

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	25
Function diagrams	26÷28
Dimensions and mounting	13÷14
Wheel motor	15
Motor with Drum Brake - MSYB	16
Shaft extensions	17
Permissible shaft loads	18
Function diagram for MSYB	18
Permissible Shaft Seal Pressure.....	19
Dimensions and mounting- MSYS, V	29
Internal Spline data	30
Order code	30

OPTIONS

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

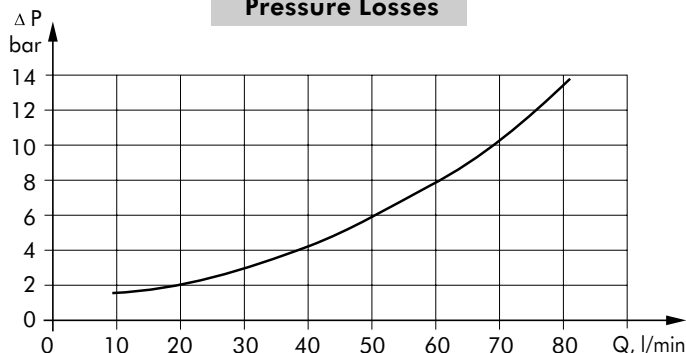
GENERAL

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
	Int.*	450	360	285	225
Max. Torque [daNm]	cont.	56,6	70,8	90,0	90,0
	Int.*	64,5	80,6	96,0	97,0
	peak**	65	80,6	108	110
Max. Output [kW]	cont.	18,1	18,0	17	11,0
	int.*	24,0	23,8	20,2	12
Max. Pressure Drop [bar]	cont.	200	200	200	160
	Int.*	225	225	220	175
	peak**	225	225	225	200
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	8
Min. Starting Torque [daNm]	at max. press. drop cont.	46,2	58,0	73,8	72,0
	at max. press. drop Int.*	50,7	63,6	79,2	78,7
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
	MSYW	11,7	12,2	12,9	13,8
	MSYQ	11,6	12,1	12,8	13,7

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

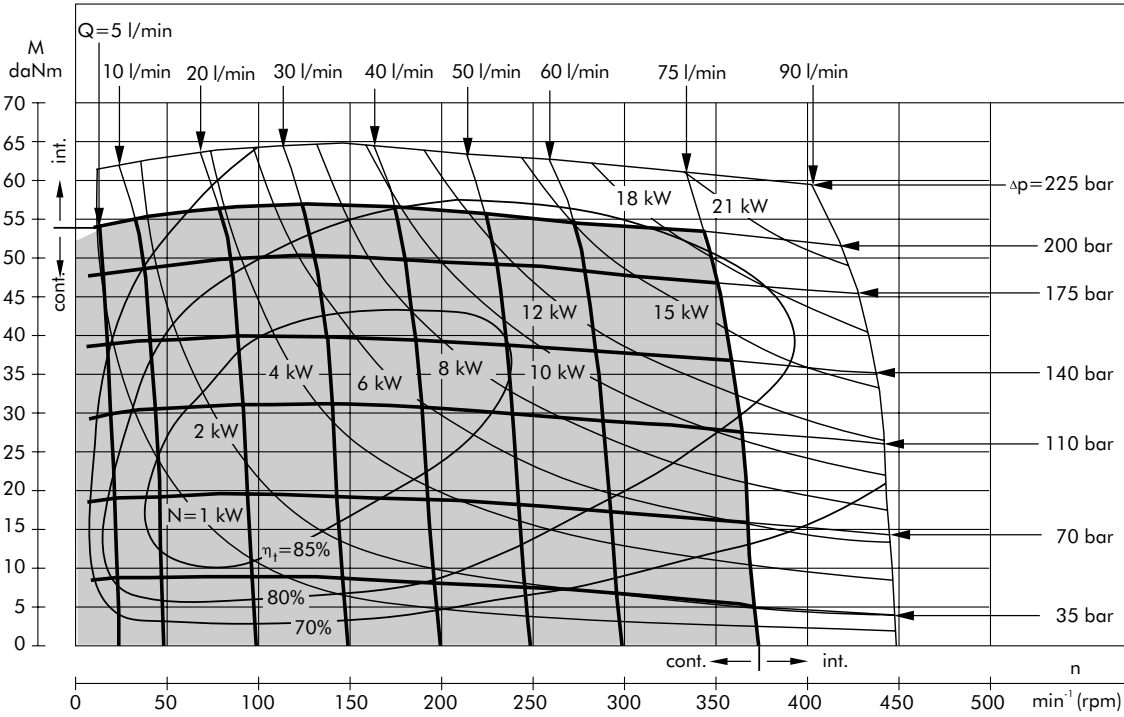
** Peak load: the permissible values may occur for max. 1% of every minute.

