

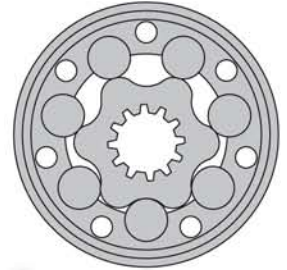
Part number:

HYDRAULIC MOTORS MR



APPLICATION

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



CONTENTS

Specification data
Function diagrams
Dimensions and mounting
Shaft extensions
Permissible shaft loads
Permissible shaft Seal Pressure
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OPTIONS

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

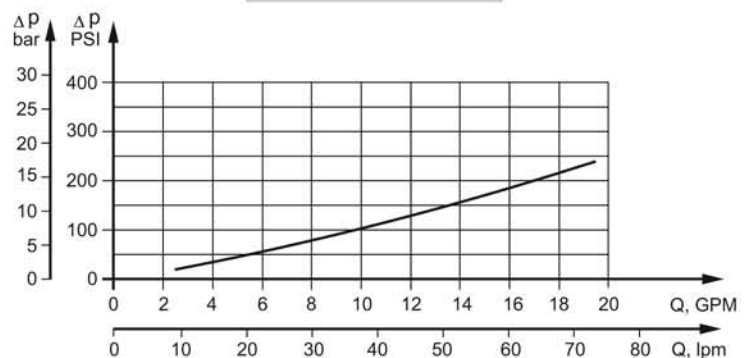
GENERAL

Max. Displacement,	cm ³ /rev [in ³ /rev]	397 [24.4]	
Max. Speed,	[RPM]	970	
Max. Torque,	daNm [lb-in]	cont.: 61 [5400]	int.: 69 [6100]
Max. Output,	kW [HP]	15 [20.1]	
Max. Pressure Drop,	bar [PSI]	cont.: 175 [2540]	int.: 200 [2900]
Max. Oil Flow,	lpm [GPM]	75 [20]	
Min. Speed,	[RPM]	10	
Pressure fluid		Mineral based- HLP (DIN 51524) or HM (ISO 6743/4)	
Temperature range,	°C [°F]	-40÷140 [-40÷284]	
Optimal Viscosity range,	mm ² /s [SUS]	20÷75 [98÷347]	
Filtration		ISO code: 18/16/13	According to ISO 4406-1999

Oil flow in drain line

Pressure drop bar [PSI]	Viscosity mm ² /s [SUS]	Oil flow in drain line lpm [GPM]
100 [1450]	20 [98]	2,5 [.660]
	35 [164]	1,8 [.476]
140 [2030]	20 [98]	3,5 [.925]
	35 [164]	2,8 [.740]

Pressure Losses



SPECIFICATION DATA

Specification Data for MR... motors with **C, CO, SH, K** and **SA** shafts.
($\varnothing 28,56$ sealing diameter)

Type	MR 50	MR 80	MR 100	MR 125	MR 160	MR 200	MR 250	MR 315	MR 400	
Displacement, cm ³ /rev [in ³ /rev]	51,5 [3.14]	80,3 [4.90]	99,8 [6.09]	125,7 [7.67]	159,6 [9.74]	199,8 [12.19]	250,1 [15.26]	315,7 [19.26]	397 [24.4]	
Max. Speed, [RPM]	Cont.	775	750	600	475	375	300	240	190	
	Int.*	970	940	750	600	470	375	300	240	
Max. Torque daNm [lb-in]	Cont.	10 [900]	20 [1770]	24 [2125]	30 [2655]	39 [3450]	38,5 [3410]	39 [3450]	36 [3185]	38 [3360]
	Int.*	13 [1150]	22 [1947]	28 [2480]	34 [3010]	43 [3805]	46 [4070]	47 [4160]	47 [4160]	47 [4160]
	Peak**	17 [1505]	27 [2390]	32 [2832]	37 [3275]	46 [4070]	56 [4960]	60 [5310]	61 [5400]	61 [5400]
Max. Output kW [HP]	Cont.	7 [9.5]	12,5 [17]	13 [17.4]	12,5 [16.8]	11,5 [15.4]	9 [12]	8 [10.7]	5 [6.7]	4,8 [6.4]
	Int.*	8,5 [11.9]	15 [20.1]	15 [20.1]	14,5 [19.5]	14 [18.8]	12 [16.1]	9,5 [12.7]	8 [10.7]	6,8 [9.1]
Max. Pressure Drop bar [PSI]	Cont.	140 [2030]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	140 [2030]	110 [1600]	85 [1230]	65 [940]
	Int.*	175 [2540]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	175 [2540]	140 [2030]	115 [1670]	90 [1300]
	Peak**	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	200 [2900]	150 [2175]	115 [1670]
Max. Oil Flow lpm [GPM]	Cont.	40 [10.5]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]
	Int.*	50 [13.2]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]
Max. Inlet Pressure bar [PSI]	Cont.	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]
	Int.*	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]
	Peak**	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]
Max. Return Pres- sure with Drain Line bar [PSI]	Cont.	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]
	Int.*	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]
	Peak**	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]
Max. Starting Pressure with Unloaded Shaft, bar [PSI]		10 [145]	10 [145]	10 [145]	9 [130]	7 [102]	5 [73]	4 [58]	3 [44]	3 [44]
Min. Starting Torque daNm [lb-in]	At max.press. drop Cont.	8 [710]	15 [1330]	20 [1770]	25 [2215]	32 2832]	33 [2920]	31 [2740]	31,5 [2875]	31,5 [2875]
	At max.press. drop Int.*	10 [885]	17 [1505]	23 [2035]	28 [2480]	37 [3275]	40 [3540]	48 [4250]	58 [5220]	50 [4425]
Min. Speed***, [RPM]		10	10	10	10	10	10	10	10	
Weight, kg [lb]	MR(F)	6,8 [15]	6,9 [15.2]	7,2 [15.9]	7,3 [16.1]	7,5 [15.2]	8 [17.6]	8,4 [18.5]	9,1 [20]	9,8 [21.6]
For rear ports: +0,650 [1.433]	MRQ(N)	6,2 [13.7]	6,3 [13.9]	6,6 [14.6]	6,8 [15]	7,2 [14.7]	7,6 [15.4]	7,8 [17.2]	8,6 [19]	9,3 [20.5]

* 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 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 13 mm²/s [70 SUS] at 50°C [122°F].
- Recommended maximum system operating temperature is 82°C [180°F].
- 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 MR... motors with **CB, KB, OB** and **HB** shafts.
(ø35 sealing diameter)

Type		MR 50	MR 80	MR 100	MR 125	MR 160	MR 200	MR 250	MR 315	MR 400
Displacement, cm ³ /rev [in ³ /rev]		51,5 [3.14]	80,3 [4.90]	99,8 [6.09]	125,7 [7.67]	59,6 [9.74]	199,8 [12.19]	250,1 [15.26]	315,7 [19.26]	397 [24.4]
	Max. Speed, [RPM]									
	Cont.	775	750	600	475	375	300	240	190	150
	Int.*	970	940	750	600	470	375	300	240	190
Max. Torque daNm [lb-in]	Cont.	10 [900]	20 [1770]	24 [2125]	30 [2655]	39 [3450]	45 [4000]	54 [4780]	55 [4870]	61 [5400]
	Int.*	13 [1150]	22 [1947]	28 [2480]	34 [3010]	43 [3805]	50 [4425]	61 [5400]	69 [6110]	69 [6110]
	Peak**	17 [1505]	27 [2390]	32 [2832]	37 [3275]	46 [4070]	56 [4960]	71 [6280]	84 [7435]	87 [7700]
Max. Output kW [HP]	Cont.	7 [9.5]	12,5 [17]	13 [17.4]	12,5 [16.8]	11,5 [15.4]	11 [14.8]	10 [13.4]	9 [12]	7,8 [10.5]
	Int.*	8,5 [11.9]	15 [20.1]	15 [20.1]	14,5 [19.5]	14 [18.8]	13 [17.4]	12 [16.1]	10 [13.4]	10,6 [14.2]
Max. Pressure Drop bar [PSI]	Cont.	140 [2030]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	135 [1960]	110 [1600]
	Int.*	175 [2540]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	175 [2540]	140 [2030]
	Peak**	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	210 [3045]	175 [2540]
Max. Oil Flow lpm [GPM]	Cont.	40 [10.5]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]	60 [15.8]
	Int.*	50 [13.2]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]
Max. Inlet Pressure bar [PSI]	Cont.	175 [2540]	175 [2540]	175 [19.8]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]
	Int.*	200 [2900]	200 [2900]	200 [2540]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]
	Peak**	225 [3260]	225 [3260]	225 [2900]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]
Max. Return Pres- sure with Drain Line bar [PSI]	Cont.	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]
	Int.*	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]
	Peak**	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]
Max. Starting Pressure with Unloaded Shaft, bar [PSI]		10 [145]	10 [145]	10 [145]	9 [130]	7 [102]	5 [73]	4 [58]	3 [44]	3 [44]
Min. Starting Torque daNm [lb-in]	At max.press.									
	drop Cont.	8 [710]	15 [1330]	20 [1770]	25 [2215]	32 [2832]	41 [3630]	50 [4425]	50 [4425]	50 [4425]
	At max.press. drop Int.*	10 [885]	17 [1505]	23 [2035]	28 [2480]	37 [3275]	46 [4070]	55 [4870]	66 [5840]	61 [5400]
Min. Speed***, [RPM]		10	10	10	10	10	10	10	10	10
Weight, kg [lb]										
For rear ports: +0,650 [1.433]		6,9 [15.2]	7 [15.4]	7,3 [16.1]	7,4 [16.3]	7,6 [15.4]	8,1 [18.9]	8,5 [18.7]	9,2 [20.3]	9,9 [21.8]

