Char-Lynn

T-Brake Series Motor Catalog

Technical Manual

Char-Lynn®

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Features and Benefits

Features

- Integrated, Compact, Patent-Pending Design
- Performance-matched system=> Load-holding Capacity Tailored to Match Motor Configuration
- Factory Preset Load-Holding Capacity
- Capability of Combining 4 inventory items into a single assembly (motor, brake, counter-balance valve, brake release line)
- Rear-mounted integrated brake with 6:1 torque advantage
- Spring-applied pressure release wet brake
- Access port for manual brake relase (for over-riding brake in the event of loss of release pressure.)

Benefits

- Complete Packaged System Solution: One-Source - One-Contact - One-Call!
- Simplifies ordering and inventory requirements!
- Ensures correct holding capacity matches motor capability!
- Reduces assembly labor and eliminates need for special assembly operations!
- Design Flexibility!
- Cost Effective Packaged System Solution!
- Full-Capacity Load-Holding Capability in a compact package
- Wet brake is environmentally protected and provides long life

Applications

Thousands of Char-Lynn, H, S and T series are used today in conjunction with conventional bolt-on brake packages supplied by a variety of manufacturers. These are often applied on winch, positioning, and boom rotate functions (also, commonly referred to a "swing drive")

Below is a list of some of the more common types of applications:

- Truck-Mounted Equipment - (boom rotate and winch)
- Conveyors – Positioners – Indexers
- Marine Cranes (boom rotate and winch)
- Fishing Winches
- Recycling and Refuse Equipment
- Vehicle Recovery Winches
- Mining Equipment
- Specialty Utility Vehicles / Machines
- Forestry Grapples
- Agricultural Equipment
- Railroad Equipment
- Airport Support Vehicles
- Lawn & Turf Equipment
- OR:

"Anywhere Load-Holding is Needed on a Low-Speed High-Torque Drive System"

Principal of Operation

The wet brake is a spring-applied / pressure release design. Load-holding is applied by a mechanical spring and released by hydraulic pressure. The spring force holds the brake on when hydraulic pressure is absent. As a result, the brake is biased "on" when no pressure is present.

Release Pressure

Release pressure is defined as the amount of pressure required to fully release the brake. The brake pressure cavity is common (shared) with the motor case. As a result, maximum release pressure is constrained by the motor case-pressure capability. The T Brake Motor incorporates a shaft seal capable up to 1500 psi (see page 15). However, seal life is reduced at higher case pressure. For most applications, case pressures below 1500 psi, typically provide adequate life.

Note:

Special attention should be given to system back pressure. System back pressure directly affects brake release pressure and can cause the brake to release at undesired conditions.

Residual Pressure

Residual back pressure is the pressure trapped in the system by restrictions or long return lines.

Residual back pressure will degrade the rated load holding torque of the brake. Increased pressure in the motor case/brake release cavity will reduce load holding capability, as well as, affect seal life. Because back pressure affects both motor case pressure and brake release pressure, special attention needs to be given when applying this product. Keep in mind that long return lines create higher pressure that will reduce brake holding torque. In applications with high system pressures, the use of a pressure reducing valve to limit case and release pressure is recommended.

Holding Torque and Motor Output Torque

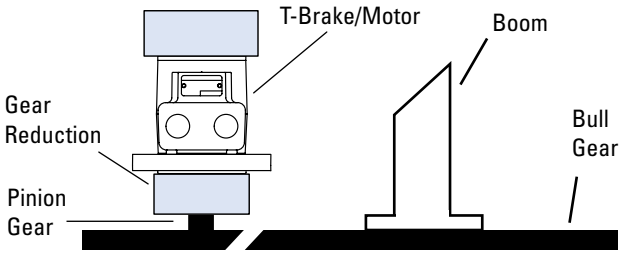
Holding torque is based on grade holding requirements for a vehicle or other load holding requirements in the application. System pressure and motor displacement are the factors in determining motor output torque. Motor displacement, measured in cubic centimeters or cubic inches, is the volume of fluid required to make one revolution. Motor output torque is the rotary force and is usually measured in inch pounds, newton meters or foot pounds. Maximum motor torque depends on pressure and motor displacement. Both output shaft size and shaft type can also affect motor torque. The T Brake Motor load holding capacity is factory set to match any limiting factor in each specific motor configuration (e.g. displacement, output shaft, etc).

Note

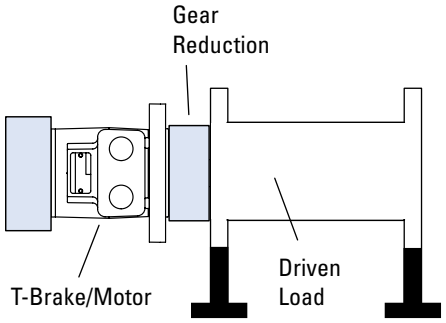
EATON Corporation does not approve any products for customer applications. It is the sole responsibility of the customer to qualify and verify the correct operation of products in their systems.

Typical Applications

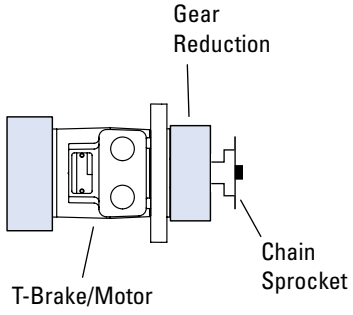
Swing Boom



Winch



Machine Drive



General Information

Eaton's latest innovation in LSHT motor technology is the new T-Brake Motor. The patent-pending design incorporates an integrated brake capable of holding full motor torque. The brake is a spring-applied hydraulically-released wet disc design. The package-size is much more compact than conventional brake designs commonly used today. The T-Brake Series Motor utilizes the same proven **Geroler®**, and spool-valve principal found in standard **Char-Lynn®**, T Series motors. This design provides smooth, reliable and efficient performance, while the integrated performance-matched brake provides dependable, load-holding capability. The brake design is innovative and operates at the orbit speed of the Geroler, star. Orbit speed of the Geroler, star is 6 times (600%) faster than the output shaft speed. Consequently, the T-Brake operates with a 6:1 torque amplification advantage. This complete packaged solution is ideal for a variety of applications including aerial work platforms, truck-mounted booms/cranes, vehicle recovery winches, sweepers, marine winches, marine booms/cranes, and many others. It is the ideal choice for applications requiring load- holding capability and can be tailored to fit your application requirements using wide-variety of options as well as **Vickers®**, manifold valves and **Aeroquip®**, hose / tube / fitting assemblies.

See Model Code for a listing of available options (page 17).

T-Brake Series

Geroler® Element .....11 Displacements

Flow LPM [GPM].....55 [15] Continuous**
75 [20] Intermittent*

Speed .....Up to 1055 RPM

Pressure Bar [PSI].....155 [2250] Cont.
190 [2750] Inter.

Torque Nm [lb-in].....440 [3905] Cont.
510 [4515] Inter.

