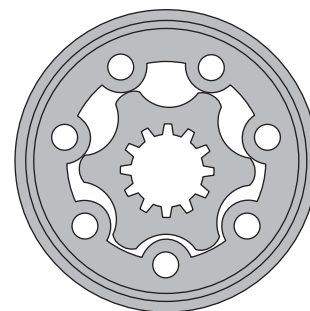


HYDRAULIC MOTORS MLHP



APPLICATION

- » Conveyors
- » Feeding mechanism of robots and manipulators
- » Metal working machines
- » Textile machines
- » Agricultural machines
- » Food industries
- » Grass cutting machinery etc.



CONTENTS

Specification data	14÷17
Function diagrams	18÷24
Dimensions and mounting	25÷26
Wheel motor	27
Shaft extensions	28÷29
Permissible shaft loads	30
Permissible shaft Seal Pressure ...	31
Order code	32

OPTIONS

- » Model - Spool valve, gerotor
- » Flange and wheel mount
- » Motor with needle bearing
- » Side and rear ports
- » Shafts - straight, splined and tapered
- » Shaft seal for high and low pressure
- » SAE, Metric and BSPP ports
- » Speed sensing
- » Other special features

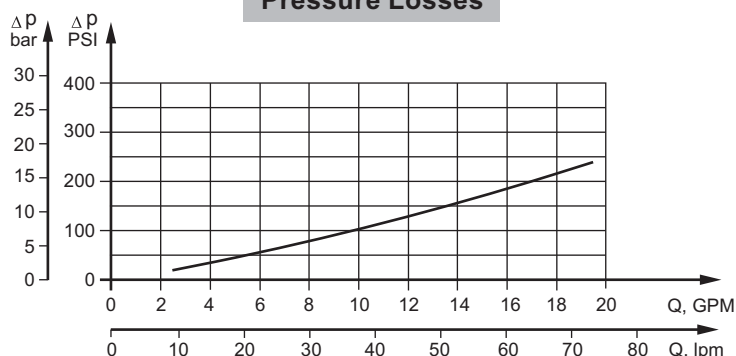
GENERAL

Max. Displacement, in ³ /rev [cm ³ /rev]	38.05 [623,6]
Max. Speed, [RPM]	1815
Max. Torque, lb-in [daNm]	cont.:4415 [50] int.: 5565 [64]
Max. Output, HP [kW]	17.1 [12,8]
Max. Pressure Drop, PSI [bar]	cont.:2030 [140] int.:2540 [175]
Max. Oil Flow, GPM [lpm]	19.8 [75]
Min. Speed, [RPM]	10
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]
1450 [100]	98 [20]	.660 [2,5]
	164 [35]	.476 [1,8]
2030 [140]	98 [20]	.925 [3,5]
	164 [35]	.740 [2,8]

Pressure Losses



SPECIFICATION DATA

Specification Data for MLHP... motors with **C, D, G, H, M, S** and **T** shafts.
(1.124 [28,56] sealing diameter)

Type		MLHP 25	MLHP 32	MLHP 40	MLHP 50	MLHP 80	MLHP 100	MLHP 125
Displacement, in³/rev [cm³/rev]		1.52 [25]	1.95 [32]	2.44 [40]	3.02 [49,5]	4.83 [79,2]	6.04 [99]	7.55 [123,8]
Max. Speed, [RPM]	Cont.	1600	1560	1500	1210	755	605	486
	Int.*	1815	1720	1750	1515	945	755	605
Max. Torque lb-in [daNm]	Cont.	290 [3,3]	380 [4,3]	550 [6,2]	835 [9,4]	1340 [15,1]	1710 [19,3]	2100 [23,7]
	Int.*	415 [4,7]	540 [6,1]	730 [8,2]	1050 [11,9]	1725 [19,5]	2100 [23,7]	2640 [29,8]
	Peak**	595 [6,7]	760 [8,6]	950 [10,7]	1285 [14,3]	1985 [22,4]	2435 [27,5]	3235 [36,5]
Max. Output HP [kW]	Cont.	6.0 [4,5]	7.8 [5,8]	11.5 [8,4]	13.5 [10,1]	13.7 [10,2]	14.1 [10,5]	13.7 [10,2]
	Int.*	8.2 [6,1]	10.5 [7,8]	15.5 [11,6]	16.1 [12,2]	16.8 [12,5]	17.1 [12,8]	16.1 [12]
Max. Pressure Drop PSI [bar]	Cont.	1450 [100]	1450 [100]	1750 [120]	2030 [140]	2030 [140]	2030 [140]	2030 [140]
	Int.*	2030 [140]	2030 [140]	2250 [155]	2540 [175]	2540 [175]	2540 [175]	2540 [175]
	Peak**	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]
Max. Oil Flow GPM [lpm]	Cont.	10.5 [40]	13.2 [50]	15.9 [60]	15.9 [60]	15.9 [60]	15.9 [60]	15.9 [60]
	Int.*	11.9 [45]	14.5 [55]	18.5 [70]	19.8 [75]	19.8 [75]	19.8 [75]	19.8 [75]
Max. Inlet Pressure PSI [bar]	Cont.	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]
	Int.*	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]
	Peak**	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]
Max. Return Pres- sure with Drain Line PSI [bar]	Cont.	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]
	Int.*	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]
	Peak**	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]
Max. Starting Pressure with Unloaded Shaft, PSI [bar]		145 [10]	145 [10]	145 [10]	145 [10]	145 [10]	145 [10]	131 [9]
Min. Starting Torque lb-in [daNm]	At max.press. drop Cont.	265 [3,0]	355 [4,0]	480 [5,4]	690 [7,8]	1170 [13,2]	1470 [16,6]	1830 [20,7]
	At max.press. drop Int.*	370 [4,2]	500 [5,6]	600 [6,8]	885 [10]	1490 [16,8]	1860 [21]	2360 [26,6]
Min. Speed***, [RPM]		20	15	10	10	10	10	10
Weight, lb [kg] For rear ports +.992 [0,450]	MLHP(F)(N)	12.3 [5,6]	12.4 [5,6]	12.6 [5,7]	12.8 [5,8]	13.2 [5,9]	13.5 [6,1]	13,7 [6,2]
	MLHPW(N)	11.7 [5,3]	11.7 [5,3]	11.9 [5,4]	12.1 [5,5]	12.4 [5,6]	12.8 [5,8]	13 [5,9]
	MLHPQ(M)(N)	11.1 [5,0]	11.1 [5,0]	11.2 [5,1]	11.5 [5,2]	11.7 [5,3]	12.1 [5,5]	12.3 [5,6]

* 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 10-15 minutes.

SPECIFICATION DATA (continued)

Specification Data for MLHP... motors with **C, D, G, H, M, S** and **T** shafts.
(1.124 [28,56] sealing diameter)

Type		MLHP 160	MLHP 200	MLHP 250	MLHP 315	MLHP 400	MLHP 500	MLHP 630
Displacement, in³/rev [cm³/rev]		9.66 [158,4]	12.1 [198]	15.1 [247,5]	19.3 [316,8]	24.16 [396]	30.2 [495]	38.05 [623,6]
Max. Speed, [RPM]	Cont.	378	303	242	190	150	120	95
	Int.*	472	378	303	236	189	150	120
Max. Torque lb-in [daNm]	Cont.	2770 [31,3]	3240 [36,6]	3360 [38]	3360 [38]	3190 [36]	3452 [39]	3895 [44]
	Int.*	3345 [37,8]	4035 [45,6]	5160 [58,3]	4960 [56]	5240 [59]	5045 [57]	5665 [64]
	Peak**	3880 [43,8]	4870 [55]	6060 [68,5]	7505 [85]	7560 [85,4]	6903 [78]	7257 [82]
Max. Output HP [kW]	Cont.	13.5 [10,1]	13.5 [10]	10 [7,5]	7.9 [5,8]	6.2 [4,6]	4.7 [3,5]	4.4 [3,3]
	Int.*	16.2 [12,1]	16.1 [12]	16.1 [12]	12.1 [9]	10.5 [7,8]	9.7 [7,2]	7.5 [5,6]
Max. Pressure Drop PSI [bar]	Cont.	2030 [140]	2030 [140]	1600 [110]	1300 [90]	1015 [70]	870 [60]	800 [55]
	Int.*	2540 [175]	2540 [175]	2540 [175]	2030 [140]	1665 [115]	1305 [90]	1160 [80]
	Peak**	3260 [225]	3260 [225]	3260 [225]	3260 [225]	2610 [180]	1885 [130]	1740 [110]
Max. Oil Flow GPM [lpm]	Cont.	15.9 [60]	15.9 [60]	15.9 [60]	15.9 [60]	15.9 [60]	15.9 [60]	15.9 [60]
	Int.*	19.8 [75]	19.8 [75]	19.8 [75]	19.8 [75]	19.8 [75]	19.8 [75]	19.8 [75]
Max. Inlet Pressure PSI [bar]	Cont.	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2030 [140]	2030 [140]
	Int.*	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2540 [175]	2540 [175]
	Peak**	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]
Max. Return Pres- sure with Drain Line PSI [bar]	Cont.	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2030 [140]	2030 [140]
	Int.*	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2540 [175]	2540 [175]
	Peak**	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3262 [225]	3260 [225]	3260 [225]
Max. Starting Pressure with Unloaded Shaft, PSI [bar]		116 [8]	100 [7]	87 [6]	73 [5]	73 [5]	73 [5]	73 [5]
Min. Starting Torque lb-in [daNm]	At max.press. drop Cont.	2500 [28,2]	2950 [33,5]	2970 [33,6]	3045 [34,4]	3050 [34,5]	3180 [36]	3670 [41,5]
	At max.press. drop Int.*	3140 [35,5]	3770 [42,6]	4795 [54,2]	5480 [61,9]	5390 [60,8]	4780 [54]	5480 [62]
Min. Speed***, [RPM]		10	10	10	10	10	10	10
Weight, lb [kg] For rear ports +.992 [0,450]	MLHP(F)(N)	14.1 [6,4]	14.6 [6,6]	15 [6,8]	15.6 [7,1]	16.8 [7,6]	20 [8,9]	21.4 [9,5]
	MLHPW(N)	13.5 [6,1]	13.9 [6,3]	14.3 [6,5]	15 [6,8]	15.9 [7,2]	19.0 [8,6]	20.3 [9,2]
	MLHPQ(M)(N)	12.8 [5,8]	13.2 [6]	13.7 [6,2]	14.3 [6,5]	15 [6,8]	18.3 [8,3]	19.8 [9]

* 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 10-15 minutes.

SPECIFICATION DATA (continued)

Specification Data for MLHP... motors with **B, K, R** and **L** shafts.
(1.378 [35] sealing diameter)

Type		MLHP 25	MLHP 32	MLHP 40	MLHP 50	MLHP 80	MLHP 100	MLHP 125
Displacement, in³/rev [cm³/rev]		1.52 [25]	1.95 [32]	2.44 [40]	3.02 [49,5]	4.83 [79,2]	6.04 [99]	7.55 [123,8]
Max. Speed, [RPM]	Cont.	1600	1560	1500	1210	755	605	486
	Int.*	1800	1720	1750	1515	945	755	605
Max. Torque lb-in [daNm]	Cont.	290 [3,3]	380 [4,3]	550 [6,2]	835 [9,43]	1340 [15,15]	1710 [19,3]	2100 [23,7]
	Int.*	415 [4,7]	540 [6,1]	730 [8,2]	1050 [11,9]	1725 [19,5]	2100 [23,7]	2640 [29,8]
	Peak**	595 [6,7]	760 [8,6]	950 [10,7]	1285 [14,3]	1985 [22,4]	2435 [27,5]	3235 [36,5]
Max. Output HP [kW]	Cont.	6.0 [4,5]	7.8 [5,8]	11.5 [8,5]	13.5 [10,1]	13.7 [10,2]	14.1 [10,5]	13.7 [10,2]
	Int.*	8.2 [6,1]	10.5 [7,8]	15.5 [11,6]	16.1 [12,2]	16.8 [12,5]	17.1 [12,8]	16.1 [12]
Max. Pressure Drop PSI [bar]	Cont.	1450 [100]	1450 [100]	1750 [120]	2030 [140]	2030 [140]	2030 [140]	2030 [140]
	Int.*	2030 [140]	2030 [140]	2250 [155]	2540 [175]	2540 [175]	2540 [175]	2540 [175]
	Peak**	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]
Max. Oil Flow GPM [lpm]	Cont.	10.5 [40]	13.2 [50]	15.9 [60]	15.9 [60]	15.9 [60]	15.9 [60]	15.9 [60]
	Int.*	11.9 [45]	14.5 [55]	18.5 [70]	19.8 [75]	19.8 [75]	19.8 [75]	19.8 [75]
Max. Inlet Pressure PSI [bar]	Cont.	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]
	Int.*	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]
	Peak**	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]
Max. Return Pres- sure with Drain Line PSI [bar]	Cont.	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]
	Int.*	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]
	Peak**	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]
Max. Starting Pressure with Unloaded Shaft, PSI [bar]		145 [10]	145 [10]	145 [10]	145 [10]	145 [10]	145 [10]	131 [9]
Min. Starting Torque lb-in [daNm]	At max.press. drop Cont.	265 [3,0]	355 [4,0]	480 [5,4]	690 [7,8]	1170 [13,2]	1470 [16,6]	1830 [20,7]
	At max.press. drop Int.*	370 [4,2]	500 [5,6]	600 [6,8]	885 [10]	1490 [16,8]	1860 [21]	2360 [26,6]
Min. Speed***, [RPM]		20	15	10	10	10	10	10
Weight, lb [kg]		12.3 [5,6]	12.4 [5,6]	12.6 [5,7]	13[5,9]	13.2[6]	13.7[6,2]	13.9[6,3]
For rear ports: +.992 [0,450]								

* 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 10-15 minutes.