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

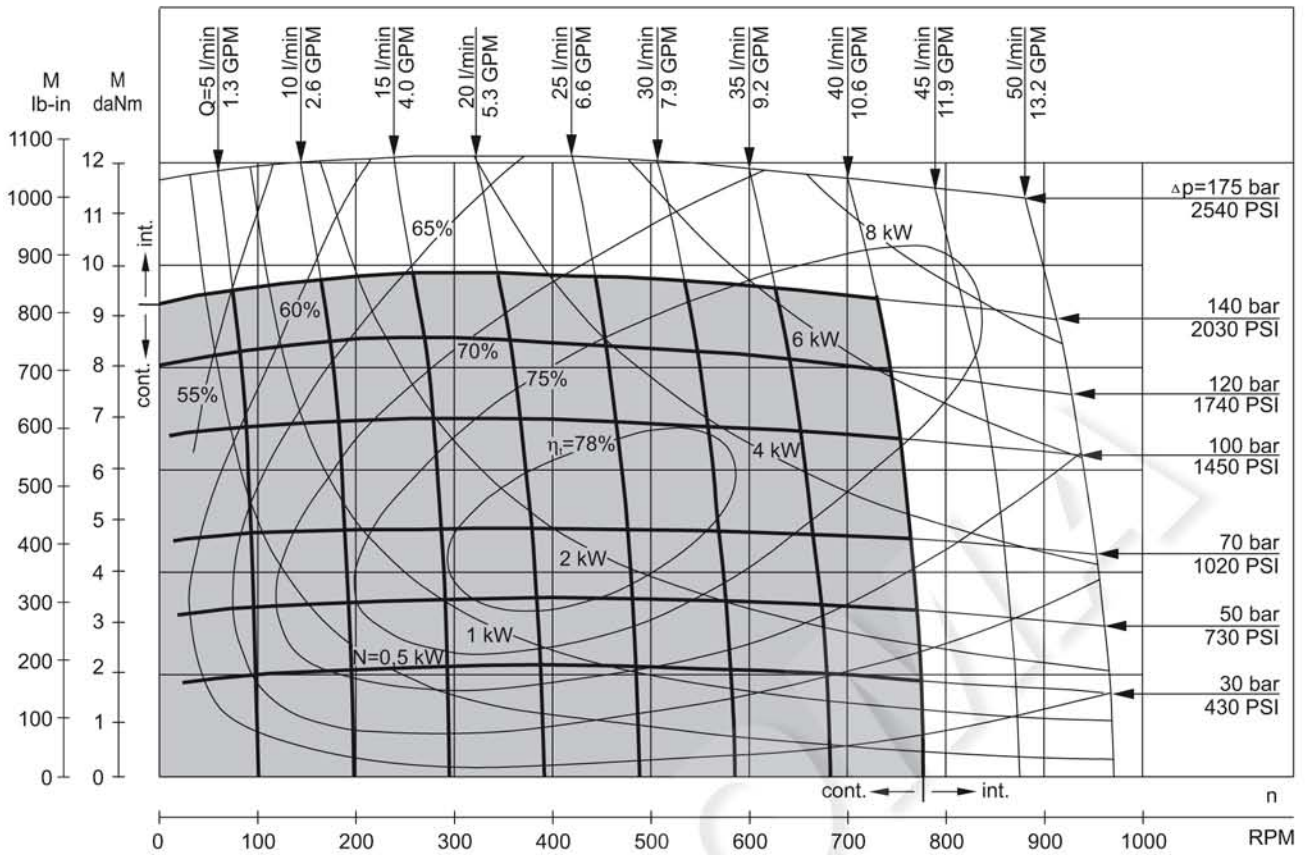
** Peak load: the permissible values may occur for max. 1% of every minute.

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

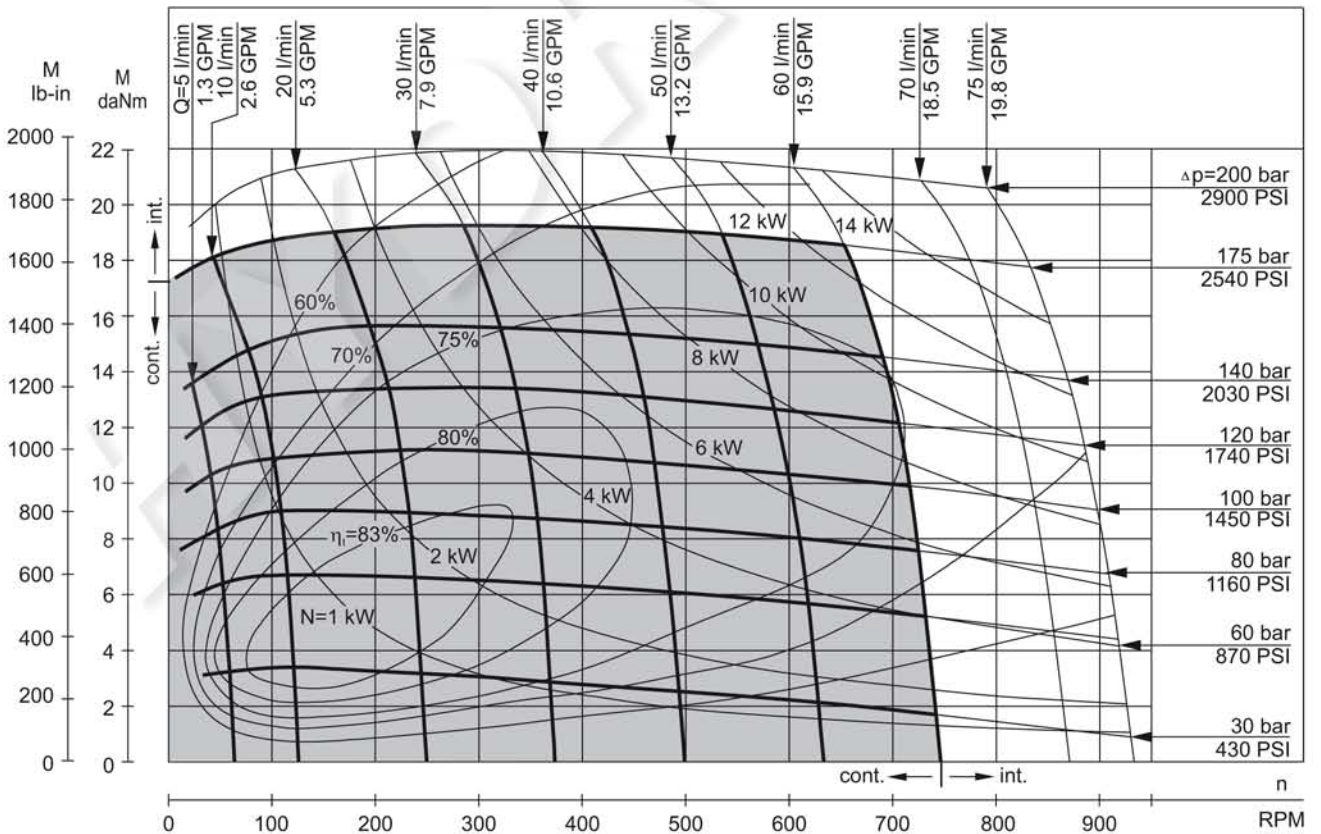
1. Intermittent speed and intermittent pressure must not occur simultaneously.
2. Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
3. Recommend using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) or HM (ISO 6743/4).
If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

