



whitedriveproducts



SERIES

145 -

146 -



LIGHT DUTY
Hydraulic Motor





OVERVIEW

The WD motor series is an economical solution for light duty applications requiring high torque. It has a smaller outline yet still provides high efficiency across a wide performance range. Its integral check valves and a provision for a case drain reduce pressure on internal seals to improve product life. The compact package is suitable for industrial and mobile applications including car wash brushes, food processing equipment, conveyors, machine tools, agricultural equipment, sweepers, skid steer attachments, and more.

FEATURES / BENEFITS

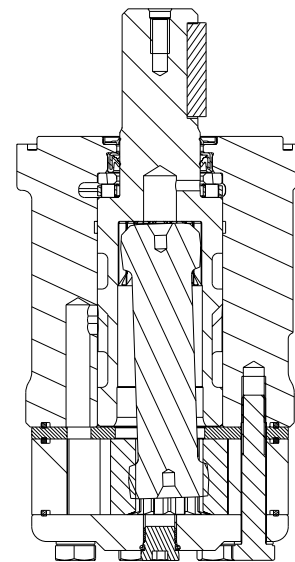
- Built-in check valves offer versatility and increased seal life.
- A variety of mounts and shafts provide flexibility in application design.
- Spool valve design gives superior performance and smooth operation over a wide speed and torque range.
- Integral rotor design provides smooth performance, compact volume and low weight.
- Low port profiling is suitable for applications with limited space.

TYPICAL APPLICATIONS

agriculture equipment, conveyors, carwashes, sweepers, food processing, grain augers, spreaders, feed rollers, augers, brush drives and more

SERIES DESCRIPTIONS

145/146 - Hydraulic Motor
Standard



SPECIFICATIONS

CODE	Displacement cm ³ [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
025	24.6 [1.5]	1361	1502	35 [9]	40 [11]	34 [301]	47 [416]	100 [1450]	140 [2030]	225 [3260]
032	30.8 [1.9]	1244	1388	40 [11]	45 [12]	42 [372]	57 [505]	100 [1450]	140 [2030]	225 [3260]
040	39.7 [2.4]	1124	1312	45 [12]	53 [14]	66 [584]	79 [699]	124 [1800]	155 [2250]	225 [3260]
050	48.2 [2.9]	900	1012	45 [12]	53 [14]	91 [805]	114 [1009]	138 [2000]	173 [2500]	225 [3260]
060	59.4 [3.6]	880	970	53 [14]	60 [16]	110 [974]	136 [1204]	138 [2000]	173 [2500]	225 [3260]
080	79.6 [4.9]	752	934	60 [16]	75 [20]	141 [1248]	175 [1549]	138 [2000]	173 [2500]	225 [3260]
100	96.0 [5.9]	628	786	60 [16]	75 [20]	170 [1505]	220 [1947]	138 [2000]	173 [2500]	225 [3260]
125	122.8 [7.5]	483	604	60 [16]	75 [20]	225 [1991]	274 [2425]	138 [2000]	173 [2500]	225 [3260]
160	158.0 [9.6]	383	479	60 [16]	75 [20]	284 [2513]	345 [3054]	138 [2000]	173 [2500]	225 [3260]
200	196.5 [12.0]	308	384	60 [16]	75 [20]	312 [2761]	411 [3638]	124 [1800]	166 [2400]	225 [3260]
250	240.5 [14.7]	248	312	60 [16]	75 [20]	317 [2806]	450 [3983]	103 [1500]	155 [2250]	225 [3260]
315	303.2 [18.5]	199	250	60 [16]	75 [20]	396 [3505]	576 [5098]	103 [1500]	155 [2250]	200 [2900]
400	385.8 [23.5]	150	189	60 [16]	75 [20]	480 [4248]	582 [5151]	97 [1400]	121 [1750]	180 [2610]

► Performance data is typical. Performance of production units varies slightly from one motor to another. Running at intermittent ratings should not exceed 10% of every minute of operation.



DISPLACEMENT PERFORMANCE

025		Pressure - bar [psi]		Max. Cont.		Max. Inter.							
		30 [435]	60 [870]	80 [1160]	100 [1450]	120 [1740]	140 [2030]						
25 cm ³ [1.5 in ³] / rev													
		Torque - Nm [lb-in], Speed rpm				Intermittent Ratings - 10% of Operation							
Flow - lpm [gpm]	5 [1.3]	9 [80] 186	18 [159] 167	25 [221] 138	32 [283] 115	35 [310] 106			203				
	10 [2.6]	9 [80] 388	20 [177] 350	26 [230] 316	34 [301] 285	37 [327] 255	46 [407] 217	407					
	15 [4.0]	8 [71] 568	19 [168] 536	27 [239] 206	33 [292] 485	38 [336] 447	47 [416] 402	610					
	20 [5.3]	8 [71] 780	19 [168] 736	26 [230] 688	33 [292] 658	38 [336] 628	47 [416] 598	813					
	25 [6.6]	7 [62] 970	18 [159] 922	26 [230] 885	33 [292] 855	37 [327] 830	46 [407] 780	1016					
	30 [7.9]	6 [53] 1172	16 [142] 1120	24 [212] 1086	32 [283] 1046	36 [319] 1026	45 [398] 981	1220					
	35 [9.2]	5 [44] 1361	13 [115] 1318	22 [195] 1285	30 [266] 1248	36 [319] 1212	43 [381] 1172	1423					
	40 [10.6]	11 [97]		20 [177] 1502	28 [248] 1477	35 [310] 1404	42 [372] 1365	1626					
Max. Max. Inter. Cont.													
Rotor Width		Overall Efficiency - 70 - 100% <input type="checkbox"/>		40 - 69% <input type="checkbox"/>		0 - 39% <input type="checkbox"/>							
4.1 [1.60] mm [in]		Theoretical Torque - Nm [lb-in]											
		12 [104]		24 [208]		31 [277]		39 [347]		47 [416]		55 [485]	
Displacement tested at 45°C [113°F] with an oil viscosity of 46cSt [213 SUS]													

