



Spool Valve motors incorporate the proven orbit motor principle to provide high torque at low speeds.



*Powering Business Worldwide*

# Spool Valve Motors

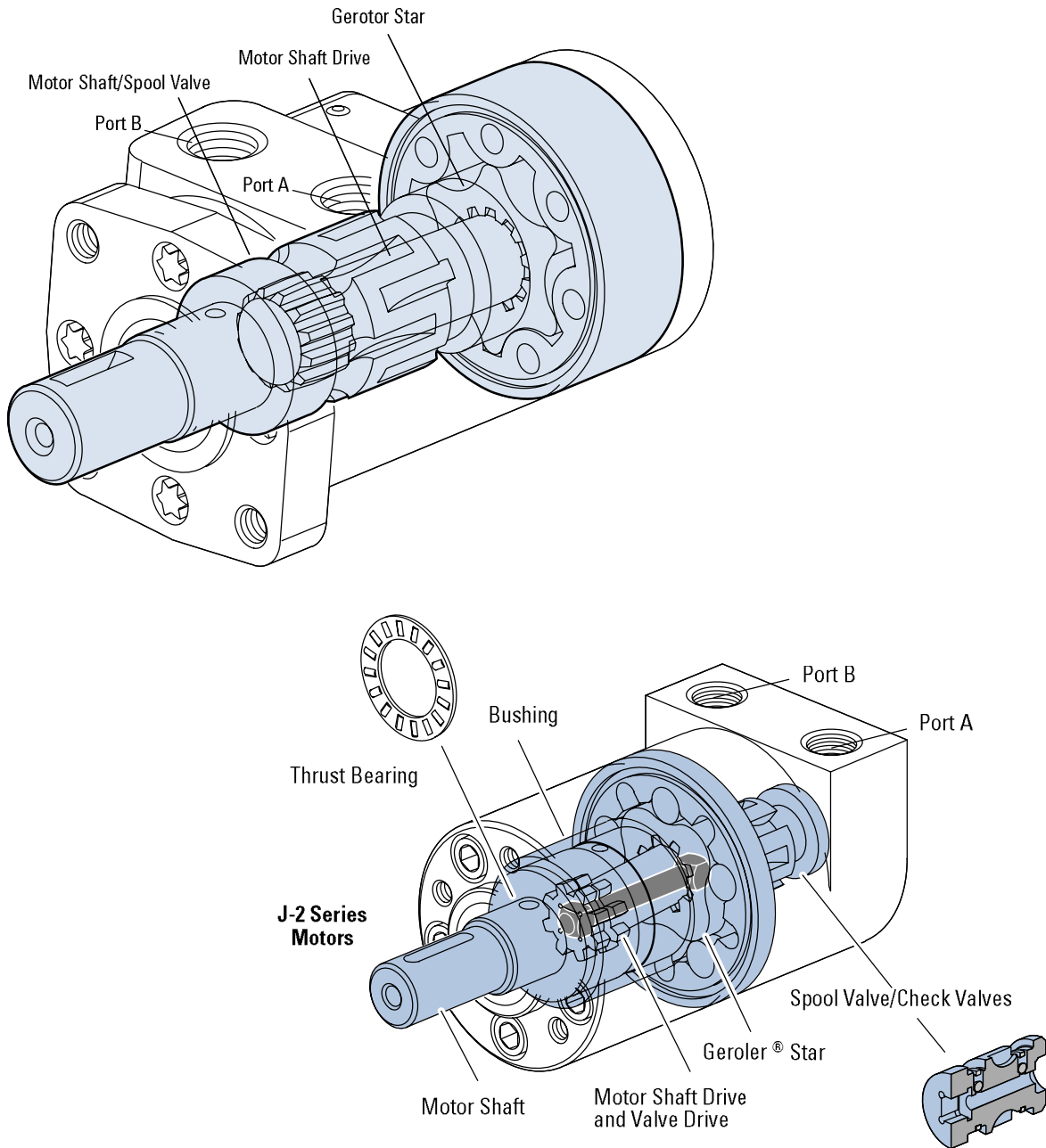
## Highlights

### Product Description

Char-Lynn spool valve motors distribute pressurized fluid into and out of the Orbit gear set (Gerotor or Geroler) via valve slots integrated into the output shaft. The spool valve motors incorporate both valving and hydrodynamic journal bearings into a common shaft design. The valve section (spool valve) can be optimized for low flow, low speed needs using a low speed spool option to enhance smooth running performance.

These motors incorporate the proven orbit motor principle to provide high torque at low speeds.

Motor shaft rotation can be instantly reversed by changing direction of input/output flow while generating equal torque in either direction. The displacements available provide a wide variety of speeds and torques from any spool valve motor series.



# Features, Benefits, and Applications

## Features

- Proven Orbit Motor Principle
- Hydrodynamic Journal Bearings
- Constant Clearance Geroler
- Three-Zone Pressure Design
- Reduced drive running-angle
- High-pressure seals
- Modular design

## Benefits

- Compact, powerful package
- Infinite bearing life (at rated loads)
- High efficiency
- Increases shaft seal & bearing life
- Smooth operation, increases drive life
- Reduces leakage
- Design flexibility
- Economically tailored solutions

## Applications

- Harvesters
- Augers
- Spreaders
- Machine tools
- Conveyors
- Winches
- Turf care equipment
- Food processing
- Aerial Work Platforms
- Anywhere a compact drive with high output torque is needed

## Design Features

Spool valve technology is typically used where compact, economical solutions are most needed. Spool valve motors use a spool valve to precisely time and control flow through the orbit gear set (Gerotor or Geroler). Inlet flow is directed into and out of the orbit set via slots in the spool and passages through the motor housing. The result is a very cost-effective compact package suited to many application requirements. The three

primary components in the motor are the orbit star, drive and output shaft. H, S and T Series incorporate the spool valve and hydrodynamic bearings in the motor shaft. The W series is similar except a ball bearing is used for the front bearing for increased side-load capacity. Due to its compact size and high speed capability, the J Series is unique and utilizes a separate dedicated spool and spool valve drive. All motors utilize Eaton's

constant-clearance Geroler technology except the H Series, which continues to use the time-proven H motor gerotor set. These motors all use a three-zone pressure design consisting of three unique pressure areas: 1) inlet, 2) return, 3) case. This provides the capability to limit motor case pressure and allows the use of several case pressure options for extended shaft seal and thrust bearing life.

Below is a quick-guide to help select the proper motor for your application:

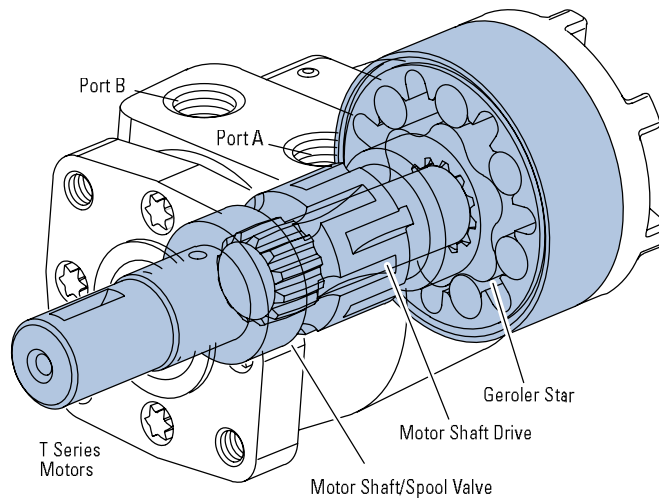
### MOTOR QUICK-GUIDE (BASED ON MAXIMUM CONTINUOUS RATINGS)

Series	Output Torque Nm [lb-in]	Pressure bar [psi]	Flow lpm [gpm]	Side Load kg [lbs]
J Series	62 [550]	140 [2030]	21 [5.5]	196 [430]
H Series	407 [3607]	124 [1800]	57 [15]	635 [1400]
S Series	430 [3800]	135 [2000]	55 [15]	635 [1400]
T Series	450 [4000]	155 [2250]	55 [15]	635 [1400]
W Series	410 [3625]	165 [2400]	68 [18]	845 [1900]

\* The above are provided as guidelines only. Actual ratings vary depending on final motor configuration

# T Series (158-)

## Highlights



### Description

The newest Geroler motor, the "T Series, features the latest innovations in Geroler technology. These innovations include optimized Geroler geometry with lower drive running angle for improved life and improved low speed performance. In addition, the improved housing and smaller diameter end cap results in increased envelope rigidity which improves efficiency under high pressure loads. All of these innovations come together to make the T Series motor the highest performing motor in its class.

### Specifications for T Series Motors

Geroler Element	11 Displacements
Flow l/min [GPM]	55 [15] Continuous***
	75 [20] Intermittent**
Speed	Up to 1021 RPM
Pressure bar [PSI]	155 [2250] Cont.***
	190 [2750] Inter.**
Torque Nm [lb-in]	441 [3905] Cont.***
	486 [4300] Inter.**

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

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

### Features:

- Constant clearance Geroler, geometry
- Optimized drive system with reduced running angle
- Three-pressure zone design (ability to reduce case pressure)
- Variety of displacements, shafts and mounts
- Special options to meet customer needs

### Benefits:

- High efficiency
- Smooth low-speed operation
- Extended motor life (especially at low speed conditions)
- Design flexibility
- Ability to optimize designs for your application needs
- Extends leak-free performance

### Applications:

- Agricultural augers, harvesters, seeders
- Car wash brushes
- Food processing
- Railroad maintenance equipment
- Machine tools
- Conveyors
- Industrial sweepers and floor polishers
- Saw mill works
- Turf equipment
- Concrete and asphalt equipment
- Skid steer attachments
- Many more



Crane (winch)



