

HYDRAULIC MOTORS MLHM

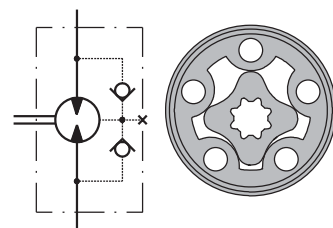


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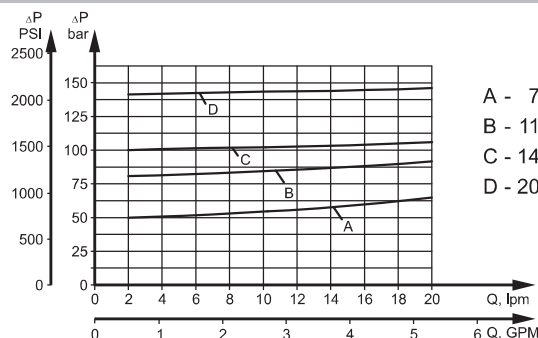
APPLICATION

- » Conveyors
- » Textile machines
- » Mining machinery
- » Machine tools
- » Ventilators
- » Construction plant equipment and access platforms etc.



Pressure Settings at Flow

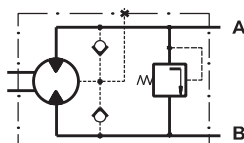
Q=.53 GPM [2 lpm], 150 SUS [32 mm²/s], 122°F [50°C]



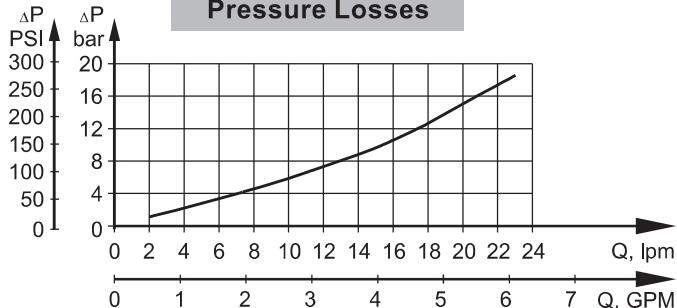
A - 725 PSI [50 bar]
 B - 1160 PSI [80 bar]
 C - 1450 PSI [100 bar]
 D - 2030 PSI [140 bar]

MLHMP Series with Integrated Internal Crossover Relief Valve

A → B, Δp=1450 or 725 PSI [100 or 50 bar]

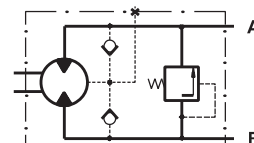


Pressure Losses



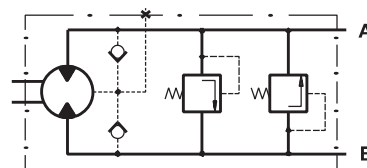
MLHMP Series with Integrated Internal Crossover Relief Valve

B → A, Δp=1450 or 725 PSI [100 or 50 bar]



MLHMD Series with Integrated Internal Crossover Relief Valves

A ↔ B, Δp=100 or 50 bar [1450 or 725 PSI]



GENERAL

Max. Displacement,	in³/rev [cm³/rev]	3.05 [50]	
Max. Speed,	[RPM]	2440	
Max. Torque,	lb-in [daNm]	cont.: 398 [4,5]	int.: 513 [5,8]
Max. Output,	HP [kW]	4,3 [3,2]	
Max. Pressure Drop,	PSI [bar]	cont.: 1500 [105]	int.: 2030 [140]
Max. Oil Flow,	GPM [lpm]	6.6 [25]	
Min. Speed,	[RPM]	20	
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)	

SPECIFICATION DATA

Type		MLHM 8	MLHM 12.5	MLHM 20	MLHM 32	MLHM 40	MLHM 50
Displacement, in ³ /rev [cm ³ /rev]		.50 [8,2]	.77 [12,5]	1.22 [19,9]	1.93 [31,6]	39,8 [39,8]	3.08 [50]
Max. Speed, [RPM]	Cont.	1950	1550	1000	630	500	400
	Int.*	2450	1940	1250	800	630	500
Max. Torque lb-in [daNm]	Cont.	95 [1,1]	140 [1,6]	220 [2,5]	350 [4,0]	400 [4,5]	410 [4,6]
	Int.*	135 [1,5]	200 [2,3]	310 [3,5]	500 [5,7]	620 [7,0]	780 [8,8]
	Peak**	187 [2,1]	293 [3,3]	453 [5,1]	568 [6,4]	725 [8,2]	885 [10,0]
Max. Output HP [kW]	Cont.	2.4 [1,8]	3.2 [2,4]	3.2 [2,4]	3.2 [2,4]	3.0 [2,2]	2.4 [1,8]
	Int.*	3.5 [2,6]	4.3 [3,2]	4.3 [3,2]	4.3 [3,2]	4.3 [3,2]	4.3 [3,2]
Max. Pressure Drop PSI [bar]	Cont.	1450 [100]	1450 [100]	1450 [100]	1450 [100]	1310 [90]	1020 [70]
	Int.*	2030 [140]	2030 [140]	2030 [140]	2030 [140]	2030 [140]	2030 [140]
	Peak**	2900 [200]	2900 [200]	2900 [200]	2320 [160]	2320 [160]	2320 [160]
Max. Oil Flow GPM [lpm]	Cont.	4.2 [16]	5.3 [20]	5.3 [20]	5.3 [20]	5.3 [20]	5.3 [20]
	Int.*	5.3 [20]	6.6 [25]	6.6 [25]	6.6 [25]	6.6 [25]	6.6 [25]
Max. Inlet Pressure PSI [bar]	Cont.	2030 [140]	2030 [140]	2030 [140]	2030 [140]	2030 [140]	2030 [140]
	Int.*	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]
	Peak**	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]
Max. Return Pressure without Drain Line or Max. Pressure in Drain Line, PSI [bar]	Cont. 0-100 RPM	2030 [140]	2030 [140]	2030 [140]	2030 [140]	2030 [140]	2030 [140]
	Cont. 100-400 RPM	1500 [105]	1500 [105]	1500 [105]	1500 [105]	1500 [105]	1500 [105]
	Cont. 400-800 RPM	725 [50]	725 [50]	725 [50]	725 [50]	725 [50]	725 [50]
	Cont. >800 RPM	290 [20]	290 [20]	290 [20]	-	-	-
	Int.* 0-max. RPM	2030 [140]	2030 [140]	2030 [140]	2030 [140]	2030 [140]	2030 [140]
Max. Return Pressure with Drain Line PSI [bar]	Cont.	2030 [140]	2030 [140]	2030 [140]	2030 [140]	2030 [140]	2030 [140]
	Int.*	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]
	Peak**	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]
Max. Starting Pressure with Unloaded Shaft, PSI [bar]		60 [4]	60 [4]	60 [4]	60 [4]	60 [4]	60 [4]
Min. Starting Torque lb-in [daNm]	At max. press. drop Cont.	60 [0,7]	105 [1,2]	2,1 [185]	300 [3,4]	335 [3,8]	365 [4,1]
	At max. press. drop Int.*	90 [1,0]	150 [1,7]	2,9 [255]	425 [4,8]	550 [6,2]	700 [7,9]
Min. Speed***, [RPM]		50	40	30	30	25	20
Weight, lb [kg] For "F" flange: + .441 [0,200]	MLHM(M) rear ports	4.2 [1,9]	4.41 [2,0]	4.63 [2,1]	4.85 [2,2]	5.07 [2,3]	5.51 [2,5]
	MLHM(M)	4.41 [2,0]	4.63 [2,1]	4.85 [2,2]	5.07 [2,3]	5.29 [2,4]	5.73 [2,6]
	MLHM(M)...P	4.85 [2,2]	5.07 [2,3]	5.29 [2,4]	5.51 [2,5]	5.73 [2,6]	6.17 [2,8]
	MLHM(M)...D	5.73 [2,6]	5.95 [2,7]	6.17 [2,8]	6.39 [2,9]	6.61 [3,0]	7.05 [3,2]