032		Pressure - bar [psi]		Max. Cont.		Max. Inter.							
		30 [435]	60 [870]	80 [1160]	100 [1450]	120 [1740]	140 [2030]						
31 cm ³ [1.9 in ³] / rev													
		Torque - Nm [lb-in], Speed rpm				Intermittent Ratings - 10% of Operation							
Flow - lpm [gpm]	5 [1.3]	12 [106] 150	24 [212] 133	32 [283] 100	40 [354] 68					162			
	10 [2.6]	12 [106] 300	25 [221] 276	33 [292] 253	42 [372] 236	48 [425] 203	55 [487] 186	325					
	15 [4.0]	11 [97] 460	24 [212] 433	33 [292] 415	42 [372] 398	49 [434] 375	57 [504] 346	487					
	20 [5.3]	9 [80] 616	24 [212] 586	32 [283] 566	41 [363] 543	49 [434] 520	56 [496] 500	649					
	25 [6.6]	8 [71] 780	23 [204] 754	32 [283] 736	40 [354] 712	48 [425] 688	56 [496] 658	812					
	30 [7.9]	7 [62] 928	22 [195] 910	31 [274] 882	40 [354] 860	47 [416] 824	56 [496] 806	974					
	35 [9.2]	7 [62] 1090	21 [186] 1077	31 [274] 1057	38 [336] 1035	46 [407] 1008	55 [487] 980	1136					
	40 [10.6]	6 [53] 1244	19 [168] 1214	29 [257] 1198	37 [327] 1177	46 [407] 1155	54 [478] 1130	1299					
45 [11.9]	17 [150]		28 [248] 1362	37 [327] 1342	45 [398] 1326	54 [478] 1300	1461						
Max. Max. Inter. Cont.													
Rotor Width		Overall Efficiency - 70 - 100% <input type="checkbox"/>		40 - 69% <input type="checkbox"/>		0 - 39% <input type="checkbox"/>							
5.1 [2.00] mm [in]		Theoretical Torque - Nm [lb-in]											
		15 [130]		29 [260]		39 [347]		49 [434]		59 [521]		69 [608]	
Displacement tested at 45°C [113°F] with an oil viscosity of 46cSt [213 SUS]													

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

DISPLACEMENT PERFORMANCE

040		Pressure - bar [psi]						Max. Cont.	Max. Inter.		
		21 [300]	41 [600]	62 [900]	83 [1200]	103 [1500]	124 [1800]	155 [2250]			
40 cm ³ [2.4 in ³] / rev		Intermittent Ratings - 10% of Operation									
Max. Max. Inter. Cont.	Flow - lpm [gpm]	Torque - Nm [lb-in], Speed rpm							Theoretical rpm		
		8 [2]	10 [89] 182	20 [177] 169	29 [257] 128	40 [354] 90				191	
		15 [4]	11 [97] 362	21 [186] 344	31 [274] 334	43 [381] 320	54 [478] 304	65 [575] 284		78 [690] 254	380
		23 [6]	10 [89] 548	20 [177] 535	32 [283] 519	42 [372] 502	53 [469] 488	66 [584] 468		79 [699] 428	572
		30 [8]	7 [62] 738	19 [168] 729	31 [274] 706	41 [363] 688	52 [460] 670	64 [566] 648		78 [690] 614	763
		38 [10]	6 [53] 932	16 [142] 914	30 [266] 896	40 [354] 878	51 [451] 856	62 [549] 834		77 [681] 798	955
		45 [12]	3 [27] 1124	14 [124] 1102	28 [248] 1084	38 [336] 1062	49 [434] 1043	60 [531] 1014		76 [673] 976	1144
53 [14]		14 [124] 1312	25 [221] 1290	38 [336] 1266	48 [425] 1242	60 [531] 1218	76 [673] 1168	1335			
Rotor Width		Overall Efficiency - 70 - 100% <input type="checkbox"/> 40 - 69% <input type="checkbox"/> 0 - 39% <input checked="" type="checkbox"/>									
6.6 [260] mm [in]		Theoretical Torque - Nm [lb-in]									
		13 [117]	26 [229]	39 [347]	52 [464]	65 [576]	78 [694]	98 [867]			
		Displacement tested at 45°C [113°F] with an oil viscosity of 46cSt [213 SUS]									

050		Pressure - bar [psi]						Max. Cont.	Max. Inter.			
		21 [300]	41 [600]	62 [900]	83 [1200]	103 [1500]	124 [1800]	138 [2000]	173 [2500]			
48 cm ³ [2.9 in ³] / rev		Intermittent Ratings - 10% of Operation										
Max. Max. Inter. Cont.	Flow - lpm [gpm]	Torque - Nm [lb-in], Speed rpm							Theoretical rpm			
		8 [2]	14 [124] 148	26 [230] 143	40 [354] 130	55 [354] 116	65 [575] 102	82 [726] 86		88 [779] 75	158	
		15 [4]	14 [124] 298	27 [239] 289	42 [372] 276	56 [381] 260	67 [593] 245	83 [735] 229		89 [788] 214	114 [1009] 166	313
		23 [6]	12 [106] 450	24 [212] 438	41 [363] 423	54 [372] 406	68 [602] 388	84 [743] 374		91 [805] 352	112 [991] 314	471
		30 [8]	9 [80] 602	21 [186] 590	38 [336] 580	52 [363] 555	65 [575] 540	81 [717] 523		88 [779] 508	110 [974] 475	629
		38 [10]	2 [18] 750	19 [168] 732	37 [327] 722	51 [354] 713	63 [558] 693	77 [681] 681		85 [752] 669	107 [947] 635	786
		45 [12]		17 [150] 900	33 [292] 885	46 [336] 875	60 [531] 860	73 [646] 848		83 [735] 830	105 [929] 794	942
53 [14]			28 [248] 1012	42 [336] 1000	58 [513] 986	70 [620] 972	80 [708] 960	100 [885] 924	1100			
Rotor Width		Overall Efficiency - 70 - 100% <input type="checkbox"/> 40 - 69% <input type="checkbox"/> 0 - 39% <input checked="" type="checkbox"/>										
6.6 [260] mm [in]		Theoretical Torque - Nm [lb-in]										
		16 [143]	31 [278]	48 [422]	64 [564]	79 [700]	95 [842]	106 [937]	133 [1175]			
		Displacement tested at 45°C [113°F] with an oil viscosity of 46cSt [213 SUS]										

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



DISPLACEMENT PERFORMANCE

060		Pressure - bar [psi]							Max. Cont.		Max. Inter.	
		21 [300]	41 [600]	62 [900]	83 [1200]	103 [1500]	124 [1800]	138 [2000]	173 [2500]			
59 cm ³ [3.6 in ³] / rev												
Torque - Nm [lb-in], Speed rpm												
Flow - lpm [gpm]	8 [2]	17 [150] 122	30 [266] 119	46 [407] 113	63 [558] 107	82 [726] 94	99 [876] 77	109 [965] 65			128	
	15 [4]	16 [142] 247	32 [283] 243	48 [425] 236	65 [575] 223	82 [726] 209	102 [903] 192	110 [974] 180	136 [1204] 142		254	
	23 [6]	15 [133] 371	29 [257] 367	47 [416] 360	66 [584] 347	81 [717] 330	99 [876] 315	107 [947] 304	135 [1195] 266		382	
	30 [8]	12 [106] 496	26 [230] 492	44 [389] 484	62 [549] 470	79 [699] 457	96 [850] 436	105 [929] 425	130 [1151] 386		510	
	38 [10]	8 [71] 626	23 [204] 618	40 [354] 608	60 [531] 596	77 [681] 582	94 [832] 567	104 [920] 558	128 [1133] 500		638	
	45 [12]	2 [18] 752	20 [177] 744	37 [327] 735	58 [513] 727	75 [664] 716	91 [805] 696	100 [885] 680	127 [1124] 628		764	
	53 [14]		15 [133] 880	31 [274] 870	48 [425] 862	71 [628] 847	87 [770] 830	97 [858] 800	121 [1071] 740		892	
	61 [16]		8 [71] 970	27 [239] 958	45 [398] 944	64 [566] 932	82 [726] 924	93 [823] 902	117 [1035] 842		1020	
Max. Max. Inter. Cont.												
Intermittent Ratings - 10% of Operation												
Overall Efficiency - 70 - 100% <input type="checkbox"/> 40 - 69% <input type="checkbox"/> 0 - 39% <input type="checkbox"/>												
Rotor Width												
Theoretical Torque - Nm [lb-in]												
		20 [176]	39 [343]	59 [520]	79 [695]	97 [862]	117 [1038]	131 [1155]	164 [1448]			
		Displacement tested at 45°C [113°F] with an oil viscosity of 46cSt [213 SUS]										