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

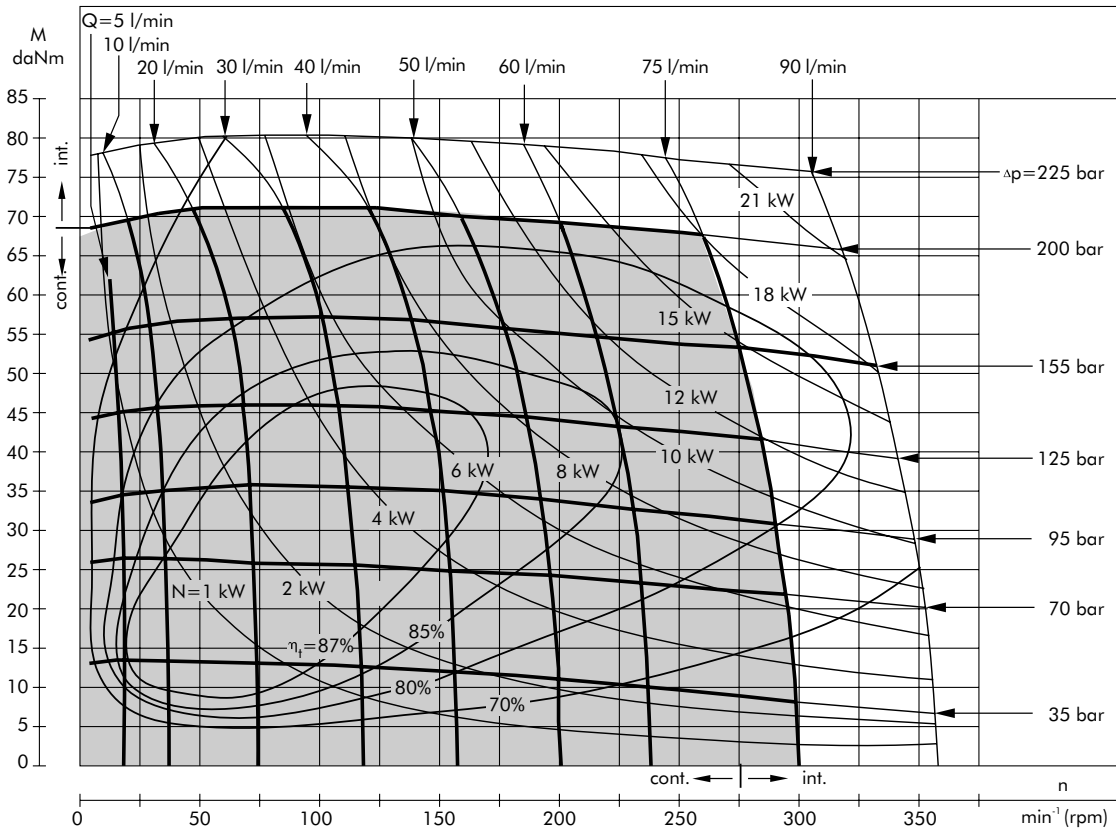
- 1) Intermittent speed and intermittent pressure must not occur simultaneously.
- 2) Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
- 3) Recommend using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) or HM (ISO 6743/4).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



