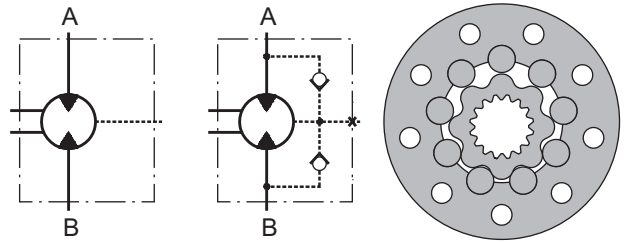


HYDRAULIC MOTORS MLHTM



APPLICATION

- » Skid Steer Loaders
- » Metal working machines
- » Trenchers
- » Augers
- » Agricultural machines
- » Road building machines
- » Special vehicles
- » Mine machines
- » Woodworking and sawmill machinery
- » Conveyors etc.



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| Internal Spline data | 28 |
| Order code | 28 |

OPTIONS

- » Model - Disc valve, roll-gerotor
- » Flange with wheel mount
- » Short motor
- » Side ports
- » Shafts - straight, splined and tapered
- » SAE and BSPP ports;
- » Other special features.

EXCELLENCE

- » High torque and pressure drop
- » High inlet pressure
- » High starting torque
- » Improved efficiency at high pressure drop
- » Smooth operation at low speed

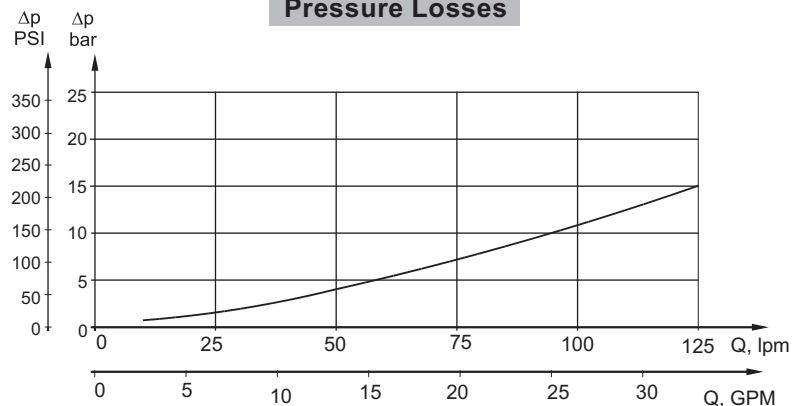
GENERAL

| | |
|---|--|
| Max. Displacement, in ³ /rev [cm ³ /rev] | 44.2 [724,3] |
| Max. Speed, [RPM] | 750 |
| Max. Torque, lb-in [daNm] | cont.: 16200 [183] int.: 20270 [229] |
| Max. Output, HP [kW] | 94 [70] |
| Max. Pressure Drop, PSI [bar] | cont.: 3600 [250] int.: 5080 [350] |
| Max. Oil Flow, GPM [lpm] | 40 [150] |
| Min. Speed, [RPM] | 5 |
| Permissible Shaft Loads lbs [daN] | P _a =2250 [1000] |
| Pressure fluid | Mineral based- HLP(DIN 51524) or HM(ISO 6743/4) |
| Temperature range, °F [°C] | -40÷284 [-40÷140] |
| Optimal Viscosity range, SUS [mm²/s] | 98÷347 [20÷75] |
| Filtration | ISO code 20/16 (Min. recommended fluid filtration of 25 microns) |

Oil flow in drain line

| Pressure drop PSI [bar] | Viscosity SUS [mm ² /s] | Oil flow in drain line GPM [lpm] |
|----------------------------|---------------------------------------|--|
| 2030 [140] | 98 [20] | .660 [2,5] |
| | 164 [35] | .396 [1,5] |
| 3045 [210] | 98 [20] | 1.321 [5] |
| | 164 [35] | .793 [3] |

Pressure Losses



SPECIFICATION DATA

| Type | | MLHTM 200 | MLHTM 250 | MLHTM 315 | MLHTM 400 | MLHTM 470 | MLHTM 500 | MLHTM 630 | MLHTM 725 |
|--|--------|------------------|------------------|-----------------|------------------|----------------|------------------|------------------|---------------|
| Displacement, in³/rev [cm³/rev] | | 12.29 [201,4] | 15.36 [251,8] | 19.9 [326,3] | 25.06 [410,9] | 28.97 [475] | 31.95 [523,6] | 38.52 [631,2] | 44.2 [724] |
| Max. Speed, [RPM] | Cont. | 625 | 500 | 380 | 305 | 260 | 240 | 190 | 170 |
| | Int.* | 750 | 600 | 460 | 365 | 315 | 285 | 230 | 215 |
| Max. Torque lb-in [daNm] | Cont. | 6550 [74] | 7965[90] | 10265[116] | 13010[147] | 15135[171] | 15225[172] | 16200[183] | 14160[160] |
| | Int.* | 9030[102] | 11330[128] | 14425[163] | 18232[206] | 16030[215] | 19030[215] | 20270[229] | 17000[192] |
| | Peak** | 10180[115] | 12745[144] | 16460[186] | 20800[235] | 21240[240] | 21240[240] | 24250[274] | 21240[240] |
| Max. Output HP [kW] | Cont. | 55 [41] | 55 [41] | 55 [41] | 55 [41] | 55 [41] | 50[37,5] | 37,5 [28] | 35 [26] |
| | Int.* | 87 [65] | 94[70] | 94[70] | 94[70] | 74[55] | 68 [51] | 56 [42] | 54 [40] |
| Max. Pressure Drop PSI [bar] | Cont. | 3600[250] | 3600[250] | 3600[250] | 3600[250] | 3600[250] | 3340[230] | 2900[200] | 2320[160] |
| | Int.* | 5080[350] | 5080[350] | 5080[350] | 5080[350] | 4570[315] | 4060[280] | 3625[250] | 3045[210] |
| | Peak** | 5800[400] | 5800[400] | 5800[400] | 5800[400] | 5080[350] | 4640[320] | 4350[300] | 3770[260] |
| Max. Oil Flow GPM [lpm] | Cont. | 33[125] | 33[125] | 33[125] | 33[125] | 33[125] | 33[125] | 33[125] | 33[125] |
| | Int.* | 40[150] | 40[150] | 40[150] | 40[150] | 40[150] | 40[150] | 40[150] | 40[150] |
| Max. Inlet Pressure PSI [bar] | Cont. | 3920[270] | 3920[270] | 3920[270] | 3920[270] | 3920[270] | 3920[270] | 3920[270] | 3920[270] |
| | Int.* | 5370[370] | 5370[370] | 5370[370] | 5370[370] | 5370[370] | 5370[370] | 5370[370] | 5370[370] |
| | Peak** | 6100[420] | 6100[420] | 6100[420] | 6100[420] | 6100[420] | 6100[420] | 6100[420] | 6100[420] |
| Max. Return Pressure with Drain Line PSI [bar] | Cont. | 2000[140] | 2000[140] | 2000[140] | 2000[140] | 2000[140] | 2000[140] | 2000[140] | 2000[140] |
| | Int.* | 2500[175] | 2500[175] | 2500[175] | 2500[175] | 2500[175] | 2500[175] | 2500[175] | 2500[175] |
| | Peak** | 3000[210] | 3000[210] | 3000[210] | 3000[210] | 3000[210] | 3000[210] | 3000[210] | 3000[210] |
| Max. Starting Pressure with Unloaded Shaft, PSI [bar] | | 90 [6] | 90 [6] | 90 [6] | 90 [6] | 90 [6] | 90 [6] | 90 [6] | 90 [6] |
| Min. Starting Torque lb-in [daNm] | | 5310[60] | 6640[75] | 8585[97] | 10800[122] | 12570[142] | 12655[143] | 12830[145] | 13100[148] |
| Min. Speed***, [RPM] | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Weight, lb [kg] | MLHTM | 59.3 [26,9] | 60.2 [27,3] | 62 [28,1] | 64 [29] | 65.5 [29,7] | 66.6 [30,2] | 65.5 [29,7] | 68.4 [31] |
| | MLHTMW | 60.4 [27,4] | 61.3 [27,8] | 63.1 [28,6] | 65.1 [29,5] | 66.6 [30,2] | 67.7 [30,7] | 66.6 [30,2] | 69.5 [31,5] |
| | MLHTMV | 34.6 [15,7] | 35.5 [16,1] | 37.3 [16,9] | 39.3 [17,8] | 40.8 [18,5] | 41.9 [19] | 40.8 [18,5] | 43.7 [19,8] |

* Intermittent operation: the permissible values may occur for max. 10% of every minute.