080		Pressure - bar [psi]							Max. Cont.		Max. Inter.	
		21 [300]	41 [600]	62 [900]	83 [1200]	103 [1500]	124 [1800]	138 [2000]	173 [2500]			
80 cm ³ [4.9 in ³] / rev												
Torque - Nm [lb-in], Speed rpm												
Flow - lpm [gpm]	8 [2]	22 [195] 90	42 [372] 85	61 [540] 78	82 [726] 70	102 [903] 62	124 [1097] 52	138 [1221] 42			95	
	15 [4]	20 [177] 187	43 [381] 182	62 [549] 176	84 [743] 167	107 [947] 154	128 [1133] 143	141 [1248] 136	171 [1513] 112		190	
	23 [6]	19 [168] 286	41 [363] 276	63 [558] 268	83 [735] 257	104 [920] 248	125 [1106] 237	139 [1230] 227	175 [1549] 202		285	
	30 [8]	13 [115] 378	38 [336] 372	61 [540] 364	82 [726] 354	102 [903] 342	124 [1097] 334	137 [1212] 324	174 [1540] 297		381	
	38 [10]	8 [71] 474	35 [310] 469	58 [513] 460	80 [708] 448	101 [894] 440	123 [1089] 430	135 [1195] 416	165 [1460] 370		476	
	45 [12]	2 [18] 564	29 [257] 558	55 [487] 550	75 [664] 540	100 [885] 530	121 [1071] 519	133 [1177] 504	163 [1443] 472		570	
	53 [14]		26 [230] 662	48 [425] 658	70 [620] 648	96 [850] 637	115 [1018] 633	130 [1151] 609	161 [1425] 576		666	
	61 [16]		20 [177] 752	44 [389] 734	68 [602] 724	85 [752] 716	105 [929] 700	123 [1089] 690	154 [1363] 663		761	
76 [20]		11 [97] 934	32 [283] 929	54 [478] 914	74 [655] 904	94 [832] 890	108 [956] 876	148 [1310] 814		951		
Max. Max. Inter. Cont.												
Intermittent Ratings - 10% of Operation												
Overall Efficiency - 70 - 100% <input type="checkbox"/> 40 - 69% <input type="checkbox"/> 0 - 39% <input type="checkbox"/>												
Rotor Width												
Theoretical Torque - Nm [lb-in]												
		27 [236]	52 [460]	79 [697]	105 [931]	131 [1155]	157 [1391]	175 [1548]	219 [1941]			
		Displacement tested at 45°C [113°F] with an oil viscosity of 46cSt [213 SUS]										

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



DISPLACEMENT PERFORMANCE

		Pressure - bar [psi]					Max. Cont.		Max. Inter.			
100		21 [300]	41 [600]	62 [900]	83 [1200]	103 [1500]	124 [1800]	138 [2000]	173 [2500]			
96 cm ³ [5.9 in ³] / rev										Intermittent Ratings - 10% of Operation		
		Torque - Nm [lb-in], Speed rpm										
Max. Max. Inter. Cont.	Flow - lpm [gpm]	8 [2]	28 [248] 76	57 [504] 71	82 [726] 65	108 [956] 54	132 [1168] 45	158 [1398] 33			79	Theoretical rpm
		15 [4]	25 [221] 154	56 [496] 147	80 [708] 140	106 [938] 132	130 [1151] 122	155 [1372] 113	165 [1460] 104	205 [1814] 84	157	
		23 [6]	23 [204] 235	50 [443] 226	76 [673] 219	104 [920] 212	128 [1133] 203	153 [1354] 193	170 [1505] 185	212 [1876] 162	236	
		30 [8]	19 [168] 313	47 [416] 307	74 [655] 299	104 [894] 291	125 [1106] 281	152 [1345] 270	167 [1478] 264	220 [1947] 240	316	
		38 [10]	15 [133] 392	43 [381] 389	71 [628] 384	97 [858] 375	122 [1080] 364	149 [1319] 353	167 [1478] 346	218 [1929] 314	395	
		45 [12]	11 [97] 470	37 [327] 465	70 [620] 458	94 [832] 449	120 [1062] 437	147 [1301] 429	162 [1434] 426	210 [1859] 398	473	
		53 [14]		33 [292] 550	60 [531] 545	87 [770] 532	118 [1044] 518	143 [1266] 510	160 [1416] 500	207 [1832] 473	552	
		61 [16]		27 [239] 628	55 [487] 622	82 [726] 611	114 [1009] 598	139 [1230] 584	150 [1328] 575	196 [1732] 552	631	
76 [20]			37 [327] 786	67 [593] 770	93 [823] 758	123 [1089] 732	138 [1221] 716	190 [1682] 670	789			
Rotor Width		Overall Efficiency - 70 - 100% <input type="checkbox"/> 40 - 69% <input type="checkbox"/> 0 - 39% <input checked="" type="checkbox"/>										
13.0 [510]		Theoretical Torque - Nm [lb-in]										
mm [in]		32 [284]	63 [555]	95 [840]	127 [1123]	157 [1393]	190 [1678]	211 [1867]	264 [2340]			
Displacement tested at 45°C [113°F] with an oil viscosity of 46cSt [213 SUS]												