SPECIFICATION DATA (continued)

Specification Data for MLHP... motors with **B, K, R** and **L** shafts.

(1.378 [35] sealing diameter)

Type		MLHP 160	MLHP 200	MLHP 250	MLHP 315	MLHP 400	MLHP 500	MLHP 630
Displacement, in³/rev [cm³/rev]		9.66 [158,4]	12.1 [198]	15.1 [247,5]	19.3 [316,8]	24.16 [396]	30.2 [495]	38.05 [623,6]
Max. Speed, [RPM]	Cont.	378	303	242	190	150	120	95
	Int.*	472	378	303	236	189	150	120
Max. Torque lb-in [daNm]	Cont.	2770 [31,3]	3240 [36,6]	4160 [47]	4360 [48]	4415 [50]	3452 [39]	3895 [44]
	Int.*	3345 [37,8]	4035 [45,6]	5160 [58,3]	4960 [56]	5240 [59]	5045 [57]	5665 [64]
	Peak**	3875 [43,8]	4870 [55]	6060 [68,5]	7505 [85]	7560 [85,4]	6903 [78]	7257 [82]
Max. Output HP [kW]	Cont.	13.5 [10,1]	13.5 [10]	12.1 [9]	10.2 [7,6]	8.3 [6,2]	4.7 [3,5]	4.4 [3,3]
	Int.*	16.2 [12,1]	16.1 [12]	16.1 [12]	12.1 [9]	10.5 [7,8]	9,7 [7,2]	7.5 [5,6]
Max. Pressure Drop PSI [bar]	Cont.	2030 [140]	2030 [140]	3030 [140]	1740 [120]	1400 [95]	870 [60]	800 [55]
	Int.*	2540 [175]	2540 [175]	2540 [175]	2030 [140]	1670 [115]	1305 [90]	1160 [80]
	Peak**	3260 [225]	3260 [225]	3260 [225]	3260 [225]	2610 [180]	1885 [130]	1740 [110]
Max. Oil Flow GPM [lpm]	Cont.	15.9 [60]	15.9 [60]	15.9 [60]	15.9 [60]	15.9 [60]	15.9 [60]	15.9 [60]
	Int.*	19.8 [75]	19.8 [75]	19.8 [75]	19.8 [75]	19.8 [75]	19.8 [75]	19.8 [75]
Max. Inlet Pressure PSI [bar]	Cont.	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2030 [140]	2030 [140]
	Int.*	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2540 [175]	2540 [175]
	Peak**	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]
Max. Return Pres- sure with Drain Line PSI [bar]	Cont.	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2030 [140]	2030 [140]
	Int.*	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2540 [175]	2540 [175]
	Peak**	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3262 [225]	3260 [225]	3260 [225]
Max. Starting Pressure with Unloaded Shaft, PSI [bar]		116 [8]	100 [7]	87 [6]	73 [5]	73 [5]	73 [5]	73 [5]
Min. Starting Torque lb-in [daNm]	At max.press. drop Cont.	2500 [28,2]	2950 [33,5]	3790 [42,8]	4050 [45,8]	4140 [46,8]	3180 [36]	3670 [41,5]
	At max.press. drop Int.*	3140 [35,5]	3770 [42,6]	4795 [54,2]	5480 [61,9]	5390 [60,8]	4780 [54]	5480 [62]
Min. Speed***, [RPM]		10	10	10	10	10	10	10
Weight, lb [kg]		14.3[6,5]	14.8[6,7]	15.2[6,9]	15.9[7,2]	17[7,7]	19.9 [9,0]	21.2 [9,6]
For rear ports: +.992 [0,450]								

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

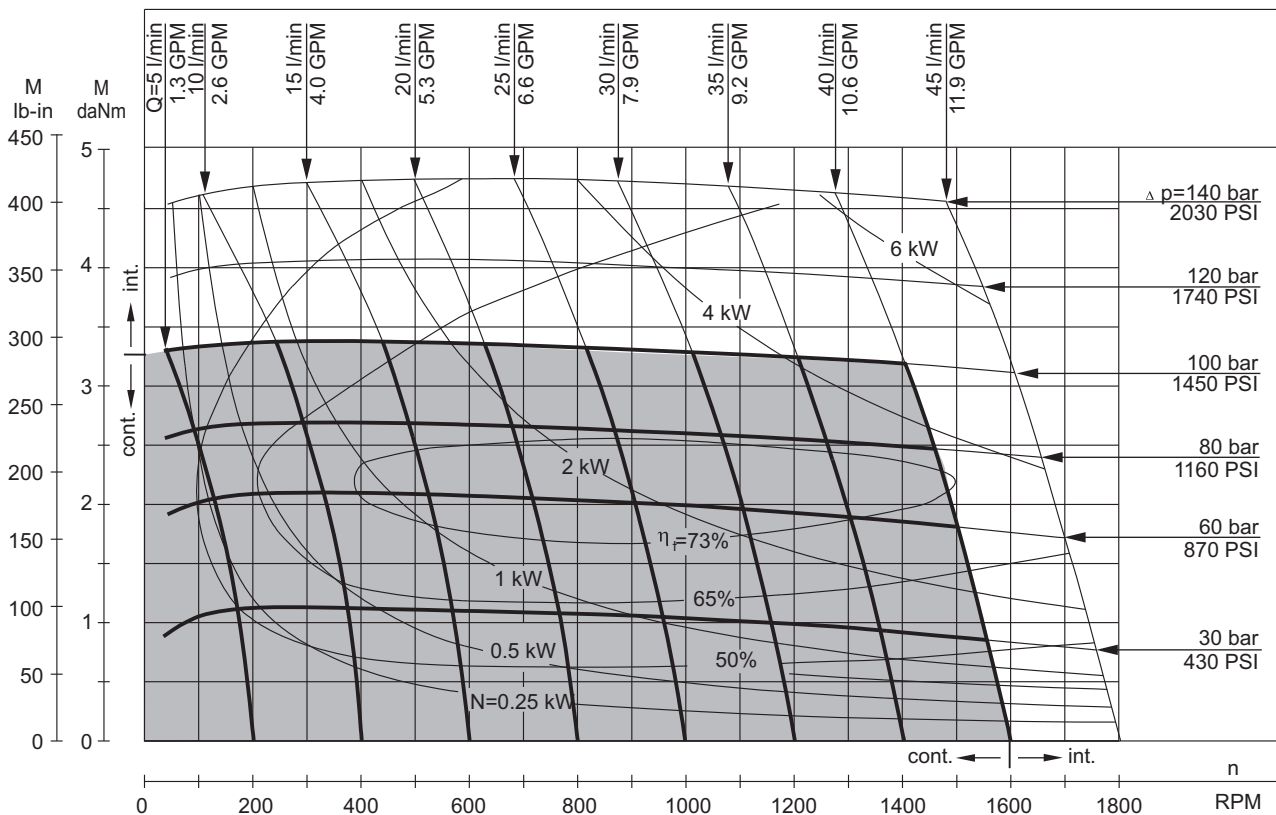
** Peak load: the permissible values may occur for max. 1% of every minute.

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

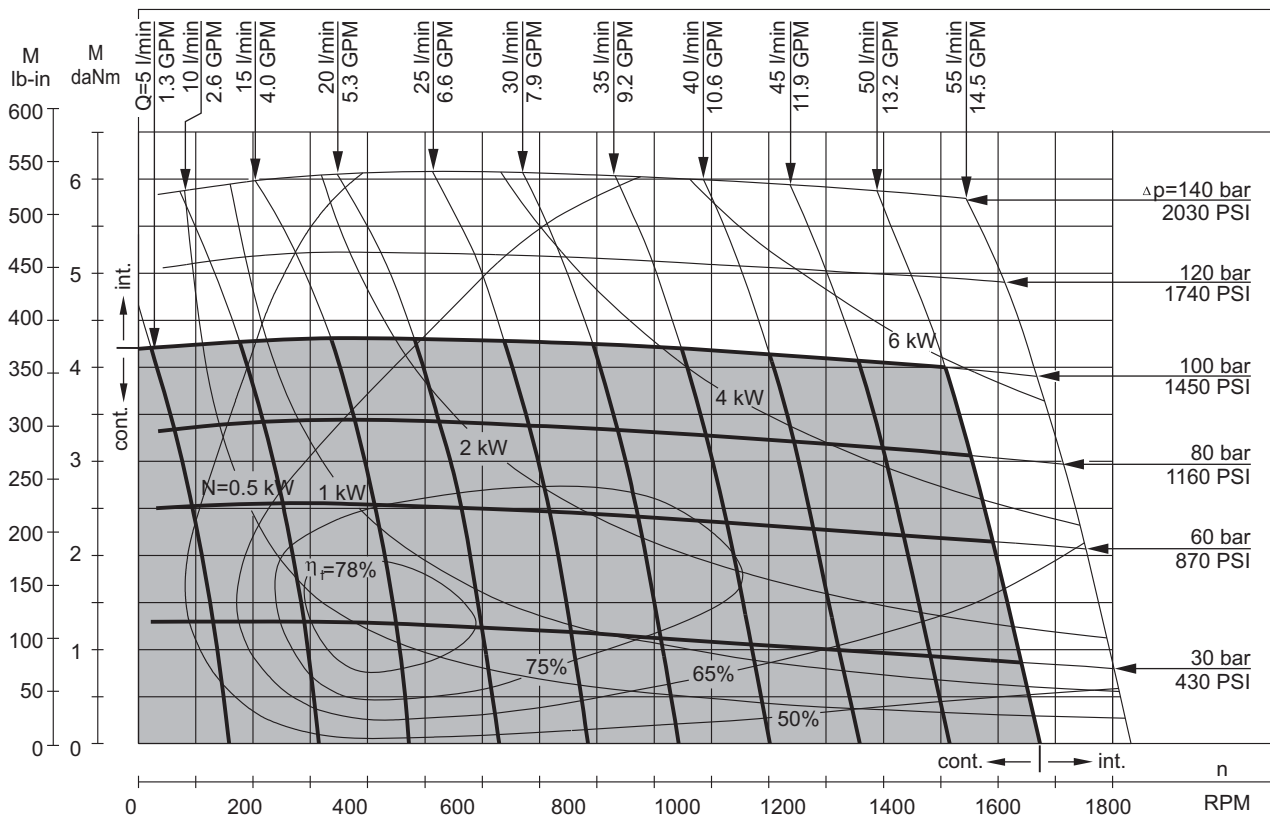
- Intermittent speed and intermittent pressure drop must not occur simultaneously.
- Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
- Recommend using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) or HM (ISO 6743/4).
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 10-15 minutes.