MR 50



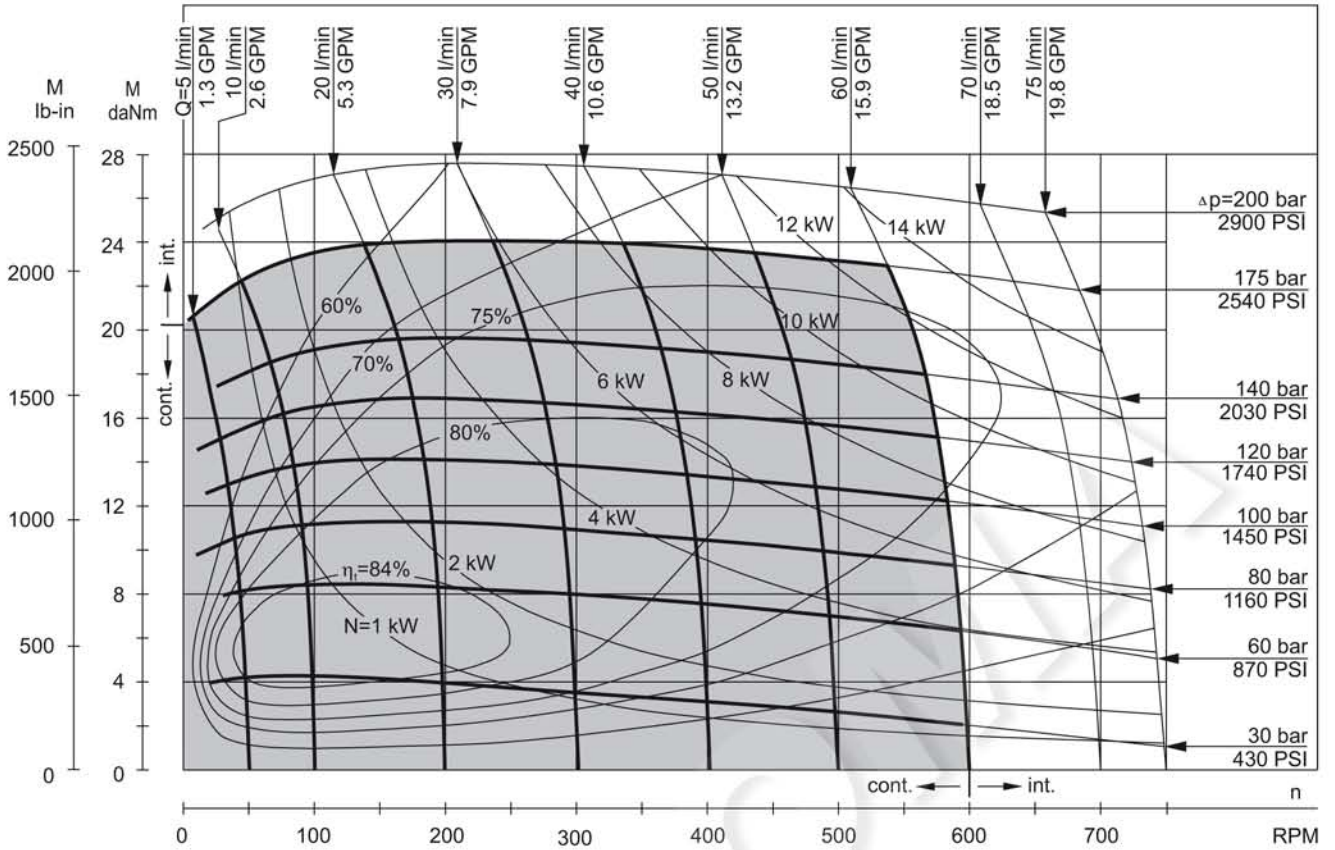
MR 80



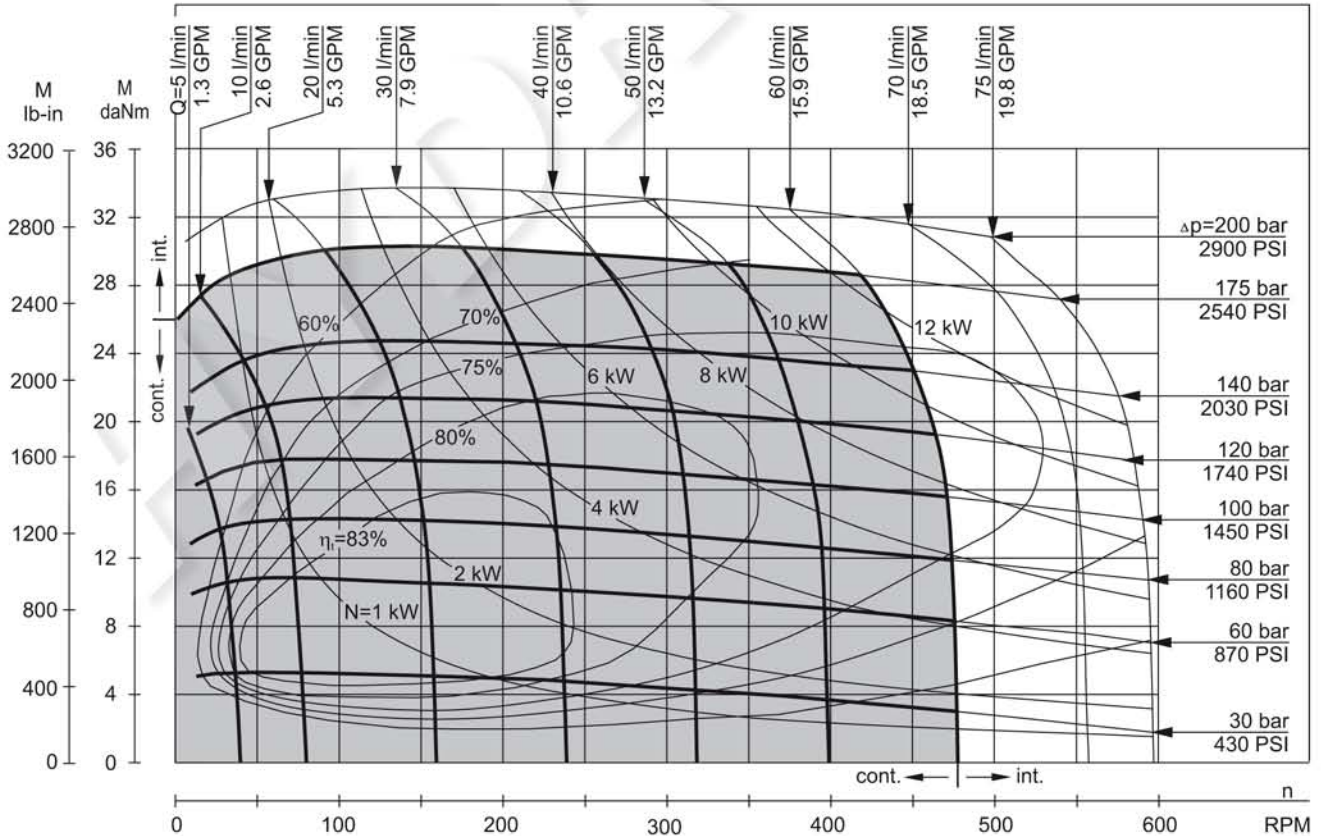
The function diagrams data is for average performance of randomly selected motors at back pressure 5÷10 bar [72.5÷145 PSI] and oil with viscosity of 32 mm²/s [150 SUS] at 50°C [122°F].

FUNCTION DIAGRAMS

MR 100



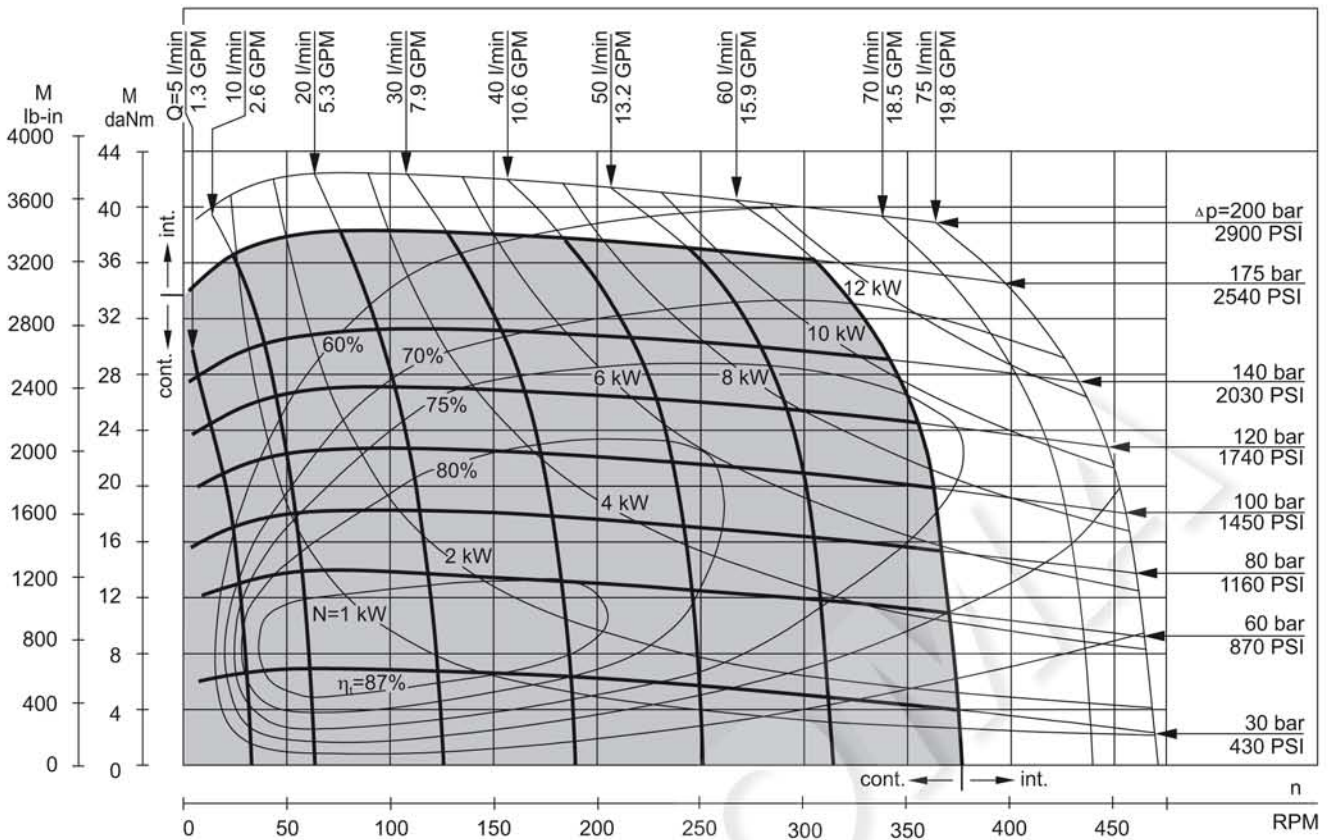
MR 125



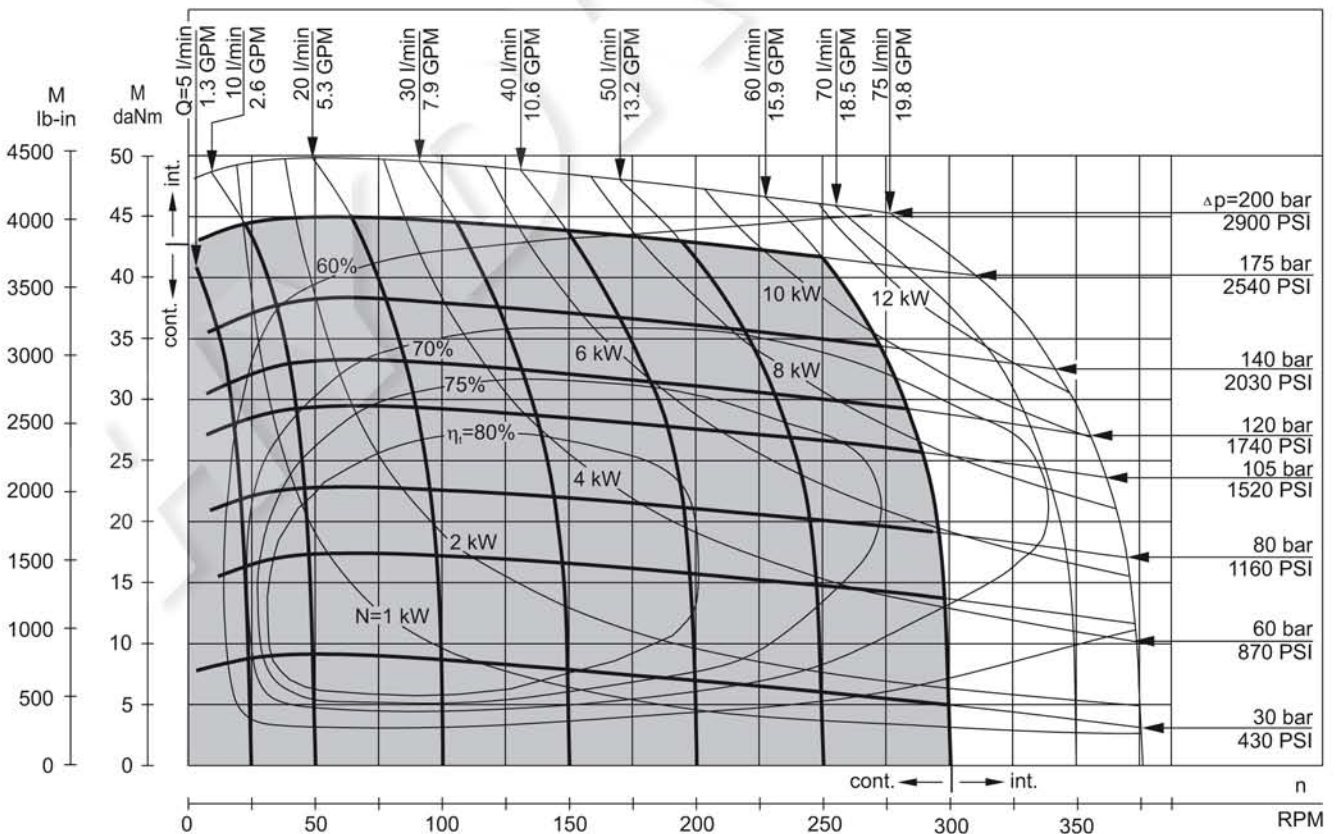
The function diagrams data is for average performance of randomly selected motors at back pressure 5÷10 bar [72.5÷145 PSI] and oil with viscosity of 32 mm²/s [150 SUS] at 50°C [122°F].