		Pressure - bar [psi]					Max. Cont.		Max. Inter.			
125		21 [300]	41 [600]	62 [900]	83 [1200]	103 [1500]	124 [1800]	138 [2000]	173 [2500]			
123 cm ³ [7.5 in ³] / rev										Intermittent Ratings - 10% of Operation		
		Torque - Nm [lb-in], Speed rpm										
Max. Max. Inter. Cont.	Flow - lpm [gpm]	8 [2]	31 [274] 60	64 [566] 57	102 [903] 54	136 [1204] 48	161 [1425] 44	193 [1708] 38	220 [1947] 34		62	Theoretical rpm
		15 [4]	30 [266] 120	63 [558] 118	101 [894] 115	138 [1221] 109	168 [1487] 102	201 [1779] 94	225 [1991] 87	274 [2425] 61	123	
		23 [6]	30 [266] 183	62 [549] 179	99 [876] 175	137 [1212] 170	167 [1478] 165	202 [1788] 155	223 [1974] 148	272 [2407] 126	185	
		30 [8]	28 [248] 242	59 [522] 240	96 [850] 237	134 [1186] 233	165 [1460] 228	199 [1761] 219	220 [1947] 205	269 [2381] 174	247	
		38 [10]	22 [195] 301	54 [478] 299	93 [823] 295	130 [1151] 289	161 [1425] 282	191 [1690] 275	215 [1903] 265	263 [2328] 244	309	
		45 [12]	15 [133] 362	48 [425] 360	86 [761] 356	124 [1097] 351	156 [1381] 345	184 [1628] 340	209 [1850] 329	257 [2274] 301	370	
		53 [14]	9 [80] 424	41 [363] 422	80 [708] 419	117 [1035] 415	149 [1319] 410	176 [1558] 386	204 [1805] 376	243 [2151] 342	432	
		61 [16]	2 [18] 483	32 [283] 477	70 [620] 470	104 [920] 463	136 [1204] 454	165 [1460] 444	194 [1717] 437	233 [2062] 412	493	
76 [20]		15 [133] 604	48 [425] 595	82 [726] 584	122 [1080] 573	153 [1354] 565	178 [1575] 556	224 [1982] 526	616			
Rotor Width		Overall Efficiency - 70 - 100% <input type="checkbox"/> 40 - 69% <input type="checkbox"/> 0 - 39% <input checked="" type="checkbox"/>										
16.8 [660]		Theoretical Torque - Nm [lb-in]										
mm [in]		41 [363]	80 [710]	121 [1075]	162 [1436]	201 [1782]	242 [2146]	270 [2388]	338 [2994]			
Displacement tested at 45°C [113°F] with an oil viscosity of 46cSt [213 SUS]												

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



DISPLACEMENT PERFORMANCE

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Pressure - bar [psi]				Max. Cont.		Max. Inter.	
21 [300]	41 [600]	62 [900]	83 [1200]	103 [1500]	124 [1800]	138 [2000]	173 [2500]

158 cm³ [9.6 in³] / rev

Intermittent Ratings - 10% of Operation

		Torque - Nm [lb-in], Speed rpm								
Flow - lpm [gpm]	8 [2]	42 [372] 47	88 [779] 45	120 [1062] 42	168 [1487] 36	210 [1859] 28	246 [2177] 20			48
	15 [4]	39 [345] 94	85 [752] 92	125 [1106] 89	170 [1505] 85	211 [1867] 79	251 [2221] 72	284 [2513] 64	345 [3053] 35	96
	23 [6]	38 [336] 143	79 [699] 140	123 [1089] 136	168 [1487] 130	209 [1850] 124	248 [2195] 116	275 [2434] 107	351 [3106] 84	144
	30 [8]	33 [292] 191	74 [655] 188	118 [1044] 184	164 [1451] 178	207 [1832] 171	245 [2168] 162	270 [2390] 154	338 [2991] 134	192
	38 [10]	25 [221] 238	68 [602] 236	113 [1000] 233	159 [1407] 229	199 [1761] 224	241 [2133] 218	262 [2319] 205	326 [2885] 183	240
	45 [12]	14 [124] 287	59 [522] 285	105 [929] 283	150 [1328] 281	192 [1699] 276	233 [2062] 270	253 [2239] 261	307 [2717] 235	287
	53 [14]	5 [44] 335	50 [443] 334	92 [814] 332	140 [1239] 329	188 [1664] 324	217 [1920] 319	242 [2142] 311	298 [2637] 281	335
	61 [16]		35 [310] 383	75 [664] 382	120 [1062] 378	160 [1416] 372	205 [1814] 363	233 [2062] 358	289 [2558] 333	384
76 [20]		12 [106] 479	55 [487] 478	92 [814] 475	135 [1195] 469	183 [1620] 460	204 [1805] 455	276 [2443] 434	479	

Rotor Width

20.8 [.820]

mm [in]

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

Theoretical Torque - Nm [lb-in]

53 [468]	103 [913]	156 [1380]	209 [1848]	259 [2293]	312 [2761]	347 [3073]	435 [3852]
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Displacement tested at 45°C [113°F] with an oil viscosity of 46cSt [213 SUS]

200

Pressure - bar [psi]				Max. Cont.		Max. Inter.	
21 [300]	41 [600]	62 [900]	83 [1200]	103 [1500]	124 [1800]	166 [2400]	

197 cm³ [12.0 in³] / rev

Intermittent Ratings - 10% of Operation

		Torque - Nm [lb-in], Speed rpm								
Flow - lpm [gpm]	8 [2]	52 [460] 38	109 [965] 35	164 [1451] 30	218 [1929] 23					39
	15 [4]	50 [443] 76	112 [991] 74	167 [1478] 70	220 [1947] 64	270 [2390] 56	310 [2744] 48			77
	23 [6]	48 [425] 115	110 [974] 113	165 [1460] 110	218 [1929] 105	274 [2425] 98	312 [2761] 92	411 [3637] 62		116
	30 [8]	46 [407] 153	102 [903] 150	159 [1407] 146	216 [1912] 138	268 [2372] 132	303 [2682] 120	406 [3593] 86		154
	38 [10]	36 [319] 192	92 [814] 190	151 [1336] 186	206 [1823] 181	258 [2283] 174	290 [2567] 163	398 [3522] 133		193
	45 [12]	22 [195] 230	80 [708] 226	142 [1257] 223	193 [1708] 218	236 [2089] 210	282 [2496] 200	386 [3416] 167		231
	53 [14]	5 [44] 268	70 [620] 266	130 [1151] 262	176 [1558] 258	215 [1903] 250	272 [2407] 240	374 [3310] 209		270
	61 [16]		58 [513] 308	118 [1044] 305	156 [1381] 299	198 [1752] 292	253 [2239] 284	360 [3186] 256		308
76 [20]		42 [372] 384	88 [779] 381	124 [1097] 376	173 [1531] 372	220 [1947] 358	328 [2903] 330		385	

Rotor Width

25.9 [1.020]

mm [in]

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

Theoretical Torque - Nm [lb-in]

66 [582]	128 [1135]	194 [1717]	260 [2298]	322 [2852]	388 [3434]	519 [4597]
----------	------------	------------	------------	------------	------------	------------

