



M+S HYDRAULIC

DISC VALVE HYDRAULIC MOTORS



TYPE MS

MSY

MT

MV

ISO 9001
CERTIFIED BY TÜV-CERT

DISC VALVE HYDRAULIC MOTORS

DISC VALVE's function is to distribute fluid to the Roller Gear Set. The pressure balanced sealing surface on the valve face and the separately driven maintains minimal leakage and mechanical losses. These gives the motors high efficiency- even at high pressures, and good starting characteristics.

ROLLER GEAR SET minimizes friction and thereby increases efficiency while providing smooth output shaft rotation.

MS, MT and MV are suitable for continuous operation under rough operating conditions- high pressures, thin oil, or frequent reversals. The Tapered roller bearings permit high radial loads.

Standard Motor The standard motor mounting flange is located as close to the output shaft as possible. This type of mounting supports the motor close to the shaft load. This mounting flange is also compatible with many standard gear boxes.

Wheel Motor The wheel motor mounting flange is located near the center of the motor which permits part or all of the motor to be located inside the wheel or roller hub. In traction drive applications, loads can be positioned over the motor bearings for best bearing life. This wheel motor mounting flange provides design flexibility in many applications.

Short Motor This motor is assembled without the output shaft, bearings and bearing housing and has the same drive components as the standard and wheel motors. The short motor is especially suited for applications such as gear boxes, winch, reel and roll drives. Short motor applications must be designed with a bearing supported internal spline to mate with the bearing less motor drive. Product designs using these hydraulic motors provide considerable cost savings.

Low Leakage **LL** Series hydraulic motors have been designed to operate at the whole standard range of working conditions (pressure drop and frequency of rotation), but with considerable decreased volumetric losses in the drainage ports. Their main purpose is to operate as series-connected motors in hydraulic systems. For this version is permissible decreasing of the maximal torque with up to 5% (at middle speed) and up to 10% (at high speed) in comparison to the standard versions of motors. This version is available for the EPMS motors.

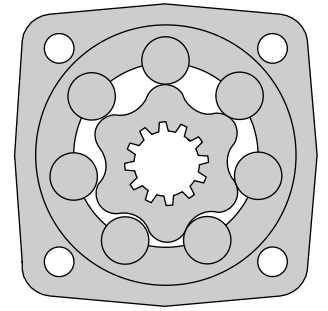
Low Speed Valve **LSV** Series hydraulic motors have been designed to operate with normal pressure drop and to ensure smooth run at low speed (up to 200 min^{-1}), as the best security for operation is guaranteed at frequency of rotation $20 \div 50 \text{ min}^{-1}$. They have an increased starting pressure drop and are not recommended for using at pressure less than 40 bar. This version is available for the EPMS motors.

HYDRAULIC MOTORS MS



APPLICATION

- » Conveyors
- » Metal working machine
- » Machines for agriculture
- » Road building machines
- » Mining machinery
- » Food industries
- » Special vehicles etc.



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OPTIONS

- » Model- Disc valve, roll-gerotor
- » Flange and wheel mount
- » Short motor
- » Motor with Drum Brake
- » Tacho connection
- » Speed sensing
- » Side and rear ports
- » Shafts- straight, splined and tapered
- » Metric and BSPP ports
- » Other special features

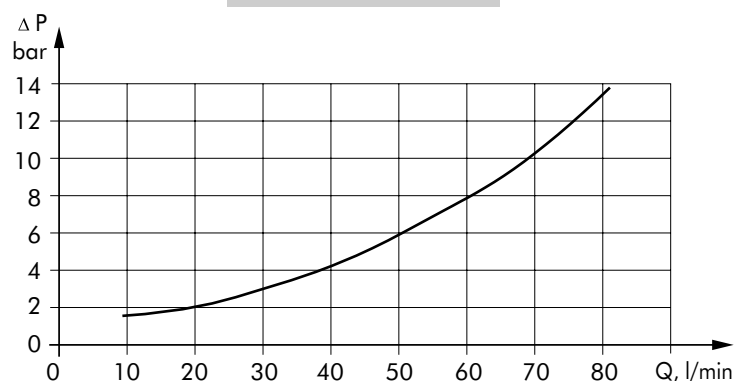
GENERAL

Displacement, [cm ³ /rev.]	80,5 ÷ 397
Max. Speed, [RPM]	190 ÷ 810
Max. Torque, [daNm]	20 ÷ 58
Max. Output, [kW]	20 ÷ 10
Max. Pressure Drop, [bar]	100 ÷ 200
Max. Oil Flow, [l/min]	75
Min. Speed, [RPM]	5 ÷ 10
Permissible Shaft Loads, [daN]	P _σ = 500
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)
140	20	1,5
	35	1
210	20	3
	35	2

Pressure Losses



SPECIFICATION DATA

Type		MS 80	MS 100	MS 125	MS 160
Displacement [cm ³ /rev.]		80,5	100	125,7	159,7
Max. Speed, [RPM]	cont.	810	750	600	470
	Int.*	1000	900	720	560
Max. Torque [daNm]	cont.	20	29,2	37,4	46
	Int.*	24	32	41	51,5
	peak**	26	32	41	51,5
Max. Output [kW]	cont.	16,4	19,5	20	15,5
	int.*	22	26	24	21,9
Max. Pressure Drop [bar]	cont.	175	205	205	205
	Int.*	210	225	225	225
	peak**	225	225	225	225
Max. Oil Flow [l/min]	cont.	65	75	75	75
	Int.*	80	90	90	90
Max. Inlet Pressure [bar]	cont.	210	210	210	210
	Int.*	250	250	250	250
	peak**	300	300	300	300
Max. Return Pressure with Drain Line [bar]	cont.	140	140	140	140
	Int.*	175	175	175	175
	peak**	210	210	210	210
Max. Starting Pressure with Unloaded Shaft, [bar]		12	10	10	8
Min. Starting Torque [daNm]	at max. press. drop cont.	16,5	23,9	26	36,9
	at max. press. drop Int.*	19,4	26,4	31	40,5
Min. Speed***, [RPM]		10	10	8	8
Weight, [kg] For Rear Ports +0,4 kg	MS(F)	9,9	10,1	10,4	10,8
	MSW	10,4	10,6	10,9	11,3
	MSS(Z)	7,9	8,1	8,4	8,8
	MSV	5,8	6	6,3	6,7
	MSQ	10,3	10,5	10,8	11,2
	MSB	16,9	17,1	17,4	17,8

* 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 of 5 RPM 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 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)

Type		MS 200	MS 250	MS 315	MS 400
Displacement [cm ³ /rev.]		200	250	314,9	397
Max. Speed, [RPM]	cont.	375	300	240	190
	Int.*	450	360	290	230
Max. Torque [daNm]	cont.	46	50	54	58
	Int.*	60	63	63	69
	peak**	65	72	84	85
Max. Output [kW]	cont.	14	13,5	11,5	10
	int.*	21	21	13,5	13
Max. Pressure Drop [bar]	cont.	160	140	120	100
	Int.*	210	175	140	120
	peak**	225	200	185	140
Max. Oil Flow [l/min]	cont.	75	75	75	75
	Int.*	90	90	90	90
Max. Inlet Pressure [bar]	cont.	210	210	210	210
	Int.*	250	250	250	250
	peak**	300	300	300	300
Max. Return Pressure with Drain Line [bar]	cont.	140	140	140	140
	Int.*	175	175	175	175
	peak**	210	210	210	210
Max. Starting Pressure with Unloaded Shaft, [bar]		8	8	8	8
Min. Starting Torque [daNm]	at max. press. drop cont.	37,5	40	51	54
	at max. press. drop Int.*	48,5	50	65	63
Min. Speed***, [RPM]		6	6	5	5
Weight, [kg] For Rear Ports +0,4 kg	MS(F)	11,2	11,7	12,4	13,3
	MSW	11,7	12,2	12,9	13,8
	MSS(Z)	9,2	9,7	10,4	11,3
	MSV	7,1	7,6	8,3	9,2
	MSQ	11,6	12,1	12,8	13,7
	MSB	18,2	18,7	19,4	20,3

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

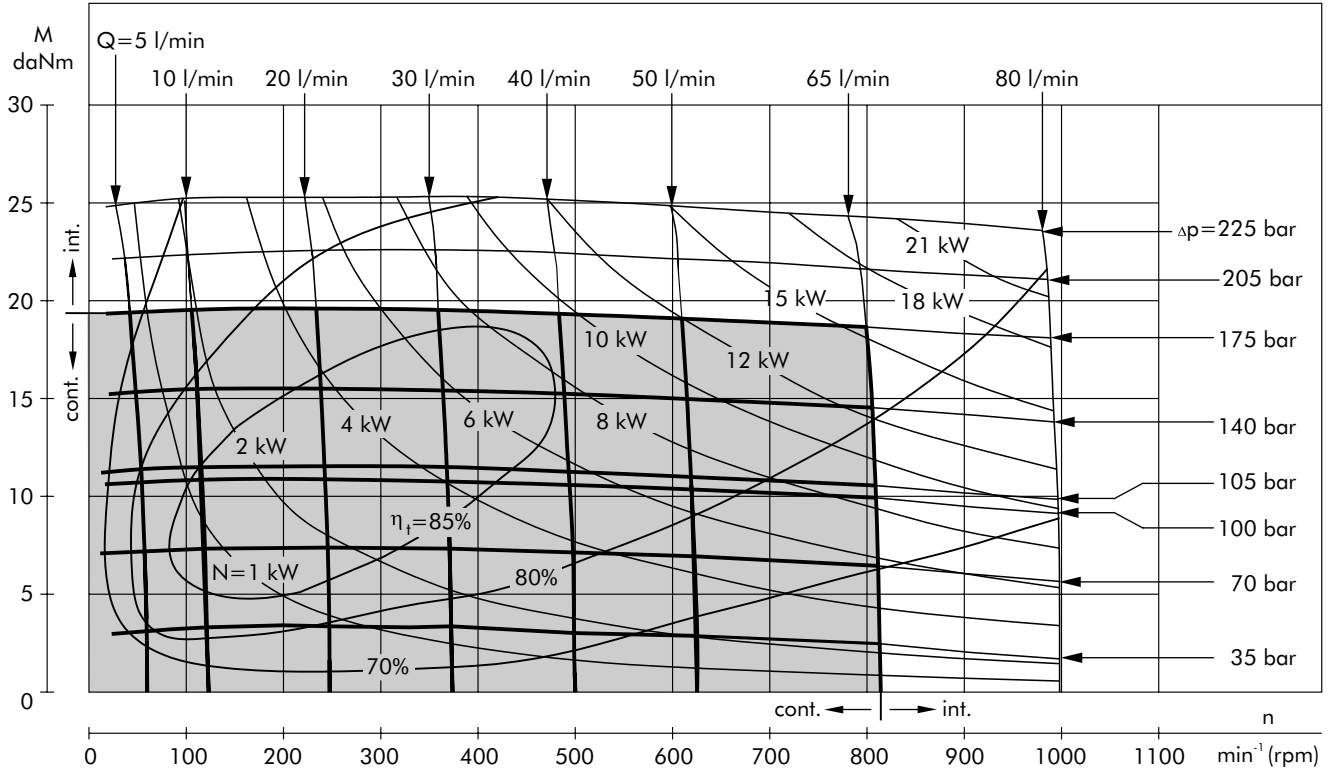
** Peak load: the permissible values may occur for max. 1% of every minute.

*** For speeds of 5 RPM lower than given, consult factory or your regional manager.

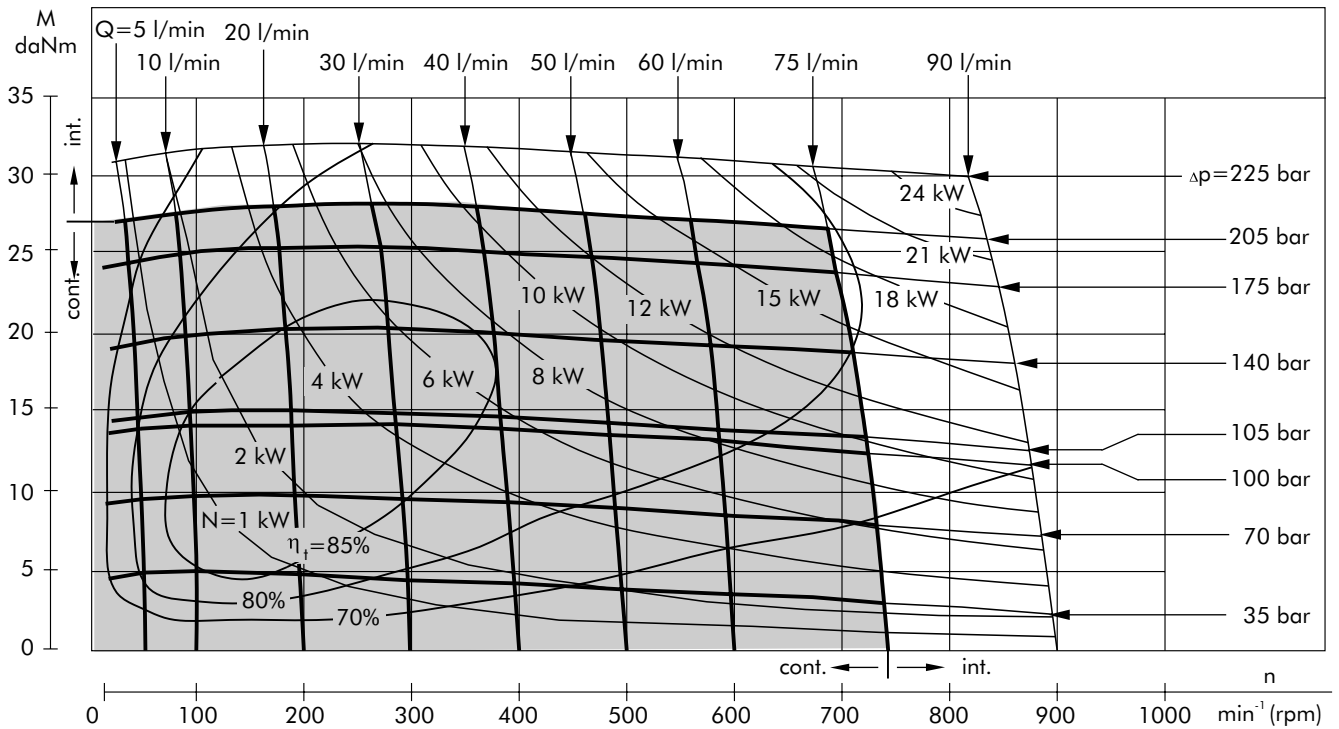
- 1) Intermittent speed and intermittent pressure must not occur simultaneously.
- 2) Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
- 3) Recommend using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) or HM (ISO 6743/4).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

MS 80



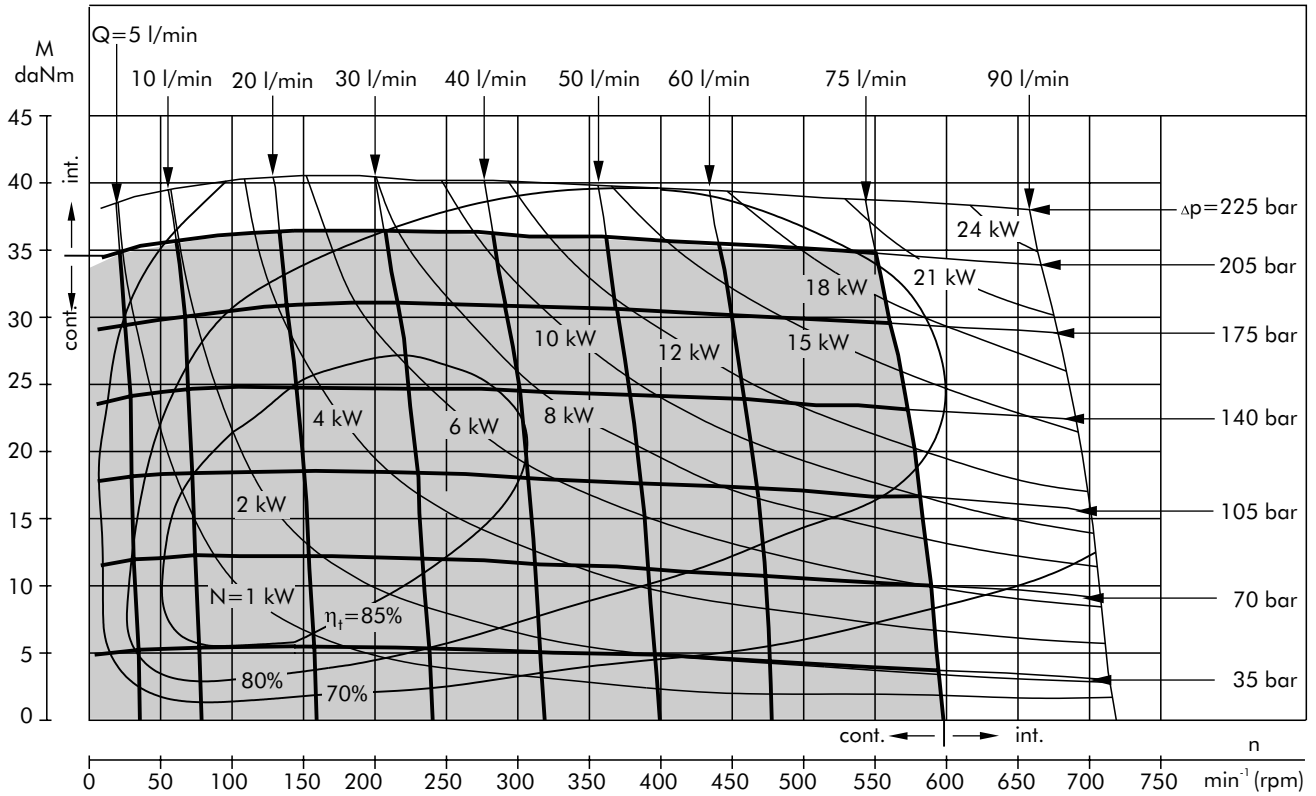
MS 100



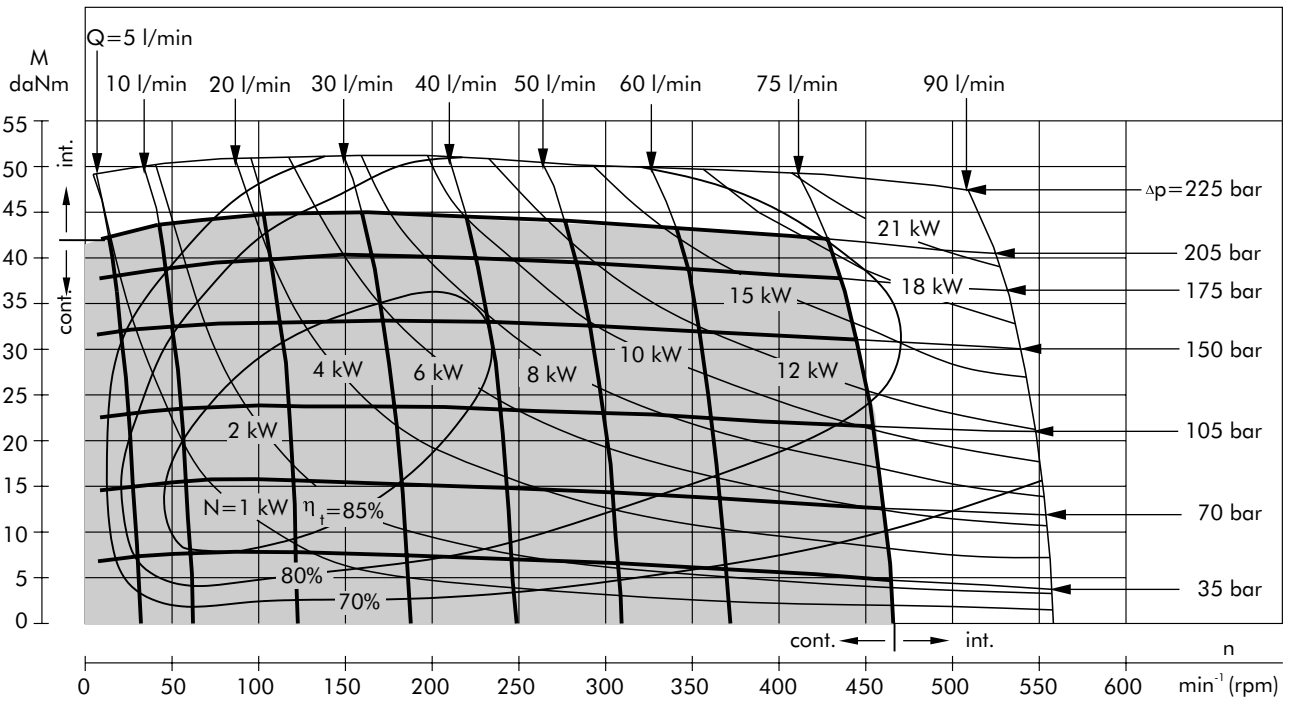
The function diagrams data was collected at back pressure 5 ÷ 10 bar and oil with viscosity of 32 mm²/s at 50° C.

FUNCTION DIAGRAMS

MS 125



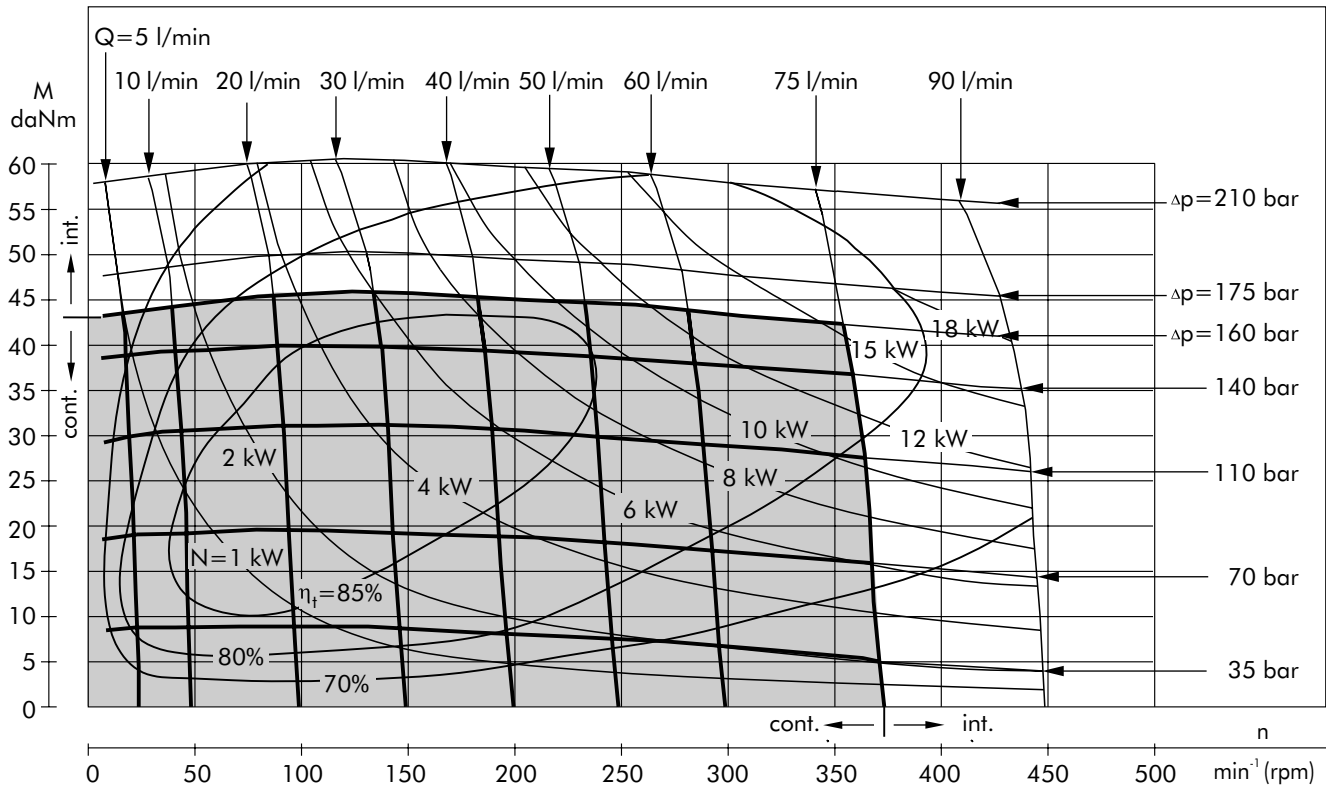
MS 160



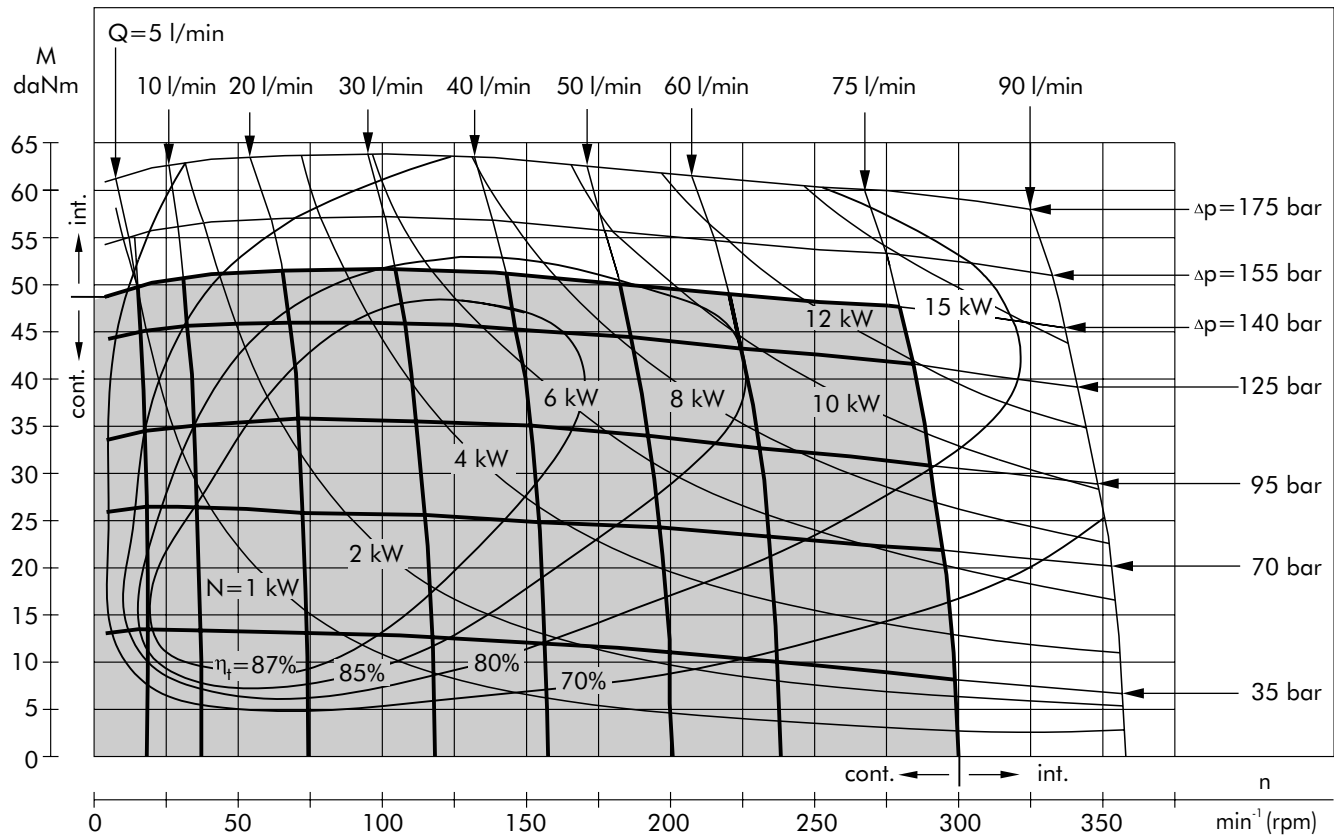
The function diagrams data was collected at back pressure $5 \div 10$ bar and oil with viscosity of $32 \text{ mm}^2/\text{s}$ at 50°C .