Paving



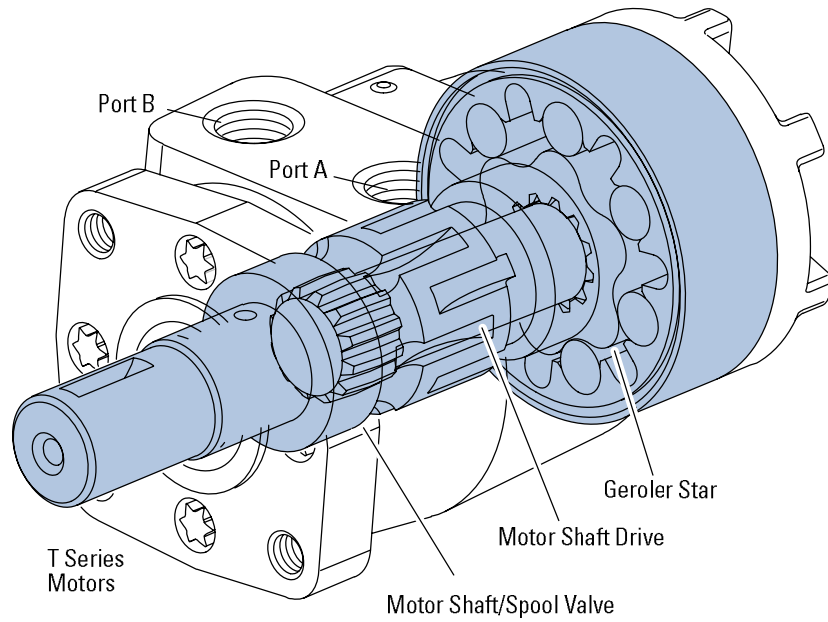
Harvester



Crane and winches

# T Series (158-)

## Specifications



### SPECIFICATION DATA — T MOTORS

Displ. cm <sup>3</sup> /r [in <sup>3</sup> /r]		36 [2.2]	49 [3.0]	66 [4.0]	80 [4.9]	102 [6.2]	131 [8.0]	157 [9.6]	195 [11.9]	244 [14.9]	306 [18.7]	370 [22.6]
Max. Speed (RPM) @ Continuous Flow		1021	906	849	694	550	426	355	287	229	183	152
Flow LPM [GPM]	Continuous	38 [10]	45 [12]	57 [15]	57 [15]	57 [15]	57 [15]	57 [15]	57 [15]	57 [15]	57 [15]	57 [15]
	Intermittent	38 [10]	57 [15]	68 [18]	76 [20]	76 [20]	76 [20]	76 [20]	76 [20]	76 [20]	76 [20]	76 [20]
Torque Nm [lb-in]	Continuous	76 [672]	105 [928]	138 [1222]	174 [1541]	219 [1936]	251 [2226]	297 [2628]	359 [3178]	410 [3633]	441 [3905]	430 [3811]
	Intermittent**	93 [824]	118 [1131]	168 [1488]	212 [1872]	264 [2339]	307 [2718]	359 [3178]	437 [3864]	485 [4290]	483 [4275]	486 [4300]
Pressure Δ Bar	Continuous*	155 [2250]	155 [2250]	155 [2250]	155 [2250]	155 [2250]	138 [2000]	138 [2000]	138 [2000]	127 [1850]	110 [1600]	90 [1300]
Δ PSI]	Intermittent**	190 [2750]	190 [2750]	190 [2750]	190 [2750]	190 [2750]	172 [2500]	172 [2500]	172 [2500]	155 [2250]	124 [1800]	103 [1500]

A simultaneous maximum torque and maximum speed NOT recommended.

#### Note:

To assure best motor life, run motor for approximately one hour at 30% of rated pressure before application to full load. Be sure motor is filled with fluid prior to any load applications.

#### Maximum Inlet Pressure:

190 Bar [2750 PSI] without regard to Δ Bar [D PSI] and/or back pressure ratings or combination thereof.

6B splined or Tapered shafts are recommended whenever operation above 282 NM [2500 lb-in] of torque, especially for those applications subject to frequent reversals.

#### Δ Pressure:

The true Δbar [Δ PSI] between inlet port and outlet port

#### Continuous Rating:

Motor may be run continuously at these ratings

#### Intermittent Operation:

10% of every minute

#### Recommended Fluids:

Premium quality, anti-wear type hydraulic oil with a viscosity of not less than 70 SUS at operating temperature.

#### Recommended Maximum System Operating Temp.:

82°C [180°F]

#### Recommended Filtration:

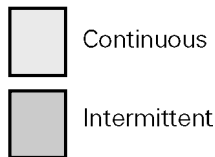
per ISO Cleanliness Code 4406, level 20/18/13

# T Series (158-, 185-)

## Performance Data

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

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



**36 cm<sup>3</sup>/r [2.2 in<sup>3</sup>/r]**  
Δ Pressure Bar [PSI]  
Continuous

	[200] 14	[400] 28	[600] 41	[800] 55	[1000] 69	[1200] 83	[1400] 97	[1600] 110	[1800] 124	[2000] 138	[2200] 152	[2250] 155	Max. Contin- uous	Max. Inter- mittent
														[2750] 190
[2]	[50] 6	[110] 12	[172] 19	[233] 26	[291] 33	[348] 39	[401] 45	[455] 51	[501] 57	[546] 62	[590] 67	[596] 67		[635] 72
7,6	209	203	197	191	189	181	167	164	153	139	122	116		64
[4]	[50] 6	[109] 12	[172] 19	[233] 26	[296] 33	[355] 40	[414] 47	[475] 54	[534] 60	[584] 66	[646] 73	[659] 74		[786] 89
15,1	415	411	398	388	384	381	368	357	354	323	304	302		283
[6]	[43] 5	[108] 12	[171] 19	[233] 26	[298] 34	[361] 41	[420] 47	[479] 54	[538] 61	[595] 67	[657] 74	[672] 76		[824] 93
22,7	617	613	602	595	585	570	563	558	534	520	504	496		425
[8]	[39] 4	[101] 11	[164] 19	[226] 26	[292] 33	[354] 40	[415] 47	[475] 54	[538] 61	[592] 67	[656] 74	[670] 76		[819] 92
30,3	821	815	803	797	784	774	758	747	732	707	688	680		607
Max. Contin- uous	[30] 3	[93] 11	[155] 18	[214] 24	[278] 31	[342] 39	[406] 46	[473] 53	[532] 60	[590] 67	[650] 73	[668] 75		[805] 91
37,9	1021	1014	1002	999	981	965	953	937	921	903	880	873		799

**49 cm<sup>3</sup>/r [3.0 in<sup>3</sup>/r]**  
Δ Pressure Bar [PSI]  
Continuous



	[200] 14	[400] 28	[600] 41	[800] 55	[1000] 69	[1200] 83	[1400] 97	[1600] 110	[1800] 124	[2000] 138	[2200] 152	[2250] 155	Max. Contin- uous	Max. Inter- mittent
														[2750] 190
[2]	[73] 8	[161] 18	[245] 28	[327] 37	[408] 46	[486] 55	[563] 64	[641] 72	[710] 80	[786] 89	[849] 96	[866] 98		[1023] 116
7,6	152	152	148	147	142	141	134	124	115	109	95	92		58
[4]	[72] 8	[160] 18	[246] 28	[329] 37	[416] 47	[500] 56	[584] 66	[668] 75	[746] 84	[825] 93	[901] 102	[922] 104		[1123] 127
15,1	303	298	294	290	276	273	265	261	245	243	235	228		152
[6]	[58] 7	[148] 17	[234] 26	[326] 37	[413] 47	[500] 56	[583] 66	[663] 75	[746] 84	[827] 93	[909] 103	[928] 105		[1131] 128
22,7	461	450	445	438	434	421	419	410	407	389	376	373		344
[8]	[44] 5	[127] 14	[216] 24	[306] 35	[392] 44	[480] 54	[566] 64	[652] 74	[734] 83	[815] 92	[897] 101	[917] 104		[1125] 127
30,3	607	603	600	590	583	576	564	554	545	536	522	520		503
[10]	[39] 4	[128] 14	[213] 24	[302] 34	[391] 44	[477] 54	[562] 63	[647] 73	[731] 83	[815] 92	[897] 101	[917] 104		[1121] 127
37,9	755	750	745	738	732	719	713	702	696	682	663	661		638
Max. Contin- uous	[33] 4	[119] 13	[203] 23	[291] 33	[378] 43	[464] 52	[551] 62	[635] 72	[719] 81	[802] 91	[883] 100	[900] 102		[1061] 120
45,4	906	902	895	883	875	862	859	844	835	819	806	804		788
Max. Inter- mittent	[15] 3	[86] 10	[172] 19	[256] 29	[342] 39	[430] 49	[505] 57	[591] 67	[674] 76	[745] 84	[830] 94	[851] 96		
56,8	1132	1124	1113	1115	1106	1106	1098	1093	1079	1070	1058	1056		

# T Series (158-, 185-)

## Performance Data

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

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

 Continuous  
 Intermittent

		66 cm <sup>3</sup> /r [4.0 in <sup>3</sup> /r] Pressure Bar [PSI] Continuous											Max. Contin- uous	Max. Inter- mittent		
		[200]	[400]	[600]	[800]	[1000]	[1200]	[1400]	[1600]	[1800]	[2000]	[2200]	[2250]	[2750]		
		14	28	41	55	69	83	97	110	124	138	152	155	190		
Flow LPM [GPM]	[2] 7,6	[78] 9 114	[191] 22 111	[303] 34 110	[414] 47 107	[522] 59 105	[625] 71 101	[706] 80 96	[804] 91 92	[898] 101 87	[991] 112 81	[1081] 122 73	[1103] 125 72	[1318] 149 48		
	[4] 15,1	[97] 11 229	[209] 24 229	[325] 37 217	[441] 50 216	[548] 62 212	[657] 74 205	[766] 87 194	[873] 99 190	[972] 110 186	[1077] 122 183	[1181] 133 181	[1205] 136 178	[1437] 162 170		
	[6] 22,7	[79] 9 344	[192] 22 343	[309] 35 335	[426] 48 334	[534] 60 321	[649] 73 320	[760] 86 319	[874] 99 315	[984] 111 291	[1090] 123 288	[1190] 134 279	[1218] 138 276	[1488] 168 270		
	[8] 30,3	[75] 8 456	[191] 22 451	[304] 34 447	[419] 47 442	[532] 60 431	[645] 73 426	[759] 86 419	[871] 98 415	[982] 111 412	[1092] 123 401	[1197] 135 391	[1222] 138 386	[1458] 165 339		
	[10] 37,9	[49] 6 569	[163] 18 565	[283] 32 560	[398] 45 552	[509] 58 547	[623] 70 541	[742] 84 532	[856] 97 525	[971] 110 512	[1080] 122 504	[1186] 134 498	[1209] 137 496	[1425] 161 475		
	[12] 45,4	[24] 3 681	[156] 18 678	[270] 31 671	[385] 43 665	[502] 57 658	[614] 69 651	[729] 82 641	[845] 95 635	[963] 109 623	[1067] 121 612	[1182] 134 604	[1209] 137 601	[1472] 166 571		
	[14] 53,0	[19] 2 793	[143] 16 788	[261] 29 787	[370] 42 778	[485] 55 771	[602] 68 762	[718] 81 753	[837] 95 746	[948] 107 733	[1064] 120 723	[1175] 133 715	[1199] 135 711	[1436] 162 677		
	Max. Contin- uous	[15] 56,8	[13] 1 849	[120] 14 844	[236] 27 839	[352] 40 832	[471] 53 826	[590] 67 819	[707] 80 806	[823] 93 800	[939] 106 786	[1052] 119 779	[1165] 132 770	[1192] 135 766	[1462] 165 725	
	Max. Inter- mittent	[18] 68,1		[107] 12 1006	[215] 24 1003	[326] 37 998	[442] 50 988	[555] 63 976	[669] 76 975	[786] 89 965	[900] 102 952	[1016] 115 940	[1123] 127 924	[1152] 130 919		