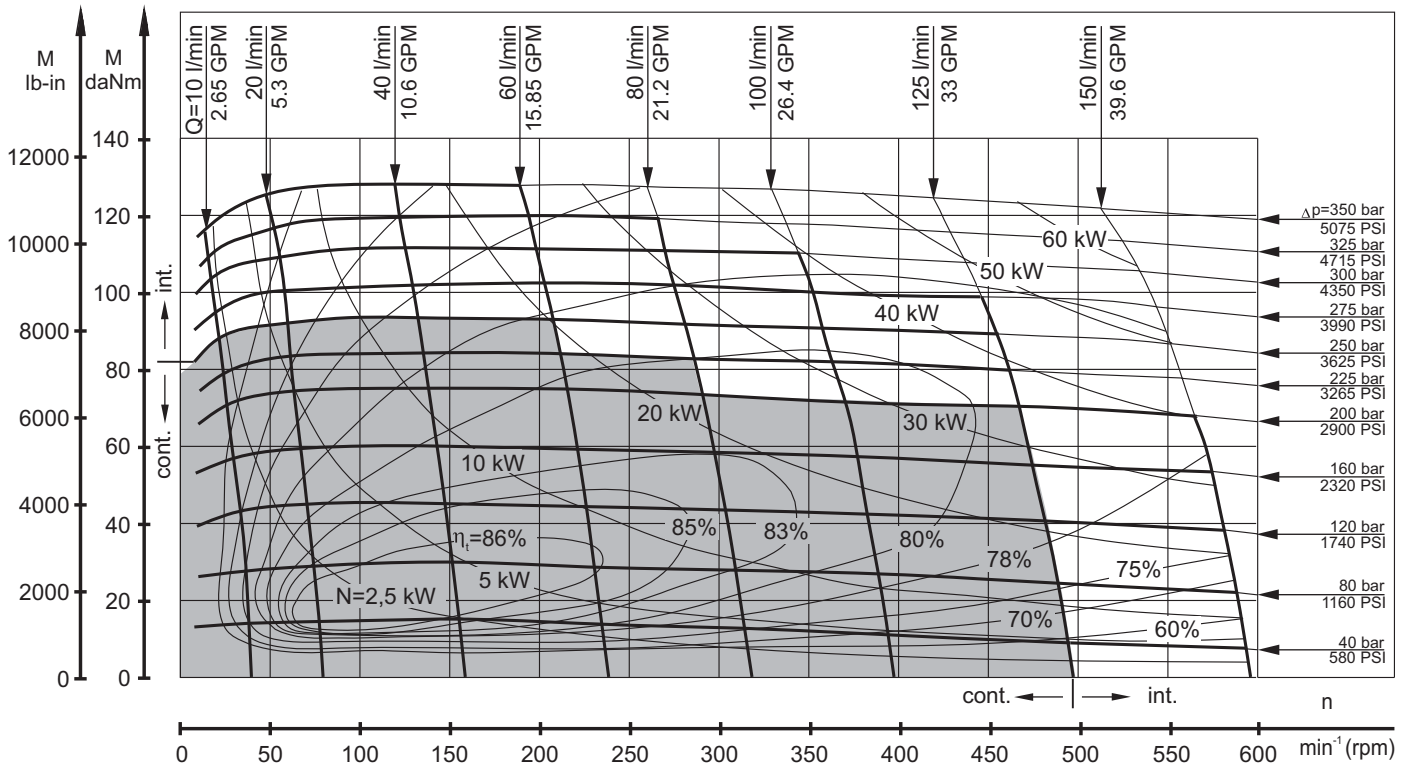
** Peak load: the permissible values may occur for max. 1% of every minute.

*** For speeds lower than given, consult factory or your regional manager.

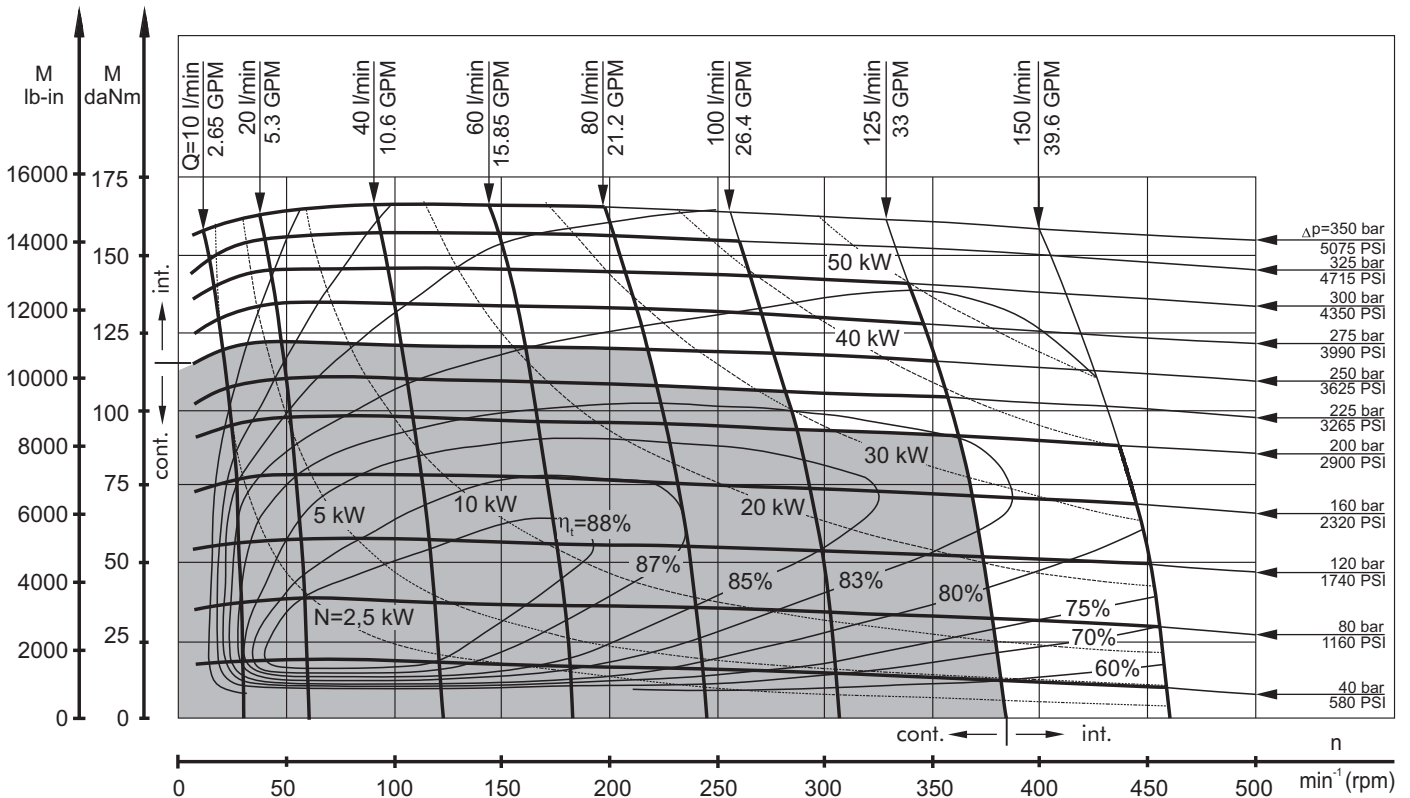
1. Intermittent speed and intermittent pressure drop must not occur simultaneously.
2. Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
3. Recommend using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) or HM (ISO 6743/4).
If using synthetic fluids consult the factory for alternative seal materials.
4. Recommended minimum oil viscosity 70 SUS [13 mm²/s] at 122°F [50°C].
5. Recommended maximum system operating temperature is 180°F [82°C].
6. To assure optimum motor life fill with fluid prior to loading and run at moderate load and speed for 10-15 minutes.