FUNCTION DIAGRAMS

MS 200

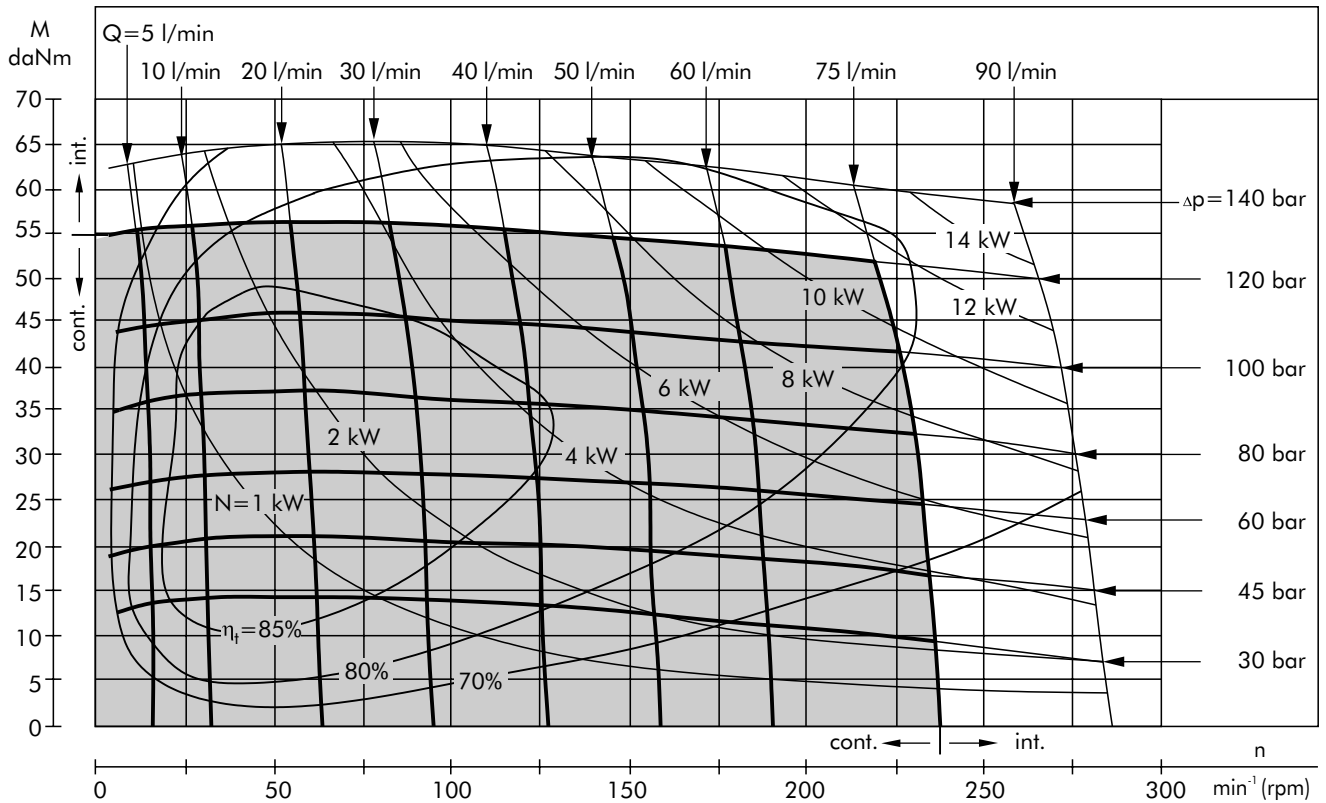


MS 250

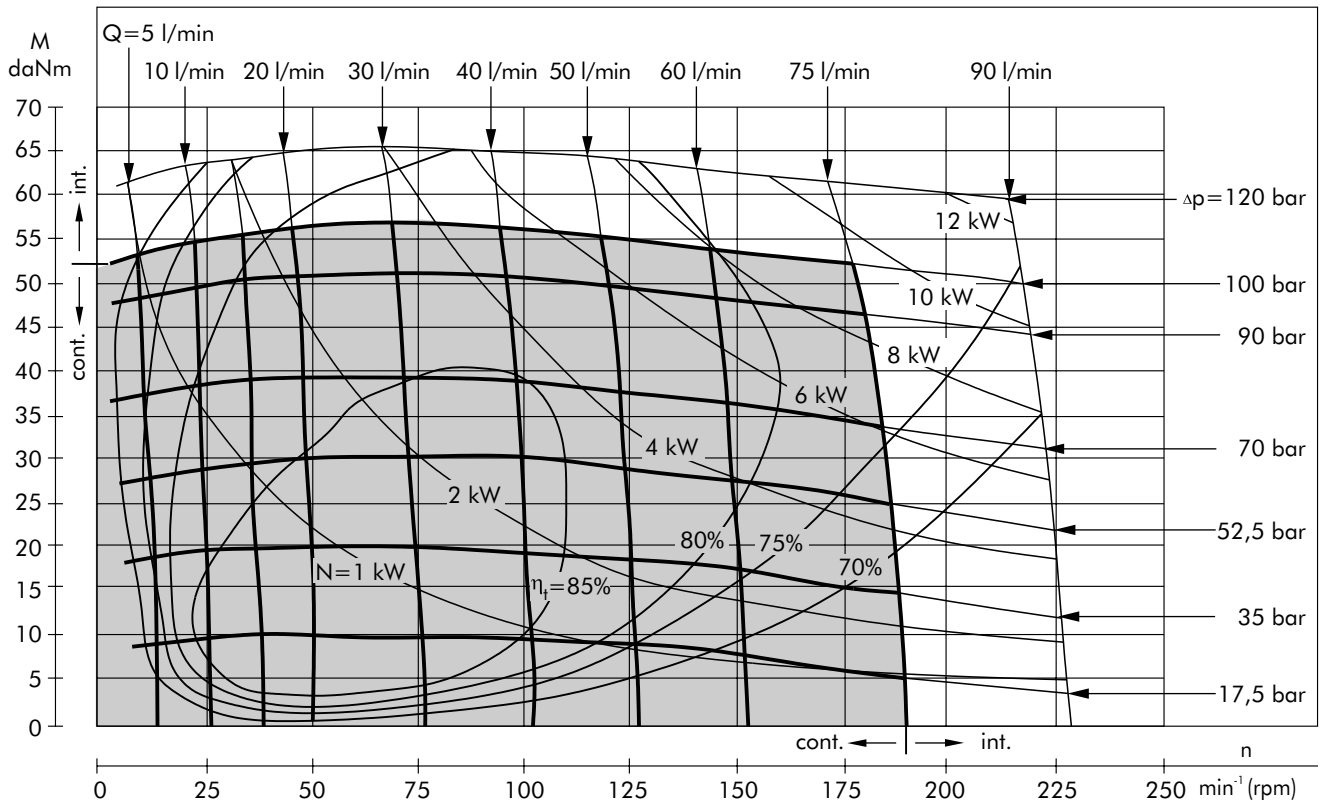


The function diagrams data was collected at back pressure 5÷10 bar and oil with viscosity of 32 mm²/s at 50° C.

MS 315

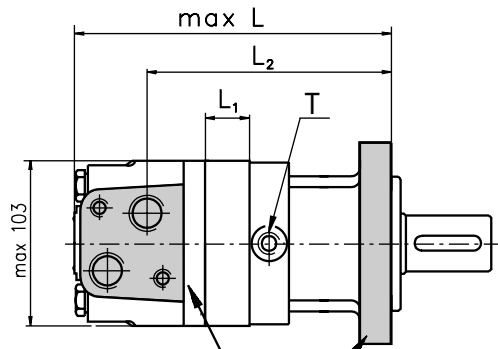


MS 400

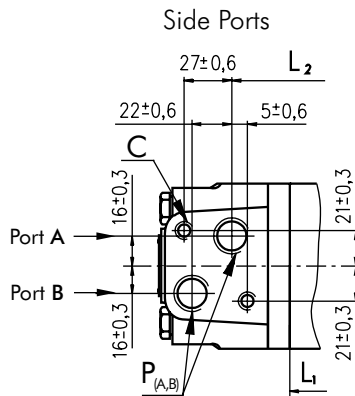


The function diagrams data was collected at back pressure $5 \div 10$ bar and oil with viscosity of $32 \text{ mm}^2/\text{s}$ at 50°C .

DIMENSIONS AND MOUNTING DATA

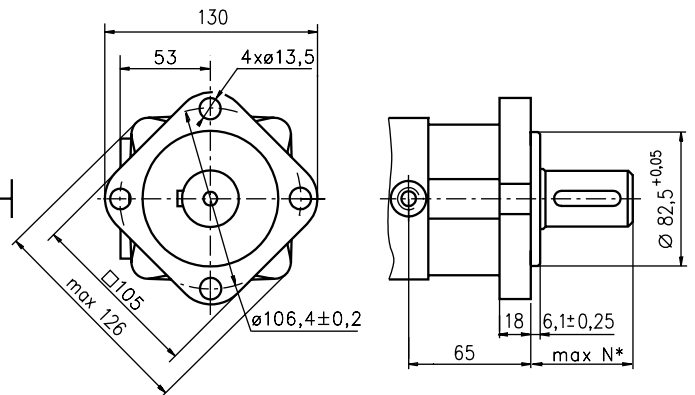


Porting

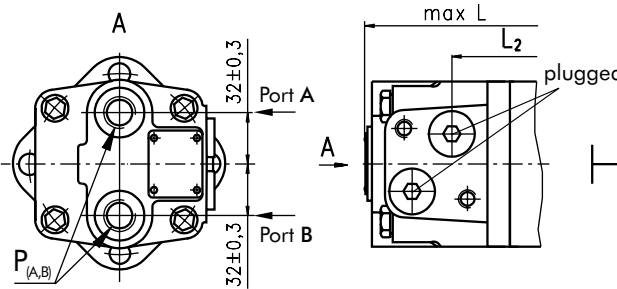


Mounting

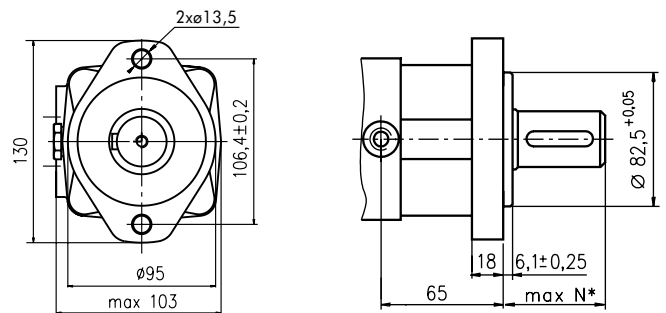
SAE A-4 Mount (4 Holes)



E Rear Ports



A SAE A-2 Mount (2 Holes)



*For N see page 15

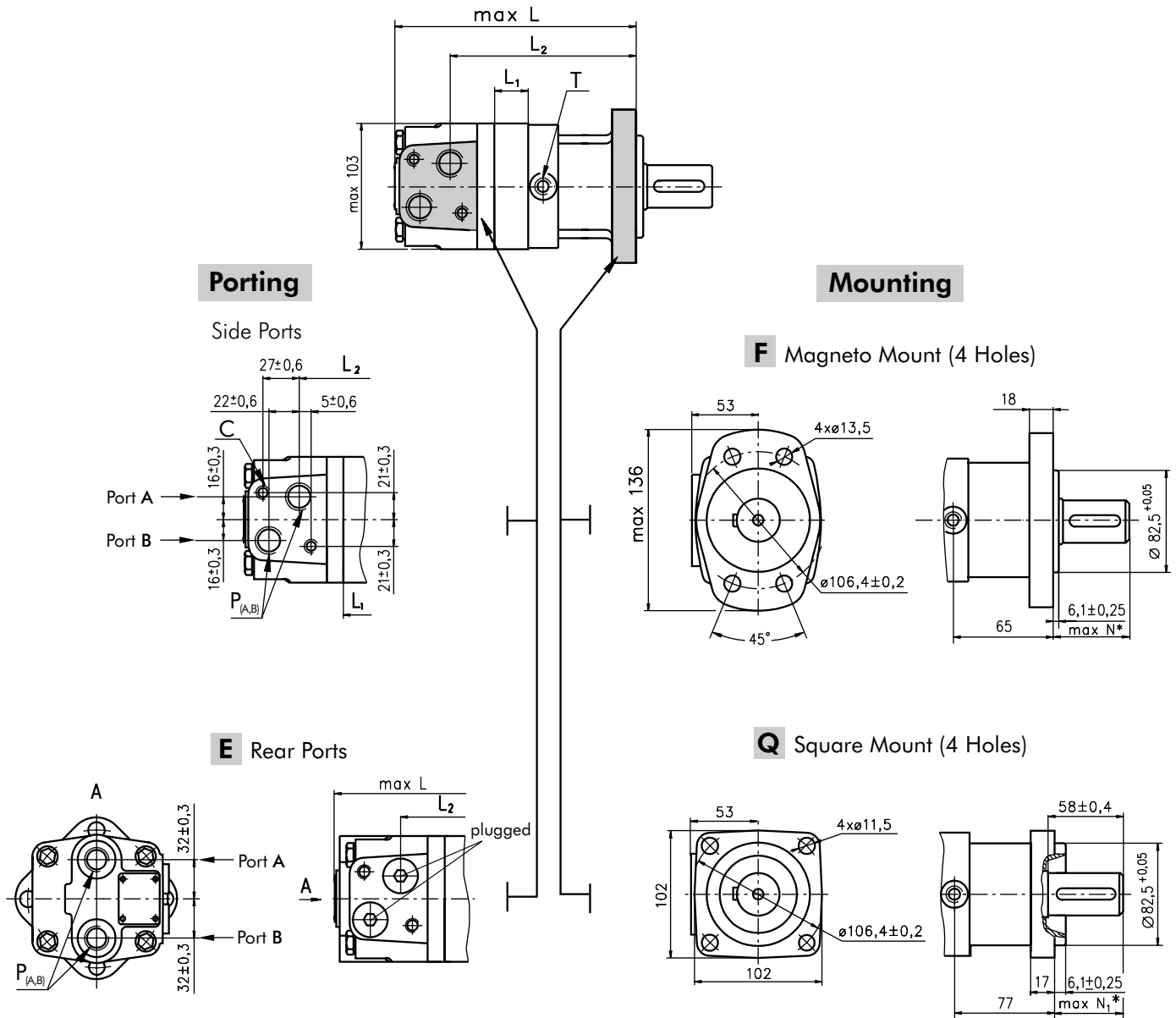
- C:** 2xM10-12 mm depth
- P_(A,B):** 2xG1/2 or 2xM22x1,5-15 mm depth
- T:** G 1/4 or M14x1,5- 12 mm depth (plugged)

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	L ₂ , mm	Type	L, mm	L ₁ , mm
MS(A) 80	168	124	MS(A)E 80	173	14
MS(A) 100	171	129	MS(A)E 100	177	17,4
MS(A) 125	176	132	MS(A)E 125	181	21,8
MS(A) 160	182	138	MS(A)E 160	187	27,8
MS(A) 200	189	145	MS(A)E 200	194	34,8
MS(A) 250	197	154	MS(A)E 250	203	43,5
MS(A) 315	209	165	MS(A)E 315	214	54,8
MS(A) 400	223	179	MS(A)E 400	228	69,4
MSY(A) 475	237	193	MSY(A)E 475	242	82,6

DIMENSIONS AND MOUNTING DATA



*For **N** and **N₁**, see page 15

C: 2xM10-12 mm depth

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

T: G 1/4 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

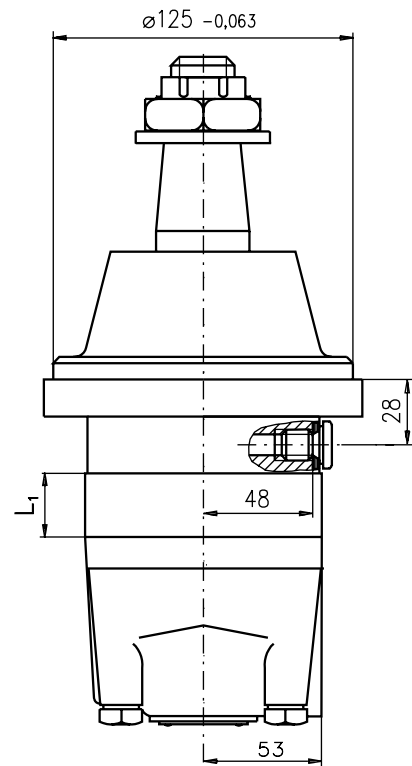
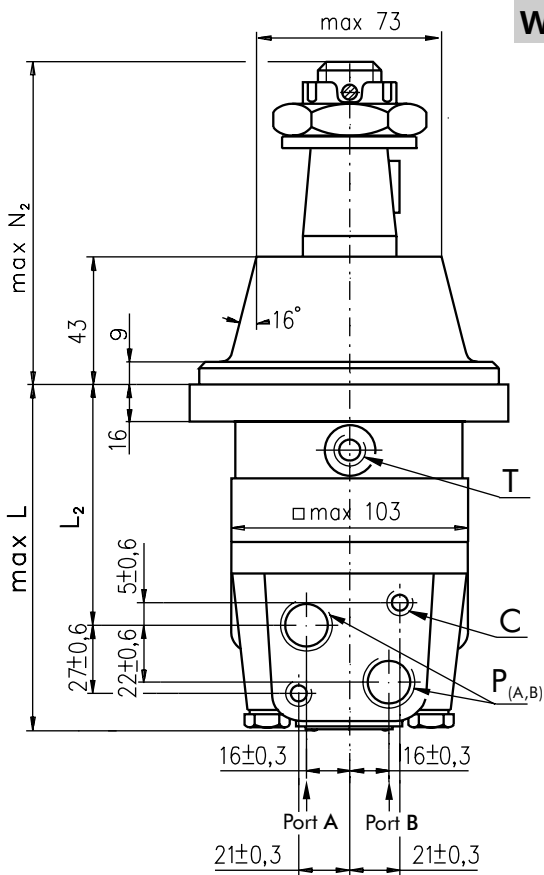
Port A Pressurized - CCW

Port B Pressurized - CW

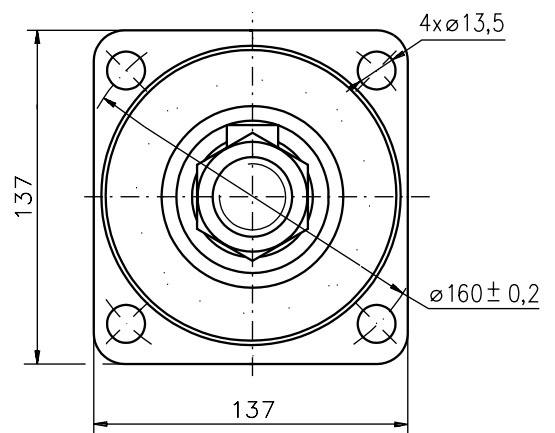
Type	L, mm	L ₂ , mm	Type	L, mm	L ₂ , mm	Type	L, mm	Type	L, mm	L ₁ , mm
MSF 80	168	124	MSQ 80	179	136	MSFE 80	173	MSQE 80	185	14
MSF 100	171	129	MSQ 100	183	140	MSFE 100	177	MSQE 100	189	17,4
MSF 125	176	132	MSQ 125	187	144	MSFE 125	181	MSQE 125	193	21,8
MSF 160	182	138	MSQ 160	193	150	MSFE 160	187	MSQE 160	199	27,8
MSF 200	189	145	MSQ 200	200	157	MSFE 200	194	MSQE 200	206	34,8
MSF 250	197	154	MSQ 250	209	166	MSFE 250	203	MSQE 250	215	43,5
MSF 315	209	165	MSQ 315	220	177	MSFE 315	214	MSQE 315	226	54,8
MSF 400	223	179	MSQ 400	235	192	MSFE 400	228	MSQE 400	241	69,4
MSYF 475	237	193	MSYQ 475	247	205	MSYFE 475	242	MSYQE 475	254	82,6

DIMENSIONS AND MOUNTING DATA -MSW

W Wheel Mount

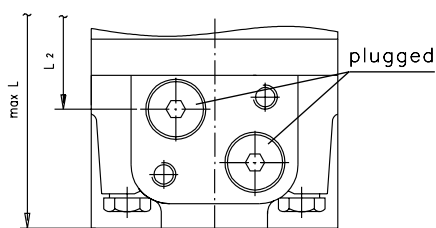
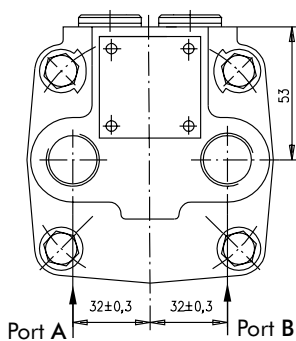


- C:** 2xM10-12 mm depth
- P_(A,B):** 2xG1/2 or 2xM22x1,5-15 mm depth
- T:** G ¼ or M14x1,5 - 12 mm depth(plugged)



*For N₂ see page 15

E Rear Port



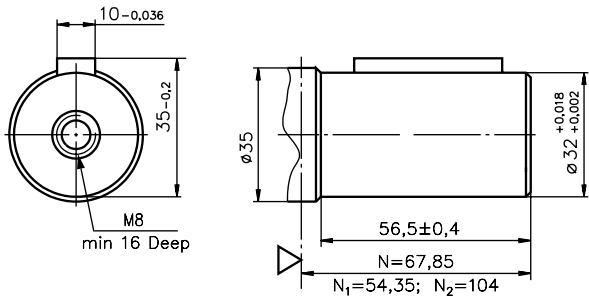
Standard Rotation
Viewed from Shaft End
Port A Pressurized - CW
Port B Pressurized - CCW

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

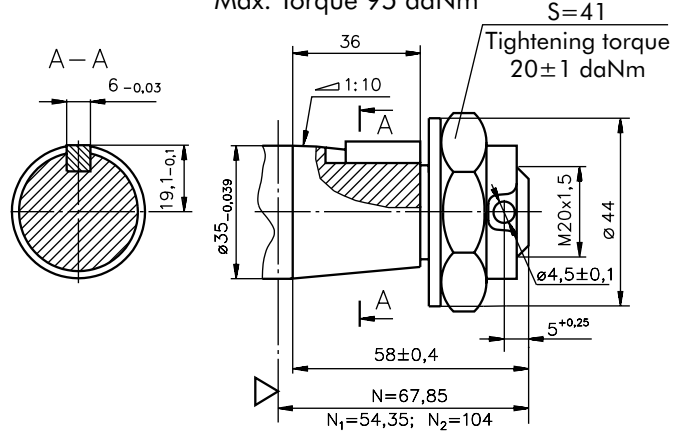
Type	L, mm	L ₁ , mm	L ₂ , mm	Type	L, mm
MSW 80	129	14	87	MSWE 80	138
MSW100	133	17,4	91	MSWE 100	142
MSW 125	137	21,8	95	MSWE 125	146
MSW 160	143	27,8	101	MSWE 160	152
MSW 200	150	34,8	108	MSWE 200	159
MSW 250	159	43,5	117	MSWE 250	168
MSW 315	170	54,8	128	MSWE 315	179
MSW 400	184	69,4	143	MSWE 400	194
MSYW 475	198	82,6	156	MSYWE 475	207

SHAFT EXTENSIONS

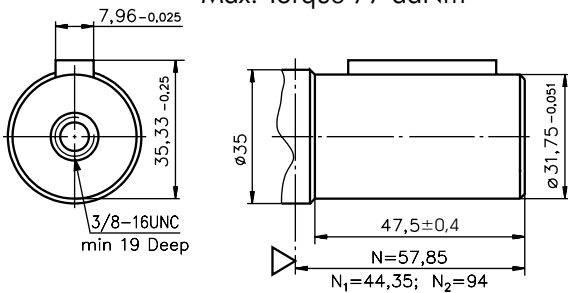
C - $\phi 32$ straight, Parallel key A10x8x45 DIN 6885
Max. Torque 77 daNm



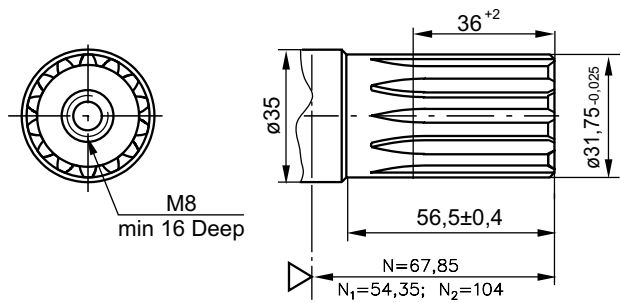
K - tapered 1:10, Parallel key B6x6x20 DIN 6885
Max. Torque 95 daNm



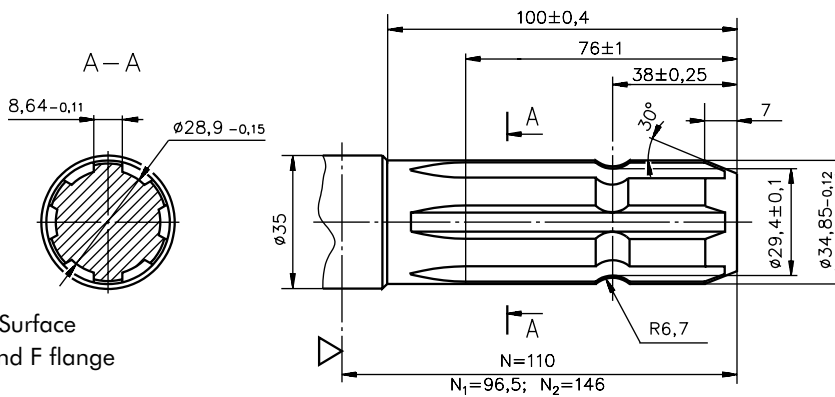
CO - $\phi 1\frac{1}{4}$ " straight, Parallel key $\frac{5}{16}$ "x $\frac{5}{16}$ "x $1\frac{1}{4}$ "BS46
Max. Torque 77 daNm



SH - $\phi 1\frac{1}{4}$ " splined 14T, DP12/24 ANSI B92.1-1976
Max. Torque 95 daNm