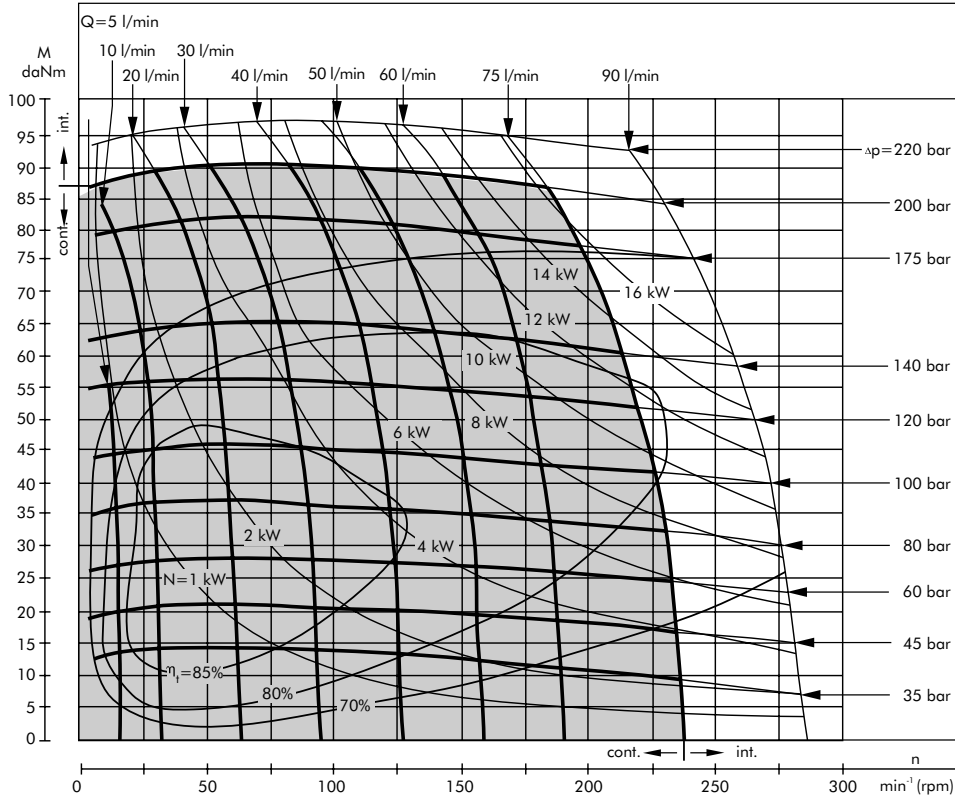
MSY 250



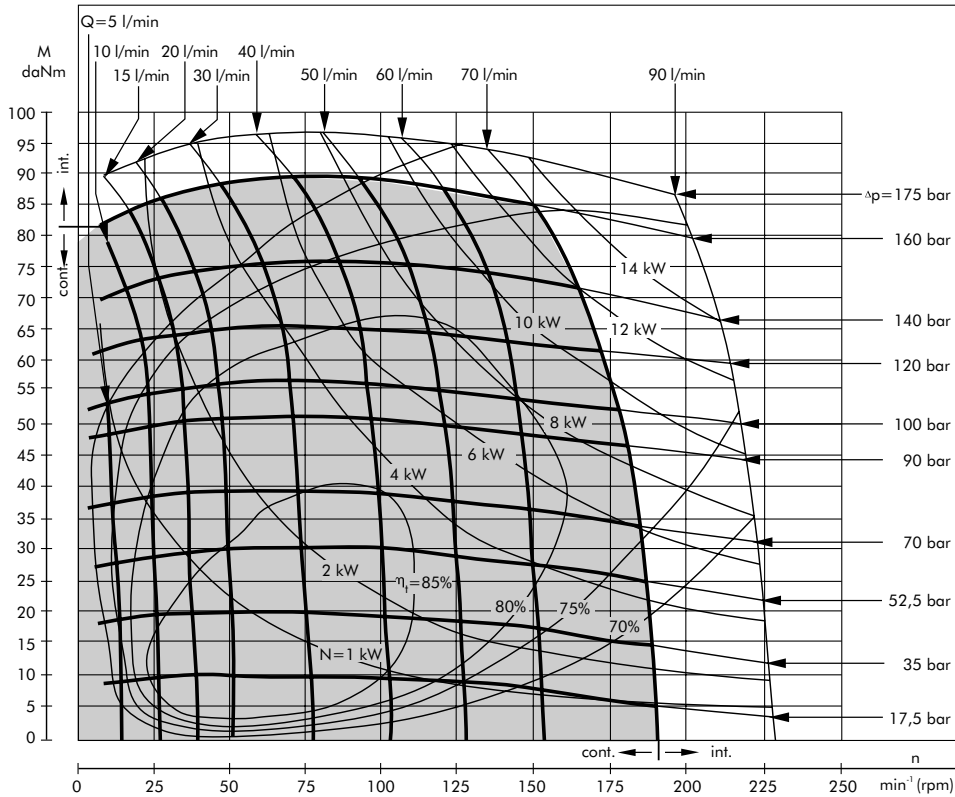
The function diagrams data was collected at back pressure $5 \div 10$ bar and oil with viscosity of $32 \text{ mm}^2/\text{s}$ at 50°C .