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

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



DISPLACEMENT PERFORMANCE

250		Pressure - bar [psi]					Max. Cont.		Max. Inter.	
		21 [300]	41 [600]	62 [900]	83 [1200]	97 [1400]	103 [1500]	138 [2000]	155 [2250]	
241 cm ³ [14.7 in ³] / rev										
Torque - Nm [lb-in], Speed rpm					Intermittent Ratings - 10% of Operation					
Flow - lpm [gpm]	8 [2]	58 [513] 31	118 [1044] 30	193 [1708] 28	259 [2292] 23	300 [2655] 19				32
	15 [4]	61 [540] 62	122 [1080] 61	190 [1682] 58	254 [2248] 55	302 [2673] 51	317 [2805] 47	414 [2513] 38	450 [3983] 27	63
	23 [6]	58 [513] 94	116 [1027] 93	185 [1637] 92	250 [2213] 87	295 [2611] 83	308 [2726] 81	412 [2434] 67	446 [3947] 57	94
	30 [8]	51 [451] 125	112 [991] 124	178 [1575] 121	245 [2168] 117	290 [2567] 113	304 [2690] 110	406 [2390] 97	439 [3885] 88	126
	38 [10]	40 [354] 158	98 [867] 156	169 [1496] 155	236 [2089] 151	284 [2513] 147	298 [2637] 145	390 [2319] 136	429 [3797] 121	158
	45 [12]	29 [257] 188	83 [735] 187	156 [1381] 186	230 [2036] 184	277 [2451] 180	282 [2496] 176	372 [2239] 164	414 [3664] 150	189
	53 [14]	22 [195] 220	67 [593] 219	138 [1221] 217	214 [1894] 214	262 [2319] 211	260 [2301] 209	355 [2142] 194	395 [3496] 181	220
	61 [16]		52 [460] 248	123 [1089] 244	190 [1682] 241	233 [2062] 237	244 [2159] 235	335 [2062] 223	376 [3328] 210	252
Max. Max. Inter. Cont.	76 [20]		24 [212] 312	84 [743] 309	165 [1460] 305	202 [1788] 302	208 [1841] 300	298 [1805] 285	335 [2965] 268	315
Overall Efficiency - 70 - 100% <input type="checkbox"/> 40 - 69% <input type="checkbox"/> 0 - 39% <input type="checkbox"/>										
Rotor Width										
32.5 [1.280]		Theoretical Torque - Nm [lb-in]								
mm [in]		80 [712]	157 [1390]	237 [2101]	318 [2813]	371 [3288]	394 [3491]	528 [4677]	594 [5253]	
Displacement tested at 45°C [113°F] with an oil viscosity of 46cSt [213 SUS]										

315		Pressure - bar [psi]					Max. Cont.		Max. Inter.	
		21 [300]	41 [600]	62 [900]	90 [1300]	103 [1500]	138 [2000]	155 [2250]		
303 cm ³ [18.5 in ³] / rev										
Torque - Nm [lb-in], Speed rpm					Intermittent Ratings - 10% of Operation					
Flow - lpm [gpm]	8 [2]	88 [779] 25	174 [1540] 22	255 [2257] 20						25
	15 [4]	89 [788] 49	170 [1505] 47	263 [2328] 43	352 [3115] 35	396 [3505] 30				50
	23 [6]	78 [690] 74	162 [1434] 72	246 [2177] 69	345 [3053] 59	392 [3469] 54	532 [4708] 33	576 [5098] 22		75
	30 [8]	60 [531] 101	151 [1336] 98	240 [2124] 95	339 [3000] 90	386 [3416] 84	526 [4655] 65	566 [5009] 53		100
	38 [10]	60 [531] 125	142 [1257] 123	230 [2036] 121	335 [2965] 115	380 [3363] 112	514 [4549] 90	558 [4938] 80		125
	45 [12]	37 [327] 147	128 [1133] 146	220 [1947] 143	325 [2876] 139	370 [3275] 132	500 [4425] 118	536 [4744] 105		150
	53 [14]	15 [133] 175	108 [956] 174	208 [1841] 171	318 [2814] 166	355 [3142] 160	486 [4301] 138	516 [4567] 127		175
	61 [16]		88 [779] 199	196 [1735] 197	300 [2655] 187	340 [3009] 182	465 [4115] 166	494 [4372] 152		200
Max. Max. Inter. Cont.	76 [20]		60 [531] 250	180 [1593] 246	280 [2478] 240	326 [2885] 236	442 [3912] 217	468 [4142] 206		250
Overall Efficiency - 70 - 100% <input type="checkbox"/> 40 - 69% <input type="checkbox"/> 0 - 39% <input type="checkbox"/>										
Rotor Width										
40.9 [1.610]		Theoretical Torque - Nm [lb-in]								
mm [in]		101 [897]	198 [1752]	299 [2649]	435 [3846]	497 [4401]	666 [5896]	748 [6623]		
Displacement tested at 45°C [113°F] with an oil viscosity of 46cSt [213 SUS]										

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



DISPLACEMENT PERFORMANCE

400		Pressure - bar [psi]				Max. Cont.	Max. Inter.
		21 [300]	41 [600]	69 [1000]	83 [1200]	97 [1400]	121 [1750]
386 cm ³ [23.5 in ³] / rev		Intermittent Ratings - 10% of Operation					
		Torque - Nm [lb-in], Speed rpm					
Flow - lpm [gpm]	8 [2]	105 [929] 19	218 [1929] 18	360 [3186] 14	417 [3960] 11		20
	15 [4]	99 [876] 39	207 [1832] 37	344 [3044] 33	411 [3637] 28	480 [4248] 25	39
	23 [6]	91 [805] 59	195 [1726] 57	336 [2974] 52	403 [3567] 43	478 [4260] 39	59
	30 [8]	72 [637] 77	186 [1646] 75	325 [2876] 73	398 [3522] 67	466 [4124] 60	79
	38 [10]	62 [549] 100	178 [1575] 97	314 [2779] 93	394 [3487] 89	458 [4053] 81	98
	45 [12]	51 [451] 120	164 [1451] 117	310 [2744] 113	378 [3345] 109	448 [3965] 97	118
	53 [14]	38 [336] 137	142 [1257] 134	284 [2513] 131	360 [3186] 129	429 [3797] 124	137
	61 [16]	20 [177] 150	121 [1071] 154	260 [2301] 151	338 [2991] 148	410 [3629] 138	157
	76 [20]		98 [867] 189	234 [2071] 187	308 [2726] 185	384 [3398] 182	196
	Max. Max. Inter. Cont.						
Rotor Width		Overall Efficiency - 70 - 100% <input type="checkbox"/> 40 - 69% <input type="checkbox"/> 0 - 39% <input checked="" type="checkbox"/>					
52.1 [2.050]		Theoretical Torque - Nm [lb-in]					
mm [in]		129 [1142]	252 [2229]	424 [3751]	510 [4513]	596 [5274]	743 [6579]
Displacement tested at 45°C [113°F] with an oil viscosity of 46cSt [213 SUS]							