FUNCTION DIAGRAMS

MR 160



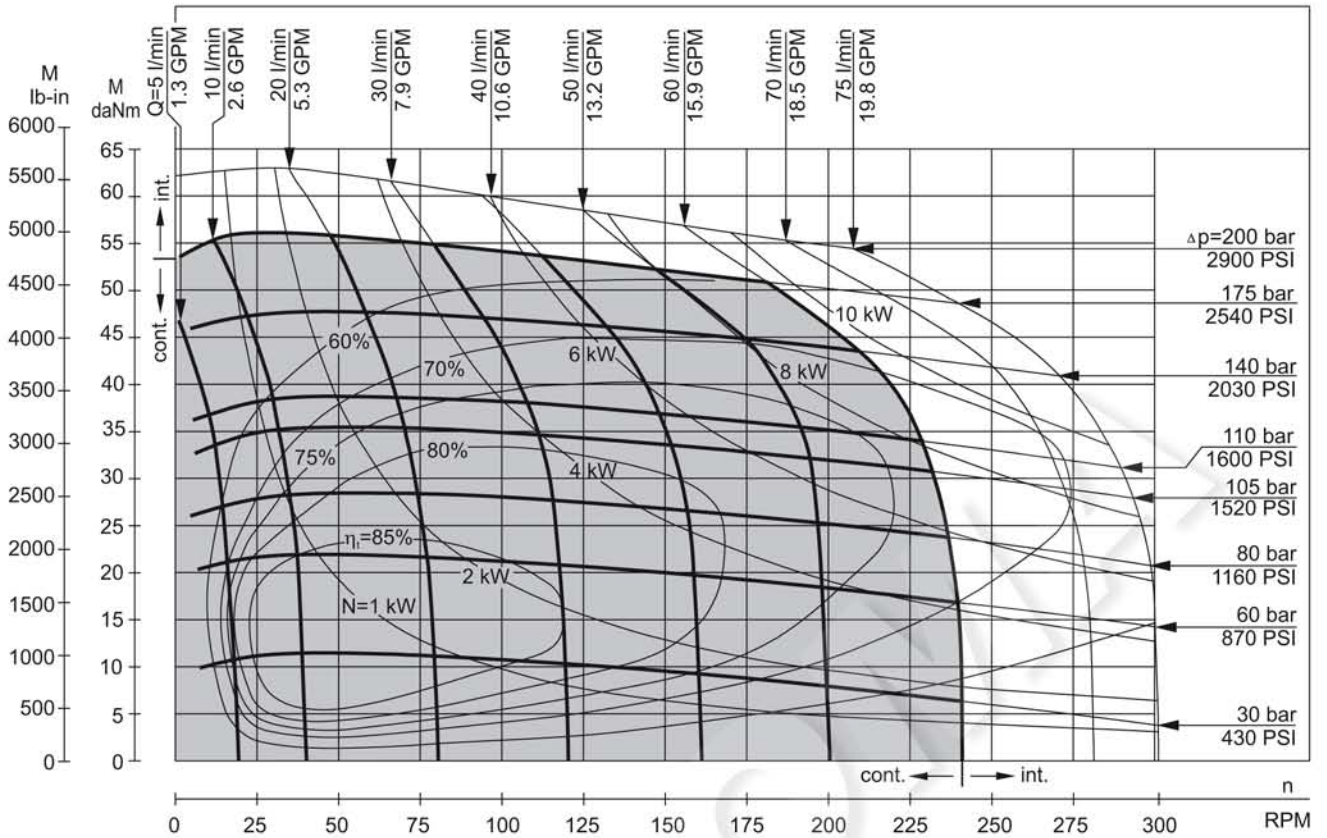
MR 200



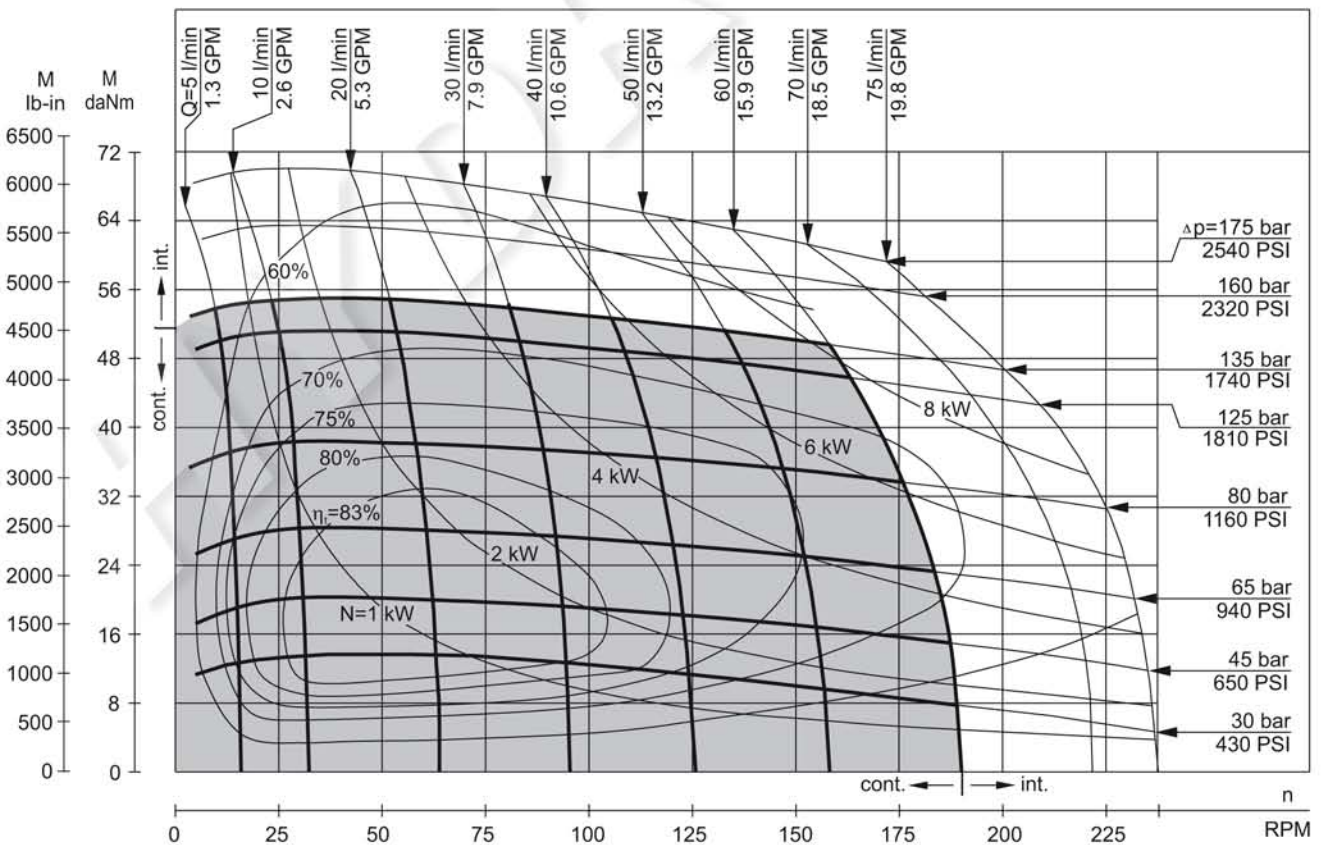
The function diagrams data is for average performance of randomly selected motors at back pressure 5÷10 bar [72.5÷145 PSI] and oil with viscosity of 32 mm²/s [150 SUS] at 50°C [122°F].