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

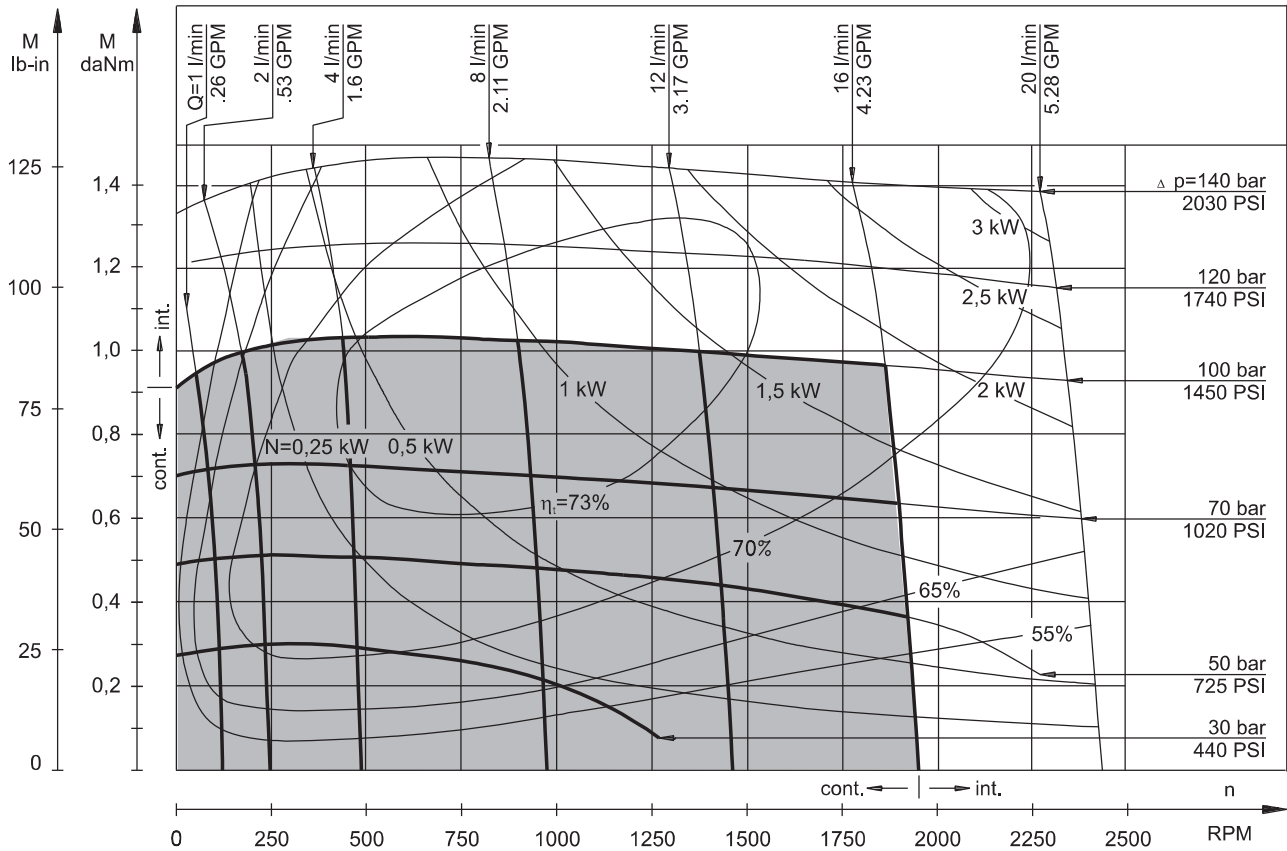
** Peak load: the permissible values may occur for max. 1% of every minute.