FUNCTION DIAGRAMS

MLHTM 250



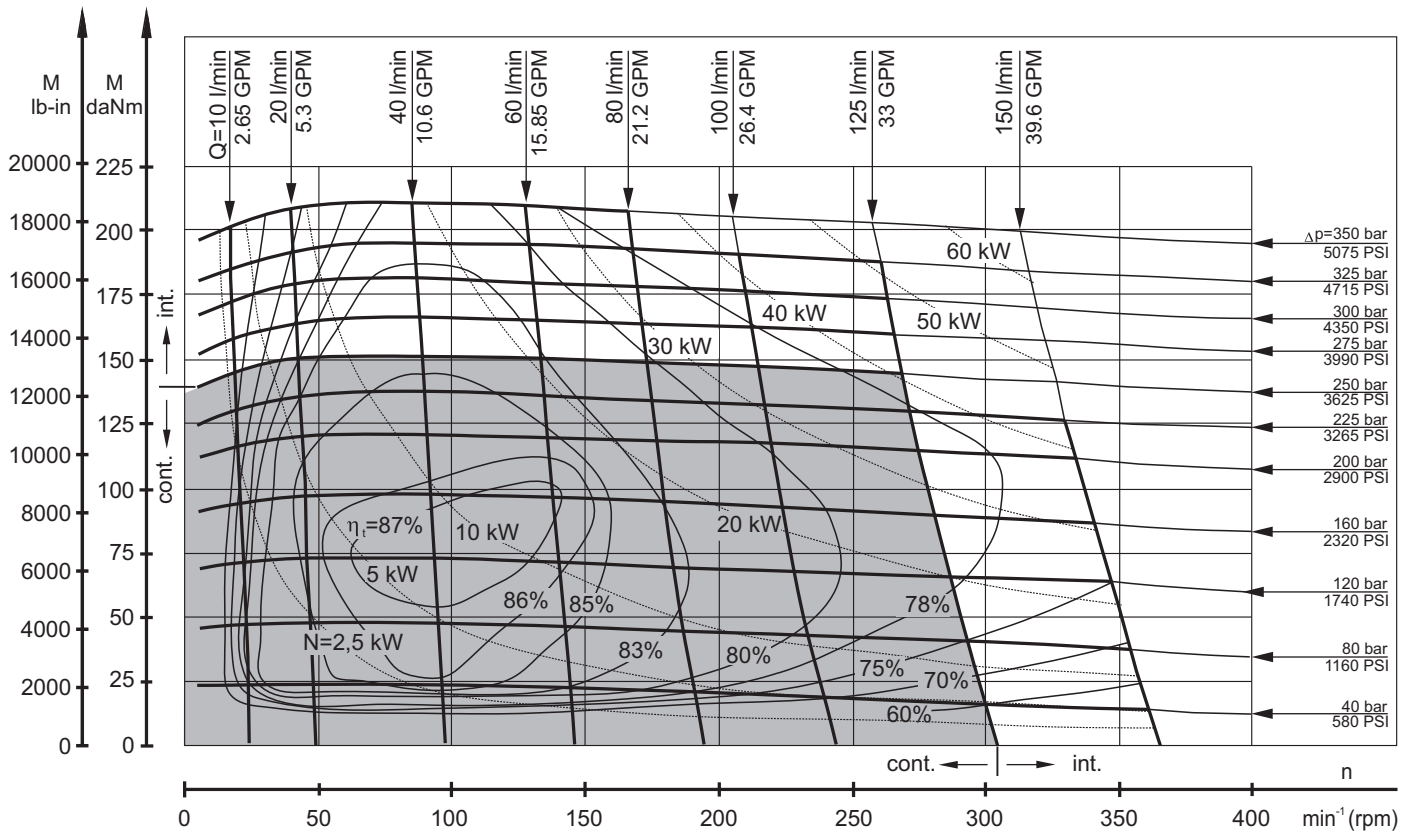
MLHTM 315



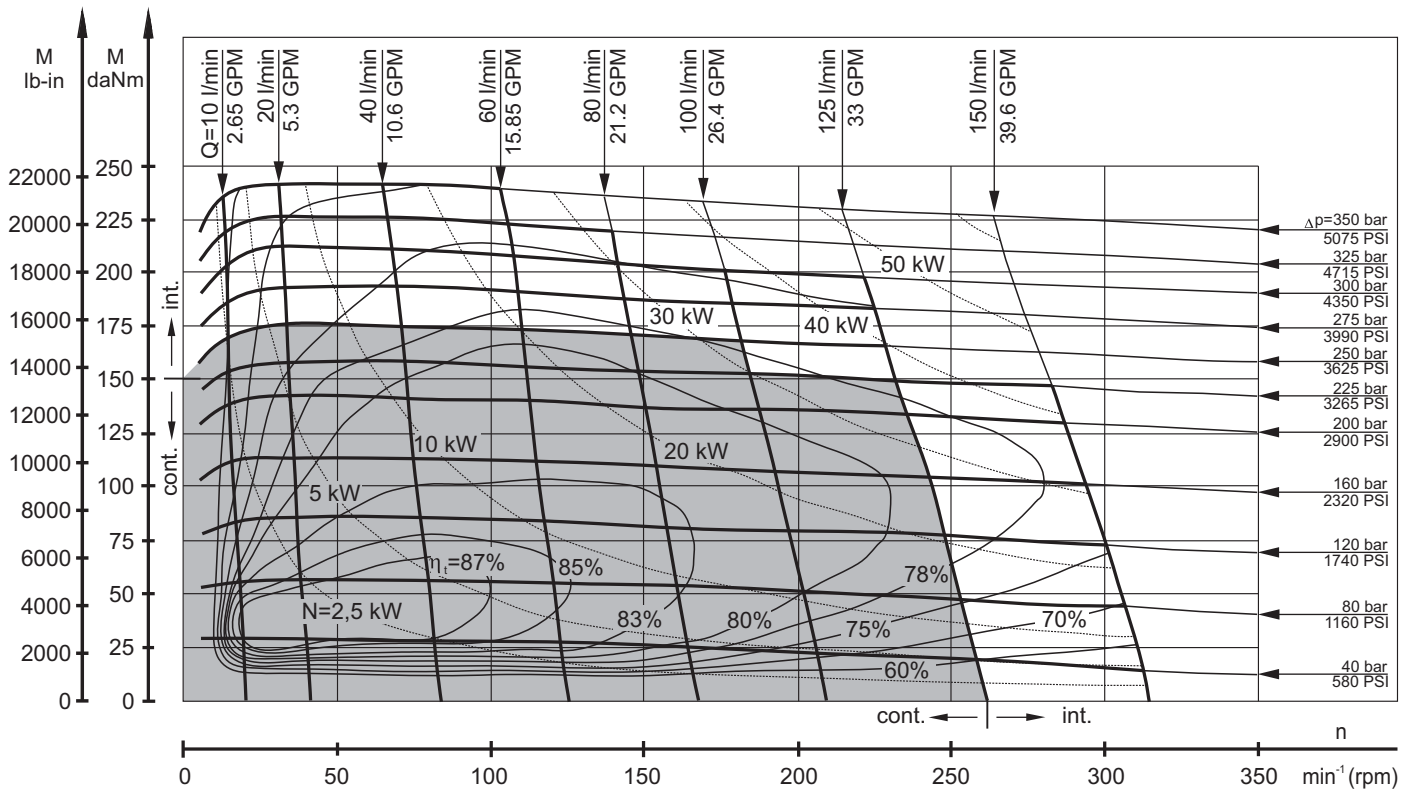
The function diagrams data is for average performance of randomly selected motors at back pressure 72.5÷145 PSI [5÷10 bar] and oil with viscosity of 150 SUS [32 mm²/s] at 122°F [50°C].

