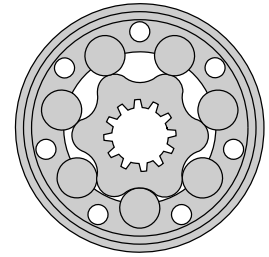


HYDRAULIC MOTORS MR



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 Permissible shaft Seal Pressure ... 26
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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

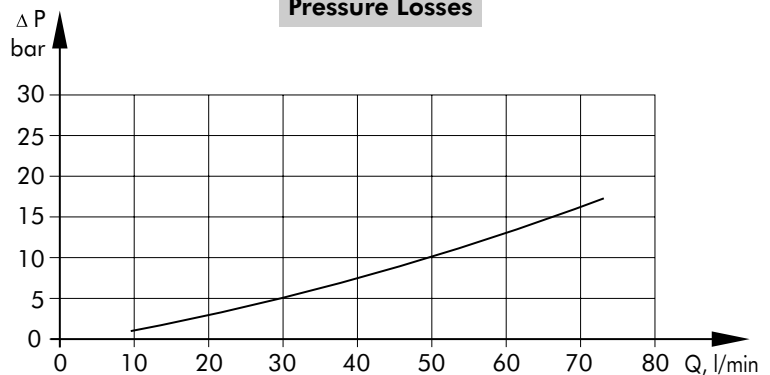
GENERAL

Displacement,	[cm ³ /rev.]	51,5 ÷ 397
Max. Speed,	[RPM]	150 ÷ 775
Max. Torque,	[daNm]	10,1 ÷ 61
Max. Output,	[kW]	5 ÷ 13
Max. Pressure Drop,	[bar]	70 ÷ 175
Max. Oil Flow,	[l/min]	40 ÷ 60
Min. Speed,	[RPM]	10
Pressure fluid		Mineral based- HLP(DIN 51524) or HM(ISO 6743/4)
Temperature range,	[°C]	-30 ÷ 90
Optimal Viscosity range,	[mm ² /s]	20 ÷ 75
Filtration		ISO code 20/16 (Min. recommended fluid filtration of 25 micron)

Oil flow in drain line

Pressure drop (bar)	Viscosity (mm ² /s)	Oil flow in drain line (l/min)
100	20	2,5
	35	1,8
140	20	3,5
	35	2,8

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	80	100	125	160	200	250	315	400	
Displacement, [cm ³ /rev.]	51,5	80,3	99,8	125,7	159,6	199,8	250,1	315,7	397	
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]	cont.	10	20	24	30	39	38,5	39	36	38
	int.*	13	22	28	34	43	46	47	47	47
	peak**	17	27	32	37	46	56	60	61	61
Max. Output, [kW]	cont.	7	12,5	13	12,5	11,5	9	8	5	4,8
	int.*	8,5	15	15	14,5	14	12	9,5	8	6,8
Max. Pressure Drop [bar]	cont.	140	175	175	175	175	140	110	85	65
	int.*	175	200	200	200	200	175	140	115	90
	peak**	225	225	225	225	225	225	200	150	115
Max. Oil Flow [l/min]	cont.	40	60	60	60	60	60	60	60	60
	int.*	50	75	75	75	75	75	75	75	75
Max. Inlet Pressure [bar]	cont.	175	175	175	175	175	175	175	175	175
	int.*	200	200	200	200	200	200	200	200	200
	peak**	225	225	225	225	225	225	225	225	225
Max. Return Pressure with Drain Line [bar]	cont.	175	175	175	175	175	175	175	175	175
	int.*	200	200	200	200	200	200	200	200	200
	peak**	225	225	225	225	225	225	225	225	225
Max. Starting Pressure with Unloaded Shaft, [bar]		10	10	10	9	7	5	4	3	3
Min. Starting Torque [daNm]	at max. press. drop cont.	8	15	20	25	32	33	31	31,5	31,5
	at max. press. drop int.*	10	17	23	28	37	40	48	50	50
Min. Speed***, [RPM]		10	10	10	10	10	10	10	10	10
Weight, avg. [kg] For rear ports: +0,650 kg	MR(F)	6,8	6,9	7,2	7,3	7,5	8	8,4	9,1	9,8
	MRQ(N)	6,2	6,3	6,6	6,8	7,0	7,2	7,8	8,6	9,3

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

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

*** For speeds of 10 RPM or lower, 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. Recommended 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 at operating temperatures.
5. Recommended maximum system operating temperature - 82°C.
6. To assure optimum motor life fill with fluid prior to loading and run at moderate load and speed for 10-15 min.

SPECIFICATION DATA (continued)

Specification Data for MR... motors with CB, KB, OB and HB shafts.
(ø35 sealing diameter)

Type	MR									
	50	80	100	125	160	200	250	315	400	
Displacement, [cm ³ /rev.]	51,5	80,3	99,8	125,7	159,6	199,8	250,1	315,7	397	
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]	cont.	10	20	24	30	39	45	54	55	61
	int.*	13	22	28	34	43	50	61	69	69
	peak**	17	27	32	37	46	56	71	84	87
Max. Output, [kW]	cont.	7	12,5	13	12,5	11,5	11	10	9	7,8
	int.*	8,5	15	15	14,5	14	13	12	10	10,6
Max. Pressure Drop [bar]	cont.	140	175	175	175	175	175	175	135	110
	int.*	175	200	200	200	200	200	200	175	140
	peak**	225	225	225	225	225	225	225	210	175
Max. Oil Flow [l/min]	cont.	40	60	60	60	60	60	60	60	60
	int.*	50	75	75	75	75	75	75	75	75
Max. Inlet Pressure [bar]	cont.	175	175	175	175	175	175	175	175	175
	int.*	200	200	200	200	200	200	200	200	200
	peak**	225	225	225	225	225	225	225	225	225
Max. Return Pressure with Drain Line [bar]	cont.	175	175	175	175	175	175	175	175	175
	int.*	200	200	200	200	200	200	200	200	200
	peak**	225	225	225	225	225	225	225	225	225
Max. Starting Pressure with Unloaded Shaft, [bar]		10	10	10	9	7	5	4	3	3
Min. Starting Torque [daNm]	at max. press. drop cont.	8	15	20	25	32	41	50	50	50
	at max. press. drop int.*	10	17	23	28	37	46	55	66	61
Min. Speed***, [RPM]		10	10	10	10	10	10	10	10	10
Weight, avg. [kg] For rear ports: +0,650 kg	MR(F)	6,9	7	7,3	7,4	7,6	8,1	8,5	9,2	9,9

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

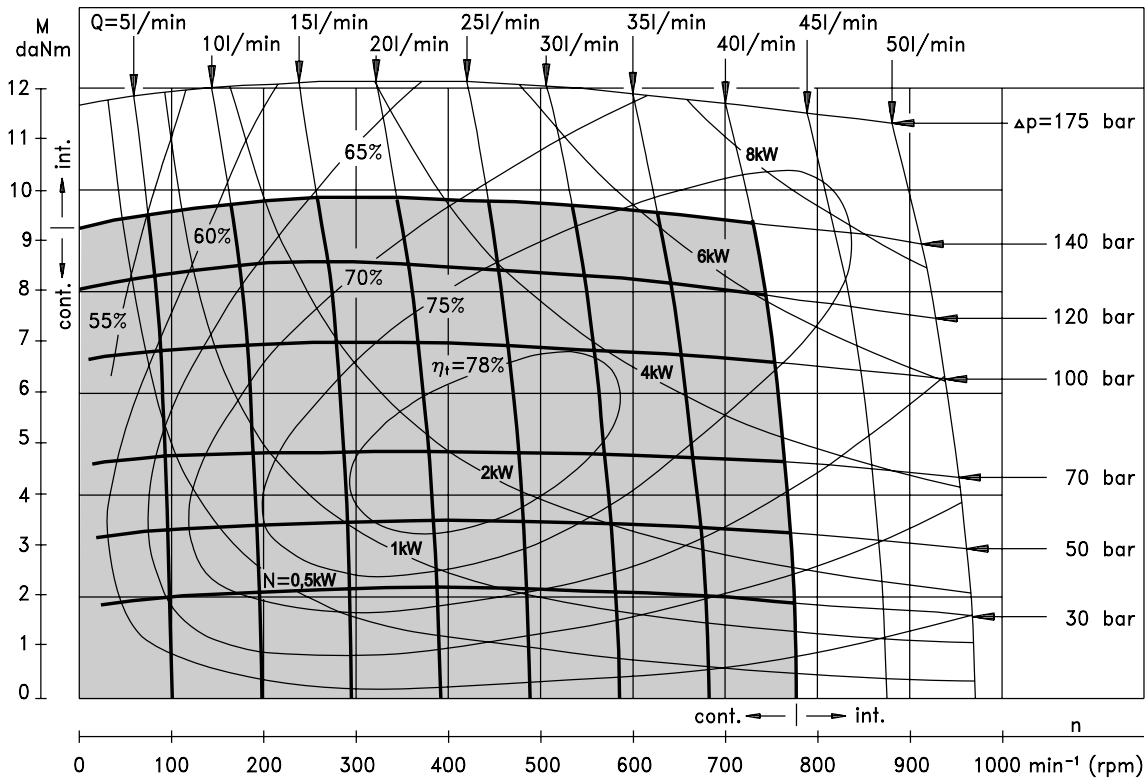
** Peak load: the permissible values may occur for max. 1% for every minute.

*** For speeds of 10 RPM or lower, consult factory or your regional manager.

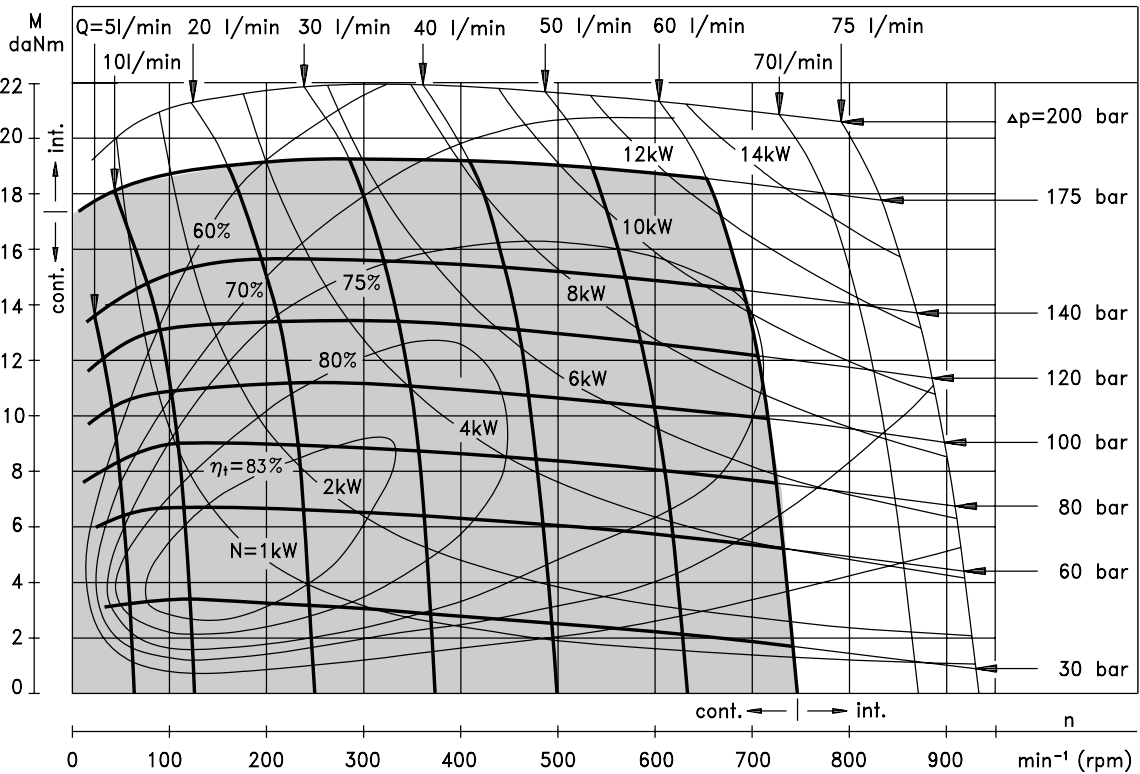
1. Intermittent speed and intermittent pressure drop must not occur simultaneously!
2. Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
3. Recommended using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) or HM (ISO 6743/4).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

FUNCTION DIAGRAMS

MR 50



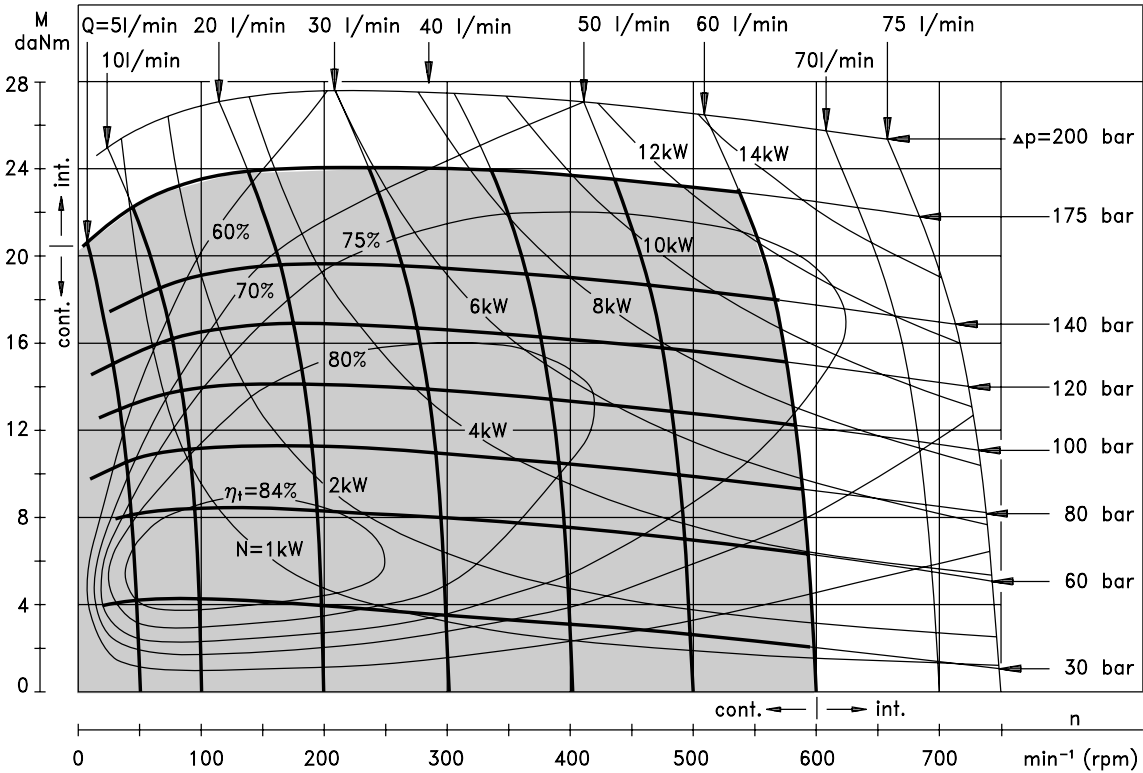
MR 80



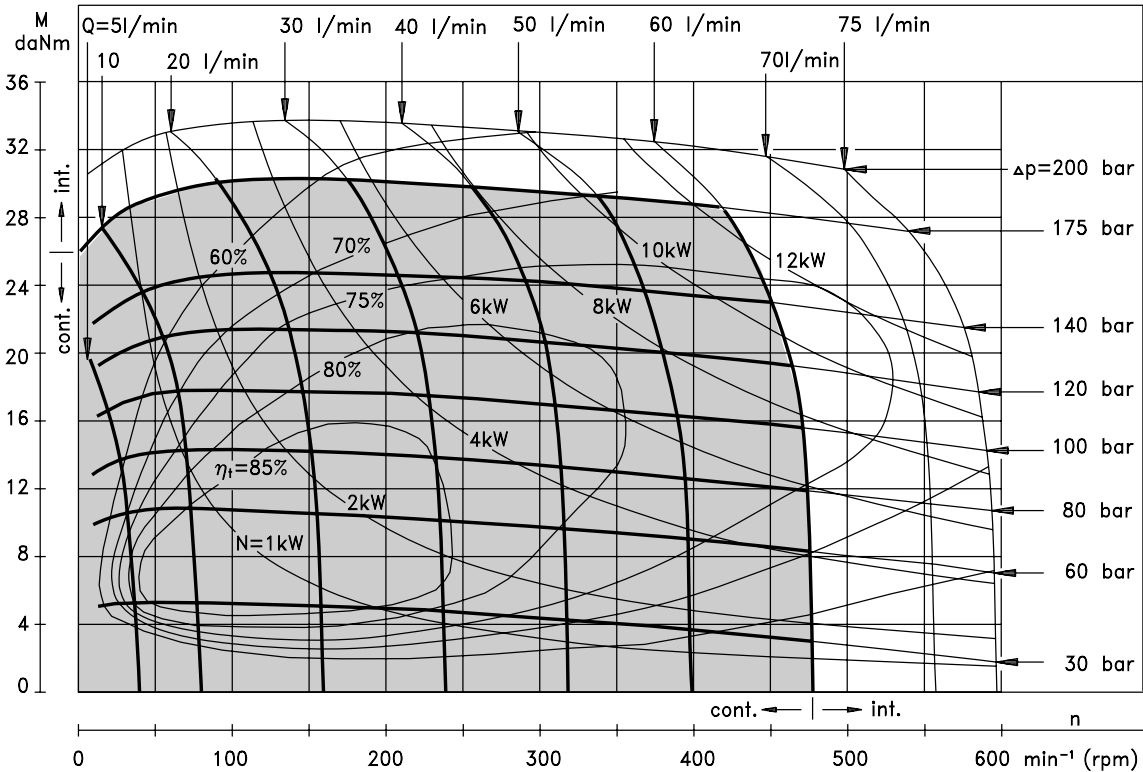
The function diagrams data was collected at back pressure 5 ÷ 10 bar and oil with viscosity of 32 mm²/s at 50° C.

FUNCTION DIAGRAMS

MR 100



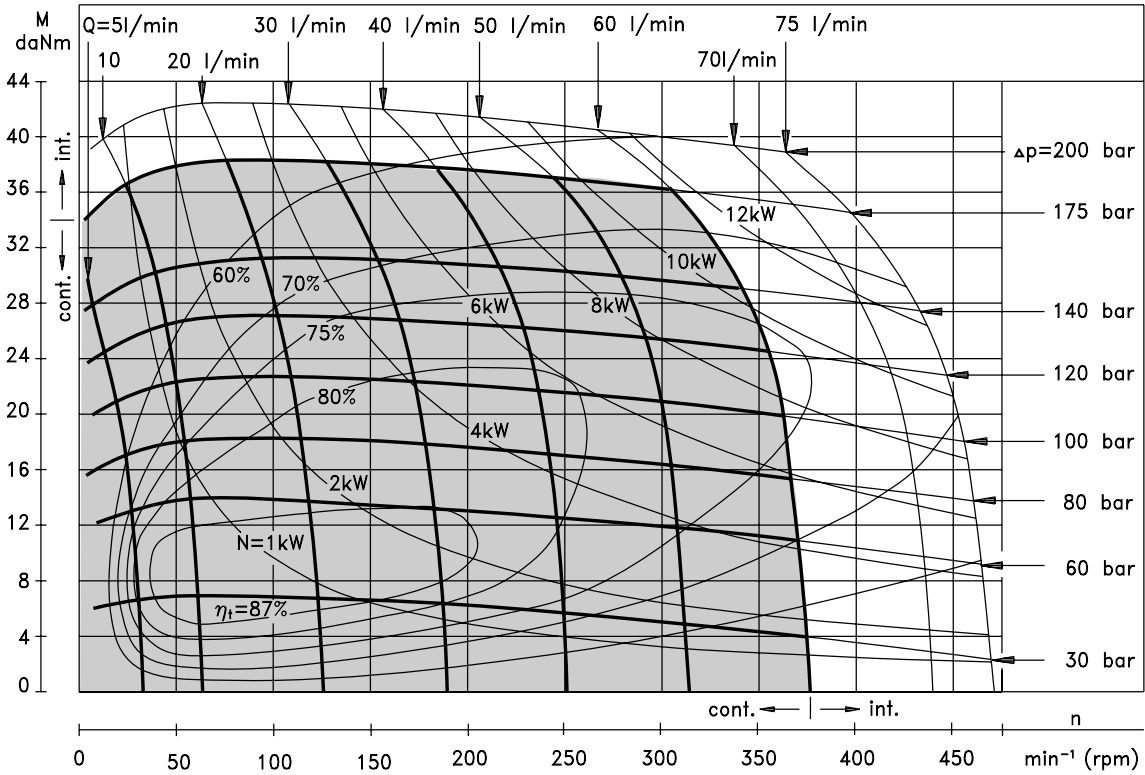
MR 125



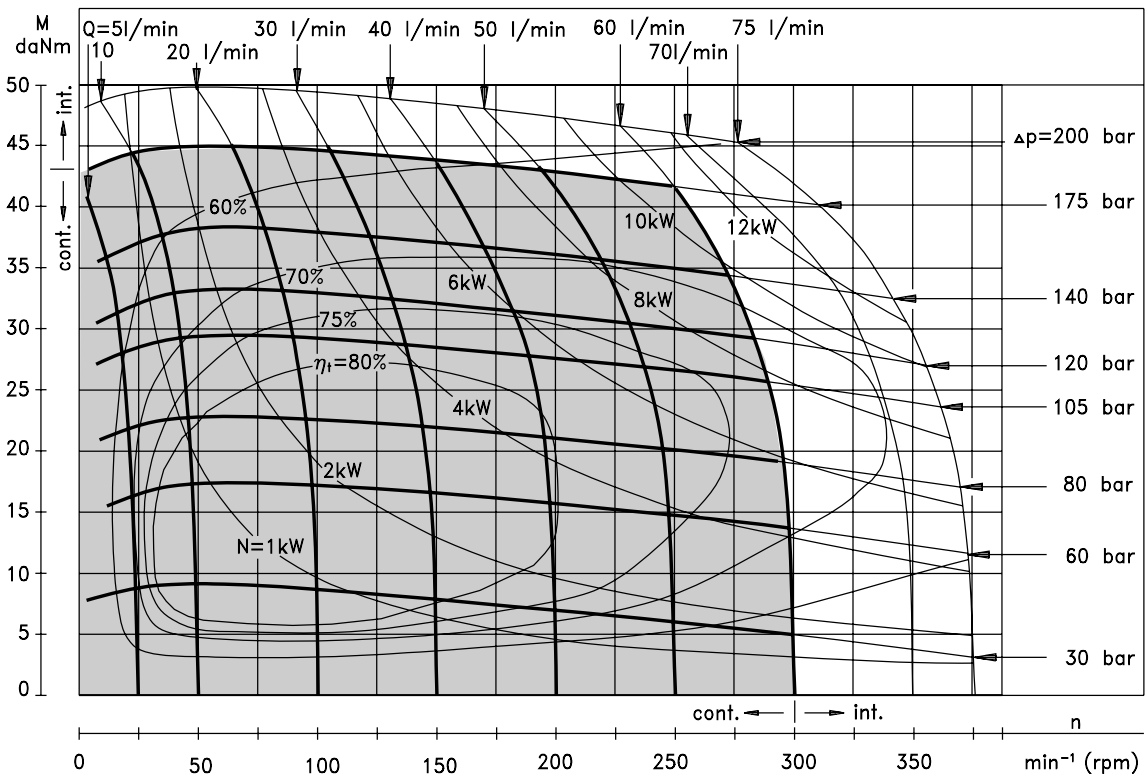
The function diagrams data was collected at back pressure $5 \div 10$ bar and oil with viscosity of $32 \text{ mm}^2/\text{s}$ at 50°C .