		80 cm <sup>3</sup> /r [4.9 in <sup>3</sup> /r] Pressure Bar [PSI] Continuous											Max. Contin- uous	Max. Inter- mittent		
		[200]	[400]	[600]	[800]	[1000]	[1200]	[1400]	[1600]	[1800]	[2000]	[2200]	[2250]	[2750]		
		14	28	41	55	69	83	97	110	124	138	152	155	190		
Flow LPM [GPM]	[2] 7,6	[123] 14 93	[265] 30 90	[405] 46 86	[544] 61 83	[680] 77 80	[804] 91 75	[934] 106 70	[1052] 119 63	[1181] 133 57	[1079] 122 43	[937] 106 24	[895] 101 20			
	[4] 15,1	[120] 14 187	[264] 30 185	[406] 46 183	[551] 62 179	[689] 78 175	[828] 94 171	[965] 109 166	[1101] 124 162	[1237] 140 156	[1369] 155 150	[1505] 170 142	[1537] 174 140	[1857] 210 121		
	[6] 22,7	[113] 13 279	[255] 29 275	[398] 45 271	[542] 61 267	[682] 77 265	[823] 93 258	[963] 109 253	[1101] 124 248	[1239] 140 240	[1373] 155 232	[1508] 170 223	[1541] 174 221	[1868] 211 198		
	[8] 30,3	[99] 11 372	[243] 27 367	[386] 44 364	[528] 60 359	[669] 76 354	[812] 92 351	[954] 108 343	[1094] 124 338	[1233] 139 333	[1368] 155 324	[1503] 170 315	[1537] 174 313	[1872] 212 289		
	[10] 37,9	[84] 9 463	[228] 26 460	[371] 42 456	[514] 58 450	[655] 74 446	[798] 90 441	[941] 106 435	[1080] 122 428	[1219] 136 420	[1357] 152 412	[1496] 168 403	[1530] 173 399	[1870] 211 368		
	[12] 45,4	[63] 7 557	[209] 24 552	[354] 40 547	[498] 56 543	[638] 72 537	[782] 88 530	[926] 105 523	[1067] 121 515	[1208] 136 509	[1346] 152 500	[1484] 168 489	[1520] 172 487	[1864] 211 470		
	[14] 53,0	[55] 6 649	[185] 21 646	[331] 37 642	[476] 54 635	[620] 70 630	[762] 86 622	[904] 102 616	[1046] 118 609	[1188] 134 599	[1327] 150 592	[1467] 166 581	[1502] 170 578	[1842] 208 550		
	Max. Contin- uous	[15] 56,8	[51] 6 694	[176] 20 691	[316] 36 687	[463] 52 680	[609] 69 673	[748] 85 668	[891] 101 660	[1037] 117 650	[1177] 133 642	[1316] 149 634	[1457] 165 622	[1491] 168 619	[1844] 208 598	
	Max. Inter- mittent	[20] 75,7		[160] 18 916	[305] 34 910	[455] 51 893	[578] 65 893	[737] 83 875	[857] 97 866	[968] 109 877	[1144] 129 843	[1277] 144 833	[1412] 160 839	[1446] 163 836		

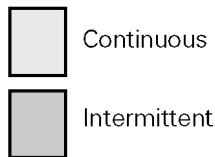
[176]  
20  
691
   
 } Torque [lb-in]  
 Nm  
 } Speed RPM

# T Series (158-, 185-)

## Performance Data

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

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



		102 cm <sup>3</sup> /r [6.2 in <sup>3</sup> /r] Pressure Bar [PSI] Continuous											Max. Continuous	Max. Intermittent	
		[200]	[400]	[600]	[800]	[1000]	[1200]	[1400]	[1600]	[1800]	[2000]	[2200]	[2500]		
		14	28	41	55	69	83	97	110	124	138	152	155	[2750]	190
Flow LPM [GPM]	[2] 7,6	[161] 18 73	[341] 39 71	[519] 59 68	[697] 79 66	[871] 98 63	[1030] 116 60	[1193] 135 56	[1349] 152 51	[1511] 171 46	[1496] 169 36	[1441] 163 23	[1421] 161 20		
	[4] 15,1	[157] 18 149	[340] 38 146	[520] 59 144	[702] 79 141	[879] 99 138	[1056] 119 135	[1229] 139 131	[1401] 158 128	[1567] 177 124	[1727] 195 118	[1889] 213 111	[1925] 217 109	[2271] 257 92	
	[6] 22,7	[147] 17 221	[329] 37 217	[510] 58 214	[692] 78 211	[871] 98 208	[1050] 119 204	[1227] 139 199	[1401] 158 195	[1571] 178 190	[1731] 196 184	[1895] 214 176	[1936] 219 174	[2339] 264 154	
	[8] 30,3	[132] 15 294	[315] 36 290	[497] 56 287	[675] 76 284	[857] 97 280	[1038] 117 277	[1216] 137 271	[1392] 157 267	[1564] 177 262	[1725] 195 255	[1891] 214 247	[1932] 218 245	[2326] 263 220	
	[10] 37,9	[109] 12 367	[293] 33 363	[477] 54 360	[657] 74 355	[839] 95 351	[1018] 115 347	[1198] 135 343	[1374] 155 337	[1542] 174 332	[1711] 193 325	[1878] 212 318	[1918] 217 315	[2326] 263 287	
	[12] 45,4	[84] 9 440	[271] 31 436	[457] 52 432	[638] 72 429	[818] 92 424	[999] 113 419	[1179] 133 414	[1354] 153 409	[1527] 173 402	[1697] 192 395	[1858] 210 386	[1901] 215 384	[2323] 262 364	
	[14] 53,0	[59] 7 513	[242] 27 510	[428] 48 506	[611] 69 501	[794] 90 497	[974] 110 492	[1151] 130 487	[1328] 150 482	[1502] 170 475	[1674] 189 469	[1841] 208 458	[1883] 213 456	[2301] 260 428	
	Max. Continuous 56,8	[39] 4 550	[227] 26 545	[411] 46 542	[595] 67 537	[780] 88 532	[957] 108 528	[1136] 128 522	[1314] 148 516	[1486] 168 510	[1658] 187 502	[1829] 207 492	[1869] 211 490	[2285] 258 463	
	Max. Intermittent 75,7		[154] 17 724	[328] 37 718	[515] 58 720	[710] 80 709	[874] 99 707	[1060] 120 696	[1243] 140 684	[1405] 159 683	[1579] 178 670	[1763] 199 659	[1803] 204 660		

		131 cm <sup>3</sup> /r [8.0 in <sup>3</sup> /r] Pressure Bar [PSI] Continuous											Max. Continuous	Max. Intermittent
		[200]	[400]	[600]	[800]	[1000]	[1200]	[1400]	[1600]	[1800]	[2000]	[2500]		
		14	28	41	55	69	83	97	110	124	138	172		
Flow LPM [GPM]	[2] 7,6	[219] 25 57	[450] 51 55	[682] 77 53	[915] 103 51	[1144] 129 49	[1348] 152 47	[1561] 176 43	[1771] 200 40	[1979] 224 36	[2159] 244 30			
	[4] 15,1	[212] 24 115	[449] 51 113	[681] 77 110	[917] 104 109	[1148] 130 107	[1376] 155 105	[1600] 181 102	[1822] 206 99	[2025] 229 96	[2221] 251 91	[2629] 297 75		
	[6] 22,7	[197] 22 171	[435] 49 168	[669] 76 166	[903] 102 163	[1139] 129 160	[1370] 155 157	[1600] 181 154	[1818] 205 150	[2032] 230 147	[2226] 252 142	[2718] 307 125		
	[8] 30,3	[181] 20 227	[417] 47 225	[657] 74 222	[886] 100 219	[1122] 127 217	[1359] 154 213	[1589] 180 209	[1812] 205 206	[2022] 228 202	[2215] 250 196	[2699] 305 175		
	[10] 37,9	[144] 16 284	[389] 44 281	[631] 71 278	[859] 97 275	[1098] 124 271	[1330] 150 267	[1562] 176 265	[1783] 201 261	[1993] 225 258	[2198] 248 252	[2687] 304 231		
	[12] 45,4	[114] 13 341	[361] 41 338	[605] 68 334	[838] 95 332	[1075] 121 328	[1307] 148 325	[1532] 173 321	[1755] 198 318	[1965] 222 312	[2177] 246 307	[2671] 302 285		
	[14] 53,0	[82] 9 397	[327] 37 394	[569] 64 391	[803] 91 387	[1042] 118 384	[1273] 144 361	[1498] 169 378	[1722] 195 374	[1935] 219 370	[2147] 243 365	[2655] 300 339		
	Max. Continuous 56,8	[66] 7 426	[302] 34 423	[550] 62 422	[785] 89 415	[1025] 116 412	[1254] 142 409	[1480] 167 405	[1704] 193 402	[1915] 216 398	[2119] 239 392	[2648] 299 367		
	Max. Intermittent 75,7		[177] 20 565	[429] 48 560	[678] 77 556	[908] 103 553	[1143] 129 549	[1375] 155 546	[1596] 180 541	[1811] 205 536	[2017] 228 527			

[302]  
34 } Torque [lb-in]  
423 } Nm  
Speed RPM

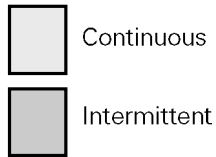


# T Series (158-, 185-)

## Performance Data

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

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



		157 cm <sup>3</sup> /r [9.6 in <sup>3</sup> /r] Δ Pressure Bar [PSI] Continuous										Max. Contin- uous	Max. Inter- mittent	
		[200]	[400]	[600]	[800]	[1000]	[1200]	[1400]	[1600]	[1800]	[2000]	[2500]	[2500]	
		14	28	41	55	69	83	97	110	124	138	172	172	
Flow LPM [GPM]	[2] 7,6	[264] 30 47	[541] 61 45	[819] 93 44	[1092] 123 42	[1357] 153 40	[1605] 181 37	[1847] 209 34	[2084] 235 30	[2311] 261 25	[1858] 210 16			
	[4] 15,1	[259] 29 96	[541] 61 95	[822] 93 92	[1101] 124 91	[1373] 155 90	[1638] 185 88	[1890] 214 85	[2145] 242 82	[2383] 269 78	[2613] 295 73	[3063] 346 60		
	[6] 22,7	[241] 27 142	[526] 59 140	[808] 91 138	[1090] 123 136	[1368] 155 134	[1638] 185 132	[1900] 215 129	[2150] 243 125	[2399] 271 121	[2628] 297 114	[3169] 358 99		
	[8] 30,3	[219] 25 189	[506] 57 187	[789] 89 185	[1068] 121 183	[1348] 152 181	[1625] 184 178	[1885] 213 175	[2140] 242 172	[2388] 270 166	[2619] 296 159	[3178] 359 140		
	[10] 37,9	[180] 20 237	[472] 53 234	[759] 86 232	[1037] 117 230	[1319] 149 227	[1590] 180 224	[1853] 209 222	[2111] 239 218	[2355] 266 211	[2594] 293 203	[3170] 358 183		
	[12] 45,4	[141] 16 284	[436] 49 282	[728] 82 279	[1010] 114 277	[1292] 146 274	[1561] 176 272	[1821] 206 269	[2079] 235 265	[2331] 263 257	[2573] 291 248	[3162] 357 225		
	[14] 53,0	[101] 11 332	[397] 45 329	[687] 78 326	[969] 109 323	[1252] 141 321	[1519] 172 319	[1778] 201 316	[2040] 230 311	[2295] 259 305	[2539] 287 296	[3147] 356 274		
	Max. Contin- uous	[15] 56,8	[81] 9 355	[367] 41 353	[665] 75 350	[944] 107 347	[1231] 139 344	[1497] 169 342	[1755] 198 339	[2018] 228 334	[2273] 257 327	[2512] 284 318	[3136] 354 300	
	Max. Inter- mittent	[20] 75,7		[221] 25 472	[519] 59 467	[814] 92 464	[1095] 124 462	[1368] 155 459	[1631] 184 455	[1891] 214 450	[2149] 243 443	[2396] 271 433		