FUNCTION DIAGRAMS

MLHTM 400



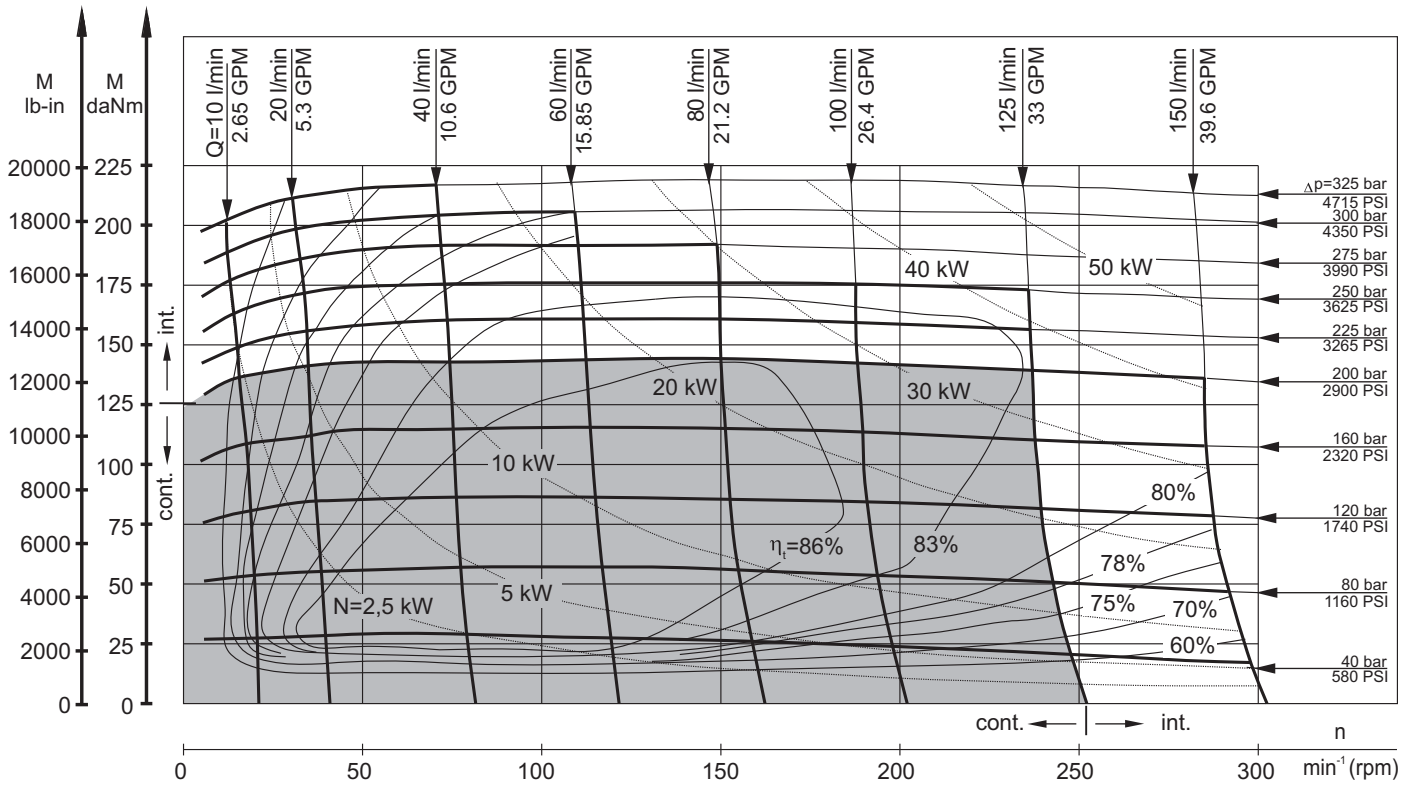
MLHTM 470



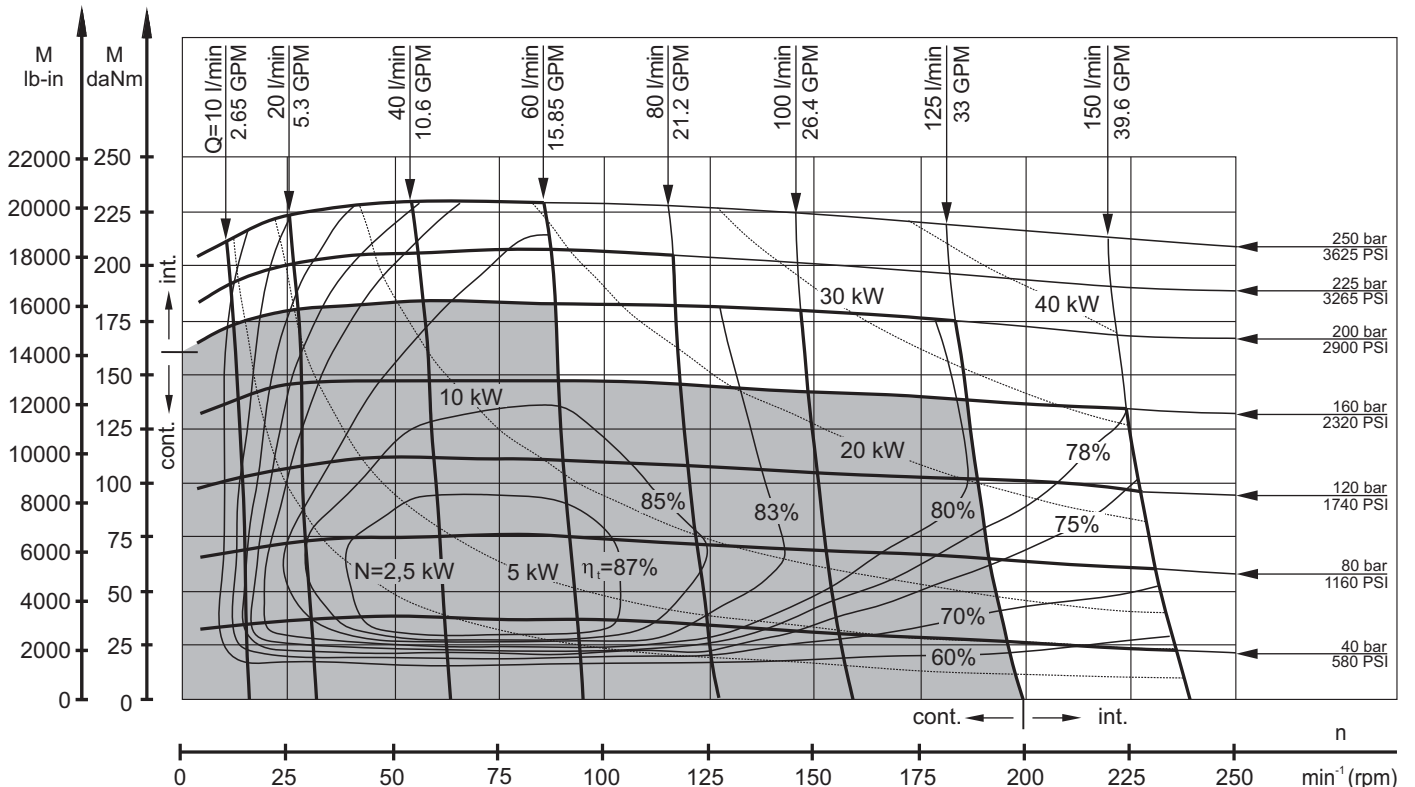
The function diagrams data is for average performance of randomly selected motors at back pressure 72.5÷145 PSI [5÷10 bar] and oil with viscosity of 150 SUS [32 mm²/s] at 122°F [50°C].

FUNCTION DIAGRAMS

MLHTM 500

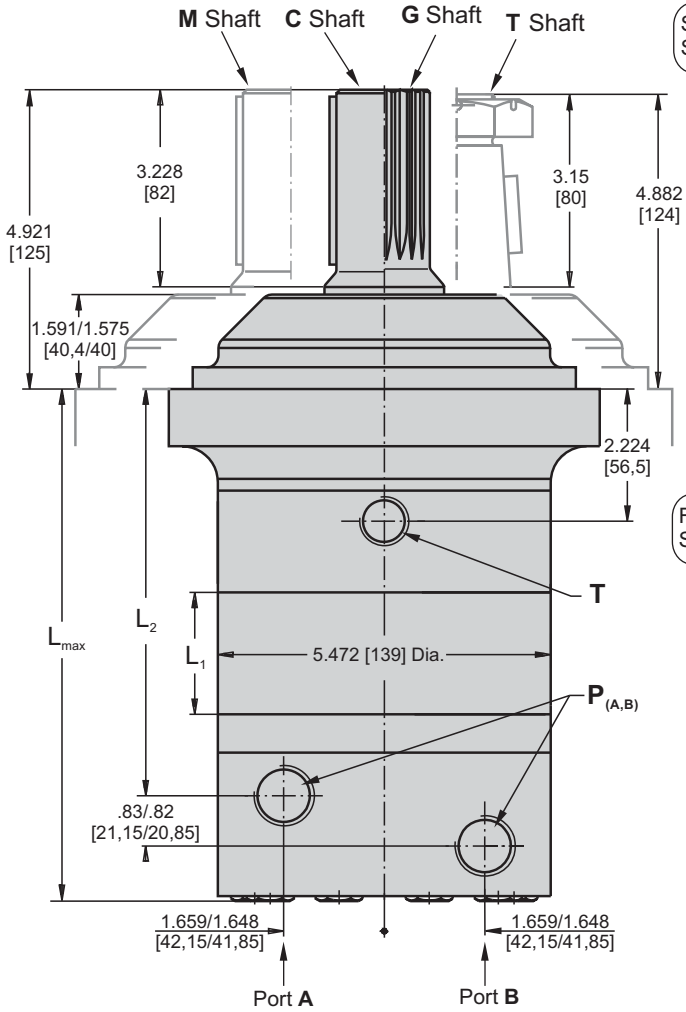


MLHTM 630



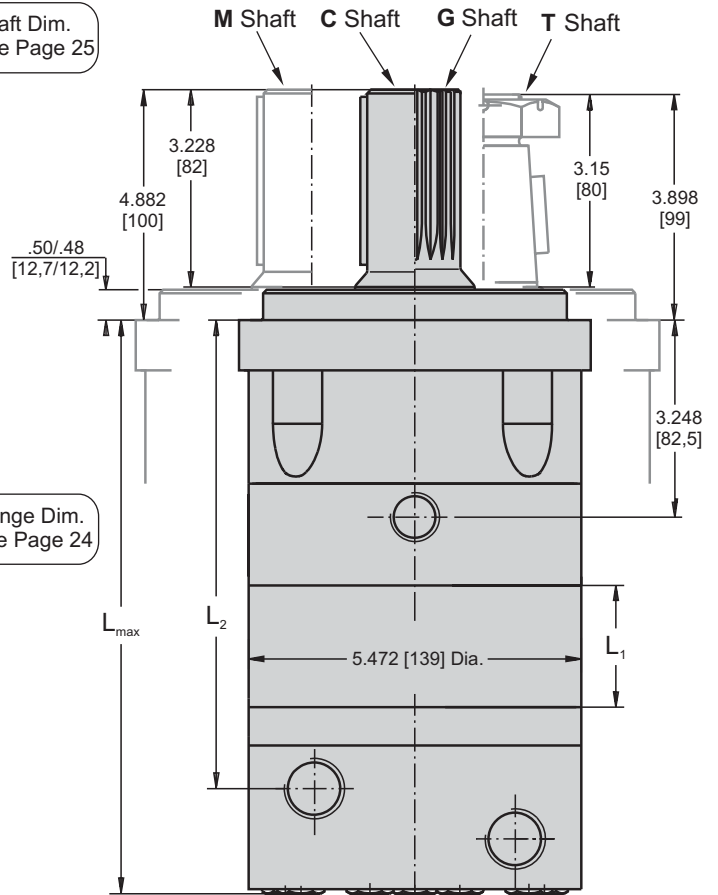
The function diagrams data is for average performance of randomly selected motors at back pressure 72.5÷145 PSI [5÷10 bar] and oil with viscosity of 150 SUS [32 mm²/s] at 122°F [50°C].

DIMENSIONS - MLHTM and MLHTMC



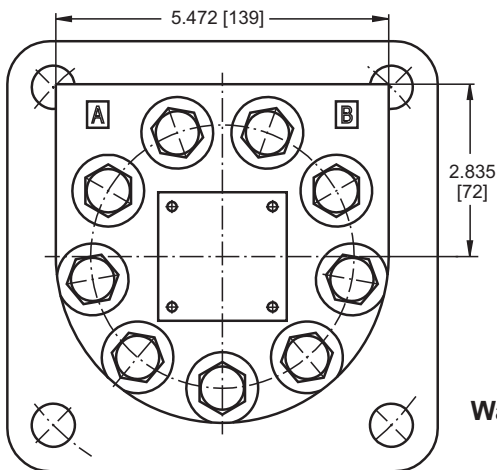
Shaft Dim.
See Page 25

Flange Dim.
See Page 24



Standard Rotation
Viewed from Shaft End
Port A Pressurized - CW
Port B Pressurized - CCW

Reverse Rotation
Viewed from Shaft End
Port A Pressurized - CCW
Port B Pressurized - CW