FUNCTION DIAGRAMS

MLHP 25



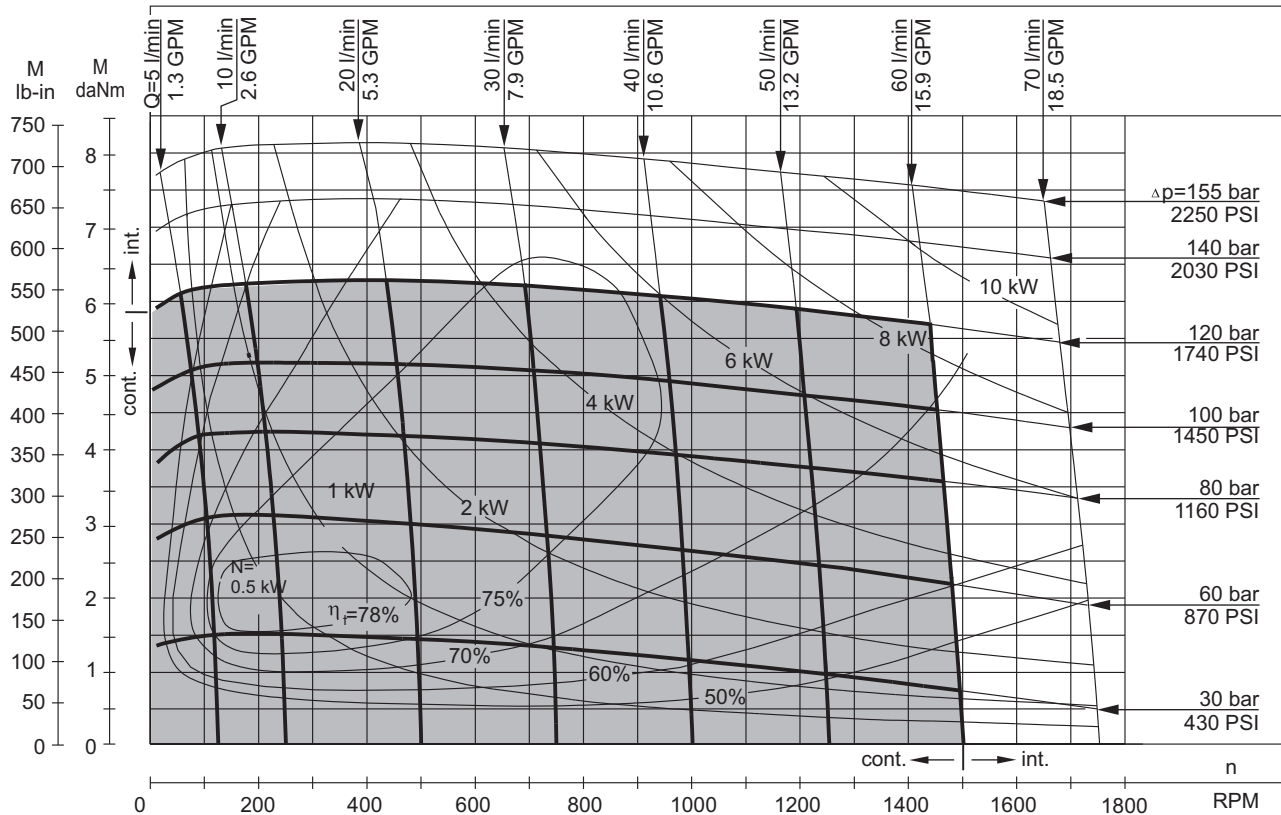
MLHP 32



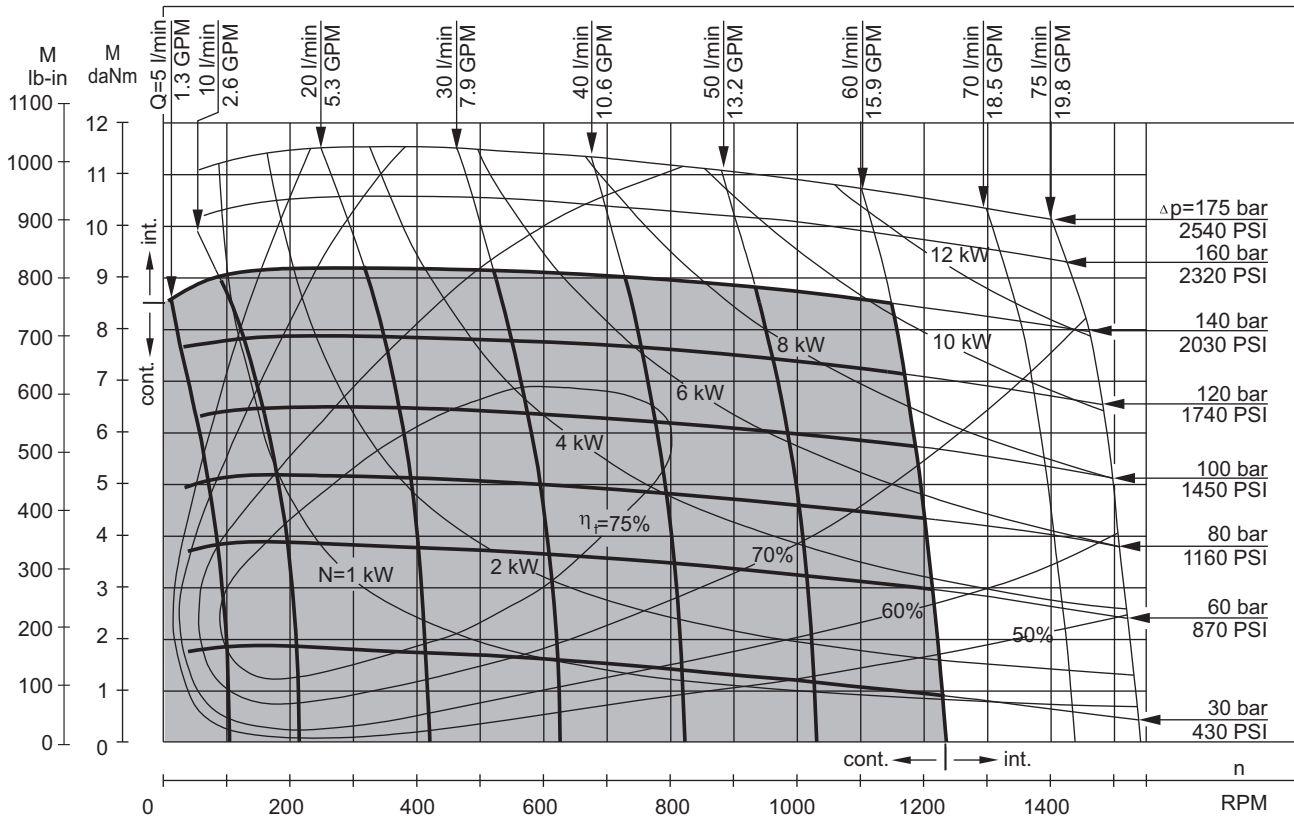
The function diagrams data is for average performance of randomly selected motors at back pressure 72.5÷145 PSI [5÷10 bar] and oil with viscosity of 150 SUS [32 mm²/s] at 122°F [50°C].

FUNCTION DIAGRAMS

MLHP 40



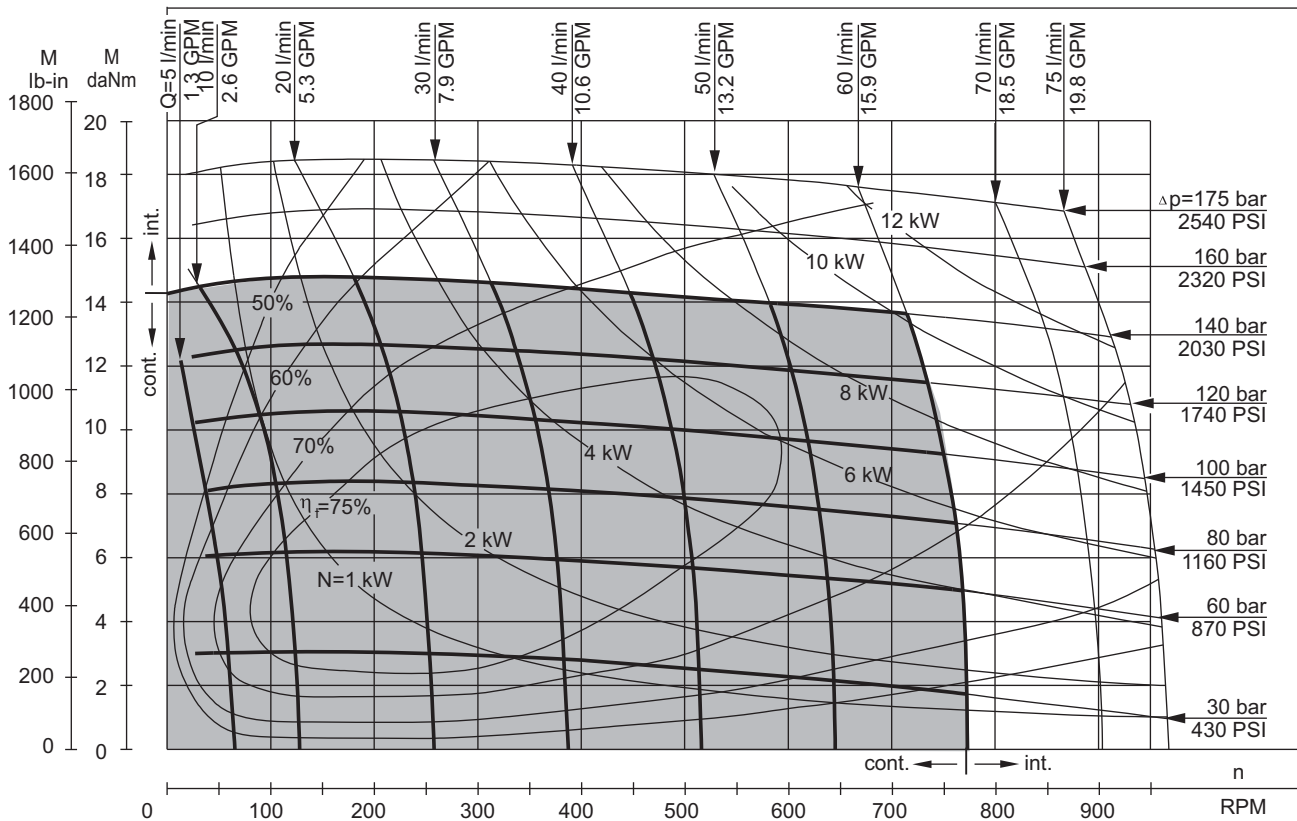
MLHP 50



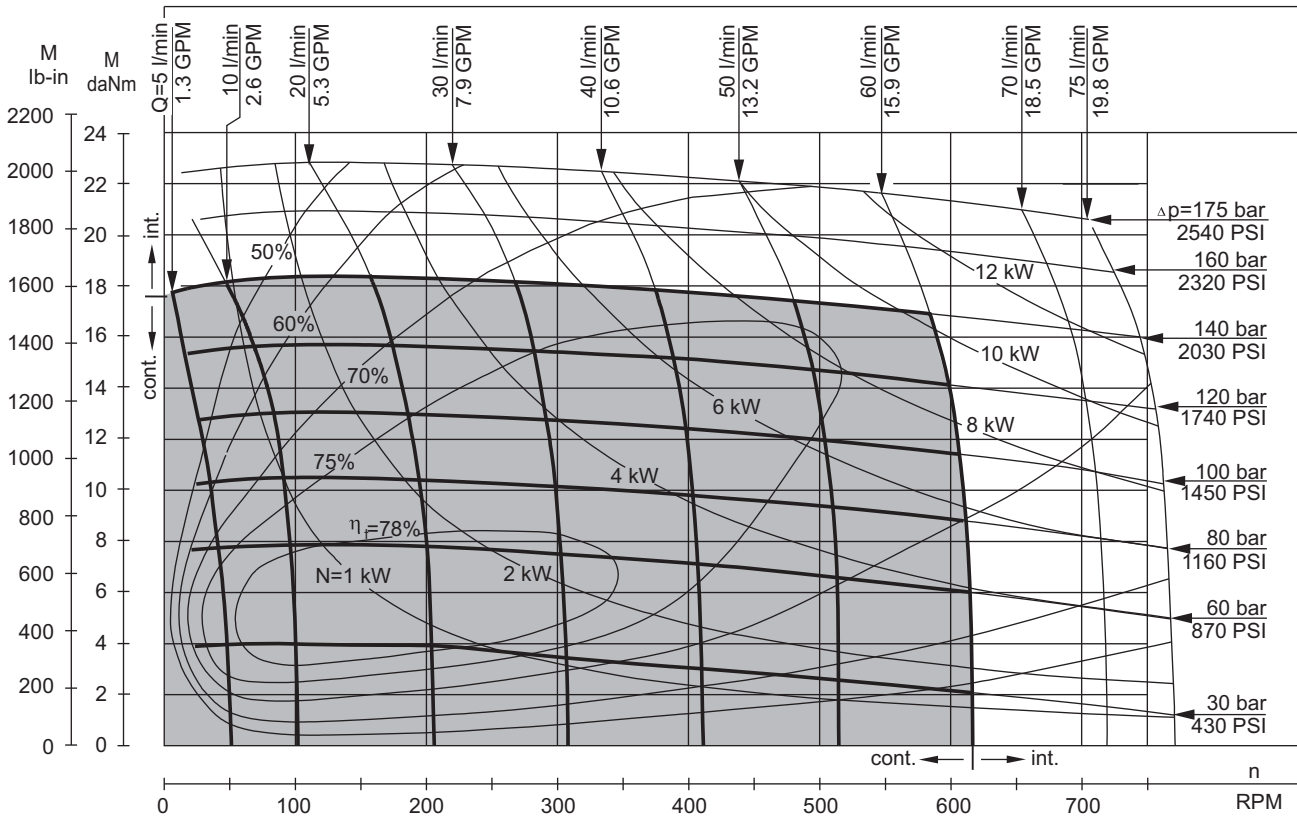
The function diagrams data is for average performance of randomly selected motors at back pressure 72.5-145 PSI [5-10 bar] and oil with viscosity of 150 SUS [32 mm²/s] at 122°F [50°C].