FUNCTION DIAGRAMS

MR 160



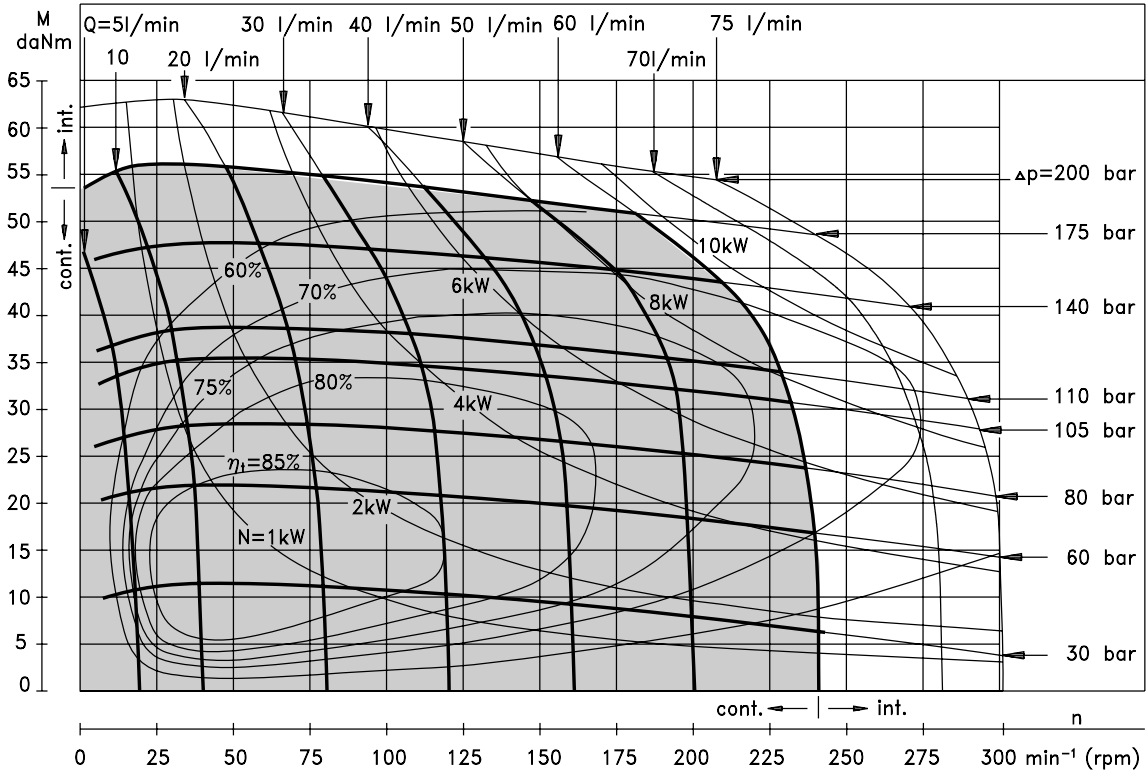
MR 200



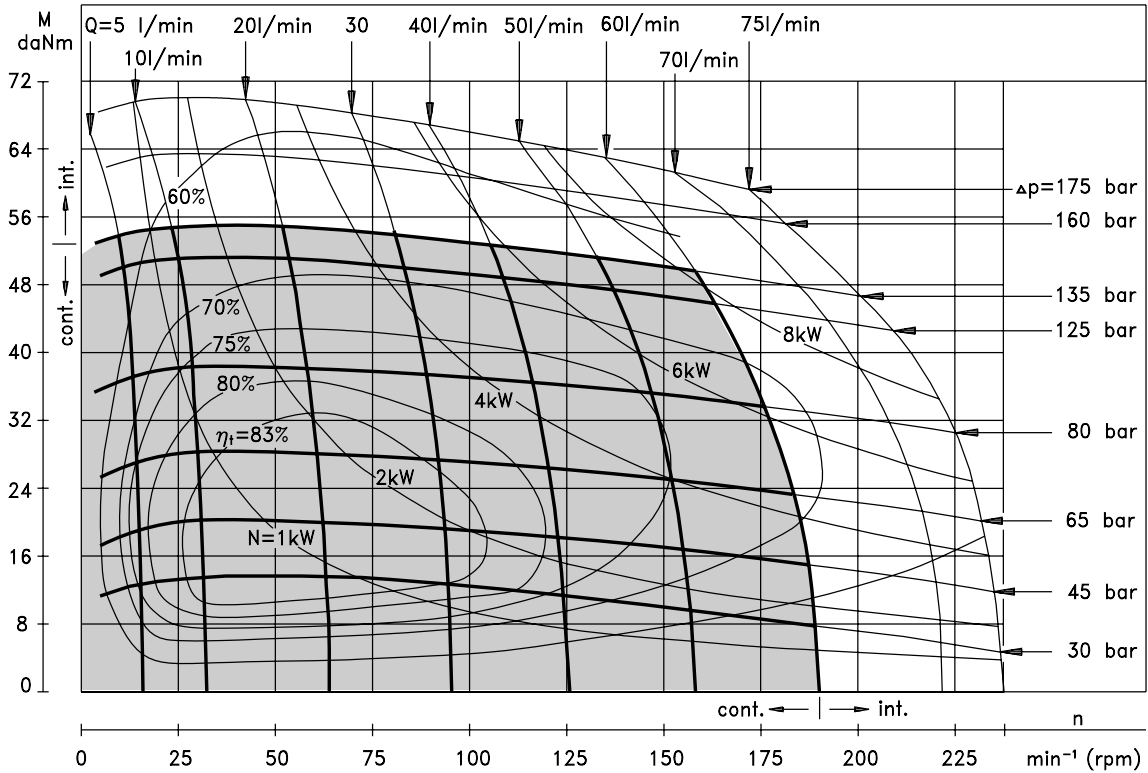
The function diagrams data was collected at back pressure 5 ÷ 10 bar and oil with viscosity of 32 mm²/s at 50° C.

FUNCTION DIAGRAMS

MR 250



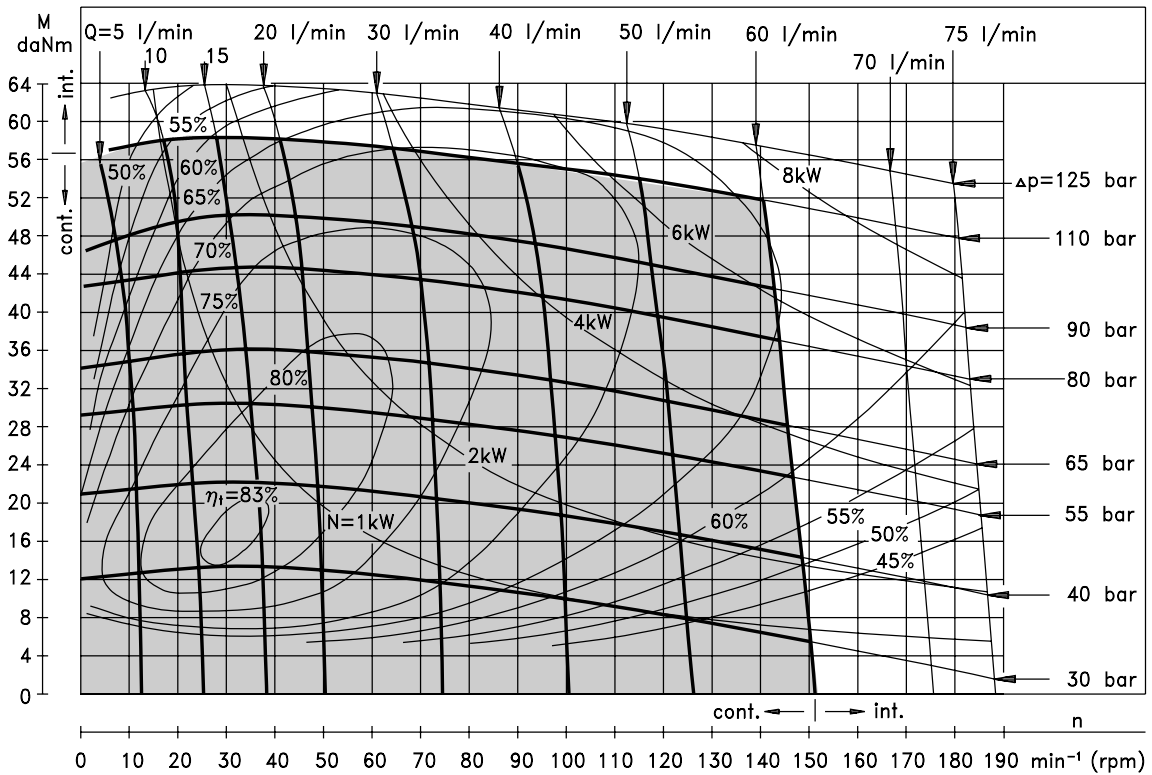
MR 315



The function diagrams data was collected at back pressure $5 \div 10$ bar and oil with viscosity of $32 \text{ mm}^2/\text{s}$ at 50°C .

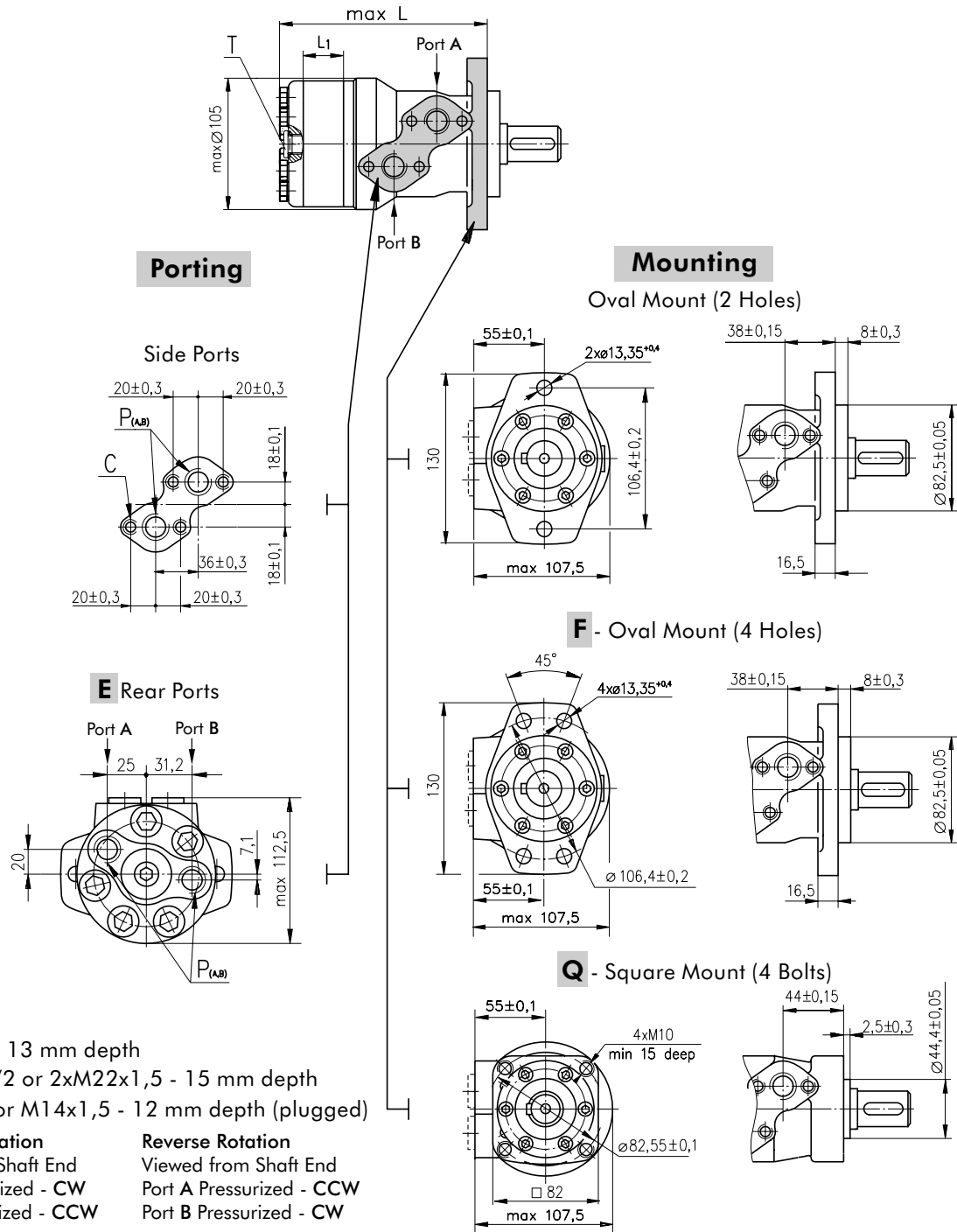
FUNCTION DIAGRAM

MR 400



The function diagram data was collected at back pressure 5 ÷ 10 bar and oil with viscosity of 32 mm²/s at 50° C.

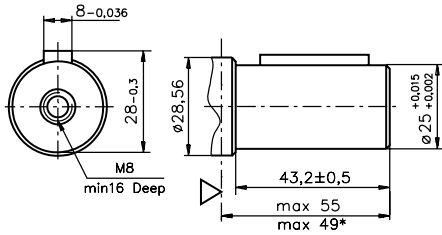
DIMENSIONS AND MOUNTING DATA



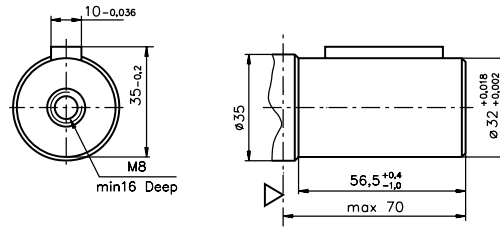
Type	L, mm	Type	L, mm	Type	L, mm	Type	L, mm	L ₁ , mm
MR(F) 50	138,0	MRQ 50	143,5	MR(F)E 50	157,5	MRQE 50	163,5	9,0
MR(F) 80	143,0	MRQ 80	148,5	MR(F)E 80	162,5	MRQE 80	168,5	14,0
MR(F) 100	146,0	MRQ 100	152,0	MR(F)E 100	165,5	MRQE 100	171,5	17,4
MR(F) 125	150,5	MRQ 125	156,5	MR(F)E 125	170,0	MRQE 125	176,0	21,8
MR(F) 160	156,5	MRQ 160	162,5	MR(F)E 160	176,0	MRQE 160	182,0	27,8
MR(F) 200	163,5	MRQ 200	169,5	MR(F)E 200	183,0	MRQE 200	189,0	34,8
MR(F) 250	172,0	MRQ 250	179,0	MR(F)E 250	192,0	MRQE 250	198,0	43,5
MR(F) 315	183,0	MRQ 315	189,0	MR(F)E 315	204,0	MRQE 315	210,0	54,8
MR(F) 400	198,0	MRQ 400	204,0	MR(F)E 400	218,0	MRQE 400	224,0	69,4

SHAFT EXTENSIONS FOR MP AND MR MOTORS

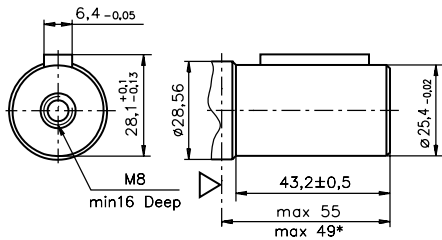
C - $\varnothing 25$ straight, Parallel key A8x7x32 DIN 6885
Max. Torque 34 daNm



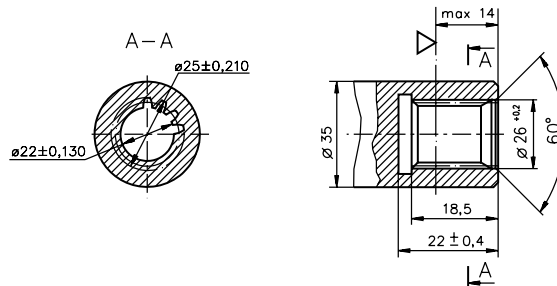
CB - $\varnothing 32$ straight, Parallel key A10x8x45 DIN 6885
Max. Torque 77 daNm



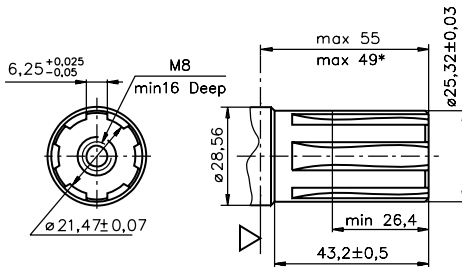
CO - $\varnothing 1"$ straight, Parallel key $\frac{1}{4} \times \frac{1}{4} \times \frac{1}{4}"$ BS46
Max. Torque 34 daNm



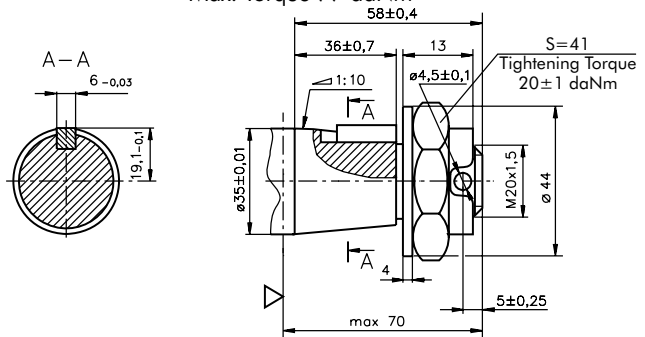
SB - splined A25x22xH10 DIN 5482
Max. Torque 34 daNm



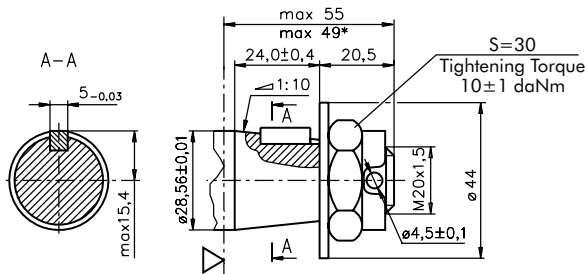
SH - splined, BS 2059 (SAE 6B)
Max. Torque 40 daNm