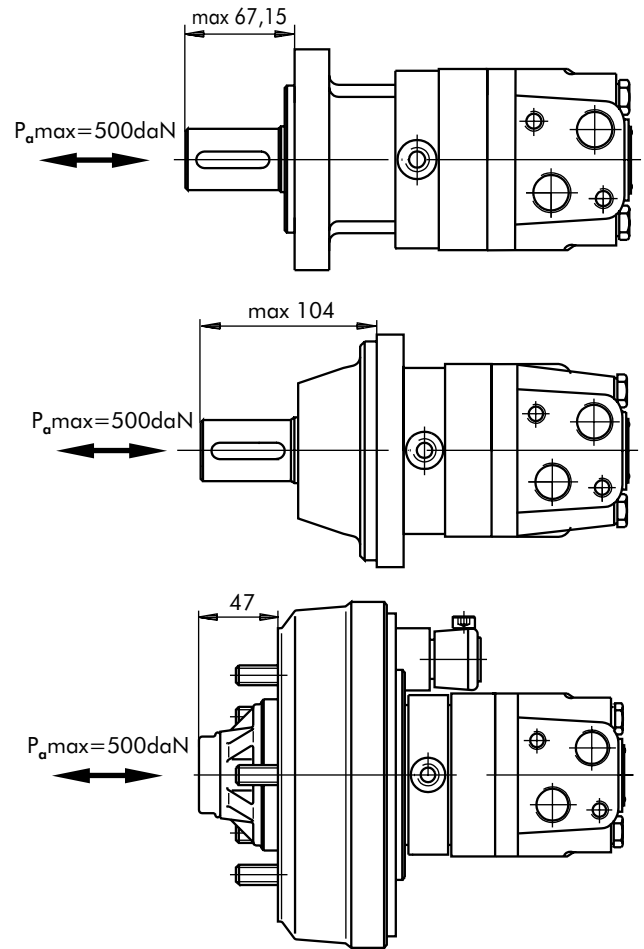
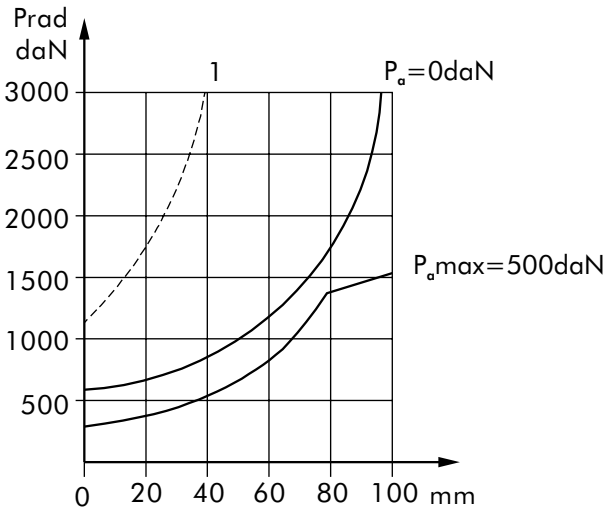
SL - $\phi 34,85$ p.t.o. DIN 9611 Form 1
Max. Torque 77 daNm



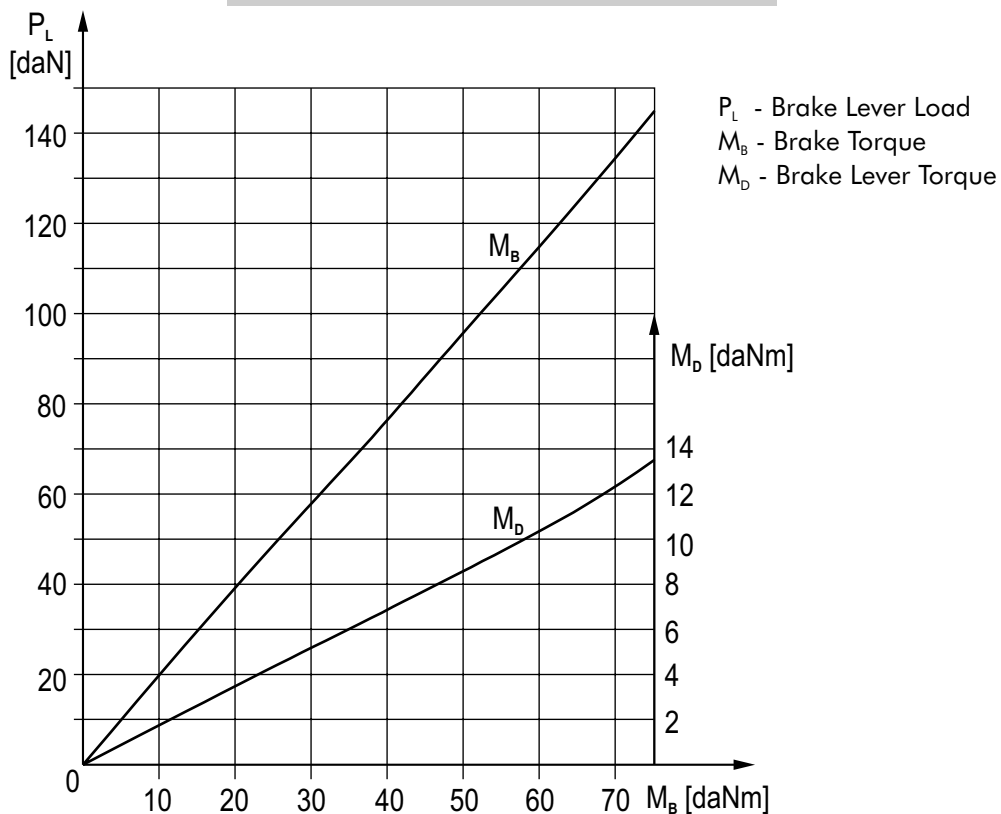
▽ - Motor Mounting Surface
N - for standart,A and F flange
N₁ - for Q flange
N₂ - for W flange

PERMISSIBLE SHAFT LOADS

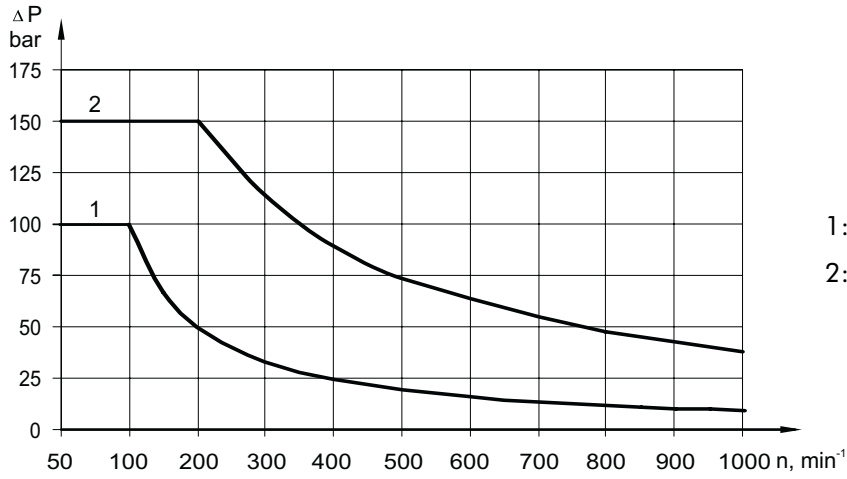
The output shaft runs in tapered bearings that permit high axial and radial forces. Curve "1" shows max. radial shaft load. Any shaft load exceeding the values quoted in the curve will seriously reduce motor life. The two other curves apply to a B10 bearing life of 3000 hours at 200 RPM.



FUNCTION DIAGRAM MSB

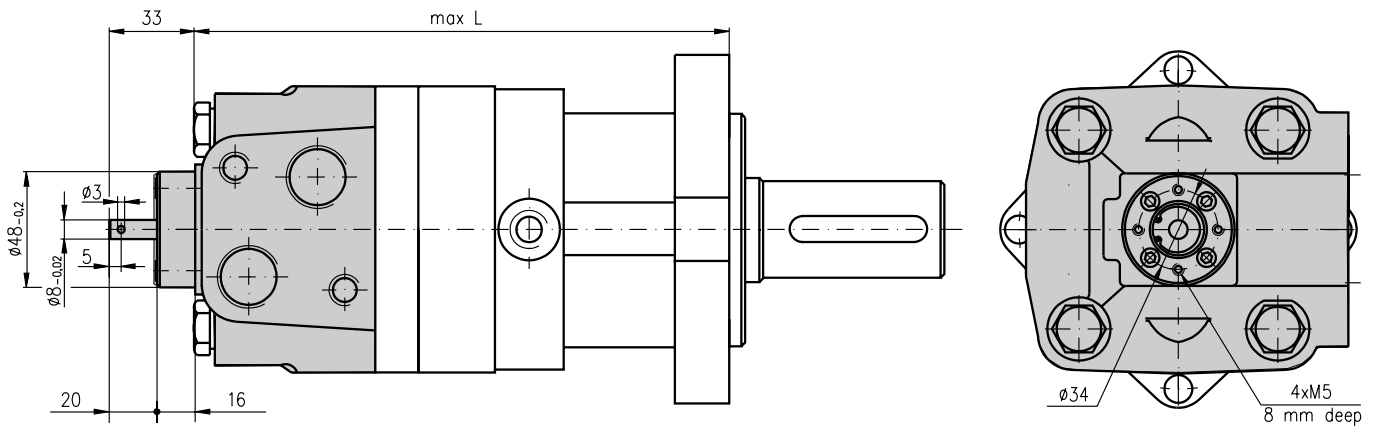


MAX. PERMISSIBLE SHAFT SEAL PRESSURE

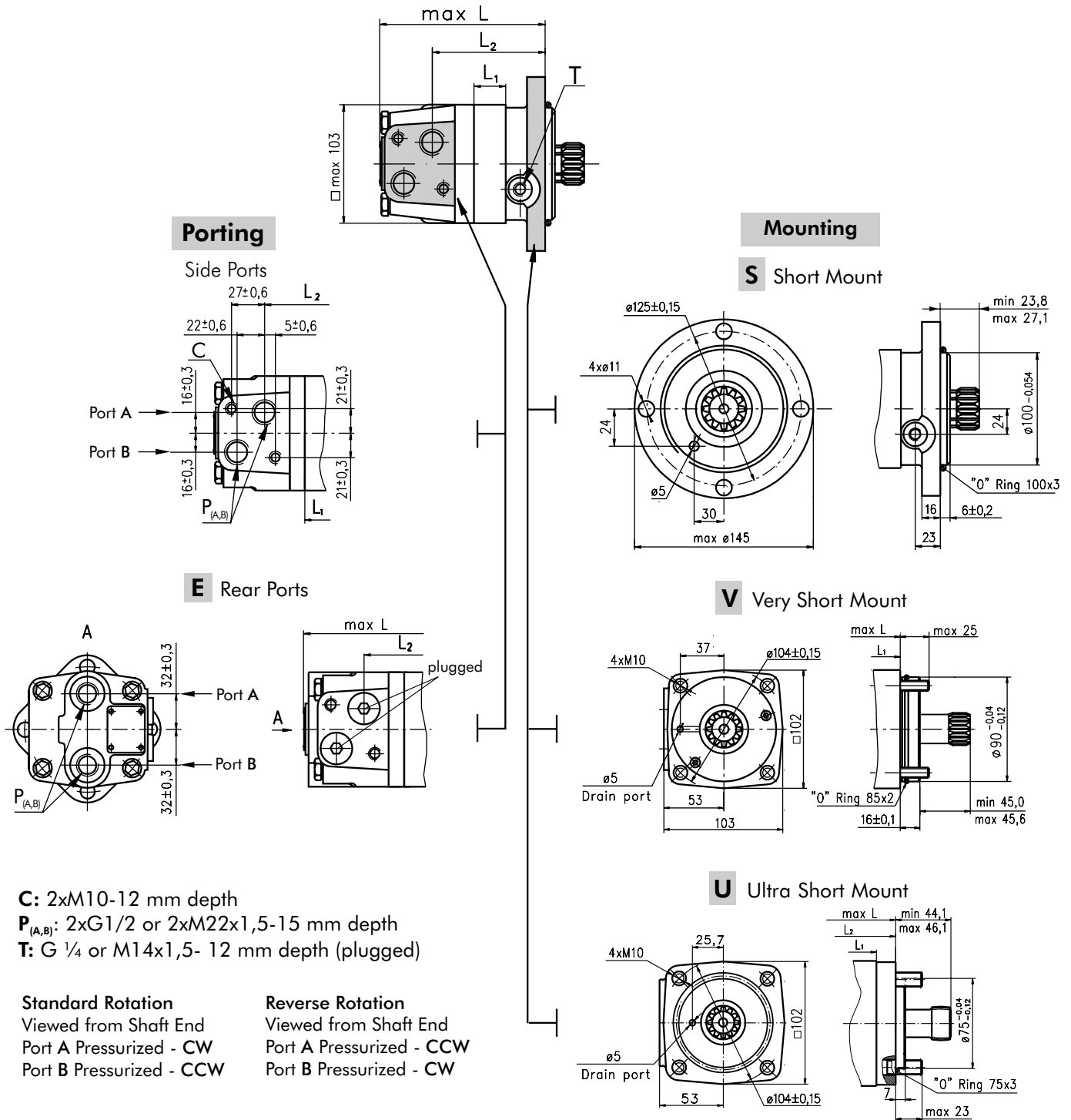


1: Drawing for Standard Shaft Seal
2: Drawing for High Pressure Seal ("U" Seal)

MOTORS WITH TACHO CONNECTION



DIMENSIONS AND MOUNTING DATA - MSS, MSV and MSU



C: 2xM10-12 mm depth
P_(A,B): 2xG1/2 or 2xM22x1,5-15 mm depth
T: G 1/4 or M14x1,5- 12 mm depth (plugged)

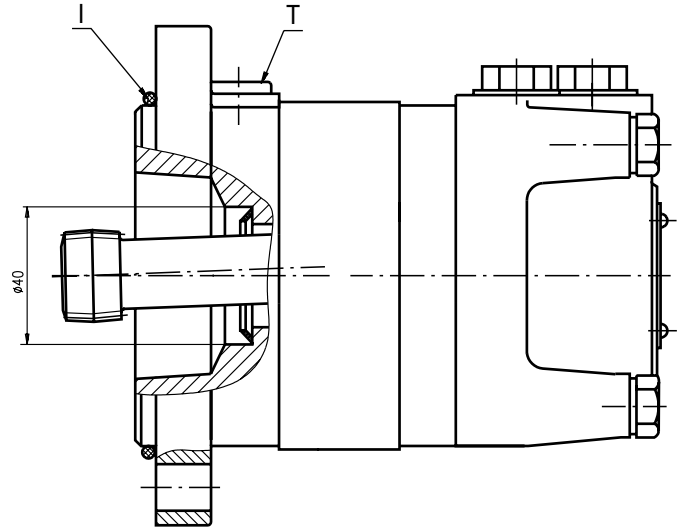
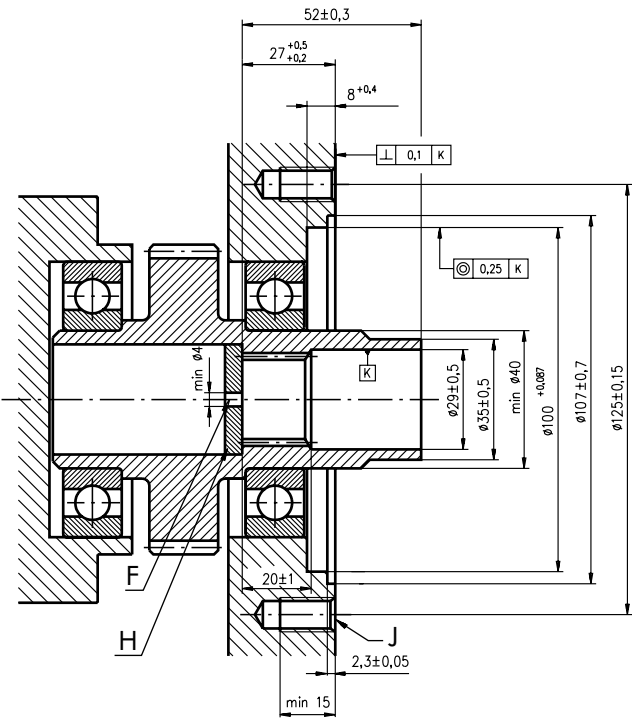
Standard Rotation
 Viewed from Shaft End
 Port A Pressurized - CW
 Port B Pressurized - CCW

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

Type	L, mm	L ₂ , mm	Type	L, mm	Type	L, mm	L ₂ , mm	Type	L, mm	Type	L, mm	L ₂ , mm	Type	L, mm	L ₁ , mm
MSS 80	125	83	MSSE 80	134	MSV 80	91	52	MSVE 80	97	MSU 80	105,5	63	MSUE 80	111,5	14
MSS 100	129	87	MSSE 100	138	MSV 100	94	55,5	MSVE 100	100	MSU 100	109	66,5	MSUE 100	115	17,4
MSS 125	133	90	MSSE 125	141	MSV 125	100	60	MSVE 125	105	MSU 125	113	71	MSUE 125	119	21,8
MSS 160	139	96	MSSE 160	147	MSV 160	106	66	MSVE 160	111	MSU 160	119	77	MSUE 160	125	27,8
MSS 200	146	103	MSSE 200	154	MSV 200	113	73	MSVE 200	118	MSU 200	126	84	MSUE 200	132	34,8
MSS 250	155	112	MSSE 250	163	MSV 250	121	81,5	MSVE 250	126	MSU 250	135	92,5	MSUE 250	141	43,5
MSS 315	166	123	MSSE 315	174	MSV 315	133	93	MSVE 315	138	MSU 315	146	104	MSUE 315	152	54,8
MSS 400	181	138	MSSE 400	189	MSV 400	147	108	MSVE 400	153	MSU 400	161	118,5	MSUE 400	167	69,4
MSYS 475	194	152	MSYSY 475	203	MSYV 475	161	121	MSYVE 475	166						82,6

DIMENSIONS OF THE ATTACHED COMPONENT

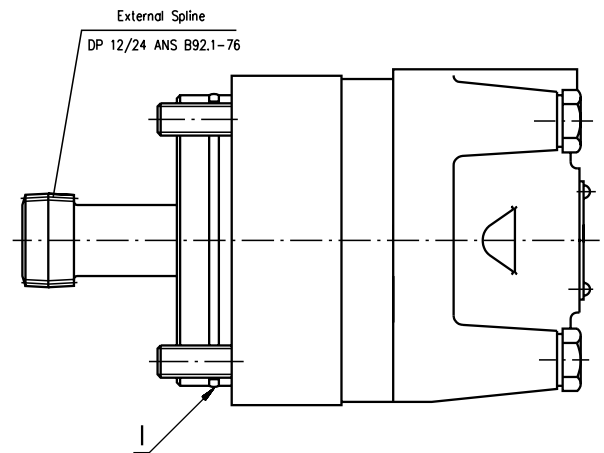
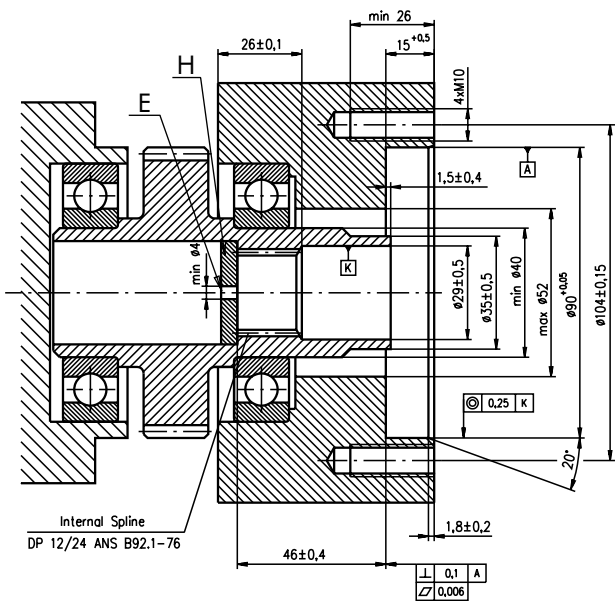
For MSS



F: Oil circulation hole
H: Hardened stop plate

I: O- Ring 100x3mm
J: 4xM10-16 mm depth, 90°
T: Drain connection G1/4 or M14x1,5

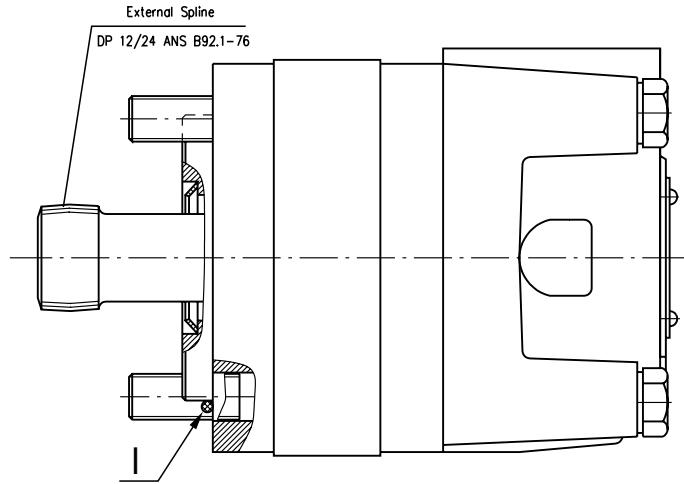
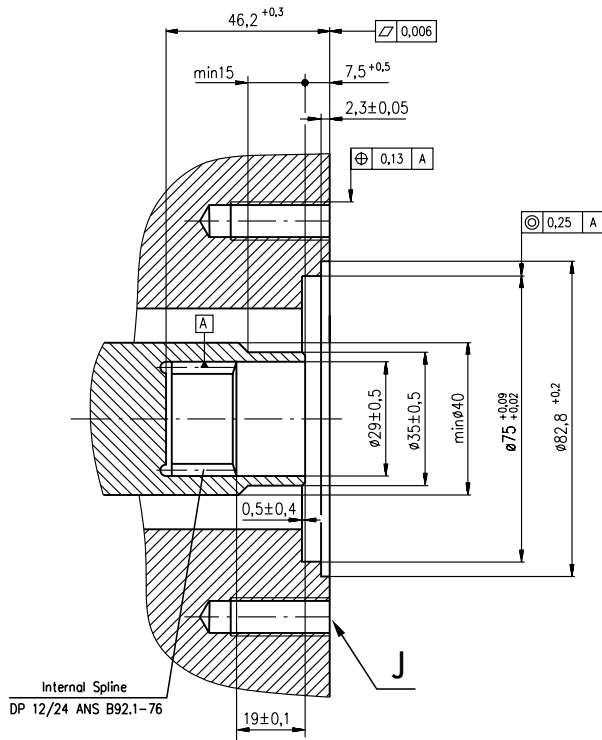
For MSV



E: External drain hole
H: Hardened stop plate
I: O- Ring 85x2mm

DIMENSIONS OF THE ATTACHED COMPONENT(continued)

For MSU



J: 4xM10-26 mm depth, 90°, ø104
I: O- Ring 75x3 mm

DRAIN CONNECTION

A drain line ought to be used when pressure in the return line can exceed the permissible pressure. It can be connected:

- For MSS at the drain port of the motor;
- For MSV and MSU at the drain connection of the attached component. The maximum pressure in the drain line is limited by the attached component and its shaft seal.

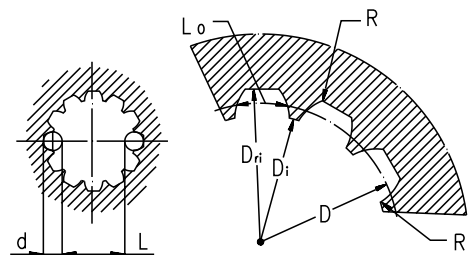
The drain line must be possible for oil to flow freely between motor and attached component and must be led to the tank. The maximum pressure in the drain line is limited by the attached component and its seal.

INTERNAL SPLINE DATA FOR THE ATTACHED COMPONENT

Standard ANS B92.1-1976, class 5
 [m=2.1166; corrected x.m=+0,8]

Fillet Root Side Fit		mm
Number of Teeth	z	12
Diametral Pitch	DP	12/24
Pressure Angle		30°
Pitch Dia.	D	25,4
Major Dia.	D _{ri}	28,0 _{-0,1}
Minor Dia.	D _i	23,0 ^{+0,033}
Space Width [Circular]	L _o	4,308 ± 0,020
Fillet Radius	R	0,2
Max. Measurement between Pin	L	17,62 ^{+0,15}
Pin Dia.	d	4,835 ± 0,001

Above are when hardened



Hardening Specification:
 HRC 60 ± 2
 Effective case depth (HRC 52) 0,7 ± 0,2 mm
 Material 20 MoCr4 DIN 17210 or better

ORDER CODE

	1	2	3	4	5	6	7	8	9
MS									

Pos. 1 - Mounting Flange

- omit - SAE A-4 mount, four holes
- A** - SAE A-2 mount, two holes
- F** - Magneto mount, four holes
- Q** - Square mount, four holes
- B** - Motor with drum brake
- S** - Short mount
- V** - Very short mount
- U** - Ultra short mount
- W** - Wheel mount

Pos. 2 - Port type

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

Pos. 3 - Displacement code

- 80** - 80,5 [cm³/rev]
- 100** - 100,0 [cm³/rev]
- 125** - 125,7 [cm³/rev]
- 160** - 159,7 [cm³/rev]
- 200** - 200,0 [cm³/rev]
- 250** - 250,0 [cm³/rev]
- 315** - 314,9 [cm³/rev]
- 400** - 397,0 [cm³/rev]

Pos. 4 - Shaft Extensions*

- C** - ø32 straight, Parallel key A10x8x45 DIN6885
- CO** - ø1 1/4" straight, Parallel key 5/16"x5/16"x1 1/4" BS46
- K** - ø35 tapered 1:10, Parallel key B6x6x20 DIN6885
- SL** - ø34,85 p.t.o. DIN 9611 Form 1
- SH** - ø1 1/4" splined 14T ANSI B92.1-1976

Pos. 5 - Shaft Seal Version [\(see page 17\)](#)

- omit - Low pressure seal
- U** - High pressure seal

Pos. 6 - Ports

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

Pos. 7 - Actuating Direction**

- /R** - Right
- /L** - Left

Pos. 8 - Special Features [\(see page 50\)](#)

Pos. 9 - Design Series

- omit - Factory specified

NOTES:

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

The hydraulic motors are mangano-phosphatized as standard.

HYDRAULIC MOTORS MSY

MSY is the new hydraulic motor in a family of "disc valve" series which has dimensions and mounting data the same as at hydraulic motors type MS.

This motor is described with 15÷20% higher technical data-max. Torque and max. Pressure drop, thereby higher power. This makes it suitable for vehicles with greater loads and speed drop.