FUNCTION DIAGRAMS

MSY 315



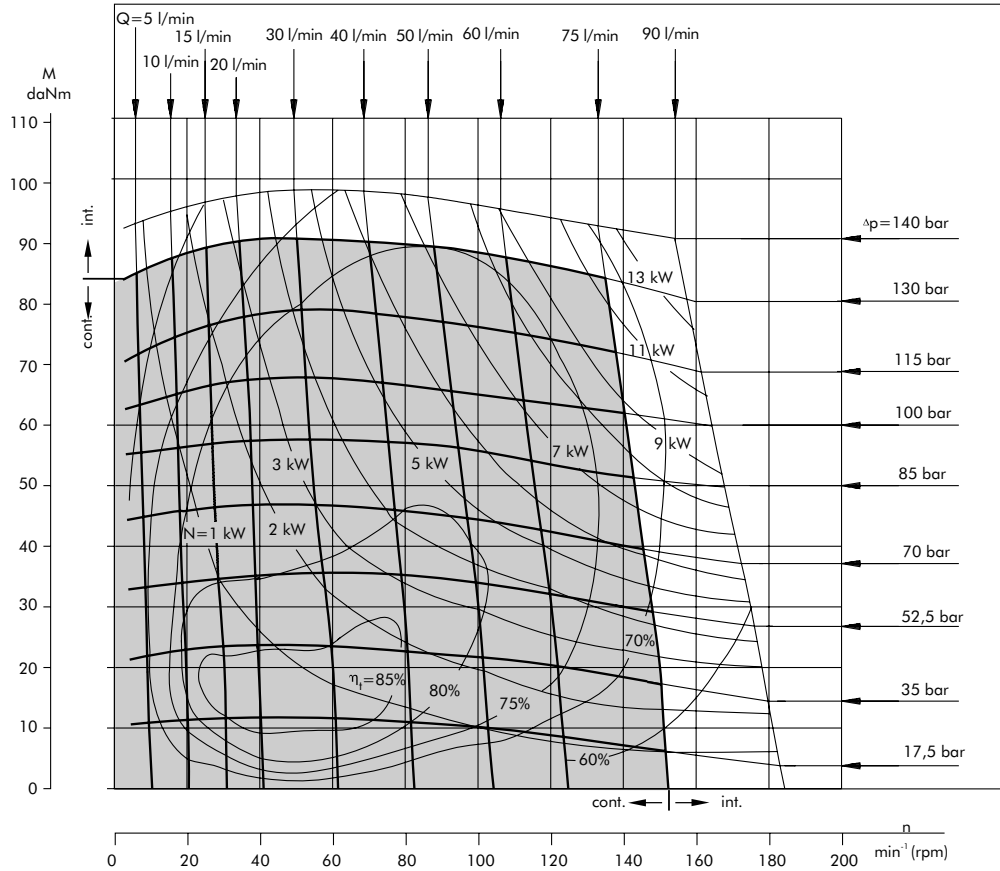
MSY 400



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

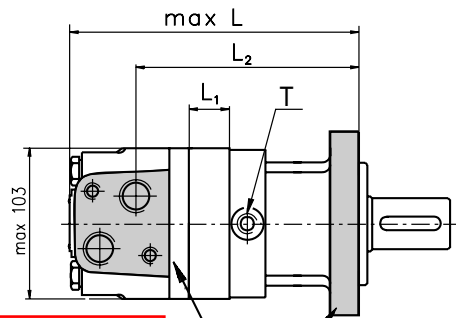
FUNCTION DIAGRAMS

MSY 475



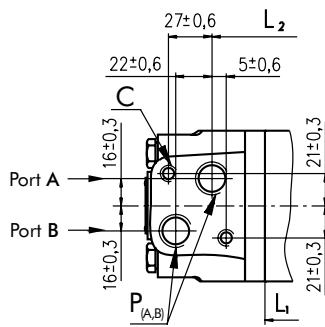
The function diagrams data was collected at back pressure 5 ± 10 bar and oil with viscosity of $32 \text{ mm}^2/\text{s}$ at 50°C .