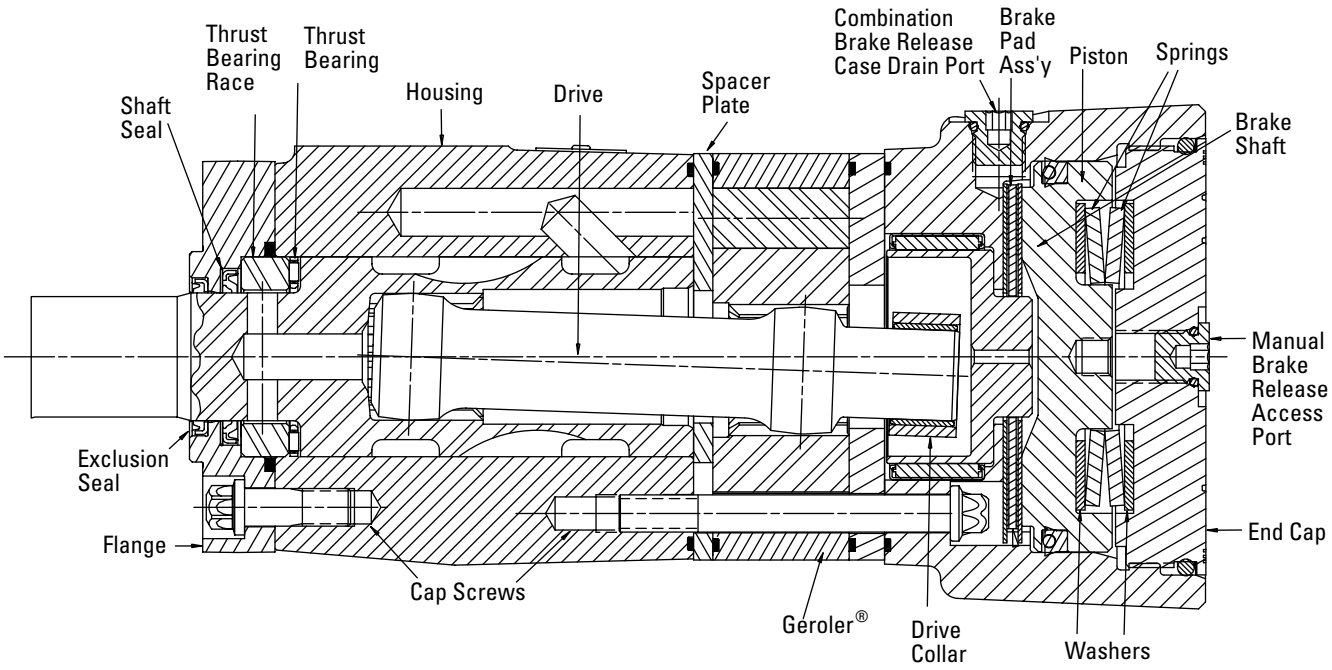
Minimum Release.....17 [250] Pressure Bar [PSI]

Maximum Release.....103 [1500] Pressure Bar [PSI]

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

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

Specifications



SPECIFICATION DATA —T-BRAKE SERIES

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 [Δ PSI]	Continuous *	155 [2250]	155 [2250]	155 [2250]	155 [2250]	155 [2250]	138 [2000]	138 [2000]	138 [2000]	127 [1850]	110 [1600]	90 [1300]
	Intermittent * **	190 [2750]	190 [2750]	190 [2750]	190 [2750]	190 [2750]	172 [2500]	172 [2500]	172 [2500]	155 [2250]	124 [1800]	103 [1500]

Maximum Case Pressure — 103 Bar [1500 PSI] see pages 14-15.

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 intermittent pressure at motor inlet port of **190 Bar [2750 PSI]** without regard to D Bar [D PSI] and/or back pressure ratings or combination thereof.

** **A simultaneous maximum torque and maximum speed NOT recommended.**

6B Splined or Tapered shafts are recommended whenever operating above **282 Nm [2500 lb-in]** of torque, especially for those applications subject to frequent reversals (see page 10).

Δ Bar [Δ PSI]— True pressure difference between inlet port and outlet port.

Continuous Rating — Motor may be run continuously at these ratings.

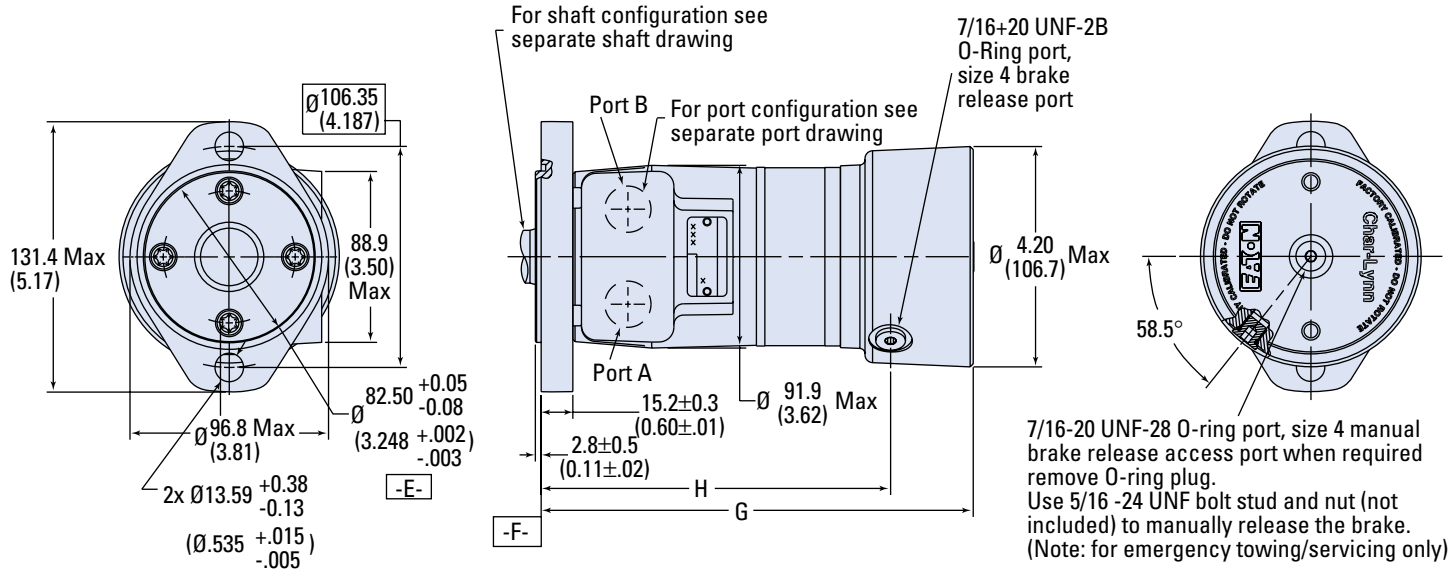
Intermittent Operation — 10% of every minute.