FUNCTION DIAGRAMS

MLHP 80



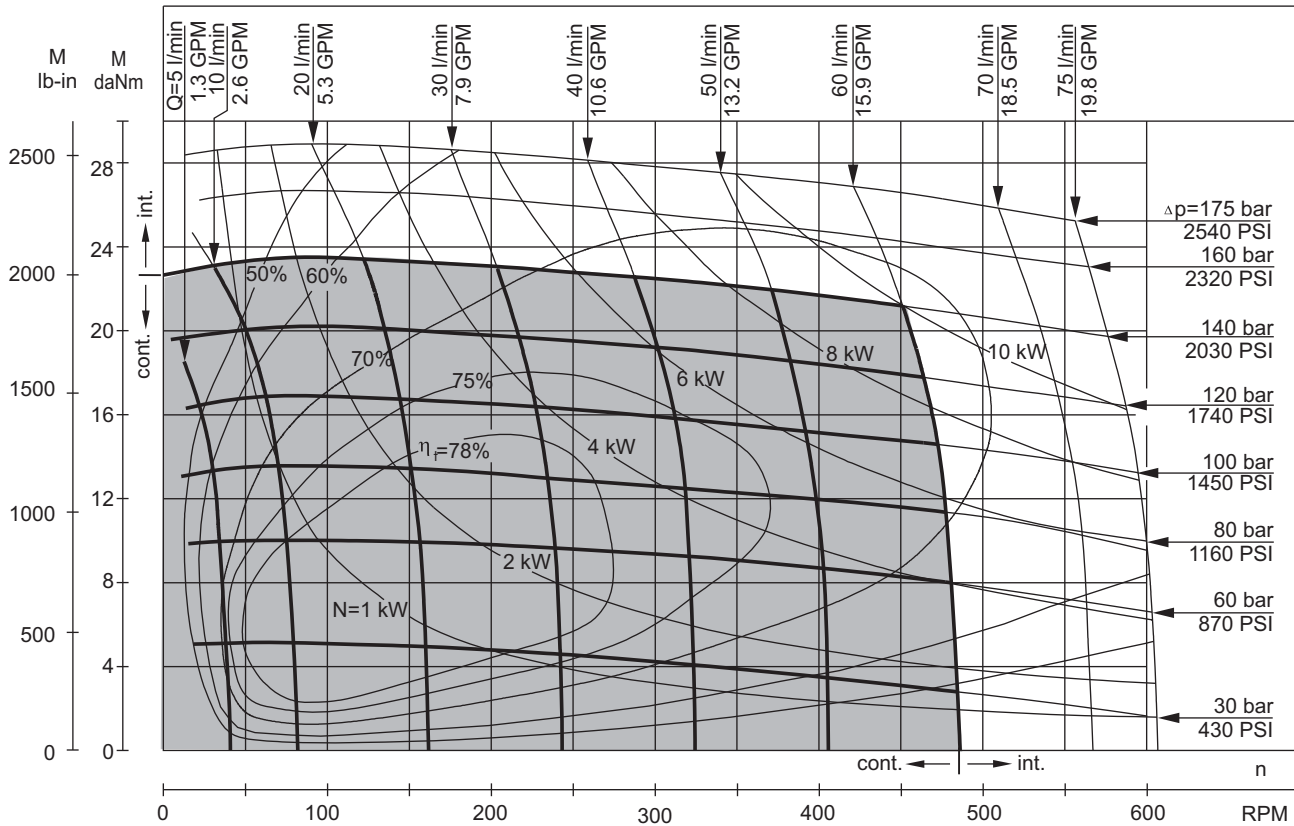
MLHP 100



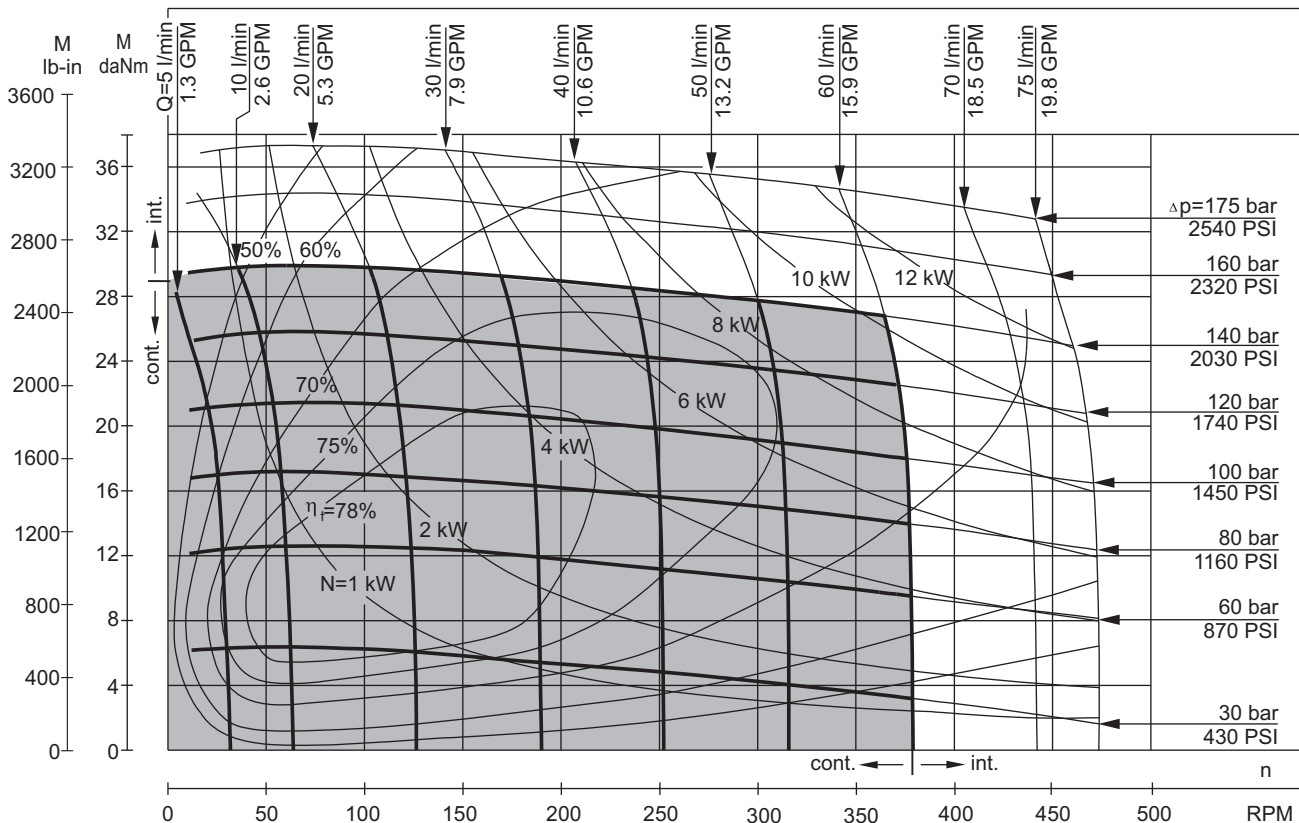
The function diagrams data is for average performance of randomly selected motors at back pressure 72.5÷145 PSI [5÷10 bar] and oil with viscosity of 150 SUS [32 mm²/s] at 122°F [50°C].

FUNCTION DIAGRAMS

MLHP 125



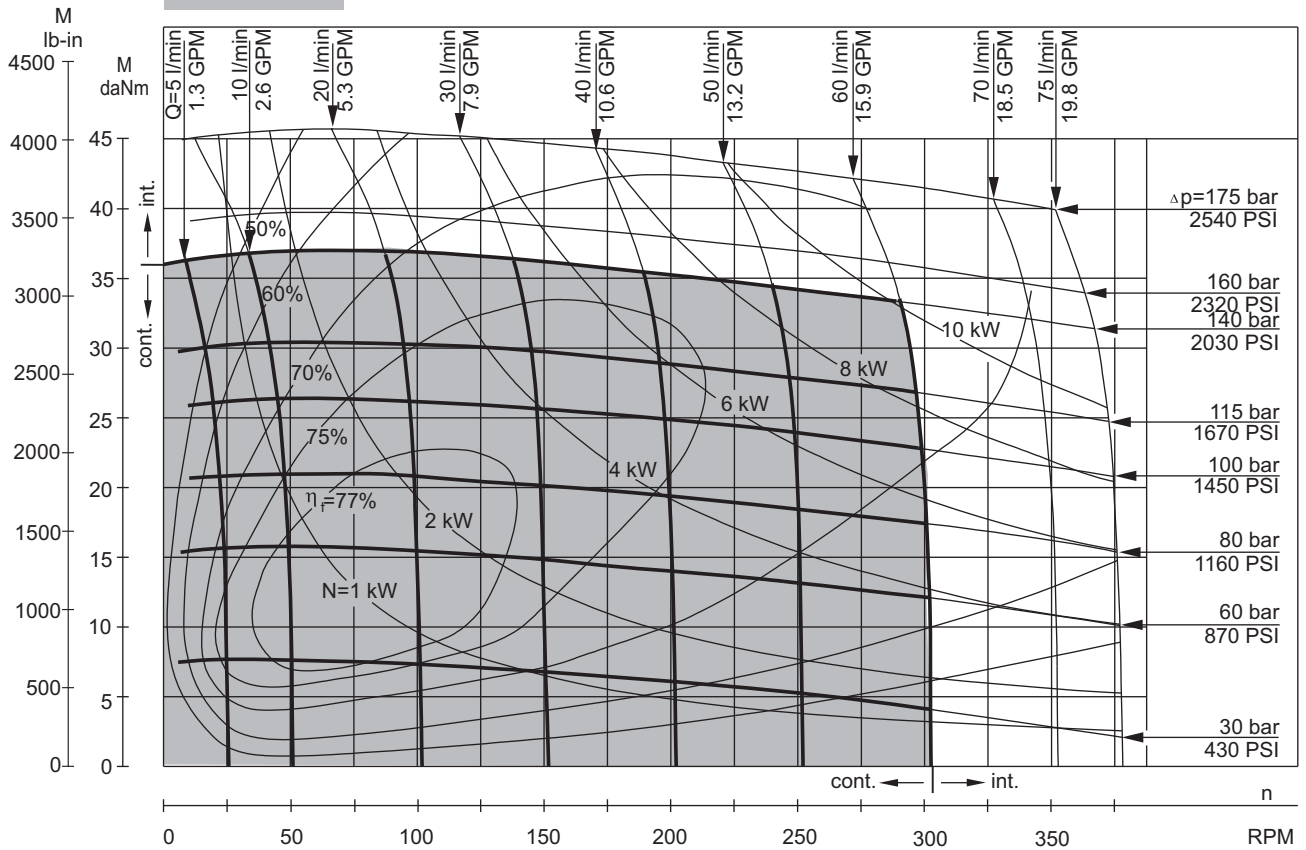
MLHP 160



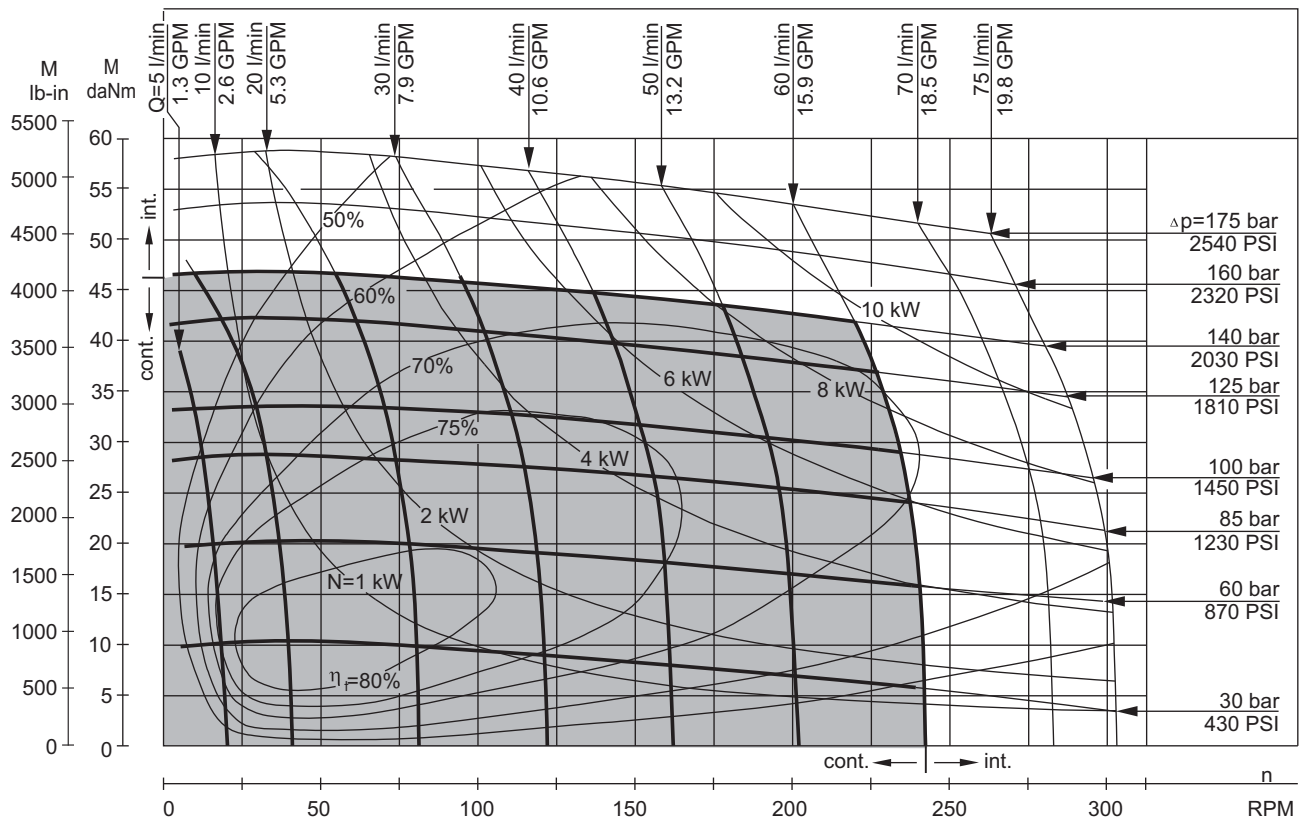
The function diagrams data is for average performance of randomly selected motors at back pressure 72.5÷145 PSI [5÷10 bar] and oil with viscosity of 150 SUS [32 mm²/s] at 122°F [50°C].