CONTENTS

Specification data	23
Function diagrams	24÷25
Dimensions and mounting	11÷12
Wheel motor	13
Shaft extensions	15
Permissible shaft loads	16
Permissible Shaft Seal Pressure.....	17
Dimensions and mounting- MSYS, V	27
Internal Spline data	28
Order code	28

OPTIONS

- » Model- Disc valve, roll-gerotor
- » Flange and wheel mount
- » Short motor
- » Side and rear ports
- » Shafts- straight, splined and tapered
- » Other special features

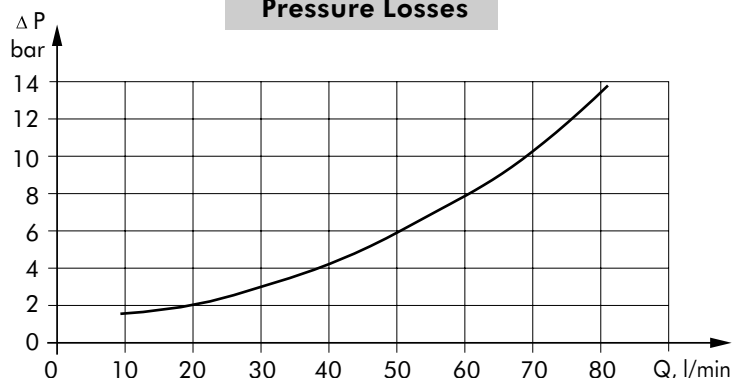
GENERAL

Displacement, [cm ³ /rev.]	200÷474,6
Max. Speed, [RPM]	155÷375
Max. Torque, [daNm]	56,6÷91
Max. Output, [kW]	9÷18,1
Max. Pressure Drop, [bar]	140÷200
Max. Oil Flow, [l/min]	75
Min. Speed, [RPM]	5÷8
Permissible Shaft Loads, [daN]	P _a =500
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)
140	20	1,5
	35	1
210	20	3
	35	2

Pressure Losses



SPECIFICATION DATA FOR MSY

Type	MSY 200	MSY 250	MSY 315	MSY 400	MSY 475	
Displacement [cm ³ /rev.]	200	250	314,9	397	474,6	
Max. Speed, [RPM]	cont.	375	300	240	185	155
	Int.*	450	360	285	225	185
Max. Torque [daNm]	cont.	56,6	70,8	90,0	90,0	91
	Int.*	64,5	80,6	96,0	97,0	96
	peak**	65	80,6	108	110	100
Max. Output [kW]	cont.	18,1	18,0	17	11,0	9,0
	int.*	24,0	23,8	20,2	12	11,0
Max. Pressure Drop [bar]	cont.	200	200	200	160	140
	Int.*	225	225	220	175	150
	peak**	225	225	225	200	175
Max. Oil Flow [l/min]	cont.	75	75	75	75	75
	Int.*	90	90	90	90	90
Max. Inlet Pressure [bar]	cont.	210	210	210	210	210
	Int.*	250	250	250	250	250
	peak**	300	300	300	300	300
Max. Return Pressure with Drain Line [bar]	cont.	140	140	140	140	140
	Int.*	175	175	175	175	175
	peak**	210	210	210	210	210
Max. Starting Pressure with Unloaded Shaft, [bar]	8	8	8	8	8	
Min. Starting Torque [daNm]	at max. press. drop cont.	46,2	58,0	73,8	72,0	47
	at max. press. drop Int.*	50,7	63,6	79,2	78,7	55
Min. Speed***, [RPM]	6	6	5	5	5	
Weight, [kg] For Rear Ports +0,4 kg	MSY (F)	11,2	11,7	12,4	13,3	14,4
	MSYW	11,7	12,2	12,9	13,8	15,0
	MSYQ	11,6	12,1	12,8	13,7	14,9

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

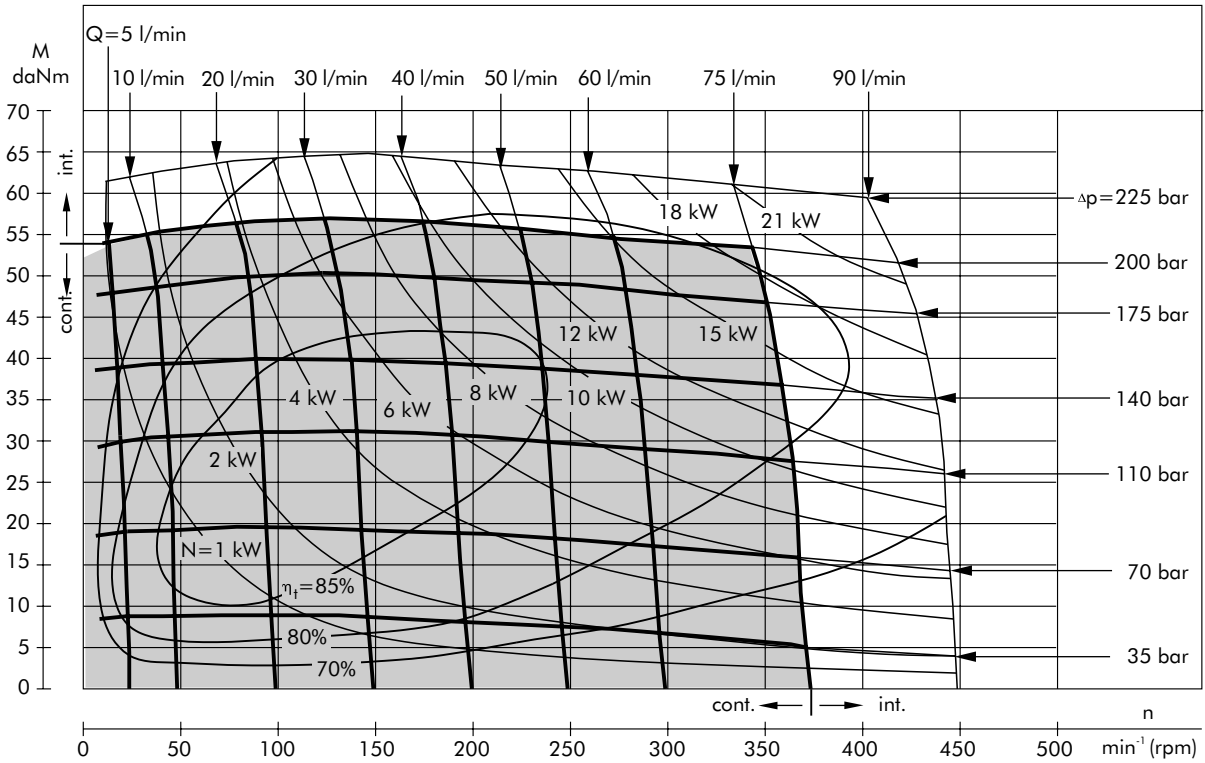
** Peak load: the permissible values may occur for max. 1% of every minute.

*** For speeds of 5 RPM lower than given, consult factory or your regional manager.

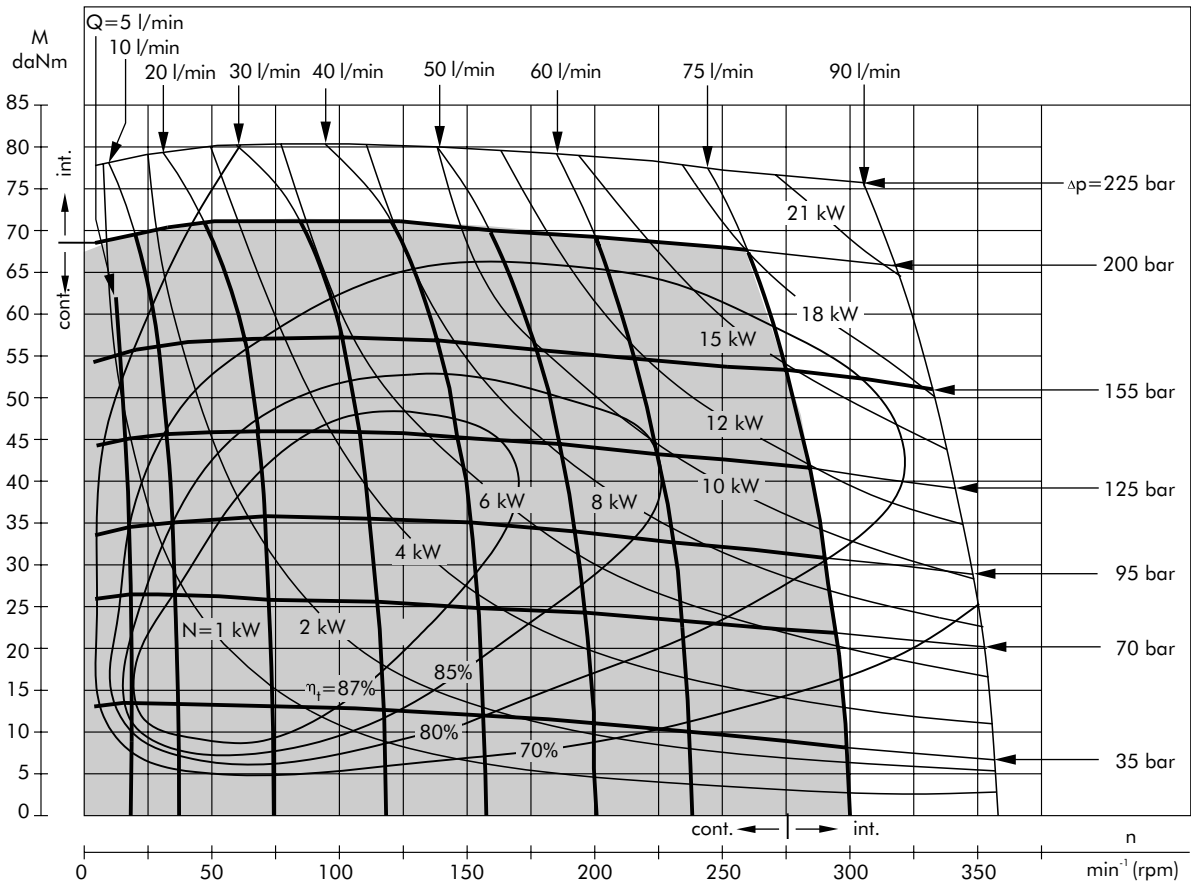
- 1) Intermittent speed and intermittent pressure must not occur simultaneously.
- 2) Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
- 3) Recommend using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) or HM (ISO 6743/4).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

MSY 200



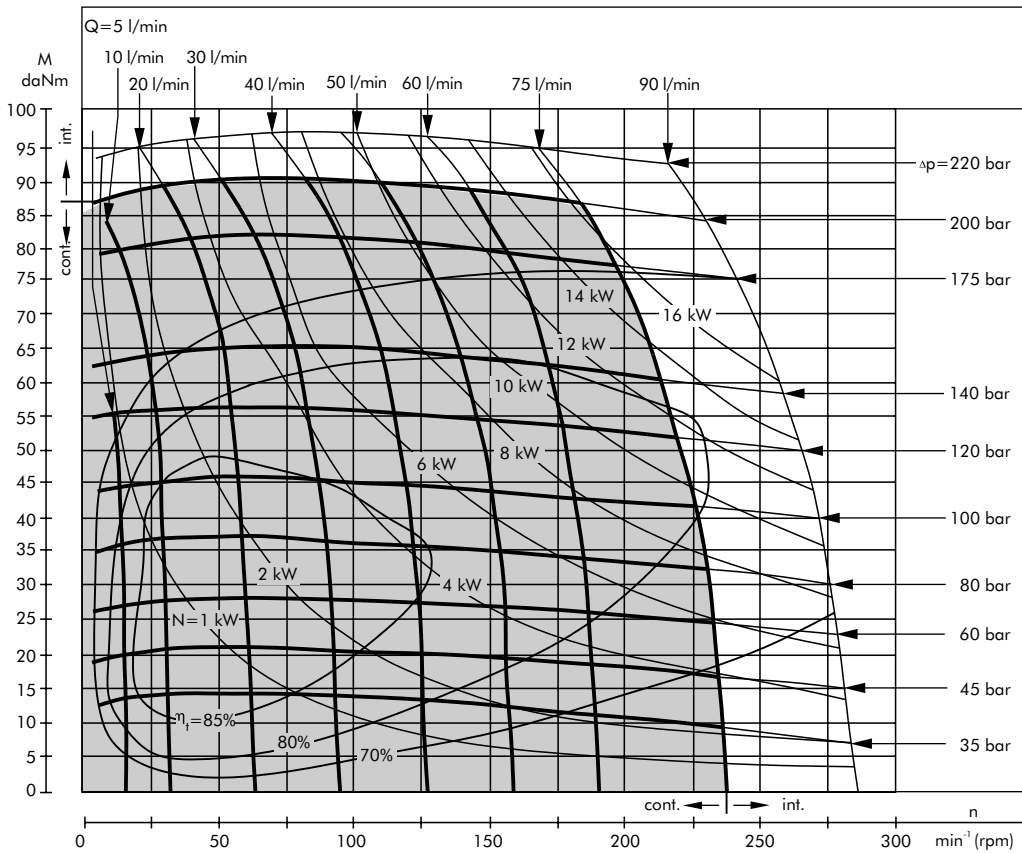
MSY 250



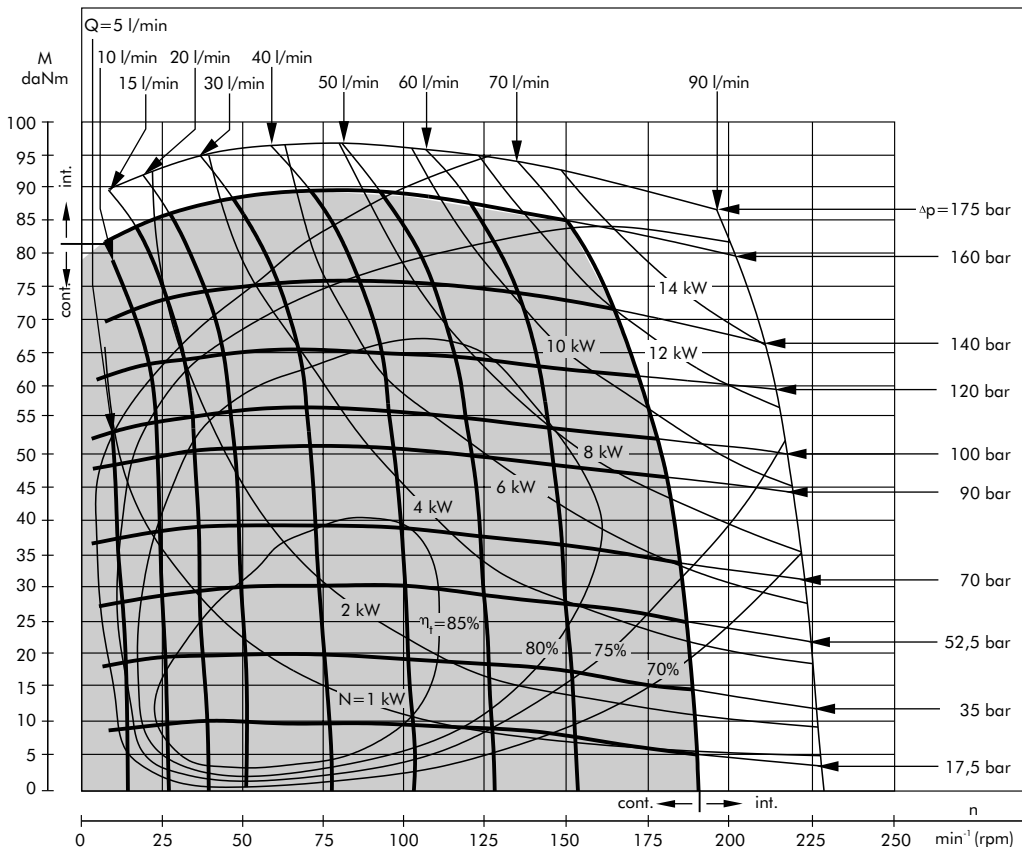
The function diagrams data was collected at back pressure 5 ÷ 10 bar and oil with viscosity of 32 mm²/s at 50° C.

FUNCTION DIAGRAMS

MSY 315



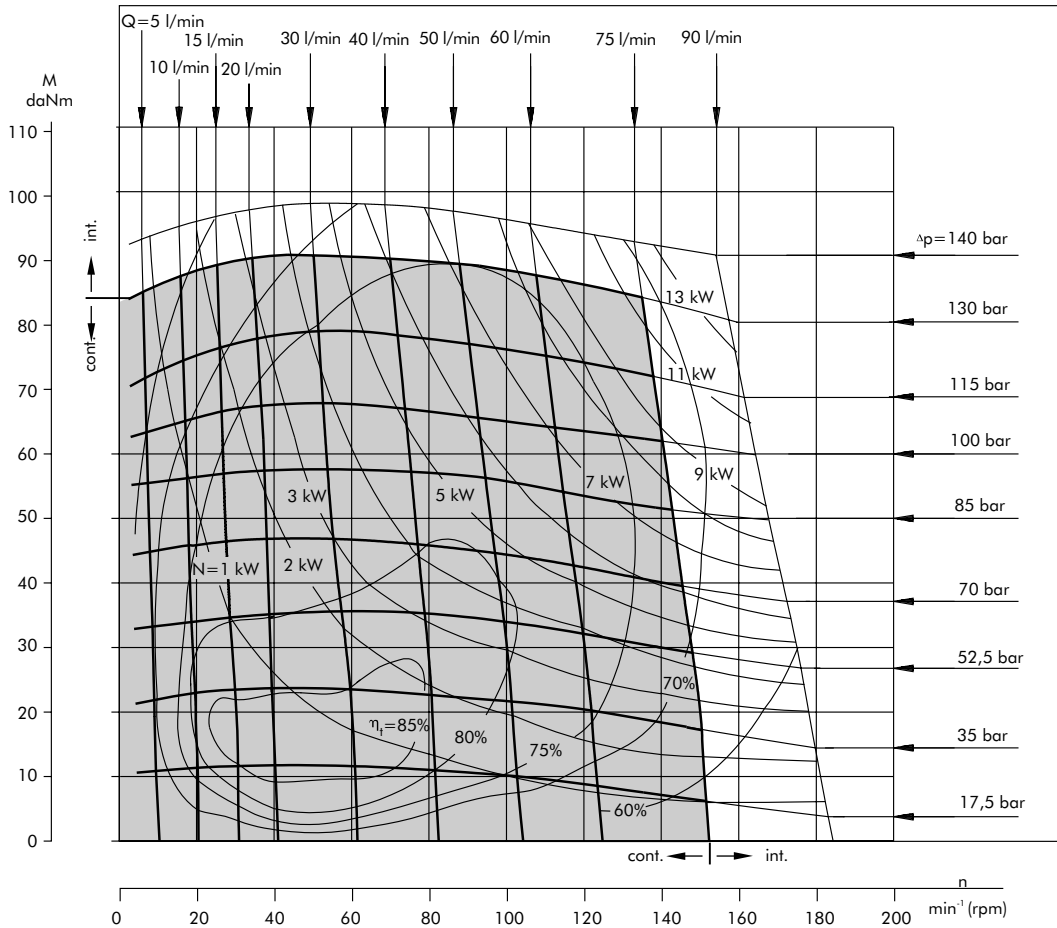
MSY 400



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

MSY 475

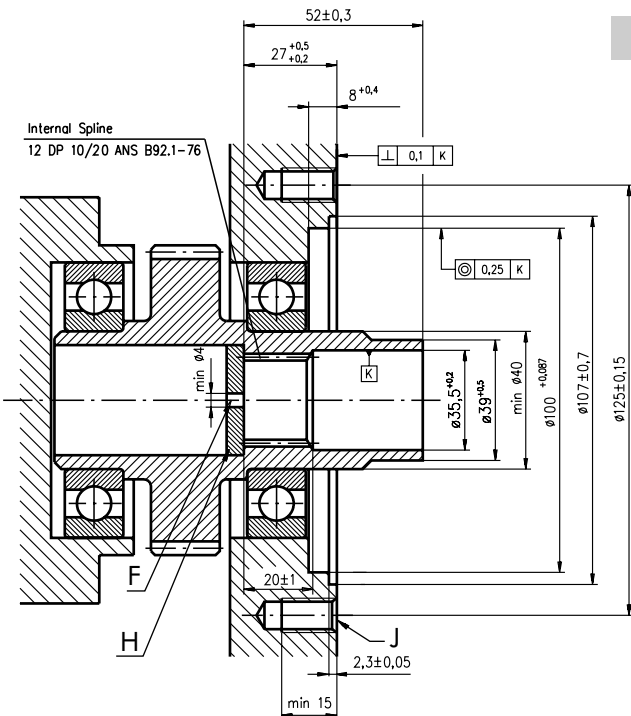


The function diagrams data was collected at back pressure 5 ÷ 10 bar and oil with viscosity of 32 mm²/s at 50° C.

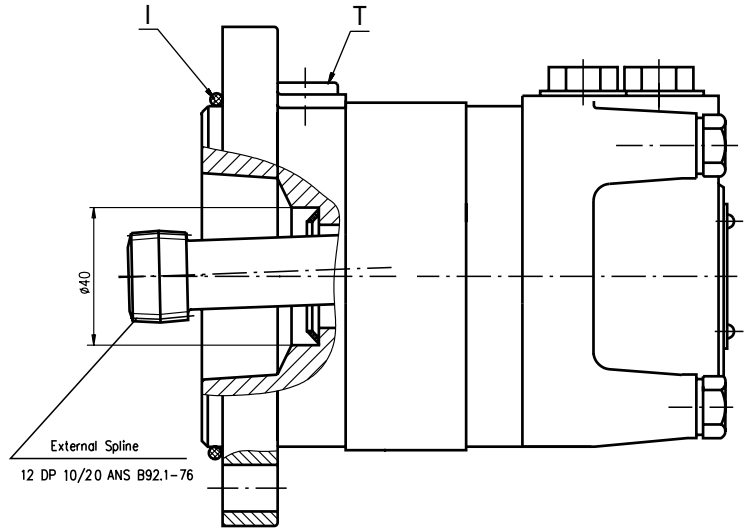
The dimensions, mounting data, shaft extensions and permissible shaft loads are the same as at hydraulic motors type MS except following below.

DIMENSIONS OF THE ATTACHED COMPONENT

For MSYS

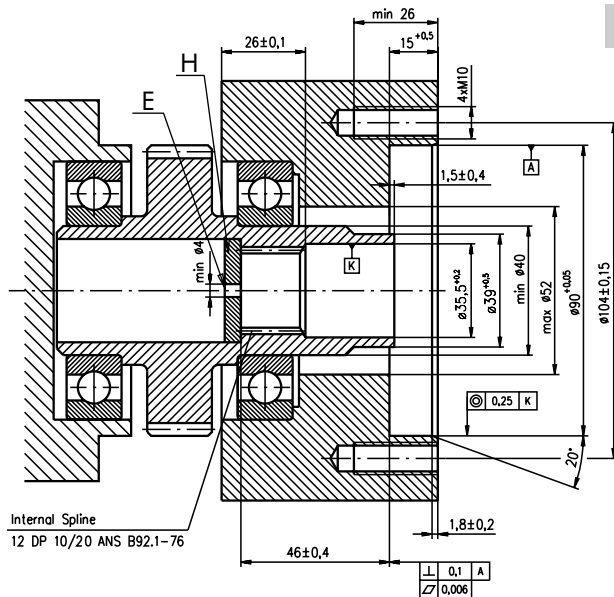


F: Oil circulation hole
H: Hardened stop plate

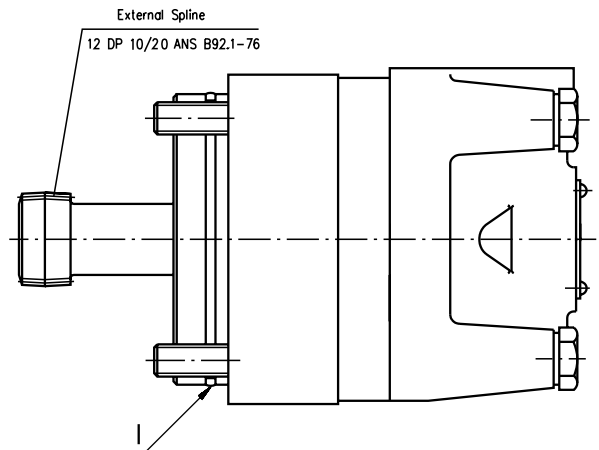


I: O- Ring 100x3mm
J: 4xM10-16 mm depth, 90°
T: Drain connection G1/4 or M14x1,5

For MSYV



E: External drain hole
H: Hardened stop plate
I: O- Ring 85x2mm



DRAIN CONNECTION

A drain line ought to be used when pressure in the return line can exceed the permissible pressure. It can be connected:

- For MSYS at the drain port of the motor;
- For MSYV at the drain connection of the attached component. The maximum pressure in the drain line is limited by the attached component and its shaft seal.

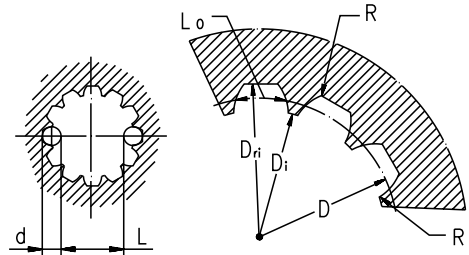
The drain line must be possible for oil to flow freely between motor and attached component and must be led to the tank. The maximum pressure in the drain line is limited by the attached component and its seal.

INTERNAL SPLINE DATA FOR THE ATTACHED COMPONENT

Standard 12 DP 10/20 ANSI B92.1-1976, class 5
[$m=2.54$; corrected $x.m=+0,4$]

Fillet Root Side Fit	mm	
Number of Teeth	z	12
Diametral Pitch	DP	10/20
Pressure Angle		30°
Pitch Dia.	D	30,48
Major Dia.	D_{ri}	33,2 ^{+0,4}
Minor Dia.	D_i	27,8 ^{+0,1}
Space Width [Circular]	L_o	4,45 ^{+0,071}
Fillet Radius	R	0,2
Max. Measurement between Pin	L	22,72 ^{+0,17}
Pin Dia.	d	5±0,001

Above are when hardened



Hardening Specification:
HRC 60±2
Effective case depth (HRC 52) 0,7±0,2 mm
Material: 20 MoCr4 DIN 17210 or better

ORDER CODE

	1	2	3	4	5	6	7	8
MSY								

Pos. 1 - Mounting Flange

- omit - SAE A mount, four holes
- A** - SAE A mount, two holes
- F** - Magneto mount, four holes
- Q** - Square mount, four holes
- S** - Short mount
- V** - Very short mount
- W** - Wheel mount

Pos. 2 - Port type

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

Pos. 3 - Displacement code

- 200** - 200,0 [cm³/rev]
- 250** - 250,0 [cm³/rev]
- 315** - 314,9 [cm³/rev]
- 400** - 397,0 [cm³/rev]
- 475** - 474,5 [cm³/rev]

Pos. 4 - Shaft Extensions*

- C** - ø32 straight, Parallel key A10x8x45 DIN6885
- K** - ø35 tapered 1:10, Parallel key B6x6x20 DIN6885
- SL** - ø34,85 p.t.o. DIN 9611 Form 1
- SH** - ø1¼" splined 14T ANSI B92.1-1976

Pos. 5 - Shaft Seal Version (see page 17)

- omit - Low pressure seal
- U** - High pressure seal

Pos. 6 - Ports

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

Pos. 7 - Special Features (see page 50)

Pos. 8 - Design Series

- omit - Factory specified

NOTES:

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

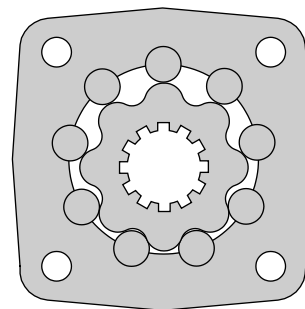
The hydraulic motors are manganophosphatized as standard.

HYDRAULIC MOTORS MT



APPLICATION

- » Conveyors
- » Metal working machines
- » Machines for agriculture
- » Road building machines
- » Mining machinery
- » Food industries
- » Special vehicles
- » Plastic and rubber machinery etc.