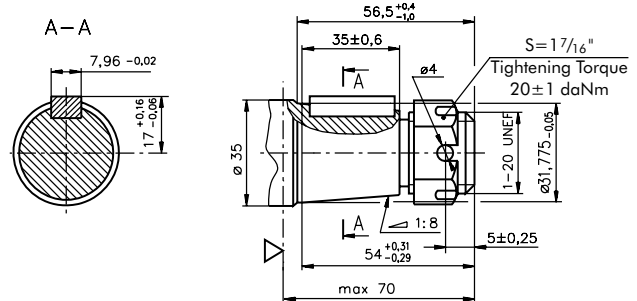
KB - tapered 1:10, Parallel key B6x6x20 DIN 6885
Max. Torque 77 daNm



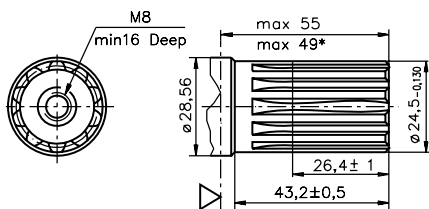
K - tapered 1:10, Parallel key B5x5x14 DIN 6885
Max. Torque 40 daNm



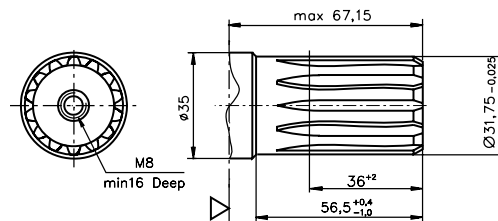
OB - tapered 1:8 SAEJ 501, Parallel key $\frac{5}{16} \times \frac{5}{16} \times \frac{1}{4}"$ BS46
Max. Torque 77 daNm



SA - splined, B25x22h9 DIN 5482
Max. Torque 40 daNm



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

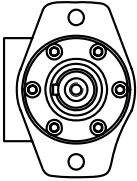
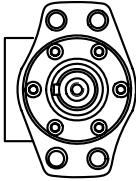
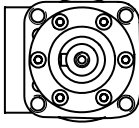


▽ - Motor Mounting Surface

* - For Q-flange

PERMISSIBLE SHAFT LOADS FOR MP AND MR MOTORS

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

Mounting Flange			
Shaft Version	cylindrical - C, CO tapered - K, splined - SH	splined - HB cylindrical - CB	cylindrical - C, CO
Radial Shaft Load P_{rad}^*	$\frac{800}{n} \times \frac{25000}{95+L}$, daN	$\frac{800}{n} \times \frac{18750}{95+L}$, daN	$\frac{800}{n} \times \frac{25000}{101+L}$, daN

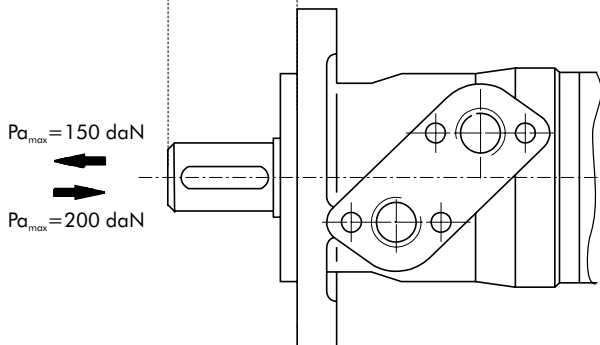
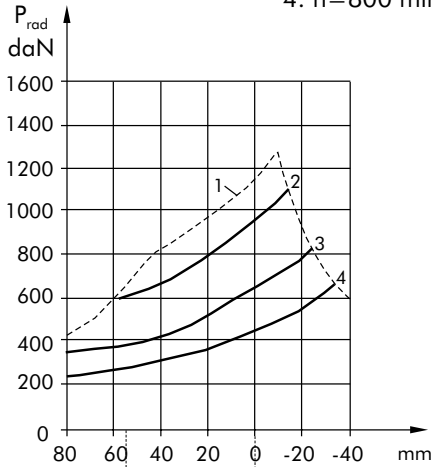
$n < 200 \text{ min}^{-1}$; max $P_{rad} = 800 \text{ daN}$

* $n \geq 200 \text{ min}^{-1}$; $L < 55 \text{ mm}$

MPN and MRN

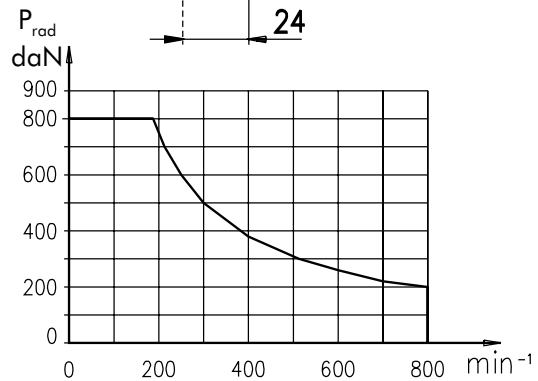
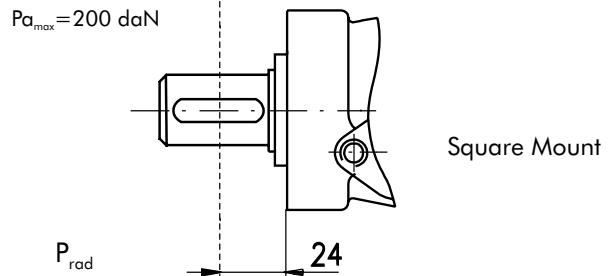
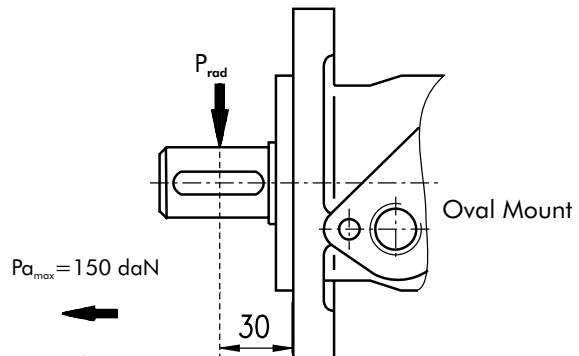
The curves apply to a B10 bearing life of 2000 hours.

- 1: Max. radial shaft load
- 2: $n = 50 \text{ min}^{-1}$
- 3: $n = 200 \text{ min}^{-1}$
- 4: $n = 800 \text{ min}^{-1}$



MP and MR

Radial Shaft Load P_{rad} for C, CO Shaft Extensions by $L=30$ (24) mm

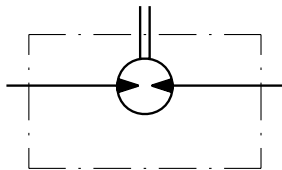


**MAX. PERMISSIBLE SHAFT SEAL PRESSURE
FOR MP AND MR MOTORS**

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

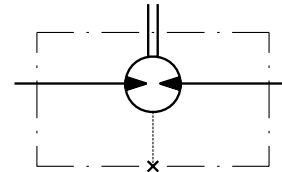
The shaft seal pressure equals the average
of input pressure and return pressure.

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



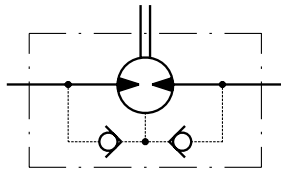
**MP/MR...U motors with high pressure seal
and drain connection:**

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



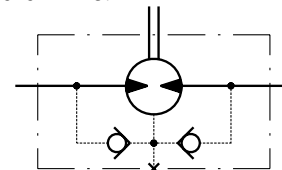
**MP/MR...1 motors with low pressure seal
or standard shaft seal
and without drain connection:**

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

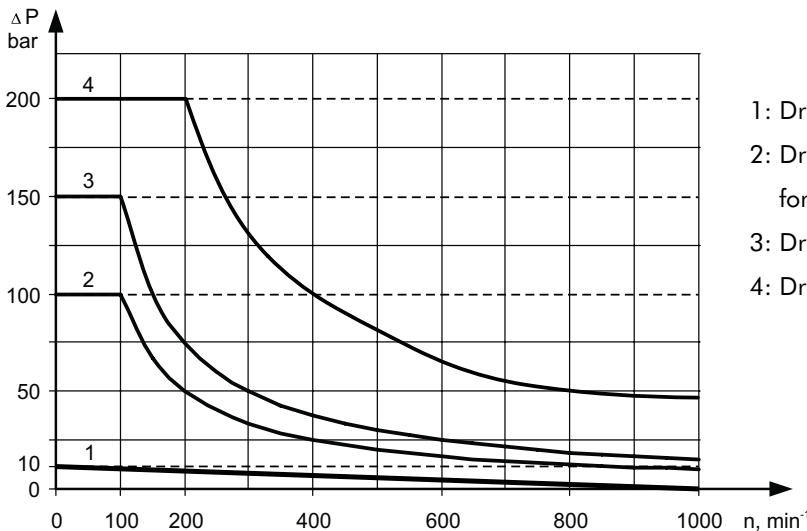


**MP/MR... motors with low pressure seal
or standard shaft seal
and with drain connection:**

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
M R										

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]

80 - 80,3 [cm³/rev]

100 - 99,8 [cm³/rev]

125 - 125,7 [cm³/rev]

160 - 159,6 [cm³/rev]

200 - 199,8 [cm³/rev]

250 - 250,1 [cm³/rev]

315 - 315,7 [cm³/rev]

400 - 397,0 [cm³/rev]

Pos.5 - Shaft Extensions* (see page 24)

C - ø25 straight, Parallel key A8x7x32 DIN6885

VC - ø25 straight, Parallel key A8x7x32 DIN6885
with corrosion resistant bushing

CO - ø1" straight, Parallel key ¼"x¼"x1¼" BS46

VCO - ø1" straight, Parallel key ¼"x¼"x1¼" BS46
with corrosion resistant bushing

SH - ø25,32 splined BS 2059 (SAE 6B)

VSH - ø25,32 splined BS 2059 (SAE 6B)
with corrosion resistant bushing

K - ø28,56 tapered 1:10, Parallel key B5x5x14 DIN6885

SA - ø24,5 splined B 25x22 DIN 5482

VSA - ø24,5 splined B 25x22 DIN 5482
with corrosion resistant bushing

CB - ø32 straight, Parallel key A10x8x45 DIN6885

KB - ø35 tapered 1:10, Parallel key B6x6x20 DIN6885

SB - splined A 25x22 DIN 5482

OB - ø1¼" tapered 1:8, Parallel key ⅝"x⅝"x1¼" BS46

HB - ø1¼" splined 14T ANSI B92.1 - 1976

Pos. 6 - Shaft Seal Version (see page 26)

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 (see page 46)

Pos.10 - Design Series

omit - Factory specified

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

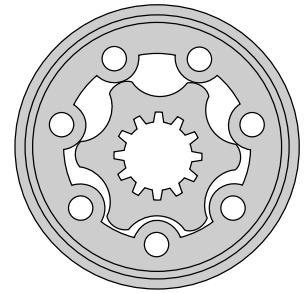
NOTES: 1. The following combinations are not allowed:- **Q** flange with "...B" shafts;

- **N** option with "...B" shafts, Low Pressure Seal or **U** option;

- "...B" shafts with **D** and **U** shaft seals.

The hydraulic motors are mangano-phosphatized as standard.

HYDRAULIC MOTORS MP



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 Shaft extensions 24
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 Permissible shaft Seal Pressure ... 26
 Order code 27

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
- » Metric and BSPP ports
- » Speed sensing
- » Other special features

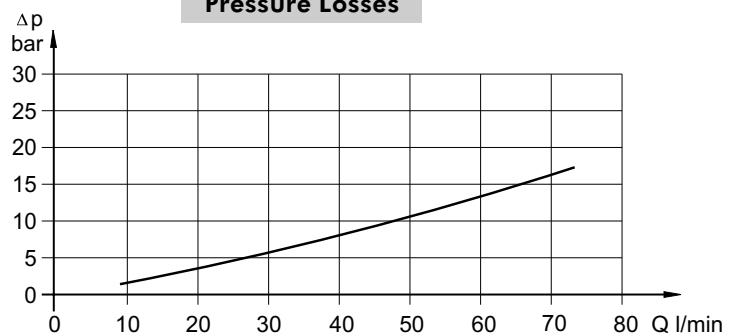
GENERAL

Displacement,	[cm ³ /rev.]	25 ÷ 623,6
Max. Speed,	[RPM]	95 ÷ 1600
Max. Torque,	[daNm]	3,3 ÷ 50
Max. Output,	[kW]	3,3 ÷ 10,5
Max. Pressure Drop,	[bar]	55 ÷ 140
Max. Oil Flow,	[l/min]	40 ÷ 60
Min. Speed,	[RPM]	10
Pressure fluid		Mineral based- HLP(DIN 51524) or HM(ISO 6743/4)
Temperature range,	[°C]	-30 ÷ 90
Optimal Viscosity range, [mm ² /s]		20 ÷ 75
Filtration		ISO code 20/16 (Min. recommended fluid filtration of 25 micron)

Oil flow in drain line

Pressure drop (bar)	Viscosity (mm ² /s)	Oil flow in drain line (l/min)
100	20	2,5
	35	1,8
140	20	3,5
	35	2,8

Pressure Losses



SPECIFICATION DATA

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

Type	MP														
	25	32	40	50	80	100	125	160	200	250	315	400	500	630	
Displacement, [cm ³ /rev.]	25	32	40	49,5	79,2	99	123,8	158,4	198	247,5	316,8	396	495	623,6	
Max. Speed, [RPM]	cont.	1600	1560	1500	1210	755	605	486	378	303	242	190	150	120	95
	int.*	1800	1720	1750	1515	945	755	605	472	378	303	236	189	150	120
Max. Torque [daNm]	cont.	3,3	4,3	6,2	9,4	15,1	19,3	23,7	31,3	36,6	38	38	36	39	44
	int.*	4,7	6,1	8,2	11,9	19,5	23,7	29,8	37,8	45,6	58,3	56	59	57	64
	peak**	6,7	8,6	10,7	14,3	22,4	27,5	36,5	43,8	55	68,5	85	85,4	78	82
Max. Output, [kW]	cont.	4,5	5,8	8,4	10,1	10,2	10,5	10	10,1	10	7,5	5,7	4,6	3,5	3,3
	int.*	6,1	7,8	11,6	12,2	12,5	12,8	12	12,1	12	12	9	7,8	7,2	5,6
Max. Pressure Drop [bar]	cont.	100	100	120	140	140	140	140	140	140	110	90	70	60	55
	int.*	140	140	155	175	175	175	175	175	175	175	140	115	90	80
	peak**	225	225	225	225	225	225	225	225	225	225	225	180	130	110
Max. Oil Flow [l/min]	cont.	40	50	60	60	60	60	60	60	60	60	60	60	60	60
	int.*	45	55	70	70	70	70	70	70	70	70	70	70	70	70
Max. Inlet Pressure [bar]	cont.	175	175	175	175	175	175	175	175	175	175	175	175	140	140
	int.*	200	200	200	200	200	200	200	200	200	200	200	200	175	175
	peak**	225	225	225	225	225	225	225	225	225	225	225	225	225	225
Max. Return Pressure with Drain Line [bar]	cont.	175	175	175	175	175	175	175	175	175	175	175	175	140	140
	int.*	200	200	200	200	200	200	200	200	200	200	200	200	175	175
	peak**	225	225	225	225	225	225	225	225	225	225	225	225	225	225
Max. Starting Pressure with Unloaded Shaft, [bar]		10	10	10	10	10	10	9	8	7	6	5	5	5	5
Min. Starting Torque [daNm]	at max. press. drop cont.	3	4	5,4	7,8	13,2	16,6	20,7	28,2	33,5	33,6	34,4	34,5	36	41,5
	at max. press. drop int.*	4,2	5,6	6,9	10	16,8	21	26,6	35,5	42,6	54,2	61,9	60,8	54	62
Min. Speed***, [RPM]		20	15	10	10	10	10	10	10	10	10	10	10	10	10
Weight, avg. [kg]	MP(F)	5,6	5,6	5,7	5,8	5,9	6,1	6,2	6,4	6,6	6,8	7,1	7,6	8,9	9,5
	MPQ(N)	5,0	5,0	5,1	5,2	5,3	5,5	5,6	5,8	6,0	6,2	6,5	6,8	8,3	9,0
	MP(F)(N)E	6,1	6,1	6,2	6,3	6,4	6,6	6,7	6,9	7,1	7,3	7,6	8,1	9,3	10
	MPW(N)	5,3	5,3	5,4	5,5	5,6	5,8	5,9	6,1	6,3	6,5	6,8	7,2	8,6	9,2
	MPQ(N)E	5,5	5,5	5,6	5,7	5,8	6,0	6,1	6,3	6,5	6,7	7,0	7,3	8,8	8,5

* 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 of 10 RPM or lower, 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. Recommended 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 at operating temperatures.

5. Recommended maximum system operating temperature is 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.

SPECIFICATION DATA (continued)

Specification Data for MP.. motors with CB, KB, OB and HB shafts.

(ø35 sealing diameter)

Type	MP														
	25	32	40	50	80	100	125	160	200	250	315	400	500	630	
Displacement, [cm ³ /rev.]	25	32	40	49,5	79,2	99	123,8	158,4	198	247,5	316,8	396	495	623,6	
Max. Speed, [RPM]	cont.	1600	1560	1500	1210	755	605	486	378	303	242	190	150	120	95
	int.*	1800	1720	1750	1515	945	755	605	472	378	303	236	189	150	120
Max. Torque [daNm]	cont.	3,3	4,3	6,2	9,4	15,1	19,3	23,7	31,3	36,6	47	48,6	50	39	44
	int.*	4,7	6,1	8,2	11,9	19,5	23,7	29,8	37,8	45,6	58,3	56	59	57	64
	peak**	6,7	8,6	10,7	14,3	22,4	27,5	36,5	43,8	55	68,5	85	85,4	78	82
Max. Output, [kW]	cont.	4,5	5,8	8,4	10,1	10,2	10,5	10	10,1	9,5	9,5	7,6	6,2	3,5	3,3
	int.*	6,1	7,8	11,6	12,2	12,5	12,8	12	12,1	12,5	12	9	7,8	7,2	5,6
Max. Pressure Drop [bar]	cont.	100	100	120	140	140	140	140	140	140	140	120	95	60	55
	int.*	140	140	155	175	175	175	175	175	175	175	140	115	90	80
	peak**	225	225	225	225	225	225	225	225	225	225	225	180	130	110
Max. Oil Flow [l/min]	cont.	40	50	60	60	60	60	60	60	60	60	60	60	60	60
	int.*	45	55	70	70	70	70	70	70	70	70	70	70	70	70
Max. Inlet Pressure [bar]	cont.	175	175	175	175	175	175	175	175	175	175	175	175	140	140
	int.*	200	200	200	200	200	200	200	200	200	200	200	200	175	175
	peak**	225	225	225	225	225	225	225	225	225	225	225	225	225	225
Max. Return Pressure with Drain Line [bar]	cont.	175	175	175	175	175	175	175	175	175	175	175	175	140	140
	int.*	200	200	200	200	200	200	200	200	200	200	200	200	175	175
	peak**	225	225	225	225	225	225	225	225	225	225	225	225	225	225
Max. Starting Pressure with Unloaded Shaft, [bar]		10	10	10	10	10	10	9	8	7	6	5	5	5	5
Min. Starting Torque [daNm]	at max. press. drop cont.	3	4	5,4	7,8	13,2	16,6	20,7	28,2	33,5	42,8	45,8	46,8	36	41,5
	at max. press. drop int.*	4,2	5,6	6,9	10	16,8	21	26,6	35,5	42,6	54,2	61,9	60,8	54	62
Min. Speed***, [RPM]		20	15	10	10	10	10	10	10	10	10	10	10	10	10
Weight, avg. [kg]	MP(F)...B	5,6	5,6	5,7	5,9	6	6,2	6,3	6,5	6,7	6,9	7,2	7,7	9	9,6
	MP(F)E...B	6,1	6,1	6,2	6,4	6,5	6,7	6,8	6,9	7,2	7,4	7,7	8,2	9,4	10,1

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

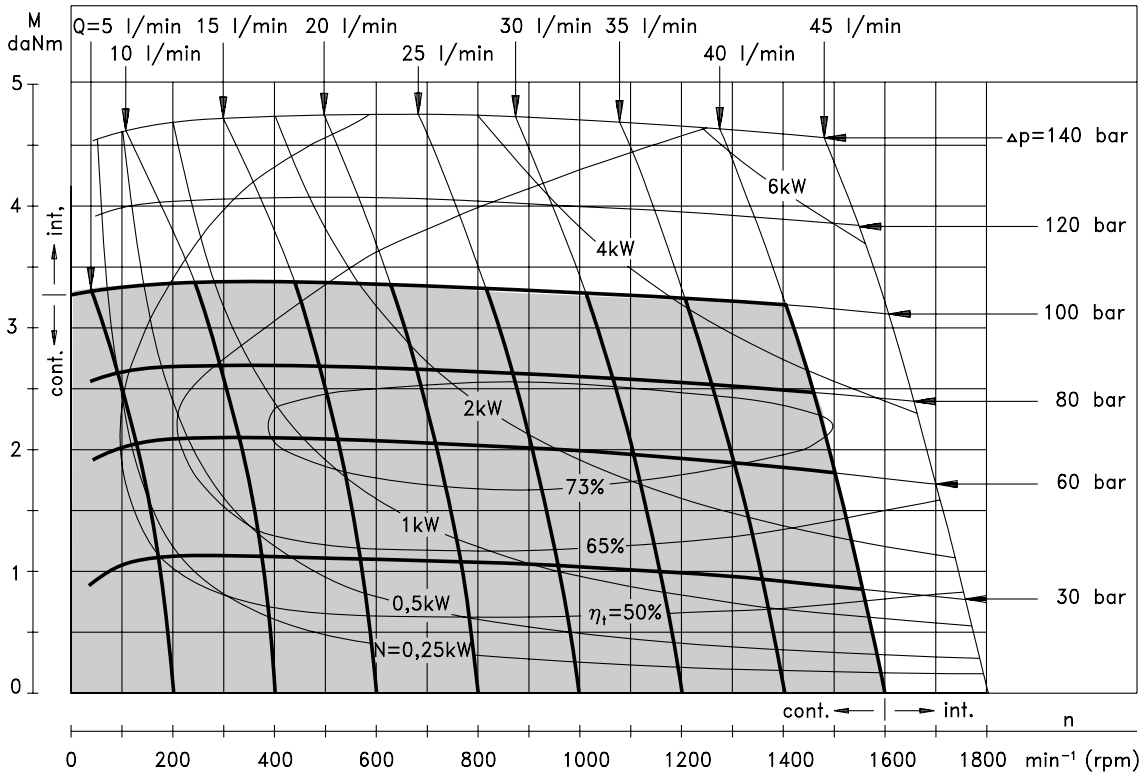
** Peak load: the permissible values may occur for max. 1% of every minute.

