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



Powering Business Worldwide

Spool Valve Motors

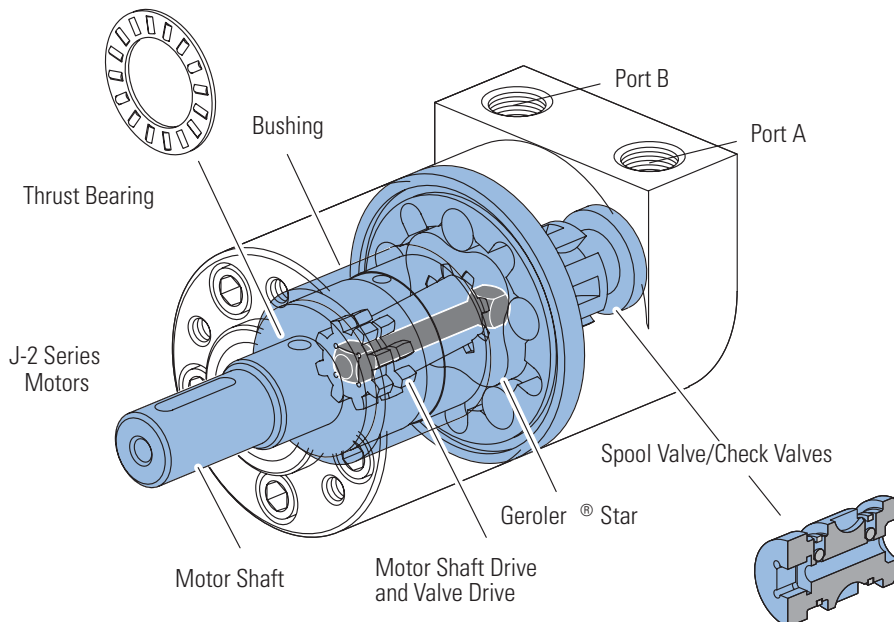
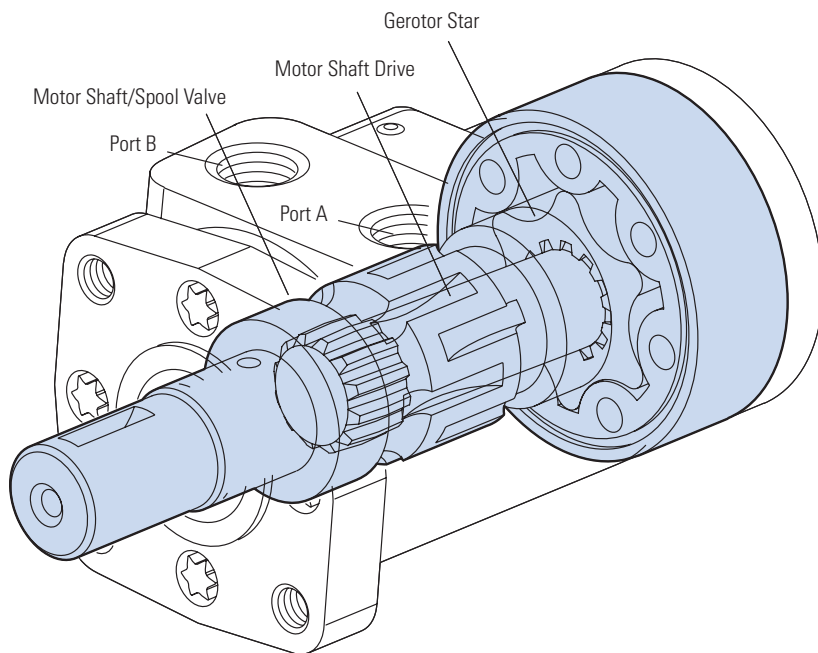
Highlights

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

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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:

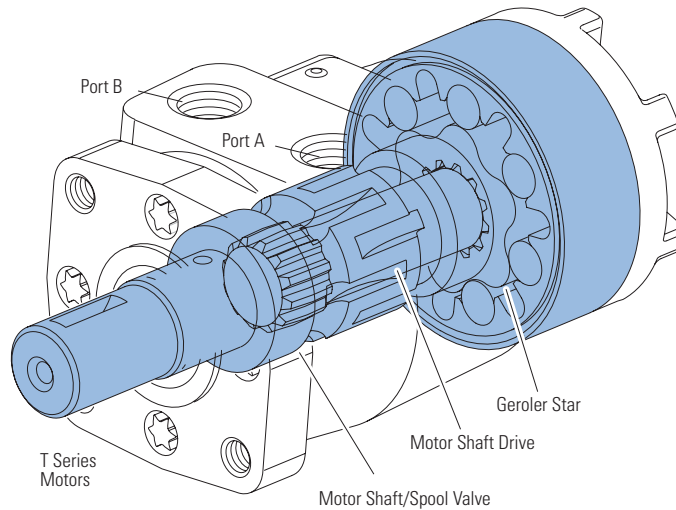
MOTOR QUICK-GUIDE (BASED ON MAXIMUM CONTINUOUS RATINGS)

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

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Crane (winch)



Paving



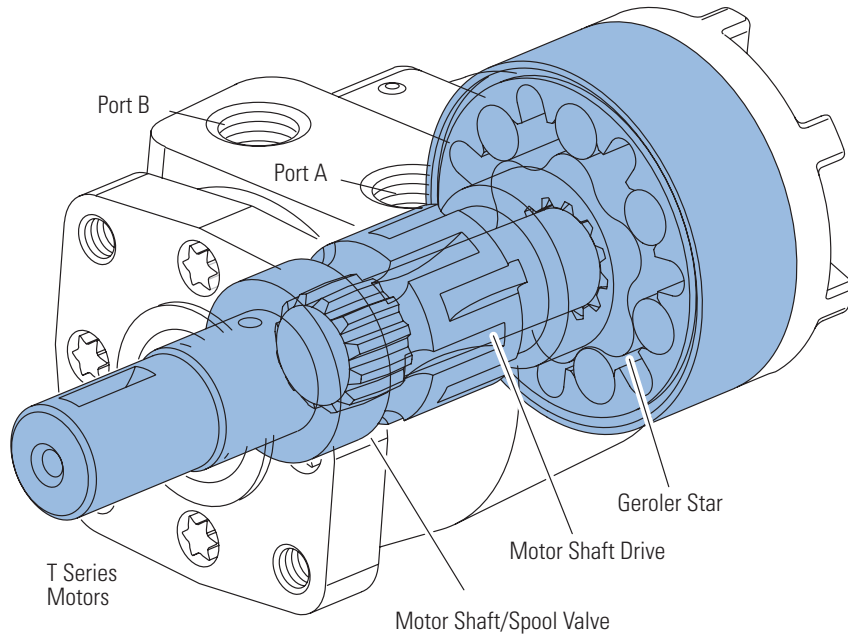
Harvester



Crane and winches

T Series (158-, 185-)

Specifications



SPECIFICATION DATA – T MOTORS

Displ. cm ³ /r [in ³ /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 [Δ 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 Δ bar [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 System Operating Temp.:

-34°C to 82°C [-30°F to 180°F]

Recommended Filtration:

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

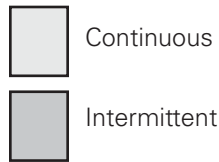
T Series

(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 ³ /r [2.2 in ³ /r] Δ Pressure Bar [PSI] Continuous												Max. Contin- uous	Max. Inter- mittent
		[200] 14	[400] 28	[600] 41	[800] 55	[1000] 69	[1200] 83	[1400] 97	[1600] 110	[1800] 124	[2000] 138	[2200] 152	[2250] 155		[2750] 190
Flow LPM [GPM]	[2] 7,6	[50] 6 209	[110] 12 203	[172] 19 197	[233] 26 191	[291] 33 189	[348] 39 181	[401] 45 167	[455] 51 164	[501] 57 153	[546] 62 139	[590] 67 122	[596] 67 116		[635] 72 64
	[4] 15,1	[50] 6 415	[109] 12 411	[172] 19 398	[233] 26 388	[296] 33 384	[355] 40 381	[414] 47 368	[475] 54 357	[534] 60 354	[584] 66 323	[646] 73 304	[659] 74 302		[786] 89 283
	[6] 22,7	[43] 5 617	[108] 12 613	[171] 19 602	[233] 26 595	[298] 34 585	[361] 41 570	[420] 47 563	[479] 54 558	[538] 61 534	[595] 67 520	[657] 74 504	[672] 76 496		[824] 93 425
	[8] 30,3	[39] 4 821	[101] 11 815	[164] 19 803	[226] 26 797	[292] 33 784	[354] 40 774	[415] 47 758	[475] 54 747	[538] 61 732	[592] 67 707	[656] 74 688	[670] 76 680		[819] 92 607
	[10] 37,9	[30] 3 1021	[93] 11 1014	[155] 18 1002	[214] 24 999	[278] 31 981	[342] 39 965	[406] 46 953	[473] 53 937	[532] 60 921	[590] 67 903	[650] 73 880	[668] 75 873		[805] 91 799
	Max. Contin- uous														

[93]
11
1014

} Torque [lb-in]
Nm
Speed RPM

		49 cm ³ /r [3.0 in ³ /r] Δ Pressure Bar [PSI] Continuous												Max. Contin- uous	Max. Inter- mittent
		[200] 14	[400] 28	[600] 41	[800] 55	[1000] 69	[1200] 83	[1400] 97	[1600] 110	[1800] 124	[2000] 138	[2200] 152	[2250] 155		[2750] 190
Flow LPM [GPM]	[2] 7,6	[73] 8 152	[161] 18 152	[245] 28 148	[327] 37 147	[408] 46 142	[486] 55 141	[563] 64 134	[641] 72 124	[710] 80 115	[786] 89 109	[849] 96 95	[866] 98 92		[1023] 116 58
	[4] 15,1	[72] 8 303	[160] 18 298	[246] 28 294	[329] 37 290	[416] 47 276	[500] 56 273	[584] 66 265	[668] 75 261	[746] 84 245	[825] 93 243	[901] 102 235	[922] 104 228		[1123] 127 152
	[6] 22,7	[58] 7 461	[148] 17 450	[234] 26 445	[326] 37 438	[413] 47 434	[500] 56 421	[583] 66 419	[663] 75 410	[746] 84 407	[827] 93 389	[909] 103 376	[928] 105 373		[1131] 128 344
	[8] 30,3	[44] 5 607	[127] 14 603	[216] 24 600	[306] 35 590	[392] 44 583	[480] 54 576	[566] 64 564	[652] 74 554	[734] 83 545	[815] 92 536	[897] 101 522	[917] 104 520		[1125] 127 503
	[10] 37,9	[39] 4 755	[128] 14 750	[213] 24 745	[302] 34 738	[391] 44 732	[477] 54 719	[562] 63 713	[647] 73 702	[731] 83 696	[815] 92 682	[897] 101 663	[917] 104 661		[1121] 127 638
	Max. Contin- uous														
		[15] 56,8	[26] 3 1132	[86] 10 1124	[172] 19 1113	[256] 29 1115	[342] 39 1106	[430] 49 1106	[505] 57 1098	[591] 67 1093	[674] 76 1079	[745] 84 1070	[830] 94 1058	[851] 96 1056	
		Max. Inter- mittent													

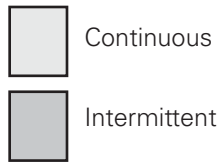
T Series

(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.