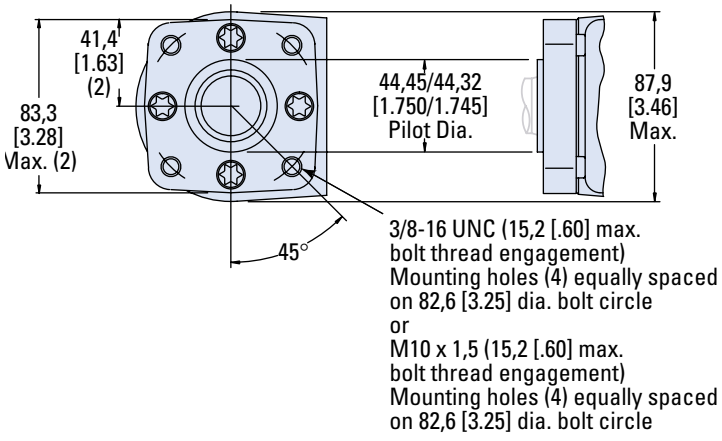
Recommended Fluids — Premium quality, anti-wear type hydraulic oil with a viscosity of not less than 70 SUS at operating temperature (see page 00).

Recommended Maximum System Operating Temp. — Is 82° C [180° F]

Recommended Filtration — per ISO Cleanliness Code, level 18/13

Dimensions





DISPLACEMENT	G MAX	H
code	Width mm [in.]	Length mm [in.]
02	190.2 [7.49]	145.8±0.9 [5.74±0.3]
A2	190.8 [7.51]	146.4±0.9 [5.76±0.3]
03	192.5 [7.58]	148.2±0.9 [5.84±0.3]
A3	194.3 [7.65]	150.0±0.9 [5.90±0.3]
04	195.6 [7.70]	151.2±0.9 [5.95±0.3]
05	198.4 [7.81]	153.9±0.9 [6.06±0.3]
06	202.2 [7.96]	157.8±0.9 [6.21±0.3]
08	207.5 [8.17]	163.2±0.9 [6.42±0.3]
10	212.6 [8.37]	168.1±0.9 [6.62±0.3]
12	219.2 [8.63]	174.8±0.9 [6.88±0.3]
15	228.3 [8.99]	183.8±0.9 [7.24±0.3]
19	239.5 9.43]	195.2±0.9 [7.69±0.3]
23	251.2 [9.89]	206.9±0.9 [8.14±0.3]

Note

Standard Rotation

When facing shaft end of motor shaft to rotate clockwise when port "A" is pressurized, counter-clockwise when port "B" is pressurized

Reverse Rotation

When facing shaft end of motor shaft will rotate clockwise when port "B" is pressurized, counter-clockwise when port "A" is pressurized

Product Numbers

PRODUCT NUMBERS WITH STANDARD VALVING — T-BRAKE SERIES

Add three digit prefix —185-to four digit number from chart for complete product number—Example 185-1068. Orders will not be accepted without three digit prefix.

Mounting	Shaft	Ports	Part# Prefix	3.0	4.0	4.9	6.2	8.0	9.6	11.9	14.9	18.7	22.6
2-Bolt	1" Keyed	7/8-14 O-ring	185-	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
		Manifold	185-	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
	6B Splined	7/8-14 O-ring	185-	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
		Manifold	185-	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
	13T Splined 16/32 pitch	7/8-14 O-ring	185-	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049
		Manifold	185-	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059
4-Bolt	1" Keyed	7/8-14 O-ring	185-	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069
		Manifold	185-	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079
	6B Splined	7/8-14 O-ring	185-	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089
		Manifold	185-	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099
	13T Splined 16/32 pitch	7/8-14 O-ring	185-	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109
		Manifold	185-	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119
2-Bolt SAE B	1" Keyed	7/8-14 O-ring	185-	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129
		Manifold	185-	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139
	6B Splined	7/8-14 O-ring	185-	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149
		Manifold	185-	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159
	13T Splined 16/32 pitch	7/8-14 O-ring	185-	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169
		Manifold	185-	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179

PRODUCT NUMBERS WITH LOW SPEED VALVING — T-BRAKE SERIES

Mounting	Shaft	Ports	Part# Prefix	3.0	4.0	4.9	6.2	8.0	9.6	11.9	14.9	18.7	22.6
2-Bolt	1" Keyed	7/8-14 O-ring	185-	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189
		Manifold	185-	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199
	6B Splined	7/8-14 O-ring	185-	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209
		Manifold	185-	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219
	13T Splined 16/32 pitch	7/8-14 O-ring	185-	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229
		Manifold	185-	2230	2231	2232	2233	2234	2235	2236	2237	2238	223
4-Bolt	1" Keyed	7/8-14 O-ring	185-	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249
		Manifold	185-	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259
	6B Splined	7/8-14 O-ring	185-	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269
		Manifold	185-	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279
	13T Splined 16/32 pitch	7/8-14 O-ring	185-	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289
		Manifold	185-	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299
2-Bolt SAE B	1" Keyed	7/8-14 O-ring	185-	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309
		Manifold	185-	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319
	6B Splined	7/8-14 O-ring	185-	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329
		Manifold	185-	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339
	13T Splined 16/32 pitch	7/8-14 O-ring	185-	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349
		Manifold	185-	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359

* 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-Brake Series Motors with a configuration Not Shown in these charts: Use the model code number system on page 00 to specify the product in detail.

Special order displacements also available: 36cc [2.2], 39cc [2.4], 59cc [7.6]

These motors with the low speed valving option provide very low speed while maintaining high torque. **Designed to run continuously at up to 200 RPM at standard rated pressures and reduced flows,** providing smooth operation at low speeds. Furthermore, they resist slippage and have more momentary load holding ability than the standard standard motors.

Motors with this valving are not intended for low pressure applications (41 Bar [600 PSI] Minimum). Shaft side / radial load ratings are not affected by this valving.

Shaft Side Load Capacity

The hydrodynamic journal bearings have infinite life when shaft load ratings are not exceeded. As a result, the shaft side load capacity is more than adequate to handle most application requirements provided the motor is applied within its torque rating.

Side load curves (below) are based on the side/radial loads being applied to the shaft at locations A, B, and C. To determine the shaft side load capacity at locations other than those shown use the formula below: For more information about shaft side loads on Char-Lynn motors contact your Eaton representative.

Note

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

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

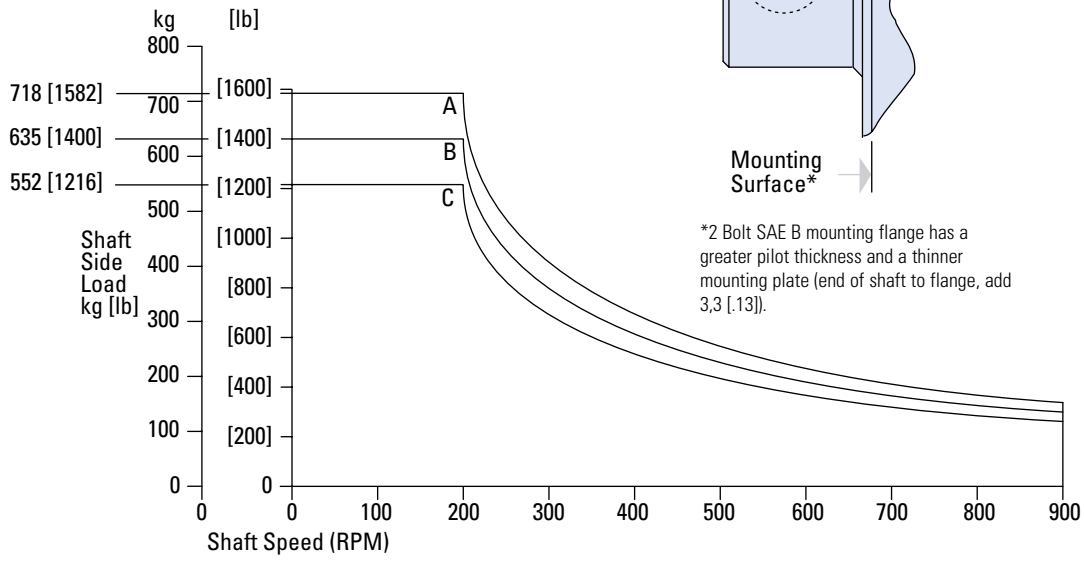
$$\text{Sideload P [lb]} = \frac{900}{N}\left(\frac{1460}{L+[3.79]}\right) \quad \text{for 200-900 RPM}$$