*** For speeds of 10 RPM or lower, consult factory or your regional manager.

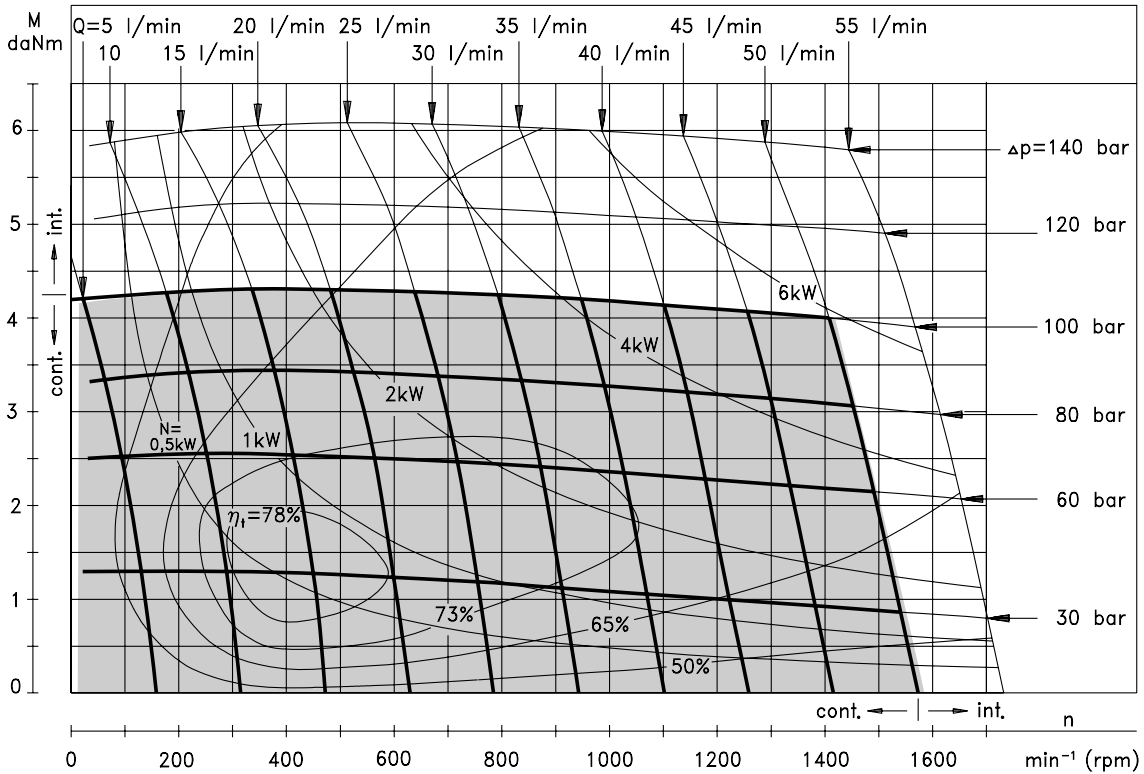
1. Intermittent speed and intermittent pressure drop must not occur simultaneously.
2. Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
3. Recommended using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) or HM (ISO 6743/4).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

MP 25



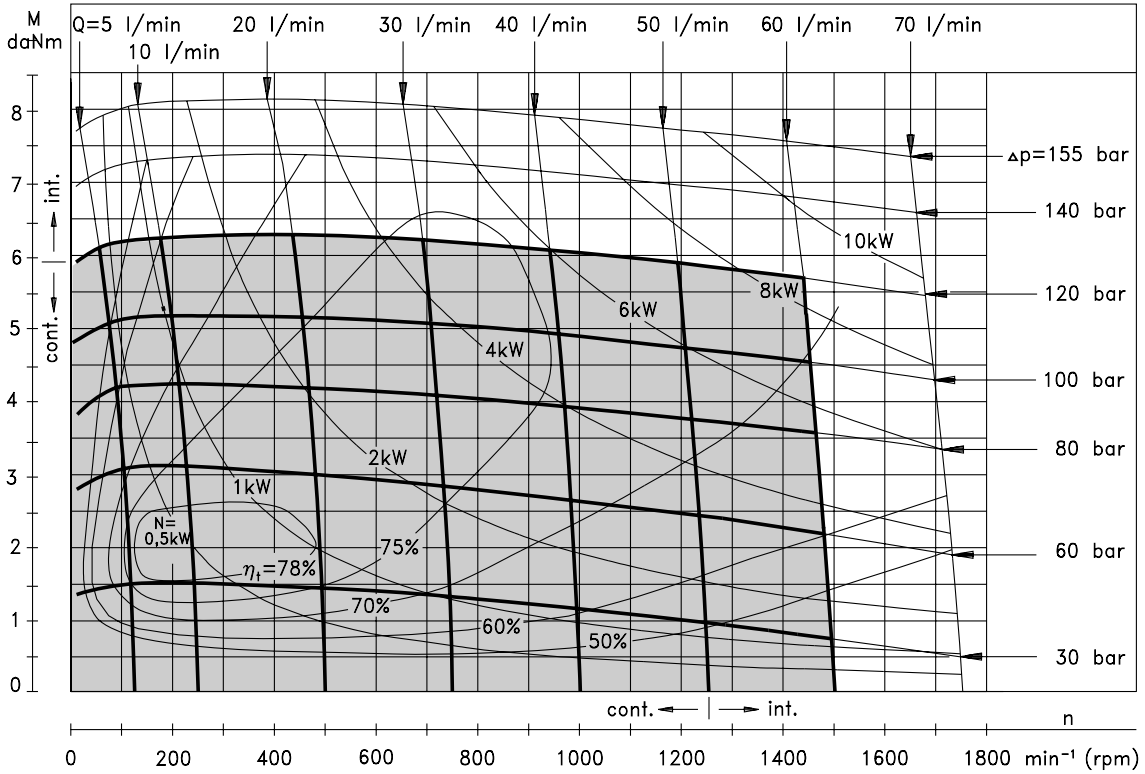
MP 32



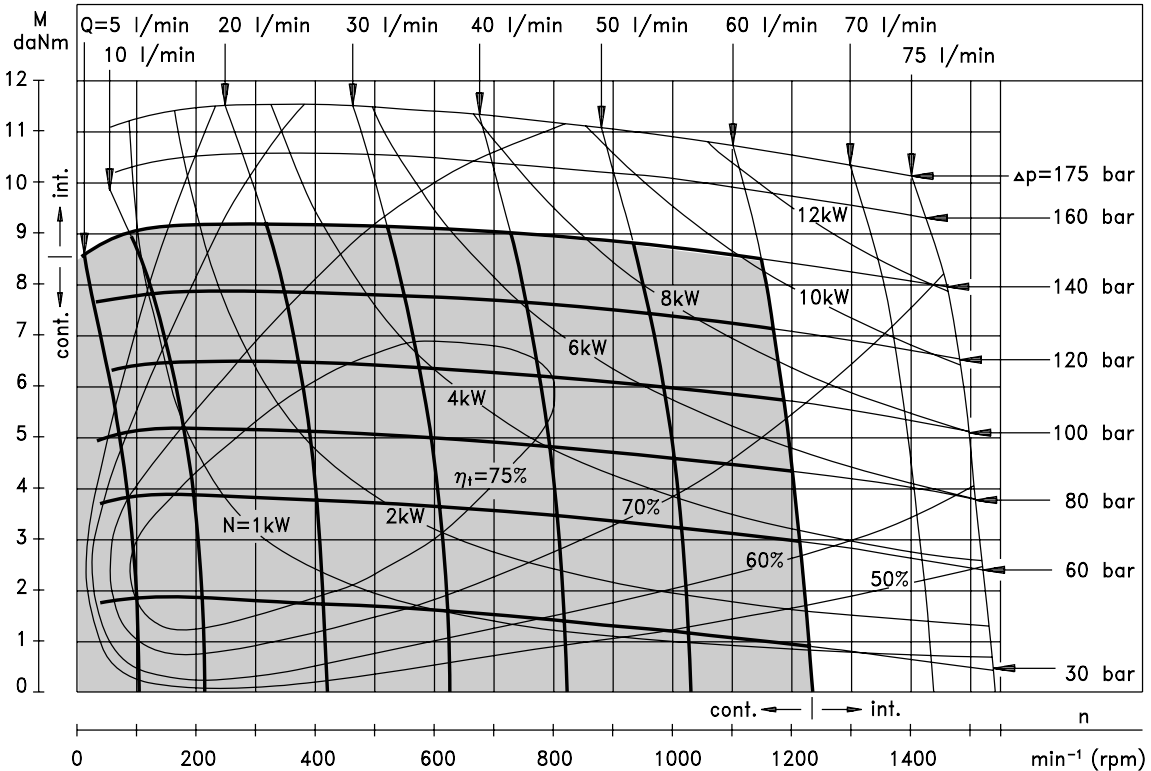
The function diagrams data was collected at back pressure 5 ÷ 10 bar and oil with viscosity of 32 mm²/s at 50° C.

FUNCTION DIAGRAMS

MP 40



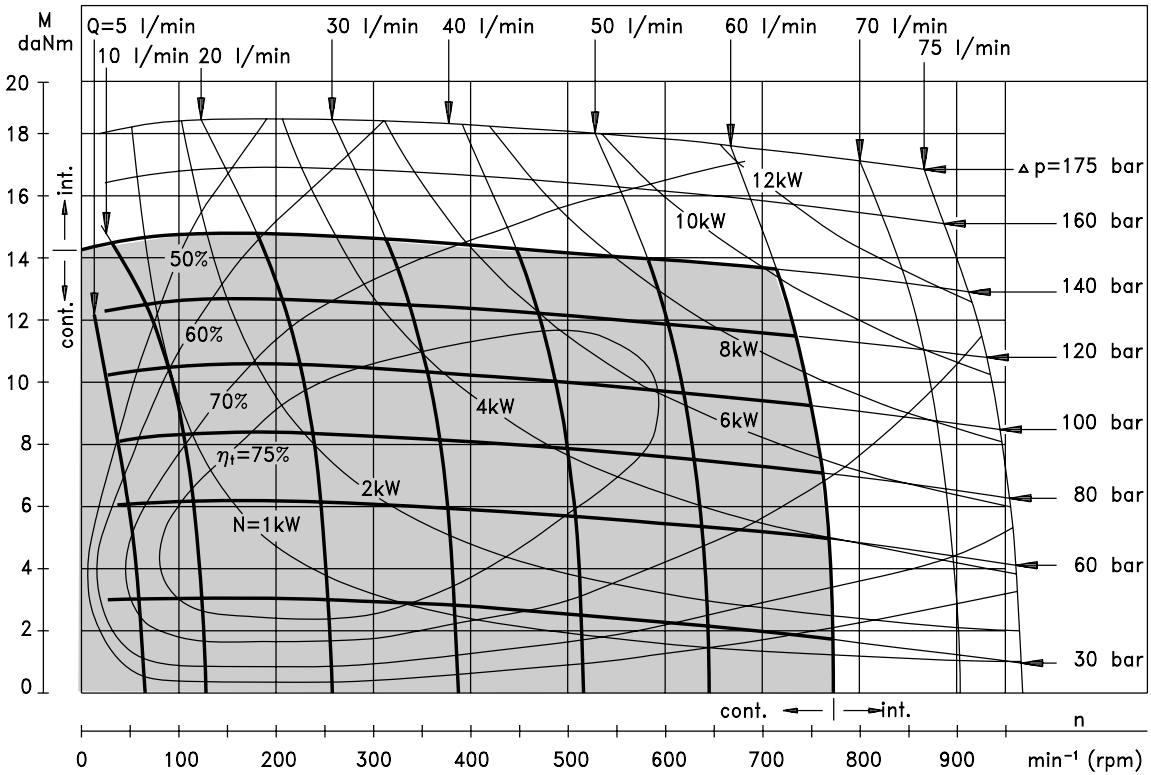
MP 50



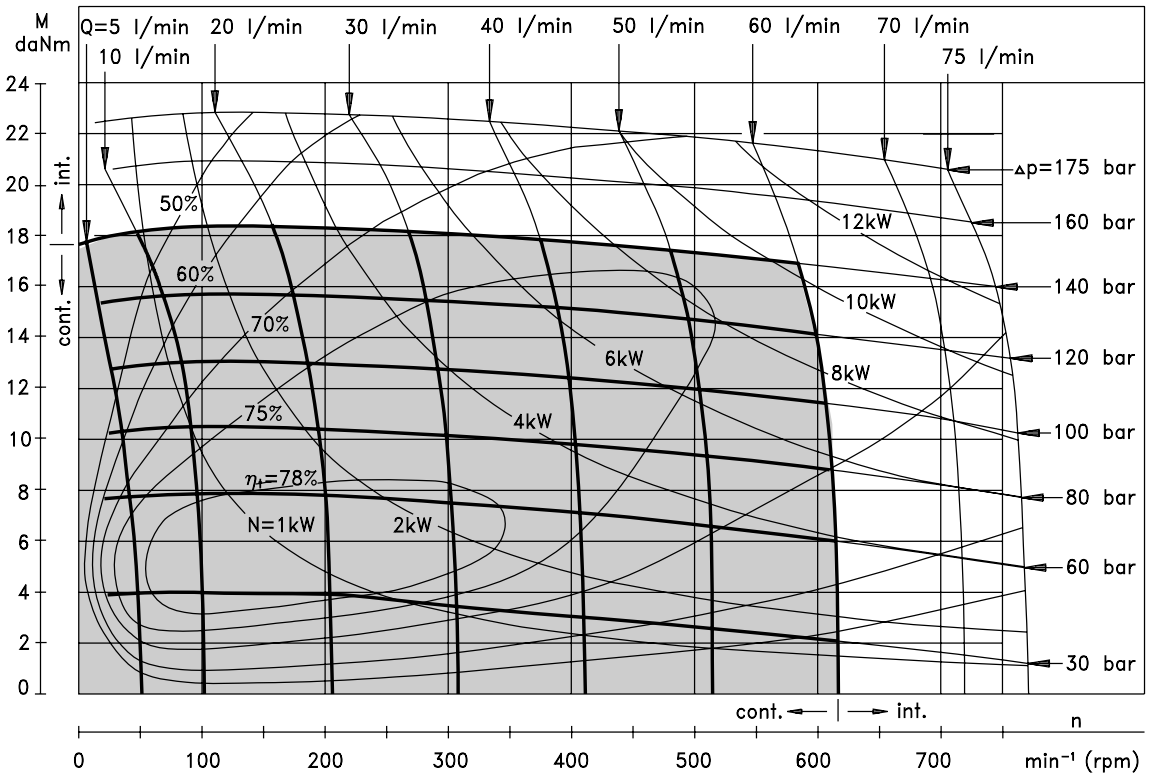
The function diagrams data was collected at back pressure 5 ÷ 10 bar and oil with viscosity of 32 mm²/s at 50° C.

FUNCTION DIAGRAMS

MP 80



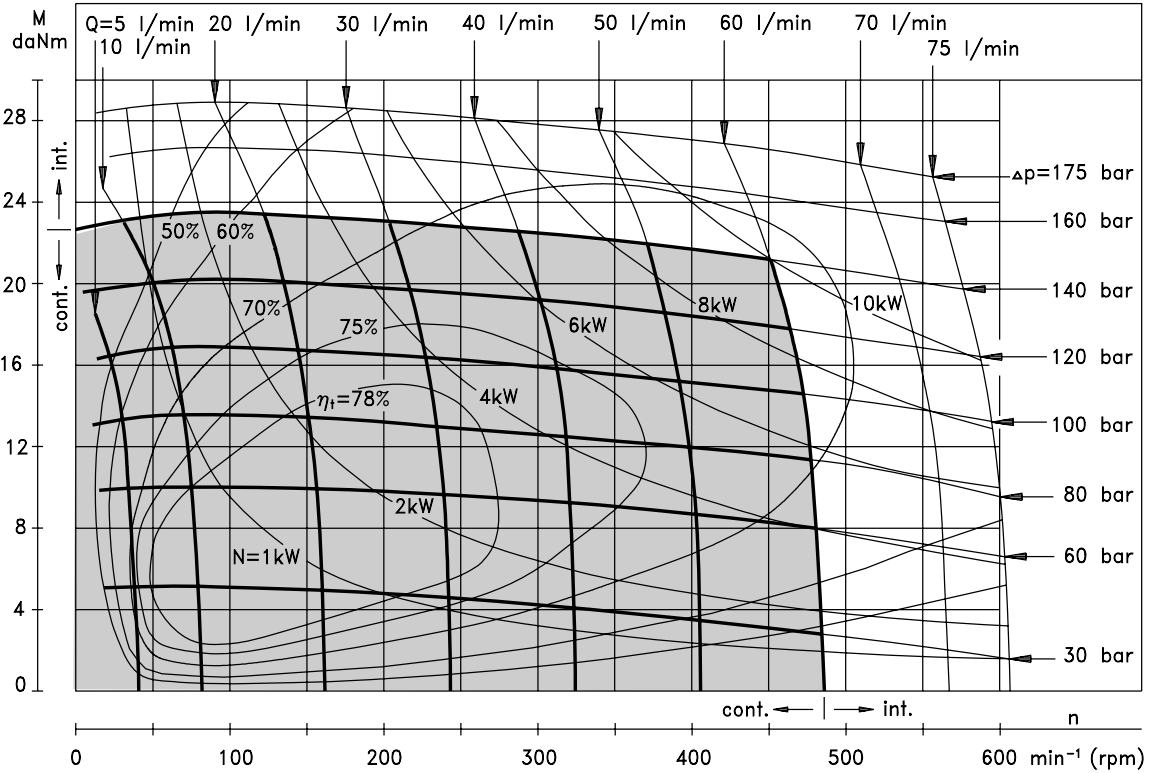
MP 100



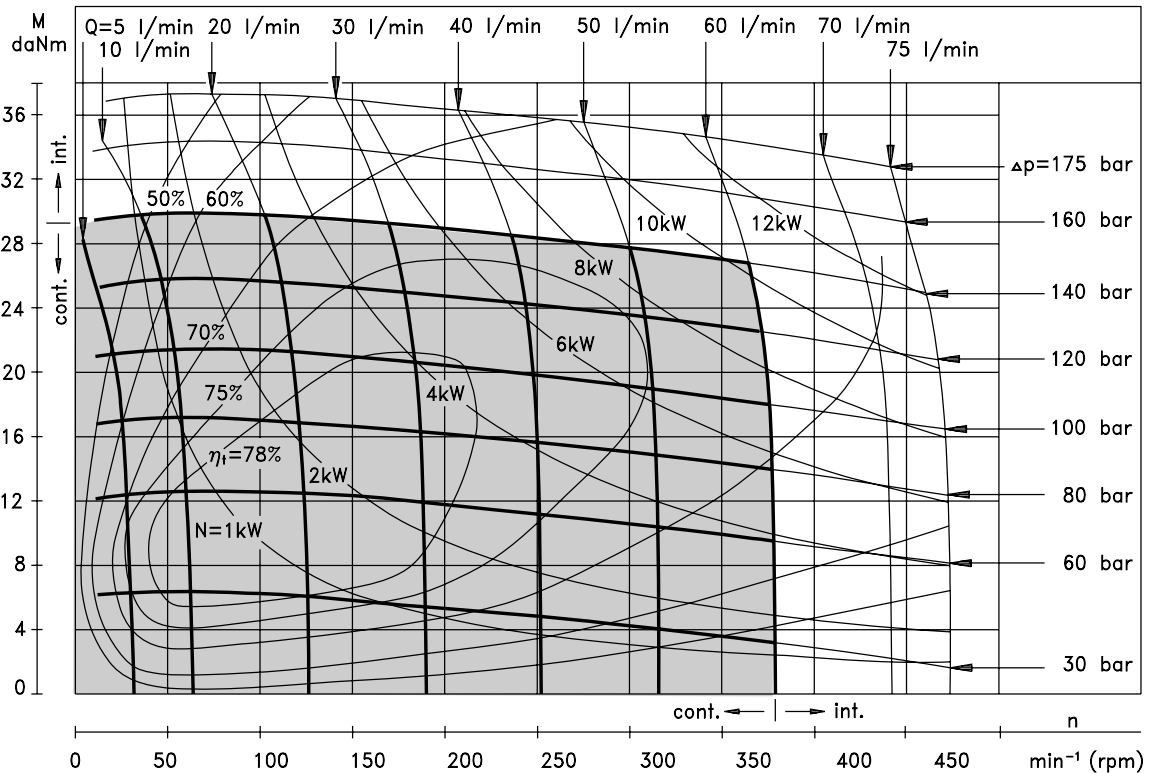
The function diagrams data was collected at back pressure 5 ÷ 10 bar and oil with viscosity of 32 mm²/s at 50° C.