CONTENTS

Specification data	30
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Shaft extensions	35
Dimensions and mounting- MTS, V	36 ÷ 37
Internal Spline data	38
Permissible shaft loads	38
Tacho connection	39
Order code	39

OPTIONS

- » Model- Disc valve, roll-gerotor
- » Flange with wheel mount
- » Short motor
- » Tacho connection
- » Speed sensing
- » Side and rear ports
- » Shafts- straight, splined and tapered
- » Metric and BSPP ports
- » Other special features

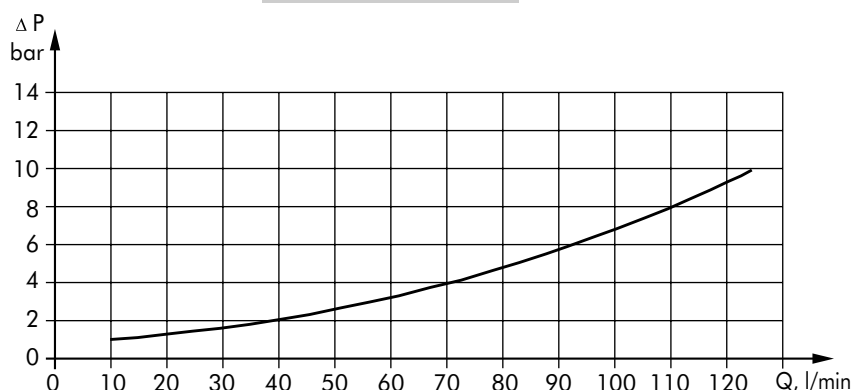
GENERAL

Displacement, [cm ³ /rev.]	161,1 ÷ 523,6
Max. Speed, [RPM]	240 ÷ 625
Max. Torque, [daNm]	47 ÷ 122
Max. Output, [kW]	26,5 ÷ 33,5
Max. Pressure Drop, [bar]	160 ÷ 200
Max. Oil Flow, [l/min]	100 ÷ 125
Min. Speed, [RPM]	5 ÷ 10
Permissible Shaft Loads, [daN]	P ₀ = 1000
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)
140	20	2,5
	35	1,5
210	20	5
	35	3

Pressure Losses



SPECIFICATION DATA

Type	MT 160	MT 200	MT 250	MT 315	MT 400	MT 500
Displacement [cm ³ /rev.]	161,1	201,4	251,8	326,3	410,9	523,6
Max. Speed, [RPM]	cont.	625	625	500	380	240
	Int.*	780	750	600	460	285
Max. Torque [daNm]	cont.	47	59	73	95	122
	Int.*	56	71	88	114	137
	peak**	66	82	102	133	160
Max. Output [kW]	cont.	26,5	33,5	33,5	33,5	30
	int.*	32	40	40	40	35
Max. Pressure Drop [bar]	cont.	200	200	200	200	180
	Int.*	240	240	240	240	210
	peak**	280	280	280	280	240
Max. Oil Flow [l/min]	cont.	100	125	125	125	125
	Int.*	125	150	150	150	150
Max. Inlet Pressure [bar]	cont.	210	210	210	210	210
	Int.*	250	250	250	250	250
	peak**	300	300	300	300	300
Max. Return Pressure without Drain Line or Max. Pressure in Drain Line , [bar]	cont. 0-100 RPM	75	75	75	75	75
	cont. 100-300 RPM	40	40	40	40	40
Max. Return Pressure with Drain Line [bar]	cont. >300 RPM	20	20	20	20	-
	Int.* 0-max. RPM	75	75	75	75	75
Max. Starting Pressure with Unloaded Shaft, [bar]	cont.	140	140	140	140	140
	Int.*	175	175	175	175	175
	peak**	210	210	210	210	210
Min. Starting Torque [daNm]	at max. press. drop cont.	10	10	10	10	10
	at max. press. drop Int.*	34	43	53	74	84
Min. Speed***, [RPM]		41	52	63	89	97
Weight, [kg]		10	9	8	7	6
	MT	20	20,5	21	22	23
	MTW	22	22,5	23	24	25
	MTS	15	15,5	16	17	18
	MTV	11	11,5	12	13	14

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

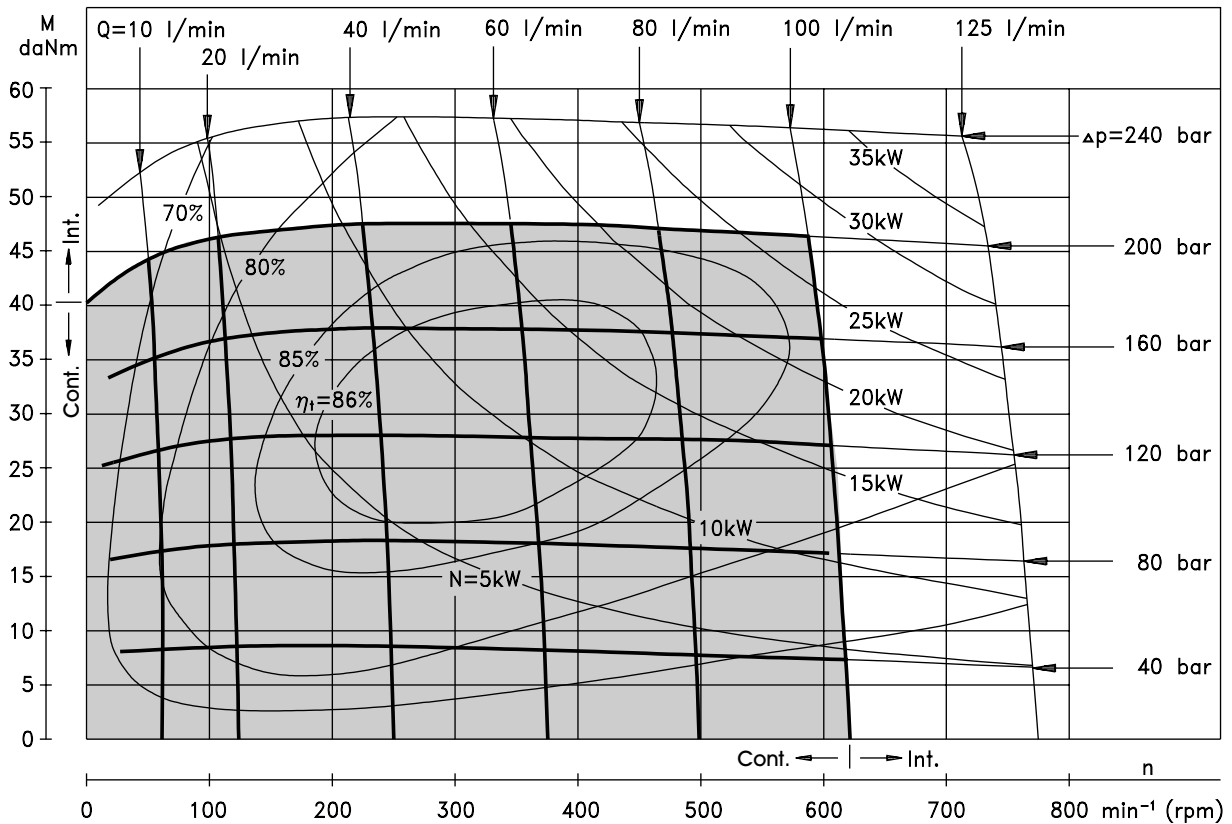
** Peak load: the permissible values may occur for max. 1% of every minute.

*** For speeds of 5 RPM lower than given, consult factory or your regional manager.

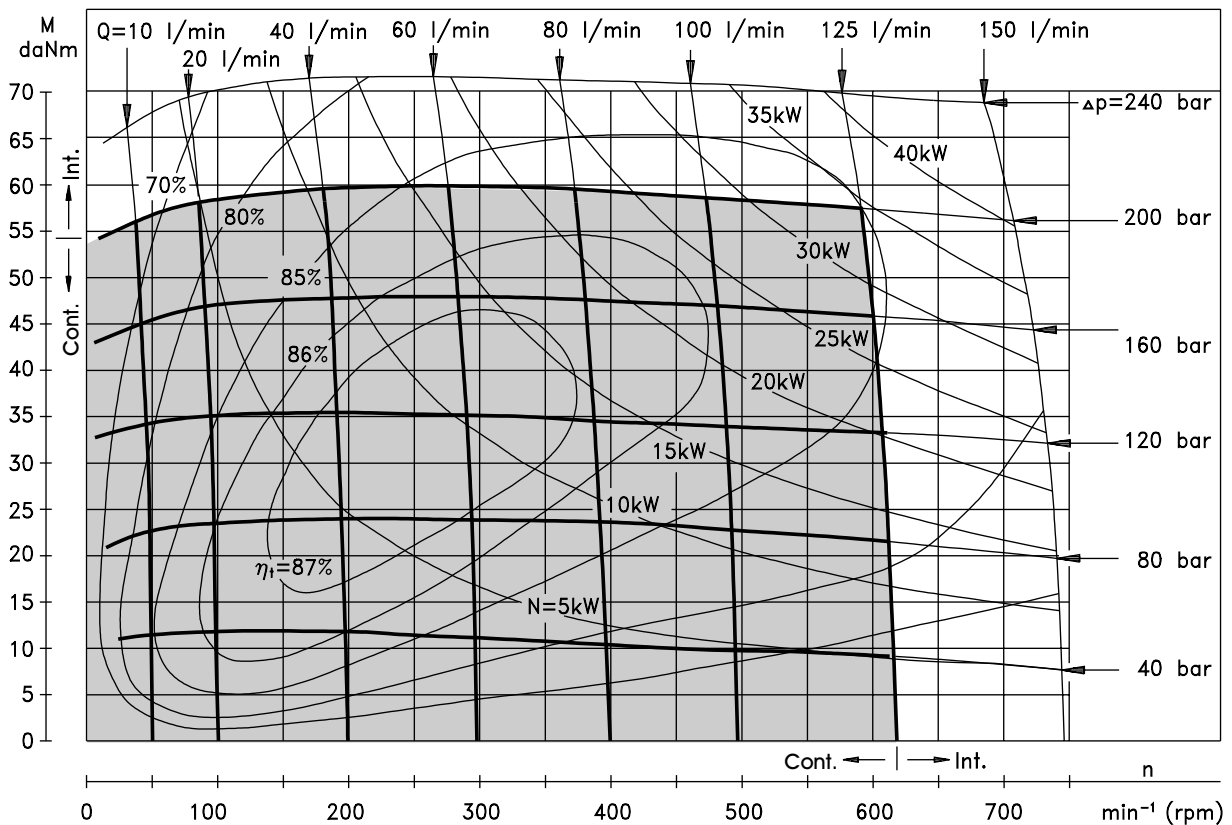
- 1) Intermittent speed and intermittent pressure must not occur simultaneously.
- 2) Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
- 3) Recommend using a premium quality, anti-wear type mineral based hydraulic oil, HLP(DIN51524) or HM(ISO6743/4).
If using synthetic fluids consult the factory for alternative seal materials.
- 4) Recommended minimum oil viscosity 13 mm²/s at 50°C.
- 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

MT 160



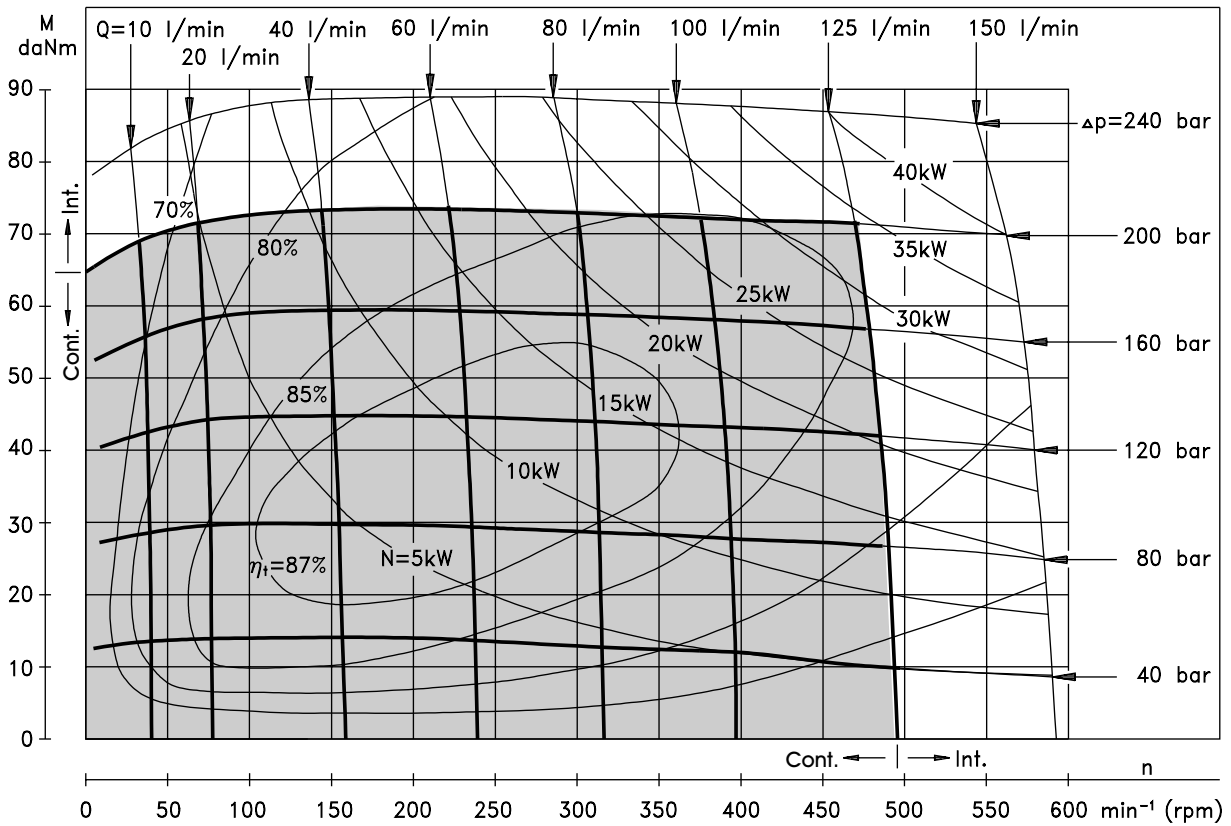
MT 200



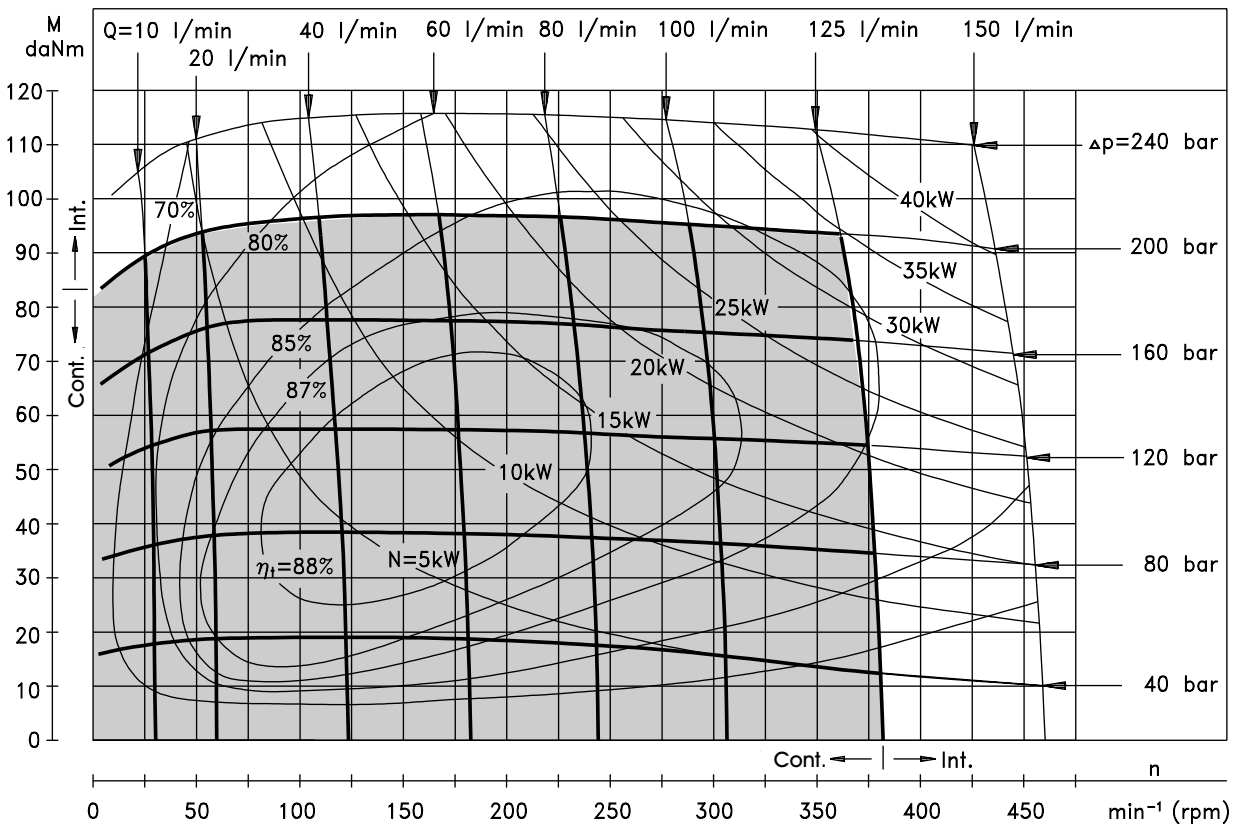
The function diagrams data was collected at back pressure 5÷10 bar and oil with viscosity of 32 mm²/s at 50° C.

FUNCTION DIAGRAMS

MT 250

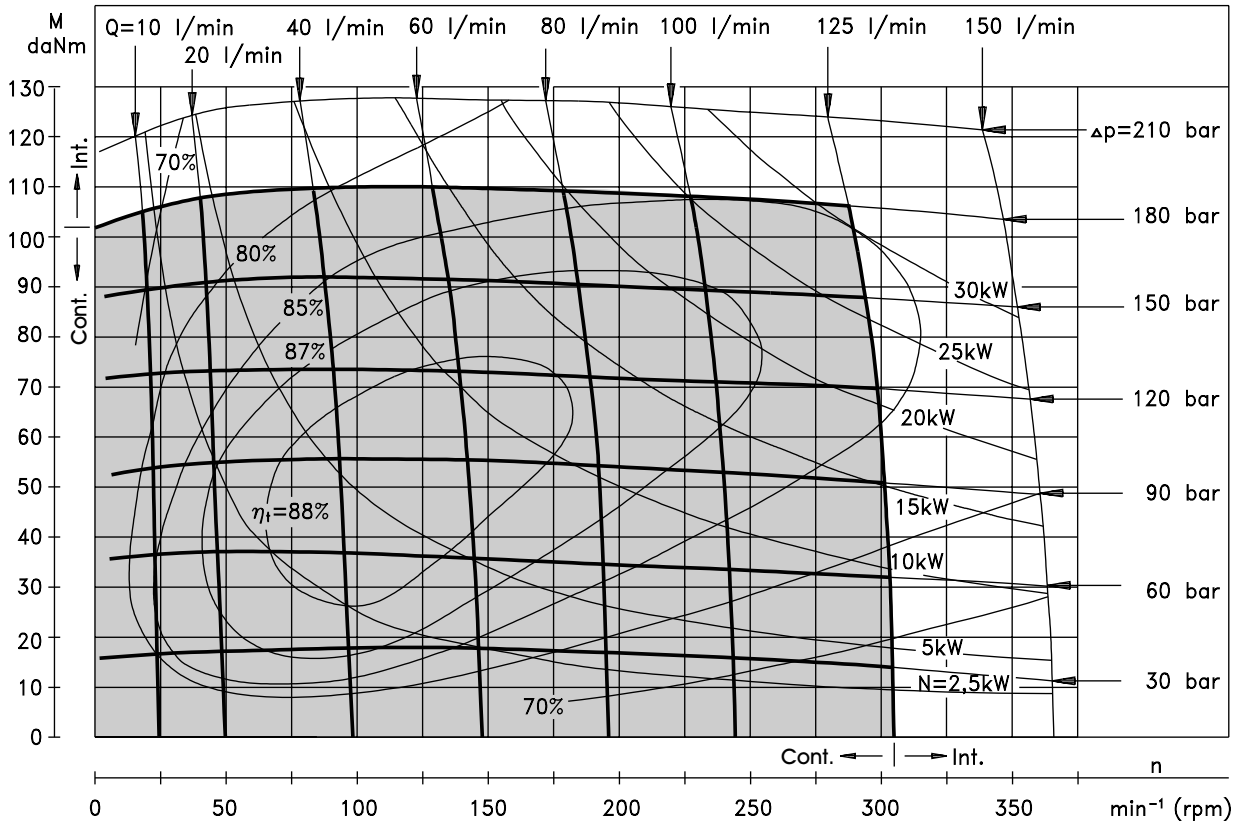


MT 315

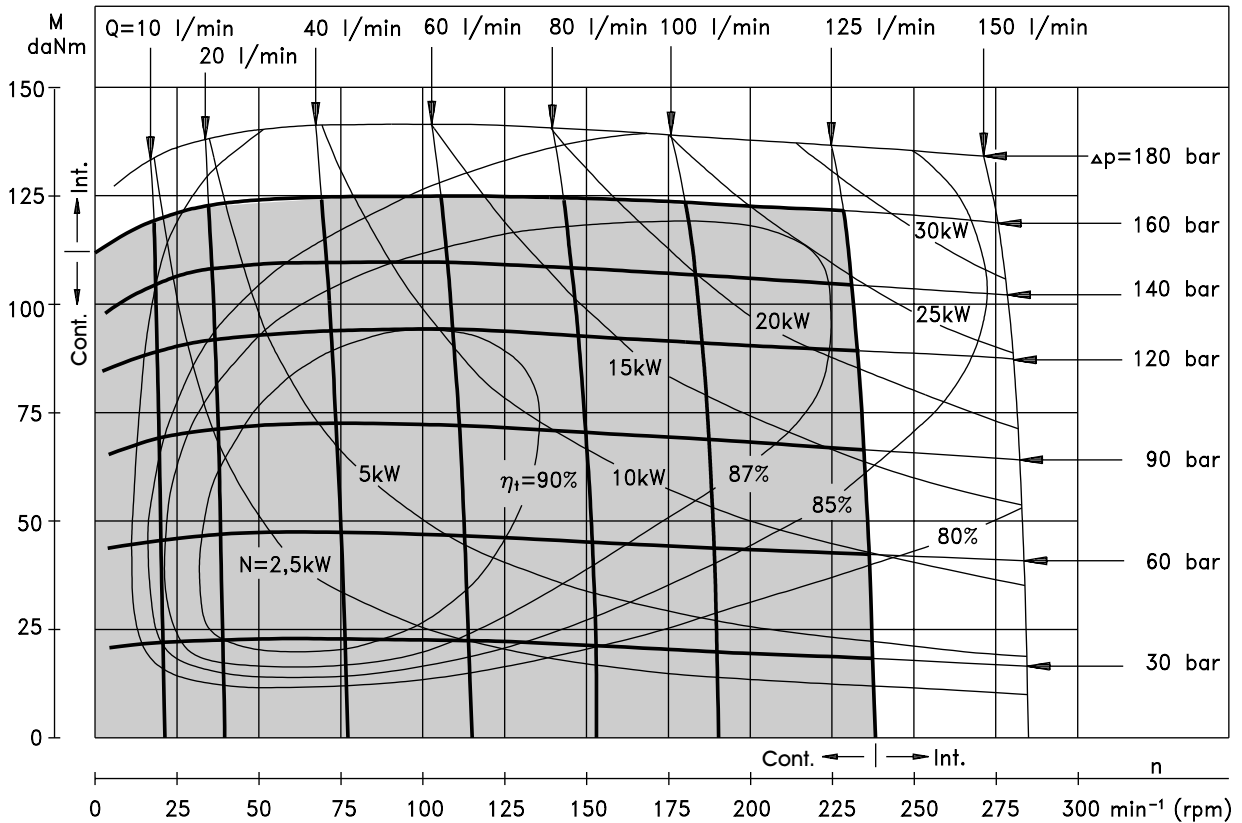


FUNCTION DIAGRAMS

MT 400

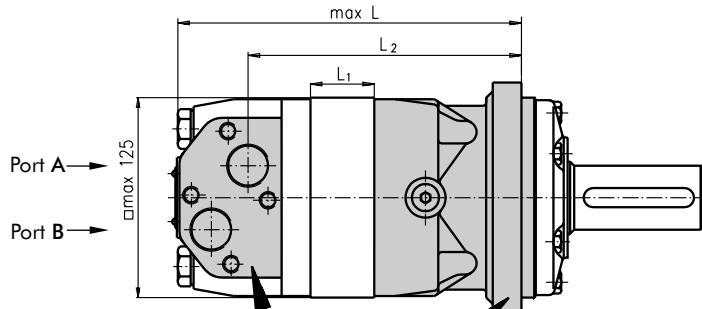


MT 500

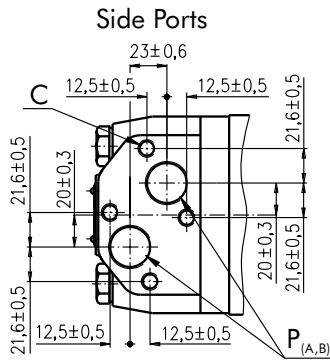


The function diagrams data was collected at back pressure 5 ÷ 10 bar and oil with viscosity of 32 mm²/s at 50° C.