		66 cm ³ /r [4.0 in ³ /r]											Max. Continuous	Max. Intermittent
		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	[2750] 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. Continuous 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. Intermittent 68,1		[18] 12 1006	[107] 24 1003	[215] 37 1003	[326] 50 998	[442] 63 988	[555] 76 976	[669] 89 975	[786] 102 965	[900] 115 952	[1016] 127 940	[1123] 130 924	[1152] 130 919	

		80 cm ³ /r [4.9 in ³ /r]											Max. Continuous	Max. Intermittent
		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	[2750] 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] 138 420	[1357] 153 412	[1496] 169 403	[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. Continuous 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. Intermittent 75,7		[20] 18 916	[160] 34 910	[305] 51 893	[455] 65 893	[578] 83 875	[737] 97 866	[857] 109 877	[968] 129 843	[1144] 144 833	[1277] 160 839	[1412] 163 836	[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.

	Continuous
	Intermittent

		102 cm³/r [6.2 in³/r]											Max. Contin-uous	Max. Inter-mittent
		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	[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. Contin-uous	[15] 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	[1828] 207 492	[1869] 211 490
Max. Inter-mittent	[20] 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 cm³/r [8.0 in³/r]										Max. Contin-uous	Max. Inter-mittent
		Pressure Bar [PSI]											
		Continuous											
		[200] 14	[400] 28	[600] 41	[800] 55	[1000] 69	[1200] 83	[1400] 97	[1600] 110	[1800] 124	[2000] 138	[2500] 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		
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	[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	
	[15] 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. Contin-uous													
Max. Inter-mittent	[20] 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
423 } Torque [lb-in]
Nm
Speed RPM

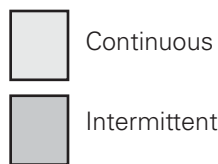
T Series

(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.



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

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

	Continuous
	Intermittent

244 cm³/r [14.9 in³/r]

Pressure Bar [PSI]

Continuous

Max.
Contin-
uous

Max.
Inter-
mittent

		Continuous										Intermittent		
		[200] 14	[400] 28	[600] 41	[800] 55	[1000] 69	[1200] 83	[1400] 97	[1600] 110	[1650] 114	[1800] 125	[1850] 127	[2250] 155	
Flow LPM [GPM]	[2] 7.6	[406] 46 30	[833] 94 29	[1260] 142 27	[1655] 187 26	[2038] 230 24	[2403] 272 22	[2707] 306 17	[2597] 293 12	[2552] 288 11	[2373] 268 7	[2299] 260 6		
	[4] 15.1	[404] 46 62	[843] 95 62	[1277] 144 60	[1695] 192 59	[2083] 235 59	[2468] 279 57	[2820] 319 55	[3177] 359 50	[3261] 368 49	[3509] 396 46	[3589] 406 44	[4194] 474 35	
	[6] 22.7	[382] 43 92	[823] 93 91	[1261] 142 90	[1687] 191 90	[2088] 236 88	[2477] 280 86	[2843] 321 82	[3196] 361 78	[3285] 371 76	[3547] 401 72	[3633] 410 71	[4290] 485 60	
	[8] 30.3	[341] 39 123	[787] 89 122	[1220] 138 121	[1651] 187 120	[2059] 233 119	[2454] 277 116	[2820] 319 113	[3177] 359 108	[3265] 369 106	[3530] 399 101	[3615] 408 99	[4285] 484 85	
	[10] 37.9	[297] 34 154	[744] 84 152	[1177] 133 151	[1611] 182 150	[2017] 228 148	[2412] 273 146	[2774] 313 143	[3151] 356 136	[3241] 366 134	[3504] 396 127	[3593] 406 125	[4269] 482 107	
	[12] 45.4	[225] 25 184	[687] 78 183	[1132] 128 181	[1553] 175 180	[1967] 222 179	[2360] 267 177	[2734] 309 173	[3105] 351 166	[3194] 361 163	[3466] 392 156	[3554] 402 153	[4237] 479 134	
	[14] 53.0	[154] 17 214	[628] 71 213	[1072] 121 212	[1498] 169 211	[1910] 216 209	[2298] 260 207	[2674] 302 202	[3052] 345 195	[3148] 356 193	[3419] 386 185	[3510] 397 182	[4226] 477 161	
	Max. Continuous	[15] 56.8	[119] 13 229	[586] 66 228	[1035] 117 227	[1458] 165 226	[1872] 212 224	[2261] 255 222	[2637] 298 217	[3022] 341 209	[3116] 352 207	[3389] 383 200	[3488] 394 197	[4220] 477 174
	Max. Intermittent	[20] 75.7		[372] 42 305	[816] 92 303	[1251] 141 303	[1663] 188 300	[2067] 234 297	[2448] 277 292	[2832] 320 284	[2928] 331 281	[3214] 363 273	[3312] 374 270	