FUNCTION DIAGRAMS

MP 125



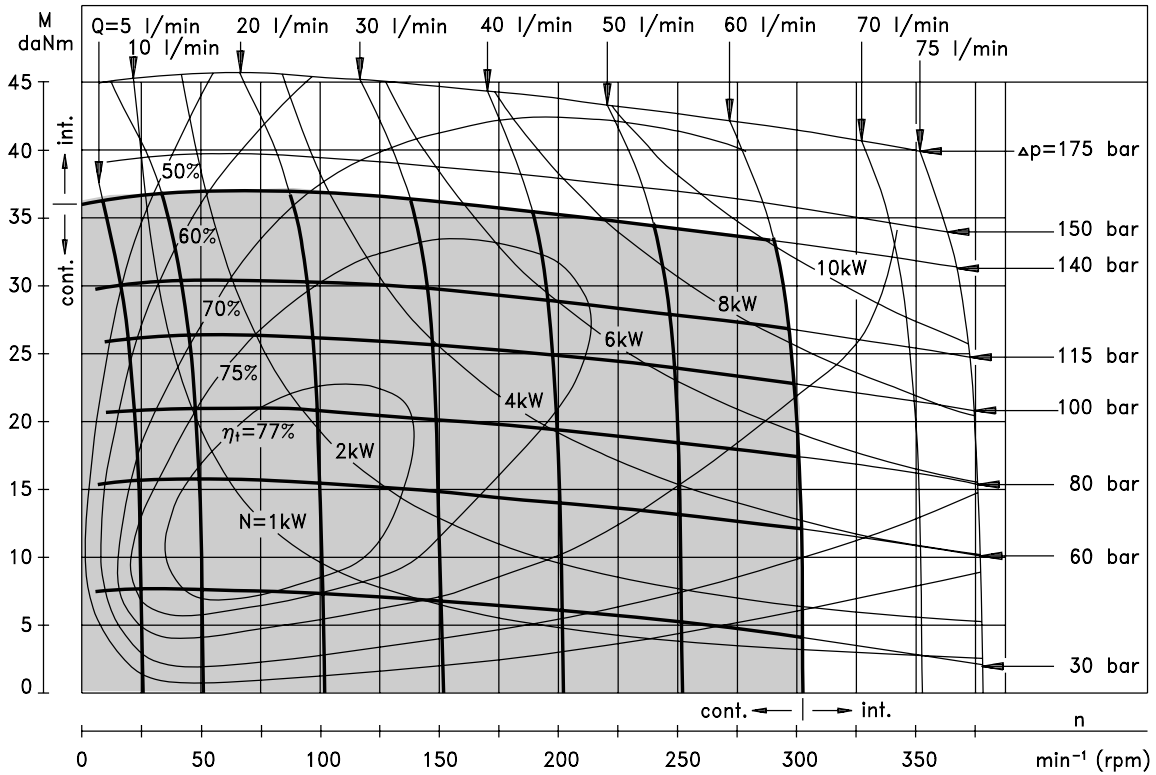
MP 160



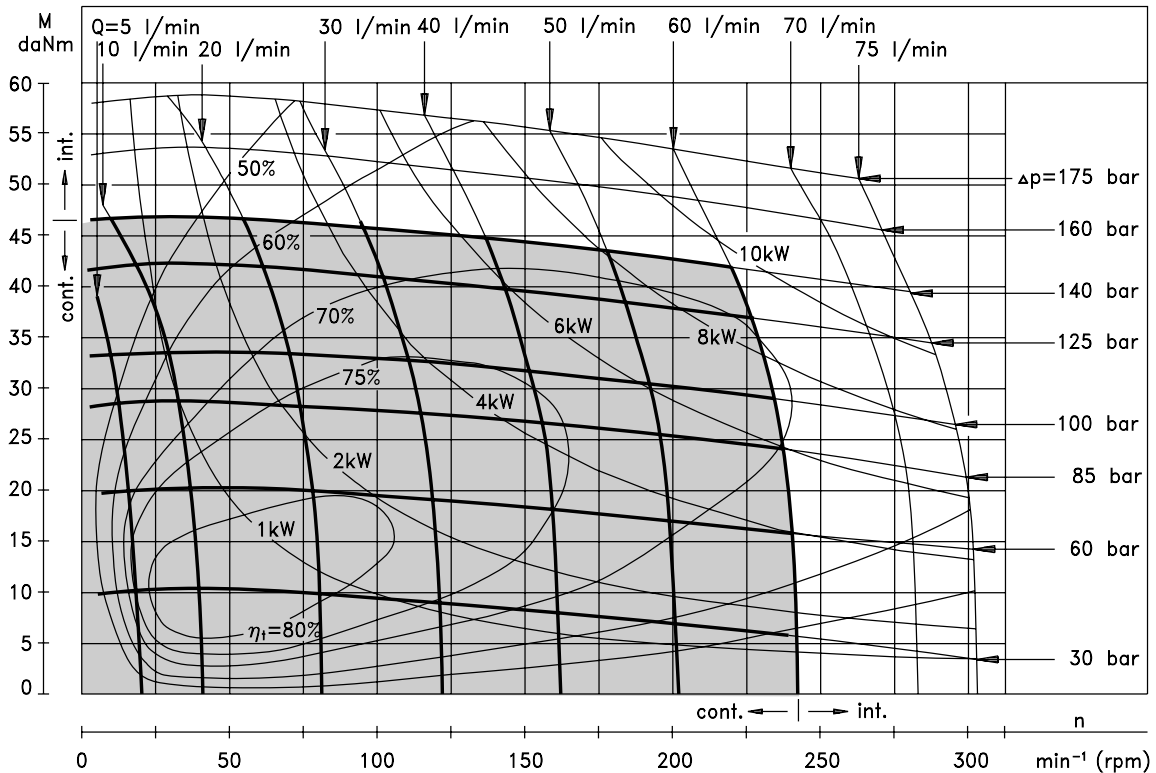
The function diagrams data was collected at back pressure 5 ÷ 10 bar and oil with viscosity of 32 mm²/s at 50° C.

FUNCTION DIAGRAMS

MP 200



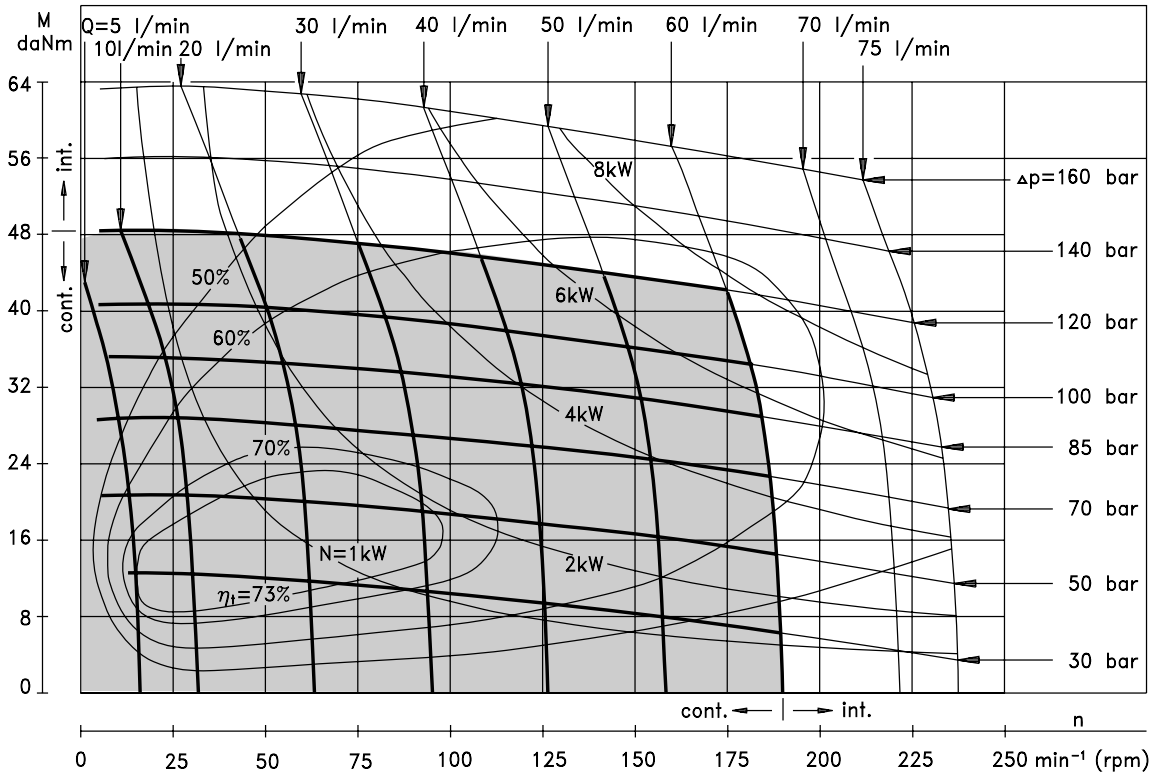
MP 250



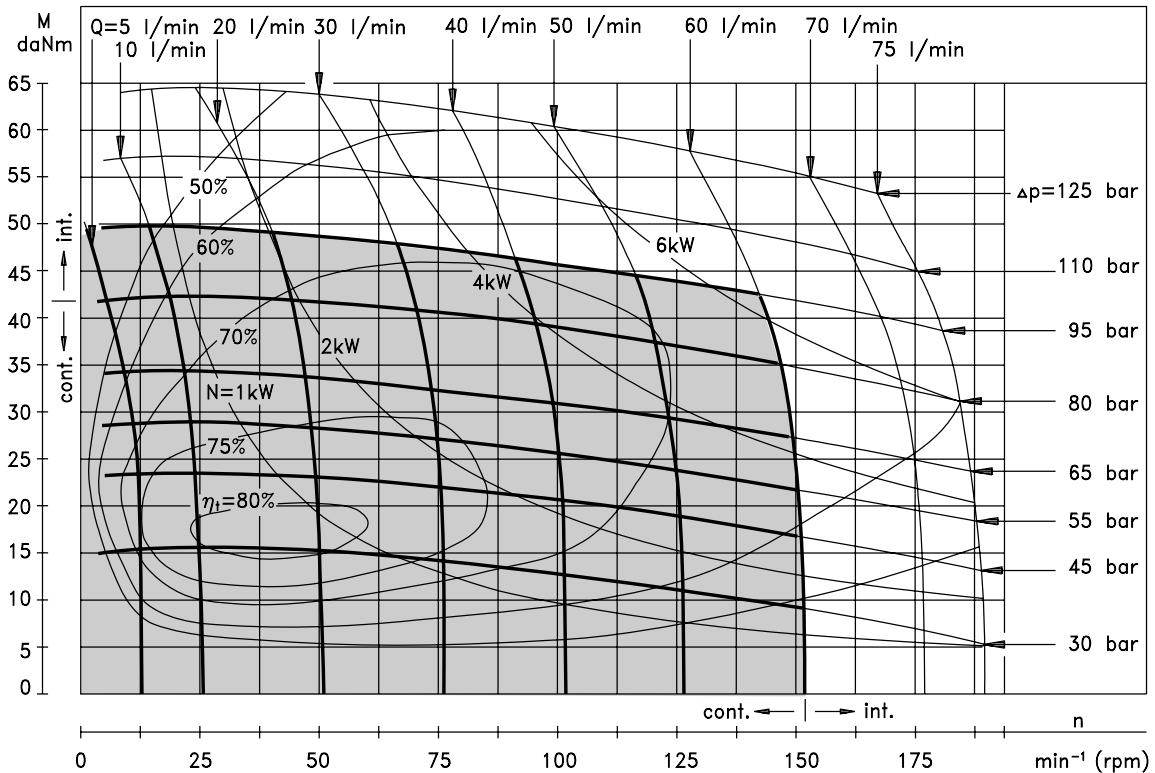
The function diagrams data was collected at back pressure 5 ÷ 10 bar and oil with viscosity of 32 mm²/s at 50° C.

FUNCTION DIAGRAM

MP 315



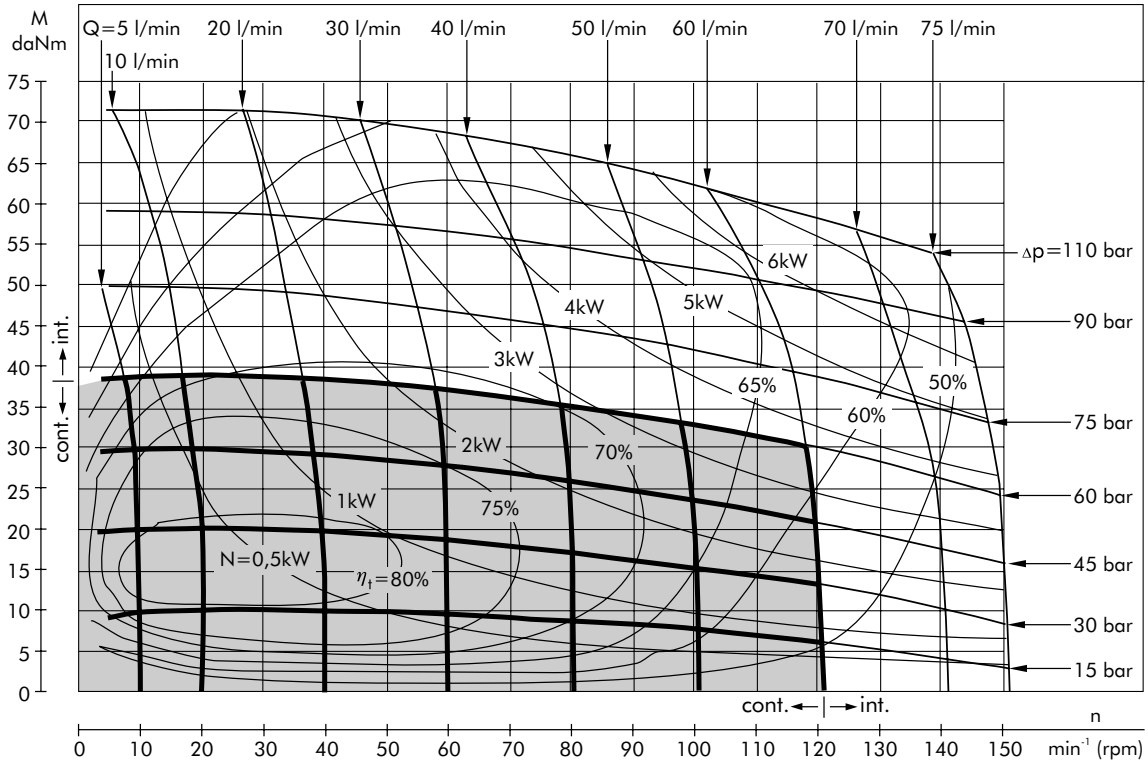
MP 400



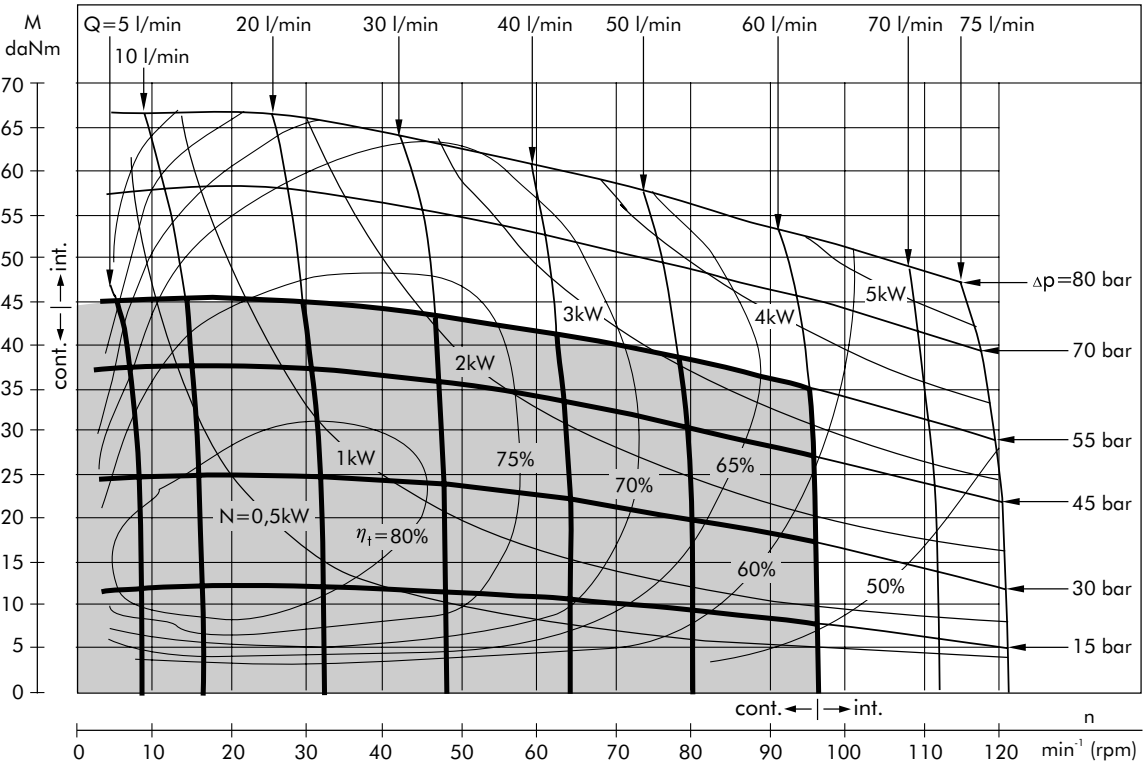
The function diagram data was collected at back pressure 5 ÷ 10 bar and oil with viscosity of 32 mm²/s at 50° C.