		195 cm <sup>3</sup> /r [11.9 in <sup>3</sup> /r] Δ Pressure Bar [PSI] Continuous										Max. Contin- uous	Max. Inter- mittent	
		[200]	[400]	[600]	[800]	[1000]	[1200]	[1400]	[1600]	[1750]	[1800]	[2000]	[2500]	
		14	28	41	55	69	83	97	110	121	125	138	172	
Flow LPM [GPM]	[2] 7,6	[330] 37 38	[671] 76 36	[1016] 115 34	[1345] 152 33	[1654] 187 31	[1969] 222 28	[2242] 253 25	[2507] 283 20	[2689] 304 16	[2748] 310 14	[2973] 336 8		
	[4] 15,1	[328] 37 77	[675] 76 77	[1026] 116 75	[1366] 154 73	[1692] 191 73	[2010] 227 71	[2289] 259 68	[2586] 292 65	[2799] 316 62	[2867] 324 61	[3144] 355 55	[3797] 429 40	
	[6] 22,7	[306] 35 115	[658] 74 113	[1011] 114 111	[1360] 154 110	[1698] 192 109	[2021] 228 107	[2324] 263 104	[2604] 294 100	[2829] 320 97	[2901] 328 95	[3178] 359 87	[3831] 433 68	
	[8] 30,3	[272] 31 153	[634] 72 151	[980] 111 150	[1331] 150 148	[1675] 189 146	[2003] 226 144	[2300] 260 142	[2592] 293 139	[2815] 318 134	[2888] 326 132	[3174] 359 123	[3864] 437 99	
	[10] 37,9	[238] 27 192	[596] 67 189	[945] 107 188	[1296] 146 186	[1637] 185 184	[1960] 221 183	[2255] 255 181	[2565] 290 176	[2786] 315 168	[2857] 323 166	[3140] 355 156	[3816] 431 133	
	[12] 45,4	[181] 20 230	[545] 62 228	[908] 103 226	[1260] 142 224	[1607] 182 222	[1924] 217 221	[2223] 251 219	[2529] 286 213	[2759] 312 207	[2836] 320 204	[3121] 353 192	[3807] 430 160	
	[14] 53,0	[154] 17 268	[500] 56 266	[860] 97 264	[1211] 137 261	[1556] 176 259	[1869] 211 259	[2175] 246 256	[2483] 281 251	[2713] 307 244	[2792] 315 242	[3080] 348 229	[3778] 427 199	
	Max. Contin- uous	[15] 56,8	[140] 16 287	[465] 53 285	[832] 94 283	[1179] 133 281	[1525] 172 279	[1835] 207 278	[2144] 242 275	[2459] 278 269	[2693] 304 262	[2768] 313 260	[3061] 346 247	[3764] 425 220
	Max. Inter- mittent	[20] 75,7		[291] 33 382	[653] 74 378	[1013] 114 375	[1366] 154 373	[1689] 191 372	[1987] 225 368	[2298] 260 363	[2540] 287 356	[2622] 296 353	[2928] 331 342	

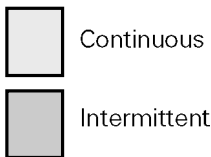
[465]  
53  
285 } Torque [lb-in]  
Nm  
Speed RPM

# T Series (158-, 185-)

## Performance Data

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

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



### 244 cm<sup>3</sup>/r [14.9 in<sup>3</sup>/r]

Pressure Bar [PSI]

Continuous

Max. Continuous  
Max. Intermittent

		[200]	[400]	[600]	[800]	[1000]	[1200]	[1400]	[1600]	[1800]	[1850]	[2250]
		14	28	41	55	69	83	97	110	114	125	127
Flow LPM [GPM]	[2]	[406]	[833]	[1260]	[1655]	[2038]	[2403]	[2707]	[2597]	[2552]	[2373]	[2299]
	7,6	46 30	94 29	142 27	187 26	230 24	272 22	306 17	293 12	288 11	268 7	260 6
	[4]	[404]	[843]	[1277]	[1695]	[2083]	[2468]	[2820]	[3177]	[3261]	[3509]	[3589]
	15,1	46 62	95 62	144 60	192 59	235 59	279 57	319 55	359 50	368 49	396 46	406 44
	[6]	[382]	[823]	[1261]	[1687]	[2088]	[2477]	[2843]	[3196]	[3285]	[3547]	[3633]
	22,7	43 92	93 91	142 90	191 89	236 88	280 86	321 82	361 78	371 76	401 72	410 71
	[8]	[341]	[787]	[1220]	[1651]	[2059]	[2454]	[2820]	[3177]	[3265]	[3530]	[3615]
	30,3	39 123	89 122	138 121	187 120	233 119	277 116	319 113	359 108	369 106	399 101	408 99
	[10]	[297]	[744]	[1177]	[1611]	[2017]	[2412]	[2774]	[3151]	[3241]	[3504]	[3593]
	37,9	34 154	84 152	133 151	182 150	228 148	273 146	313 143	356 136	366 134	396 127	406 125
	[12]	[225]	[687]	[1132]	[1553]	[1967]	[2360]	[2734]	[3105]	[3194]	[3466]	[3554]
	45,4	25 184	78 183	128 181	175 180	222 179	267 177	309 173	351 166	361 163	392 156	402 153
	[14]	[154]	[628]	[1072]	[1498]	[1910]	[2298]	[2674]	[3052]	[3148]	[3419]	[3510]
	53,0	17 214	71 213	121 212	169 211	216 209	260 207	302 202	345 195	356 193	386 185	397 182
	[15]	[119]	[586]	[1035]	[1458]	[1872]	[2261]	[2637]	[3022]	[3116]	[3389]	[3488]
Max. Continuous	56,8	13 229	86 228	117 227	165 226	212 224	255 222	298 217	341 209	352 207	393 200	394 197
Max. Intermittent	[20]	[372]	[816]	[1251]	[1663]	[2067]	[2448]	[2832]	[2928]	[3214]	[3312]	
	75,7	305	303	301	300	297	292	284	281	273	270	

### 306 cm<sup>3</sup>/r [18.7 in<sup>3</sup>/r]

Pressure Bar [PSI]

Continuous

Max. Continuous  
Max. Intermittent

		[200]	[400]	[600]	[800]	[1000]	[1200]	[1400]	[1500]	[1600]	[1800]
		14	28	41	55	69	83	97	103	110	124
Flow LPM [GPM]	[2]	[499]	[1035]	[1560]	[2034]	[2501]	[2912]	[3239]	[3859]	[2400]	
	7,6	56 24	117 23	176 22	230 21	283 19	329 16	366 11	423 8	271 5	
	[4]	[497]	[1052]	[1590]	[2101]	[2561]	[3023]	[3464]	[3680]	[3866]	
	15,1	56 49	119 49	180 48	237 48	289 47	342 47	391 44	439 41	439 38	
	[6]	[480]	[1031]	[1578]	[2096]	[2564]	[3023]	[3464]	[3689]	[3905]	
	22,7	54 74	116 74	178 72	237 72	290 71	342 69	391 64	417 62	441 60	
	[8]	[427]	[975]	[1520]	[2051]	[2525]	[2998]	[3448]	[3667]	[3881]	
	30,3	48 99	110 98	172 97	232 97	285 96	339 94	390 89	414 86	438 83	
	[10]	[370]	[930]	[1467]	[2001]	[2477]	[2955]	[3406]	[3631]	[3852]	
	37,9	42 123	105 122	166 121	226 120	280 120	334 117	385 112	410 108	435 104	
	[12]	[281]	[871]	[1410]	[1908]	[2400]	[2887]	[3352]	[3573]	[3790]	
	45,4	32 147	98 146	159 145	216 145	271 145	326 142	379 136	404 131	428 127	
	[14]	[192]	[791]	[1338]	[1851]	[2338]	[2816]	[3281]	[3511]	[3743]	
	53,0	22 171	89 171	151 170	209 170	264 169	318 165	371 159	397 154	423 150	
	[15]	[148]	[738]	[1288]	[1803]	[2287]	[2773]	[3243]	[3475]	[3705]	
Max. Continuous	56,8	17 183	83 183	146 182	204 182	258 181	313 177	366 171	419 165	463 160	
Max. Intermittent	[20]	[476]	[1020]	[1544]	[2010]	[2519]	[3010]	[3243]	[3495]		
	75,7	54 243	115 242	174 242	227 241	285 238	340 231	366 226	395 209		

[738]  
83 } Torque [lb-in]  
183 } Nm  
Speed RPM

### 370 cm<sup>3</sup>/r [22.6 in<sup>3</sup>/r]

Pressure Bar [PSI]

Continuous

Max. Continuous  
Max. Intermittent

		[200]	[400]	[600]	[800]	[1000]	[1200]	[1300]	[1500]
		14	28	41	55	69	83	90	103
Flow LPM [GPM]	[2]	[590]	[1237]	[1858]	[2406]	[2953]	[3388]	[3586]	
	7,6	67 20	140 19	210 18	272 17	334 15	383 12	405 11	
	[4]	[588]	[1263]	[1906]	[2506]	[3029]	[3557]	[3811]	
	15,1	66 41	143 41	215 40	283 40	342 39	402 38	431 37	
	[6]	[580]	[1245]	[1899]	[2506]	[3029]	[3544]	[3788]	
	22,7	66 61	141 60	215 60	283 59	342 58	400 57	428 56	
	[8]	[514]	[1164]	[1824]	[2452]	[2975]	[3518]	[3783]	
	30,3	58 82	132 81	206 80	277 79	336 78	397 77	427 77	
	[10]	[444]	[1119]	[1759]	[2391]	[2928]	[3479]	[3750]	
	37,9	50 102	126 102	199 101	270 101	331 100	393 97	424 96	
	[12]	[337]	[1062]	[1690]	[2256]	[2813]	[3393]	[3655]	
	45,4	38 122	120 121	191 120	255 119	318 119	383 118	416 116	
	[14]	[231]	[958]	[1608]	[2201]	[2748]	[3319]	[3610]	
	53,0	26 142	108 141	182 140	249 139	310 138	375 137	404 134	
	[15]	[178]	[896]	[1543]	[2147]	[2683]	[3272]	[3572]	
Max. Continuous	56,8	20 152	101 152	174 151	243 150	303 149	370 147	404 146	
Max. Intermittent	[20]	[587]	[1228]	[1833]	[2331]	[2948]	[3273]		
	75,7	66 202	139 201	207 207	263 200	333 198	370 196		

# T Series (158-)

## Dimensions

(Refer to pages B-4-19 thru B-4-22 for shaft and port dimensions.)