306 cm³/r [18.7 in³/r]

Pressure Bar [PSI]

Continuous

Max.
Contin-
uous

Max.
Inter-
mittent

		Flow LPM [GPM]									Max. Continuous		Max. Inter-mittent	
		[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]	[2859]	[2400]				
	7.6	56	117	176	230	283	329	366	323	271				
		24	23	22	21	19	16	11	8	5				
	[4]	[497]	[1052]	[1590]	[2101]	[2561]	[3023]	[3464]	[3680]	[3886]			[4221]	
	15.1	56	119	180	237	289	342	391	416	439			477	
		49	49	48	48	47	47	44	41	38			30	
	[6]	[480]	[1031]	[1578]	[2096]	[2564]	[3023]	[3464]	[3689]	[3905]			[4275]	
	22.7	54	116	178	237	290	342	391	417	441			483	
		74	74	72	72	71	69	64	62	60			51	
	[8]	[427]	[975]	[1520]	[2051]	[2525]	[2998]	[3448]	[3667]	[3881]			[4264]	
30.3	48	110	172	232	285	339	390	414	438			482		
	99	98	97	97	96	94	89	86	83			73		
[10]	[370]	[930]	[1467]	[2001]	[2477]	[2955]	[3406]	[3631]	[3852]			[4264]		
37.9	42	105	166	226	280	334	385	410	435			482		
	123	122	121	120	120	117	112	108	104			92		
[12]	[281]	[871]	[1410]	[1908]	[2400]	[2887]	[3352]	[3573]	[3790]			[4189]		
45.4	32	98	159	216	271	326	379	404	428			473		
	147	146	145	145	145	142	136	131	127			112		
[14]	[192]	[791]	[1338]	[1851]	[2338]	[2816]	[3281]	[3511]	[3743]			[4135]		
53.0	22	89	151	209	264	318	371	397	423			467		
	171	171	170	170	169	165	159	154	150			133		
Max. Continuous	[15]	[148]	[738]	[1288]	[1803]	[2287]	[2773]	[3243]	[3475]	[3705]			[4098]	
	56.8	17	83	146	204	258	313	366	393	419			463	
		183	183	182	182	181	177	171	165	160			146	
Max. Inter-mittent	[20]		[476]	[1020]	[1544]	[2010]	[2519]	[3010]	[3243]	[3495]				
	75.7		54	115	174	227	285	340	366	395				
			243	242	242	241	238	231	226	209				

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

370 cm³/r [22.6 in³/r]

Pressure Bar [PSI]