DIMENSIONS AND MOUNTING DATA



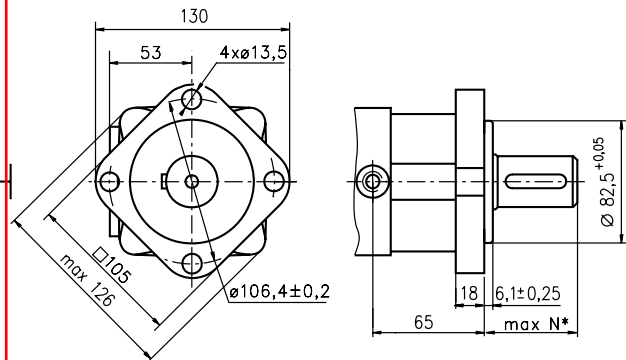
Porting

Side Ports

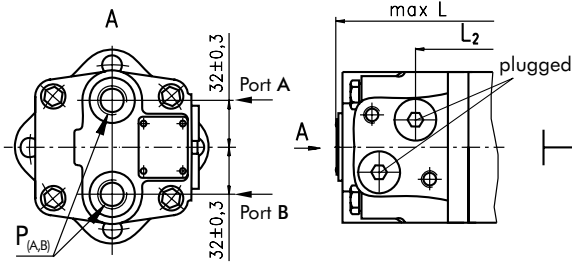


Mounting

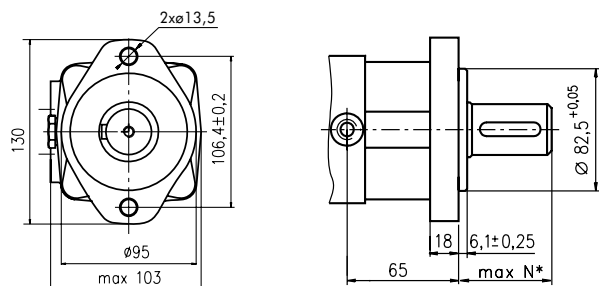
SAE A-4 Mount (4 Holes)



E Rear Ports



A SAE A-2 Mount (2 Holes)



*For N see page 17

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)

Standard Rotation

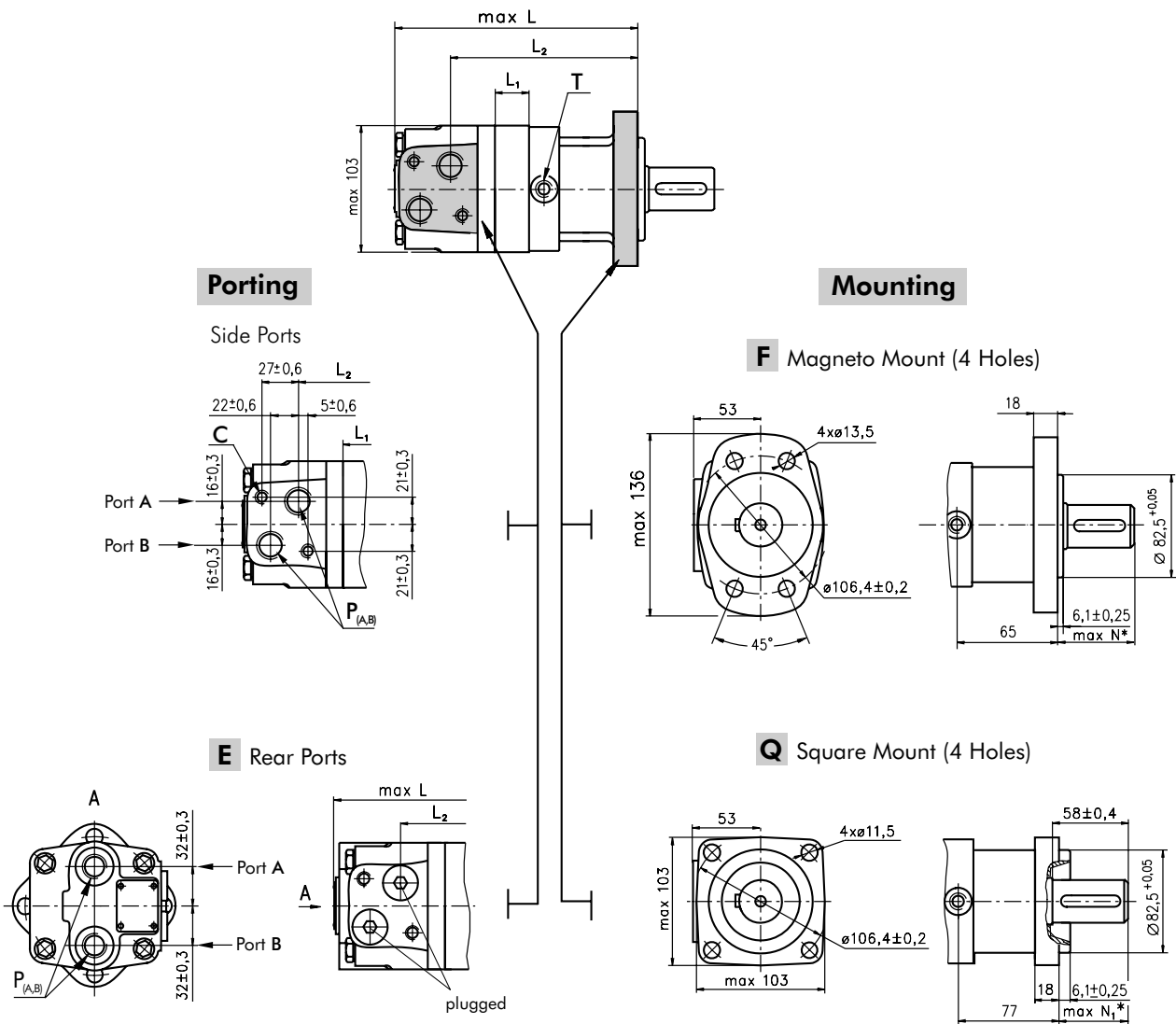
Viewed from Shaft End
Port A Pressurized - CW
Port B Pressurized - CCW