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

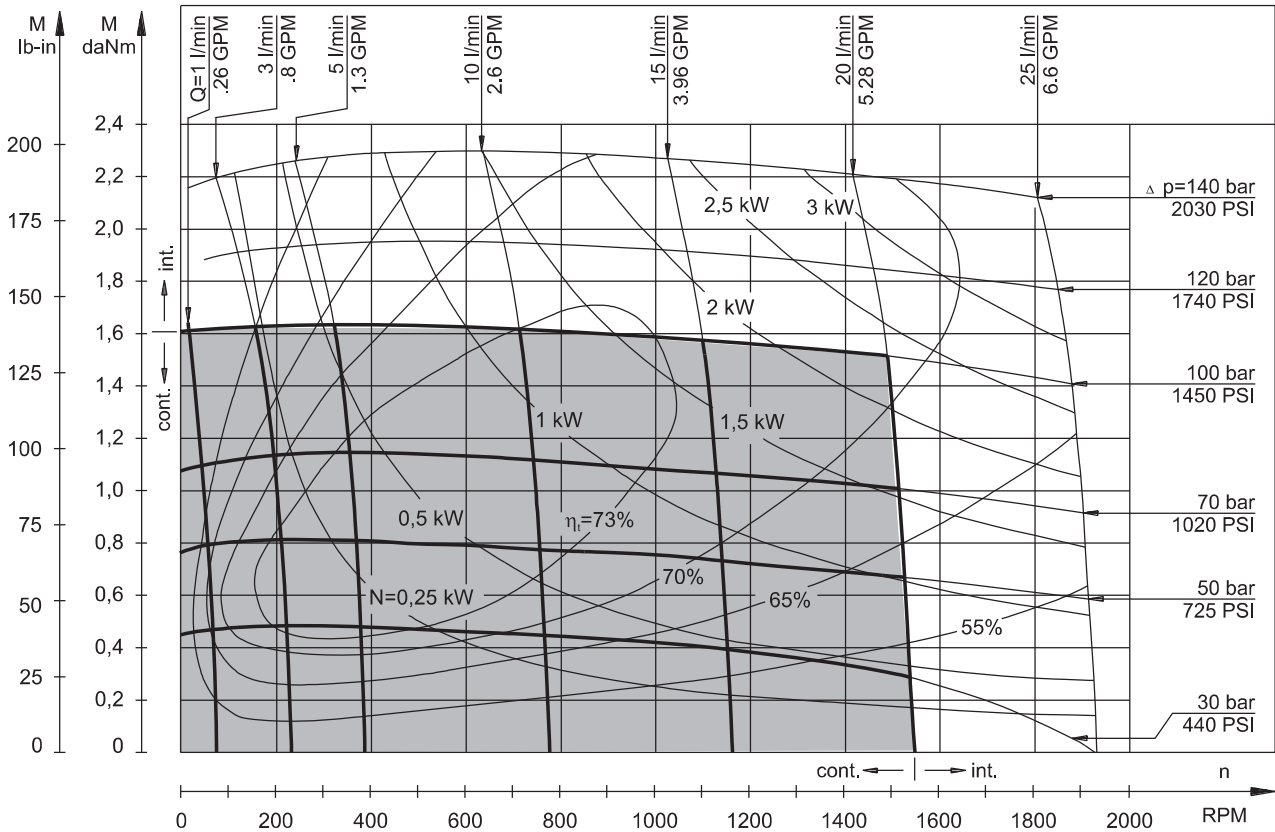
- Intermittent speed and intermittent pressure drop must not occur simultaneously.
- Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
- Recommend using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) or HM (ISO 6743/4). If using synthetic fluids consult the factory for alternative seal materials.
- Recommended minimum oil viscosity 70 SUS [13 mm²/s] at 122°F [50°C].
- Recommended maximum system operating temperature is 180°F [82°C].
- To assure optimum motor life fill with fluid prior to loading and run at moderate load and speed for 15-30 minutes.