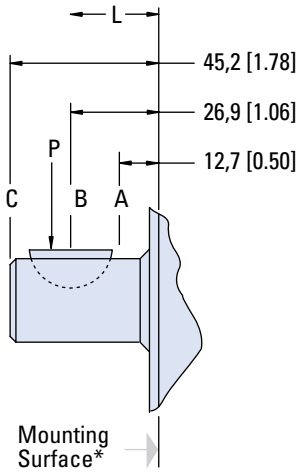
N=Shaft speed (RPM)

L=Distance from mounting surface

ALLOWABLE SHAFT SIDE LOAD – KG (LB)

RPM	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]

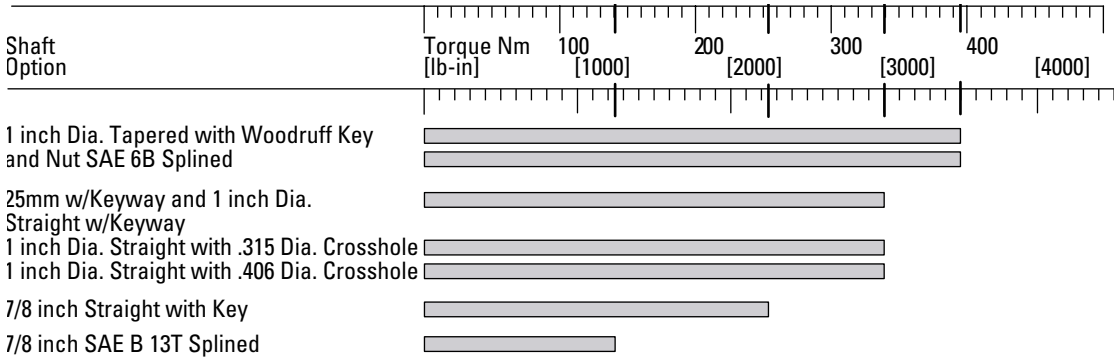


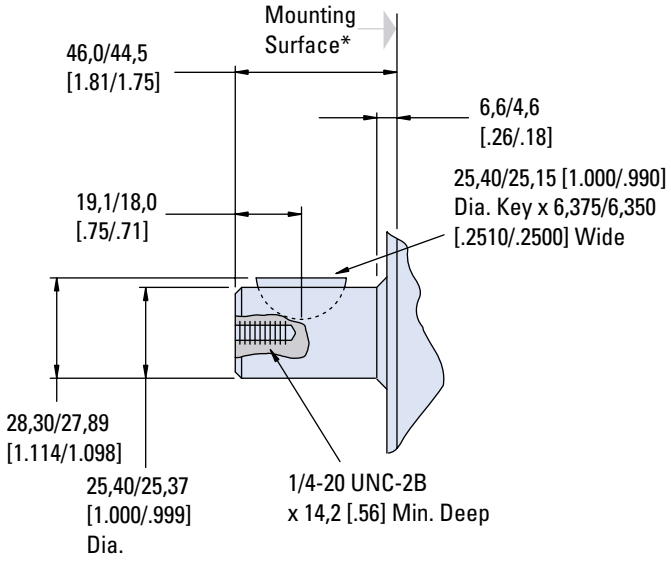


*2 Bolt SAE B mounting flange has a greater pilot thickness and a thinner mounting plate (end of shaft to flange, add 3,3 [.13]).

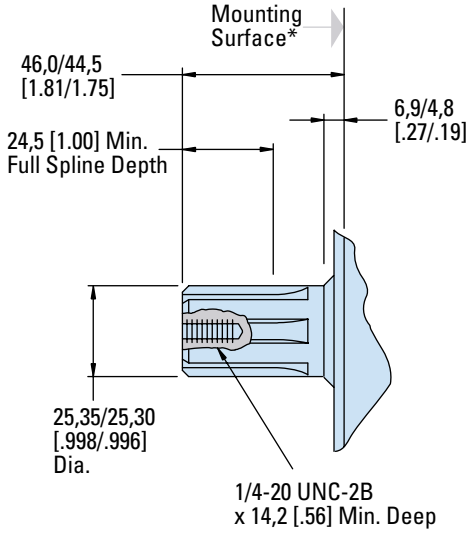
Shaft Dimensions

Shaft Size/Motor Torque Combination Limit Guide

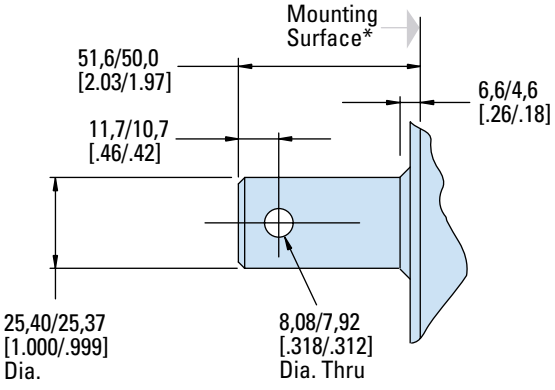




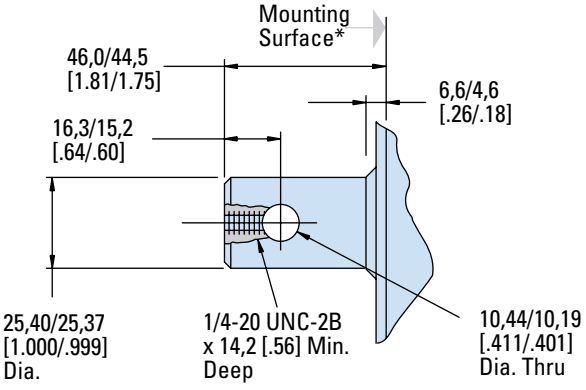
1 in. Dia. Straight with Woodruff Key



SAE 6B Splined Shaft



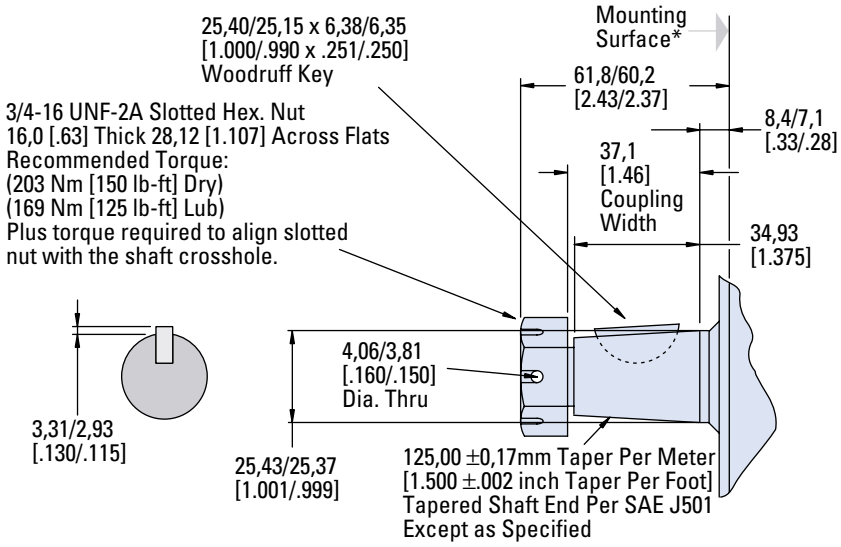
1 in. Dia. Straight Shaft with .315 Dia. Crosshole