DIMENSIONS AND MOUNTING DATA



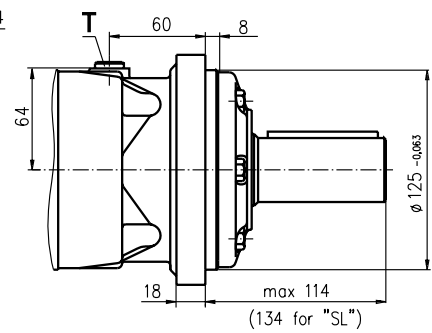
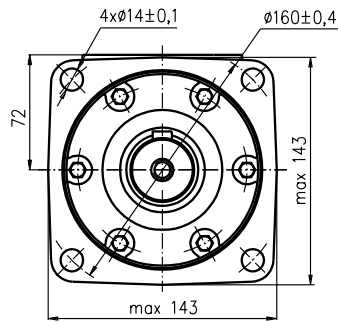
Porting



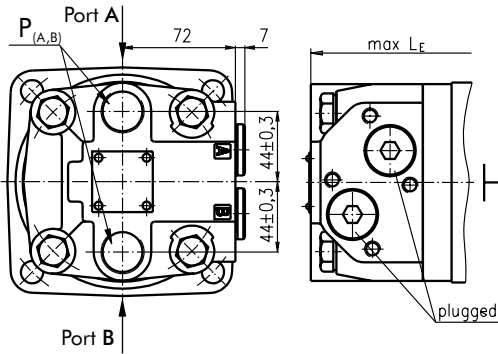
Side Ports

Mounting

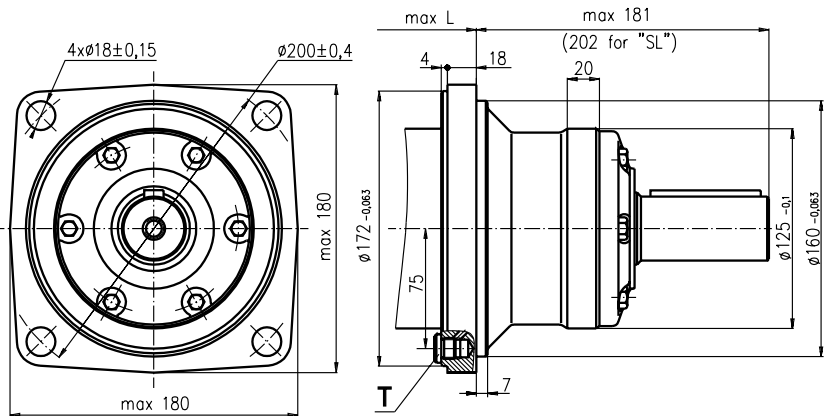
Square Mount (4 Holes)



Rear Ports



Wheel Mount



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

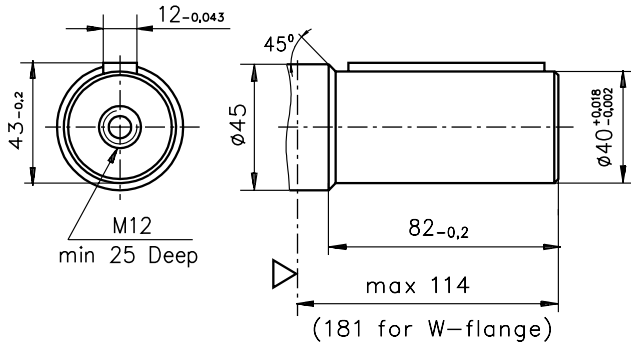
Reverse Rotation
Viewed from Shaft End
Port A Pressurized - CCW
Port B Pressurized - CW

C: 4xM10-10 mm depth
P_(A,B): 2xG3/4 or 2xM27x2-17 mm depth
T: G 1/4 or M14x1,5 - 12 mm depth (plugged)

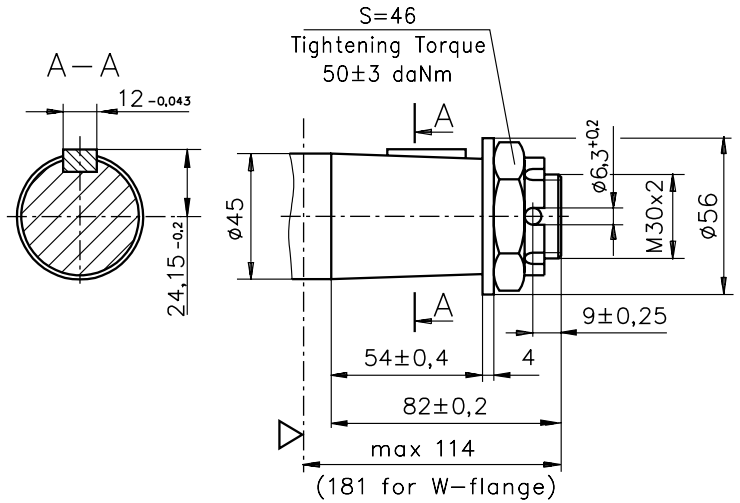
Type	L, mm	Type	L _E , mm	L ₂ , mm	Type	L, mm	Type	L _E , mm	L ₂ , mm	L ₁ , mm
MT 160	195	MTE 160	200	147	MTW 160	128	MTWE 160	133	80	20
MT 200	200	MTE 200	205	152	MTW 200	133	MTWE 200	138	85	25
MT 250	206	MTE 250	211	158	MTW 250	139	MTWE 250	144	91	31,3
MT 315	216	MTE 315	221	168	MTW 315	149	MTWE 315	154	101	40,5
MT 400	226	MTE 400	231	178	MTW 400	159	MTWE 400	164	111	51
MT 500	240	MTE 500	245	192	MTW 500	173	MTWE 500	178	125	65

SHAFT EXTENSIONS

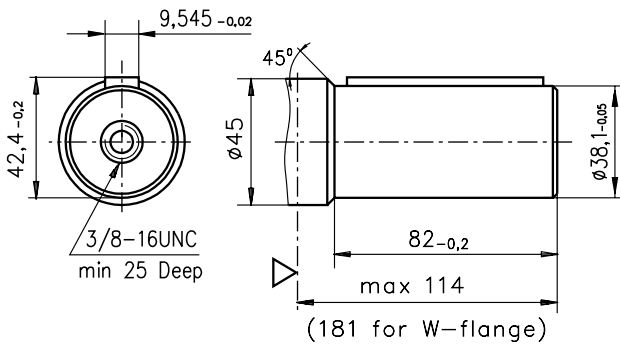
C - $\varnothing 40$ straight, Parallel key A12x8x70 DIN 6885
Max. Torque 132,8 daNm



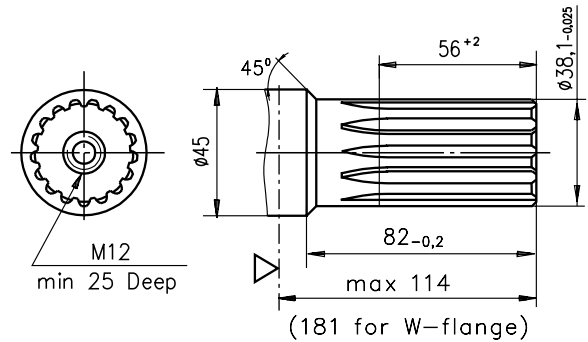
K -tapered 1:10, Parallel key B12x8x28 DIN 6885
Max. Torque 210,7 daNm



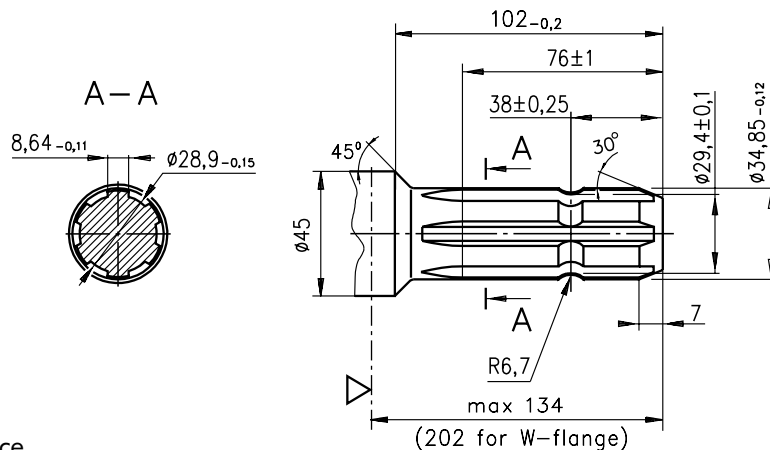
CO - $\varnothing 1\frac{1}{2}$ " straight, Parallel key $\frac{3}{8}$ "x $\frac{3}{8}$ "x $2\frac{1}{4}$ " BS46
Max. Torque 132,8 daNm



SH - $\varnothing 1\frac{1}{2}$ " splined 17T, DP 12/24 ANSI B92.1-1976
Max. Torque 132,8 daNm

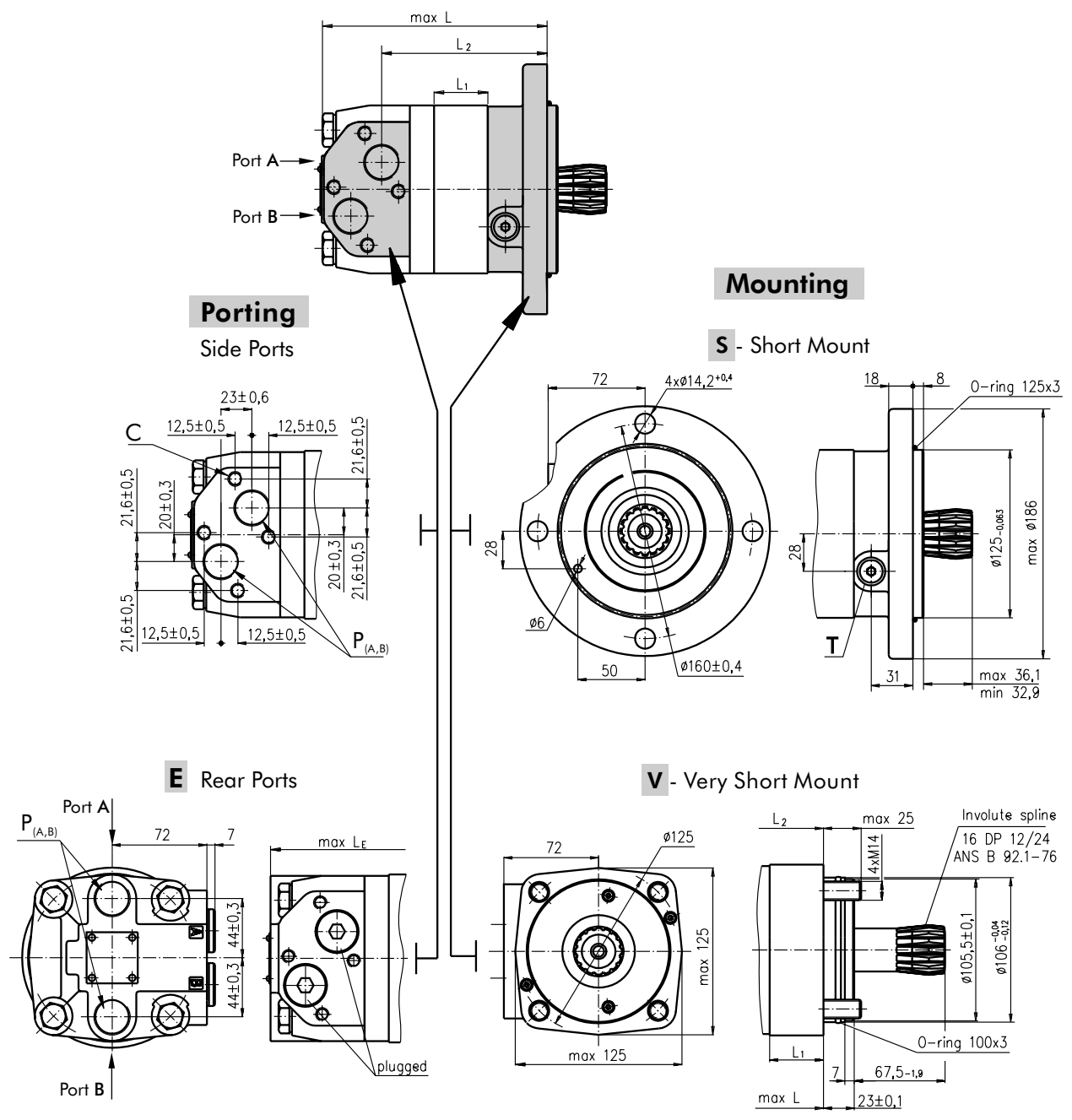


SL - $\varnothing 34,85$ p.t.o. DIN 9611 Form 1
Max. Torque 77 daNm



▽ - Motor Mounting Surface

DIMENSIONS AND MOUNTING DATA - MTS and MTV



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

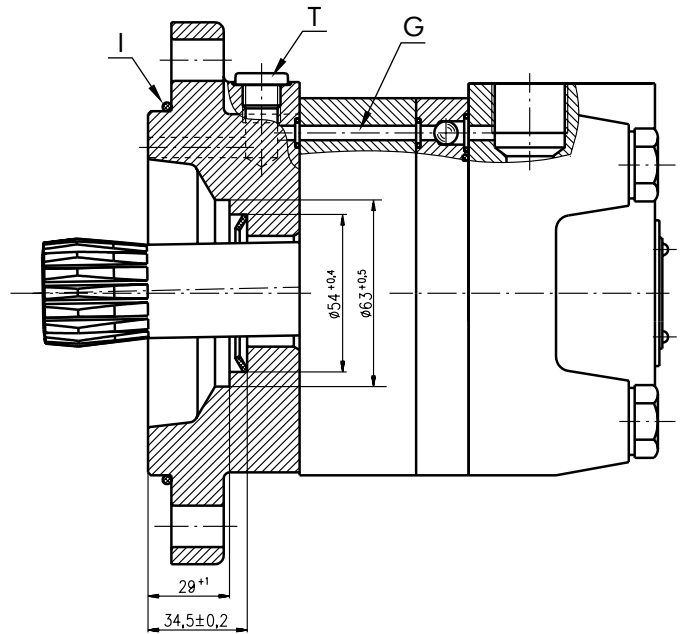
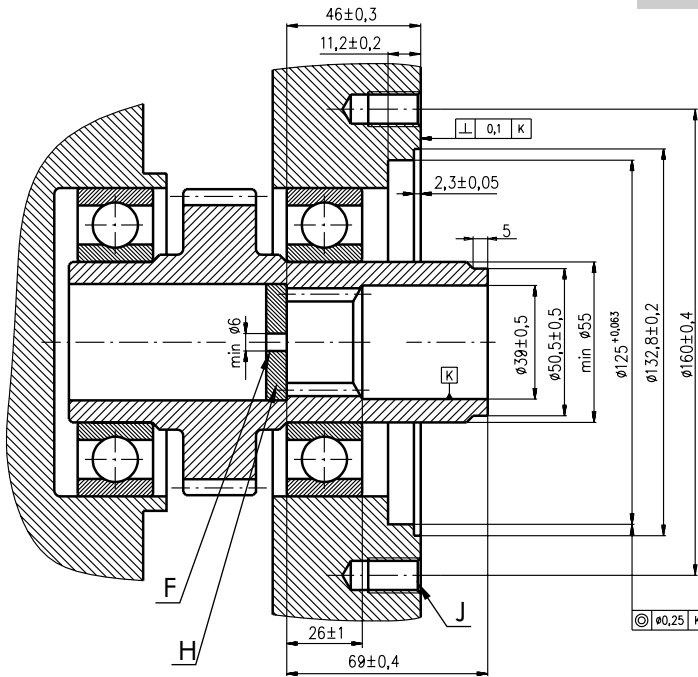
Reverse Rotation
Viewed from Shaft End
Port A Pressurized - CCW
Port B Pressurized - CW

C: 4xM10-10 mm depth
P_(A,B): 2xG3/4 or 2xM27x2-17 mm depth
T: G 1/4 or M14x1,5 - 12 mm depth (plugged)

Type	L, mm	Type	L, mm	L ₂ , mm	Type	L, mm	Type	L, mm	L ₂ , mm	L ₁ , mm
MTS 160	151	MTSE 160	156	103	MTV 160	106	MTVE 160	111	58,5	20
MTS 200	156	MTSE 200	161	108	MTV 200	111	MTVE 200	116	63,5	25
MTS 250	162	MTSE 250	167	115	MTV 250	117	MTVE 250	122	70,8	31,3
MTS 315	171	MTSE 315	176	123	MTV 315	126	MTVE 315	131	79	40,5
MTS 400	182	MTSE 400	187	134	MTV 400	137	MTVE 400	142	89,5	51
MTS 500	196	MTSE 500	201	149	MTV 500	151	MTVE 500	156	103,5	65

DIMENSIONS OF THE ATTACHED COMPONENT

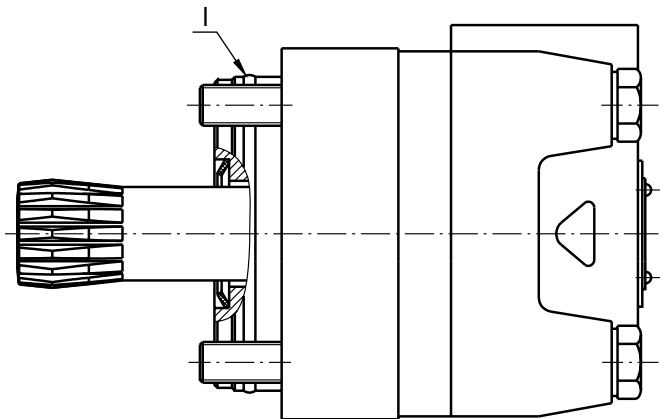
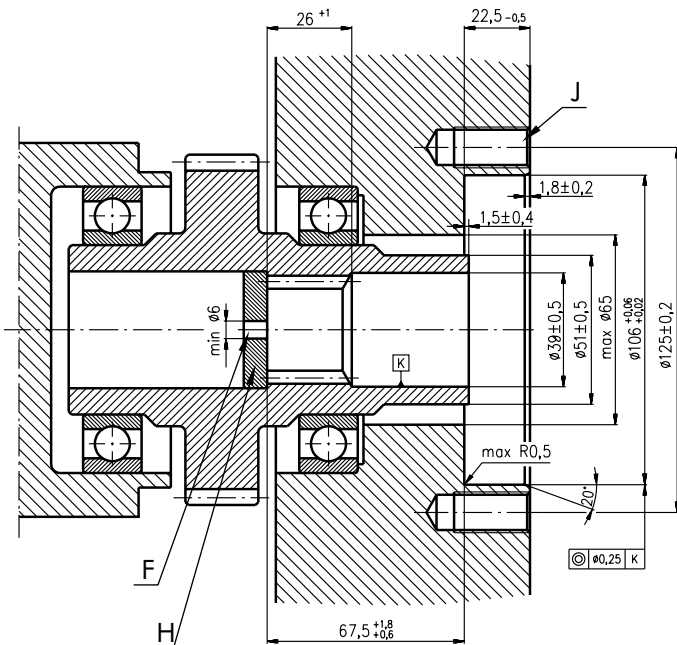
MTS



- F:** Oil circulation hole
- G:** Internal drain channel
- H:** Hardened stop plate

- I:** O- Ring 125x3mm
- J:** 4xM12-18 mm depth, 90°
- T:** Drain connection G1/4 or M14x1,5

MTV



- F:** Oil circulation hole
- J:** 4xM14-26 mm depth, 90°
- H:** Hardened stop plate
- I:** O- Ring 100x3mm

DRAIN CONNECTION

A drain line ought to be used when pressure in the return line can exceed the permissible pressure. It can be connected:

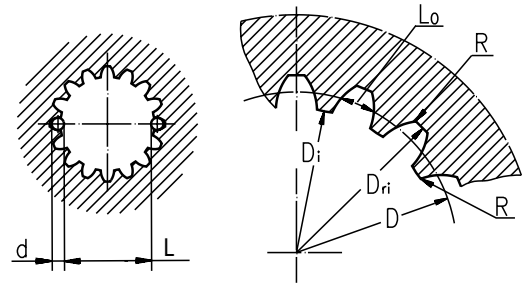
- For MTS at the drain port of the motor;
- For MTV at the drain connection of the attached component. The maximum pressure in the drain line is limited by the attached component and its shaft seal.

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

INTERNAL SPLINE DATA FOR THE ATTACHED COMPONENT

Standard ANSI B92.1-1976, class 5
[$m=2.1166$; corrected $x.m=+1,0$]

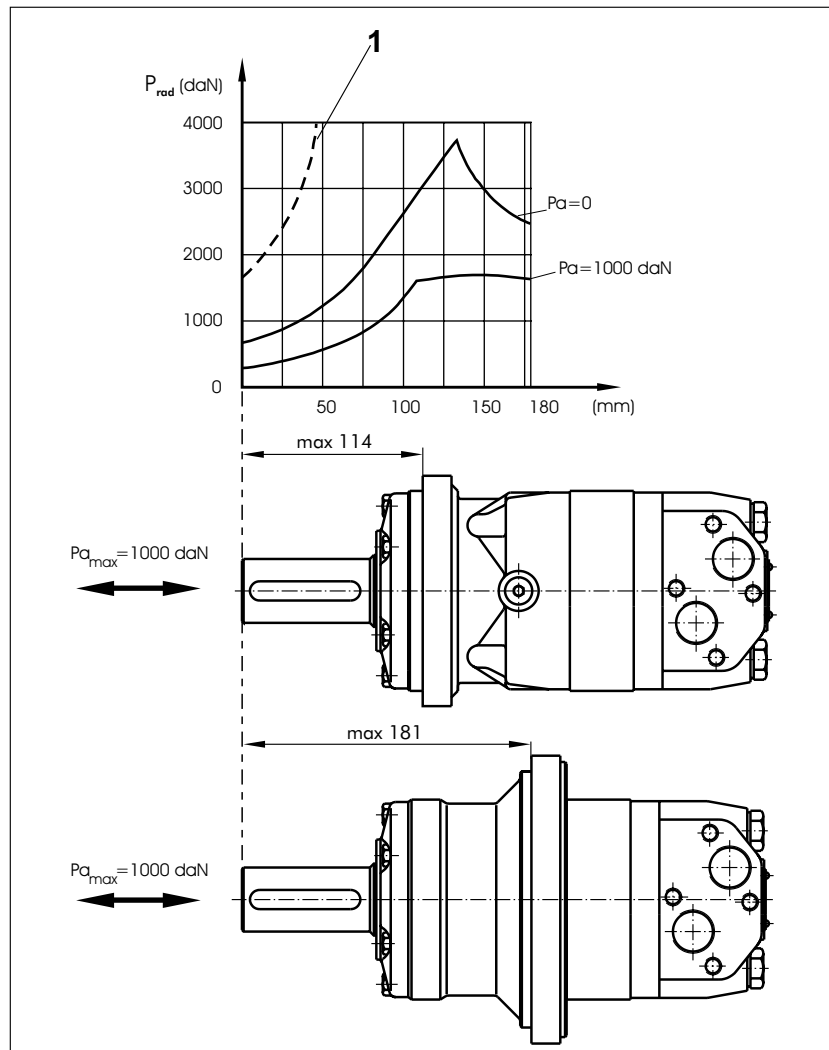
Fillet Root Side Fit		mm
Number of Teeth	z	16
Diametral Pitch	DP	12/24
Pressure Angle		30°
Pitch Dia.	D	33,8656
Major Dia.	D _{ri}	38,4 ^{+0,4}
Minor Dia.	D _i	32,15 ^{+0,04}
Space Width [Circular]	Lo	4,516±0,037
Fillet Radius	R	0,5
Max. Measurement between Pin	L	26,9 ^{+0,10}
Pin Dia.	d	4,835±0,001



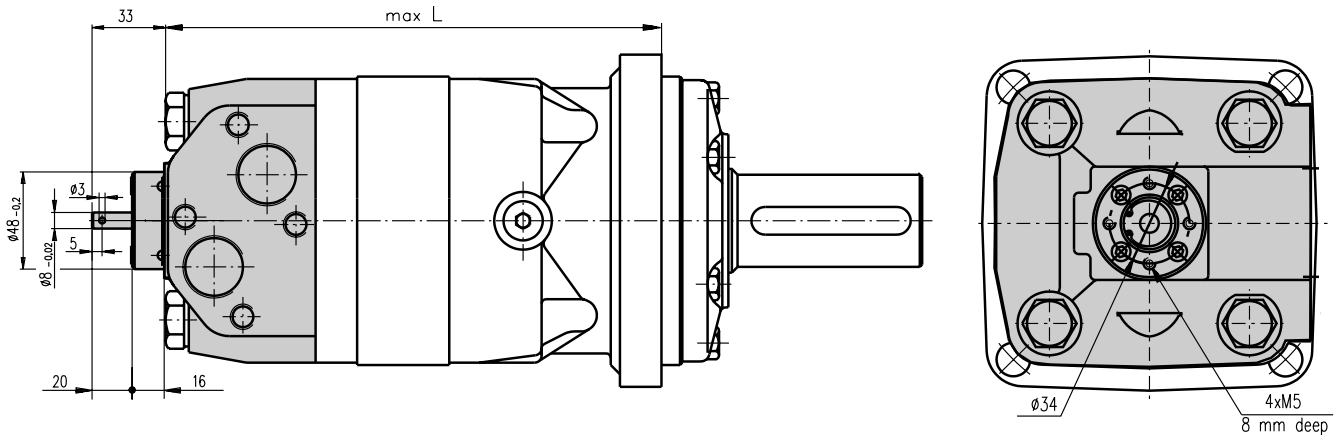
Hardening Specification:
HRC 60±2
HRC 52
0,7±0,2 mm effective case depth
Material 20 MoCr4 DIN 17210 or better

PERMISSIBLE SHAFT LOADS

The output shaft runs in tapered bearings that permit high axial and radial forces. Curve "1" shows max. radial shaft load. Any shaft load exceeding the values quoted in the curve will seriously reduce motor life. The two other curves apply to a B10 bearing life of 3000 hours at 200 RPM.



MOTORS WITH TACHO CONNECTION



ORDER CODE

	1	2	3	4	5	6	7
MT							

Pos.1 - Mounting Flange

omit - Square mount, four holes

S - Short mount

V - Veryshort mount

W - Wheel mount

Pos.2 - Port type

omit - Side ports

E - Rear ports

Pos.3 - Displacement code

160 - 161,1[cm³/rev]

200 - 201,4[cm³/rev]

250 - 251,8[cm³/rev]

315 - 326,3[cm³/rev]

400 - 410,9[cm³/rev]

500 - 523,6[cm³/rev]

Pos.4 - Shaft Extensions*

C - \varnothing 40 straight, Parallel key A12x8x70 DIN6885

CO - \varnothing 1 1/2" straight, Parallel key 3/8"x3/8"x2 1/4" BS46

K - \varnothing 45 tapered 1:10, Parallel key B12x8x28 DIN6885

SL - \varnothing 34,85 p.t.o. DIN 9611 Form 1

SH - \varnothing 1 1/2" splined 17T ANSI B92.1-1976

Pos. 5 - Ports

omit - BSPP (ISO 228)

M - Metric (ISO 262)

Pos. 6 - Special Features (see page 50)

Pos. 7 - Design Series

omit - Factory specified

NOTES:

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

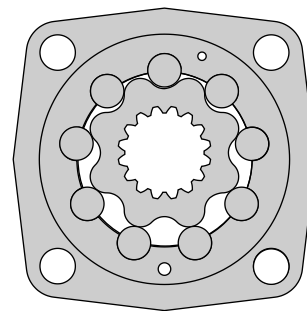
The hydraulic motors are mangano-phosphatized as standard.

HYDRAULIC MOTORS MV



APPLICATION

- » Conveyors
- » Metal working machines
- » Machines for agriculture
- » Road building machines
- » Mining machinery
- » Food industries
- » Special vehicles
- » Plastic and rubber machinery etc.