FUNCTION DIAGRAMS

MLHP 200



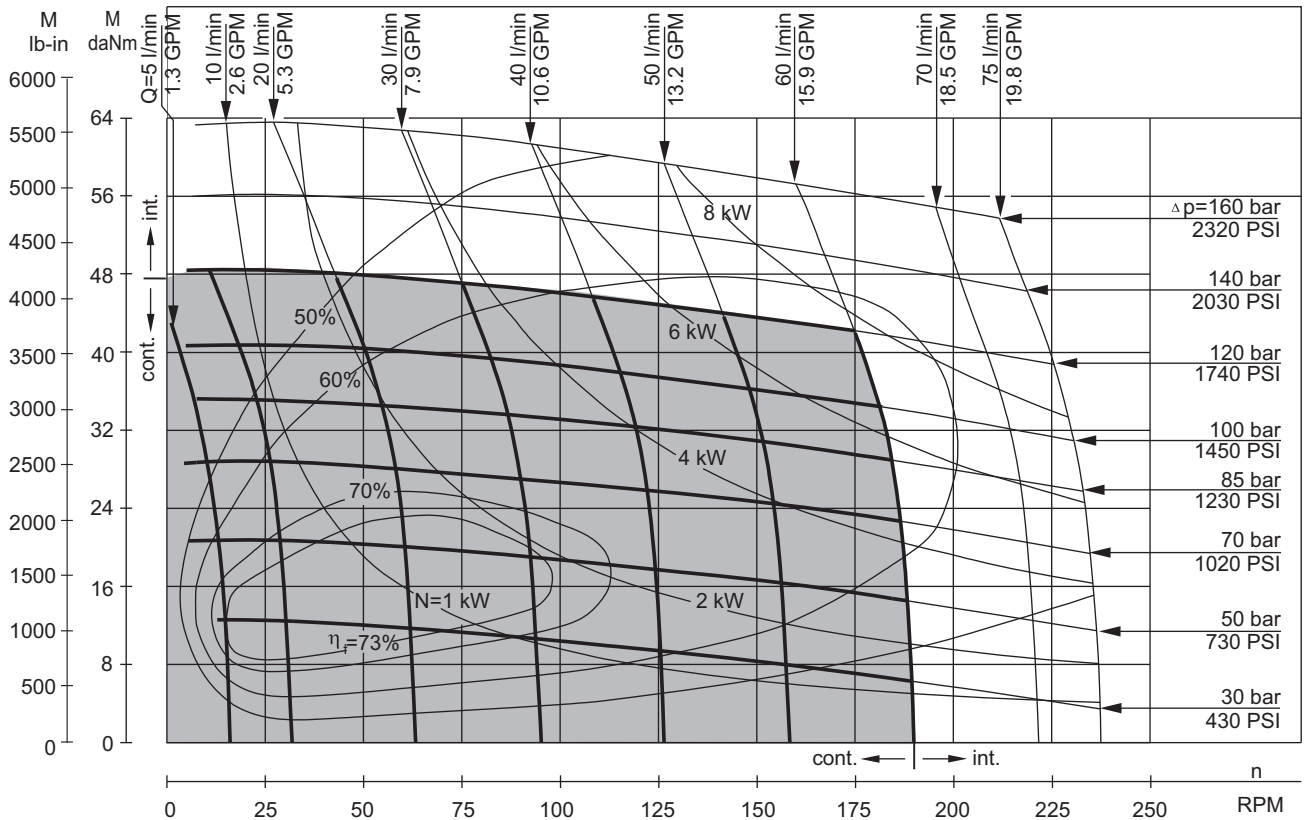
MLHP 250



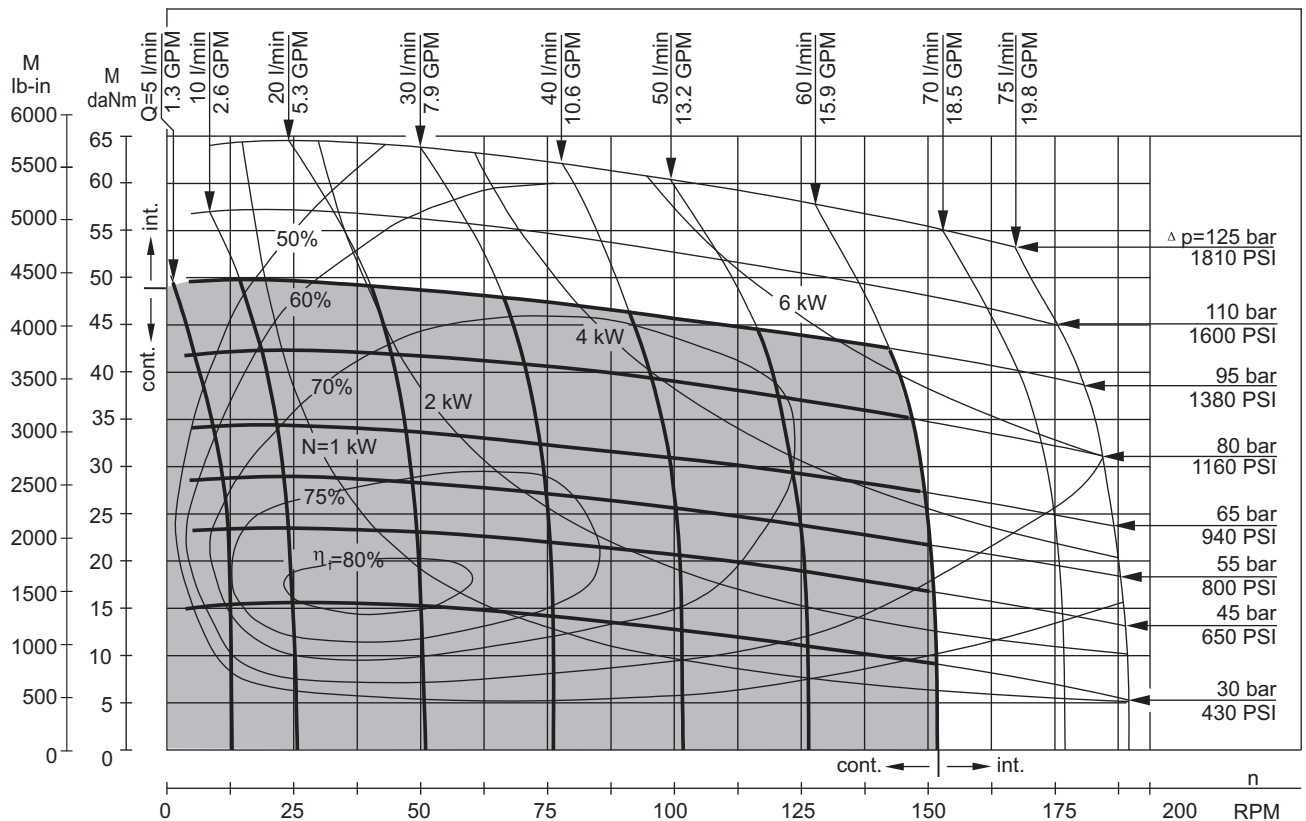
The function diagrams data is for average performance of randomly selected motors at back pressure 72.5÷145 PSI [5÷10 bar] and oil with viscosity of 150 SUS [32 mm²/s] at 122°F [50°C].

FUNCTION DIAGRAMS

MLHP 315



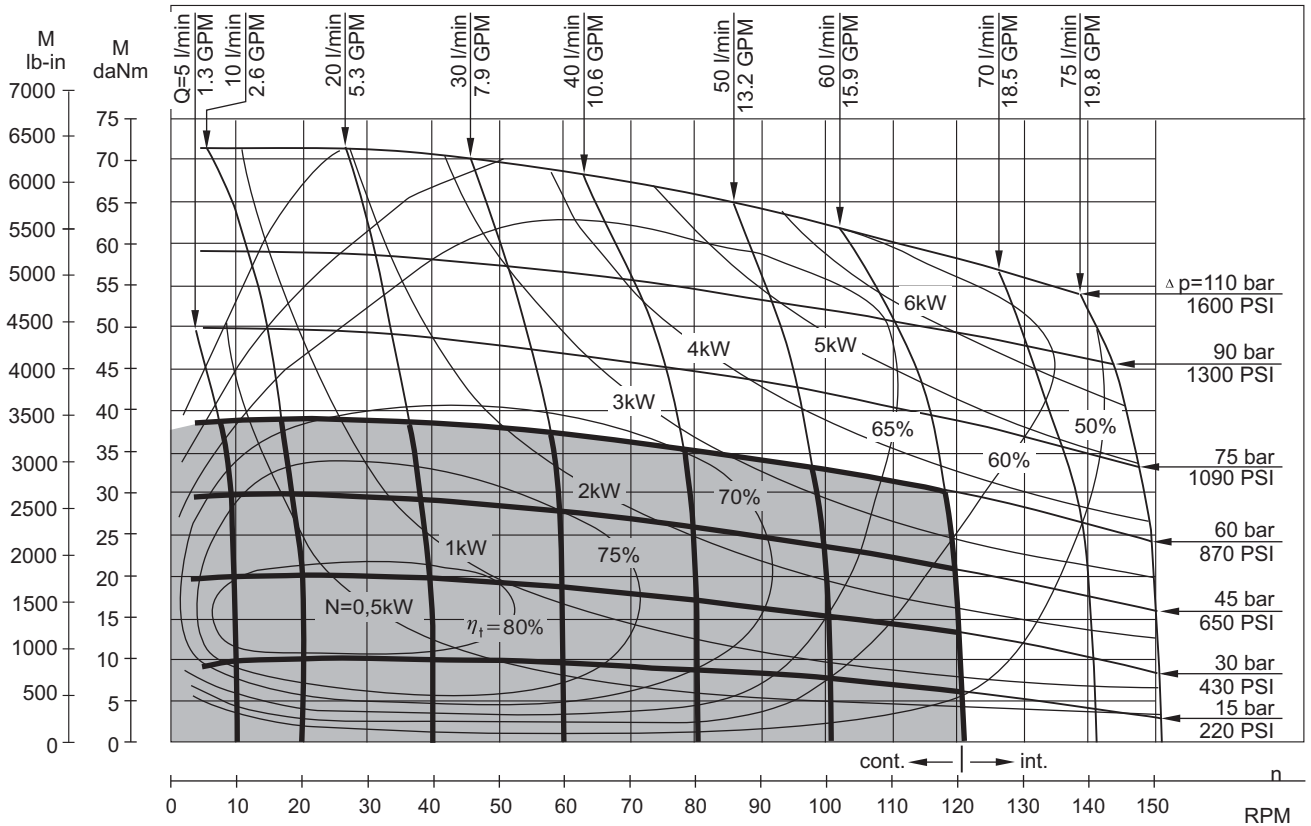
MLHP 400



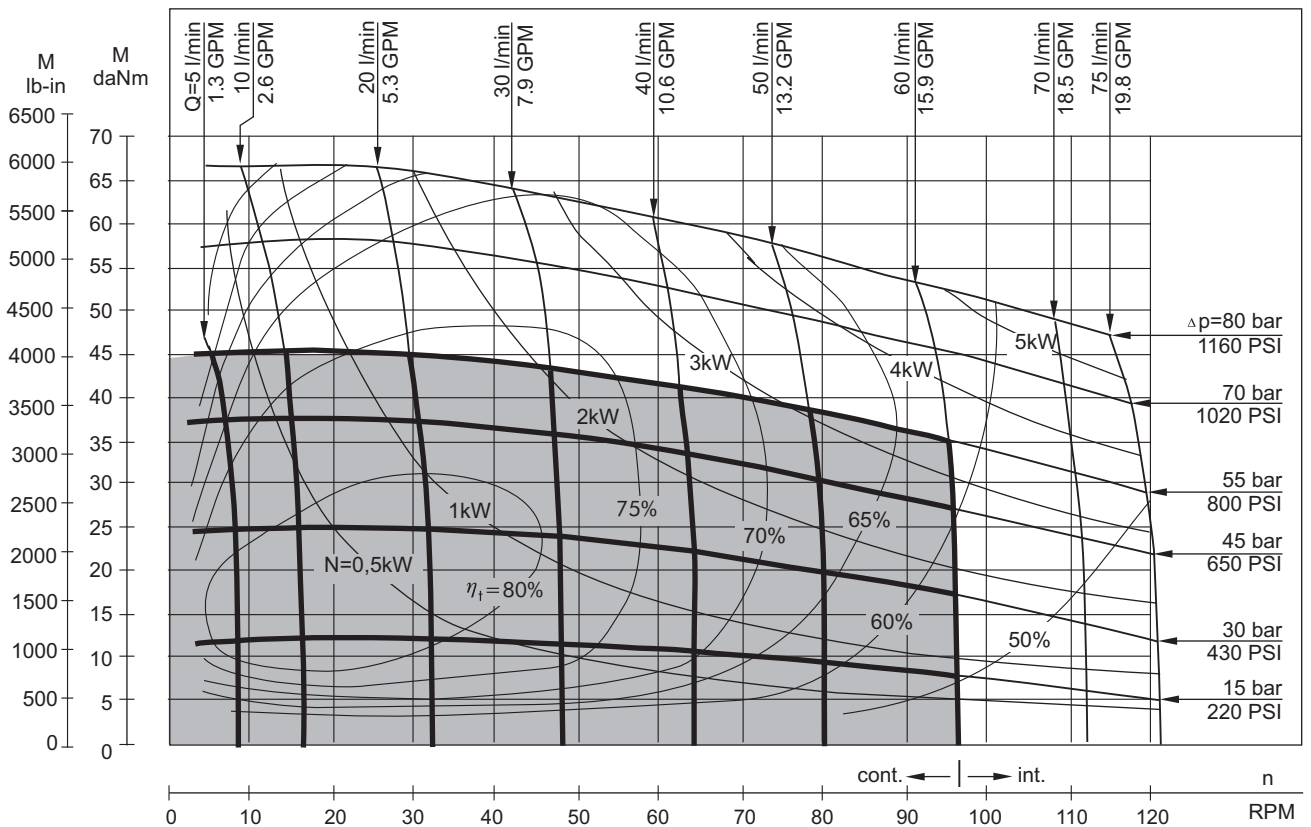
The function diagrams data is for average performance of randomly selected motors at back pressure 72.5÷145 PSI [5÷10 bar] and oil with viscosity of 150 SUS [32 mm²/s] at 122°F [50°C].

FUNCTION DIAGRAMS

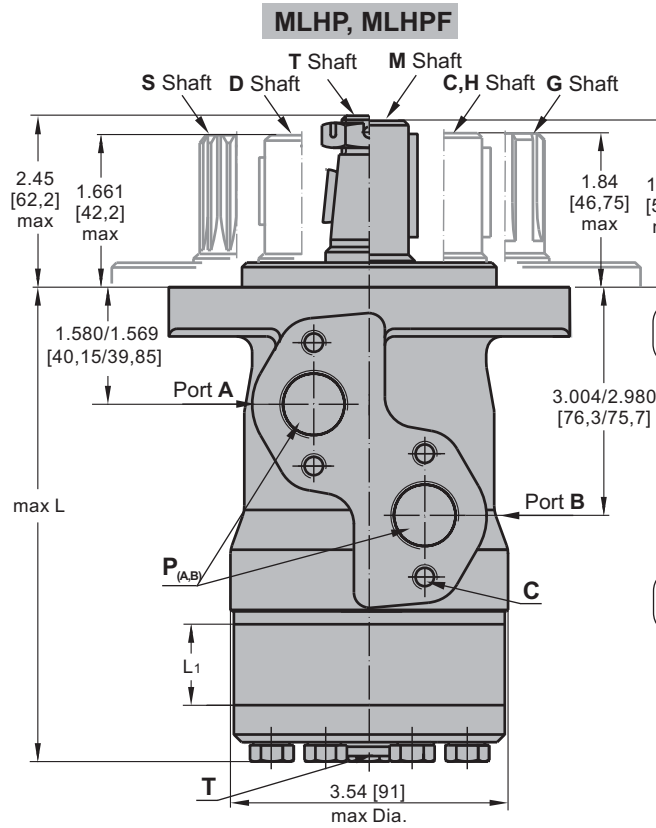
MLHP 500



MLHP 630

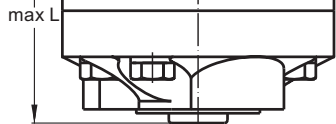
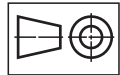


The function diagrams data is for average performance of randomly selected motors at back pressure 72.5÷145 PSI [5÷10 bar] and oil with viscosity of 150 SUS [32 mm²/s] at 122°F [50°C].