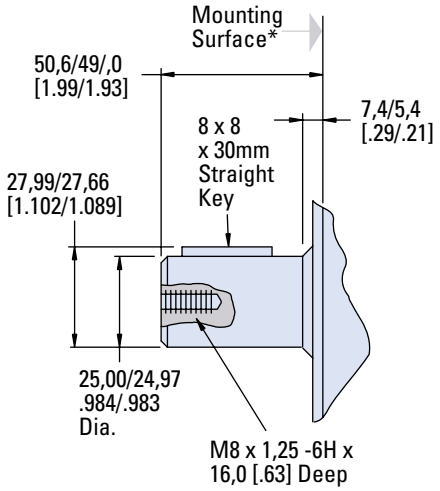
1 in. Dia. Straight Shaft with .406 Dia. Crosshole

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

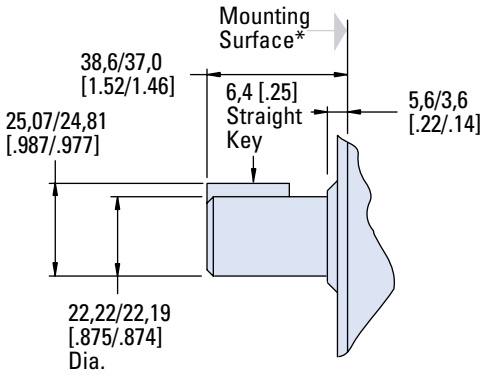
Shaft Dimensions



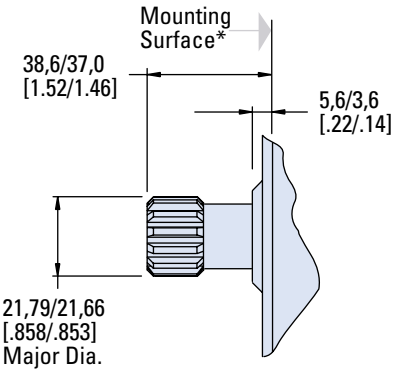
1 in. Dia. Tapered Shaft with Woodruff Key and Nut



25mm Dia. Straight Shaft with 8mm Keyway



7/8 in. Dia. Straight Shaft with Key



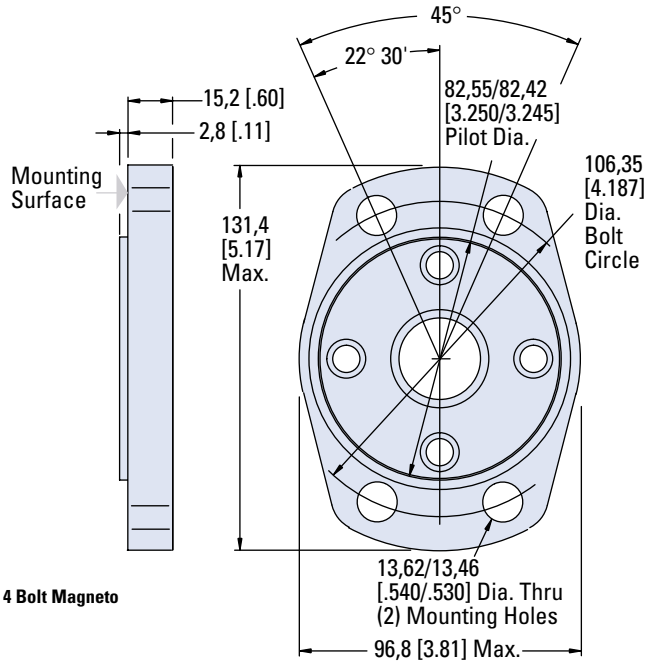
7/8 in. Dia. SAE B Shaft 13 T 16/32 Splined

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

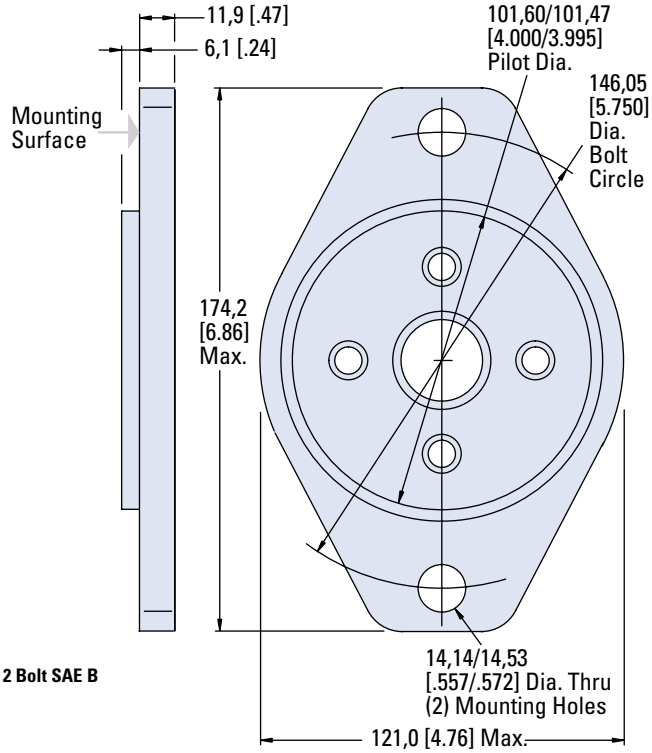
Mounting Options

Note

Mounting surface flatness requirement is ⏥ ,13 mm [.005 inch] max.