FUNCTION DIAGRAM

MP 500

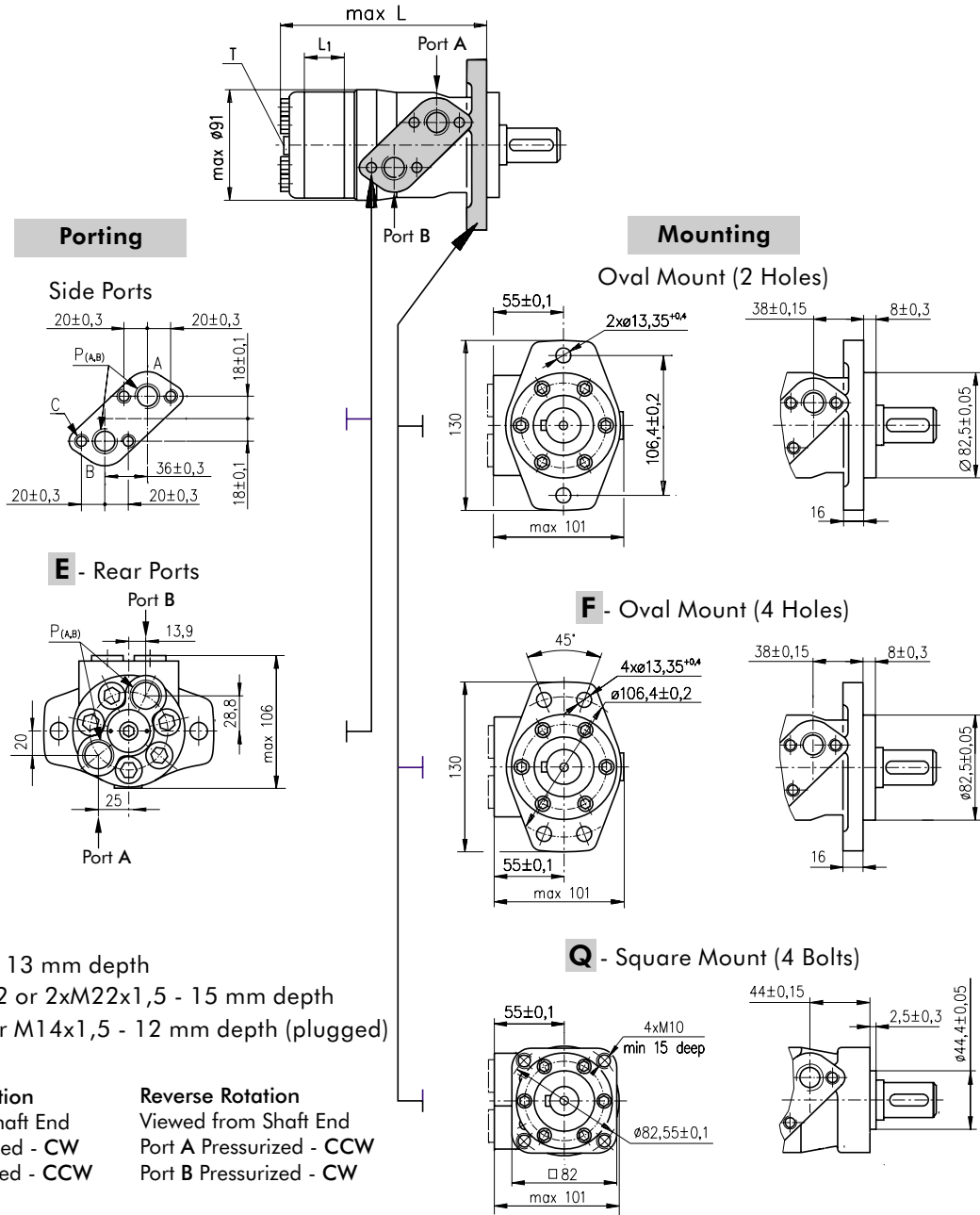


MP 630



The function diagram data was collected at back pressure 5 ÷ 10 bar and oil with viscosity of 32 mm²/s at 50° C.

DIMENSIONS AND MOUNTING DATA



- C** : 4xM8 - 13 mm depth
- P_(A, B)**: 2xG1/2 or 2xM22x1,5 - 15 mm depth
- T** : G1/4 or M14x1,5 - 12 mm depth (plugged)

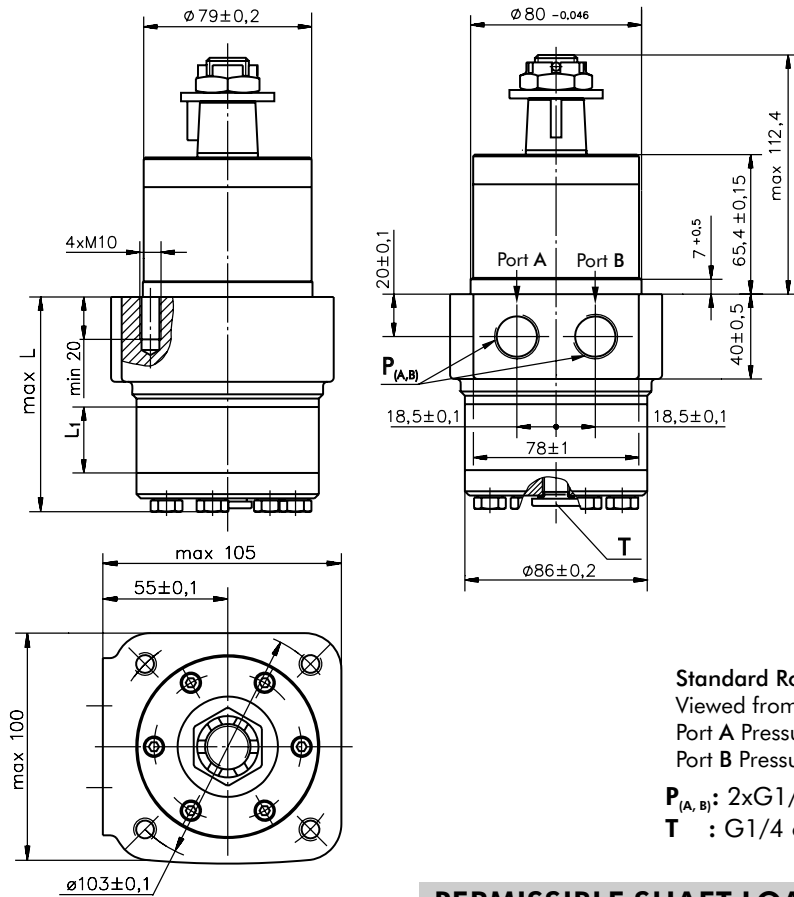
Standard Rotation
Viewed from Shaft End
Port A Pressurized - CW
Port B Pressurized - CCW

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

Type	L, mm	Type	L, mm	Type	L, mm	Type	L, mm	L ₁ , mm
MP(F) 25	133,2	MPQ 25	139,4	MP(F)E 25	151,2	MPQE 25	157,4	5,20
MP(F) 32	134,5	MPQ 32	140,7	MP(F)E 32	152,5	MPQE 32	158,7	6,30
MP(F) 40	135,2	MPQ 40	141,4	MP(F)E 40	153,2	MPQE 40	159,4	7,40
MP(F) 50	135,6	MPQ 50	141,8	MP(F)E 50	155,8	MPQE 50	162,0	6,67
MP(F) 80	139,6	MPQ 80	145,8	MP(F)E 80	159,8	MPQE 80	166,0	10,67
MP(F) 100	142,2	MPQ 100	148,4	MP(F)E 100	162,4	MPQE 100	168,6	13,33
MP(F) 125	145,6	MPQ 125	151,8	MP(F)E 125	165,8	MPQE 125	172,0	16,67
MP(F) 160	150,2	MPQ 160	156,4	MP(F)E 160	170,4	MPQE 160	176,6	21,33
MP(F) 200	155,6	MPQ 200	161,8	MP(F)E 200	175,8	MPQE 200	182,0	26,67
MP(F) 250	162,2	MPQ 250	168,4	MP(F)E 250	182,4	MPQE 250	188,6	33,33
MP(F) 315	171,6	MPQ 315	177,8	MP(F)E 315	191,8	MPQE 315	198,0	42,67
MP(F) 400	182,2	MPQ 400	188,4	MP(F)E 400	202,4	MPQE 400	208,6	53,33
MP(F) 500	193,0	MPQ 500	199,0	MP(F)E 500	213,0	MPQE 500	219,0	66,63
MP(F) 630	210,5	MPQ 630	216,5	MP(F)E 630	230,5	MPQE 630	236,5	84,00

DIMENSIONS AND MOUNTING DATA - MPW

W - Wheel Mount



Type	L, mm	L ₁ , mm
MPW(N) 25	77,0	5,2
MPW(N) 32	78,0	6,3
MPW(N) 40	79,5	7,4
MPW(N) 50	78,5	6,67
MPW(N) 80	82,5	10,67
MPW(N) 100	85,0	13,33
MPW(N) 125	88,5	16,67
MPW(N) 160	93,0	21,33
MPW(N) 200	98,5	26,67
MPW(N) 250	105,0	33,33
MPW(N) 315	114,5	42,67
MPW(N) 400	125,0	53,33
MPW(N) 500	138,5	66,63
MPW(N) 630	156,0	84,0

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

P_(A,B): 2xG1/2 or 2xM22x1,5 - 15 mm depth

T : G1/4 or M14x1,5 - 12 mm depth (plugged)

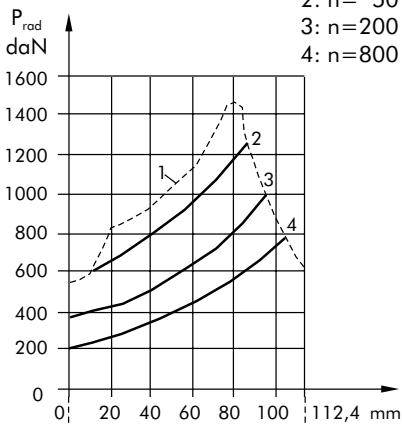
PERMISSIBLE SHAFT LOADS

MPWN

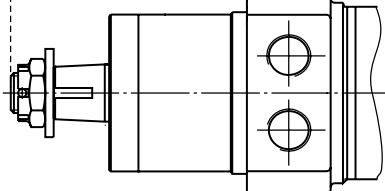
MPW

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

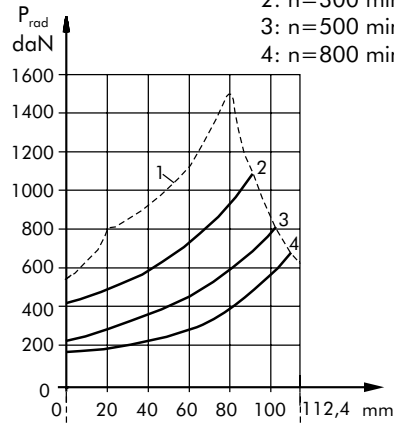
- 1: Max. radial shaft load
- 2: n = 50 min⁻¹
- 3: n = 200 min⁻¹
- 4: n = 800 min⁻¹



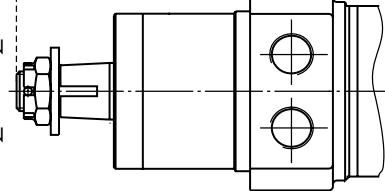
$P_{a_{max}} = 150 \text{ daN}$
 $P_{b_{max}} = 200 \text{ daN}$



- 1: Max. radial shaft load
- 2: n = 300 min⁻¹
- 3: n = 500 min⁻¹
- 4: n = 800 min⁻¹

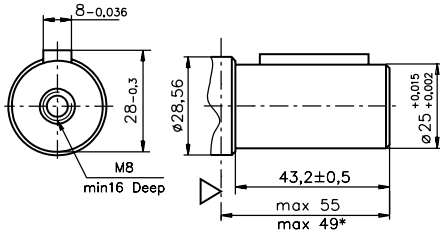


$P_{a_{max}} = 150 \text{ daN}$
 $P_{b_{max}} = 200 \text{ daN}$

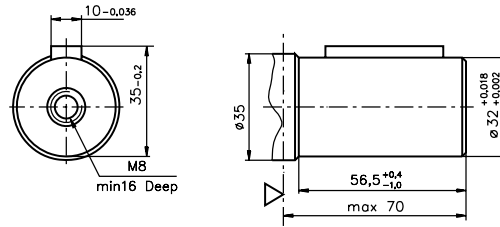


SHAFT EXTENSIONS FOR MP AND MR MOTORS

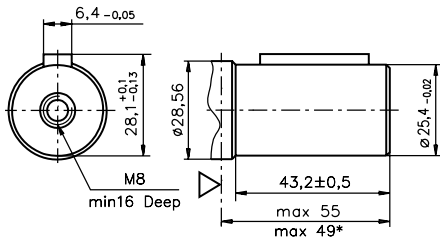
C - $\varnothing 25$ straight, Parallel key A8x7x32 DIN 6885
Max. Torque 34 daNm



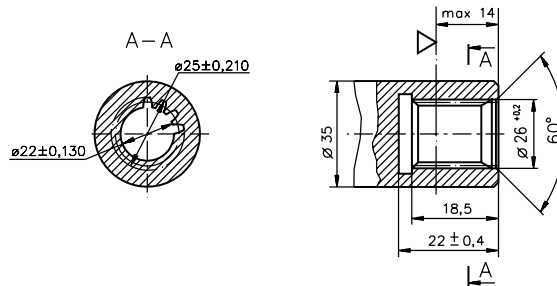
CB - $\varnothing 32$ straight, Parallel key A10x8x45 DIN 6885
Max. Torque 77 daNm



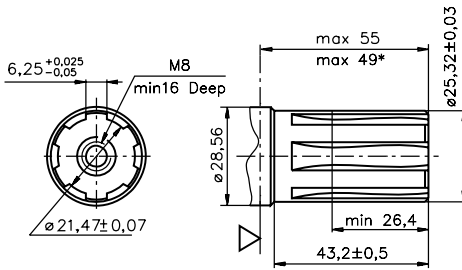
CO - $\varnothing 1"$ straight, Parallel key $1/4" \times 1/4" \times 1/4"$ BS46
Max. Torque 34 daNm



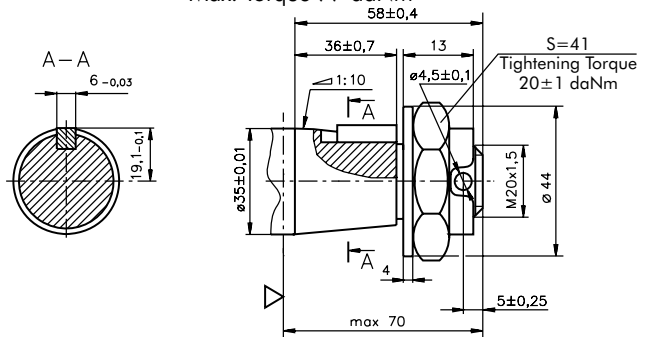
SB - splined A25x22xH10 DIN 5482
Max. Torque 34 daNm



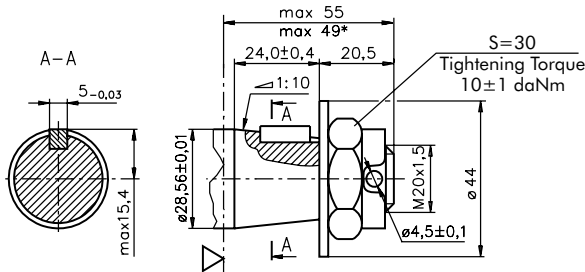
SH - splined, BS 2059 (SAE 6B)
Max. Torque 40 daNm



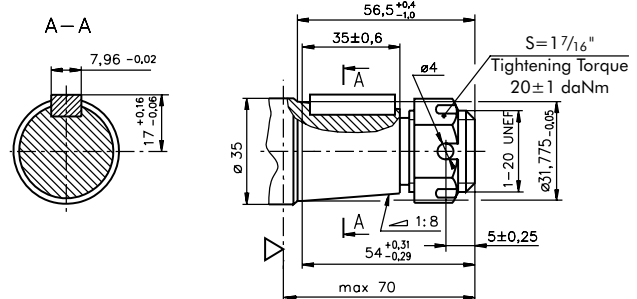
KB - tapered 1:10, Parallel key B6x6x20 DIN 6885
Max. Torque 77 daNm



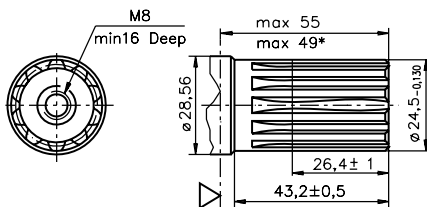
K - tapered 1:10, Parallel key B5x5x14 DIN 6885
Max. Torque 40 daNm



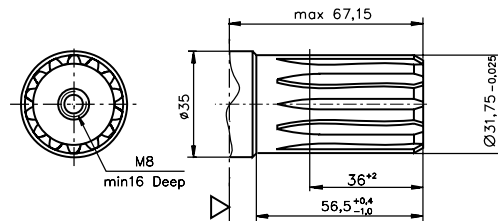
OB - tapered 1:8 SAEJ 501, Parallel key $5/16" \times 5/16" \times 1/4"$ BS46
Max. Torque 77 daNm



SA - splined, B25x22h9 DIN 5482
Max. Torque 40 daNm



HB - $\varnothing 1 1/4"$ splined 14T, ANSI B92.1-1976 Norm
Max. Torque 77 daNm

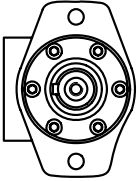
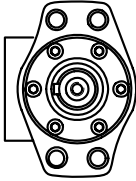
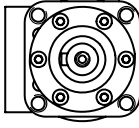


▽ - Motor Mounting Surface

* - For Q-flange

PERMISSIBLE SHAFT LOADS FOR MP AND MR MOTORS

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

Mounting Flange			
Shaft Version	cylindrical - C, CO tapered - K, splined - SH	splined - HB cylindrical - CB	cylindrical - C, CO
Radial Shaft Load P_{rad}^*	$\frac{800}{n} \times \frac{25000}{95+L}$, daN	$\frac{800}{n} \times \frac{18750}{95+L}$, daN	$\frac{800}{n} \times \frac{25000}{101+L}$, daN

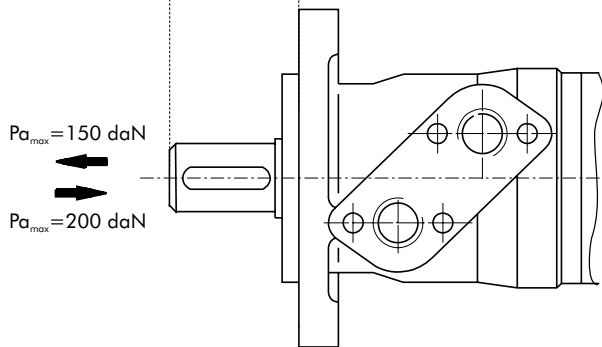
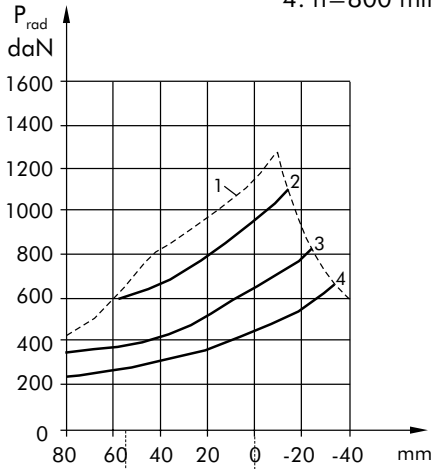
$n < 200 \text{ min}^{-1}$; max $P_{rad} = 800 \text{ daN}$

* $n \geq 200 \text{ min}^{-1}$; $L < 55 \text{ mm}$

MPN and MRN

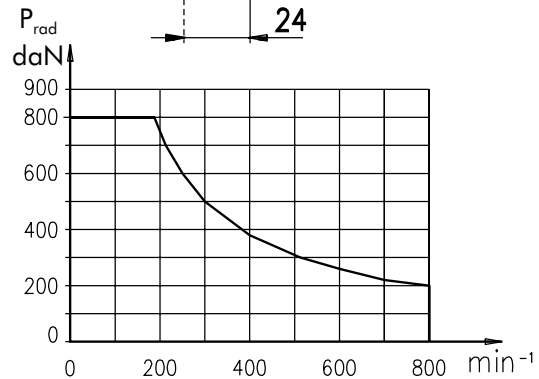
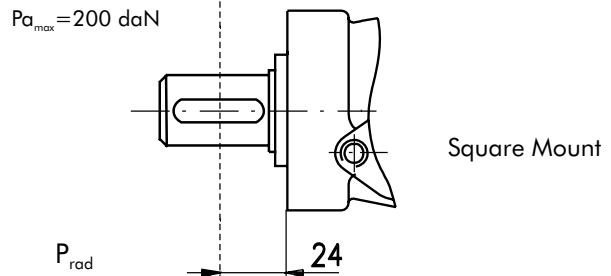
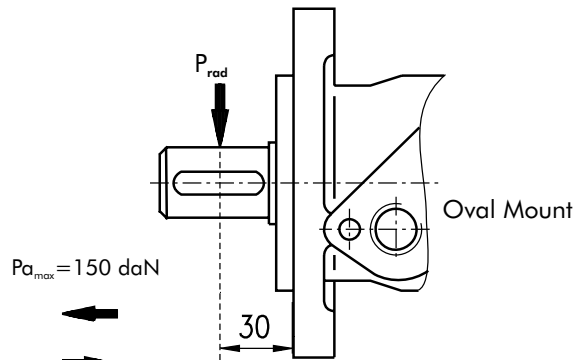
The curves apply to a B10 bearing life of 2000 hours.

- 1: Max. radial shaft load
- 2: $n = 50 \text{ min}^{-1}$
- 3: $n = 200 \text{ min}^{-1}$
- 4: $n = 800 \text{ min}^{-1}$



MP and MR

Radial Shaft Load P_{rad} for C, CO Shaft Extensions by $L = 30$ (24) mm

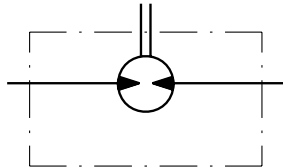


**MAX. PERMISSIBLE SHAFT SEAL PRESSURE
FOR MP AND MR MOTORS**

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

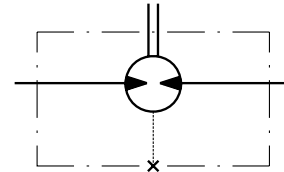
The shaft seal pressure equals the average
of input pressure and return pressure.