### Ports

- 7/8 -14 INF O-Ring Ports (2)
- 1/2 -14 NPTF (2)
- G 1/2 BSP (2)
- Manifold Ports (5/16-18 mounting threads)

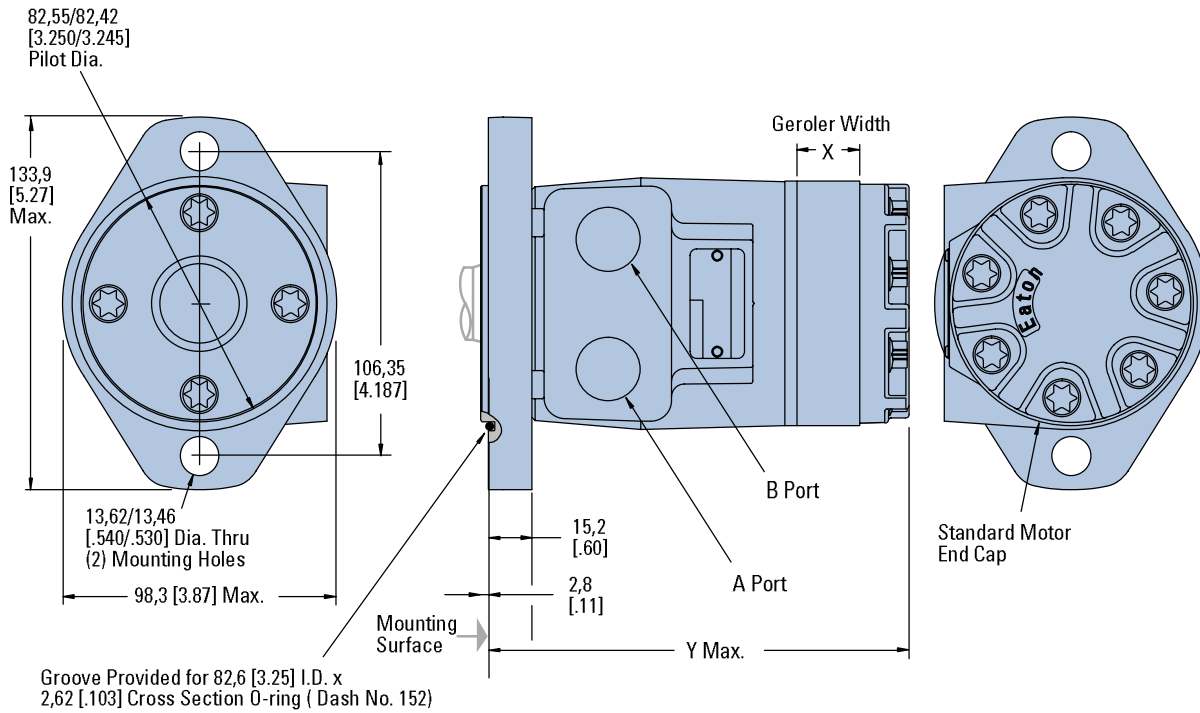
### Note:

Mounting Surface Flatness Requirement is  $\frac{\text{---}}{\text{---}}$ ,13 mm [.005 inch] Max.

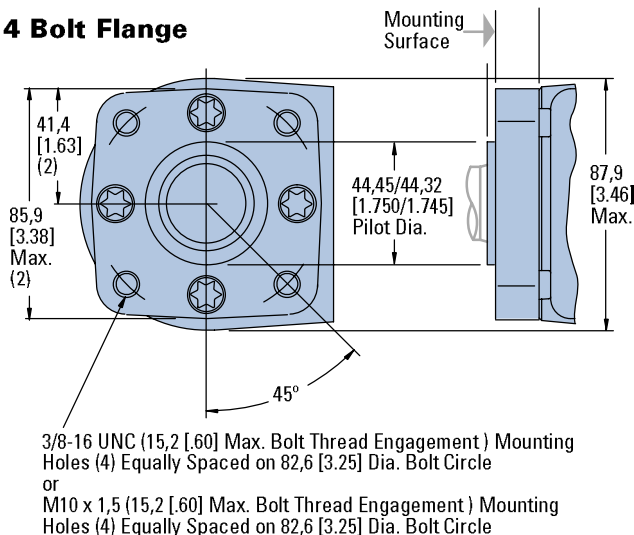
### Standard Rotation Viewed from Shaft End

- Port A Pressurized — CW
- Port B Pressurized — CCW

## 2 Bolt Flange



## 4 Bolt Flange



### 2 AND 4 BOLT FLANGE PORT DIMENSIONS

Displacement cm <sup>3</sup> /r [in <sup>3</sup> /r]	X mm [inch]	Y mm [inch]
36 [2.2]	6,6 [.26]	132,2 [5.21]
49 [3.0]	9,1 [.36]	134,6 [5.30]
66 [4.0]	12,2 [.48]	137,7 [5.42]
80 [4.9]	14,7 [.58]	140,3 [5.53]
102 [6.2]	18,5 [.73]	144,3 [5.68]
131 [8.0]	24,1 [.95]	149,6 [5.89]
157 [9.6]	29,0 [1.14]	154,5 [6.09]
195 [11.9]	35,6 [1.40]	161,3 [6.35]
244 [14.9]	44,7 [1.76]	170,3 [6.71]
306 [18.7]	56,1 [2.21]	181,6 [7.16]
370 [22.6]	72,1 [2.84]	197,9 [7.79]

# T Series (158-) Product Numbers

Use digit prefix—158—plus four digit number from charts for complete product number—  
Example: 158-1067.

**Orders will not be accepted without the three-digit prefix.**

## Standard

MOUNTING	SHAFT	PORT SIZE	DISPL. cm <sup>3</sup> /r [in <sup>3</sup> /r] / PRODUCT NUMBER										
			36 [2.2]	49 [3.0]	66 [4.0]	80 [4.9]	102 [6.2]	131 [8.0]	157 [9.6]	195 [11.9]	244 [14.9]	306 [18.7]	370 [22.6]
2 Bolt Flange	1 in. Straight w/Woodruff Key	7/8 -14 O-Ring	158- — —	—	-1537	-1034	-1035	-1538	-1036	-1037	-1038	-1039	-1040
		1/2 NPTF	158- — —	—	-1540	-1026	-1027	-1541	-1028	-1029	-1030	-1031	-1032
		Manifold*	158- — —	—	-1543	-1042	-1043	-1544	-1044	-1045	-1046	-1047	-1048
	1 in. SAE 6B Splined	7/8 -14 O-Ring	158- — —	—	-1552	-1082	-1083	-1553	-1084	-1085	-1086	-1087	-1088
		1/2 NPTF	158- — —	—	-1555	-1074	-1075	-1556	-1076	-1077	-1078	-1079	-1080
		Manifold*	158- — —	—	-1558	-1090	-1091	-1559	-1092	-1093	-1094	-1095	-1096
4 Bolt Flange	1 in. Straight w/Woodruff Key	7/8 -14 O-Ring	158- — —	—	-1570	-1010	-1011	-1571	-1012	-1013	-1014	-1015	-1016
		1/2 NPTF	158- — —	—	-1573	-1002	-1003	-1574	-1004	-1005	-1006	-1007	-1008
		Manifold*	158- — —	—	-1576	-1018	-1019	-1577	-1020	-1021	-1022	-1023	-1024
	1 in. SAE 6B Splined	7/8 -14 O-Ring	158- — —	—	-1579	-1058	-1059	-1580	-1060	-1061	-1062	-1063	-1064
		1/2 NPTF	158- — —	—	-1582	-1050	-1051	-1583	-1052	-1053	-1054	-1055	-1056
		Manifold*	158- — —	—	-1585	-1066	-1067	-1586	-1068	-1069	-1070	-1071	-1072

158-1067

## T Series Motors with Corrosion Protection

MOUNTING	SHAFT	PORT SIZE	DISPL. cm <sup>3</sup> /r [in <sup>3</sup> /r] / PRODUCT NUMBER											
			36 [2.2]	49 [3.0]	66 [4.0]	80 [4.9]	102 [6.2]	131 [8.0]	157 [9.6]	195 [11.9]	244 [14.9]	306 [18.7]	370 [22.6]	
2 Bolt Flange	1 in. Straight w/ Woodruff Key	7/8 -14 O-Ring	158- — —	—	—	1645	—	—	—	—	—	-1649	—	-1650
4 Bolt Flange		1/2 NPTF	158- — —	—	—	—	—	—	—	—	—	-1620	—	-1621

158-1620

## T Series Motors with Low Speed Valving

MOUNTING	SHAFT	PORT SIZE	DISPL. cm <sup>3</sup> /r [in <sup>3</sup> /r] / PRODUCT NUMBER										
			36 [2.2]	49 [3.0]	66 [4.0]	80 [4.9]	102 [6.2]	131 [8.0]	157 [9.6]	195 [11.9]	244 [14.9]	306 [18.7]	370 [22.6]
2 Bolt Flange	1 in. Straight w/Woodruff Key	7/8 -14 O-Ring	158- — —	—	—	-1427	-1428	—	—	-1430	-1431	-1432	-1433
		1/2 NPTF	158- — —	—	—	-1419	-1420	—	—	-1422	-1423	-1424	-1425
		Manifold*	158- — —	—	—	—	—	—	—	—	—	—	—
4 Bolt Flange	1 in. SAE 6B Splined	7/8 -14 O-Ring	158- — —	—	—	-1525	—	—	—	—	-1675	—	—
		1/2 NPTF	158- — —	—	—	—	-1634	—	—	—	—	—	—
		Manifold*	158- — —	—	—	-1522	-2678	—	—	—	—	—	-1527
4 Bolt Flange	1 in. Straight w/ Woodruff Key	7/8 -14 O-Ring	158- — —	—	-1625	-1410	-1411	-1626	-1412	-1413	-1414	-1415	-1416
		1/2 NPTF	158- — —	—	-1644	-1402	-1403	—	-1404	-1405	-1406	-1407	-1408

158-1403

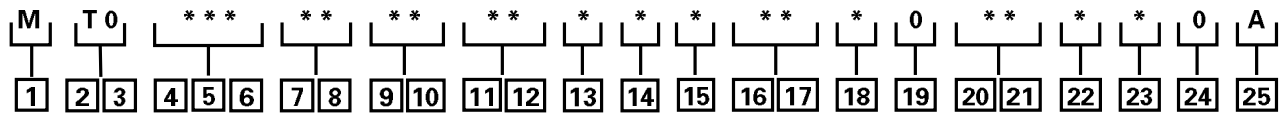
\*Manifold product numbers shown are for motors with four 5/16 -18 port face mounting threads. Manifold, manifold mounting O-Rings and bolts are NOT included.

For T Series Motors with a configuration Not Shown in the charts above: Use the model code system on page B-4-10 to specify the product in detail.

# T Series (158-)

## Model Code

The following 25-digit coding system has been developed to identify all of the configuration options for the T motor. Use this model code to specify a motor with the desired features. All 25-digits of the code must be present when ordering. You may want to photocopy the matrix below to ensure that each number is entered in the correct box.