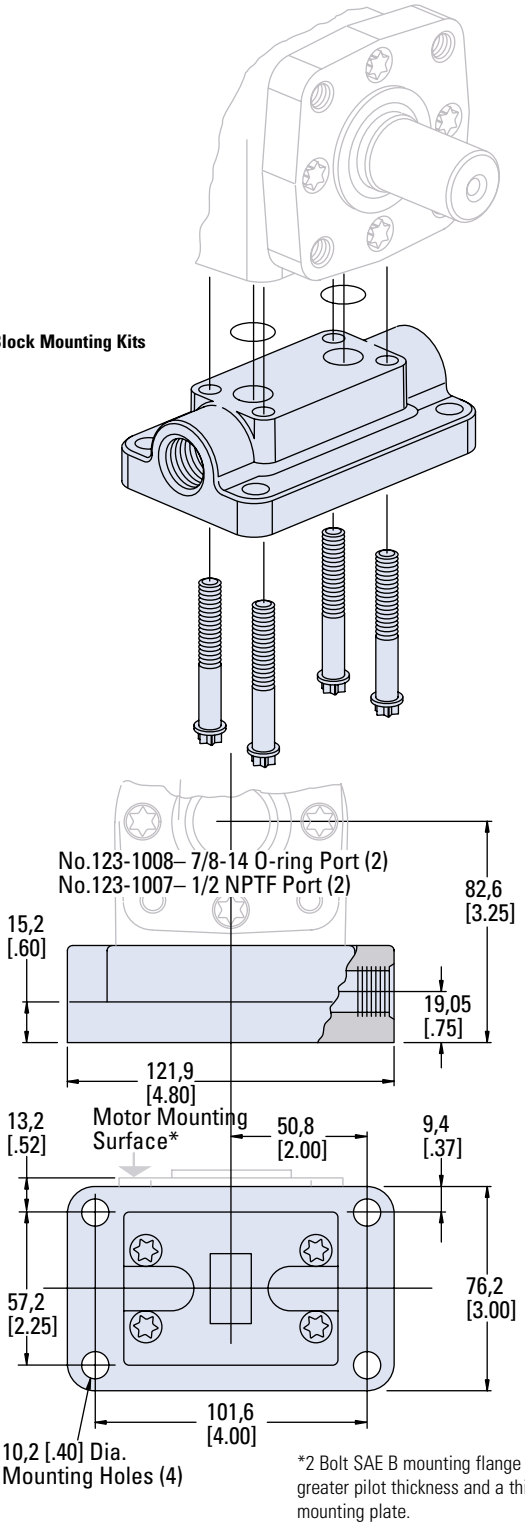


4 Bolt Magneto



2 Bolt SAE B

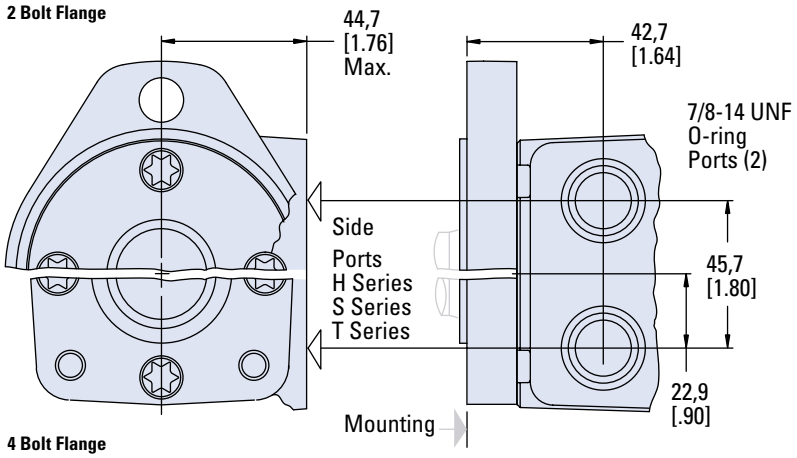
Base Block Mounting Kits



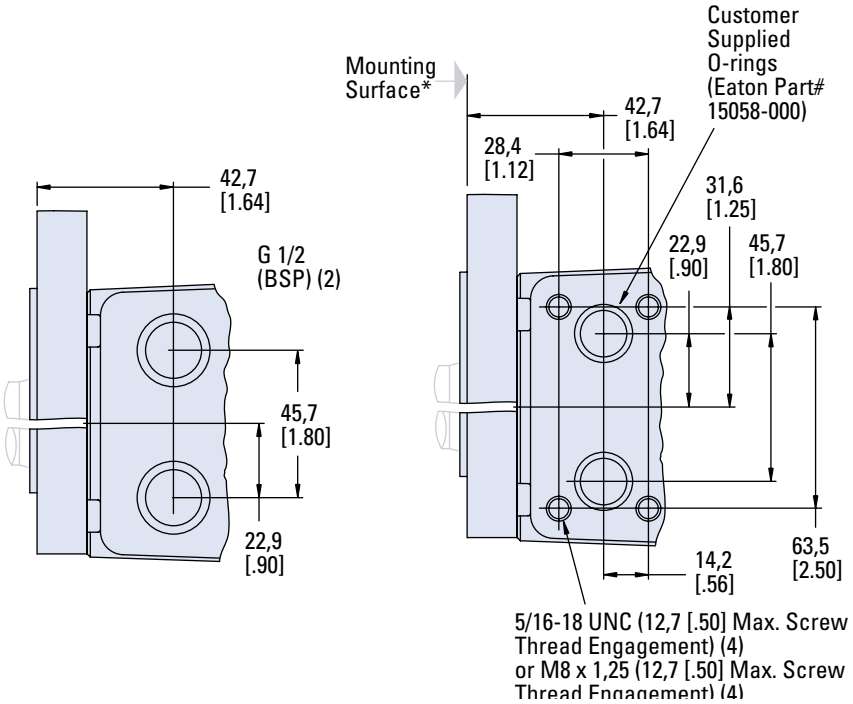
*2 Bolt SAE B mounting flange has a greater pilot thickness and a thinner mounting plate.

Port Dimensions

7/8 -14 O-Ring Ports



Manifold Ports



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

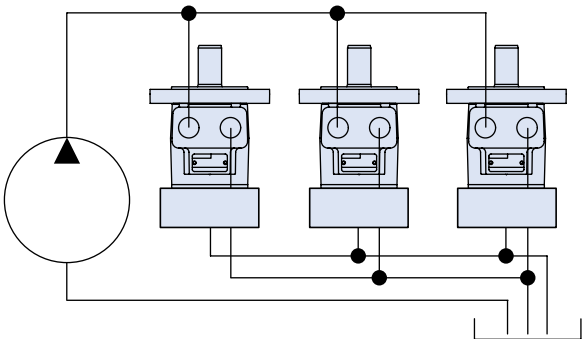
Case Pressure, Release Pressure and Case Drain

Series or Parallel Connection

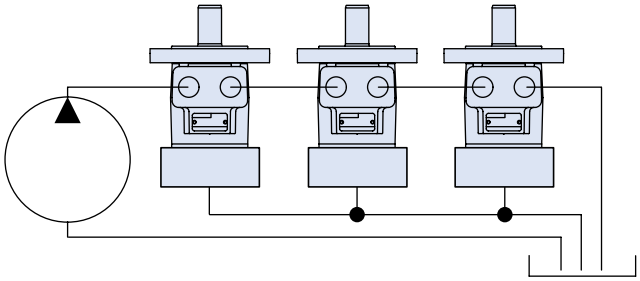
Hydraulic lines bringing pressurized fluid from the pump to the motor and return flow from the motor back to tank can be flexible or ridged. One pump can be sized to supply a single motor or many motors. Furthermore, one pump and multiple motors can be connected in series or in parallel (see each type of connection shown below). When connecting the pump to the motors in series excess internal case pressure is created in the motor, this excess pressure must be ported back to tank. However, when making a parallel connection from the pump to the motors no excess case pressure will be added. The T brake motor must maintain a minimum case pressure of 250 psi to fully release the brake. Case pressure must be zero for full holding capacity.