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



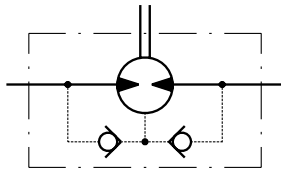
**MP/MR...U motors with high pressure seal
and drain connection:**

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



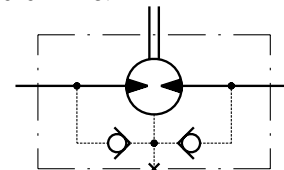
**MP/MR...1 motors with low pressure seal
or standard shaft seal
and without drain connection:**

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

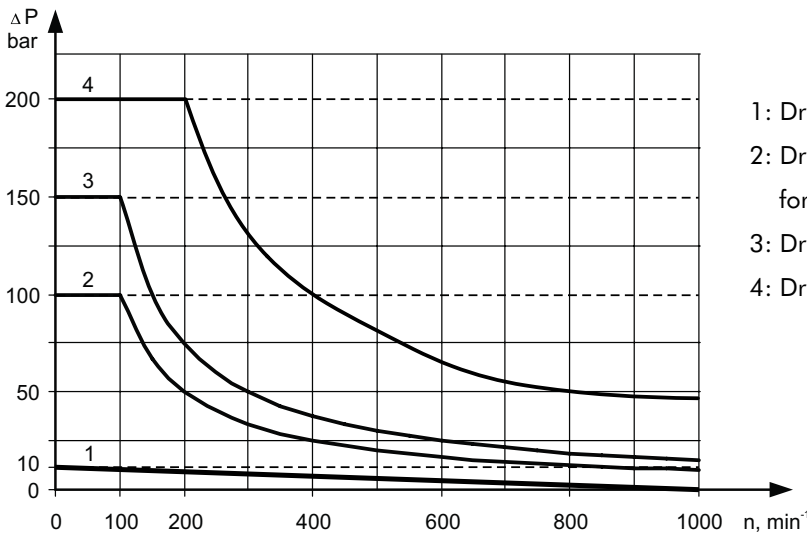


**MP/MR... motors with low pressure seal
or standard shaft seal
and with drain connection:**

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
M P										

Pos.1 - Mounting Flange

omit - Oval mount, two holes

F - Oval mount, four holes

Q - Square mount, four bolts

W - Wheel mount

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

25* - 25,0 [cm³/rev]

32* - 32,0 [cm³/rev]

40* - 40,0 [cm³/rev]

50 - 49,5 [cm³/rev]

80 - 79,2 [cm³/rev]

100 - 99,0 [cm³/rev]

125 - 123,8 [cm³/rev]

160 - 158,4 [cm³/rev]

200 - 198,0 [cm³/rev]

250 - 247,5 [cm³/rev]

315 - 316,8 [cm³/rev]

400 - 396,0 [cm³/rev]

500 - 495,0 [cm³/rev]

630 - 623,6 [cm³/rev]

Pos.5 - Shaft Extensions (see page 24)**

C - ø25 straight, Parallel key A8x7x32 DIN6885

VC - ø25 straight, Parallel key A8x7x32 DIN6885 with corrosion resistant bushing

CO - ø1" straight, Parallel key ¼"x¼"x1¼" BS46

VCO - ø1" straight, Parallel key ¼"x¼"x1¼" BS46 with corrosion resistant bushing

SH - ø25,32 splined BS 2059 (SAE 6B)

VSH - ø25,32 splined BS 2059 (SAE 6B) with corrosion resistant bushing

K - ø28,56 tapered 1:10, Parallel key B5x5x14 DIN6885

SA - ø24,5 splined B 25x22 DIN 5482

VSA - ø24,5 splined B 25x22 DIN 5482 with corrosion resistant bushing

CB - ø32 straight, Parallel key A10x8x45 DIN6885

KB - ø35 tapered 1:10, Parallel key B6x6x20 DIN6885

SB - splined A 25x22 DIN 5482

OB - ø1¼" tapered 1:8, Parallel key ⅝"x⅝"x1¼" BS46

HB - ø1¼" splined 14T ANSI B92.1 - 1976

Pos. 6 - Shaft Seal Version (see page 26)

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 (see page 46)

Pos.10 - Design Series

omit - Factory specified

* Not with Low Pressure Seal

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

NOTES: The following combinations are not allowed:

- **Q** flange with "...B" shafts;
- **W** flange with "...B" shafts, **U** option or **E** rear ports;
- **N** option with "...B" shafts, Low Pressure Seal or **U** option;
- "...B" shafts with **D** and **U** shaft seals.

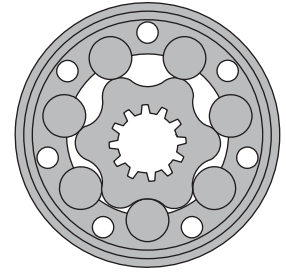
The hydraulic motors are mangano-phosphatized as standard.

HYDRAULIC MOTORS MH



APPLICATION

- » Conveyors
- » Feeding mechanism of robots and manipulators
- » Metal working machines
- » Textile machines
- » Agriculture machines
- » Food industries
- » Mining machinery etc.



CONTENTS

Specification data	77
Function diagrams	78÷80
Permissible shaft loads	80
Dimensions and mounting	81
Permissible shaft seal pressure.....	82
Shaft extensions	83
Order code	83

OPTIONS

- » Model- Spool valve, roll-gerotor
- » Flange mount
- » Shafts- straight, splined and tapered
- » Metric and BSPP ports
- » Other special features

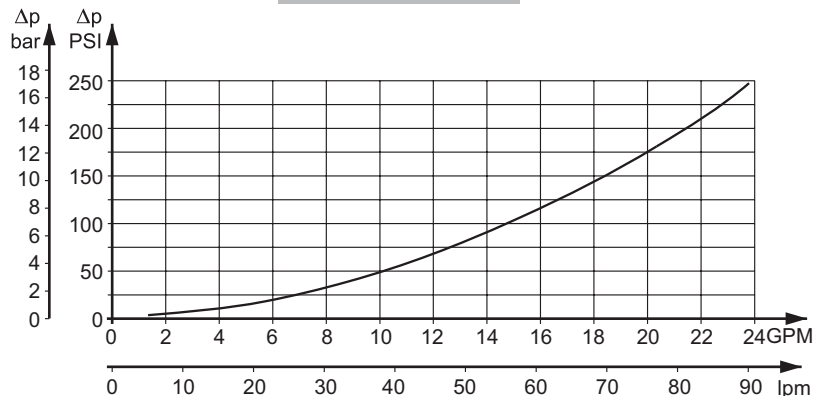
GENERAL

Max. Displacement, cm ³ /rev [in ³ /rev]	502,4 [30.7]
Max. Speed, [RPM]	445
Max. Torque, daNm [lb-in]	cont.: 84 [7434] int.: 104 [9204]
Max. Output, kW [HP]	18,5 [24.8]
Max. Pressure Drop, bar [PSI]	cont.: 175 [2540] int.: 200 [2900]
Max. Oil Flow, lpm [GPM]	90 [23.78]
Min. Speed, [RPM]	5
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 20/16 (Min. recommended fluid filtration of 25 micron)

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

Type	MH 200	MH 250	MH 315	MH 400	MH 500	
Displacement, cm³/rev [in³/rev]	201,3 [12.3]	252 [15.4]	314,9 [16.4]	396,8 [24.2]	502,4 [30.7]	
Max. Speed, [RPM]	Cont.	370	295	235	185	150
	Int.*	445	350	285	225	180
Max. Torque daNm [in-lb]	Cont.	51 [4510]	61 [5398]	74 [6548]	84 [7434]	82 [7257]
	Int.*	58 [5130]	70 [6195]	82 [7257]	98 [8673]	104 [9204]
	Peak**	64 [5064]	79 [6992]	98 [8673]	109 [9647]	117 [10350]
Max. Output kW [HP]	Cont.	16 [21]	16 [21]	14 [18.7]	12,5 [16.7]	11 [14.7]
	Int.*	18,5 [24.8]	18,5 [24.8]	15,5 [20.7]	15 [20.1]	14 [18.7]
Max. Pressure Drop bar [PSI]	Cont.	175 [2540]	175 [2540]	175 [2540]	155 [2240]	125 [1810]
	Int.*	200 [2900]	200 [2900]	200 [2900]	190 [2750]	160 [2320]
	Peak**	225 [3260]	225 [3260]	225 [3260]	210 [3045]	180 [2610]
Max. Oil Flow lpm [GPM]	Cont.	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]
	Int.*	90 [24]	90 [24]	90 [24]	90 [24]	90 [24]
Max. Inlet Pressure bar [PSI]	Cont.	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]
	Int.*	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]
	Peak**	250 [3626]	250 [3626]	250 [3626]	250 [3626]	250 [3626]
Max. Starting Pressure with Unloaded Shaft, bar [PSI]	5 [72]	5 [72]	5 [72]	5 [72]	5 [72]	
Min. Starting Torque, daNm [in-lb]	At max.press.dropCont	39 [3450]	52 [4600]	66 [5840]	72 [6370]	72 [6370]
	At max.press.drop Int.*	45 [3980]	59 [5221]	73 [6460]	88 [7788]	88 [7788]
Min. Speed***, [RPM]	10	10	8	5	5	
Weight, kg [lb]	10,5 [23.2]	11 [24.3]	11,5 [25.4]	12,3 [27.1]	13 [28.7]	

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

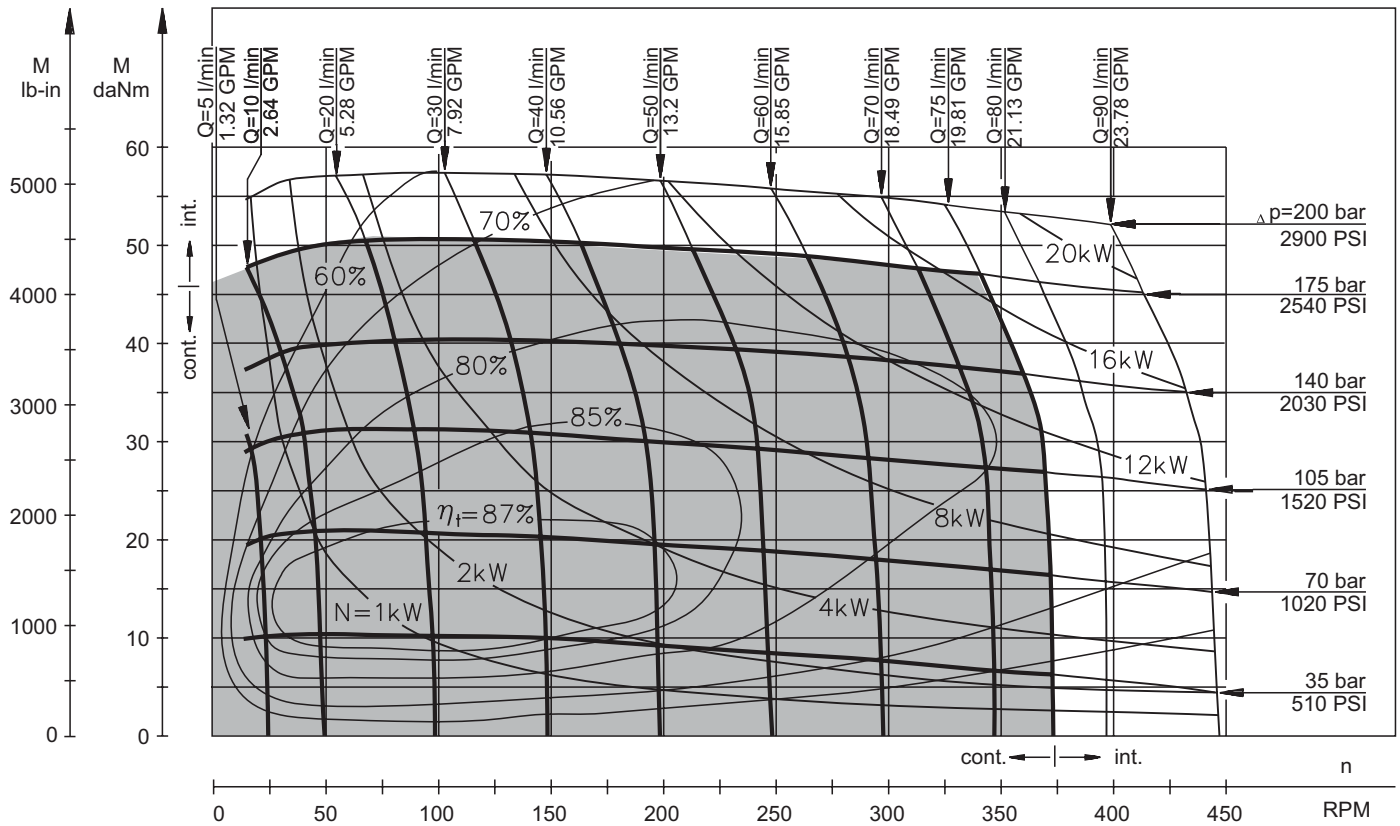
** Peak load: the permissible values may occur for max. 1% of every minute.

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

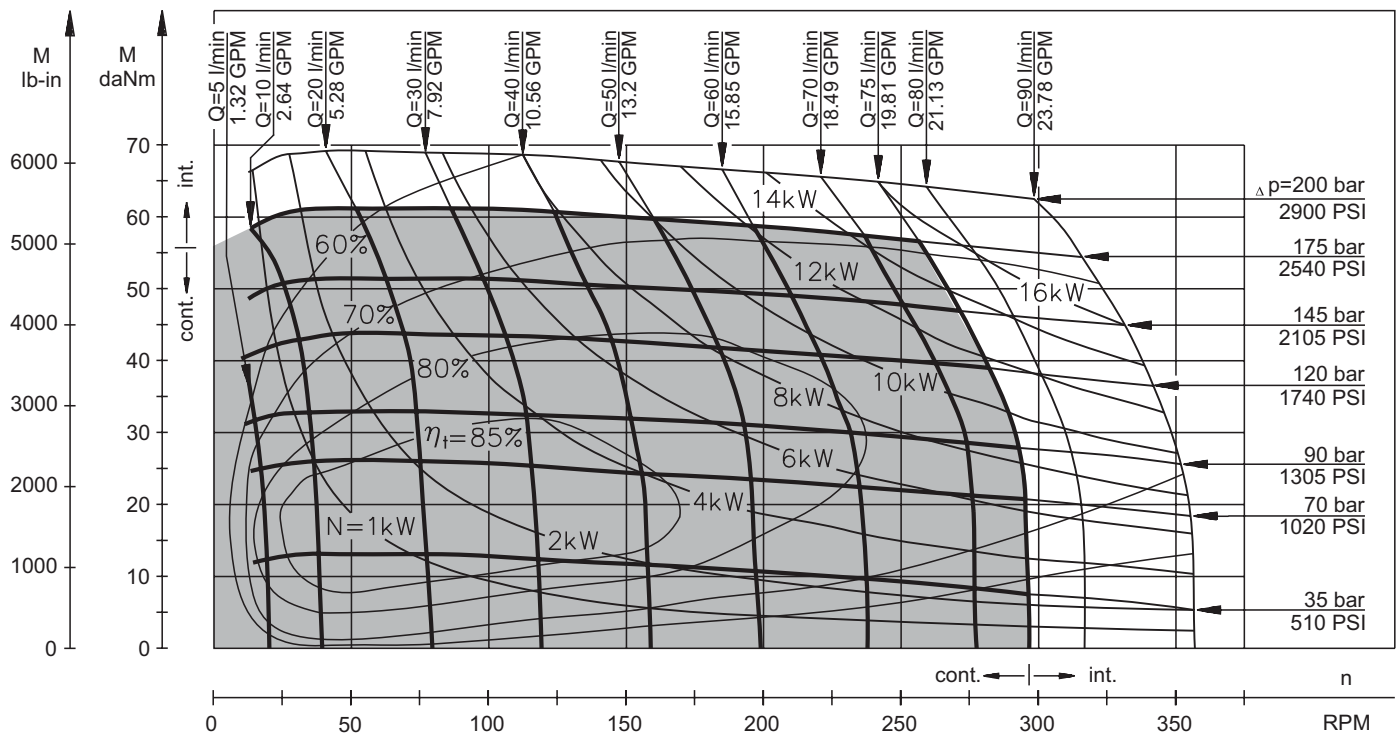
1. Intermittent speed and intermittent pressure must not occur simultaneously.
2. Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
3. Recommend using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) or HM (ISO 6743/4).
If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

MH 200



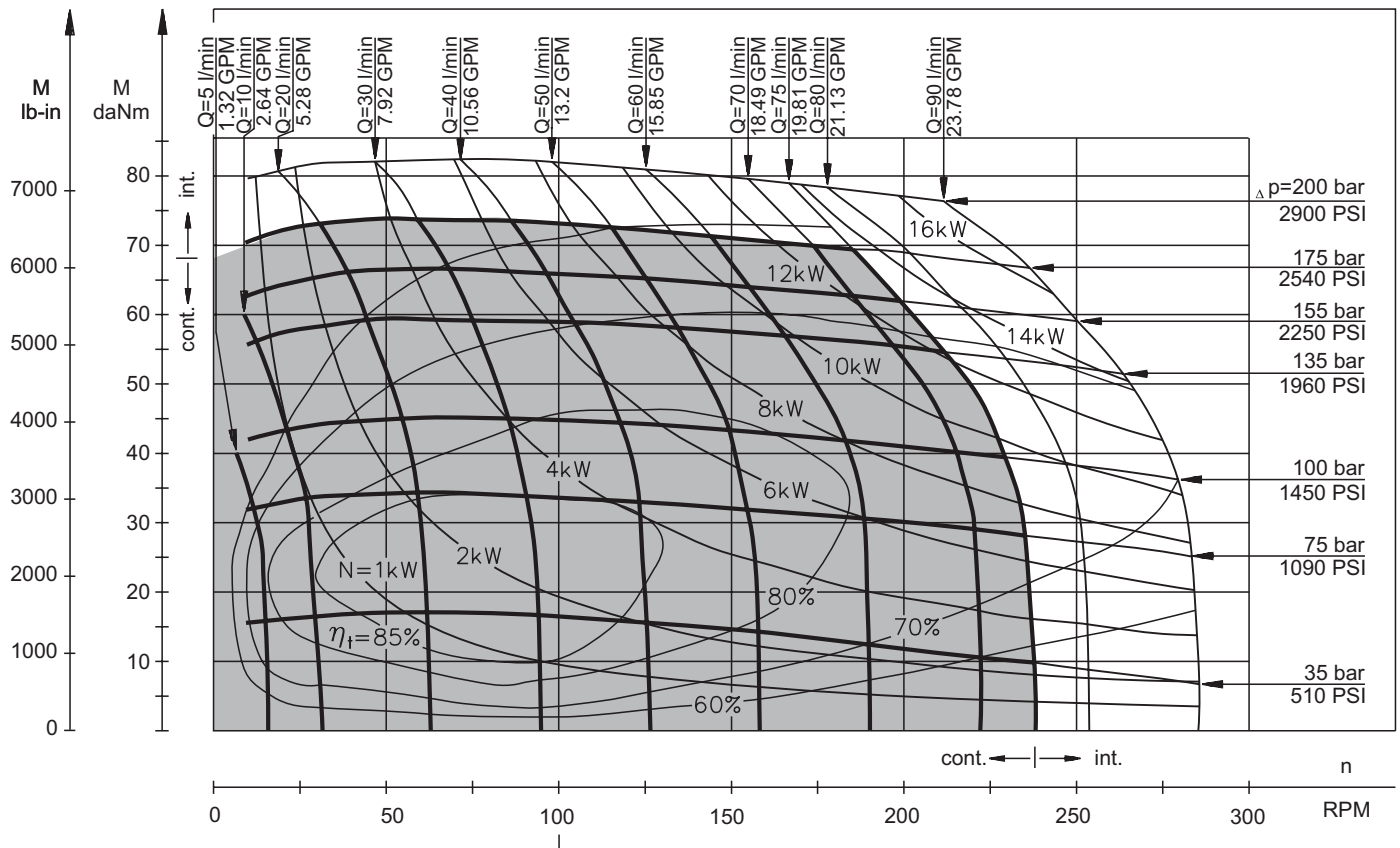
MH 250



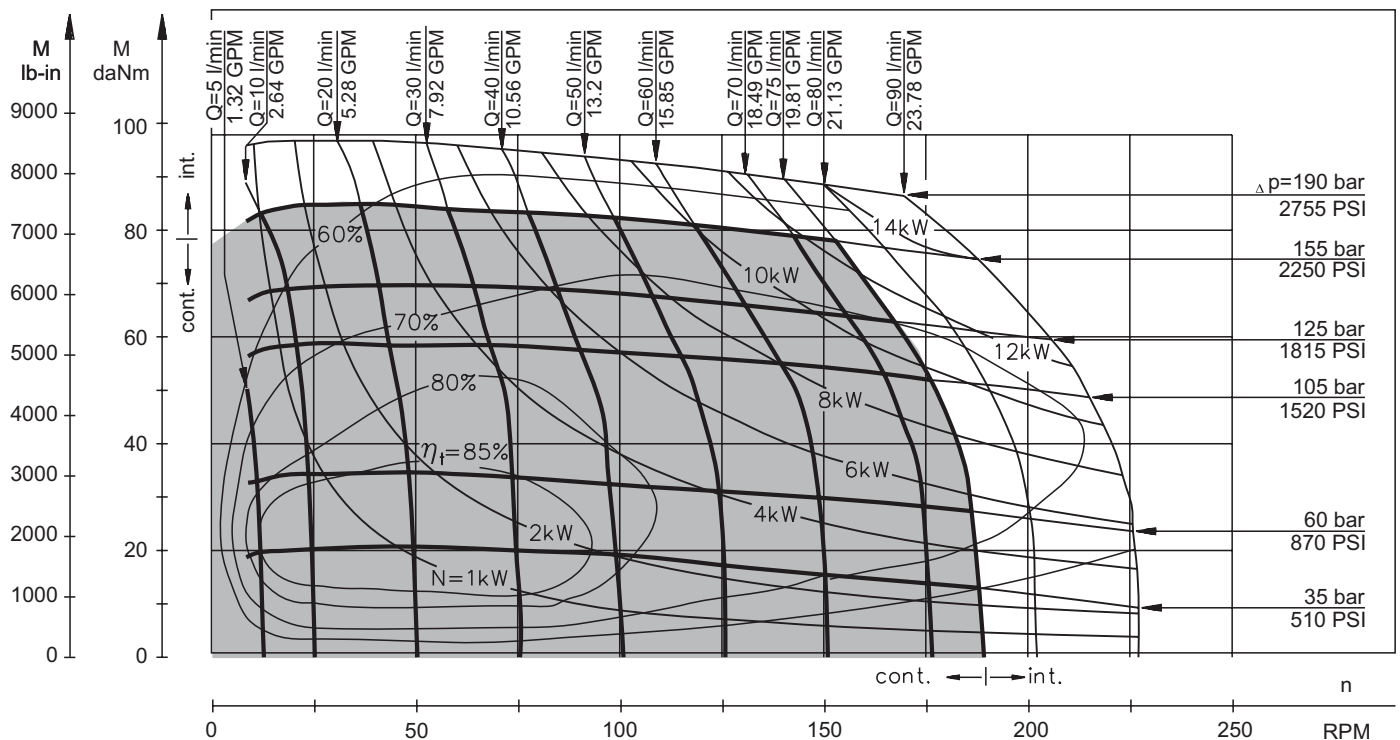
The function diagrams data is for average performance of randomly selected motors at back pressure $5 \div 10$ bar [72.5 ÷ 145 PSI] and oil with viscosity of $32 \text{ mm}^2/\text{s}$ [150 SUS] at 50°C [122°F].