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
MS(A) 475	237	193	MS(A)E 475	242	82,6
MS(A) 525	229	185	MS(A)E 525	234	74,5
MS(A) 565	235	191	MS(A)E 565	240	80,2

DIMENSIONS AND MOUNTING DATA



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)

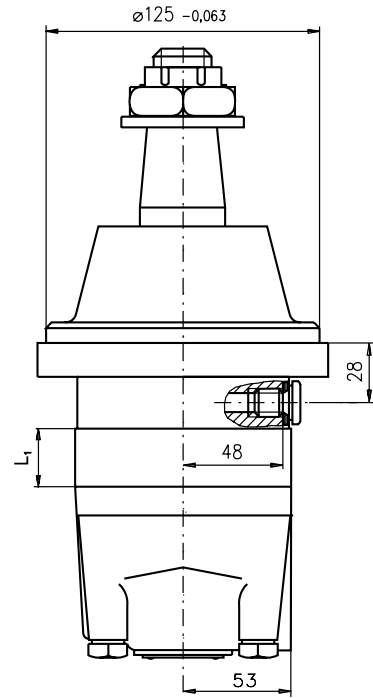
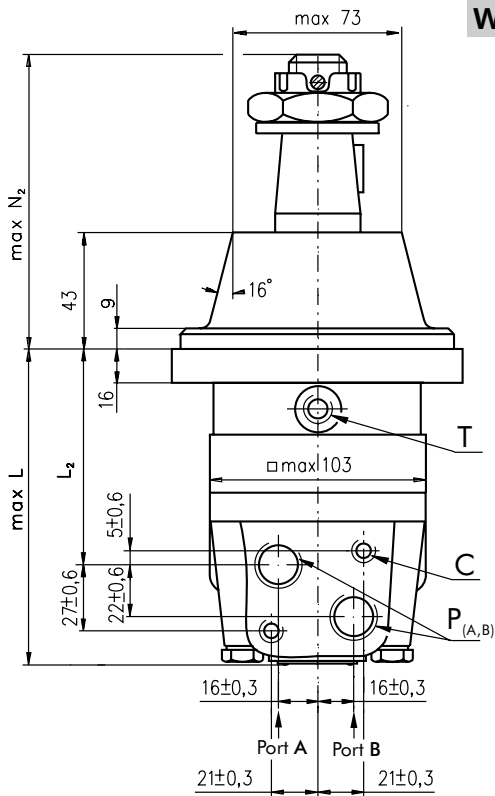
Standard Rotation
 Viewed from Shaft End
 Port A Pressurized - CW
 Port B Pressurized - CCW

*For **N** and **N_i**, see page 17
Reverse Rotation
 Viewed from Shaft End
 Port A Pressurized - CCW
 Port B Pressurized - CW

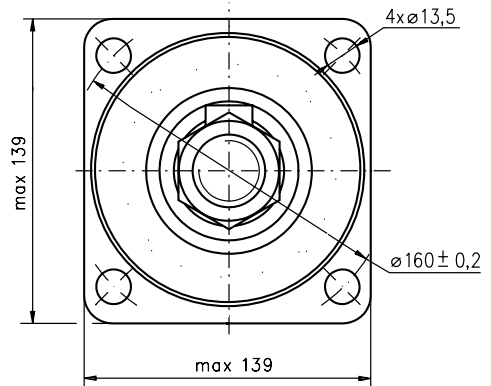
Type	L, mm	L ₂ , mm	Type	L, mm	L ₂ , mm	Type	L, mm	Type	L, mm	L ₁ , mm
MSF 80	168	124	MSQ 80	179	136	MSFE 80	173	MSQE 80	185	14
MSF 100	171	129	MSQ 100	183	140	MSFE 100	177	MSQE 100	189	17,4
MSF 125	176	132	MSQ 125	187	144	MSFE 125	181	MSQE 125	193	21,8
MSF 160	182	138	MSQ 160	193	150	MSFE 160	187	MSQE 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
MSF 475	237	193	MSQ 475	247	205	MSFE 475	242	MSQE 475	254	82,6
MSF 525	229	185	MSQ 525	240	197	MSFE 525	234	MSQE 525	246	74,5
MSF 565	235	191	MSQ 565	246	203	MSFE 565	240	MSQE 565	252	80,2