...Case Drain Advantage — In addition to providing lower case pressures for motors connected in series, there are advantages for adding an external case drain line to motors with normal case pressures as well. These advan-tages are: Contamination Control — flushing the motor case. Cooler System — exiting oil draws motor heat away. Extend Motor Seal Life — maintain low case pressure with a preset restriction installed in the case drain line.

Case Drain Optional

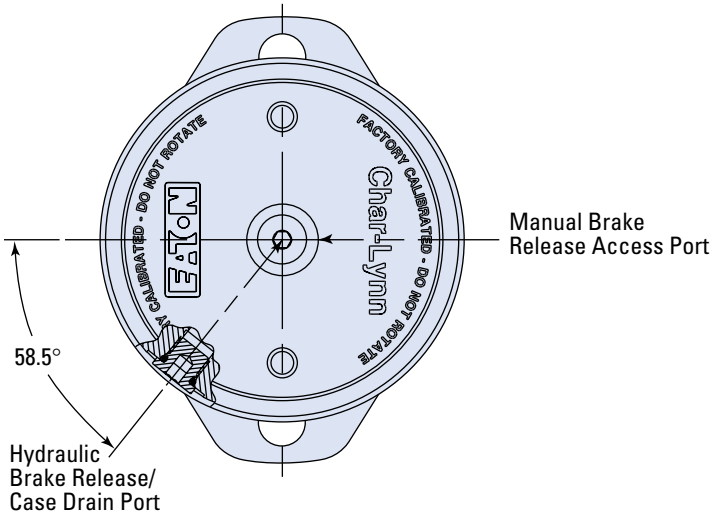


Parallel Connection



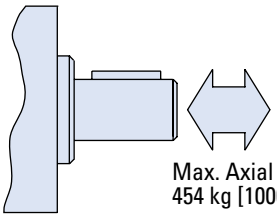
Series Connection

Manual Brake Release Access Port



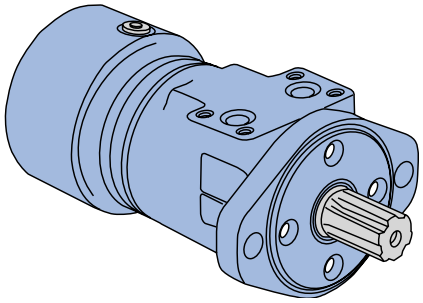
Case Pressure

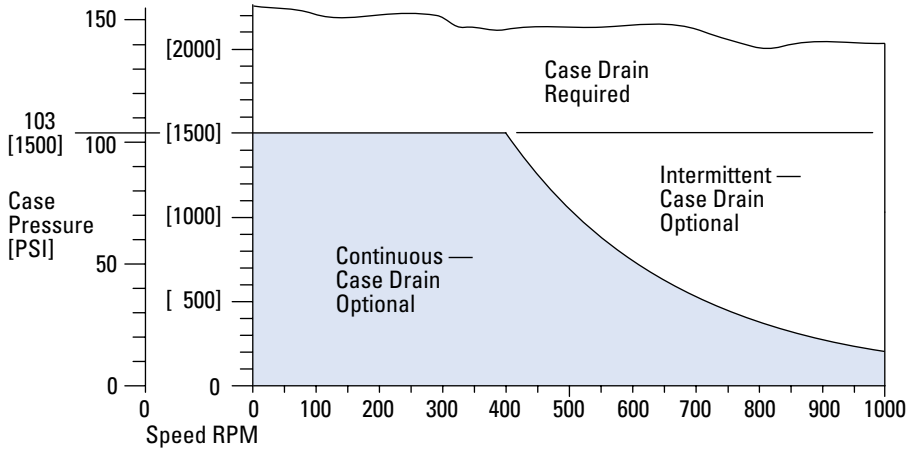
Char-Lynn T-Brake Series motors are durable and have long life as long as the recommended case pressure is not exceeded. Allowable case pressure is highest at low shaft speeds. Consequently, motor life will be shortened if case pressure exceeds these ratings (acceptability may vary with application). Reference the case pressure seal limitation chart below — chart based on case pressure and shaft speed. A pressure restriction should be added to the case drain/brake release line, during which a motor case pressure of 17 Bar [250 PSI] is maintained.



$P_C \approx .6\ DP + P_2$

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





Fluid Recommendations

Introduction

The ability of Eaton hydraulic components to provide the desired performance and life expectancy depends largely on the fluid used. The purpose of this section is to provide readers with the knowledge required to select the appropriate fluids for use in systems that employ Eaton hydraulic components.

One of the most important characteristic to consider when choosing a fluid to be used in a hydraulic system is viscosity. Viscosity choice is always a compromise; the fluid must be thin enough to flow easily but thick enough to seal and maintain a lubricating film between bearing and sealing surfaces. Viscosity requirements, see chart below.

Viscosity and Temperature

Fluid temperature affects viscosity. In general, as the fluid warms it gets thinner and its viscosity decreases. The opposite is true when fluid cools. When choosing a fluid, it is important to consider the start-up and operating temperatures of the hydraulic system.

Generally, the fluid is thick when the hydraulic system is started. With movement, the fluid warms to a point where a cooling system begins to operate.

From then on, the fluid is maintained at the temperature for which the hydraulic system was designed. In actual applications this sequence varies; hydraulic systems are used in many environments from very cold to very hot. Cooling systems also vary from very elaborate to very simple, so ambient temperature may affect operating temperature. Equipment manufacturers who use Eaton hydraulic components in their products should anticipate temperature in their designs and make the appropriate fluid recommendations to their customers.

Cleanliness

Cleanliness of the fluid in a hydraulic system is extremely important. Eaton recommends that the fluid used in its hydraulic components be maintained at ISO Cleanliness Code 18/13 per SAE J1165. This code allows a maximum of 2500 particles per milliliter greater than 5 mm and a maximum of 80 particles per milliliter greater than 15 mm. Cleanliness requirements for specific products are given in the table below.

OEM's and distributors who use Eaton hydraulic components in their products should provide for these requirements in their designs. A reputable filter supplier can supply filter information.

Fluid Maintenance

Maintaining correct fluid viscosity and cleanliness level is essential for all hydraulic systems. Since Eaton hydraulic components are used in a wide variety of applications it is impossible for Eaton to publish a fluid maintenance schedule that would cover every situation. Field testing and monitoring are the only ways to get accurate measurements of system cleanliness. OEM's and distributors who use Eaton hydraulic components should test and establish fluid maintenance schedules for their products. These maintenance schedules should be designed to meet the viscosity and cleanliness requirements laid out in this document.

Fluid Selection

Premium grade petroleum based hydraulic fluids will provide the best performance in Eaton hydraulic components. These fluids typically contain additives that are beneficial to hydraulic systems. **Eaton recommends fluids that contain anti-wear agents, rust inhibitors, anti-foaming agents, and oxidation inhibitors.** Premium grade petroleum based hydraulic fluids carry an ISO VG rating.

SAE grade crankcase oils may be used in systems that employ Eaton hydraulic components, but it should be noted that these oils may not contain all of the recommended additives. This means using crankcase oils may increase fluid maintenance requirements.