Continuous

Max.
Contin-
uous

Max.
Inter-
mittent

		[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]	[4252]
	15.1	66 41	143 41	215 40	283 40	342 39	402 38	431 37	480 36
	[6]	[580]	[1245]	[1899]	[2506]	[3029]	[3544]	[3788]	[4300]
	22.7	66 61	141 60	215 60	283 59	342 58	400 57	428 56	486 54
	[8]	[514]	[1164]	[1824]	[2452]	[2975]	[3518]	[3783]	[4284]
	30.3	58 82	132 81	206 80	277 77	336 78	397 77	427 77	484 75
	[10]	[444]	[1119]	[1759]	[2391]	[2928]	[3479]	[3750]	[4275]
	37.9	50 102	126 102	199 101	270 101	331 100	393 97	424 96	483 93
Max. Continuous	[12]	[337]	[1062]	[1690]	[2256]	[2813]	[3393]	[3685]	[4273]
	45.4	38 122	120 121	191 120	255 119	318 119	383 118	416 116	483 112
	[14]	[231]	[958]	[1608]	[2201]	[2748]	[3319]	[3610]	[4198]
	53.0	26 142	108 141	182 140	249 139	310 138	375 137	408 134	474 129
	[15]	[178]	[896]	[1543]	[2147]	[2683]	[3272]	[3572]	[4187]
	56.8	20 152	101 152	174 151	243 150	303 149	370 147	404 146	473 140
Max. Inter-mittent	[20]		[587]	[1228]	[1833]	[2331]	[2948]	[3273]	
	75.7		66 202	139 201	207 201	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:

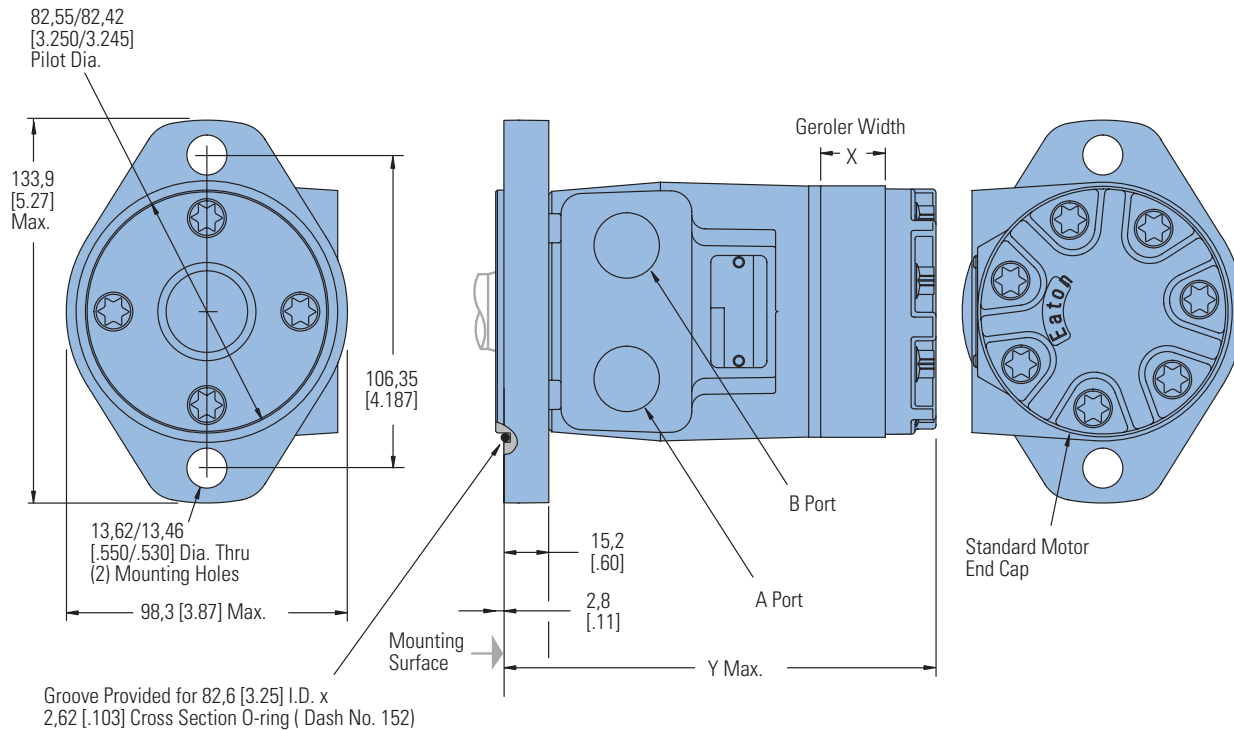
Mounting Surface Flatness Requirement is ∇ , 13 mm [.005 inch] Max.