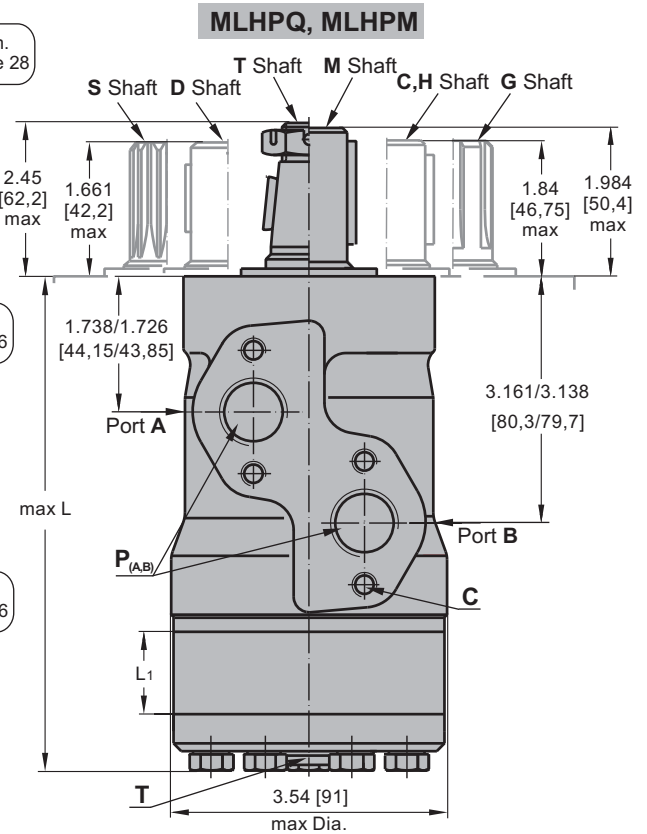
DIMENSIONS AND MOUNTING DATA


Version **6 7 8 9**
Rear ports

in [mm]



	Versions			
	2, 6	3, 9	4, 7	5, 8
C	4xM8	4xM8	4x $\frac{5}{16}$ -18 UNC	4x $\frac{5}{16}$ -18 UNC
P_(A,B)	2xG $\frac{1}{2}$	2xM22x1,5	2x $\frac{7}{8}$ -14 UNF	2x $\frac{1}{2}$ -14 NPTF
T	G $\frac{1}{4}$	M14x1,5	$\frac{7}{16}$ -20 UNF	$\frac{7}{16}$ -20 UNF



Standard Rotation

Viewed from Shaft End

Port A Pressurized - **CW**

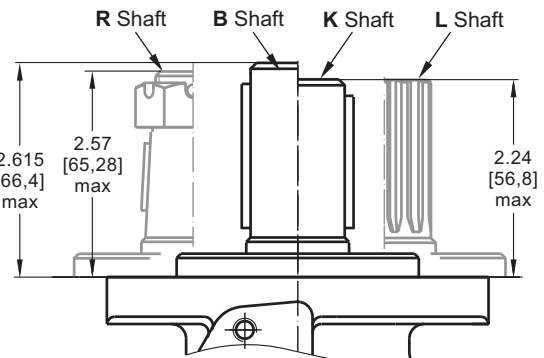
Port B Pressurized - **CCW**

Reverse Rotation

Viewed from Shaft End

Port A Pressurized - **CCW**

Port B Pressurized - **CW**

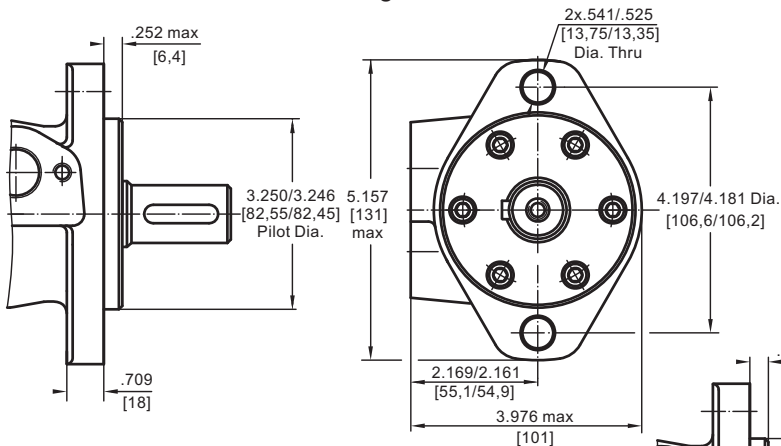


Type	L max, in [mm]		Type	L max, in [mm]		L ₁ in [mm]
	Versions 2,3,4,5	Versions 6,7,8,9		Versions 2,3,4,5	Versions 6,7,8,9	
MLHP(F) 25	5.35 [136,0]	5.98 [152,0]	MLHPQ(M) 25	5.53 [140,5]	6.16 [156,5]	.21 [5,20]
MLHP(F) 32	5.39 [137,0]	6.02 [153,0]	MLHPQ(M) 32	5.57 [141,5]	6.20 [157,5]	.25 [6,30]
MLHP(F) 40	5.45 [138,5]	6.06 [154,0]	MLHPQ(M) 40	5.61 [142,5]	6.24 [158,5]	.29 [7,40]
MLHP(F) 50	5.41 [137,5]	6.04 [153,5]	MLHPQ(M) 50	5.59 [142,0]	6.22 [158,0]	.26 [6,67]
MLHP(F) 80	5.57 [141,5]	6.20 [157,5]	MLHPQ(M) 80	5.75 [146,0]	6.34 [162,0]	.42 [10,67]
MLHP(F) 100	5.67 [144,0]	6.32 [160,5]	MLHPQ(M) 100	5.85 [148,5]	6.48 [164,5]	.52 [13,33]
MLHP(F) 125	5.81 [147,5]	6.44 [163,5]	MLHPQ(M) 125	5.98 [152,0]	6.61 [168,0]	.66 [16,67]
MLHP(F) 160	5.98 [152,0]	6.63 [168,5]	MLHPQ(M) 160	6.16 [156,5]	6.79 [172,5]	.84 [21,33]
MLHP(F) 200	6.20 [157,5]	6.83 [173,5]	MLHPQ(M) 200	6.38 [162,0]	7.01 [178,0]	1.05 [26,67]
MLHP(F) 250	6.46 [164,0]	7.11 [180,5]	MLHPQ(M) 250	6.63 [168,5]	7.26 [184,5]	1.31 [33,33]
MLHP(F) 315	6.83 [173,5]	7.46 [189,5]	MLHPQ(M) 315	7.01 [178,0]	7.64 [194,0]	1.68 [42,67]
MLHP(F) 400	7.24 [184,0]	7.89 [200,5]	MLHPQ(M) 400	7.42 [188,5]	8.05 [204,5]	2.10 [53,33]
MLHP(F) 500	7.78 [197,5]	8.41 [213,5]	MLHPQ(M) 500	7.95 [202,0]	8.58 [218,0]	2.62 [66,63]
MLHP(F) 630	8.47 [215,0]	9.09 [231,0]	MLHPQ(M) 630	8.62 [219,0]	9.25 [235,0]	3.31 [84,00]

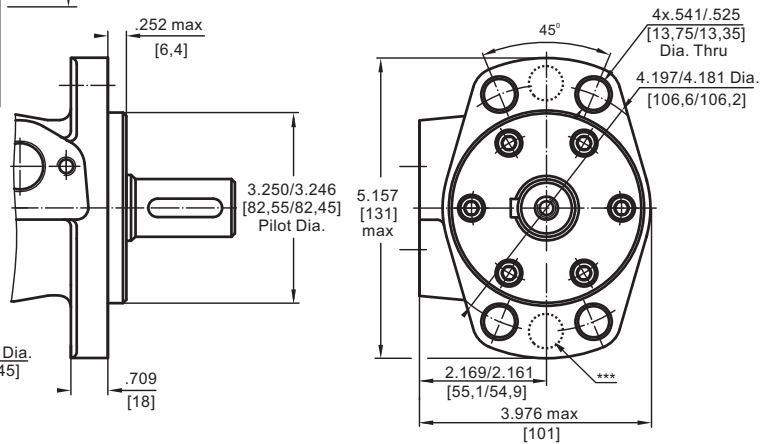
* -For Rear Ported Motors.

MOUNTING

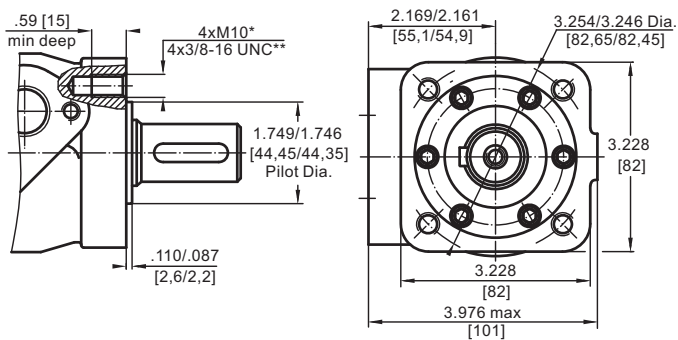
SAE A Flange



F - Magneto Flange



M and Q - Square Flange

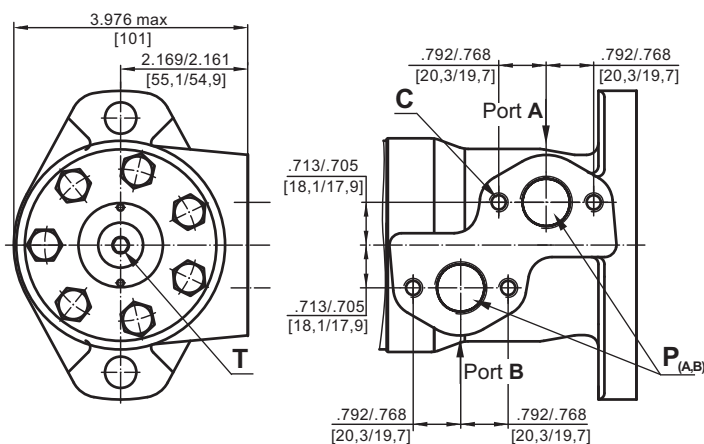


- * For M Flange
- ** For Q Flange
- *** Perform at customer's request

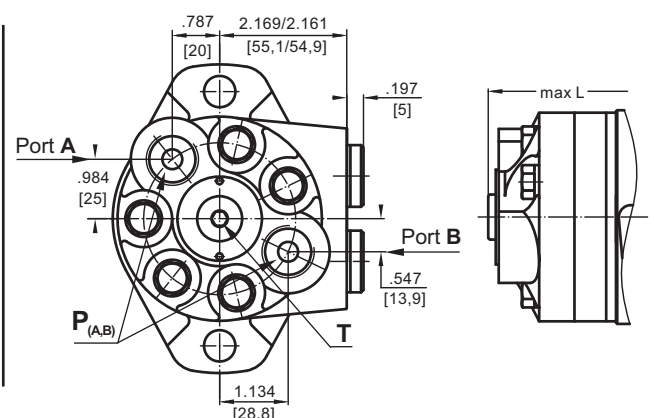


PORTS

Side Ports Version 2 3 4 5



Rear Ports Version 6 7 8 9

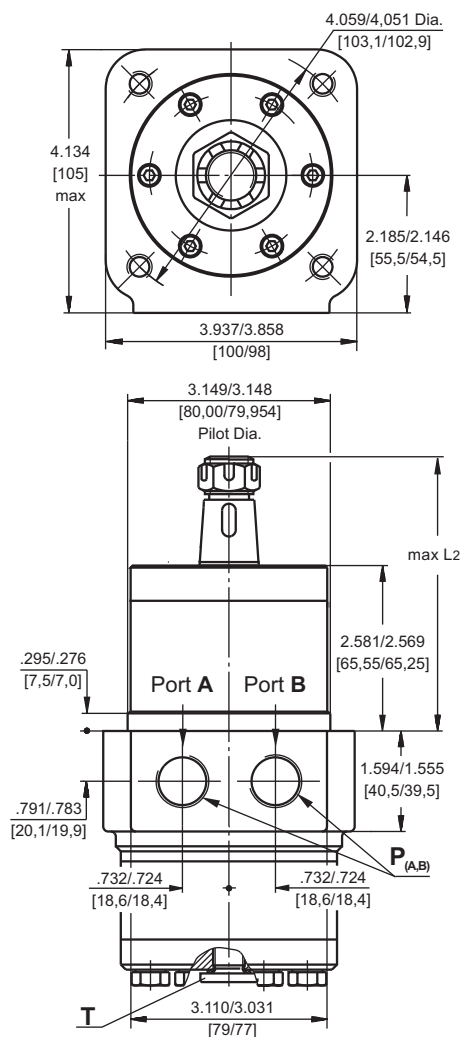


Standard Rotation
Viewed from Shaft End
Port A Pressurized - CW
Port B Pressurized - CCW