CONTENTS

Specification data	41
Function diagrams	42 ÷ 44
Permissible shaft loads	44
Dimensions and mounting	45
Dimensions and mounting- MVS	46
Dimensions and mounting- MVV	47
Internal Spline data	48
Tacho connection	48
Shaft extensions	49
Order code	49

OPTIONS

- » Model- Disc valve, roll-gerotor
- » Flange and wheel mount
- » Short motor
- » Tacho connection
- » Speed sensing
- » Side ports
- » Shafts- straight, splined and tapered
- » Metric and BSPP ports
- » Other special features

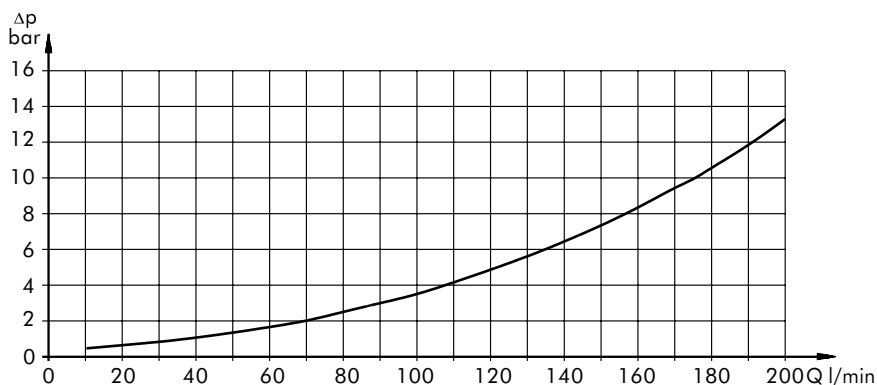
GENERAL

Displacement, [cm ³ /rev.]	314,5 ÷ 801,8
Max. Speed, [RPM]	250 ÷ 510
Max. Torque, [daNm]	92 ÷ 188
Max. Output, [kW]	42,5 ÷ 53,5
Max. Pressure Drop, [bar]	160 ÷ 200
Max. Oil Flow, [l/min]	160 ÷ 200
Min. Speed, [RPM]	5 ÷ 10
Permissible Shaft Loads, [daN]	P _a = 1500
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)
140	20	3
	35	2
210	20	6
	35	4

Pressure Losses



SPECIFICATION DATA

Type		MV 315	MV 400	MV 500	MV 630	MV 800
Displacement [cm ³ /rev.]		314,5	400,9	499,6	629,1	801,8
Max. Speed, [RPM]	cont.	510	500	400	315	250
	Int.*	630	600	480	380	300
Max. Torque [daNm]	cont.	92	118	146	166	188
	Int.*	111	141	176	194	211
	peak**	129	164	205	221	247
Max. Output [kW]	cont.	42,5	53,5	53,5	48	42,5
	int.*	51	64	64	56	48
Max. Pressure Drop [bar]	cont.	200	200	200	180	160
	Int.*	240	240	240	210	180
	peak**	280	280	280	240	210
Max. Oil Flow [l/min]	cont.	160	200	200	200	200
	Int.*	200	240	240	240	240
Max. Inlet Pressure [bar]	cont.	210	210	210	210	210
	Int.*	250	250	250	250	250
	peak**	300	300	300	300	300
Max. Return Pressure without Drain Line or Max. Pressure in Drain Line , [bar]	cont. 0-100 RPM	60	60	60	60	60
	cont. 100-300 RPM	30	30	30	30	30
	cont. >300 RPM	20	20	20	20	20
	Int.* 0-max. RPM	75	75	75	75	75
Max. Return Pressure with Drain Line [bar]	cont.	140	140	140	140	140
	Int.*	175	175	175	175	175
	peak**	210	210	210	210	210
Max. Starting Pressure with Unloaded Shaft, [bar]		8	8	8	8	8
Min. Starting Torque [daNm]	at max. press. drop cont.	71	91	113	133	151
	at max. press. drop Int.*	85	109	136	155	170
Min. Speed***, [RPM]		10	9	8	6	5
Weight, avg. [kg]	MV	31,8	32,6	33,5	34,9	36,5
	MVW	32,4	33,2	34,1	35,5	37,1
	MVS	22,7	23,5	24,4	25,6	27,7

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

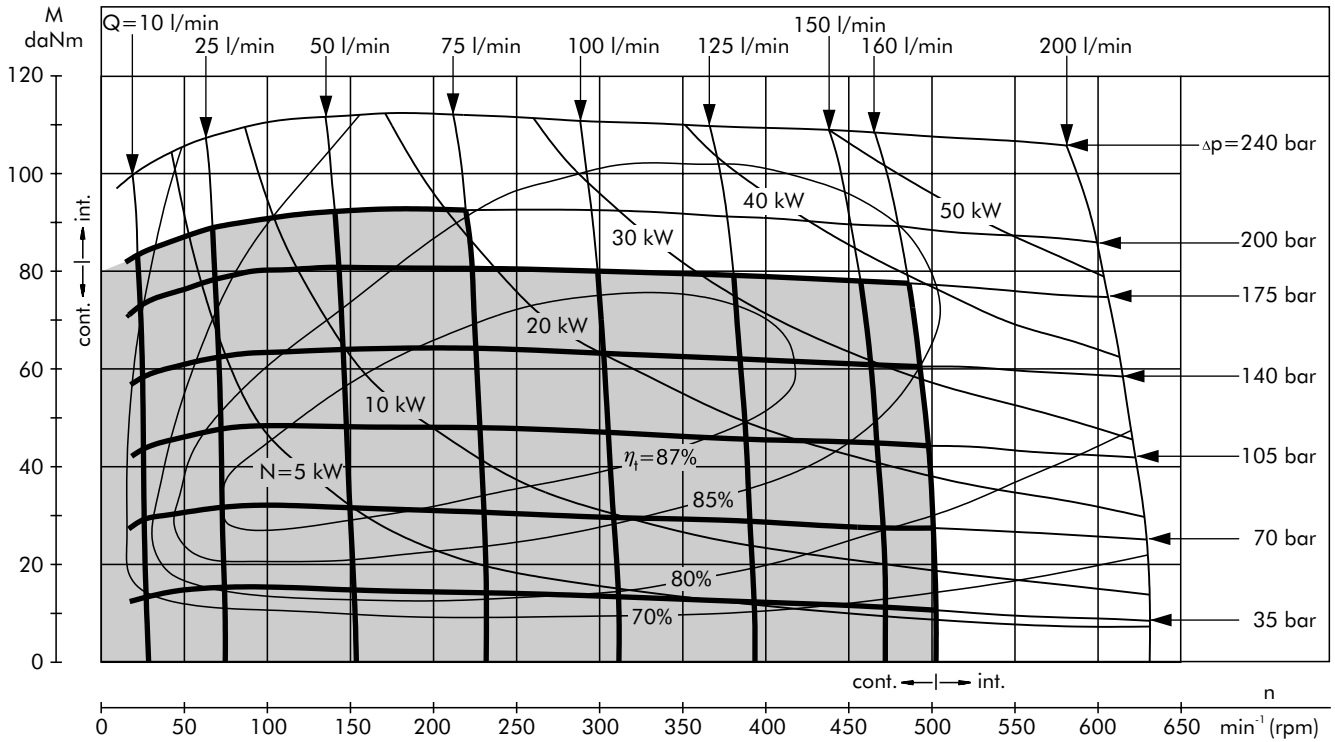
** Peak load: the permissible values may occur for max. 1% of every minute.

*** For speeds of 5 RPM lower than given, consult factory or your regional manager.

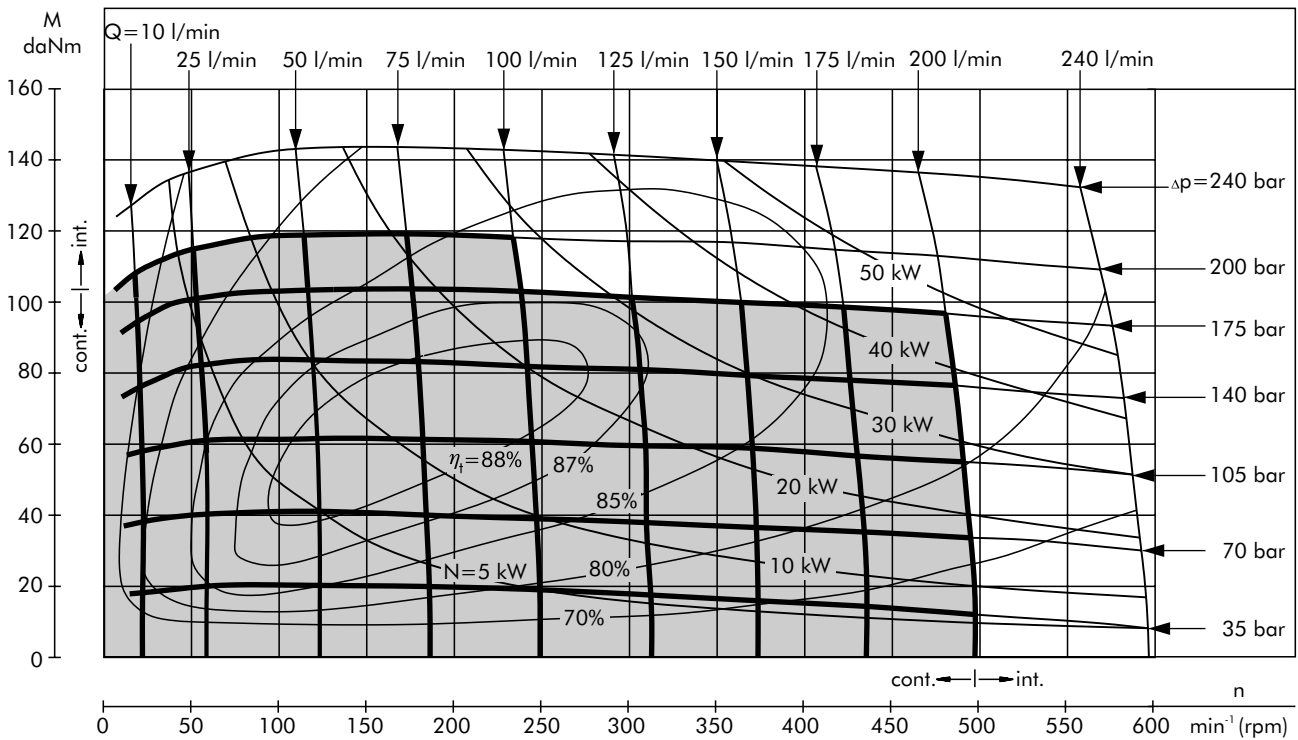
- 1) Intermittent speed and intermittent pressure must not occur simultaneously.
- 2) Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
- 3) Recommend using a premium quality, anti-wear type mineral based hydraulic oil, HLP(DIN51524) or HM(ISO6743/4).
If using synthetic fluids consult the factory for alternative seal materials.
- 4) Recommended minimum oil viscosity 13 mm²/s at 50°C.
- 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

MV 315



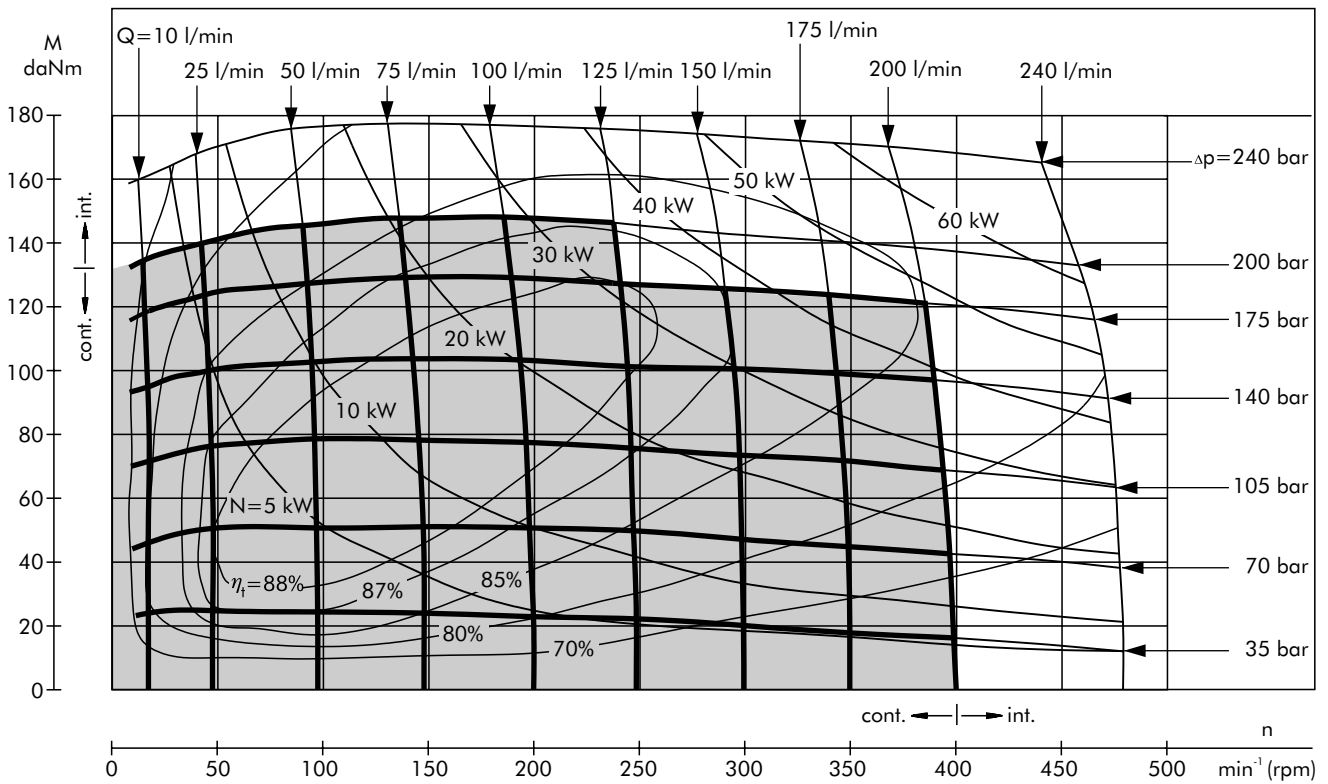
MV 400



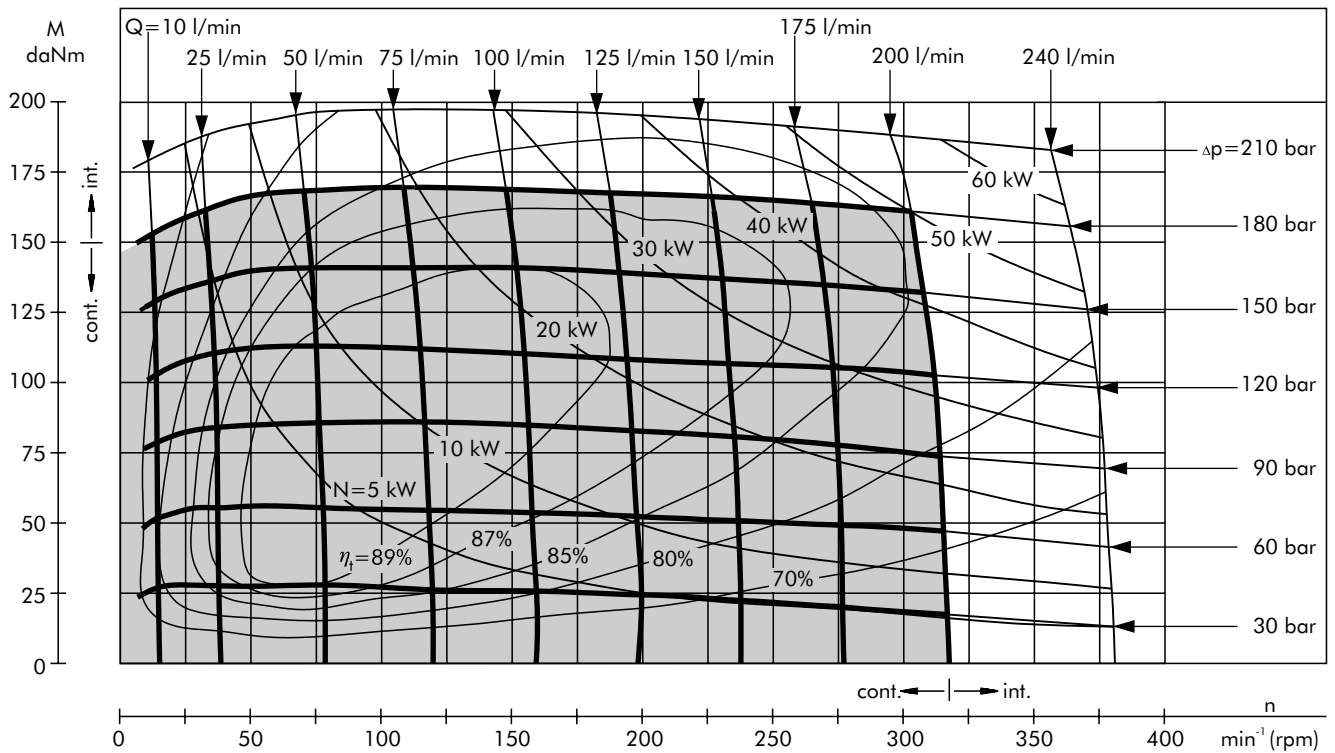
The function diagrams data was collected at back pressure 5 ÷ 10 bar and oil with viscosity of 32 mm²/s at 50° C.

FUNCTION DIAGRAMS

MV 500



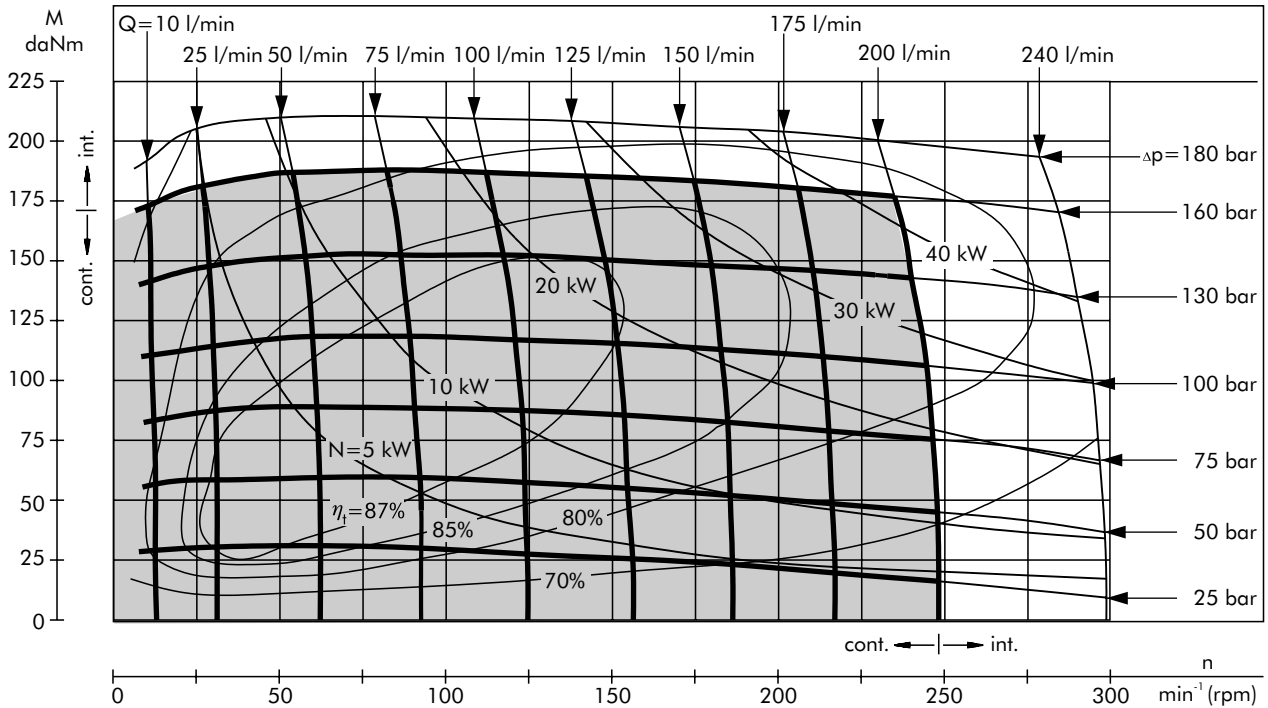
MV 630



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

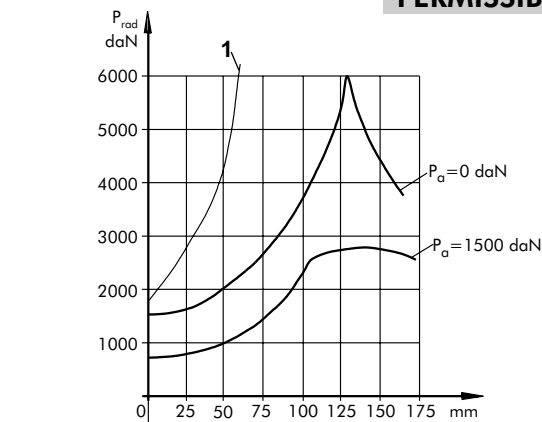
FUNCTION DIAGRAMS

MV 800

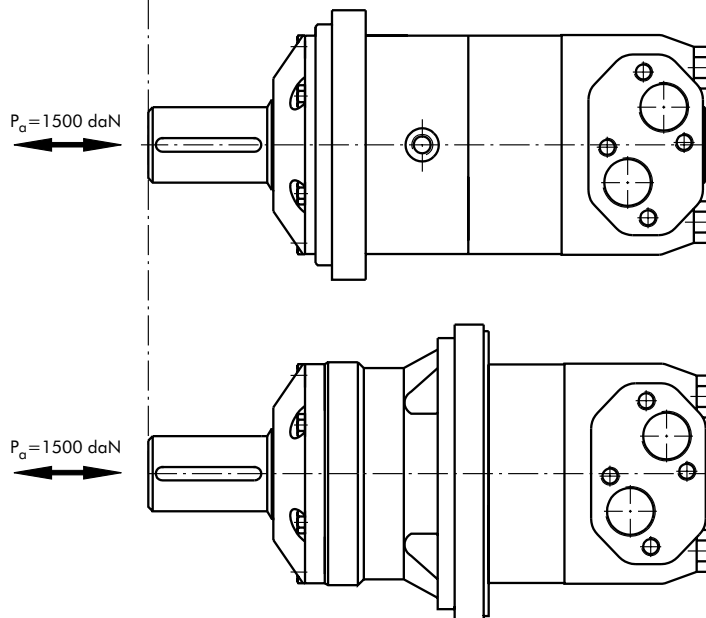


The function diagrams data was collected at back pressure $5 \div 10$ bar and oil with viscosity of $32 \text{ mm}^2/\text{s}$ at 50°C .

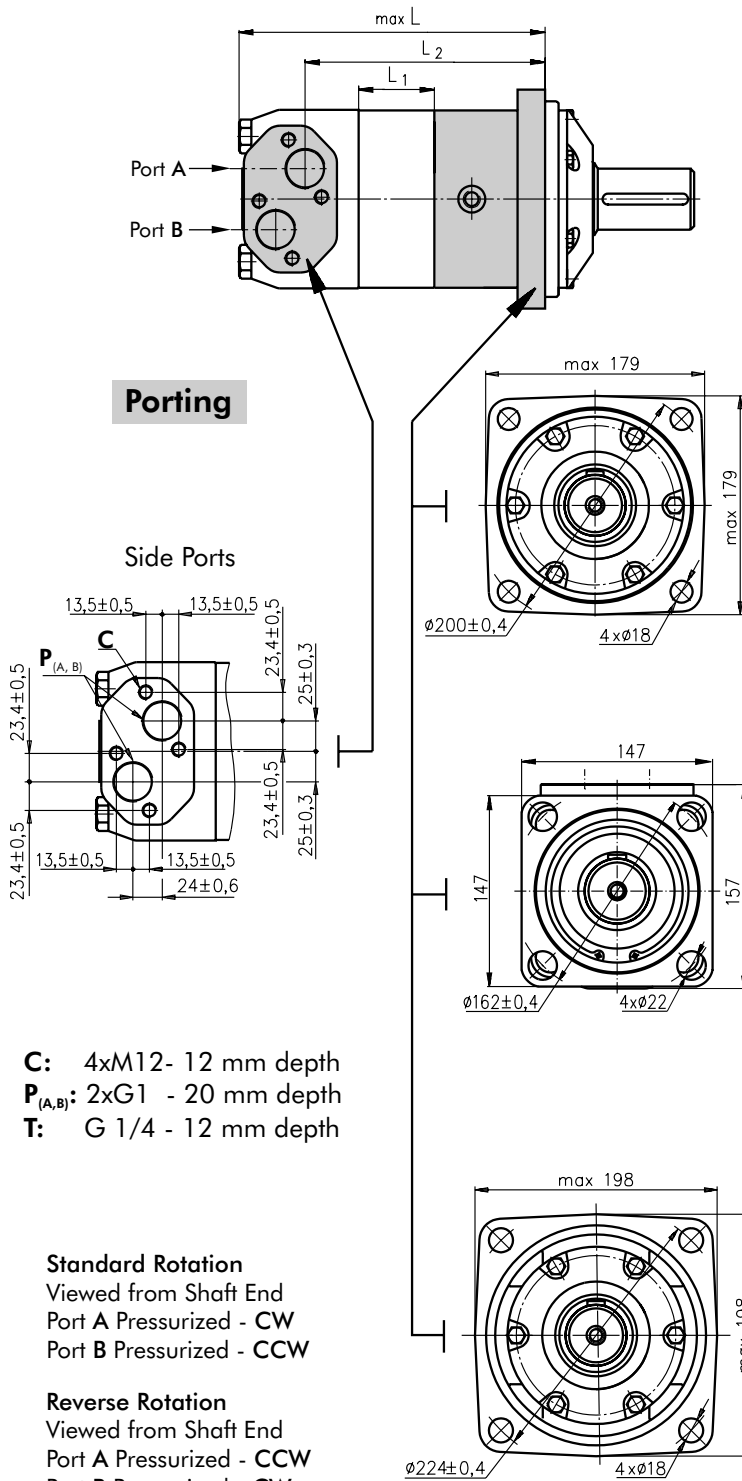
PERMISSIBLE SHAFT LOADS



The output shaft runs in tapered bearings that permit high axial and radial forces. Curve "1" shows max. radial shaft load. Any shaft load exceeding the values quoted in the curve will seriously reduce motor life. The two other curves apply to a B10 bearing life of 3000 hours at 200 RPM.



DIMENSIONS AND MOUNTING DATA



Porting

Side Ports

- C:** 4xM12- 12 mm depth
- P_(A,B):** 2xG1 - 20 mm depth
- T:** G 1/4 - 12 mm depth

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

Mounting

Square Mount (4 Holes)

C SAE C Mount

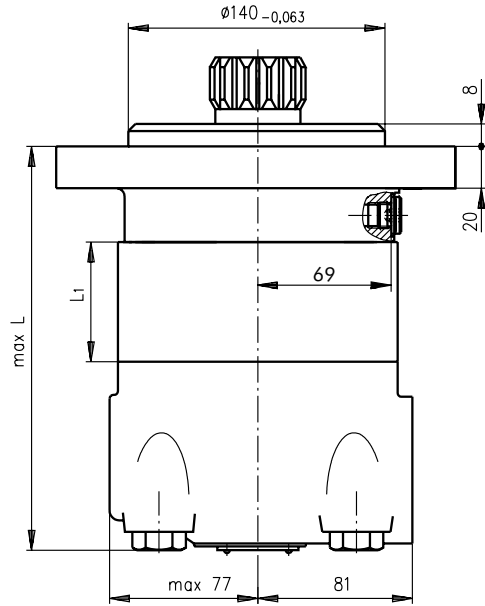
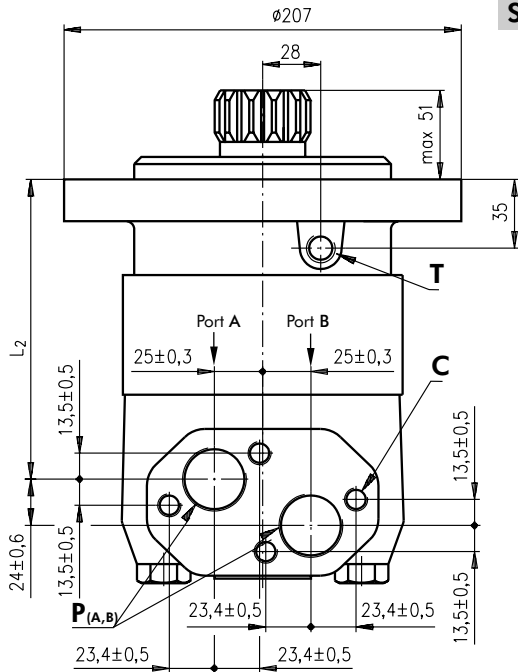
W Wheel Mount

Type	L, mm	L ₂ , mm	Type	L, mm	L ₂ , mm	Type	L, mm	L ₂ , mm	*L ₁ , mm
MV 315	214,5	160	MVC 315	238,25	184,26	MW 315	146	92	21,5
MV 400	221,5	167	MVC 400	245,25	191,26	MW 400	153	99	28,5
MV 500	229,5	175	MVC 500	253,25	199,26	MW 500	161	107	36,5
MV 630	240,0	186	MVC 630	263,75	209,76	MW 630	172	118	47,0
MV 800	254,0	200	MVC 800	277,75	223,76	MW 800	185	132	61,0

* The width of the gerolor is 4 mm greater than L₁.