### 1 Product

**M – Motor**

### 2, 3 Product Series

**T0 – T Series**

### 4, 5, 6 Displacement cm<sup>3</sup>/r [in<sup>3</sup>/r]

022 – 35 [2.2]

030 – 49 [3.0]

040 – 65 [4.0]

049 – 80 [4.9]

062 – 102 [6.2]

080 – 131 [8.0]

096 – 158 [9.6]

119 – 195 [11.9]

149 – 244 [14.9]

187 – 306 [18.7]

226 – 370 [22.6]

### 7, 8 Mounting Type

**AA – 2 Bolt (Standard)**  
82,6 [3.248] Dia. and 3,05 [.120] pilot, 13,59 [.535] Dia. Mounting Holes 106,35 [4.187] Dia. B.C.

**BA – 4 Bolt (Standard)**  
44,40 [1.748] Dia. x 3,05 [.120] pilot, .375-16 UNC-2B Mounting Holes 82,55 [3.250] Dia. B.C.

CA – 2 Bolt (Standard)  
82,50 [3.248] Dia. x 6,10 [.240] pilot, 10,41 [.410] Dia. Mounting Holes 106,35 [4.187] Dia. B.C. (SAE A)

DD – 2 Bolt (Std.) 101,60 [4.000] Dia. x 6,10 [.240] pilot, 14,35 [.565] Dia. Mounting Holes 146,05 [5.750] Dia. B.C. (SAE B) (Ductile)

EA – 4 Bolt Magneto 82,50 [3.248] Dia. x 3,05 [.120] Pilot, 13,59 [.535] Dia. Mounting Holes 106,35 [4.187] Dia. B.C.

**FA – 4 Bolt (Standard)**  
44,40 [1.748] Dia. x 3,05 [.120] pilot, M10 x 1.5-6H Mounting Holes on 82,55 [3.250] Dia. B.C.

### 9, 10 Output Shaft Description

**01 – 25,4 [1.00] Dia. Straight, Woodruff Key, .250-20 UNC-2B Hole in Shaft End**

**02 – 25,4 [1.00] Dia. SAE 6B Spline, .25-20 UNC-2B Hole in Shaft End**

07 – 25,4 [1.00] Dia. Straight, 8,03 [.316] Dia. Crosshole 11,2 [.44] from End, 5,6 [.22] Extra Length

**08 – 25,4 [1.00] Dia. Straight, 10,31 [.406] Dia. Crosshole 15,7 [.62] from End, .250-20 UNC-2B Hole in Shaft End**

**16 – 22,22 [.875] Dia. SAE 13 Tooth Spline (SAE B)**

17 – 22,22 [.875] Straight Dia. 6,4 [2.5] x 19,0 [.75] Square Key (SAE B)

18 – 25,4 [1.00] Dia. Tapered, Woodruff Key and Nut, 34,92 [1.375] Taper Length

**24 – 25.00 [.984] Dia. Straight, 8.0 [.315] Key, MB x 1.25-6H Hole in Shaft End**

### 11, 12 Port Type

**AA – .875-14 UNF-2B SAE O-Ring Ports**

**AB – .500-14 NPTF Dryseal Pipe Thread Ports**

**AC – Manifold (.3125-18 UNC-2B Mounting Holes)**

AD – Manifold Ports (MB x 1.25-6H Mounting Holes)

**AF – G 1/2 BSP Straight Thread Ports**

### 13 Case Flow Options

**0 – None Specified**

**1 – .4375-20 UNF-2B SAE O-Ring Port (End Cap)**

**2 – G 1/4 BSP Straight Thread Port (End Cap)**

**A – Internal Check Valves**

### 14 Geroler Options

**0 – None**

A – Free Running

### 15 Shaft Options

**0 – None**

N – Electroless Nickel Plated

### 16, 17 Seal Options

**00 – Standard Seals**

**02 – Seal Guard**

**03 – Vitron Seals**

**04 – Vitron Shaft Seal**

**05 – Vented Two-Stage Seal**

**07 – High Pressure Shaft Seal**

### 18 Speed Sensor Options

**0 – None**

A – 12 mm Digital Speed Pickup (15 Pulse) without Lead Wire

B – Magnetic Speed Pickup (60 Pulse by Quadrature), No Lead Wire with M12 Connector

(A=Power, B=Common, C=Signal)

### 19 Valve Options

A – None

### 20, 21 Special Features (Hardware)

**00 – None Specified**

AB – Low Speed Valving

SS – Stainless Steel Flange

Bolts

### 22 Special Assembly Instructions

**0 – None**

A – Reverse Rotation

2 – Flange Rotation 90°

### 23 Paint/Packaging Options

**0 – No Paint**

**A – Painted Low Gloss Black**

D – Environmental Coated Gloss White

### 24 Customer ID/ Nameplate Options

**A – None Specified**

### 25 Design Code

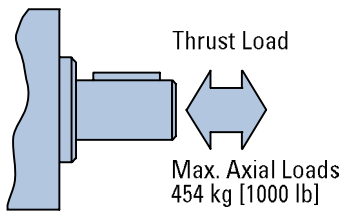
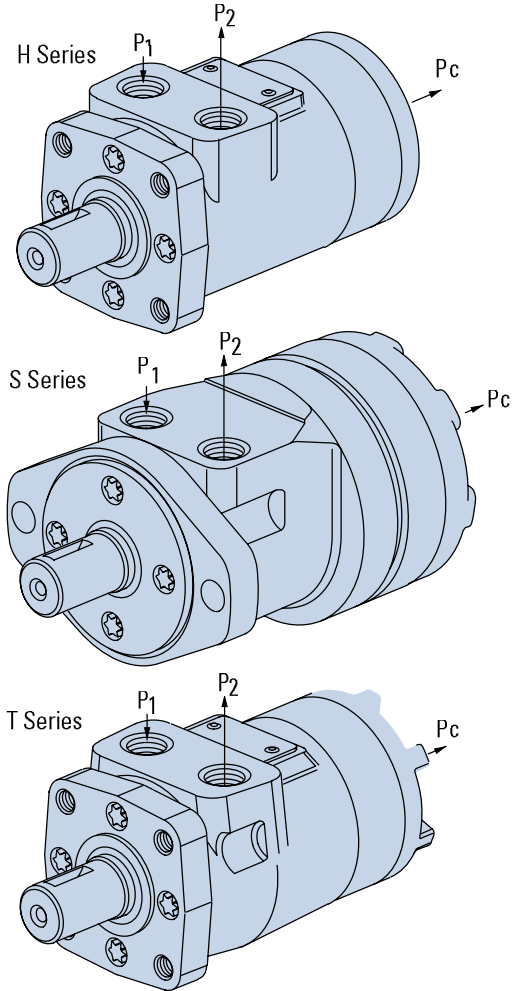
**A – One (1)**

Feature in **bold** are preferred and allow for shorter lead time.

# Case Pressure and Case Drain — H, S, and T Series

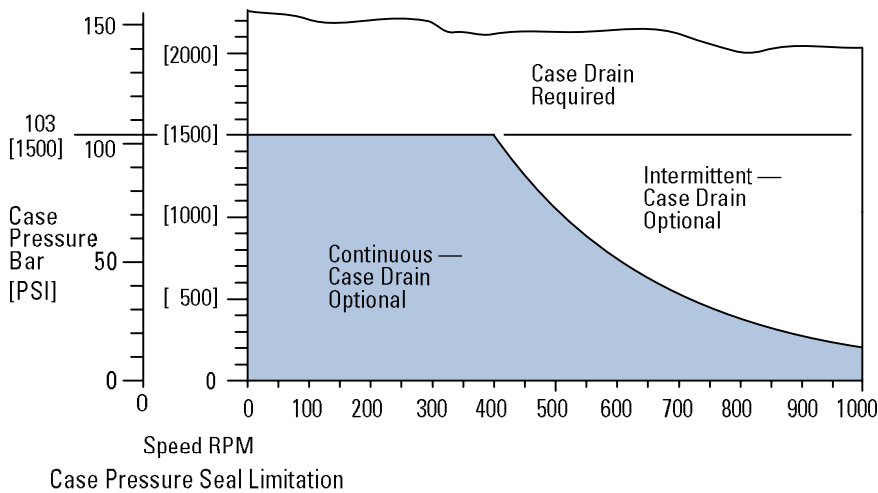
Char-Lynn H Series, S Series and T Series motors are durable and have long life as long as the recommended case pressure is not exceeded. Allowable case pressure is highest at low shaft speeds. Consequently, motor life will be shortened if case pressure exceeds these ratings (acceptability may vary with application). Determine if an external case drain is required

from the case pressure seal limitation chart below — chart based on case pressure and shaft speed. If a case drain line is needed, connect drain line to assure that the motor will always remain full of fluid. A pressure restriction should be added to the case drain line, during which a motor case pressure of 3,5 Bar [50 PSI] is maintained.



$$P_C \approx 6 \cdot P + P_2$$

$P_C$  = Case Pressure  
 $P_1$  = Inlet Line Pressure  
 $P_2$  = Back Pressure  
 $P$  =  $P_1 - P_2$



# H, S and T Series (101-, 103-, 158-, 185-)

## Side Load Capacity

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

Allowable side load chart, shaft load location drawing and load curves (below) are based on the side / radial loads being applied to shaft at locations A, B, and C, to

determine the shaft side load capacity at locations other than those shown use the formula (shown below).

For more information about shaft side loads on Char-Lynn motors contact your Eaton representative.

**Note:**

When the speed sensor option is used, side load ratings are reduced 25%.

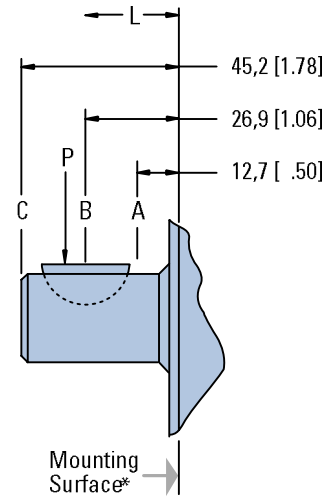
RPM	ALLOWABLE SHAFT SIDE LOAD — KG [LB]		
	A	B	C
900	154 [ 339]	136 [ 300]	118 [ 261]
625	205 [ 452]	181 [ 400]	158 [ 348]
500	256 [ 565]	227 [ 500]	197 [ 435]
400	307 [ 678]	272 [ 600]	237 [ 522]
300	410 [ 904]	363 [ 800]	316 [ 696]
200	718 [1582]	635 [1400]	552 [1216]

$$\text{Sideload } P \text{ kg} = \frac{900}{N} \left( \frac{16800}{L + 96,3} \right) \text{ for 200-900 RPM}$$