FUNCTION DIAGRAMS

MLHM 8



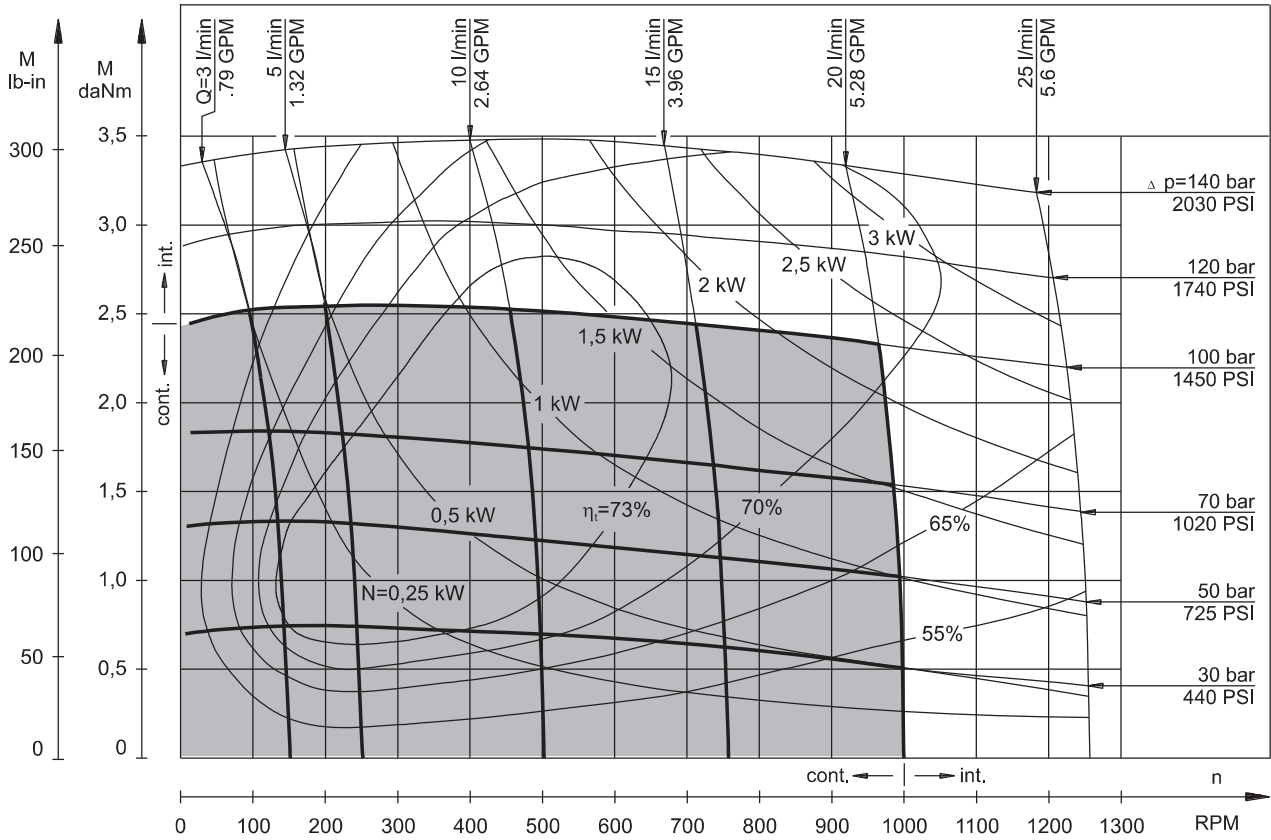
MLHM 12,5



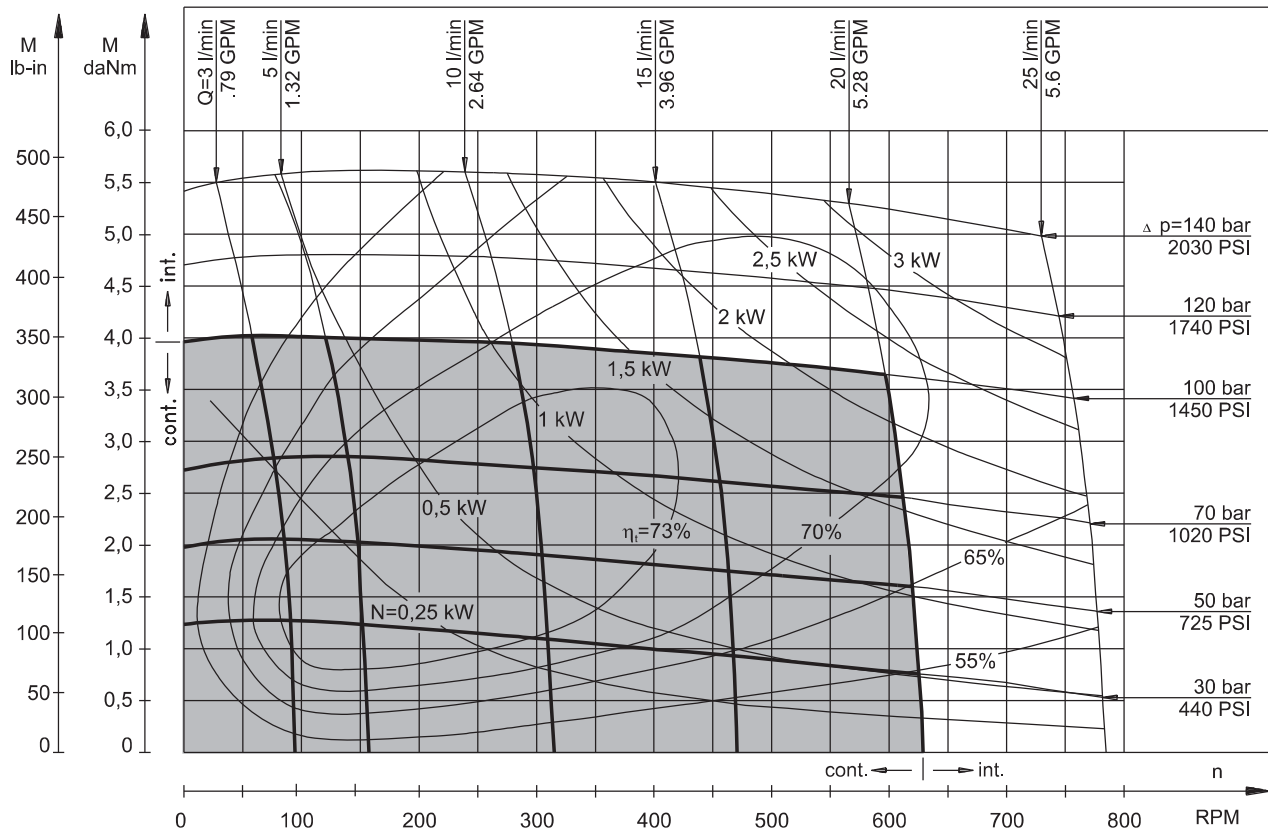
The function diagrams data is for average performance of randomly selected motors at back pressure 72.5÷145 PSI [5÷10 bar] and oil with viscosity of 150 SUS [32 mm²/s] at 122°F [50°C].