FUNCTION DIAGRAMS

MR 250



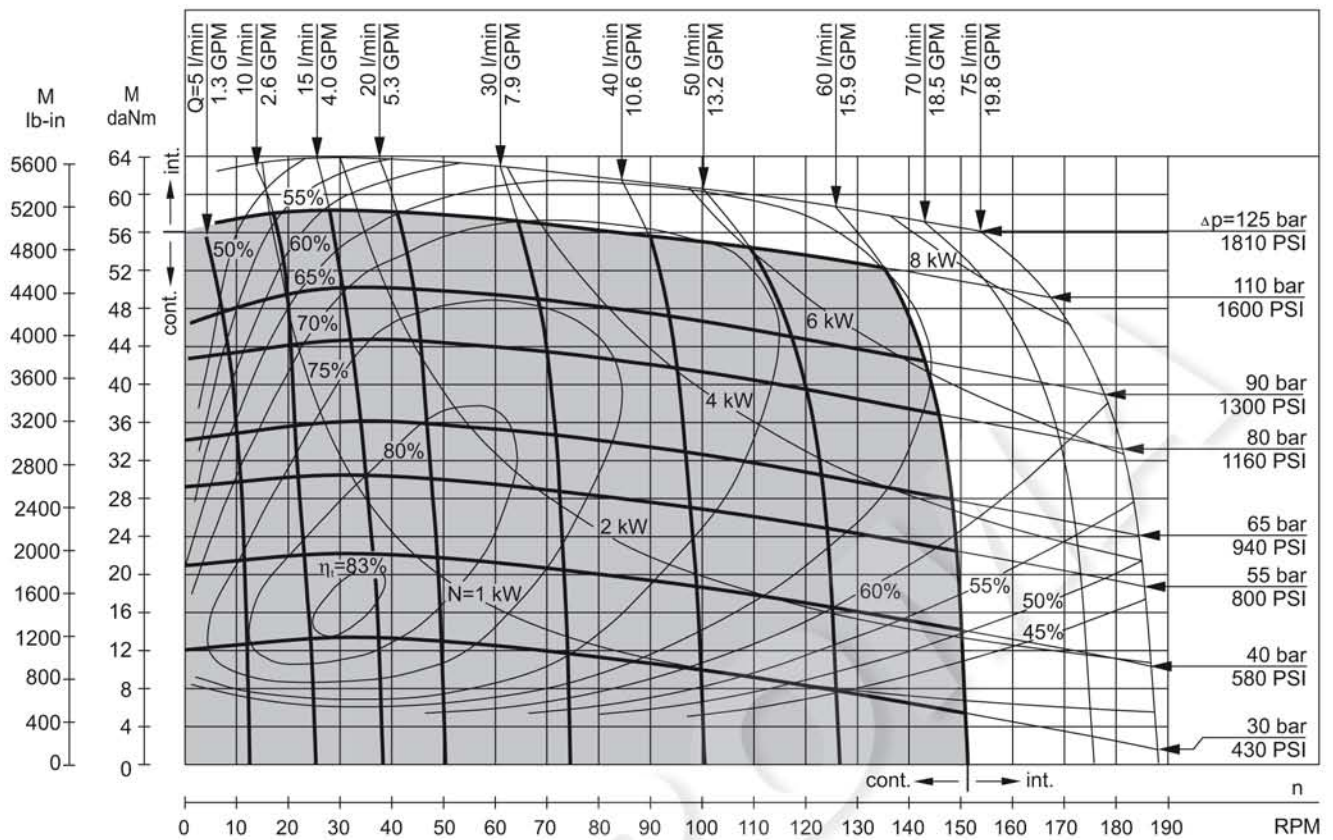
MR 315



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

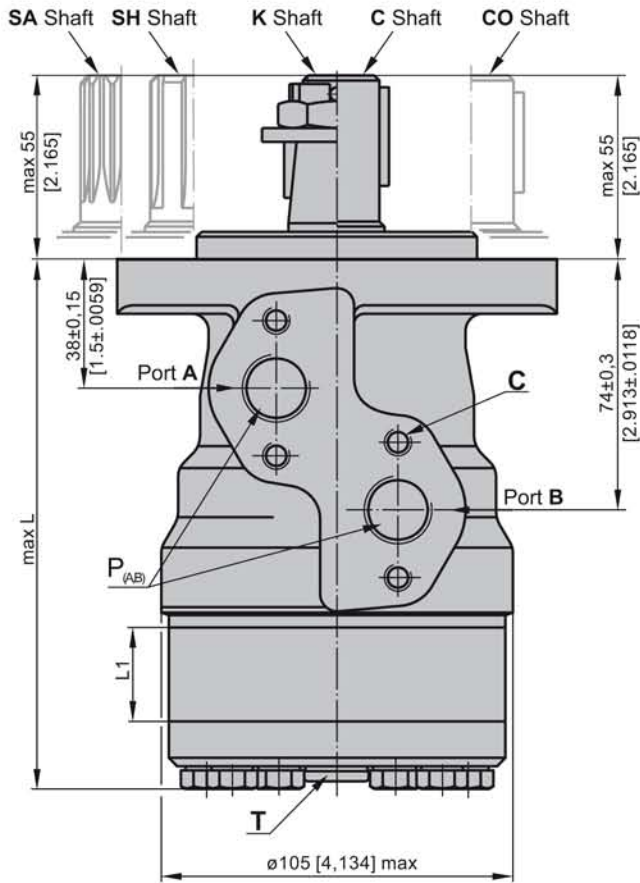
FUNCTION DIAGRAMS

MR 400



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

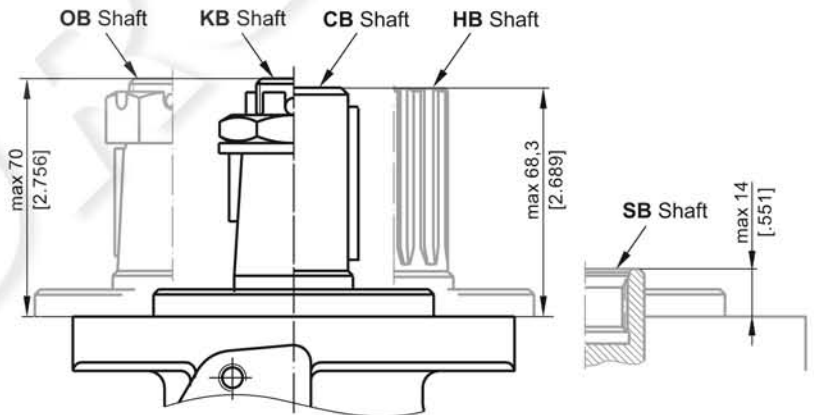
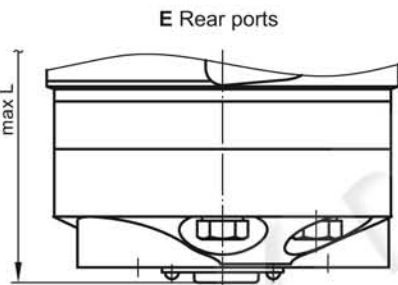
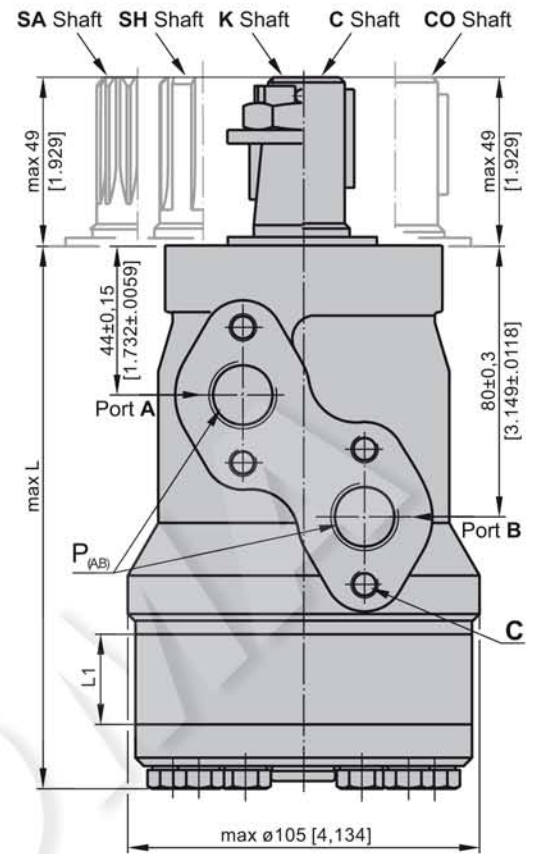
DIMENSIONS AND MOUNTING DATA



Shaft Dim.
See Page 28

Flange Dim.
See Page 41

Port Dim.
See Page 41



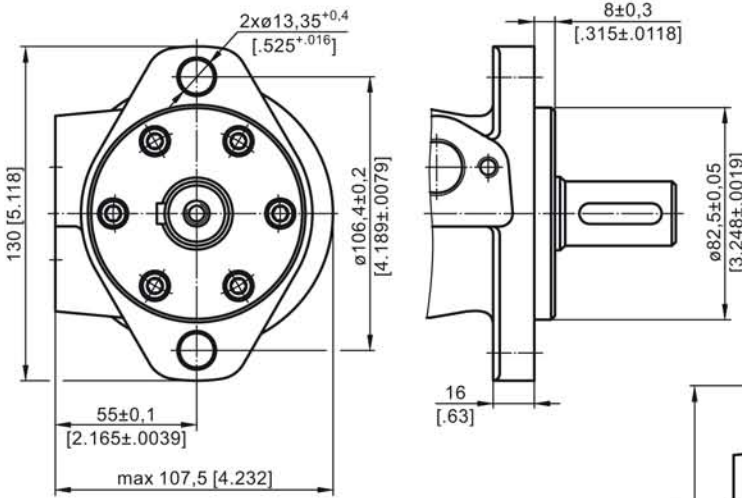
- C** : 4xM8 - 13 mm [.51 in] depth
- P_(A,B)** : 2xG1/2 or 2xM22x1,5 - 15 mm [.59 in] depth
- T** : G1/4 or M14x1,5 - 12 mm [.47 in] depth (plugged)