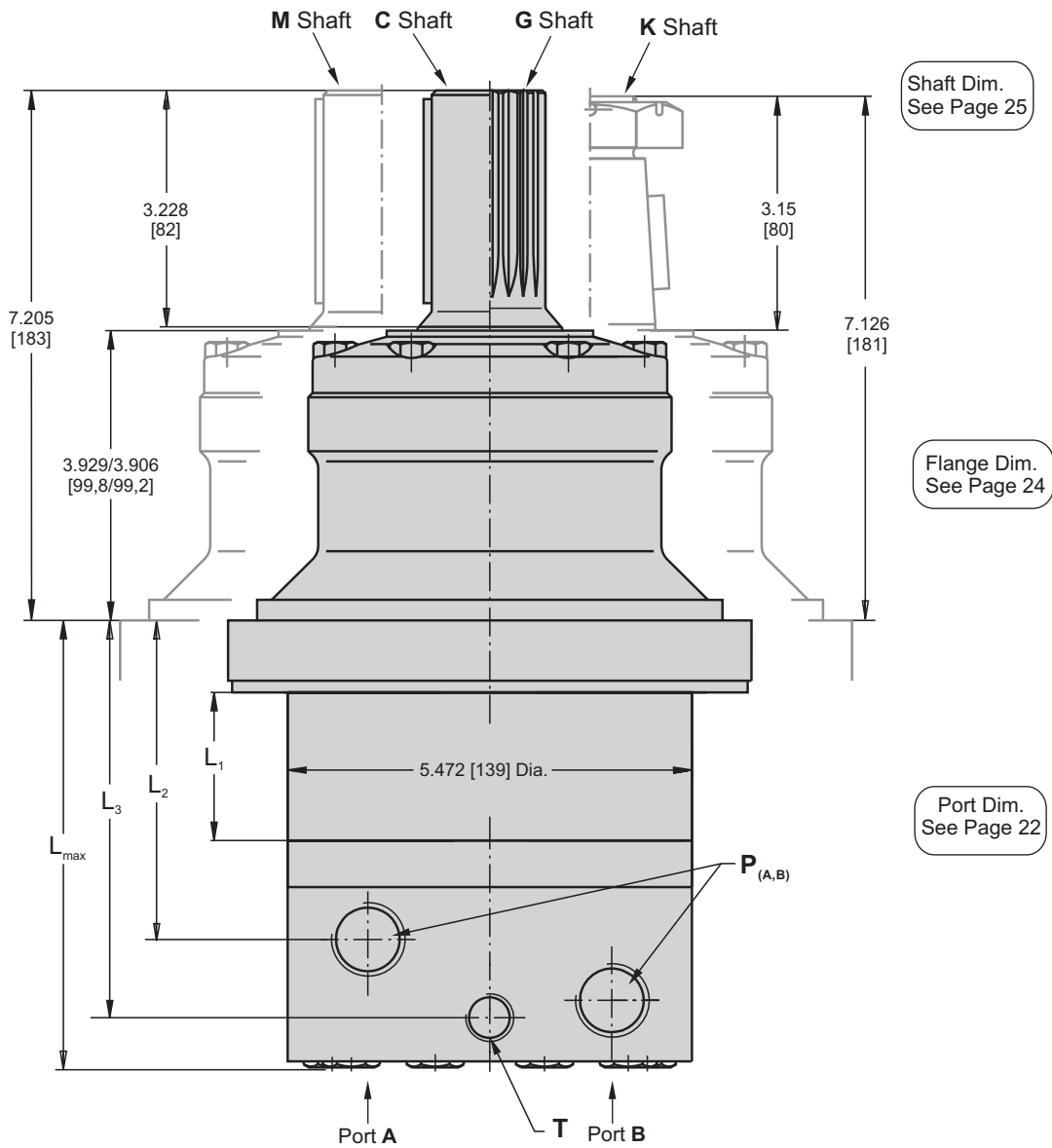


| | Versions | |
|----------------|----------|---------------|
| | 2 | 4 |
| P (A,B) | 2xG 3/4 | 2x1 1/16-12UN |
| T | G 1/4 | 9/16-18UNF |

Warning: Drain line should always be used.
This is not applicable for option "1" (with check valves)!

| Type | L _{max} , in [mm] | L ₂ , in [mm] | Type | L _{max} , in [mm] | L ₂ , in [mm] | L ₁ , in [mm] |
|-----------|----------------------------|--------------------------|------------|----------------------------|--------------------------|--------------------------|
| MLHTM 200 | 7.40 [188] | 5.60 [142,3] | MLHTMC 200 | 8.48 [215,5] | 6.69 [169,8] | .98 [25] |
| MLHTM 250 | 7.64 [194] | 5.85 [148,6] | MLHTMC 250 | 8.74 [222,0] | 6.93 [176,1] | 1.23 [31,3] |
| MLHTM 315 | 7.99 [203] | 6.21 [157,8] | MLHTMC 315 | 9.09 [231,0] | 7.30 [185,3] | 1.59 [40,5] |
| MLHTM 400 | 8.43 [214] | 6.63 [168,3] | MLHTMC 400 | 9.51 [241,5] | 7.71 [195,8] | 2.01 [51] |
| MLHTM 470 | 8.74 [222] | 6.94 [176,3] | MLHTMC 470 | 9.82 [249,5] | 8.02 [203,8] | 2.32 [59] |
| MLHTM 500 | 8.98 [228] | 7.18 [182,3] | MLHTMC 500 | 10.06 [255,5] | 8.26 [209,8] | 2.56 [65] |
| MLHTM 630 | 8.82 [224] | 7.02 [178,3] | MLHTMC 630 | 9.90 [251,5] | 8.10 [205,8] | 2.40 [61] |
| MLHTM 725 | 9.17 [233] | 7.37 [187,3] | MLHTMC 725 | 10.26 [260,5] | 8.46 [214,8] | 2.76 [70] |

DIMENSIONS -MLHTMW



Standard Rotation
 Viewed from Shaft End
 Port A Pressurized - CW
 Port B Pressurized - CCW

Reverse Rotation
 Viewed from Shaft End
 Port A Pressurized - CCW
 Port B Pressurized - CW

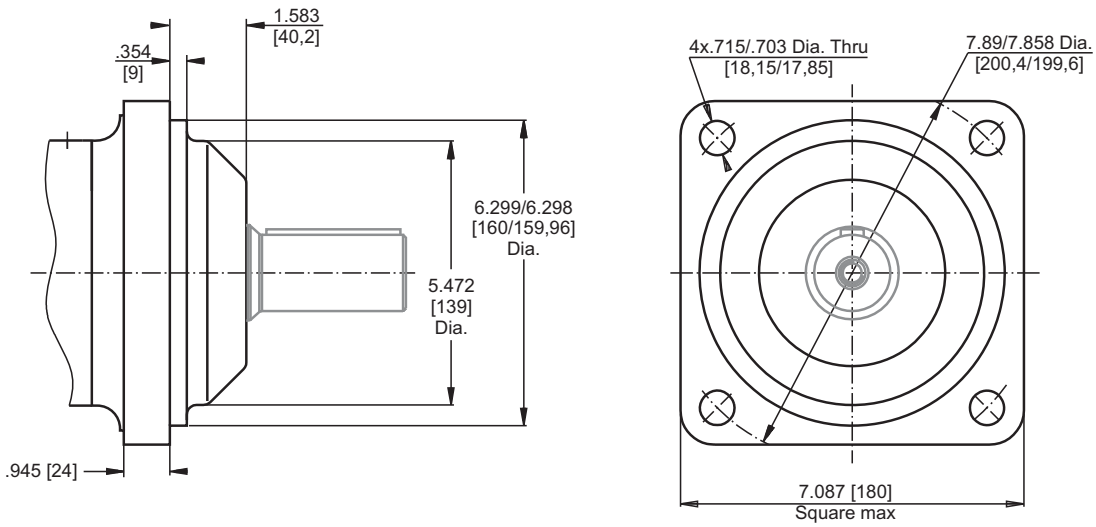
Warning: Drain line should always be used.
 This is not applicable for option "1" (with check valves)!

| Versions | | |
|--------------------|---------|---------------|
| | 2 | 4 |
| P _(A,B) | 2xG 3/4 | 2x1 1/16-12UN |
| T | G 1/4 | 9/16-18UNF |

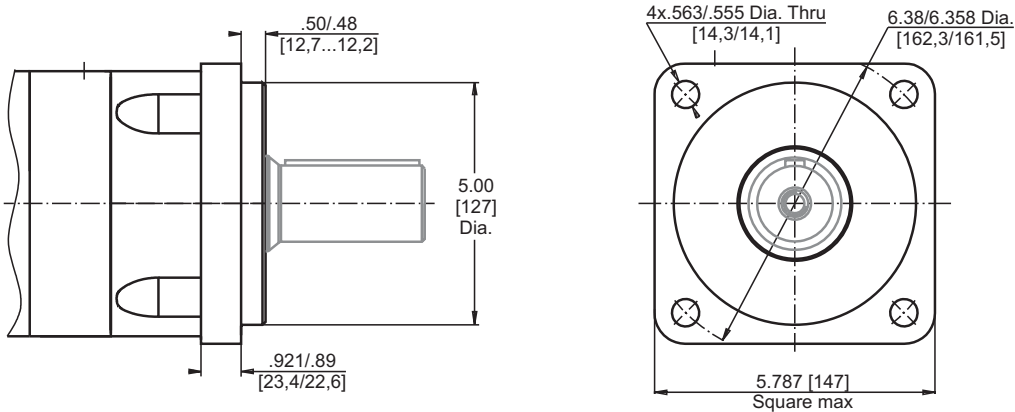
| Type | L _{max} , in [mm] | L ₁ , in [mm] | L ₂ , in [mm] | L ₃ , in [mm] |
|------------|----------------------------|--------------------------|--------------------------|--------------------------|
| MLHTMW 200 | 5.08 [129] | .98 [25] | 3.30 [83,8] | 3.37 [111,1] |
| MLHTMW 250 | 5.32 [135] | 1.23 [31,3] | 3.55 [90,1] | 4.62 [117,4] |
| MLHTMW 315 | 5.67 [144] | 1.59 [40,5] | 3.91 [99,3] | 4.98 [126,6] |
| MLHTMW 400 | 6.10 [155] | 2.01 [51] | 4.32 [109,8] | 5.40 [137,1] |
| MLHTMW 470 | 6.42 [163] | 2.32 [59] | 4.64 [117,8] | 5.71 [145,1] |
| MLHTMW 500 | 6.65 [169] | 2.56 [65] | 4.87 [123,8] | 5.95 [151,1] |
| MLHTMW 630 | 6.50 [165] | 2.40 [61] | 4.72 [119,8] | 5.79 [147,1] |
| MLHTMW 725 | 6.85 [174] | 2.76 [70] | 5.07 [128,8] | 6.15 [156,1] |