DIMENSIONS AND MOUNTING DATA -MSW

W Wheel Mount

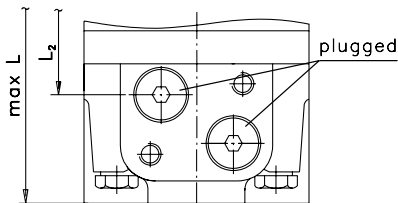
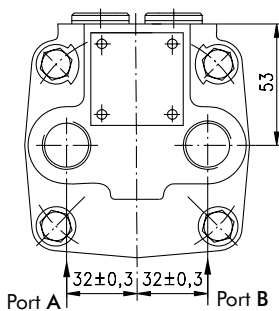


C: 2xM10-12 mm depth
P_(A,B): 2xG1/2 or 2xM22x1,5-15 mm depth
T: G ¼ or M14x1,5 - 12 mm depth(plugged)



*For **N₂**, see page 17

E Rear Port



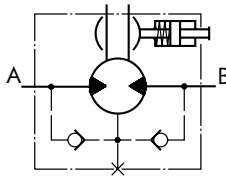
Standard Rotation
 Viewed from Shaft End
 Port A Pressurized - CW
 Port B Pressurized - CCW

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

Type	L ₁ , mm	L ₁ , mm	L ₂ , mm	Type	L ₁ , 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
MSW 475	198	82,6	156	MSWE 475	207
MSW 525	190	74,5	148	MSWE 525	199
MSW 565	196	80,2	154	MSWE 565	205

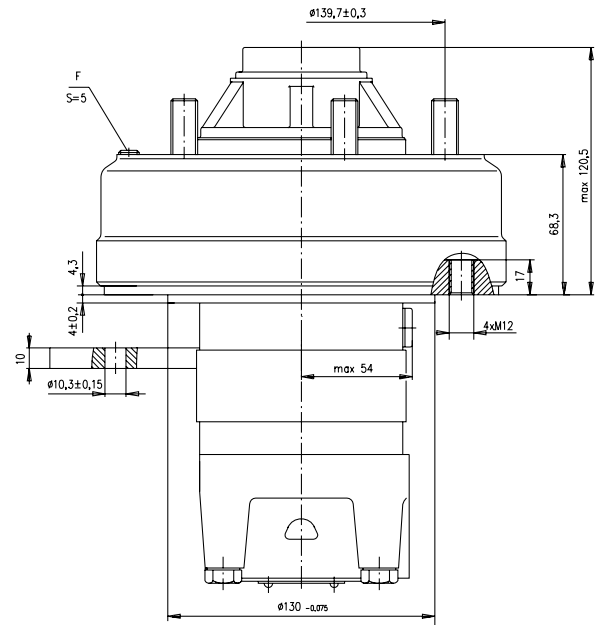
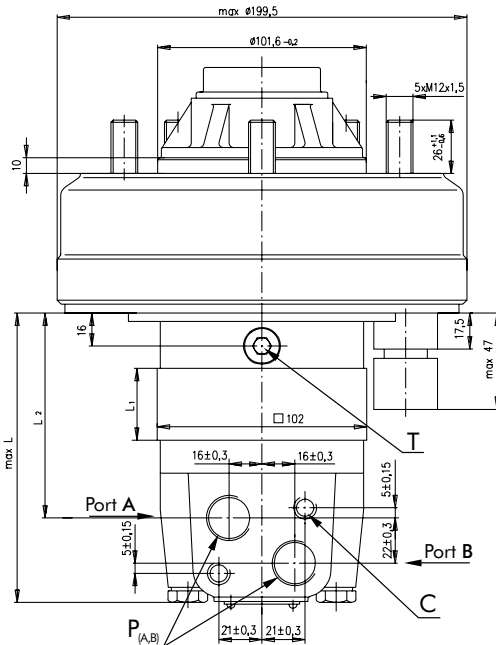
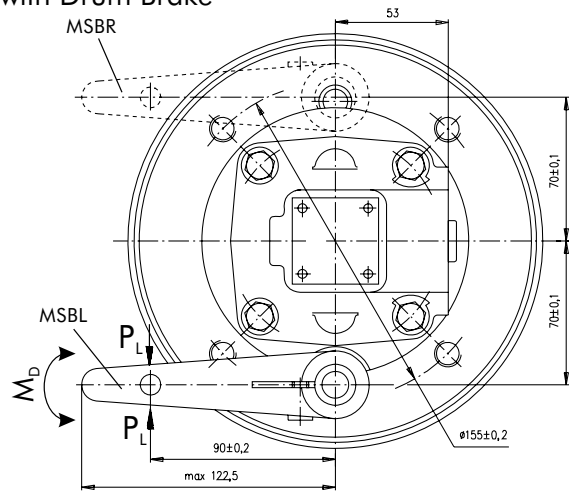
DIMENSIONS AND MOUNTING DATA -MSB