- 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**

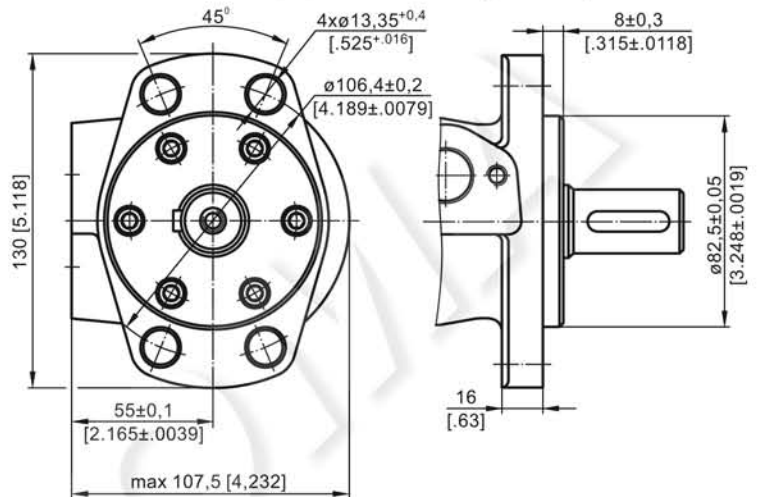
Type	L, mm [in]	Type	L, mm [in]	Type	L, mm [in]	Type	L, mm [in]	L _r , mm [in]
MR(F) 50	138,0 [5.43]	MRQ 50	143,5 [5.65]	MR(F)E 50	157,5 [6.20]	MRQE 50	163,5 [6.44]	9,0 [.35]
MR(F) 80	143,0 [5.63]	MRQ 80	148,5 [5.85]	MR(F)E 80	162,5 [6.40]	MRQE 80	168,5 [6.63]	14,0 [.55]
MR(F) 100	146,0 [5.75]	MRQ 100	152,0 [5.98]	MR(F)E 100	165,5 [6.52]	MRQE 100	171,5 [6.75]	17,4 [.69]
MR(F) 125	150,5 [5.93]	MRQ 125	156,5 [6.16]	MR(F)E 125	170,0 [6.69]	MRQE 125	176,0 [6.93]	21,8 [.86]
MR(F) 160	156,5 [6.16]	MRQ 160	162,5 [6.40]	MR(F)E 160	176,0 [6.93]	MRQE 160	182,0 [7.17]	27,8 [1.09]
MR(F) 200	163,5 [6.44]	MRQ 200	169,5 [6.67]	MR(F)E 200	183,0 [7.20]	MRQE 200	189,0 [7.44]	34,8 [1.37]
MR(F) 250	172,0 [6.77]	MRQ 250	179,0 [7.05]	MR(F)E 250	192,0 [7.56]	MRQE 250	198,0 [7.80]	43,5 [1.71]
MR(F) 315	183,0 [7.20]	MRQ 315	189,0 [7.44]	MR(F)E 315	204,0 [8.03]	MRQE 315	210,0 [8.27]	54,8 [2.16]
MR(F) 400	198,0 [7.80]	MRQ 400	204,0 [8.03]	MR(F)E 400	218,0 [8.58]	MRQE 400	224,0 [8.82]	69,4 [2.73]

MOUNTING

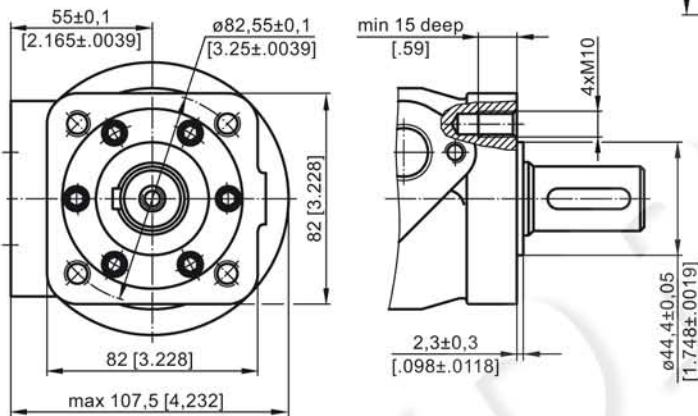
Oval Mount (2 Holes)



F - Oval Mount (4 Holes)

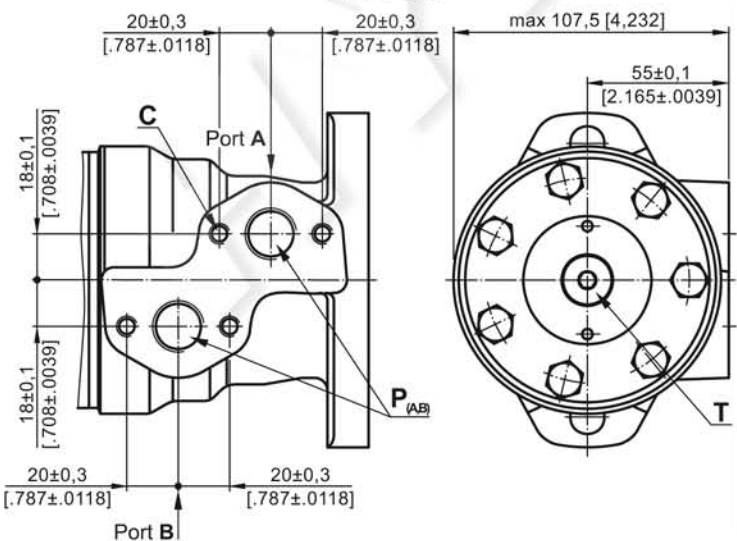


Q - Square Mount (4 Bolts)

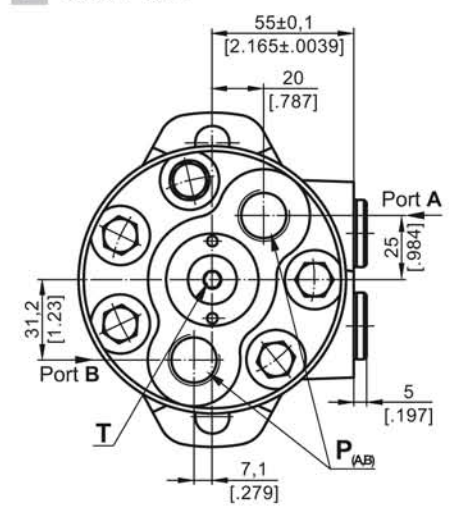


PORTS

Side Ports



E Rear Ports



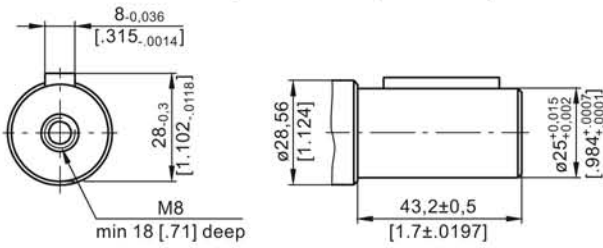
- C** : 4xM8 - 13 mm [.51 in] depth
- P_(A,B)** : 2xG1/2 or 2xM22x1,5 - 15 mm [.59 in] depth
- T** : G1/4 or M14x1,5 - 12 mm [.47 in] depth (plugged)

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

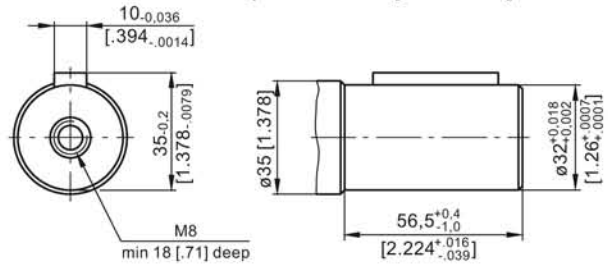
Reverse Rotation
Viewed from Shaft End
Port A Pressurized - CCW
Port B Pressurized - CW

SHAFT EXTENSIONS FOR MP AND MR MOTORS

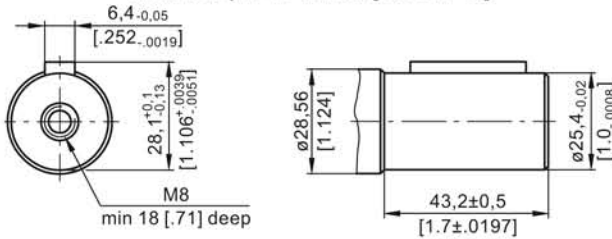
C - $\varnothing 25$ straight, Parallel key A8x7x32 DIN 6885
Max. Torque 34 daNm [3010 lb-in]



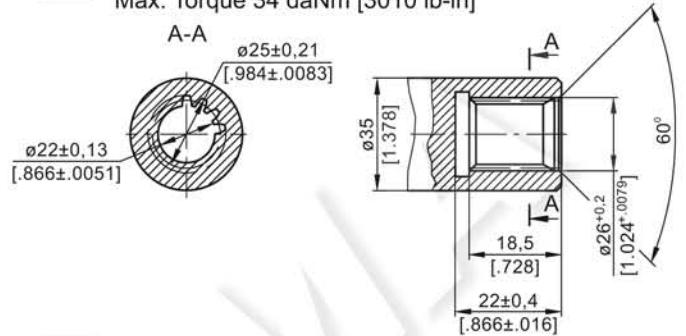
CB - $\varnothing 32$ straight, Parallel key A10x8x45 DIN 6885
Max. Torque 77 daNm [6815 lb-in]



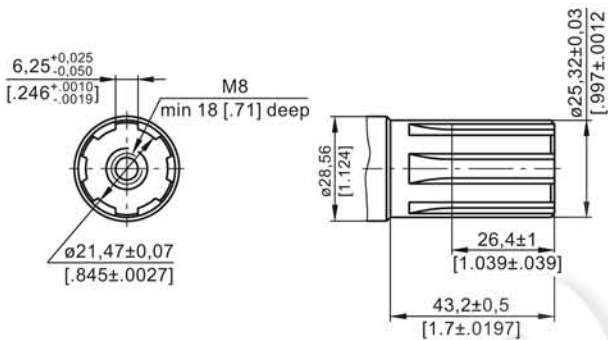
CO - $\varnothing 1"$ straight, Parallel key $\frac{1}{4}" \times \frac{1}{4}" \times 1\frac{1}{4}"$ BS46
Max. Torque 34 daNm [3010 lb-in]