Standard Rotation Viewed from Shaft End

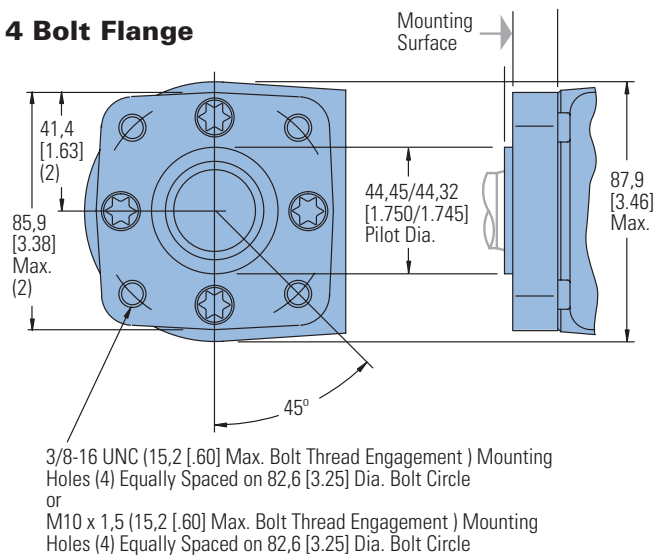
Port A Pressurized — CW

Port B Pressurized — CCW

2 Bolt Flange



4 Bolt Flange



2 AND 4 BOLT FLANGE PORT DIMENSIONS

Displacement cm ³ /r [in ³ /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 ³ /r [in ³ /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 ³ /r [in ³ /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	—

158-1620

T Series Motors with Low Speed Valving

MOUNTING	SHAFT	PORT SIZE	DISPL. cm ³ /r [in ³ /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-	—	—	—	—	—	—	—	—	—	—	—
	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 30-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 30-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.

M	T	0	***			**		**		**		**		*		*	**		**		**		**		*	**		**		A
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	

1 Product

M – Motor

2, 3 Product Series

T0 – T Series

4, 5, 6 Displacement cm³/r [in³/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.

MA – 2 Bolt (Standard)
82,50 [3.248] Dia. x 8,13
[.320] Pilot, 13,59 [.535] Dia.
Mounting Holes on 106,35
[4.187] Dia. B.C., w/o O-ring
Groove

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
39 - 25,00 [.984] Dia.
Straight (k6), 8,00 [.315] Key,
M8 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, 14 Case Flow Options

00 – None Specified

**01 – .4375-20 UNF-2B SAE
O-Ring Port (End Cap)**

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

**03 – MANIFOLD CASE
DRAIN**

04 – .4375-20 UNF-2B SAE
O-RING PORT (SIDE OF
HOUSING)

05 – .3125-24 UNF-2B SAE
O-RING PORT (MOUNTING
FLANGE)

11 – Internal Check Valves

15 Geroler® Options

0 – None

A – Free Running

16 Shaft Options

0 – None

N – Electroless Nickel Plated

17, 18 Seal Options

00 – Standard Seals

02 – Seal Guard

03 – Viton Seals

04 – Viton Shaft Seal

07 – High Pressure Shaft Seal

11 – High pressure shaft
seal, slinger seal

**19 – Extreme duty seal
guard**

19, 20 Speed Sensor Options

00 – None

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

AB – Magnetic Speed Pickup
(60 Pulse by Quadrature),
No Lead Wire with M12
Connector (A=Power,
B=Common, C=Signal)

21, 22 Valve Options

0 – None

23, 24 Special Features (Hardware)

00 – None Specified

AB – Low Speed Valving

SS – Stainless Steel Flange
Bolts

25 Special Assembly Instructions

0 – None

A – Reverse Rotation

2 – Flange Rotation 90°

26, 27 Paint/Packaging Options

00 – No Paint

**AA – Low Gloss Black
Primer**

AD – Environmental Coated
Gloss White

28, 29 Customer ID/ Nameplate Options

0 – None Specified

30 Design Code

A – One (1)

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