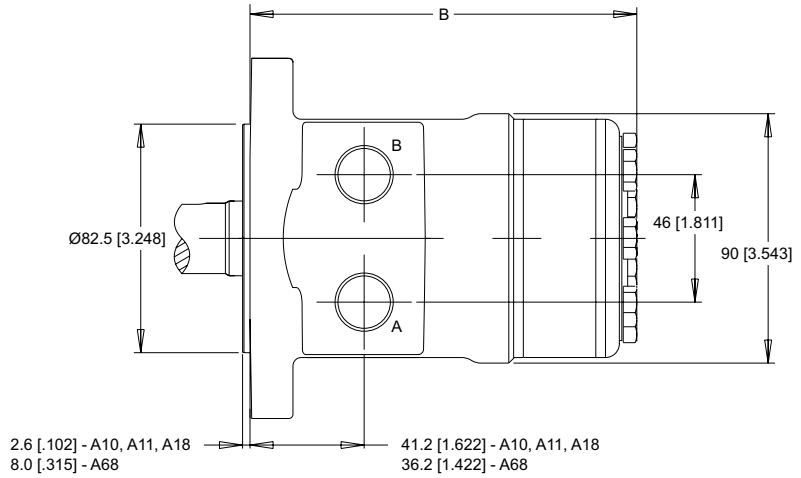
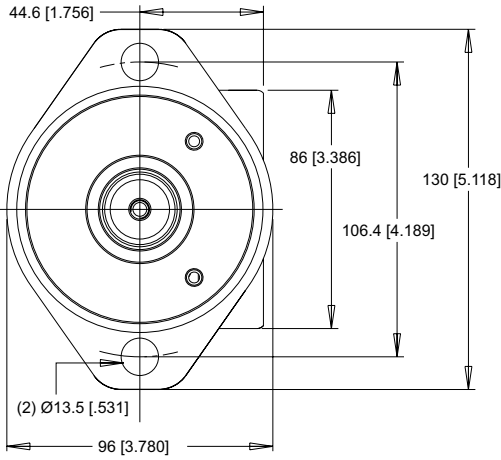
► Performance data is typical. Performance of production units varies slightly from one motor to another.

HOUSINGS

► Dimensions shown are without paint. Paint thickness can be up to 0.13 [.005].

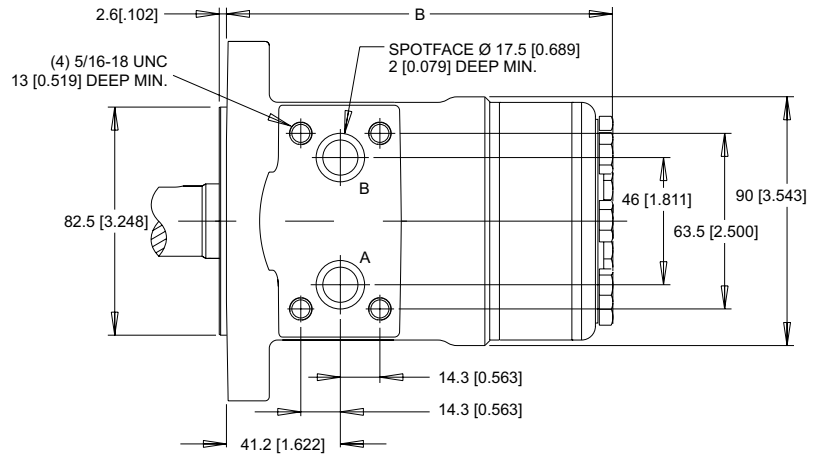
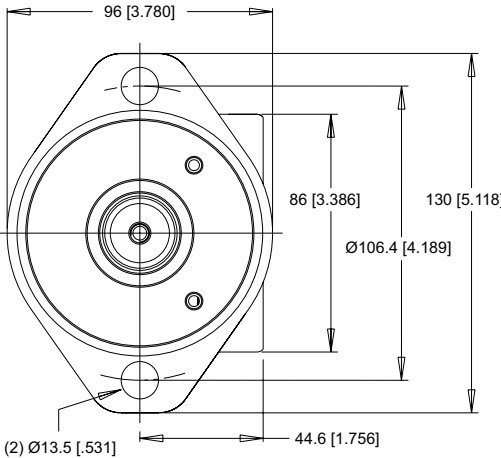
2-HOLE, SAE A MOUNT, ALIGNED PORTS

A10 1/2-14 NPT **A11** 7/8-14 UNF **A18** G 1/2 **A68** G 1/2 (TP)



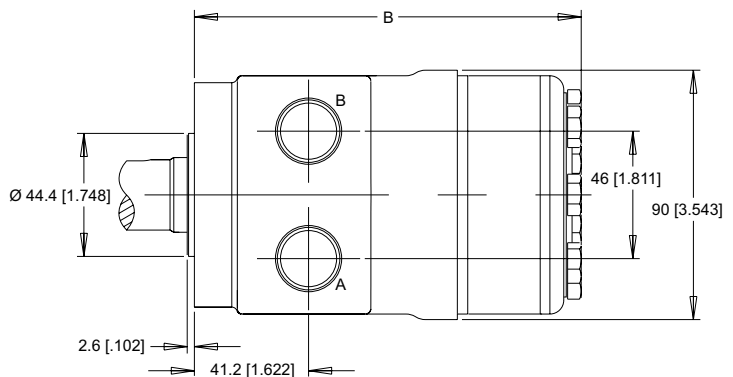
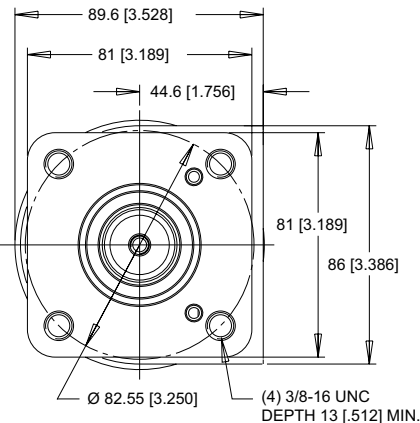
2-HOLE, SAE A MOUNT, ALIGNED MANIFOLD PORTS

A17 1/2" Drilled



4-HOLE, SQUARE MOUNT, ALIGNED PORTS

F30 1/2-14 NPT **F31** 7/8-14 UNF

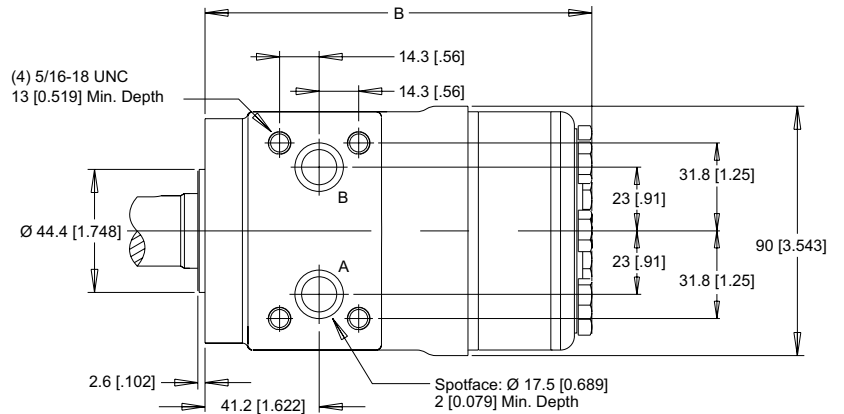
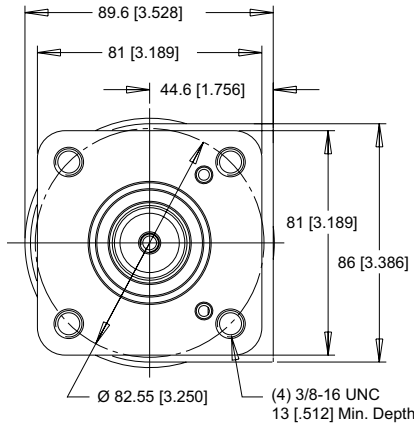


► Dimension B is charted on page 11. ► (TP) - Taller Pilot Height. Refer to detailed drawing for dimensional differences.