DIMENSIONS OF MOUNTING

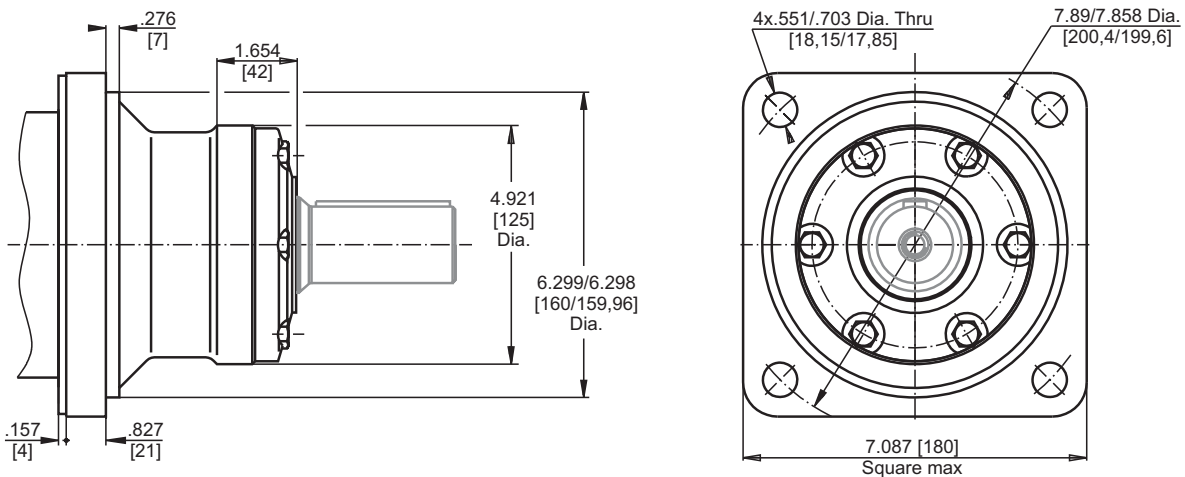
4-Bolt flange
spigot diameter 6.3 in [160 mm] - BC 7.87 in [200 mm]



C 4-Bolt flange, SAE C mounting flange
spigot diameter 5.00 in [127 mm]
BC 6.37 in [161,9 mm]



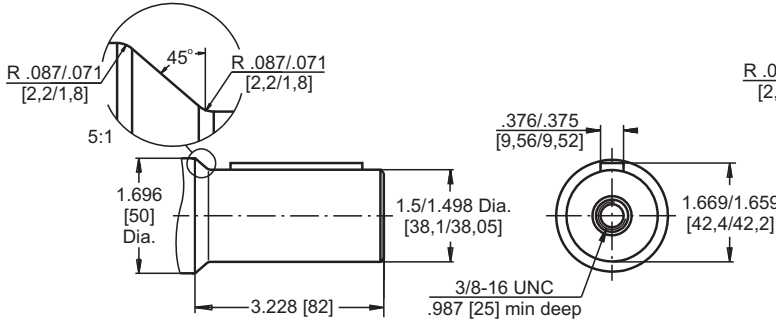
W 4-Bolt flange, Wheel Motor
spigot diameter 6.3 in [160 mm] - BC 7.87 in [200 mm]



SHAFT EXTENSIONS

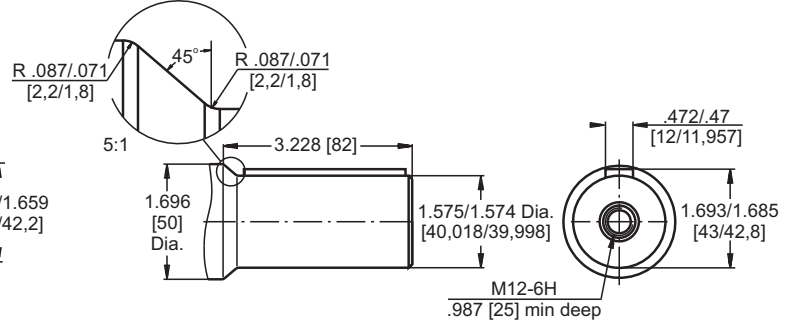
C

1 1/2" [38,1] srtaight, Parallel key 3/8"x 3/8"x 2 1/4" BS46
Max. Torque 11750 lb-in [133 daNm]



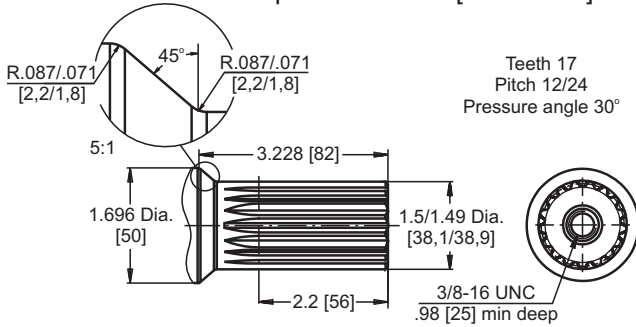
M

ø40 srtaight, Parallel key A12x8x70
Max. Torque 11750 lb-in [133 daNm]



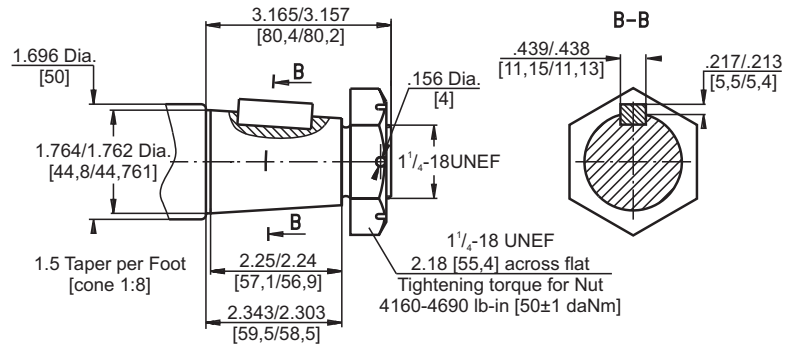
G

17T Splined, 1 1/2" [38,1] ANS B92.1-1976
Max. Torque 11750 lb-in [133 daNm]



T

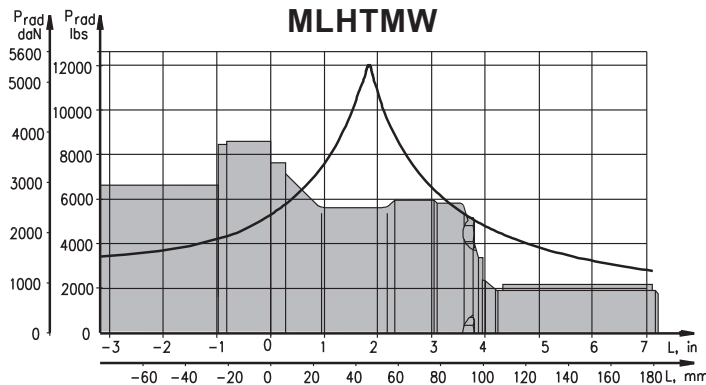
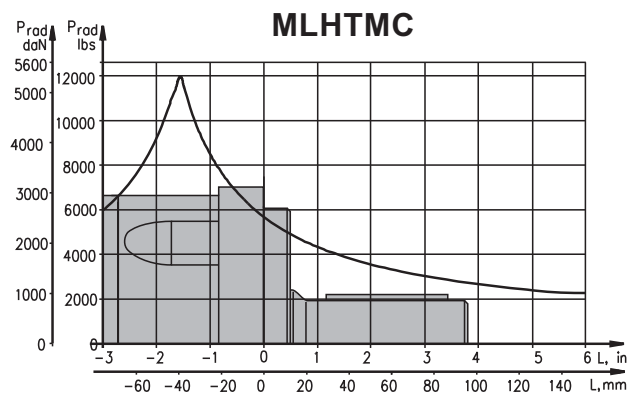
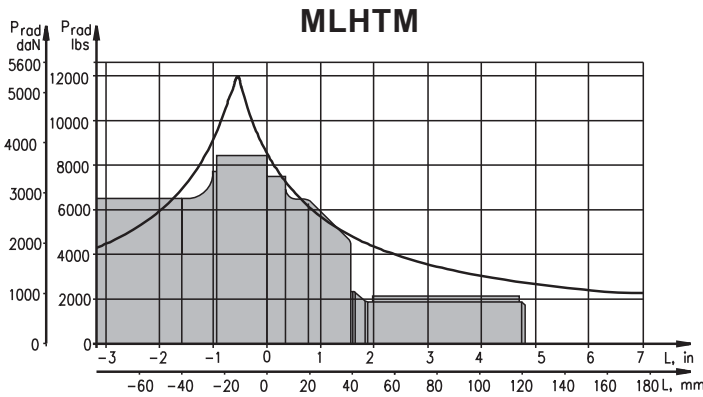
1 3/4" [44,5] SAE J501 Tapered 1:8
Parallel key 7/16"x 7/16"x 1 1/4" BS46
Max. Torque 18650 lb-in [210 daNm]