Hydraulic fluids that contain V.I. (viscosity index) improvers, sometimes called multi-viscosity oils, may be used in systems that employ Eaton hydraulic components. These V.I. improved fluids are known to "shear-down" with use. This means that their actual viscosity drops below the rated value. Fluid maintenance must be increased if V.I. improved fluids are used. Automotive automatic transmission fluids contain V.I. improvers.

Synthetic fluids may be used in Eaton hydraulic components. A reputable fluid supplier can provide information on synthetic fluids. Review applications that require the use of synthetic fluids with your Eaton representative.

Additional Notes:

- Fluids too thick to flow in cold weather start-ups will cause pump cavitation and possible damage. **Motor cavitation is not a problem during cold start-ups.**
- When choosing a hydraulic fluid, all the components in the system must be considered and the best viscosity range adjusted accordingly. For example, when a medium duty piston pump is combined with a Geroler motor the best viscosity range becomes 100 - 150 SUS [20 - 32 cSt] and viscosity should never fall below 70 SUS [13 cSt].
- If the natural color of the fluid has become black it is possible that an overheating problem exists.
- If the fluid becomes milky a water contamination problem may exist.
- Take fluid level reading when the system is cold.
- Contact your Eaton representative if you have specific questions about the fluid requirements of Eaton

Product Line	Viscosity Minimum	Viscosity ` Best Range	ISO Cleanliness Requirements
T Series	13 SUS	20-43 cSt	18/13

Model Code

Model Code for T-Brake Series Motors

The following 16-digit coding system has been developed to identify all of the configuration options for the T Series Motor.

Use this model code to specify a motor with the desired features. All 16-digits of the code must be present when ordering.

Sample Model Code:

Model Code — T Series Spool Valve Motors

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
M	T	B	0	3	A	0	1	A	1	0	0	0	A	0	A

Nos	Feature	Code	Description
1	Product Series	**M**	Motor
2, 3	T Series	**TB**	T Series with Brake
4, 5	Displacement cm^3/r [in^3/r]	02	36 [2.2]
		03	49 [3.0]
		04	66 [4.0]
		05	80 [4.9]
		06	102 [6.2]
		08	131 [8.0]
		10	157 [9.6]
		12	195 [11.9]
		15	244 [14.9]
		19	306 [18.7]
		23	370 [22.6]
6	Mounting Flange	**A**	2 Bolt (Standard) 82,6 [3.25] Pilot Dia. and 13,59 [.535] Dia. Mounting Holes 106,2 [4.18] Dia. B.C.
		B	4 Bolt (Standard) 44,4 [1.75] Pilot Dia. and 3/8-16 Mounting Holes 82,6 [3.25] Dia. B.C.
		E	4 Bolt (Standard) 44,4 [1.75] Pilot Dia. and M10 x 1,5 Mounting Holes 82,6 [3.25] Dia. B.C.
		H	2 Bolt (Std.) 101,6 [4.00] Pilot Dia. and 14,35 [.565] Dia. Mounting Holes 146,0 [5.75] Dia. B.C. (SAE B)
		K	4 Bolt Magneto 82,6 [3.25] Pilot Dia. and 13,59 [.535] Dia. Mounting Holes 106,2 [4.18] Dia. B.C.
7, 8	Output Shaft	**01**	1 inch Dia. Straight with Woodruff Key and 1/4-20 Threaded Hole
		02	1 inch Dia. SAE 6B Splined with 1/4-20 Threaded Hole
		07	1 inch Dia. Straight with 7,9 [.31] Dia. Crosshole 11,2 [.44] from End
		08	1 inch Dia. Straight with 10,2 [.40] Dia. Crosshole 15,7 [.62] from End and 1/4-20 Threaded Hole
		16	7/8 inch Dia. SAE B 13T Splined
		17	7/8 inch Dia. SAE B Straight with Square Key
		18	1 inch Dia. Tapered with Woodruff Key and Nut
		24	25mm Dia. Straight with 8mm Key and 8mm x 1.2 Threaded Hole
		27	1 inch Dia. Straight with Woodruff Key and 1/4-20 Threaded Hole (Plated for Corrosion Protection)
9	Port Type	**A**	7/8-14 O-ring
		C	Manifold (5/16-18 Mounting Threads)
		D	Manifold (M8 x 1,25 Mounting Threads)
		E	G 1/2 (BSP) End Cap
10	Brake Release/ Case Drain Port	**1**	7/16-20 O-ring Port End Cap
		2	G 1/4 (BSP) End Cap
11, 12	Special Features (Hardware)	**00**	None
		AB	Low Speed Valve
		AC	Viton Shaft Seal
		DS	High Pressure Shaft Seal
13	Special Features (Assembly)	**0**	None
		1	Reverse Rotation
		2	Flange Rotated 90 °
14	Paint/Special Packaging	0	No Paint
		A	Painted Low Gloss Black (Standard)
		D	Corrosion Protected
15	Eaton Assigned Code when Applicable	**0**	Assigned Code
16	Eaton Assigned Design Code	**A**	Design Code

T-Motor Brake Application Data Sheet

Customer Information

Customer Contact: _____

Title: _____

Phone: _____

Company: _____

Address: _____

City: _____ State: _____ Zip: _____

Application Information

Vehicle or Equipment: _____

Model No.: _____

Is a gear box being used with the motor? ❑ YES ❑ NO

Gear box ratio (if applicable): _____

Max. motor speed (mph): _____

Max. motor speed under full load (mph): _____

Max. operable grade (%): _____

Max. return line pressure (psi): _____

Max. torque required (in-lbs): _____

How will the brake be released? _____

Please answer all that apply:

Propel Application: _____

Empty vehicle weight (lbs): _____

Max. vehicle load (lbs): _____

Number of propel motors per vehicle? _____

Tire radius while under load (in): _____

Is this brake used dynamically? ❑ YES ❑ NO

Swing Application:

Max. vehicle load (lbs): _____

Max. distance to load from motor (in): _____

Conveyor Application:

Conveyor belt material: _____

Conveyor drum diameter (in): _____

Max. load capacity of conveyor (lbs): _____

Other Applications:

Please describe the application and all pertinent information related to the brake on a separate sheet. Attach any available drawings and/or schematics.

NOTE

PER EATON LIMITED WARRANTY POLICY: TECHNICAL ASSISTANCE PROVIDED BY EATON PERSONNEL, OR REPRESENTATIVES, IN SYSTEM DESIGN IS CONSTRUED TO BE A PROPOSAL AND NOT A RECOMMENDATION. THE RESPONSIBILITY FOR DETERMINING FEASIBILITY RESTS WITH THE USER AND SHOULD BE SUBJECT TO TEST.

Eaton
14615 Lone Oak Road
Eden Prairie, MN 55344
USA
Tel: 952 937-9800
Fax: 952 974-7722
www.hydraulics.eaton.com

Eaton
20 Rosamond Road
Footscray
Victoria 3011
Australia
Tel: (61) 3 9319 8222
Fax: (61) 3 9318 5714

Eaton
Eaton Fluid Power GmbH
Dr.-Reckeweg-Str. 1
D-76532 Baden-Baden, Germany
Tel: +49 (0) 7221 682-0
Fax: +49 (0) 7221 682-788

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