HOUSINGS & TECHNICAL INFORMATION

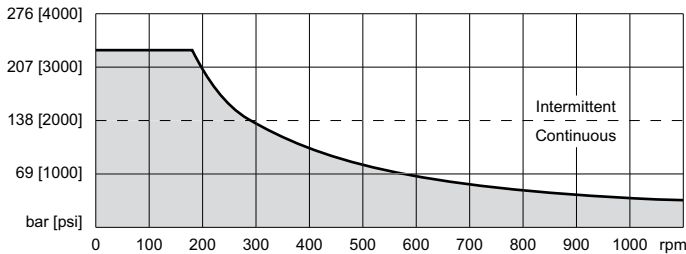
► Dimensions shown are without paint. Paint thickness can be up to 0.13 [.005].

4-HOLE, SQUARE MOUNT, ALIGNED MANIFOLD PORTS **F37** 1/2" Drilled



PERMISSIBLE SHAFT SEAL PRESSURE

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



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

LENGTH & WEIGHT CHART

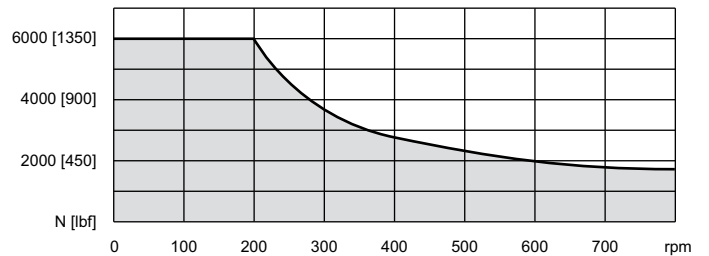
Dimension B is the overall motor length from the rear of the motor to the mounting flange surface and is referenced on detailed housing drawings listed on pages 10-11.

B	3mm Pilot	8mm Pilot	Weight
#	mm [in]	mm [in]	kg [lb]
025	119 [4.67]	114 [4.47]	5.20 [11.5]
032	120 [4.71]	115 [4.51]	5.24 [11.6]
040	121 [4.77]	116 [4.57]	5.29 [11.7]
050	121 [4.77]	116 [4.57]	5.29 [11.7]
060	123 [4.83]	118 [4.63]	5.34 [11.8]
080	125 [4.92]	120 [4.72]	5.42 [12.0]
100	128 [5.02]	123 [4.82]	5.51 [12.2]
125	131 [5.17]	126 [4.97]	5.65 [12.5]
160	135 [5.33]	130 [5.13]	5.79 [12.8]
200	141 [5.53]	136 [5.33]	5.97 [13.2]
250	147 [5.79]	142 [5.59]	6.20 [13.7]
315	156 [6.12]	151 [5.92]	6.49 [14.3]
400	167 [6.56]	162 [6.36]	6.88 [15.2]

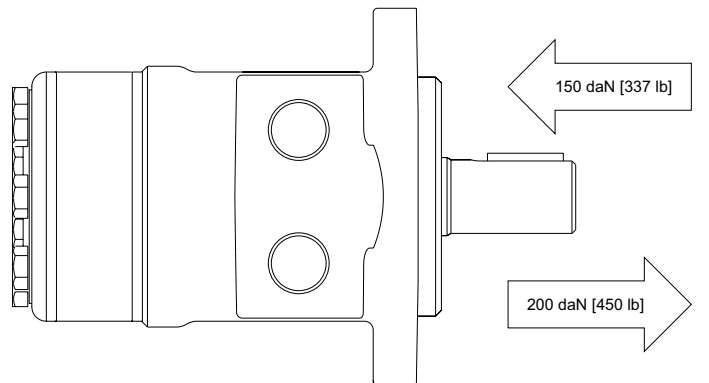
► The overall motor weights listed in this chart were calculated using the heaviest of the housing options associated with that mounting flange to end of motor dimension. 145 & 146 series motor weights can vary ± 0.5 kg [1 lb] depending on model configurations such as housing, shaft, endcover, options etc.

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.



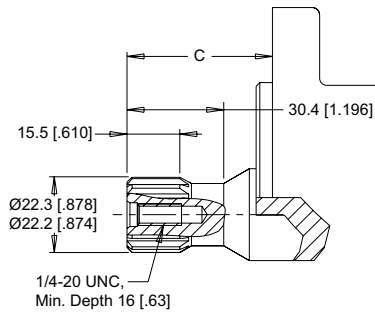
THRUST LOAD



SHAFTS

01 7/8" 13 Tooth Spline

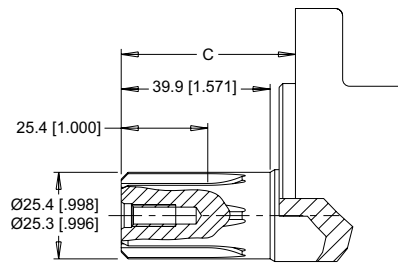
16/32 Pitch Standard
ANSI B92.1-1996 Spline



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

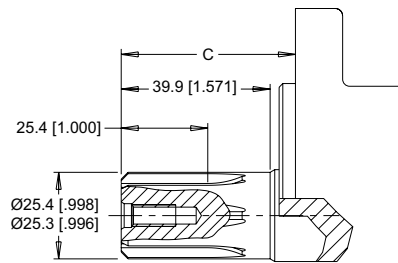
02 1" 6B Spline, 1/4-20 Tap

6B Spline
SAE J499 Standard



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

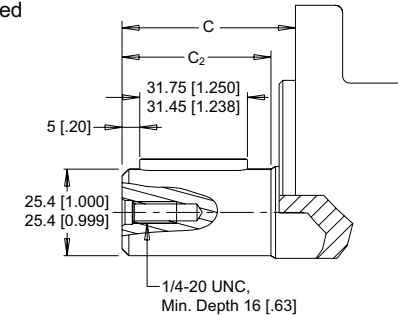
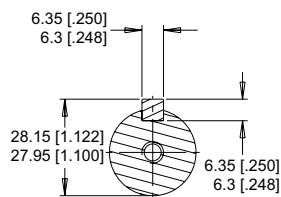
04 1" 6B Spline, M8x1.25 Tap



10 1" Straight

15 1" Straight Extended

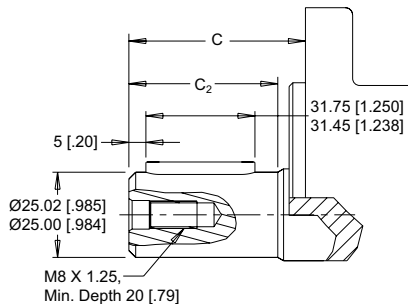
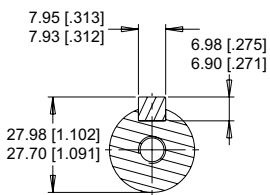
G8 1" Straight Nickel Plated