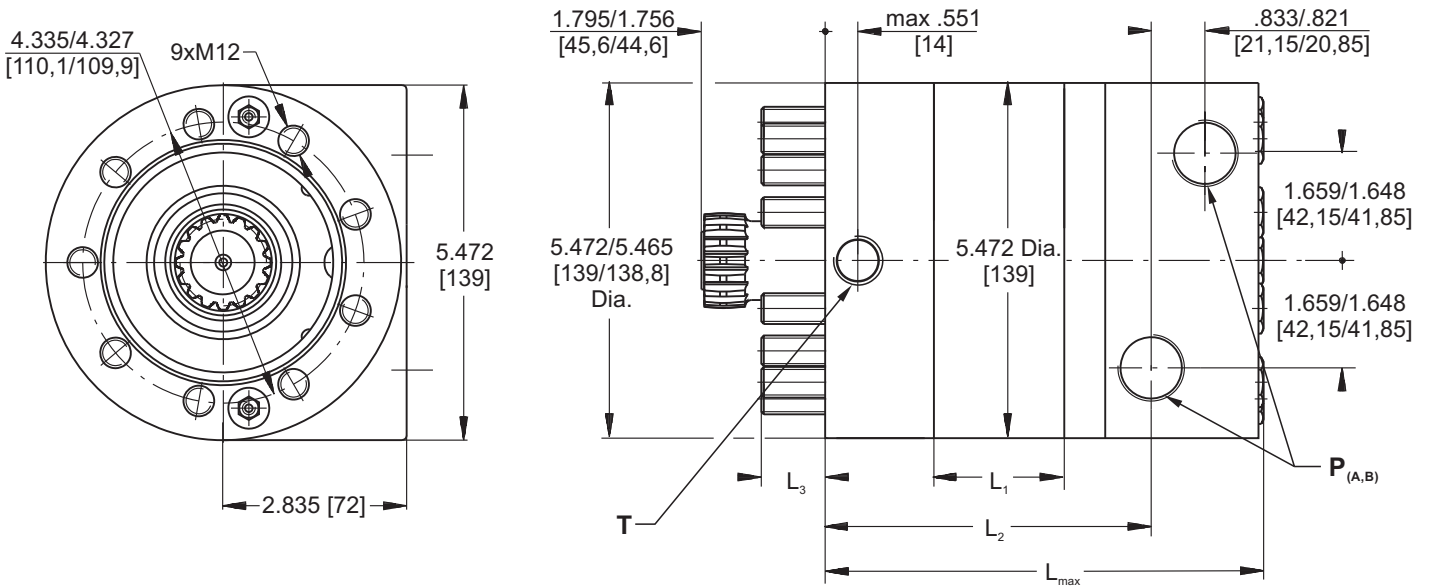
Requirement max. Torque must not be exceeded.

PERMISSIBLE SHAFT LOADS

The curves apply to a B10 bearing life (ISO281) of 2000 hours at 200 RPM.



OUTLINE DIMENSIONS REFERENCE FOR MLHTMV



| | Versions | |
|----------------|----------|--------------------------|
| | 2 | 4 |
| P (A,B) | 2xG 3/4 | 2x1 $\frac{1}{16}$ -12UN |
| T | G 1/4 | $\frac{9}{16}$ -18UNF |

Standard Rotation
Viewed from Shaft End
Port **A** Pressurized - **CW**
Port **B** Pressurized - **CCW**

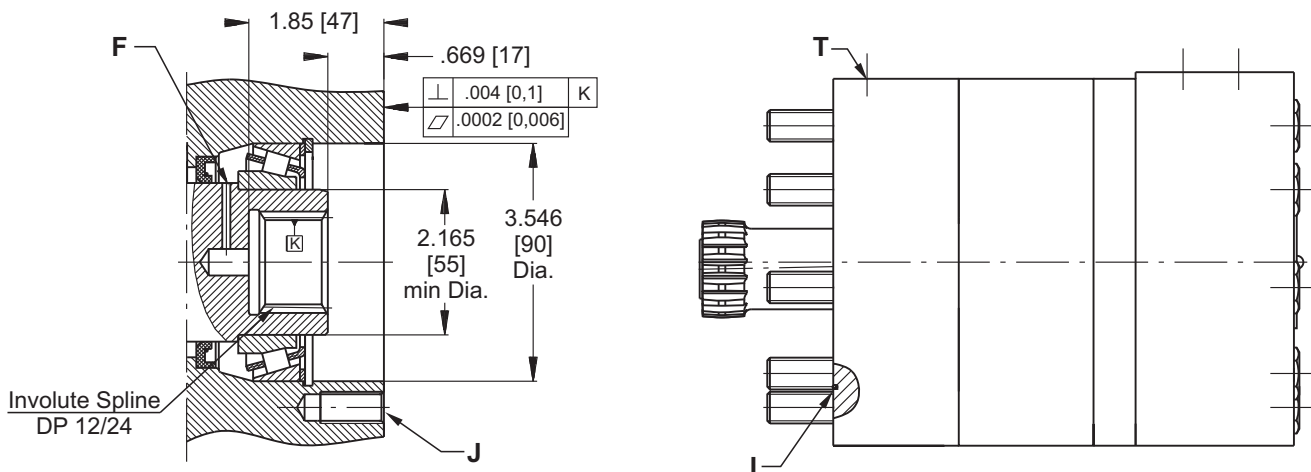
Reverse Rotation
Viewed from Shaft End
Port **A** Pressurized - **CCW**
Port **B** Pressurized - **CW**

| Type | L ₁ , in [mm] | L, in [mm] | L ₂ , in [mm] | L ₃ , in [mm] |
|------------|--------------------------|-------------|--------------------------|--------------------------|
| MLHTMV 200 | .98 [25] | 5.945 [151] | 4.193 [106,5] | 1.094 [27,8] |
| MLHTMV 250 | 1.23 [31,3] | 6.181 [157] | 4.441 [112,8] | 1.043 [26,5] |
| MLHTMV 315 | 1.59 [40,5] | 6.575 [167] | 4.803 [122,0] | .878 [22,3] |
| MLHTMV 400 | 2.01 [51] | 6.968 [177] | 5.217 [132,5] | .858 [21,8] |
| MLHTMV 470 | 2.32 [59] | 7.283 [185] | 5.531 [140,5] | .937 [23,8] |
| MLHTMV 500 | 2.56 [65] | 7.520 [191] | 5.768 [146,5] | 1.094 [27,8] |
| MLHTMV 630 | 2.40 [61] | 7.362 [187] | 5.610 [142,5] | .858 [21,8] |
| MLHTMV 725 | 2.76 [70] | 7.717 [196] | 5.965 [151,5] | .898 [22,8] |

Warning: Drain line should always be used.
This is not applicable for option "1" (with check valves)!



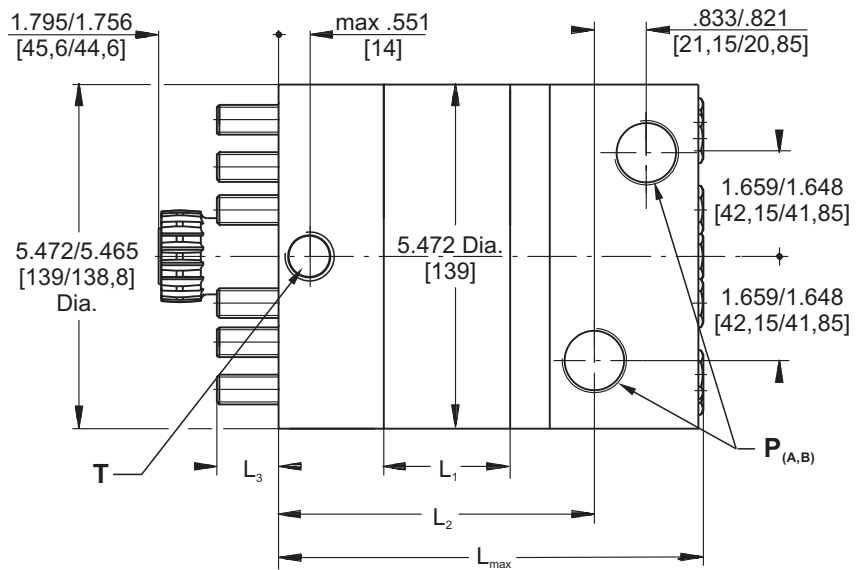
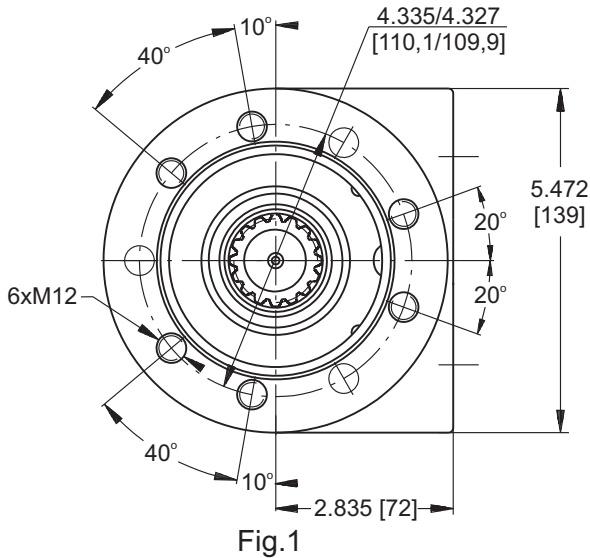
DIMENSIONS OF THE ATTACHED COMPONENT



F: Oil circulation hole
J: 9xM12-1.18 [30] depth, 40°, 4.331[110] Dia. B. C.