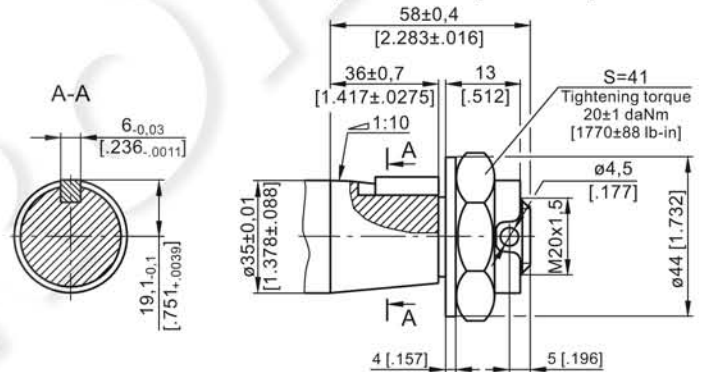
SB - splined A25x22xH10 DIN 5482
Max. Torque 34 daNm [3010 lb-in]



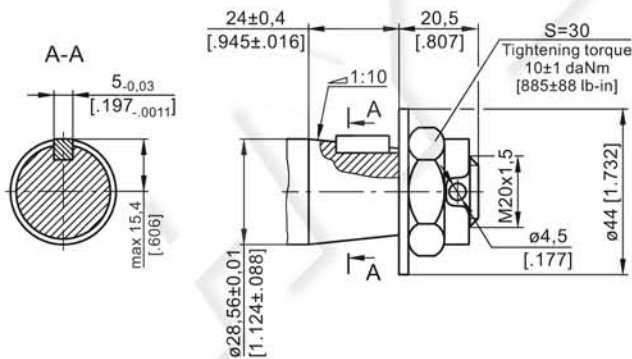
SH - splined, BS 2059 (SAE 6B)
Max. Torque 40 daNm [3540 lb-in]



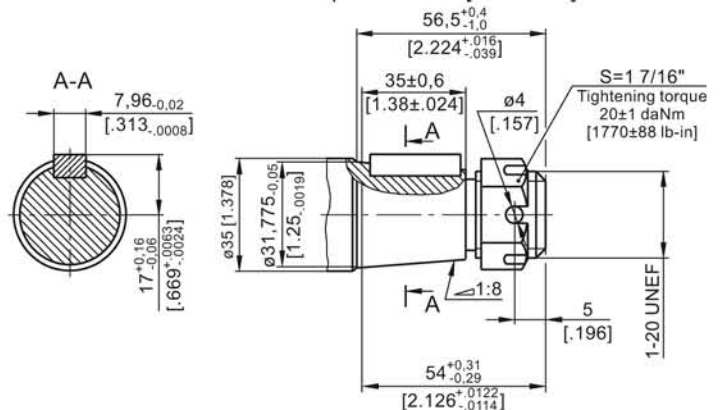
KB - tapered 1:10, Parallel key B6x6x20 DIN 6885
Max. Torque 77 daNm [6815 lb-in]



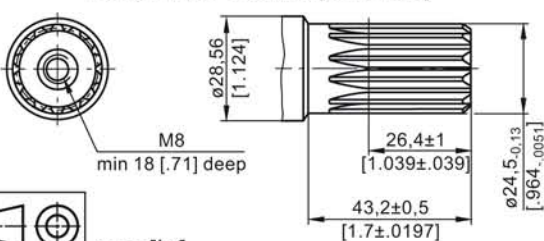
K - tapered 1:10, Parallel key B5x5x14 DIN 6885
Max. Torque 40 daNm [3540 lb-in]



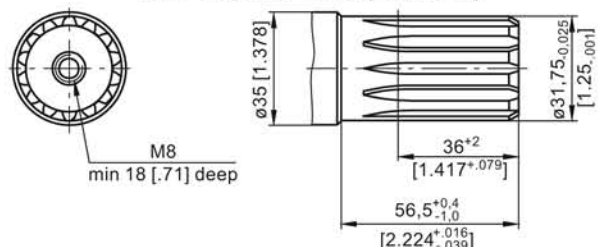
OB - tapered 1:8 SAEJ 501, Parallel key $\frac{5}{16}" \times \frac{5}{16}" \times 1\frac{1}{4}"$ BS46
Max. Torque 77 daNm [6815 lb-in]



SA - splined, B25x22h9 DIN 5482
Max. Torque 40 daNm [3540 lb-in]

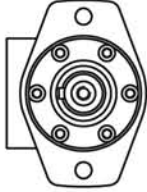
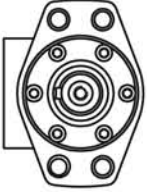
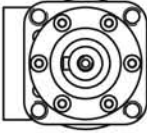


HB - $\varnothing 1\frac{1}{4}"$ splined 14T, ANSI B92.1-1976 Norm
Max. Torque 77 daNm [6815 lb-in]



PERMISSIBLE SHAFT LOADS FOR MP AND MR MOTORS

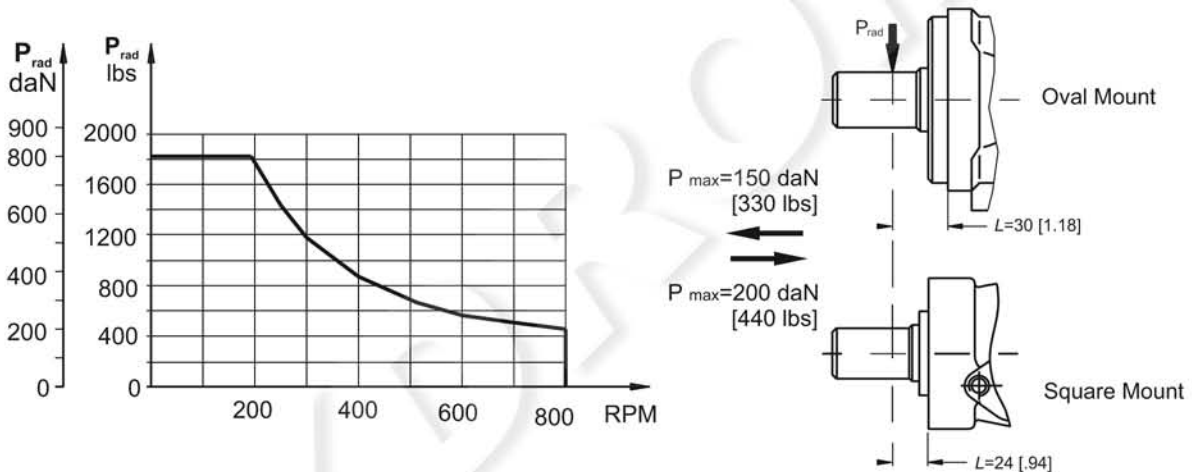
The permissible radial shaft load P_{rad} depends on the speed n , RPM, distance L from the point of load to the mounting flange and shaft version.

Mounting Flange			
Shaft Version	cylindrical - C, CO tapered - K, splined - SH	splined - HB cylindrical - CB	cylindrical - C, CO
Radial Shaft Load P_{rad} , in mm	$\frac{800}{n} \times \frac{25000}{95+L}$, daN*	$\frac{800}{n} \times \frac{18750}{95+L}$, daN*	$\frac{800}{n} \times \frac{25000}{101+L}$, daN*
Radial Shaft Load P_{rad} , in inch	$\frac{800}{RPM} \times \frac{2215}{3.74+L}$, lbs*	$\frac{800}{RPM} \times \frac{1660}{3.74+L}$, lbs*	$\frac{800}{RPM} \times \frac{2215}{3.98+L}$, lbs*

* $n < 200$ RPM; max $P_{rad}=800$ daN [1800 lbs]
 $n \geq 200$ RPM; $L < 55$ mm [2.2 in]

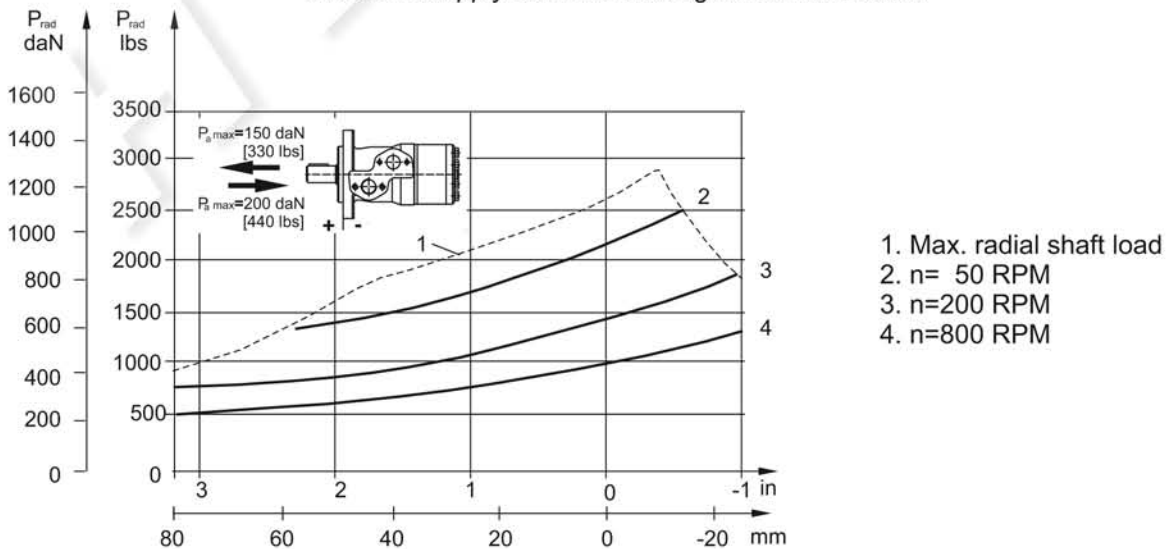
MP AND MR

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



MPN AND MRN

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

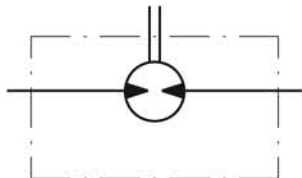


MAX. PERMISSIBLE SHAFT SEAL PRESSURE FOR MP AND MR MOTORS

MP/MR...U1 motors with high pressure seal and without drain connection:

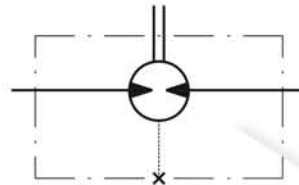
The shaft seal pressure equals the average of input pressure and return pressure.

