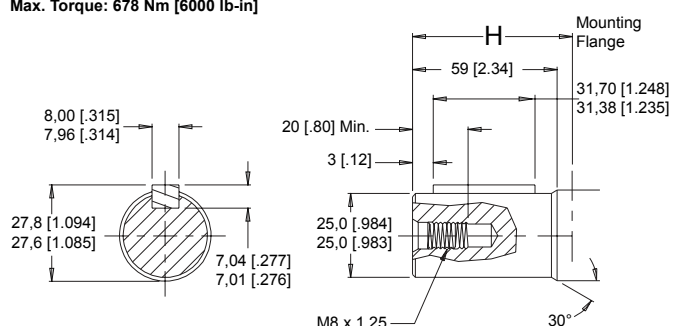
Max. Torque: 655 Nm [5800 lb-in]



H is on page 13

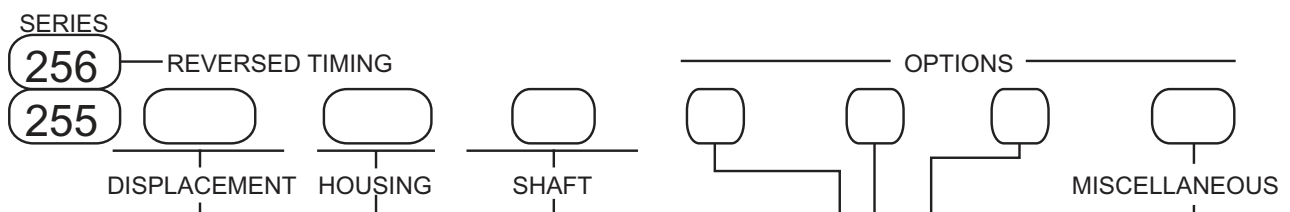
16 25mm Straight Extended

Max. Torque: 678 Nm [6000 lb-in]





255 SERIES ORDERING INFORMATION



Code	Displacements
040	40cc [2.5 in ³ /rev]
060	59cc [3.6 in ³ /rev]
070	70cc [4.3 in ³ /rev]
090	87cc [5.3 in ³ /rev]
100	101cc [6.1 in ³ /rev]
115	113cc [6.9 in ³ /rev]
130	128cc [7.8 in ³ /rev]
160	163cc [9.9 in ³ /rev]
200	202cc [12.3 in ³ /rev]
240	236cc [14.4 in ³ /rev]
320	326cc [19.8 in ³ /rev]
400	404cc [24.6 in ³ /rev]

Code	Housings
A10	2-Hole 1/2" NPT Aligned Ports
A11	2-Hole 7/8" O-Ring Aligned Ports
A12	2-Hole 1/2" BSP.F Offset Ports
A13	2-Hole 1/2" BSP.F Offset Manifold
A17	2-Hole Manifold Ports
*A19	2-Hole 7/8" O-Ring Offset w/ Valve Cavity
A1D	2-Hole 7/8" O-Ring Offset Manifold
**A62	2-Hole 1/2" BSP.F Offset w/ Tall Pilot
A63	2-Hole 1/2" BSP.F Offset Manifold w/ Tall Pilot
AC3	4-Hole 1/2" BSP.F Offset Manifold w/ Tall Pilot
A30	4-Hole 1/2" NPT Aligned Ports
A31	4-Hole 7/8" O-ring Aligned Ports
A33	4-Hole 1/2" BSP.F Offset Manifold
A3D	4-Hole 7/8" O-Ring Offset Manifold
B11	2-Hole 7/8" O-Ring Aligned Ports
B18	2-Hole 1/2" BSP.F Aligned Ports
F30	4-Hole 1/2" NPT Aligned Ports
F31	4-Hole 7/8" O-Ring Aligned Ports
F33	4-Hole 1/2" BSP.F Offset Manifold
F37	4-Hole Manifold
F38	4-Hole 1/2" BSP.F Aligned Ports
*F39	4-Hole 7/8" O-Ring Offset w/ Valve Cavity
F3D	4-Hole 7/8" O-Ring Offset Manifold
G37	4-Hole Manifold
G38	4-Hole 1/2" BSP.F Aligned Ports w/ Metric Mount

Code	Shafts
01	7/8" 13 Tooth
02	1" 6-B Spline 5/16"-18 UNC tap
04	1" 6B Spline M8x1.5 tap
05	1" Pinhole 9,5 [.375] thru hole
10	1" Straight 5/16"-18 UNC tap
11	1" Straight M8x1.25 tap
12	25mm Straight
13	1" Tapered
15	1" Straight Ext.
16	25mm Ext.
53	1" Pinhole 10,3 [.406] thru hole
66	1" Pinhole 8,0 [.315] thru hole

Code	Options
AA	None

ADD ONS

Code	Options
A	Standard
B	Lock Nut
C	Solid Hex Nut

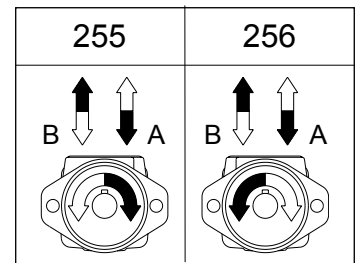
CAVITY

Code	Options
A	None
B	Relief Valve Cavity
C	69 bar [1000 psi] Relief Valve Installed
D	86 bar [1250 psi] Relief Valve Installed
E	104 bar [1500 psi] Relief Valve Installed
F	121 bar [1750 psi] Relief Valve Installed
G	138 bar [2000 psi] Relief Valve Installed

PAINT

Code	Options
A	Black
B	Black (Unpainted Flange Face)

* Must be ordered with a Valve Cavity
 ** Can be ordered with a Valve Cavity



ROTATION

To obtain the desired direction of shaft rotation, use the graphic above to determine the rotation code for the motor.



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