FUNCTION DIAGRAMS

MLHM 20



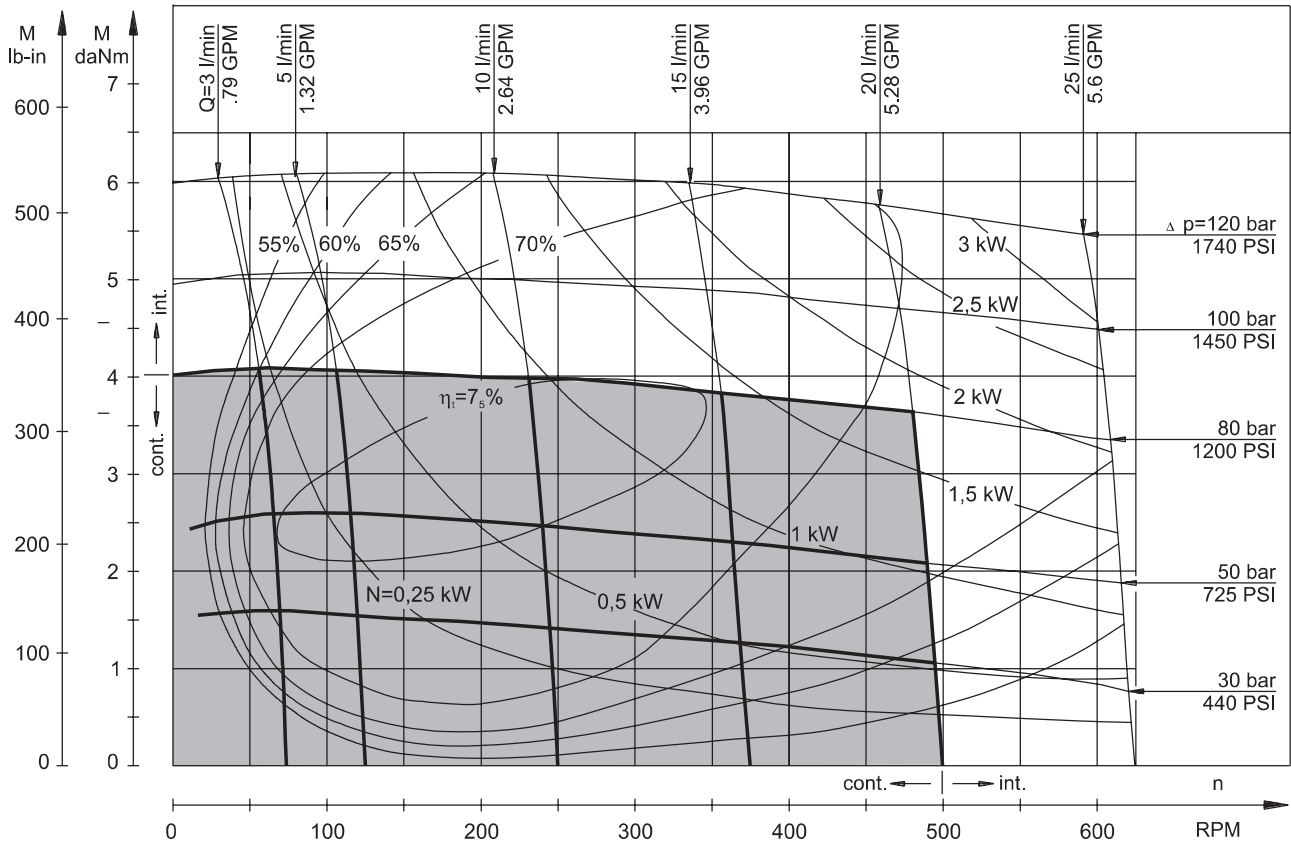
MLHM 32



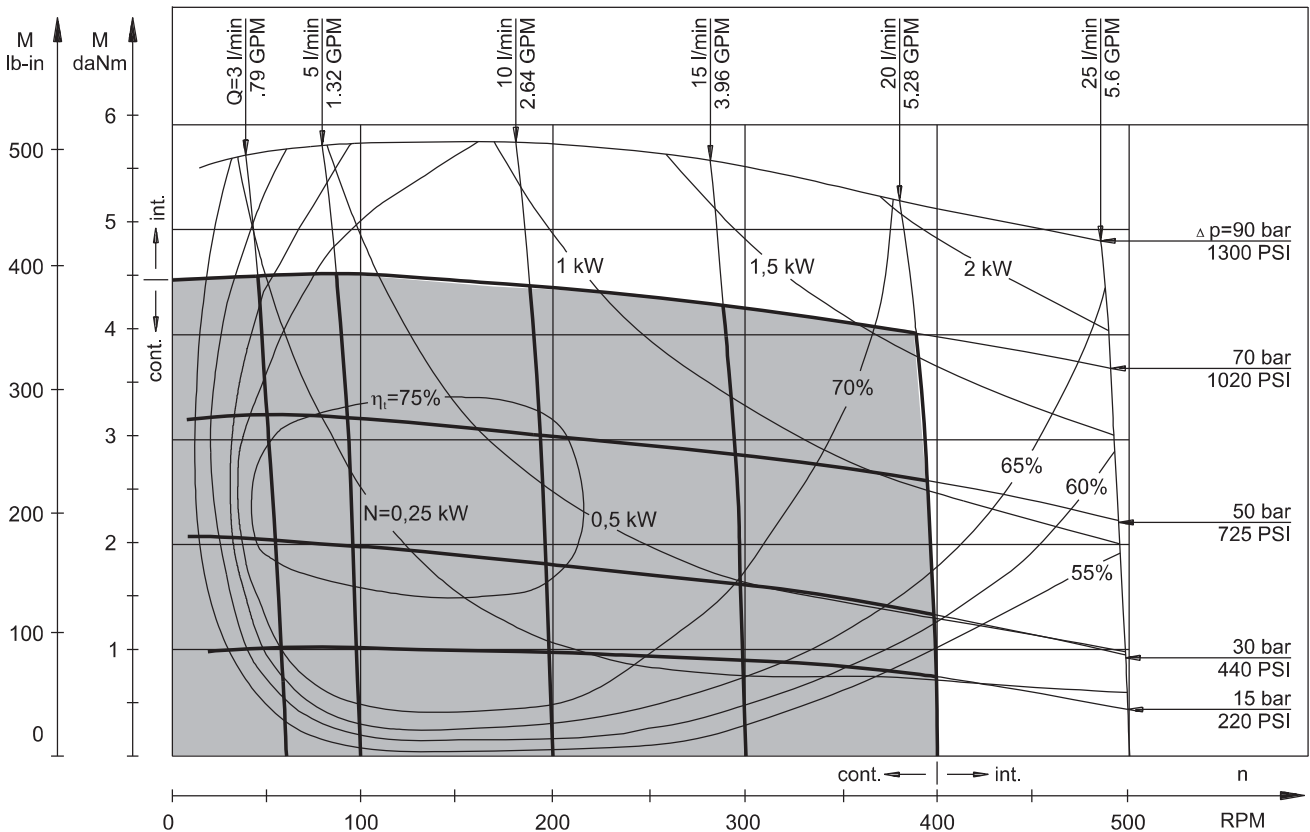
The function diagrams data is for average performance of randomly selected motors at back pressure 72.5÷145 PSI [5÷10 bar] and oil with viscosity of 150 SUS [32 mm²/s] at 122°F [50°C].

FUNCTION DIAGRAMS

MLHM 40

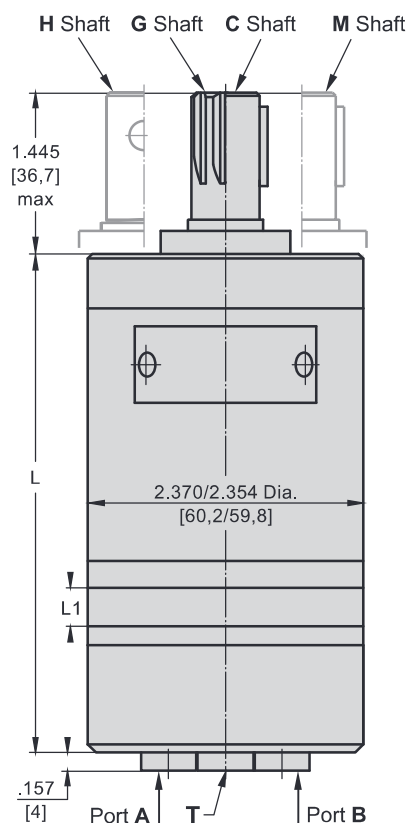


MLHM 50



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].

Three Bolts Mount



Shaft Dim.
See Page 11

Flange Dim.
See Page 10

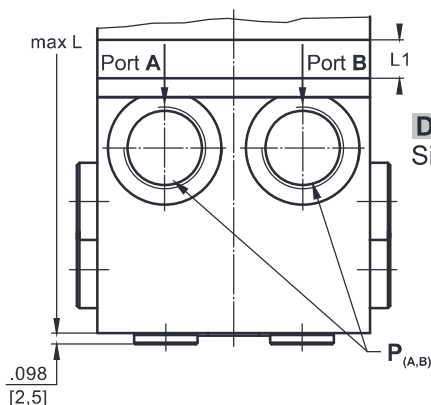
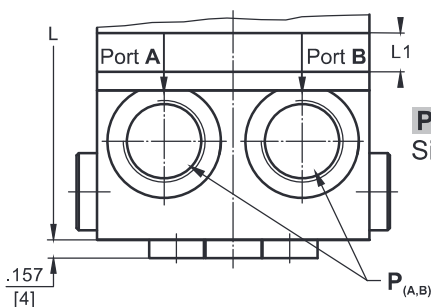
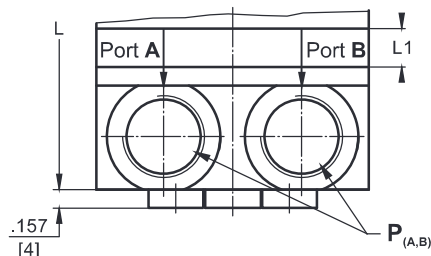
Port Dim.
See Page 10