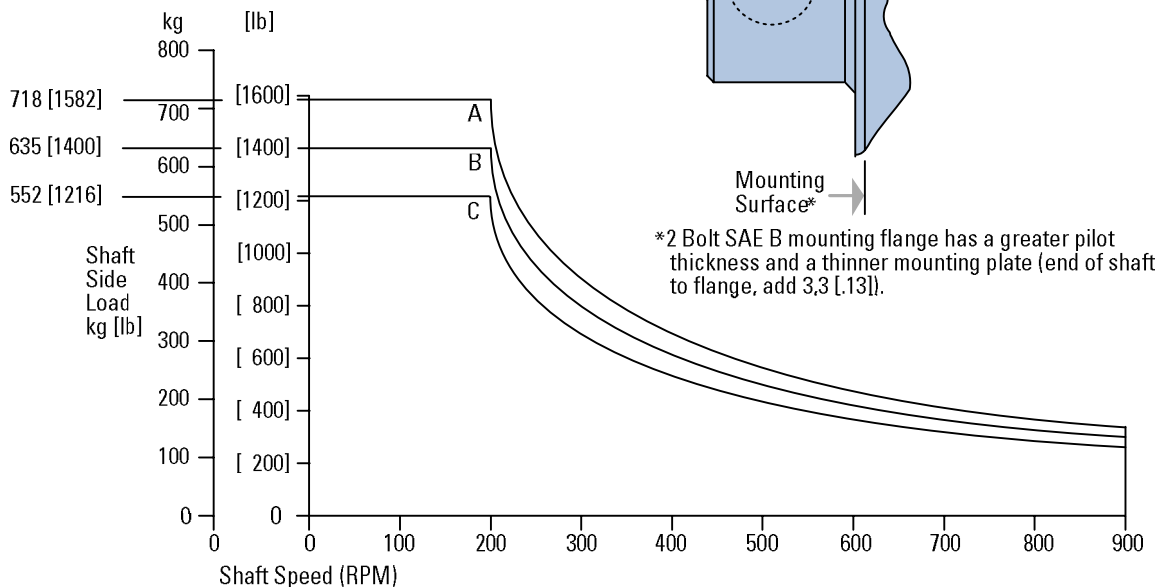
$$\text{Sideload } P \text{ [lb]} = \frac{900}{N} \left( \frac{1460}{L + [3.79]} \right) \text{ for 200-900 RPM}$$

Where N = Shaft Speed (RPM)

L = Distance from Mounting Surface



\*2 Bolt SAE B mounting flange has a greater pilot thickness and a thinner mounting plate (end of shaft to flange, add 3,3 [1.13]).

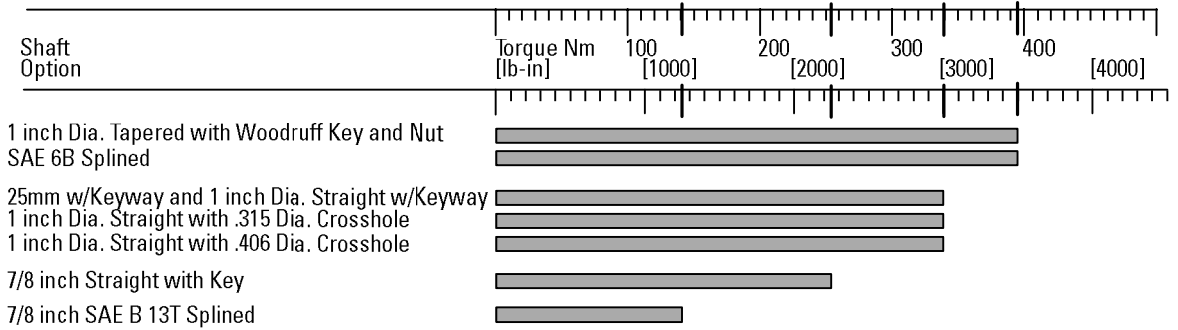


# H, S and T Series (101, 103- 158, 185)

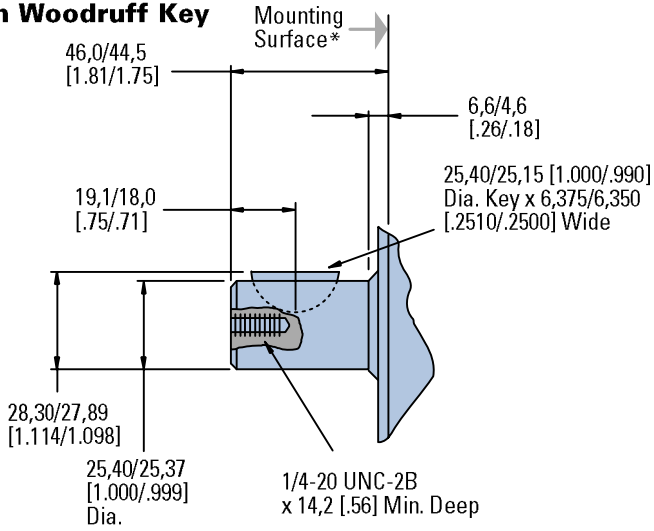
## Dimensions

Shafts

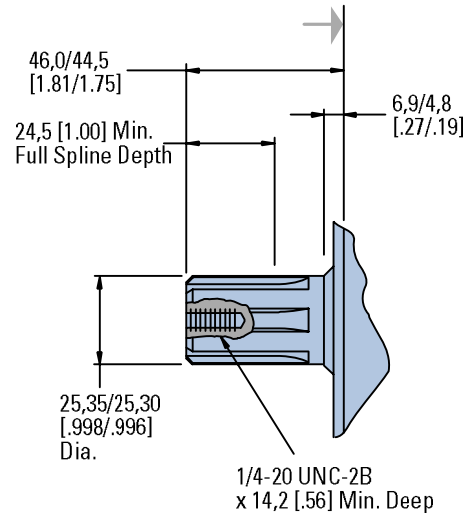
### Shaft Size Motor Torque Combination Limit Guide



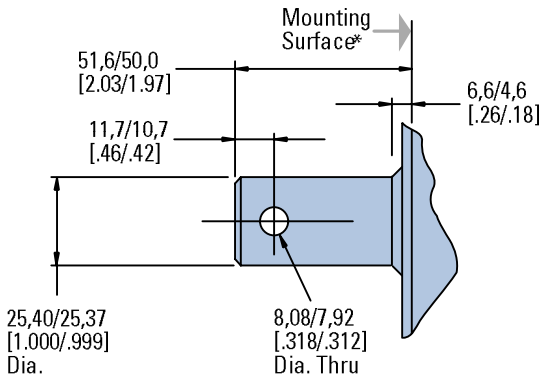
### 1 in. Dia. Straight with Woodruff Key



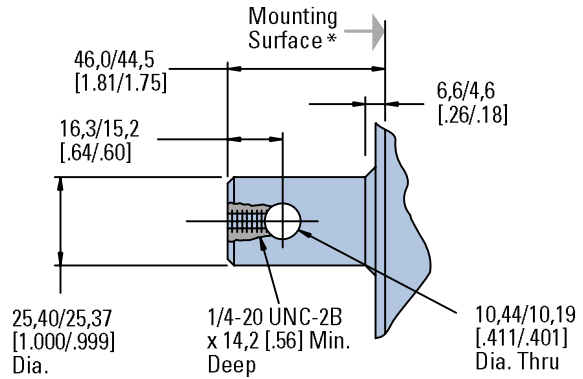
### SAE 6B Splined Shaft



### 1 in. Dia. Straight Shaft with .315 Dia. Crosshole



### 1 in. Dia. Straight Shaft with .406 Dia. Crosshole



\* 2 Bolt SAE B mounting flange has a greater pilot thickness and a thinner mounting plate (end of shaft to flange, add 3.3 [.13]).

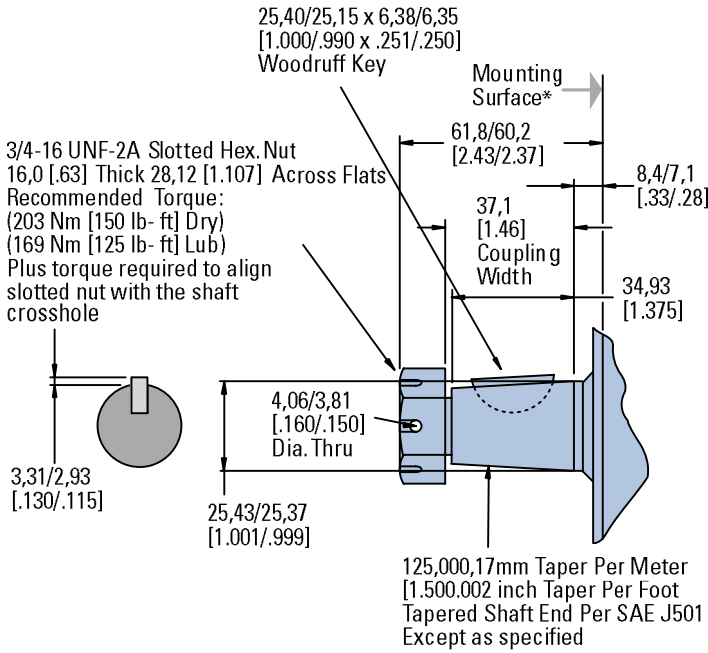


# H, S and T Series (101-, 103- 158-, 185-)

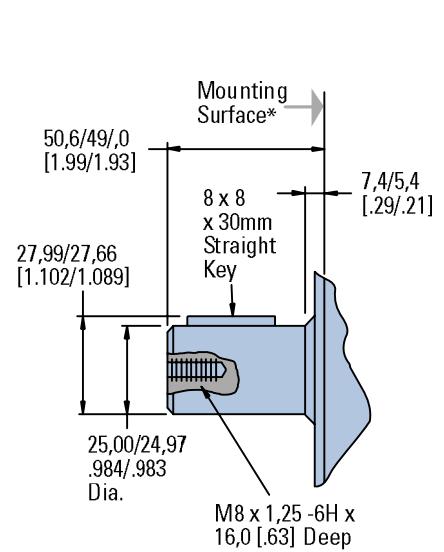
## Dimensions

Shafts

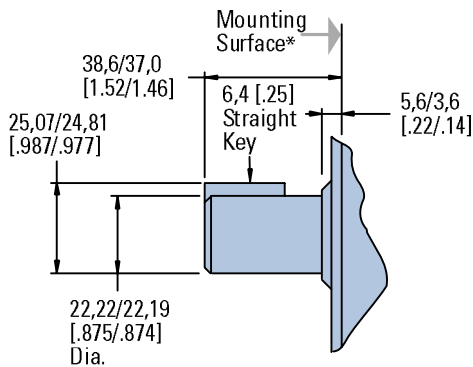
### 1 in. Dia. Tapered Shaft with Woodruff Key and Nut



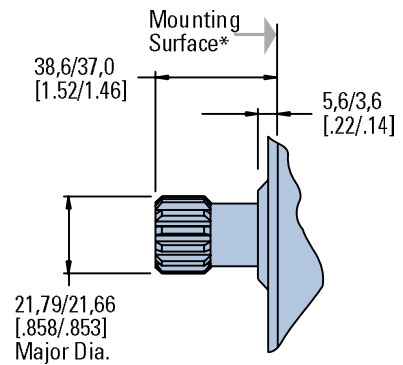
### 25mm Dia. Straight Shaft with 8mm Keyway



### 7/8 in. Dia. Straight Shaft with Key



### 7/8 in. Dia. SAE B Shaft 13 T Spline d



\* 2 Bolt SAE B mounting flange has a greater pilot thickness and a thinner mounting plate (end of shaft to flange, add 3,3 [.13]).