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

Versions				
	2, 6	3, 9	4, 7	5, 8
C	4xM8	4xM8	4x $\frac{5}{16}$ -18 UNC	4x $\frac{5}{16}$ -18 UNC
P _(A,B)	2xG $\frac{1}{2}$	2xM22x1,5	2x $\frac{7}{8}$ -14 UNF	2x $\frac{1}{2}$ -14 NPTF
T	G $\frac{1}{4}$	M14x1,5	$\frac{7}{16}$ -20 UNF	$\frac{7}{16}$ -20 UNF

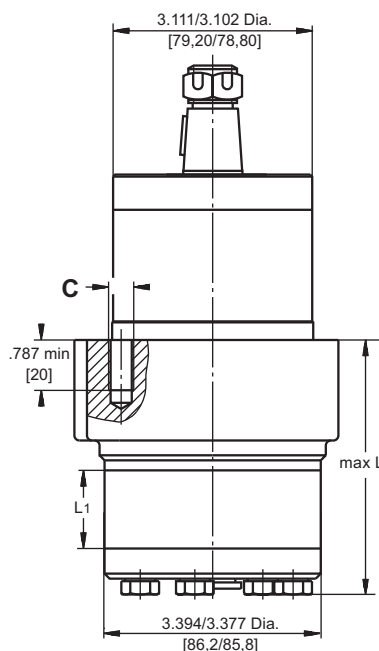
DIMENSIONS AND MOUNTING DATA - MLHPW (WHEEL MOTOR)



Shaft version	L ₂ , in [mm]
C, G, H	4.17 [106]
S, D	3.99 [101,4]
M	4.32 [109,6]
T	4.78 [121,5]

	Versions			
	2	3	4	5
C	4xM10	4xM10	3/8-16 UNC	3/8-16 UNC
P _(A,B)	2xG1/2	2xM22x1,5	2x7/8-14 UNF	2x1/2-14 NPTF
T	G1/4	M14x1,5	7/16-20 UNF	7/16-20 UNF

Type	L, in [mm]	L ₁ , in [mm]
MLHPW(N) 25	3.01 [76,5]	.21 [5,20]
MLHPW(N) 32	3.07 [78,0]	.25 [6,30]
MLHPW(N) 40	3.13 [79,5]	.29 [7,40]
MLHPW(N) 50	3.07 [78,0]	.26 [6,67]
MLHPW(N) 80	3.23 [82,0]	.42 [10,67]
MLHPW(N) 100	3.35 [85,0]	.52 [13,33]
MLHPW(N) 125	3.47 [88,0]	.66 [16,67]
MLHPW(N) 160	3.66 [93,0]	.84 [21,33]
MLHPW(N) 200	3.86 [98,0]	1.05 [26,67]
MLHPW(N) 250	4.13 [105,0]	1.31 [33,33]
MLHPW(N) 315	4.49 [114,0]	1.68 [42,67]
MLHPW(N) 400	4.92 [125,0]	2.10 [53,33]



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



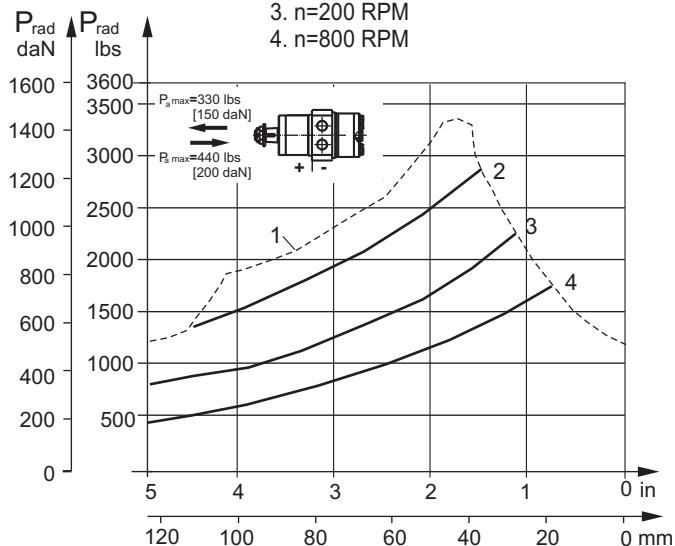
PERMISSIBLE SHAFT LOADS

MLHPWN

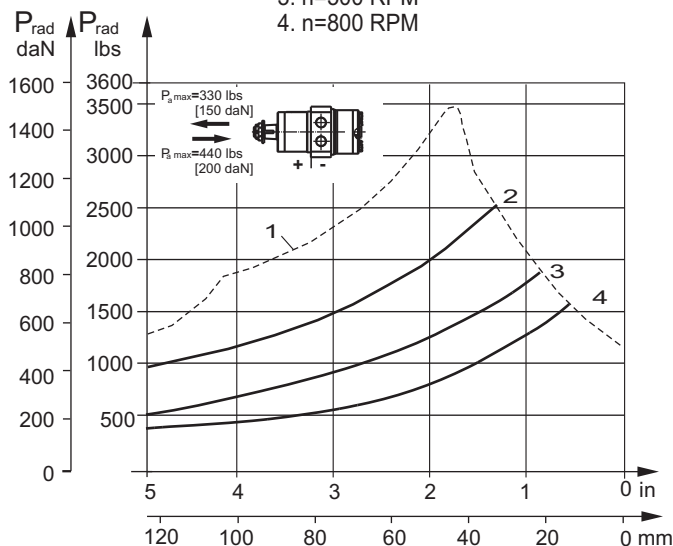
MLHPW

The curves apply to a B10 bearing life of 2000 hours.

1. Max. radial shaft load
2. n= 50 RPM
3. n=200 RPM
4. n=800 RPM



1. Max. radial shaft load
2. n=300 RPM
3. n=500 RPM
4. n=800 RPM

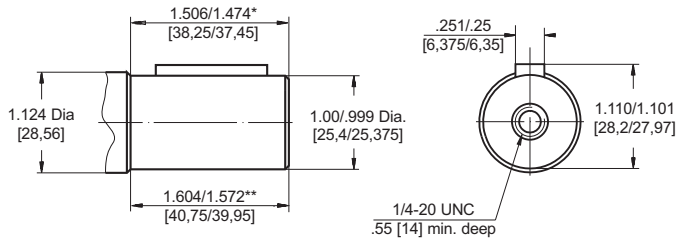


SHAFT EXTENSIONS FOR MLHP AND MLHR MOTORS

1.124 [28,56] sealing diameter

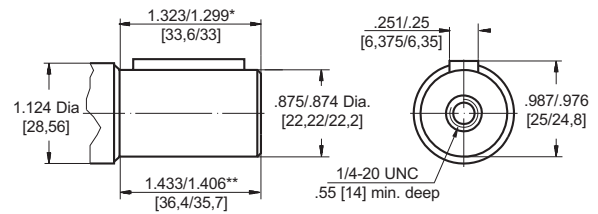
C

1" [25,4] straight, Parallel key $\frac{1}{4}" \times \frac{1}{4}" \times 1\frac{1}{4}"$ BS 46
Max. Torque 3009 lb-in [34 daNm]



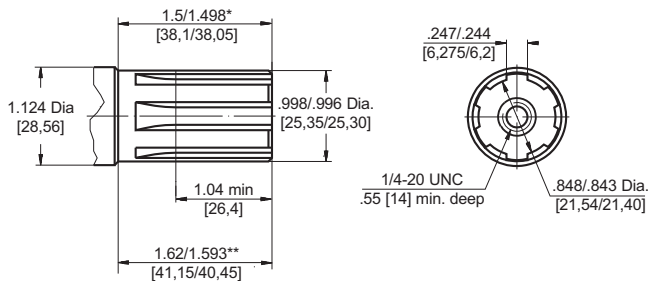
D

$\frac{7}{8}"$ [22,2] straight, Parallel key $\frac{1}{4}" \times \frac{1}{4}" \times 1"$ BS 46
Max. Torque 3200 lb-in [36 daNm]



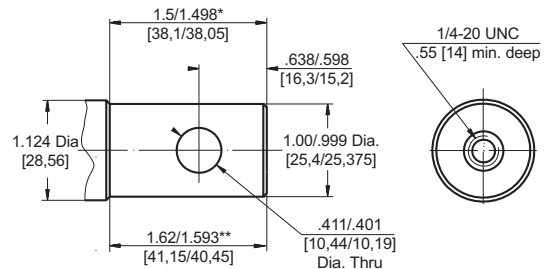
G

1" [25,4], SAE 6B Splined
Max. Torque 3540 lb-in [40 daNm]



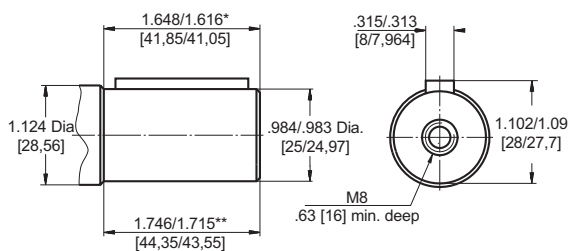
H

1" [25,4] straight, w/ .406 [10,3] Crosshole
Max. Torque 3009 lb-in [34 daNm]



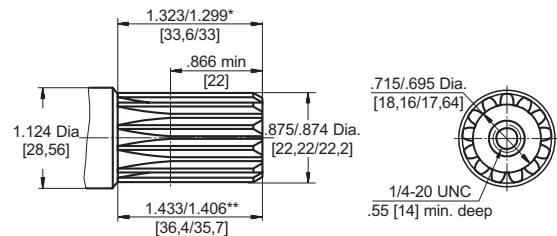
M

ø25 straight, Parallel key A8x7x32 DIN 6885
Max. Torque 3009 lb-in [34 daNm]



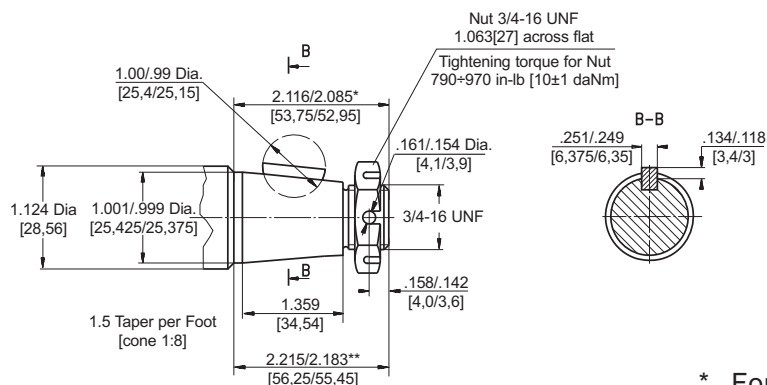
S

13T Splined, $\frac{7}{8}"$ [22,2], ANS B 92.1-1976
Max. Torque 3200 lb-in [36 daNm]



T

1" [25,4], SAE J501 Tapered
Woodruff key $\frac{1}{4}" \times 1"$ SAE J502
Max. Torque 3540 lb-in [40 daNm]



Requirement max. Torque must not be exceeded.

* For SAE A and F Flange

** For M and Q Flange

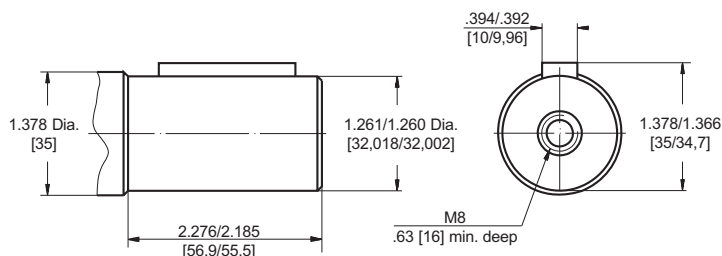
SHAFT EXTENSIONS FOR MLHP AND MLHR MOTORS (continued)

1.378 [35] sealing diameter

B

ø32 straight, Parallel key A10x8x45 DIN 6885

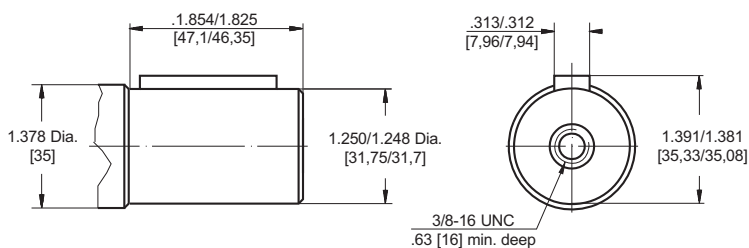
Max. Torque 6815 lb-in [77 daNm]



K

1¼" [31,75] straight, Parallel key 5/16"x5/16"x1¼" BS 46

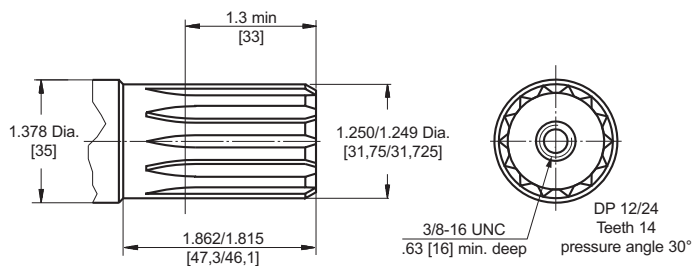
Max. Torque 6815 lb-in [77 daNm]



L

14T Splined, 1¼" [31,75], ANS B 92.1-1976

Max. Torque 6815 lb-in [77 daNm]

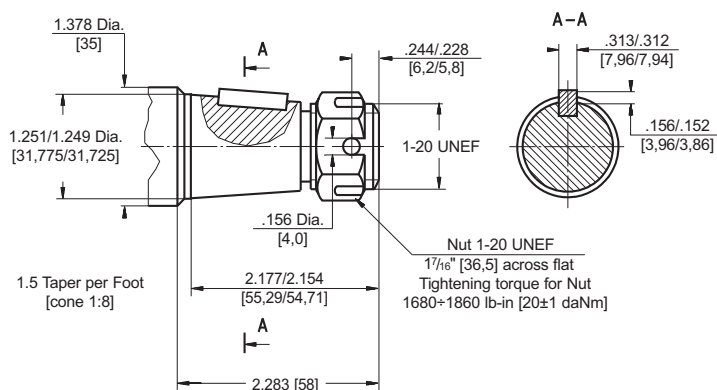


R

1¼" [31,75], SAE J501 Tapered

Parallel key 5/16"x5/16"x1"

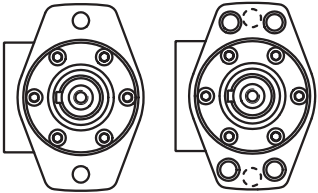
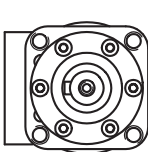
Max. Torque 6815 lb-in [77 daNm]



Requirement max. Torque must not be exceeded.