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

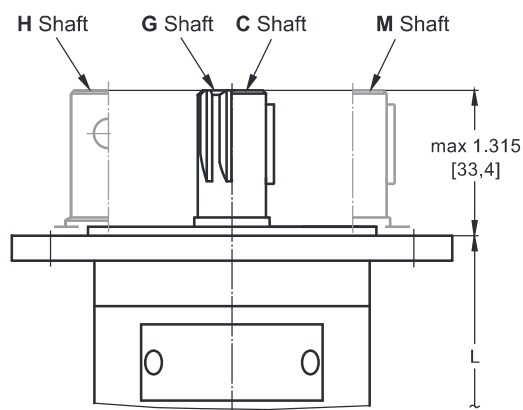
Reverse Rotation
Viewed from Shaft End
Port A Pressurized - **CCW**
Port B Pressurized - **CW**

Rear Ports
Version
6 7 9

Side Ports
Version
2 3 4



F Oval Mount (2 Holes)



Versions			
	2, 6	3, 9	4, 7
P _(A,B)	2xG $\frac{3}{8}$	2xM18x1,5	2x $\frac{9}{16}$ -18 UNF
T	2xG $\frac{1}{8}$	M10x1	$\frac{3}{8}$ -24 UNF

Type	Side Ports L, in [mm]	Rear Ports L, in [mm]	L ₁ , in [mm]
MLHM(M) 8	4.189 [106,4]	4.134 [105,0]	.13 [3,5]
MLHM(M) 12,5	4.268 [108,4]	4.213 [107,0]	.21 [5,5]
MLHM(M) 20	4.386 [111,4]	4.331 [110,0]	.335 [8,5]
MLHM(M) 32	4.583 [116,4]	4.528 [115,0]	.531 [13,5]
MLHM(M) 40	4.720 [119,9]	4.665 [118,5]	.669 [17,0]
MLHM(M) 50	4.878 [123,9]	4.823 [122,5]	.828 [21,0]

Type	Side Ports L, in [mm]	Rear Ports L, in [mm]	L ₁ , in [mm]
MLHMF 8	4.327 [109,9]	4.272 [108,5]	.13 [3,5]
MLHMF 12,5	4.406 [111,9]	4.350 [110,5]	.21 [5,5]
MLHMF 20	4.524 [114,9]	4.469 [113,5]	.335 [8,5]
MLHMF 32	4.720 [119,9]	4.665 [118,5]	.531 [13,5]
MLHMF 40	4.858 [123,4]	4.803 [122,0]	.669 [17,0]
MLHMF 50	5.016 [127,4]	4.961 [126,0]	.828 [21,0]



P
Side Ports

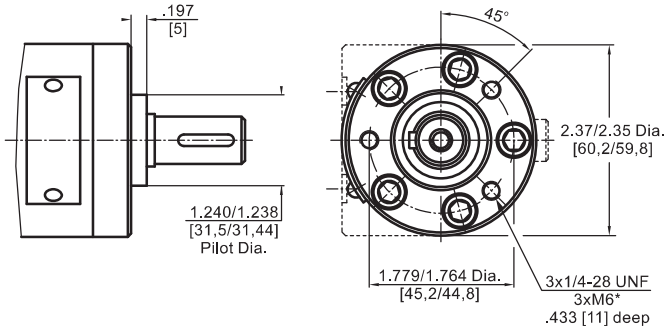
D
Side Ports

Type	L, in [mm]	Type	L, in [mm]	L ₁ , in [mm]
MLHM(M) 8 ...P	4.567 [116,0]	MLHMF 8 ...P	4.665 [118,5]	.138 [3,5]
MLHM(M) 12,5...P	4.646 [118,0]	MLHMF 12,5...P	4.783 [121,5]	.217 [5,5]
MLHM(M) 20 ...P	4.764 [121,0]	MLHMF 20 ...P	4.902 [124,5]	.335 [8,5]
MLHM(M) 32 ...P	4.961 [126,0]	MLHMF 32 ...P	5.059 [128,5]	.531 [13,5]
MLHM(M) 40 ...P	5.079 [129,0]	MLHMF 40 ...P	5.236 [133,0]	.669 [17,0]
MLHM(M) 50 ...P	5.256 [133,5]	MLHMF 50 ...P	5.394 [137,0]	.828 [21,0]

Type	L, in [mm]	Type	L, in [mm]	L ₁ , in [mm]
MLHM(M) 8 ...D	5.319 [135,1]	MLHMF 8 ...D	5.457 [138,6]	.138 [3,5]
MLHM(M) 12,5...D	5.398 [137,1]	MLHMF 12,5...D	5.535 [140,6]	.217 [5,5]
MLHM(M) 20 ...D	5.516 [140,1]	MLHMF 20 ...D	5.654 [143,6]	.335 [8,5]
MLHM(M) 32 ...D	5.713 [145,1]	MLHMF 32 ...D	5.850 [148,6]	.531 [13,5]
MLHM(M) 40 ...D	5.850 [148,6]	MLHMF 40 ...D	5.988 [152,1]	.669 [17,0]
MLHM(M) 50 ...D	6.008 [152,6]	MLHMF 50 ...D	6.146 [156,1]	.828 [21,0]

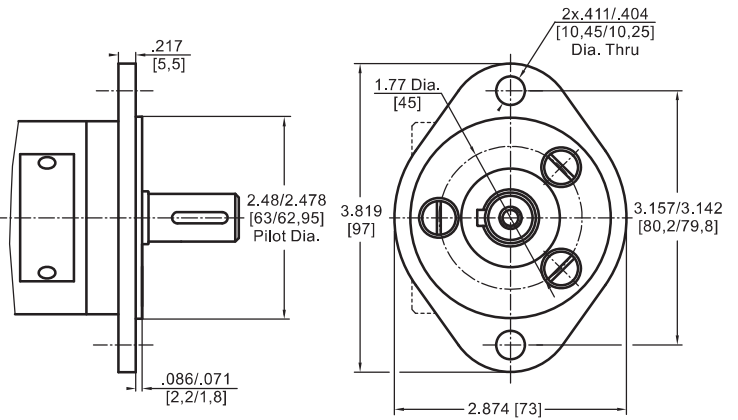
MOUNTING

Three Bolts Mount



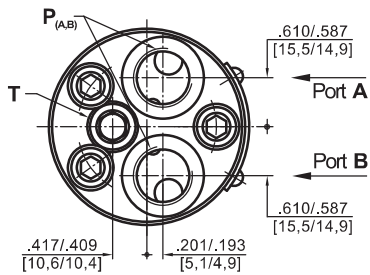
* For M Flange

F Oval Mount (2 Holes)