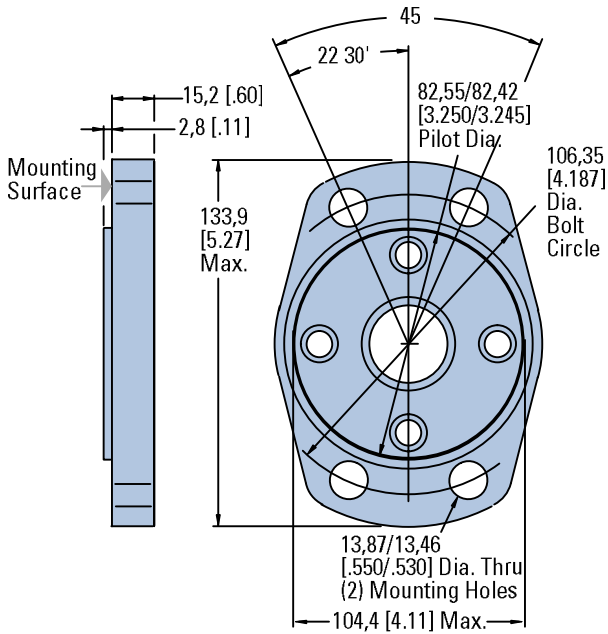
# H, S and T Series (101-, 103- 158-, 185-)

## Mounting Options

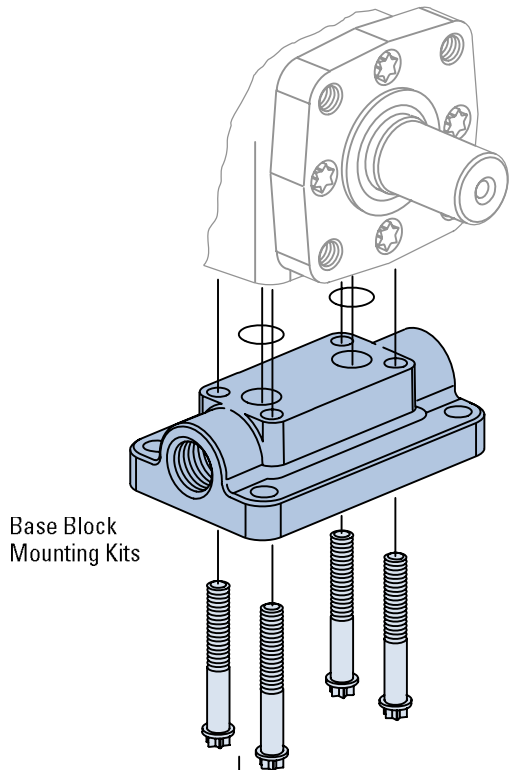
**Note:**

Mounting Surface Flatness Requirement is  $\nabla$ , 13mm [.005 inch] Max.

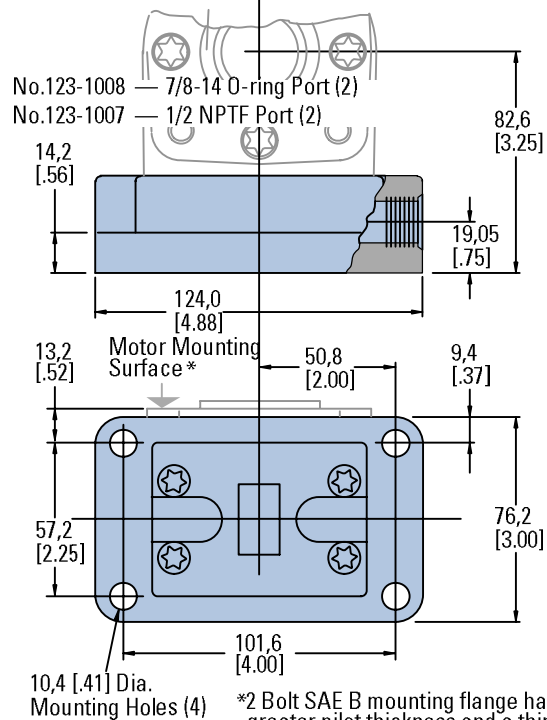
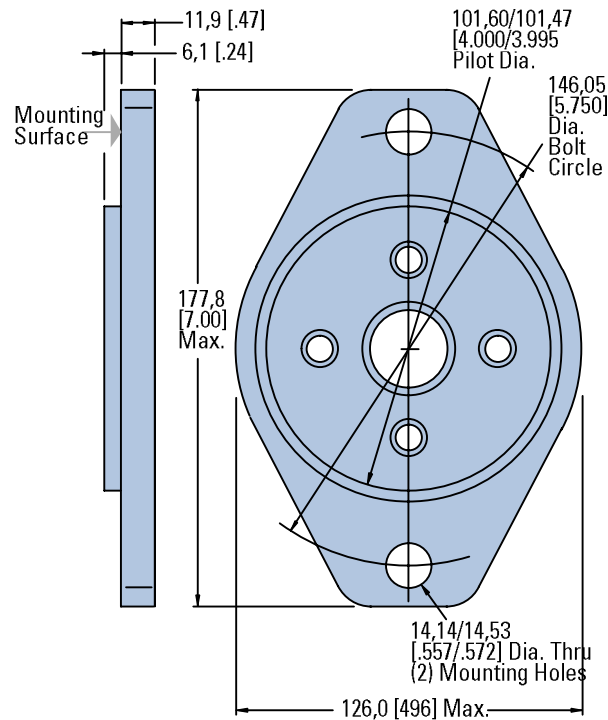
### 4 Bolt Magneto



### Base Block Mounting Kits



### 2 Bolt SAE B



\*2 Bolt SAE B mounting flange has a greater pilot thickness and a thinner mounting plate.

# H, S and T Series (101-, 103-, 158-, 185-)

## Dimensions

Ports

### Ports

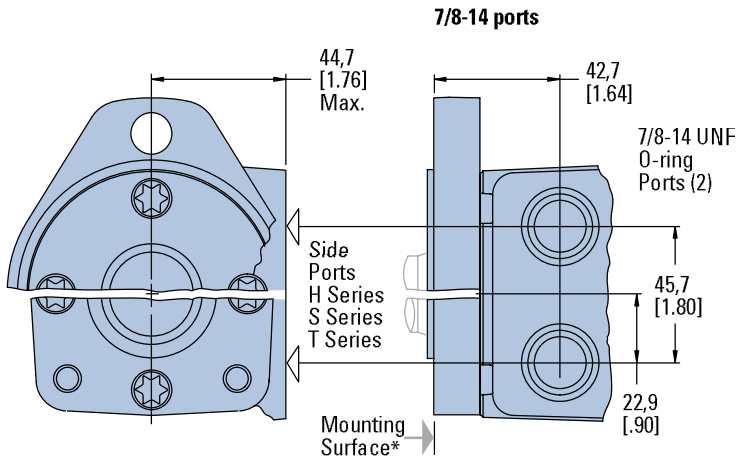
End Ports — H Series only  
G 1/2 (BSP) (2)  
or 3/4-16 O-Ring (2)

### Standard Rotation Viewed from Drive End

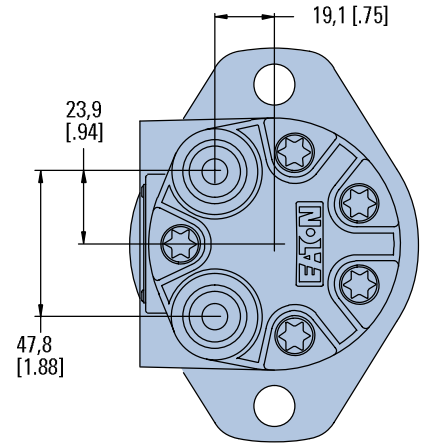
Port A Pressurized — CW  
Port B Pressurized — CCW

### Note:

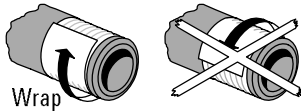
End ported motor pressure is derated. Reference page B-2-2 for ratings.



### End Ports (H Series only)



Use of Teflon Tape Sealant/Lubricant (with 1/2 14 NPTF Port Connectors only).

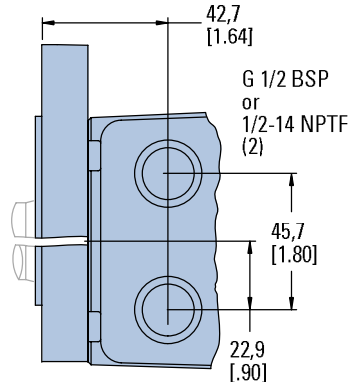


When using fittings with Teflon tape, be careful when taping and tightening. Over tightening or improperly taped fittings can cause damage to housing or leakage.

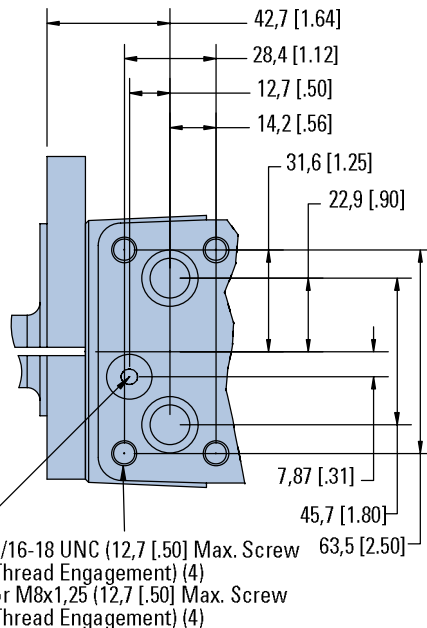
### Use the following procedures:

- Wrap approx. 1 1/2 Turns of 13 mm [1/2 in.] wide Teflon Tape around fitting threads — start tape 2 threads up from end of fitting.
- Tighten threads to a Maximum of 34 Nm [25 lb-ft]. — Do Not Tighten Further —
- If fittings leak when tightened to maximum torque, either retape, reseal, or replace fittings.

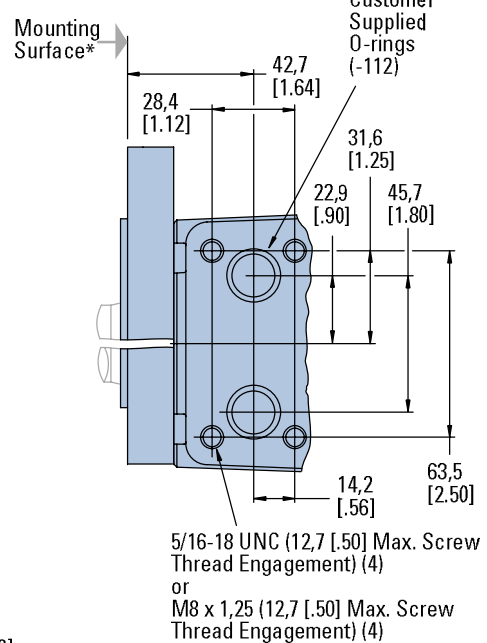
### 6-1/2 or 1/2 NPTF ports



### Manifold Ports w/manifold case port



### Manifold Ports



### Note:

End ported motor option is derated to 1400 continuous, 1700 psi intermittent.

\*2 Bolt SAE B mounting flange has a greater pilot thickness and a thinner mounting plate.

# Notes