FUNCTION DIAGRAMS

MH 315



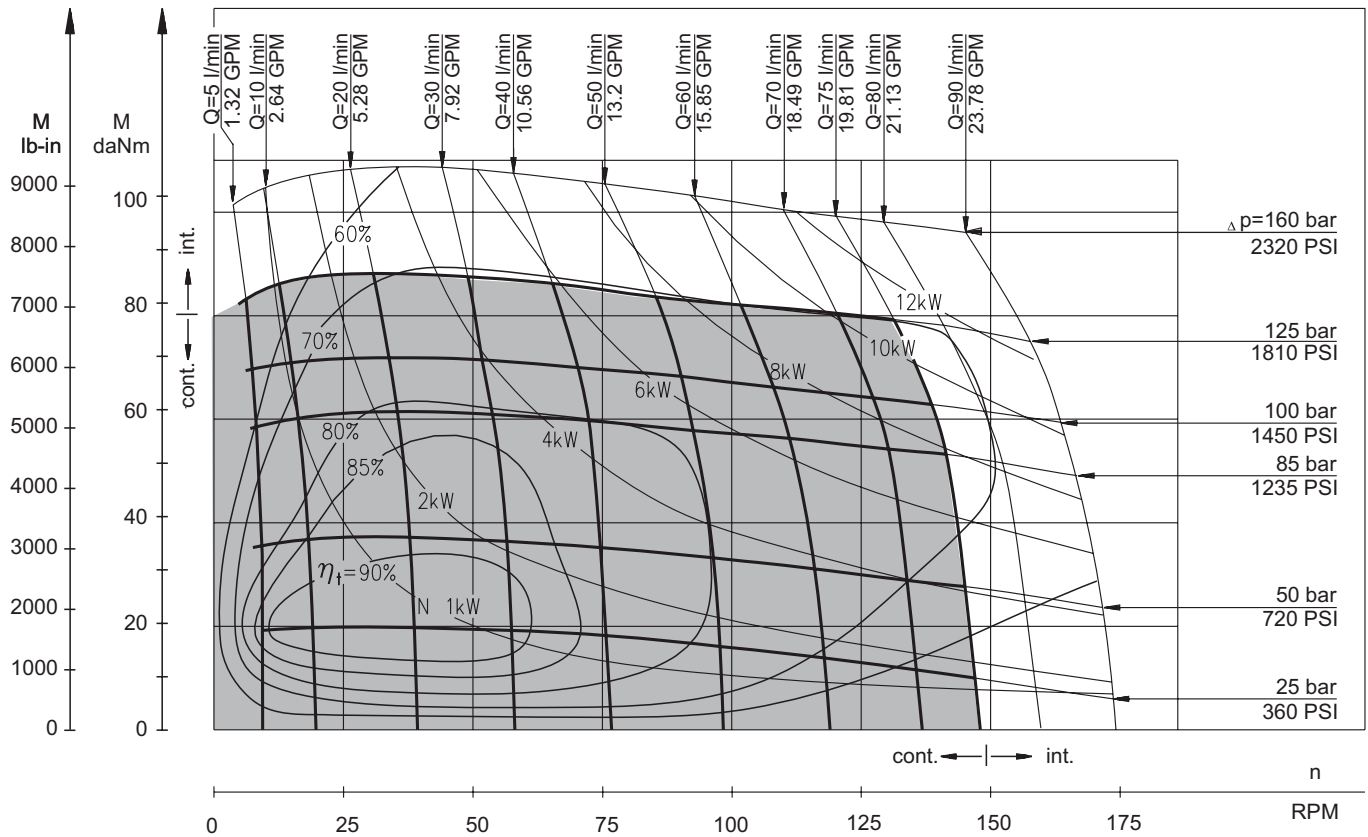
MH 400



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].

FUNCTION DIAGRAMS

MH 500



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].

PERMISSIBLE SHAFT LOADS FOR MH MOTORS

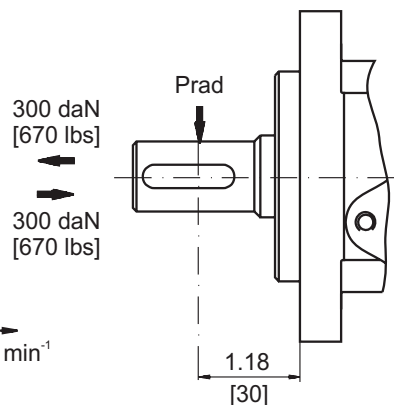
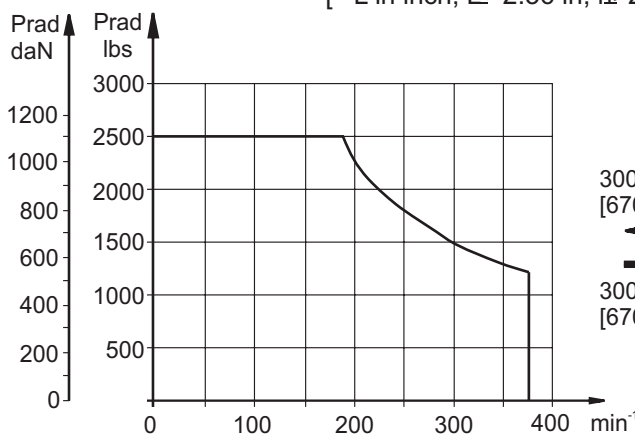
The permissible radial shaft load P_{rad} depends on the speed (RPM) and distance (L) from the point of load to the mounting flange.

$$Radial\ Shaft\ Load\ P_{rad} = \frac{1100}{n} \times \frac{25000}{103,5+L}, daN^*$$

[*L in mm; L ≤ 60 mm; n ≥ 200 RPM]

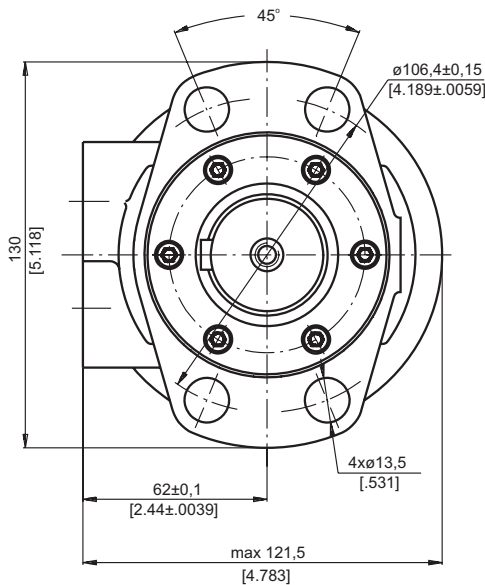
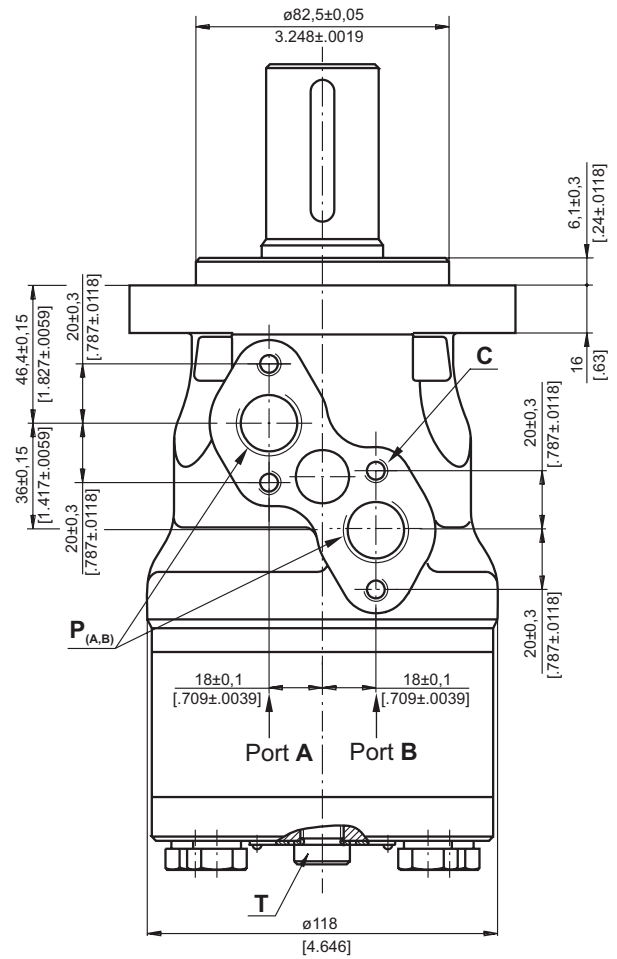
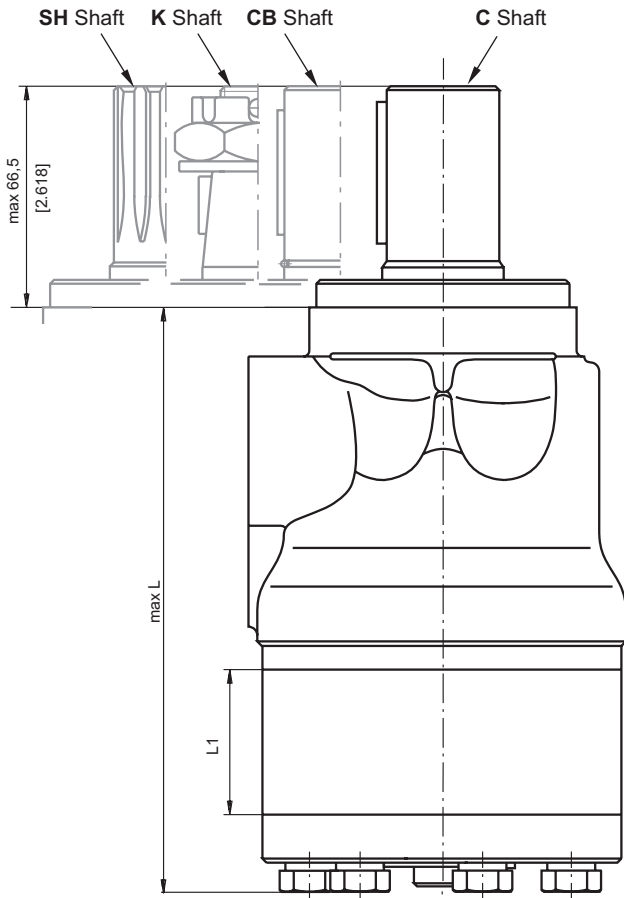
$$Radial\ Shaft\ Load\ P_{rad} = \frac{1100}{RPM} \times \frac{2215}{4.075+L}, lbs^{**}$$

[**L in inch; L ≤ 2.36 in; n ≥ 200 RPM]



DIMENSIONS AND MOUNTING DATA

Magneto Maunt (4 holes)



Type	L, mm [in.]	L ₁ , mm [in.]
MH 200	169 [6.65]	27,8 [1.09]
MH 250	176 [6.93]	34,8 [1.37]
MH 315	184 [7.24]	43,5 [1.71]
MH 400	196 [7.72]	54,8 [2.16]
MH 500	211 [8.31]	69,4 [2.73]

- 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

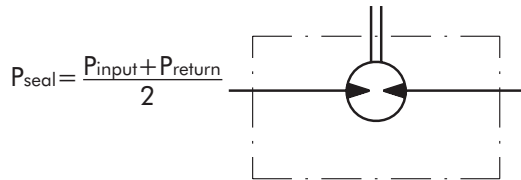
Reverse Rotation
 Viewed from Shaft End
 Port A Pressurized - CCW
 Port B Pressurized - CW



MAX. PERMISSIBLE SHAFT SEAL PRESSURE FOR MH MOTORS

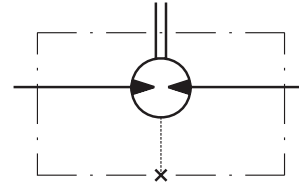
MH...U1 motors with high pressure seal and without drain connection:

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



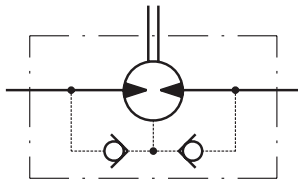
MH...U motors with high pressure seal and drain connection:

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



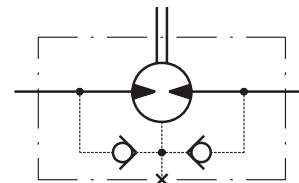
MH...1 motors with standard shaft seal and without drain connection:

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

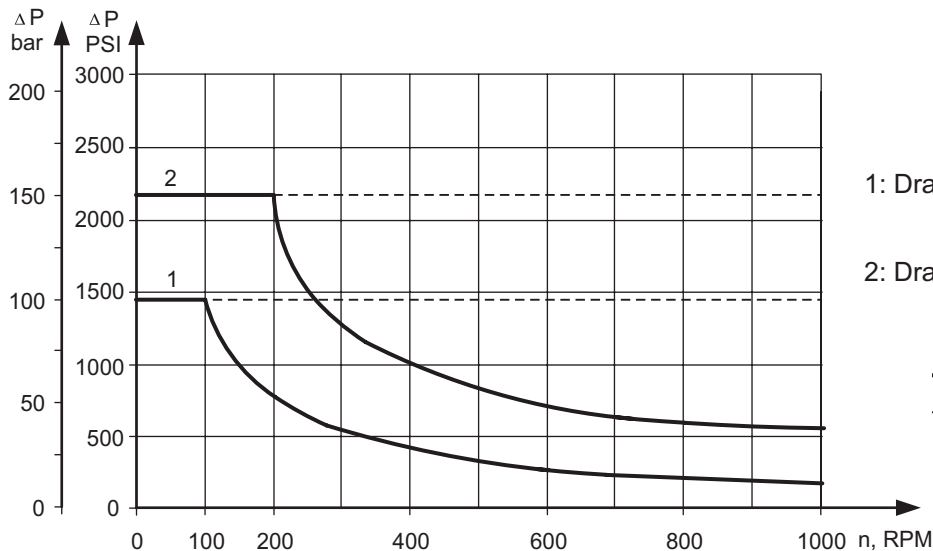


MH... motors with standard shaft seal and with drain connection:

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 Standard Shaft Seal

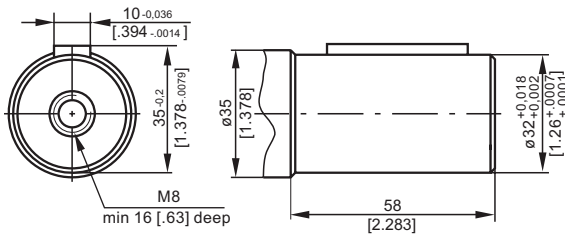
2: Drawing for High Pressure Seal ("U" Seal)

— - continuous operations

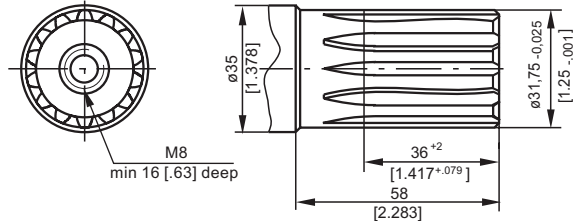
- - - - - intermittent operations

SHAFT EXTENSIONS

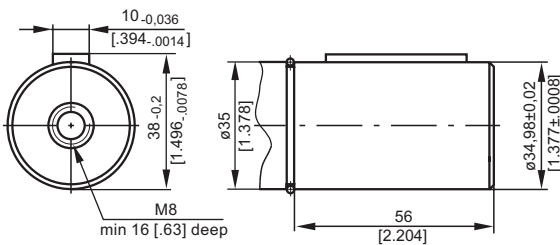
C - $\varnothing 32$ straight, Parallel key A10x8x45 DIN 6885
Max. Torque 77 daNm [6815 lb-in]



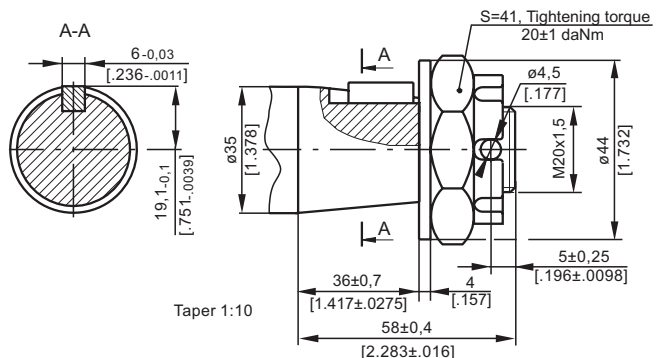
SH - $\varnothing 1\frac{1}{4}$ " splined 14T, DP 12/24 ANSI B92.1-1976
Max. Torque 95 daNm [8400 lb-in]



CB - $\varnothing 35$ straight, Parallel key A10x8x45 DIN 6885
Max. Torque 95 daNm [8400 lb-in]



K - tapered 1:10, Parallel key B6x6x20 DIN 6885
Max. Torque 95 daNm [8400 lb-in]



ORDER CODE



	1	2	3	4	5	6	7
MH							

Pos. 1 - Displacement code	
200	- 201,3 cm ³ /rev [12.3 in ³ /rev]
250	- 252,0 cm ³ /rev [15.4 in ³ /rev]
315	- 314,9 cm ³ /rev [16.4 in ³ /rev]
400	- 396,8 cm ³ /rev [24.2 in ³ /rev]
500	- 502,4 cm ³ /rev [30.7 in ³ /rev]
Pos. 2 - Shaft Extensions *	
C	$\varnothing 32$ straight, Parallel key A10x8x45 DIN 6885
SH	$\varnothing 1\frac{1}{4}$ " splined 14T ANSI B92.1-1970
CB**	$\varnothing 35$ straight, Parallel key A10x8x45 DIN 6885
K	$\varnothing 35$ tapered 1:10, Parallel key B6x6x20 DIN 6885

Pos. 3 - Shaft Seal Version	
omit	- Standard shaft seal
U	- High pressure shaft seal (without check valves)
Pos. 4 - Drain Port	
omit	- with drain port
1	- without drain port
Pos. 5 - Ports	
omit	- BSPP (ISO 228)
M	- Metric (ISO 262)
Pos. 6 - Special Features	(see page 98)
Pos. 7 - Design Series	
omit	- Factory specified

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

** The following combination is not allowed: "CB" shaft with U shaft seal.

The hydraulic motors are manganese-phosphatized as standard.