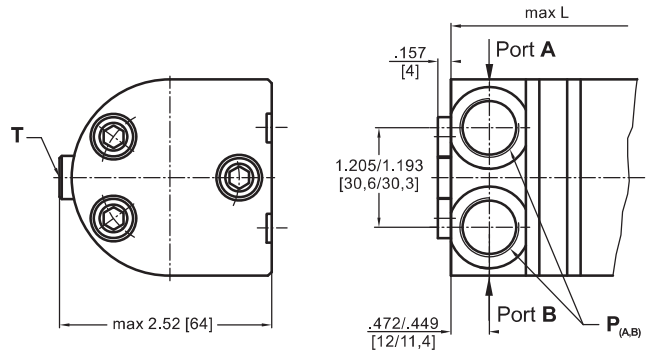


PORTS

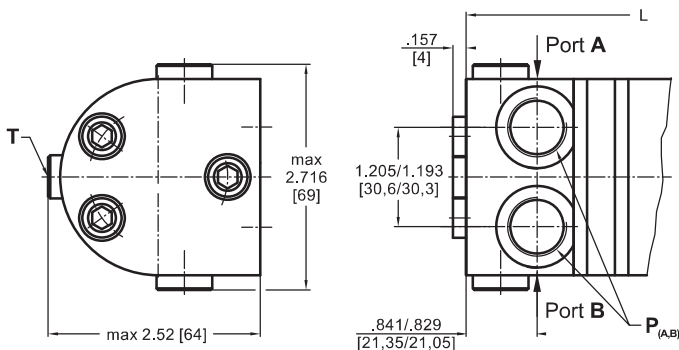
Rear Ports
Version **6** **7** **9**



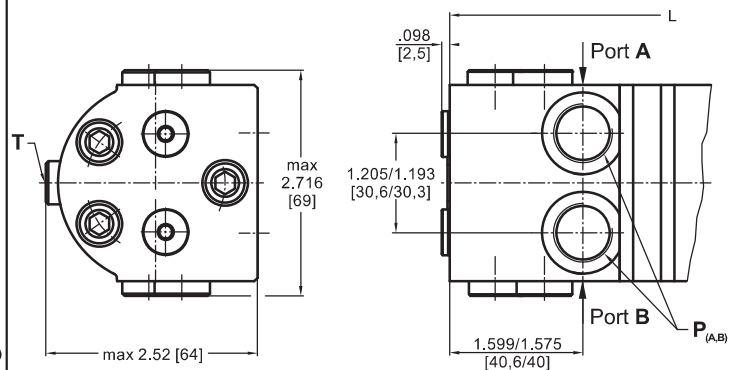
Side Ports, without valves
Version **2** **3** **4**



P Side Ports with Single Crossover Relief Valve

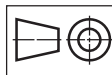


D Side Ports with Dual Crossover Relief Valve



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



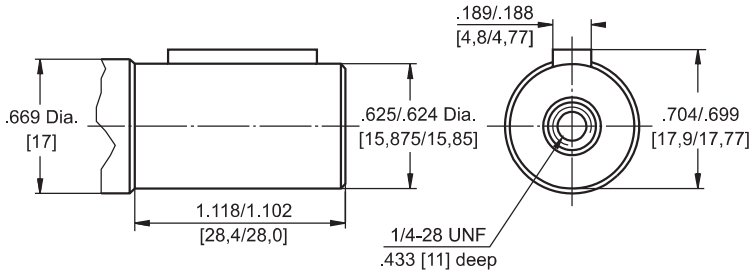
in [mm]

Versions			
	2 , 6	3 , 9	4 , 7
P _(A,B)	2xG $\frac{3}{8}$	2xM18x1,5	2x $\frac{9}{16}$ -18UNF
T	G $\frac{1}{8}$	M10x1	$\frac{3}{8}$ -24UNF

SHAFT EXTENSIONS

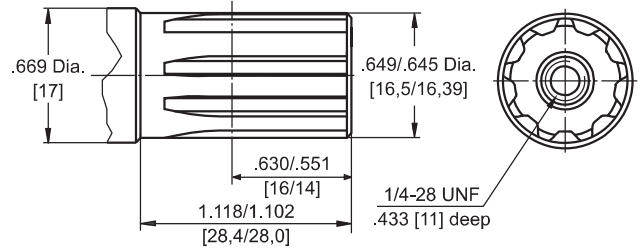
C

$\frac{5}{8}$ " [15,8] straight, Parallel key $\frac{3}{16}$ "x $\frac{3}{16}$ "x $\frac{3}{4}$ " BS 46
Max. Torque 345 lb-in [3,9 daNm]



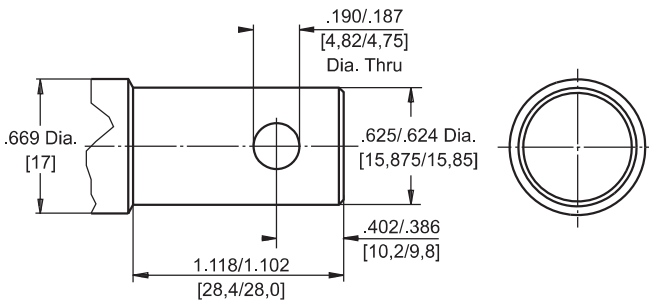
G

Splined - Metric B 17x14 DIN 5482
Max. Torque 390 lb-in [4,4 daNm]



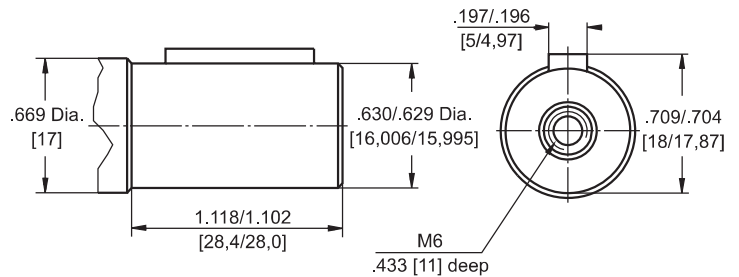
H

$\frac{5}{8}$ " [15,8] straight, w/ .19 [4,82] Crosshole
Max. Torque 345 lb-in [3,9 daNm]



M

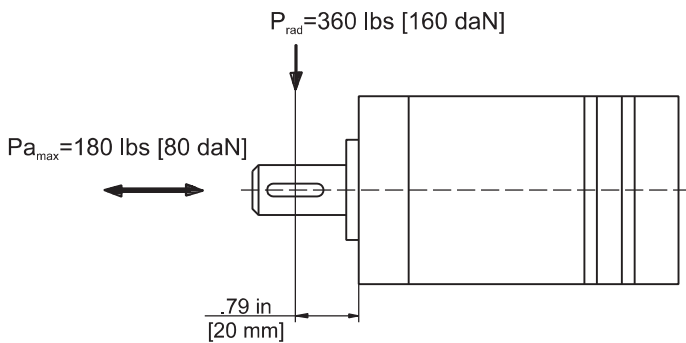
ø16 straight, Parallel key A5x5x16 DIN 6885
Max. Torque 345 lb-in [3,9 daNm]



Requirement max. Torque must be not exceeded.