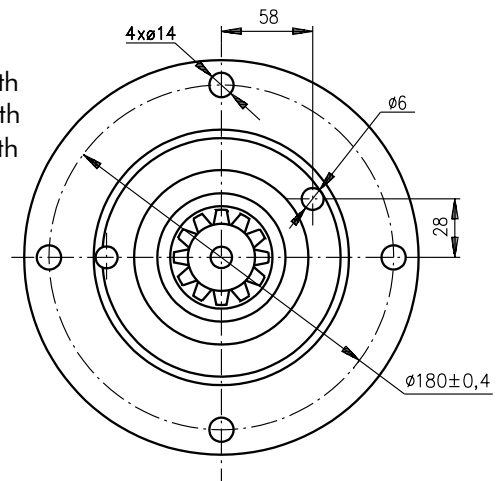
DIMENSIONS AND MOUNTING

S Short Mount



Type	L, mm	*L ₁ , mm	L ₂ , mm
MVS 315	171	22,0	117
MVS 400	179	29,0	124
MVS 500	186	37,0	132
MVS 630	197	47,5	143
MVS 800	211	61,5	157

C: 4xM12- 12 mm depth
P_(A,B): 2xG1 - 20 mm depth
T: G 1/4 - 12 mm depth



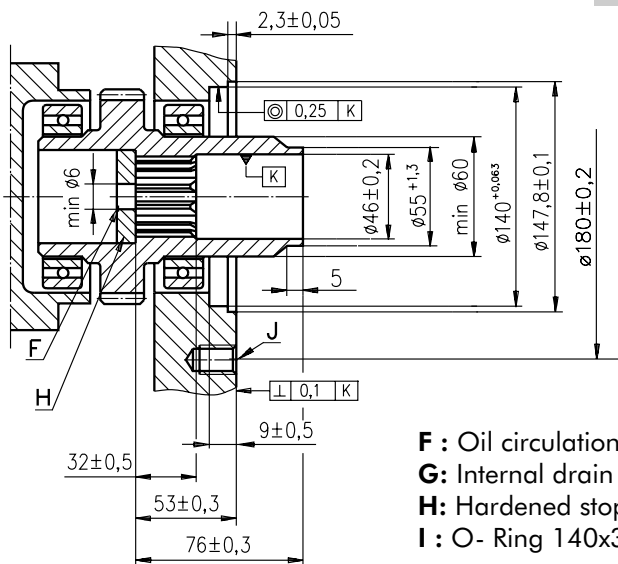
* The width of the geroler is 4 mm greater than L₁.

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

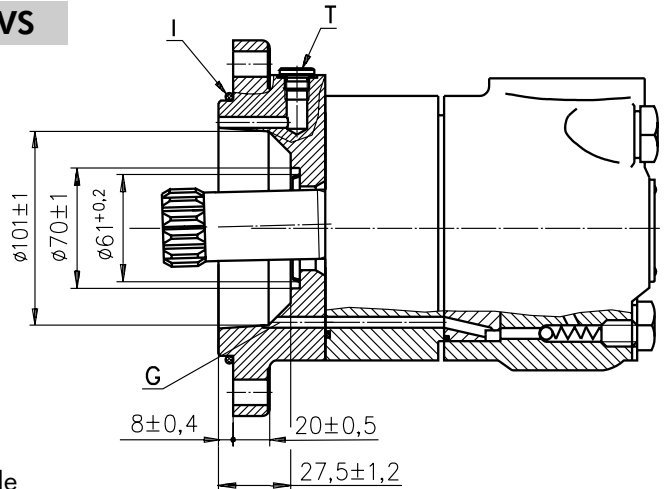
Reverse Rotation
 Viewed from Shaft End
 Port A Pressurized - CCW
 Port B Pressurized - CW

DIMENSIONS OF THE ATTACHED COMPONENT

MVS



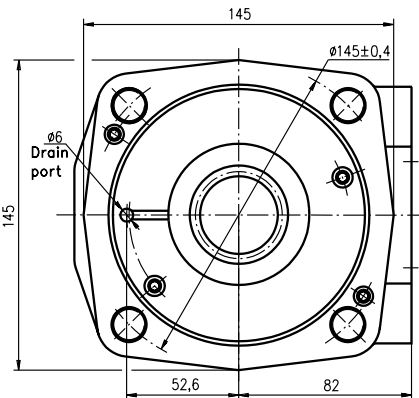
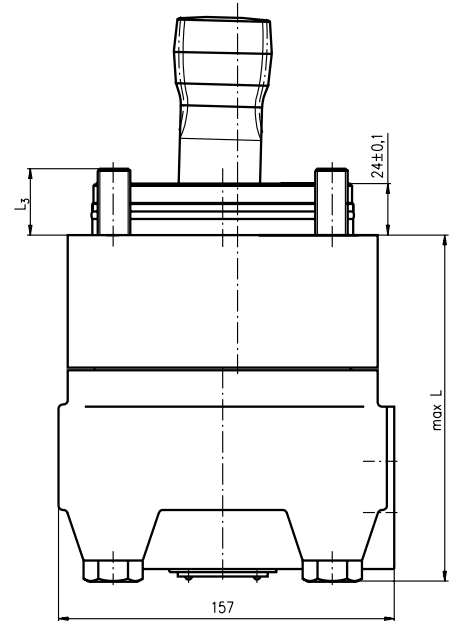
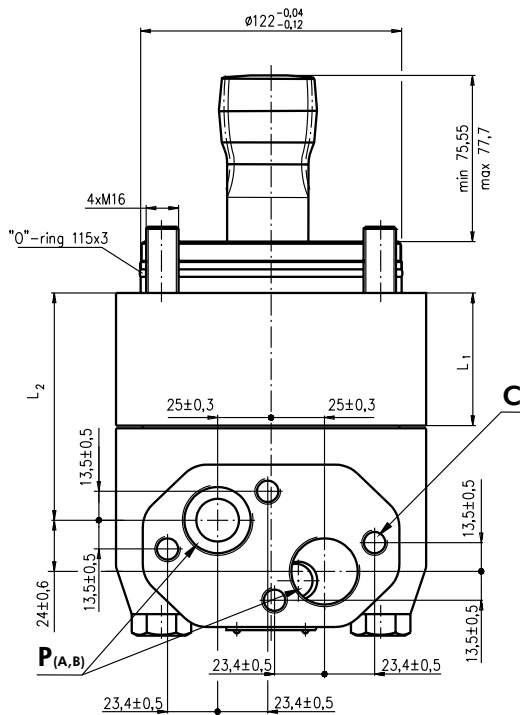
F: Oil circulation hole
G: Internal drain channel
H: Hardened stop plate
I: O- Ring 140x3mm



J: 4xM12-18 mm depth, 90°
T: Drain connection G1/4 - 12 mm depth

DIMENSIONS AND MOUNTING

V Very Short Mount



C: 4xM12- 12 mm depth

P_(A,B): 2xG1 - 20 mm depth

Type	L, mm	*L ₁ , mm	L ₂ , mm	L ₃ , mm
MVV 315	121,5	22,0	68,0	29,5
MVV 400	128,5	29,0	75,0	32,5
MVV 500	136,5	37,0	83,0	34,5
MVV 630	147,0	47,5	93,0	34,0
MVV 800	161,0	61,5	107,5	30,0

Standard Rotation

Viewed from Shaft End

Port A Pressurized - CW

Port B Pressurized - CCW

Reverse Rotation

Viewed from Shaft End

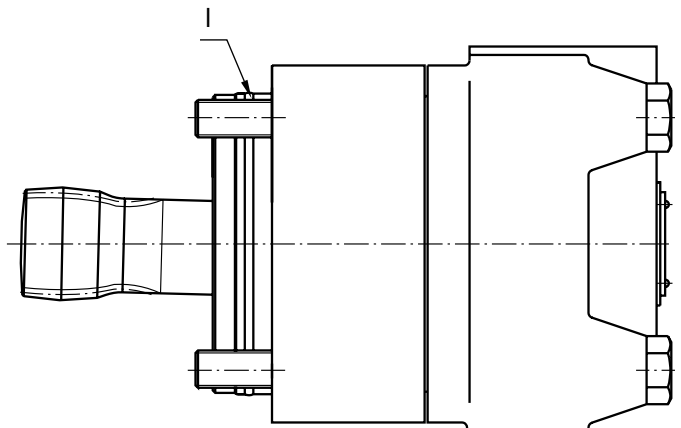
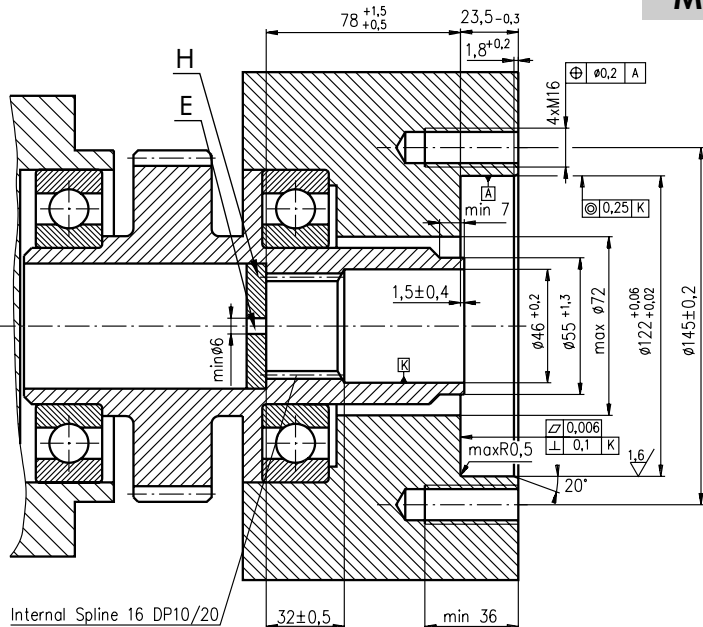
Port A Pressurized - CCW

Port B Pressurized - CW

* The width of the gerolor is 4 mm greater than L₁.

DIMENSIONS OF THE ATTACHED COMPONENT

MVV



E: External drain channel

H: Hardened stop plate

I: O- Ring 115x3mm

Internal Spline 16 DP10/20
ANS B92.1-1976, cl.5

DRAIN CONNECTION

A drain line ought to be used when pressure in the return line can exceed the permissible pressure. It can be connected:

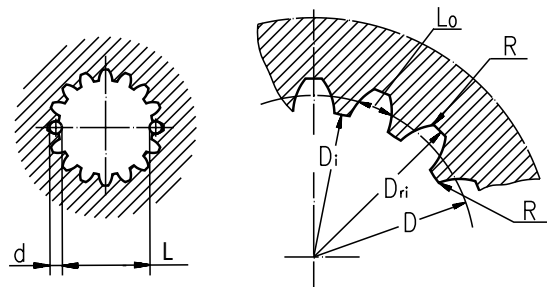
- For MVS at the drain port of the motor;
- For MVV at the drain connection of the attached component. The maximum pressure in the drain line is limited by the attached component and its shaft seal.

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

INTERNAL SPLINE DATA FOR THE ATTACHED COMPONENT

Standard ANSI B92.1-1976, class 5
[$m=2.54$; corrected $x.m=+1,0$]

Fillet Root Side Fit		mm
Number of Teeth	z	16
Diametral Pitch	DP	10/20
Pressure Angle		30°
Pitch Dia.	D	40,640
Major Dia.	D _{ri}	45,2 ^{+0,4}
Minor Dia.	D _i	38,5 ^{+0,039}
Space Width [Circular]	Lo	5,18±0,037
Fillet Radius	R	0,4
Max. Measurement between Pin	L	32,47 ^{+0,15}
Pin Dia.	d	5,5±0,001



Hardening Specification:

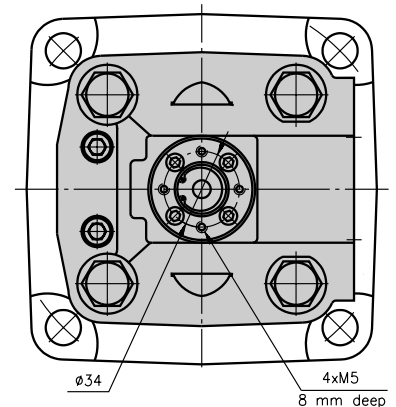
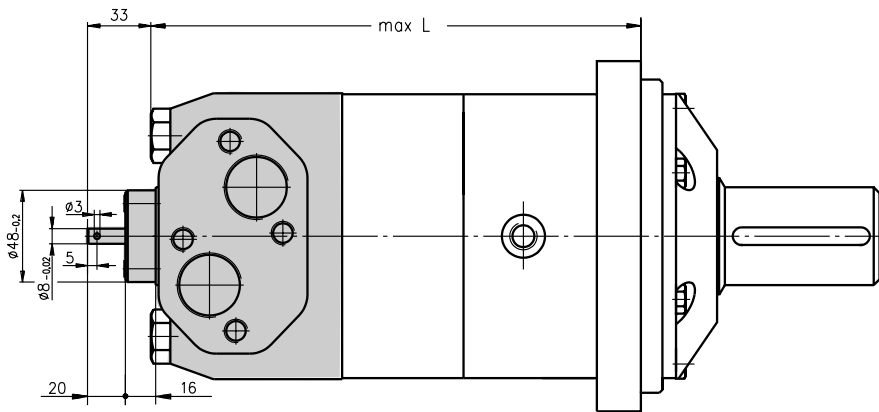
HRC 60±2

HRC 52

0,7±0,2 mm effective case depth

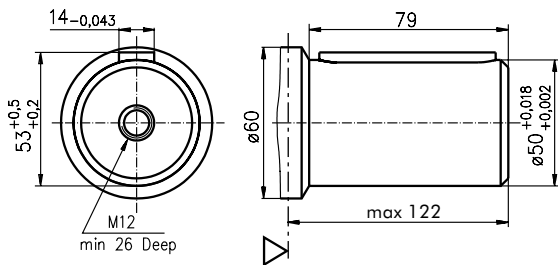
Material 20 MoCr4 DIN 17210 or better

MOTOR WITH TACHO CONNECTION

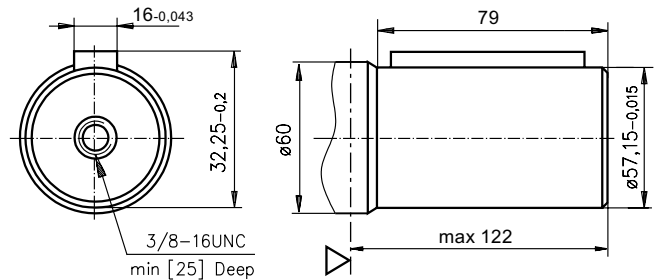


SHAFT EXTENSIONS

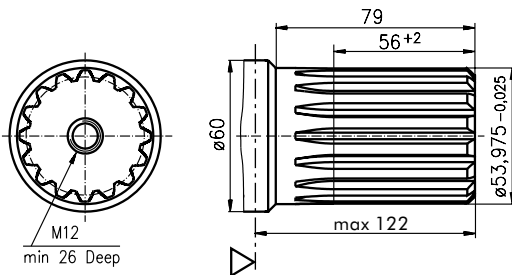
C - $\varnothing 50$ straight, Parallel key A14x9x70 DIN 6885



CO - $\varnothing 2\frac{1}{4}$ " [57,15] straight, Parallel key $\frac{1}{2}$ " x $\frac{1}{2}$ " x $2\frac{1}{4}$ " BS46

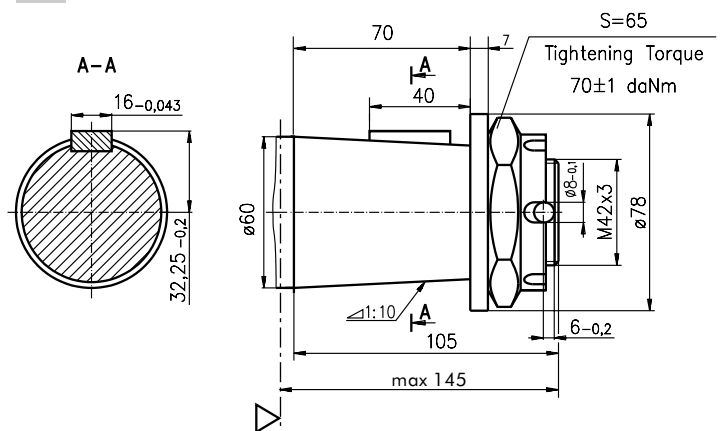


SH - $\varnothing 2\frac{1}{8}$ " splined, 16 DP 8/16 ANSI B92.1-1976



▽ - Motor Mounting Surface

K - tapered 1:10, Parallel key B16x10x32 DIN 6885



ORDER CODE

	1	2	3	4	5
MV					

Pos. 1 - Mounting Flange

omit - Square mount, four holes

C - SAE C mount

W - Wheel mount

S - Short mount

V - Very short mount

Pos. 2 - Displacement code

315 - 314,5 [cm³/rev]

400 - 400,9 [cm³/rev]

500 - 499,6 [cm³/rev]

630 - 629,1 [cm³/rev]

800 - 801,8 [cm³/rev]

Pos. 3 - Shaft extensions*

C - $\varnothing 50$ straight, Parallel key A14x9x70 DIN6885

CO - $\varnothing 2\frac{1}{4}$ " straight, Parallel key $\frac{1}{2}$ " x $\frac{1}{2}$ " x $2\frac{1}{4}$ " BS46

SH - $\varnothing 2\frac{1}{8}$ " splined, ANSI B92.1-1976

K - $\varnothing 60$ tapered 1:10, Parallel key B16x10x32 DIN6885

Pos. 4 - Special Features (see page 50)

Pos. 5 - Design Series

omit - Factory specified

NOTES:

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

The hydraulic motors are mangano- phosphatized as standard.

MOTOR SPECIAL FEATURES

Special Feature Description	Order Code	Motor type			
		MS	MSY	MT	MV
Motor for Speed Sensor*	RS	○	○	○	○
Tacho Connection**	T	○	○	○	○
Low Leakage	LL	○	○	○	○
Low Speed Valving	LSV	○	○	○	○
Free Running	FR	○	○	○	○
Reverse Rotation	R	○	○	○	○
Paint***	P	○	○	○	○
Corrosion Protected Paint***	PC	○	○	○	○
Check Valves		S	S	S	S

- Optional
- S Standard

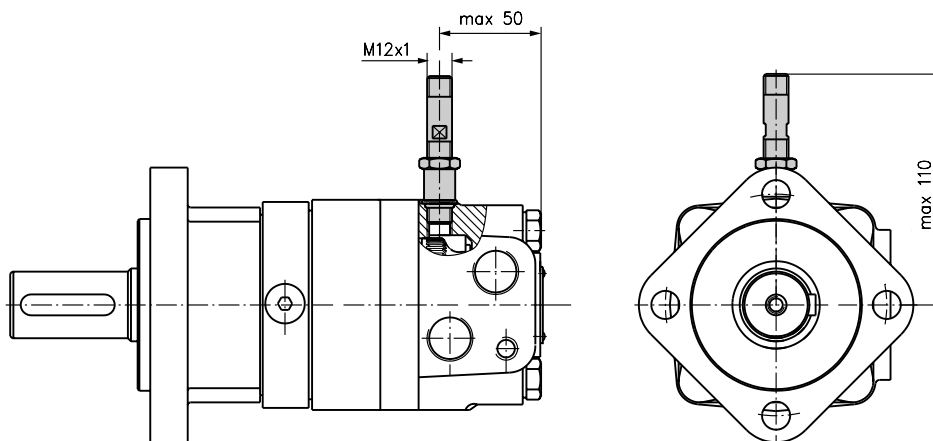
* for sensor ordering see pages 51-52.

** only for side ports.

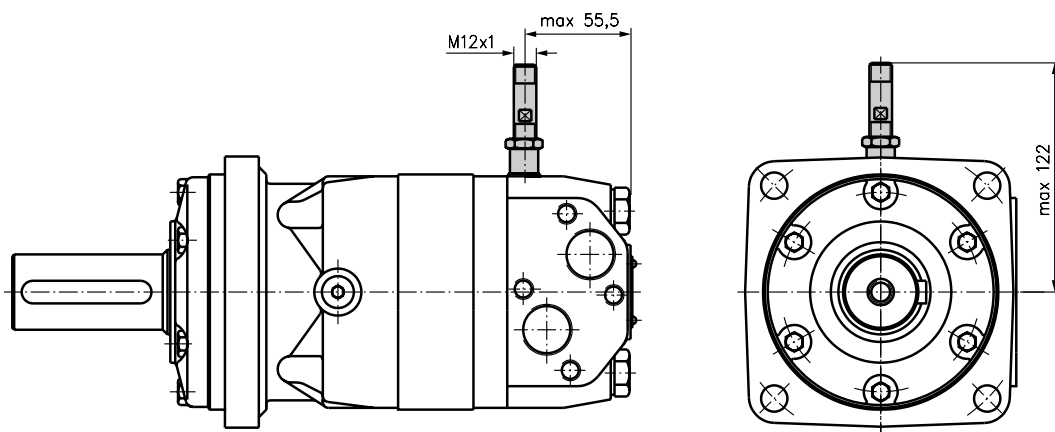
*** color at customer's request.

MOTORS WITH SPEED SENSOR

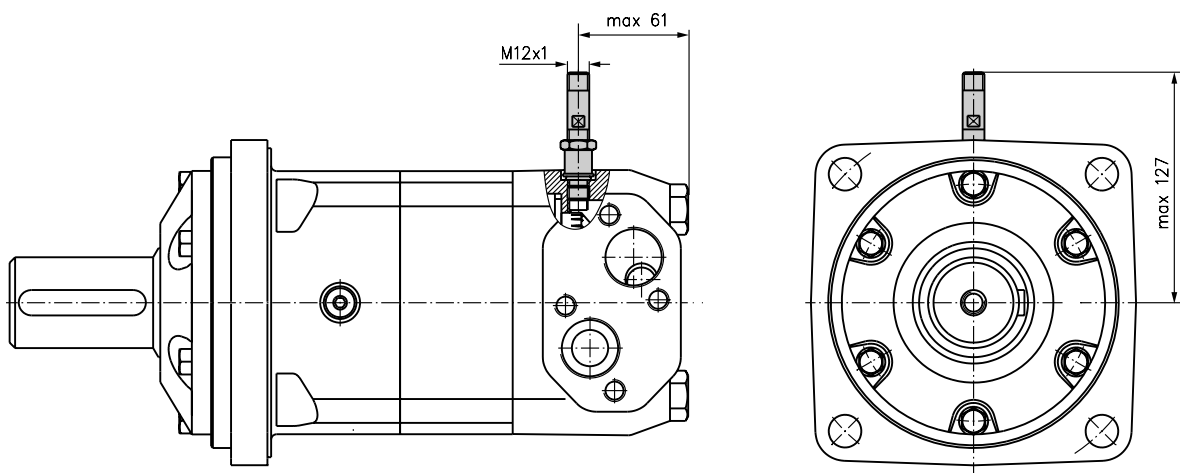
MS(Y)...RS



MT...RS



MV...RS

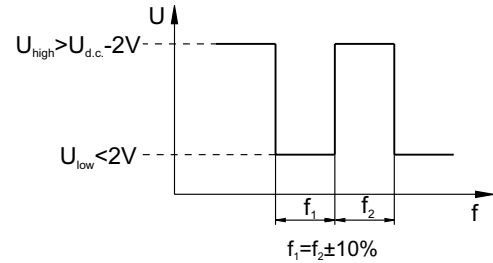


TECHNICAL DATA OF THE SPEED SENSOR

Technical data

Frequency range	3...20 000 Hz
Output	PNP, NPN
Power supply	10...36 VDC
Current input	20 mA (@24 VDC)
Current load	500 mA (@24 VDC; 24°C)
Ambient Temperature	minus 40... plus 125°C
Protection	IP 67
Plug connector	M12-Series
Mounting principle	ISO 6149

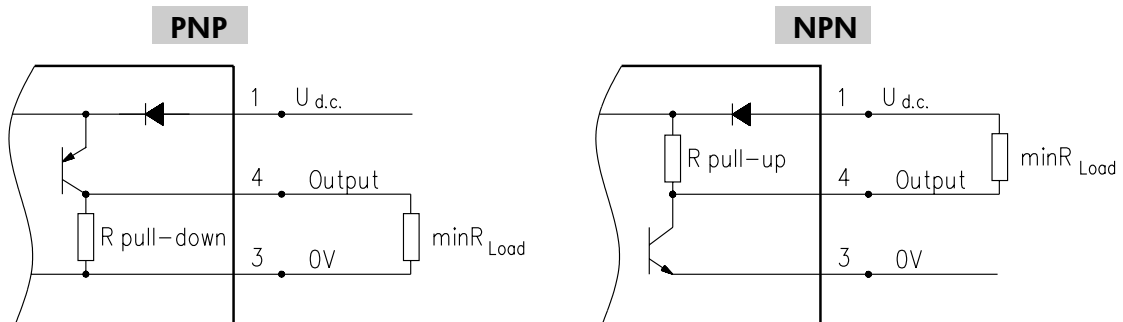
Output signal



Load max.: $I_{high} = I_{low} < 50\text{mA}$
 No load current, max: 20 mA

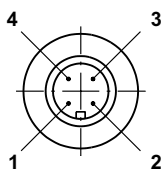
Motor type	MS	MT	MV
Pulses per revolution	54	84	102

Wiring diagrams



$$R_{Load} = U_{d.c.} / I_{max} (=50\text{mA})$$

Stick type



Terminal No.	Connection	Cable Output
1	$U_{d.c.}$	Brown
2	No connection	White
3	0V	Blue
4	Output signal	Black

Order Code for Speed Sensor

Sensor Code	Output type	Electric connection
RSN	NPN	Connector BINDER 713 series
RSP	PNP	Connector BINDER 713 series
PSNL5	NPN	Cable output 3x0,25; 5m long
RSPL5	PNP	Cable output 3x0,25; 5m long

NOTE: *- The speed sensor is not fitted at the factory, but is supplied in a plastic bag with the motor. For installation see enclosed instructions.