I: O- Ring 3.661x.059 [93x1,5]
T: Drain connection G1/4 or 9/16 - 18UNF

OUTLINE DIMENSIONS REFERENCE FOR MLHTM6V



| | Versions | |
|----------------|----------|---------------|
| | 2 | 4 |
| P (A,B) | 2XG 3/4 | 2X1 1/16-12UN |
| T | G 1/4 | 9/16-18UNF |

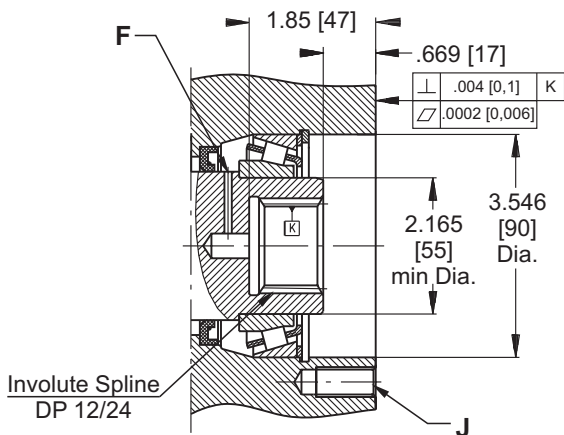
Standard Rotation
Viewed from Shaft End
Port **A** Pressurized - **CW**
Port **B** Pressurized - **CCW**

Reverse Rotation
Viewed from Shaft End
Port **A** Pressurized - **CCW**
Port **B** Pressurized - **CW**

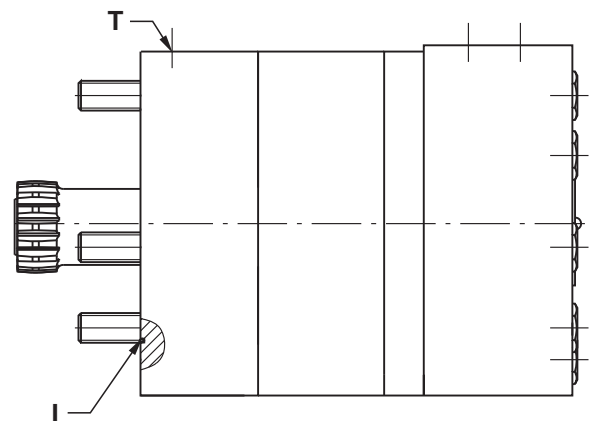
| Type | L ₁ , in [mm] | L, in [mm] | L ₂ , in [mm] | L ₃ , in [mm] |
|-------------|--------------------------|-------------|--------------------------|--------------------------|
| MLHTM6V 200 | .98 [25] | 5.945 [151] | 4.193 [106,5] | 1.094 [27,8] |
| MLHTM6V 250 | 1.23 [31,3] | 6.181 [157] | 4.441 [112,8] | 1.043 [26,5] |
| MLHTM6V 315 | 1.59 [40,5] | 6.575 [167] | 4.803 [122,0] | .878 [22,3] |
| MLHTM6V 400 | 2.01 [51] | 6.968 [177] | 5.217 [132,5] | .858 [21,8] |
| MLHTM6V 470 | 2.32 [59] | 7.283 [185] | 5.531 [140,5] | .937 [23,8] |
| MLHTM6V 500 | 2.56 [65] | 7.520 [191] | 5.768 [146,5] | 1.094 [27,8] |
| MLHTM6V 630 | 2.40 [61] | 7.362 [187] | 5.610 [142,5] | .858 [21,8] |
| MLHTM6V 725 | 2.76 [70] | 7.717 [196] | 5.965 [151,5] | .898 [22,8] |

Warning: Drain line should always be used. This is not applicable for option "1" (with check valves)!

DIMENSIONS OF THE ATTACHED COMPONENT



F: Oil circulation hole
J: 9xM12-1.18 [30] depth, 40°, 4.331[110] Dia. B. C.
6xM12-1.18 [30], situated in accordance with the bolts M12, shown on Fig.1, 4.331[110] Dia. B. C.



I: O-Ring 3.661x.059 [93x1,5]
T: Drain connection G1/4 or 9/16 - 18UNF

DRAIN CONNECTION



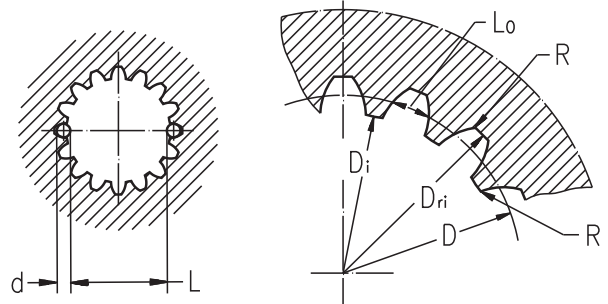
A drain line has to be used when pressure in the return line can exceed the permissible pressure. It can be connected at the drain connection of the attached component. The maximum pressure in the drain line is limited by the attached component and its shaft seal.

The drain line must be possible for oil to flow freely between motor and attached component and must be led to the tank. The maximum pressure in the drain line is limited by the attached component and its seal.

INTERNAL SPLINE DATA FOR THE ATTACHED COMPONENT

Standard ANS B92.1-1976, class 5
 [m=2.1166; corrected x.m=+1]

| Fillet Root Side Fit | | inch | mm |
|----------------------------|-----------------|-----------------|------------------------|
| Number of Teeth | z | 16 | 16 |
| Diametral Pitch | DP | 12/24 | 12/24 |
| Pressure Angle | | 30 ⁰ | 30 ⁰ |
| Pitch Dia. | D | 1.3333 | 33,8656 |
| Major Dia. | D _{ri} | 1.5118÷1.5275 | 38,4 ^{+0,4} |
| Minor Dia. | D _i | 1.2657÷1.2673 | 32,15 ^{+0,04} |
| Circular Space Width | Lo | .1763÷.1791 | 4,516±0,037 |
| Fillet Radius | R | .02 | 0,5 |
| Dimension Between Two Pins | L | 1.063÷1.059 | 26,9 ^{+0,10} |
| Pin Dia. | d | .19026÷.19034 | 4,835±0,001 |



Hardening Specification:
 HV=750±50 on the surface.
 HV=560 at .035±.019 [0,7±0,2] case depth
 Material: 20 MoCr4 EN 10084 or SAE8620.

ORDER CODE

| | | | | | | | |
|--------------|---|---|---|---|---|-----------|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| MLHTM | | | | | | HD | |

Pos.1 - Mounting Flange

- omit - 4-Bolt flange, spigot dia. 6.3 in, BC 7.87 in
- C** - SAE C, 4-Bolt flange, spigot dia. 5 in, BC 6.37 in
- W** - Wheel motor, spigot dia. 6.3 in, BC 7.87 in
- V***** - Very short mount, 9xM12 mounting bolts
- 6V***** - Very short mount, 6xM12 mounting bolts

Pos.2 - Displacement code

- 200** - 12.29 in³/rev [201,4 cm³/rev]
- 250** - 15.36 in³/rev [251,8 cm³/rev]
- 315** - 19.90 in³/rev [326,3 cm³/rev]
- 400** - 25.06 in³/rev [410,9 cm³/rev]
- 470** - 28.97 in³/rev [475,0 cm³/rev]
- 500** - 31.95 in³/rev [523,6 cm³/rev]
- 630** - 38.52 in³/rev [631,2 cm³/rev]
- 725** - 44.20 in³/rev [724,3 cm³/rev]

Pos.3 - Shaft Extensions*

- C** - 1½" [38,10] straight, Parallel key
- G** - 1½" [38,10] 17T Splined
- M** - ø40 mm straight, Parallel key
- T** - 1¾" [44,50] J501 Tapered

Pos.4 - Port Size/Type [standard manifold to each]

- 2** - side ports, 2xG 3/4, G1/4, BSP thread, ISO 228
- 4** - side ports, 2xG1 1/16-12 UN, O-ring, 9/16-18 UNF

Pos.5 - Check Valves

- omit - without check valves
- 1** - with check valves

Pos.6 - Special Features

- HD** - Reinforced motor HD**
- For Other **Special Features** [see page 48](#)

Pos.7 - Design Series

- omit - Factory specified

NOTES:

- * The permissible output torque for shafts must not be exceeded!
- ** Drain line should always be used.
This is not applicable for option "1" (with check valves)!
- *** The following combinations are not allowed:
- **V** and **6V** flange with shafts pos.3

The hydraulic motors are mangano phosphatized as standard.