PERMISSIBLE SHAFT LOAD



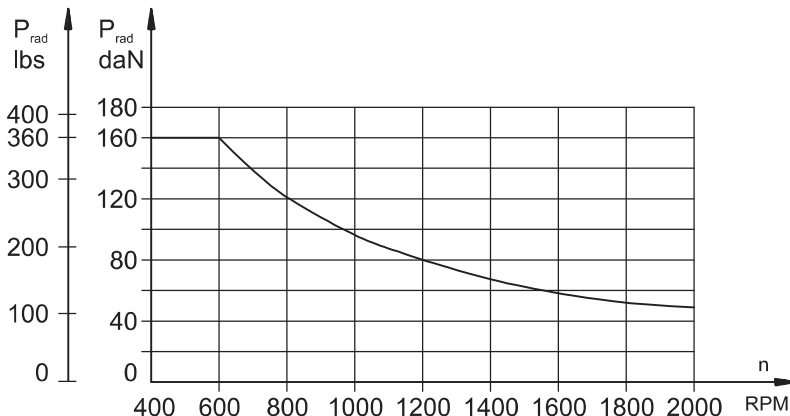
The permissible radial shaft load [P_{rad}] is calculated from the distance [L] between the point of load application and the mounting surface:

$$P_{rad} = \frac{600}{n} \times \frac{13040}{61,5 + L}, [\text{daN}]$$

[L in mm; $L \leq 80$ mm]

$$P_{rad} = \frac{600}{n} \times \frac{1155}{2,42 + L}, [\text{lbs}]$$

[L in inch; $L \leq 3.15$ in]



The drawing shows the permissible radial load when $L = .79$ in [20 mm].

If the calculated shaft load exceeds the permissible, a flexible coupling must be used.

1	2	3	4	5	6	7	8	9
M	L	H	M					

Pos.1 - Mounting Flange

- omit - round, three bolts 1/4-28 UNF
F - flange, two holes
M - round metric, three bolts M6

Pos.2 - Displacement code

- 8** - .5 in³/rev [8,2 cm³/rev]
12.5 - .79 in³/rev [12,9 cm³/rev]
20 - 1.22 in³/rev [20,0 cm³/rev]
32 - 1.93 in³/rev [31,8 cm³/rev]
40 - 2.44 in³/rev [40,0 cm³/rev]
50 - 3.05 in³/rev [50,0 cm³/rev]

Pos.3 - Shaft Extensions* [for dimensions data see page 11]

- C** - 5/8" [15,8] straight, Parallel key
VC - 5/8" [15,8] straight, Parallel key w/ corrosion resistant bushing
G - Involute Splined- Metric B17x14 DIN5482
H - 5/8" [15,8] straight, Parallel key w/ .19 [4,82] Crosshole
M - 16 mm straight, Parallel key
VM - 16 mm straight, Parallel key w/ corrosion resistant bushing

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

- 2** - side ports, 2xG3/8, G1/8, BSP thread, ISO 228
3 - side ports, 2xM18x1,5; M10x1; metric, ISO 262
4 - side ports, 2x9/16-18 UNF, O-ring, 3/8-24 UNF
6 - rear ports, 2xG3/8, G1/8, BSP thread, ISO 228
7 - rear ports, 2x9/16-18 UNF, O-ring, 3/8-24 UNF
9 - rear ports, 2xM18x1,5; M10x1; metric, ISO 262

Pos.5 - Option**

- omit - without valves
D - side ports with dual crossover relief valve
P - side ports with single crossover relief valve

Pos.6 - Directions for Control [for "P" option only]

- /L** - B → A (left control)
/R - A → B (right control)

Pos.7 - Valve Rated Pressure [for "P" and "D" option only]

- /50** - Δp= 725 PSI [50 bar]
/80 - Δp=1160 PSI [80 bar]
/100 - Δp=1450 PSI [100 bar]
/140 - Δp=2030 PSI [140 bar]

Pos.8 - Special Features [see page 103]

Pos.9 - Design Series

- omit - Factory specified

NOTES: * The permissible output torque for shafts must not be exceeded!

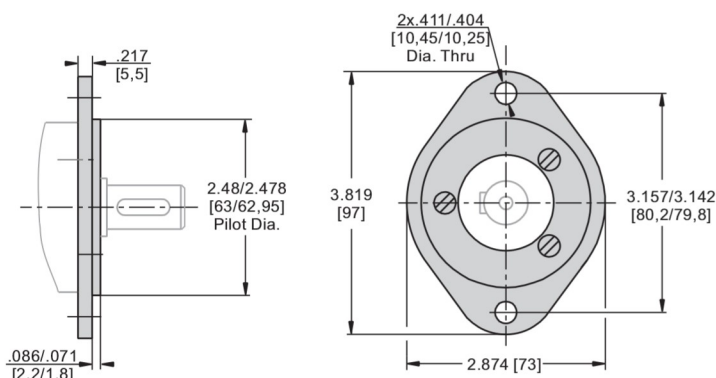
** Options **P**, **D** - for side ports (2, 3, 4) only.

The hydraulic motors are mangano-phosphatized as standard.

⚠ MLHMP and MLHMD are available with new crossover relief valves with improved characteristics. The new valves allow easier pressure setting in a wider range: from 725 PSI to 2030 PSI [50÷140 bar]. For more information about MLHMP and MLHMD - series 2 please contact with "M+S Hydraulic".

F - Flange (2 Holes)

Order No for Flange:48443 029 00



F Flange is mounted to the motor with 3 screws - 1/4-28 UNF.
 Tightening Torque: 45÷53 lb-in [5÷6 Nm].