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

12 25mm Straight

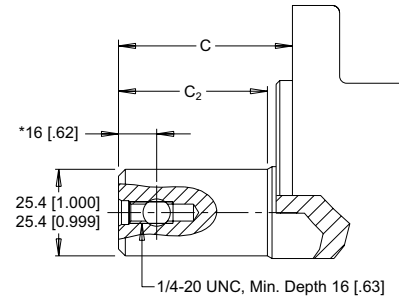
16 25mm Straight Extended



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

53 1" - 10.3 [.406] Pinhole

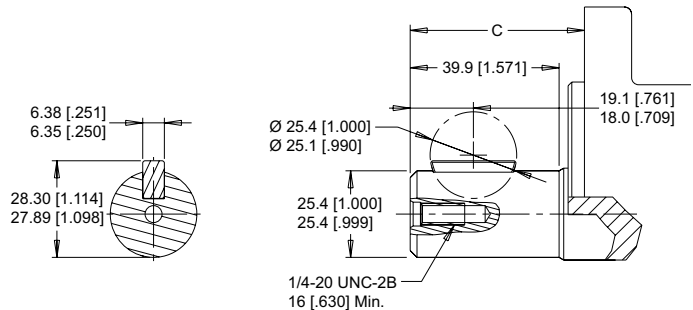
66 1" - 8.0 [.315] Pinhole



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

* Dimension for 66 shaft is 11.2 [.44]

B1 1" Straight, Woodruff Key



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

MOUNTING / SHAFT LENGTH CHART

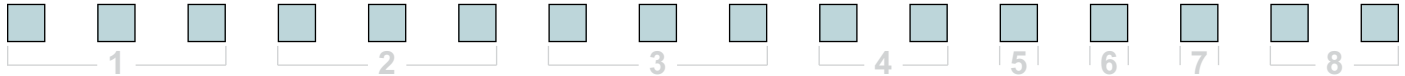
Dimension C is the overall distance from the motor mounting surface to the end of the shaft.

Additional shaft length information, if necessary, is noted as C₂ and does not increase or decrease the listed C dimensions in this chart. The overall shaft lengths are already factored into the overall distance from the mounting surface to the end of the shaft.

C	3mm Pilot	8mm Pilot	C ₂
#	mm [in]	mm [in]	mm [in]
01	45.4 [1.803]	50.8 [2.000]	N/A
02	45.4 [1.803]	50.8 [2.000]	N/A
04	45.4 [1.803]	50.8 [2.000]	N/A
10	45.4 [1.803]	50.8 [2.000]	39.9 [1.571]
12	45.4 [1.803]	50.8 [2.000]	39.9 [1.571]
15	62.1 [2.445]	67.5 [2.657]	56.0 [2.205]
16	62.1 [2.445]	67.5 [2.657]	56.0 [2.205]
53	45.4 [1.803]	50.8 [2.000]	39.9 [1.571]
66	50.4 [1.984]	55.8 [2.197]	44.9 [1.768]
B1	45.4 [1.803]	50.8 [2.000]	N/A
G8	50.4 [1.984]	55.8 [2.197]	40.6 [1.599]

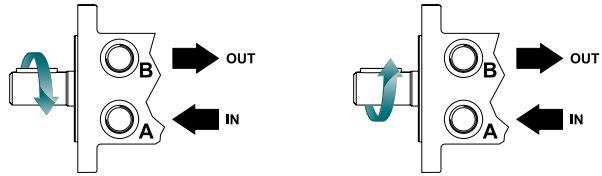


ORDERING INFORMATION



1. CHOOSE SERIES DESIGNATION

- 145** Clockwise Rotation
- 146** Counterclockwise Rotation



► The 145 & 146 series are bi-directional. Reversing the inlet hose will reverse shaft rotation.

2. SELECT A DISPLACEMENT OPTION

025	25 cm ³ /rev [1.5 in ³ /rev]	125	123 cm ³ /rev [7.5 in ³ /rev]
032	31 cm ³ /rev [1.9 in ³ /rev]	160	158 cm ³ /rev [9.6 in ³ /rev]
040	40 cm ³ /rev [2.4 in ³ /rev]	200	197 cm ³ /rev [12.0 in ³ /rev]
050	48 cm ³ /rev [2.9 in ³ /rev]	250	241 cm ³ /rev [14.7 in ³ /rev]
060	59 cm ³ /rev [3.6 in ³ /rev]	315	303 cm ³ /rev [18.5 in ³ /rev]
080	80 cm ³ /rev [4.9 in ³ /rev]	400	386 cm ³ /rev [23.5 in ³ /rev]
100	96 cm ³ /rev [5.9 in ³ /rev]		

3. SELECT A MOUNT & PORT OPTION

A10	2-Hole, SAE A Mount, Aligned Ports, 1/2-14 NPT
A11	2-Hole, SAE A Mount, Aligned Ports, 7/8-14 UNF
A17	2-Hole, SAE A Mount, Aligned Manifold Ports, 1/2" Drilled
A18	2-Hole, SAE A Mount, Aligned Ports, G 1/2
A68	2-Hole, SAE A Mount, Aligned Ports, G 1/2 (TP)
F30	4-Hole, Square Mount, Aligned Ports, 1/2-14 NPT
F31	4-Hole, Square Mount, Aligned Ports, 7/8-14 UNF
F37	4-Hole, Square Mount, Aligned Manifold Ports, 1/2" Drilled

► (TP) - Tall pilot. Speed sensor option is not available on tall pilot housings.

4. SELECT A SHAFT OPTION

01	7/8" 13 Tooth Spline	16	25mm Straight Extended
02	1" 6B Spline, 1/4-20 Tap	53	1" - 10.3 [.406] Pinhole
04	1" 6B Spline, M8x1.25 Tap	66	1" - 8.0 [.315] Pinhole
10	1" Straight	B1	1" Straight, Woodruff Key
12	25mm Straight	G8	1" Straight Nickel Plated
15	1" Straight Extended		

► If the BE option is selected in Step 8, the G8 shaft is recommended for added shaft protection. The 15 & 16 extended shafts are designed for use with one of the speed sensor options listed in STEP 7.

5. SELECT A PAINT OPTION

A	Black
B	Black, Unpainted Mounting Surface

6. SELECT A VALVE CAVITY / CARTRIDGE OPTION

A	None
----------	------

7. SELECT AN ADD-ON OPTION

A	Standard
W	Speed Sensor, Dual, 4-Pin Male Weatherpack Connector
X	Speed Sensor, Dual, 4-Pin M12 Male Connector
Y	Speed Sensor, Single, 3-Pin Male Weatherpack Connector
Z	Speed Sensor, Single, 4-Pin M12 Male Connector

8. SELECT A MISCELLANEOUS OPTION

AA	None
AC	Freeturning Rotor
BE	Slinger Seal
FB	No Check Valves Installed

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