PERMISSIBLE SHAFT LOADS FOR MLHP AND MLHR MOTORS

The permissible radial shaft load P_{rad} depends on the speed n , RPM, mounting flange, distance L from the point of load to the mounting flange and shaft version.

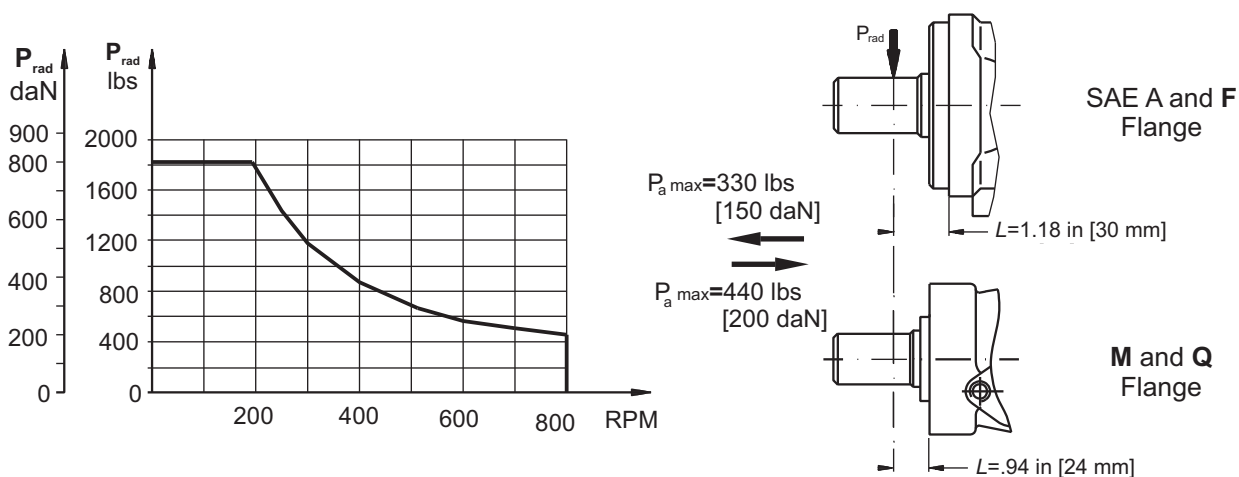
Mounting Flange			
Shaft Version	Keyed C Splined G	Keyed B Splined L	Keyed C Splined G
Radial Shaft Load P_{rad} , in mm	$\frac{800}{n} \times \frac{25000}{95+L}, \text{ daN}^*$	$\frac{800}{n} \times \frac{18750}{95+L}, \text{ daN}^*$	$\frac{800}{n} \times \frac{25000}{101+L}, \text{ daN}^*$
Radial Shaft Load P_{rad} , in inch	$\frac{800}{\text{RPM}} \times \frac{2215}{3.74+L}, \text{ lbs}^*$	$\frac{800}{\text{RPM}} \times \frac{1660}{3.74+L}, \text{ lbs}^*$	$\frac{800}{\text{RPM}} \times \frac{2215}{3.98+L}, \text{ lbs}^*$

* $n < 200$ RPM; max P_{rad} =1800 lbs [800 daN]

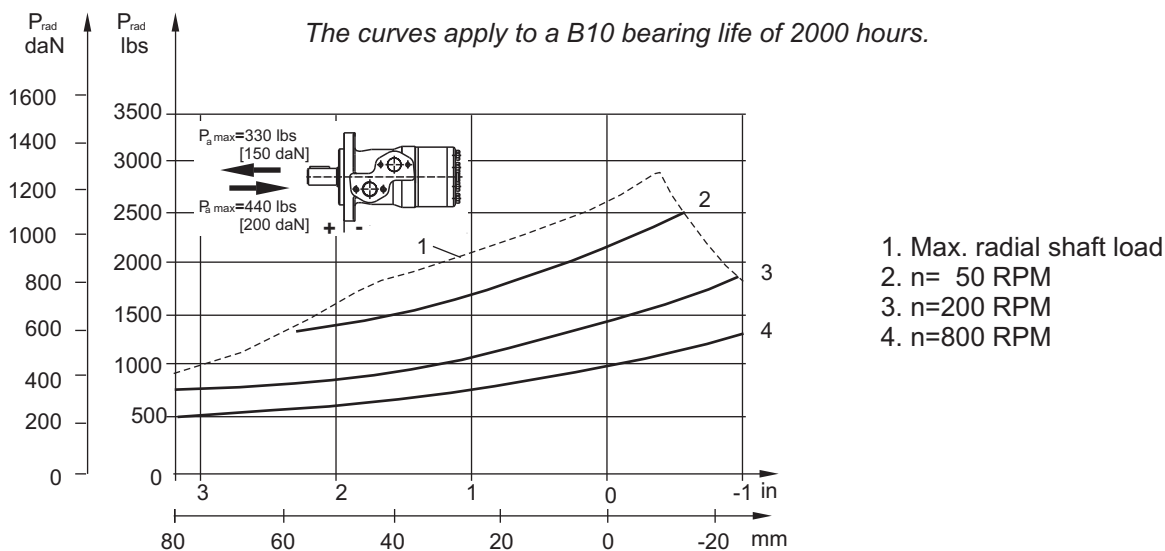
$n \geq 200$ RPM; $L < 2.2$ in [55 mm]

MLHP AND MLHR

Radial Shaft Load P_{rad} for C, G Shaft Extensions by $L=1.18$ in [30 mm] (.94 in [24 mm])



MLHPN AND MLHRN



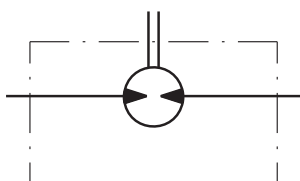
1. Max. radial shaft load
2. $n= 50$ RPM
3. $n=200$ RPM
4. $n=800$ RPM

MAX. PERMISSIBLE SHAFT SEAL PRESSURE FOR MLHP AND MLHR MOTORS

MLHP/MLHR...U1 motors with high pressure seal and without drain connection:

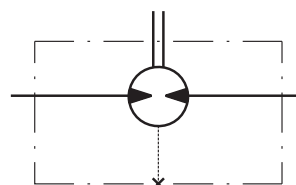
The shaft seal pressure equals the average of input pressure and return pressure.

$$P_{\text{seal}} = \frac{P_{\text{input}} + P_{\text{return}}}{2}$$



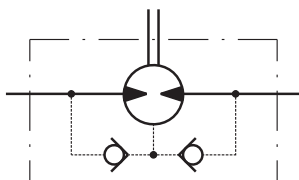
MLHP/MLHR...U motors with high pressure seal and drain connection:

The shaft seal pressure equals the pressure in the drain line.



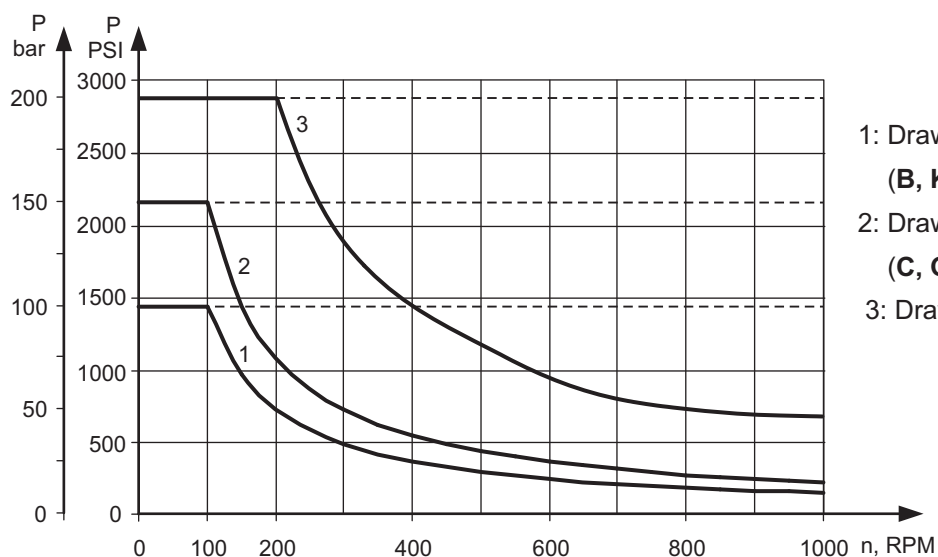
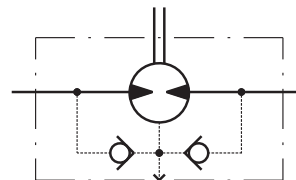
MLHP/MLHR...1 motors with standard shaft seal and without drain connection:

The shaft seal pressure never exceeds the pressure in the return line.



MLHP/MLHR... motors with standard shaft seal and with drain connection:

The shaft seal pressure equals the pressure in the drain line.



- 1: Drawing for Standard Shaft Seal
(B, K, L, R shafts)
- 2: Drawing for Standard Shaft Seal
(C, G, D, H, M, S, T shafts)
- 3: Drawing for High Pressure Seal ("U" Seal)

— - continuous operations
- - - - intermittent operations

	1	2	3	4	5	6	7	8	9
MLHP									

Pos.1 - Mounting Flange

omit - SAE A, two holes

F - Magneto, four holes (six holes at customer's request)

M - Square metric, four bolts M10

Q - Square, four bolts

W - Wheel motor

Pos.2 - Displacement code
25 - 1.52 [25,0] in³/rev [cm³/rev]

32 - 1.95 [32,0] in³/rev [cm³/rev]

40 - 2.44 [40,0] in³/rev [cm³/rev]

50 - 3.02 [49,5] in³/rev [cm³/rev]

80 - 4.83 [79,2] in³/rev [cm³/rev]

100 - 6.04 [99,0] in³/rev [cm³/rev]

125 - 7.55 [123,8] in³/rev [cm³/rev]

160 - 9.66 [158,4] in³/rev [cm³/rev]

200 - 12.1 [198,0] in³/rev [cm³/rev]

250 - 15.1 [247,5] in³/rev [cm³/rev]

315 - 19.3 [316,8] in³/rev [cm³/rev]

400 - 24.16 [396,0] in³/rev [cm³/rev]

500 - 30.2 [495,0] in³/rev [cm³/rev]

630 - 38.05 [623,6] in³/rev [cm³/rev]

Pos.3 - Shaft Extensions* [see pages 28 and 29]
C - 1" [25,4] straight, Parallel key

VC - 1" [25,4] straight, Parallel key w/ corrosion resistant bushing

D - 7/8" [22,2] straight, Parallel key

G - 1" [25,4] SAE 6B Splined

H - 1" [25,4] straight w/ .406 [10,3] Crosshole

M - 25 mm straight, Parallel key

VM - 25 mm straight, Parallel key w/ corrosion resistant bushing

S - 7/8" [22,2] 13T Splined

T - 1" [25,4] SAE J501 Tapered

B - 32 mm straight, Parallel key

K - 1 1/4" [31,75] straight, Parallel key

L - 1 1/4" [31,75] 14T Splined

R - 1 1/4" [31,75] SAE J501 Tapered

Pos. 4 - Option [needle bearings]

omit - none

N - with needle bearings

Pos. 5 - Port Size/Type [standard manifold to each]
2 - side ports, 2xG1/2, G1/4, BSP thread, ISO 228

3 - side ports, 2xM22x1,5, M14x1,5, metric thread, ISO 262

4 - side ports, 2x7/8-14 UNF, O-ring, 7/16-20 UNF

5 - side ports, 2x1/2-14 NPTF, 7/16-20 UNF

6 - rear ports, 2xG1/2, G1/4, BSP thread, ISO 228

7 - rear ports, 2x7/8-14 UNF, O-ring, 7/16-20 UNF

8 - rear ports, 2x1/2-14 NPTF, 7/16-20 UNF

9 - rear ports, 2xM22x1,5, M14x1,5, metric thread, ISO 262

Pos. 6 - Shaft Seal Version [see page 31]

omit - Standard shaft seal

U - High pressure shaft seal (without check valves)

Pos. 7 - Drain Port

omit - with drain port

1 - without drain port

Pos. 8 - Special Features [see page 101]
Pos. 9 - Design Series

omit - Factory specified

Notes : The following combinations are not allowed:

- **Q, M, W** flange with **B, K, L, R** shafts.
- **N** option with **B, K, L, R** shafts, **U** option or **RS** option.
- **W** flange with rear ports.
- **B, K, L, R** shafts with **U** option.

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

The hydraulic motors are mangano-phosphatized as standard.