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



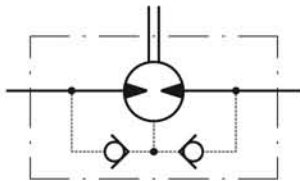
MP/MR...U motors with high pressure seal and drain connection:

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



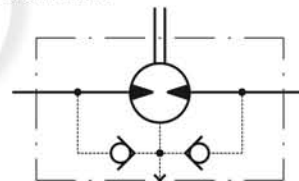
MP/MR...1 motors with low pressure seal or standard shaft seal and without drain connection:

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

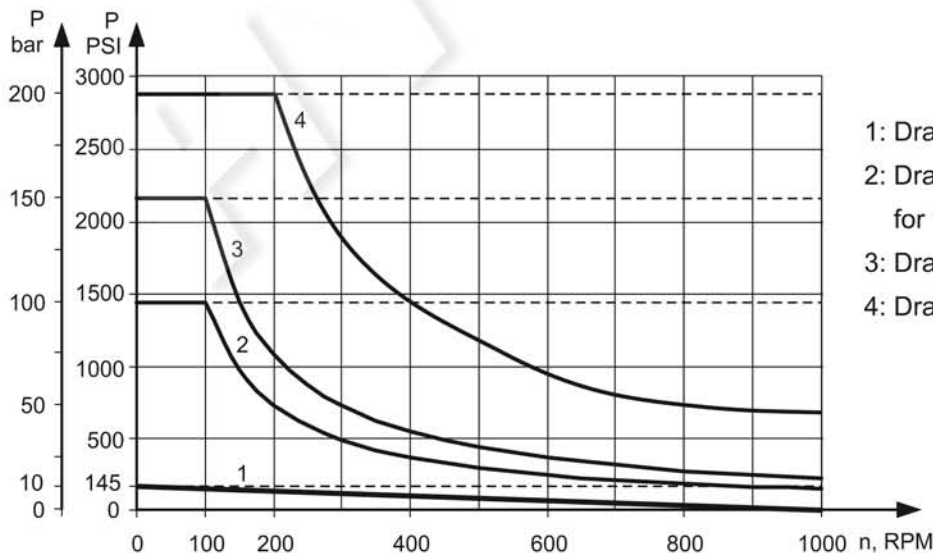


MP/MR... motors with low pressure seal or standard shaft seal and with drain connection:

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



Max. return pressure without drain line or max. pressure in the drain line



- 1: Drawing for Low Pressure Seal
- 2: Drawing for Standard Shaft Seal for "...B" shafts
- 3: Drawing for Standard Shaft Seal ("D" Seal)
- 4: Drawing for High Pressure Seal ("U" Seal)

— - continuous operations
- - - - - intermittent operations

ORDER CODE

	1	2	3	4	5	6	7	8	9	10
MR										

Pos.1 - Mounting Flange

- omit - Oval mount, two holes
- F** - Oval mount, four holes
- Q** - Square mount, four bolts

Pos.2 - Option (needle bearings)

- omit - none
- N** - with needle bearings

Pos.3 - Port type

- omit - Side ports
- E** - Rear ports

Pos.4 - Displacement code

- 50** - 51,5 cm³/rev [3.14 in³/rev]
- 80** - 80,3 cm³/rev [4.90 in³/rev]
- 100** - 99,8 cm³/rev [6.09 in³/rev]
- 125** - 125,7 cm³/rev [7.67 in³/rev]
- 160** - 159,6 cm³/rev [9.74 in³/rev]
- 200** - 199,8 cm³/rev [12.19 in³/rev]
- 250** - 250,1 cm³/rev [15.26 in³/rev]
- 315** - 315,7 cm³/rev [19.26 in³/rev]
- 400** - 397,0 cm³/rev [24.40 in³/rev]

Pos.5 - Shaft Extensions*

- C** - \varnothing 25 straight, Parallel key A8x7x32 DIN6885
- VC** - \varnothing 25 straight, Parallel key A8x7x32 DIN6885 with corrosion resistant bushing
- CO** - \varnothing 1" straight, Parallel key 1/4"x1/4"x1 1/4" BS46
- VCO** - \varnothing 1" straight, Parallel key 1/4"x1/4"x1 1/4" Bs46 with corrosion resistant bushing
- SH** - \varnothing 25,32 splined BS 2059 (SAE 6B)
- VSH** - \varnothing 25,32 splined BS 2059 (SAE 6B) with corrosion resistant bushing
- K** - \varnothing 28,56 tapered 1:10, Parallel key B5x5x14 DIN6885
- SA** - \varnothing 24,5 splined B 25x22 DIN 5482
- VSA** - \varnothing 24,5 splined B 25x22 DIN 5482 with corrosion resistant bushing
- CB** - \varnothing 32 straight, Parallel key A10x8x45 DIN6885
- KB** - \varnothing 35 tapered 1:10, Parallel key B6x6x20 DIN6885
- SB** - splined A 25x22 DIN 5482
- OB** - \varnothing 1 1/4" tapered 1:8, Parallel key 5/16"x5/16"x1 1/4" BS46
- HB** - \varnothing 1 1/4" splined 14T ANSI B92.1 - 1976

Pos. 6 - Shaft Seal Version

- omit - Low pressure shaft seal or Standard shaft seal for "...B" shaft
- D** - 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 - Ports

- omit - BSPP (ISO 228)
- M** - Metric (ISO 262)

Pos. 9 - Special Features

Pos.10 - Design Series

- omit - Factory specified

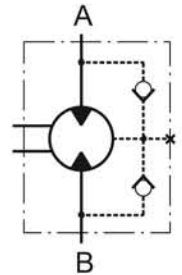
NOTES: The following combinations are not allowed: - **Q** flange with "...B" shafts;
 - **N** option with "...B" shafts, Low Pressure Seal or **U** option;
 - "...B" shafts with **D** and **U** shaft seals.

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

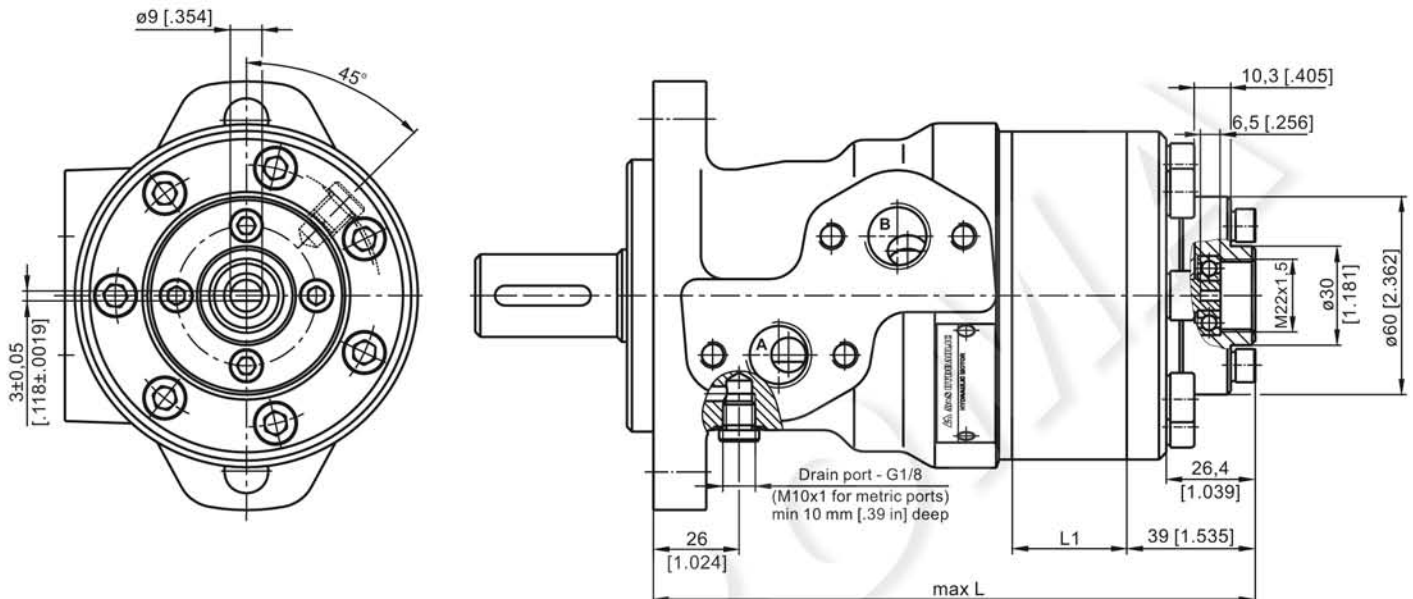
The hydraulic motors are manganese-phosphatized as standard.

Hydraulic motors type MR...T with tacho connection

MR motors are available in version with tacho drive shaft. With tacho connection the speed of the motor can be registered. Tacho shaft has a 6 times higher revolution speed than output shaft and opposite direction of rotation.



OUTLINE DIMENSIONS REFERENCE



Type	L, mm [in]	L ₁ , mm [in]
MR 50	157 [6.18]	9,0 [.35]
MR 80	162 [6.38]	14,0 [.55]
MR 100	165 [6.50]	17,4 [.69]
MR 125	170 [6.69]	21,8 [.86]
MR 160	176 [6.93]	27,8 [1.09]
MR 200	183 [7.20]	34,8 [1.37]
MR 250	192 [7.56]	43,5 [1.71]
MR 315	204 [8.03]	54,8 [2.16]
MR 400	218 [8.58]	69,4 [2.73]



Notes:

Radial or axial load on tacho shaft must be avoided. Max. torque on tacho shaft 0,1 daNm [.885 lb-in]. Max. cont. return pressure without drain line 20 bar [290 PSI].

Tacho option for MR motor is available only for shafts with sealing diameter $\varnothing 28,56$ with shaft seal type **D** (up to 150 bar).

It is not allowed for Q-flange.

The main technical features correspond to the standard motors series MR. There are no changes in the overall and mounting dimensions. For detail technical and mounting data please refer to MR catalogue.