B Motor with Drum Brake



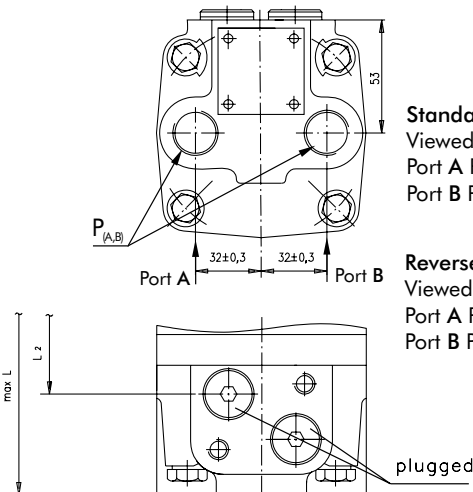
Actuating the brake level, the brake shaft is turned. The rectangular shape of the inner part of this shaft forces the brake pads to be pressed against the brake drum. This brakes the wheel or the winch drum.

Releasing the level, the springs pull it and the brake pads back to the initial position. The motor output shaft is released. Minimum angle adjustment is 10°. It can be adjusted by dismantling the level. Depending on the application You can choose the actuating direction of the brake level. The rod connection actuating the brake should be capable of moving at last 25 mm from neutral to extreme position.



- C:** 2xM10-12 mm depth
- F:** Inspection hole for checking brake lining
- T:** G 1/4 or M14x1,5 - 12 mm depth (plugged)
- P_(A,B):** 2xG1/2 or 2xM22x1,5-15 mm depth

E Rear Port



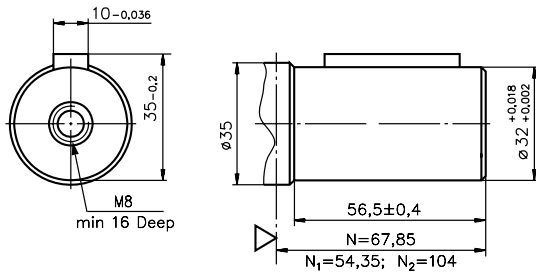
Standard Rotation
Viewed from Shaft End
Port A Pressurized - CW
Port B Pressurized - CCW

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

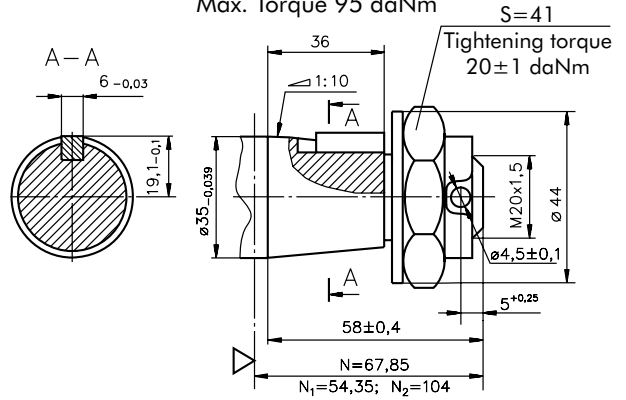
Type	L, mm	L ₁ , mm	L ₂ , mm	Type	L, mm
MSB 80	119	14	74	MSBE 80	127
MSB100	122	17,4	77	MSBE 100	130
MSB 125	126	21,8	82	MSBE 125	134
MSB 160	132	27,8	88	MSBE 160	140
MSB 200	139	34,8	95	MSBE 200	147
MSB 250	148	43,5	110	MSBE 250	156
MSB 315	159	54,8	115	MSBE 315	167
MSB 400	174	69,4	130	MSBE 400	182
MSB 475	188	82,6	143	MSBE 475	196
MSB 525	180	74,5	135	MSBE 525	188
MSB 565	186	80,2	141	MSBE 565	192

SHAFT EXTENSIONS

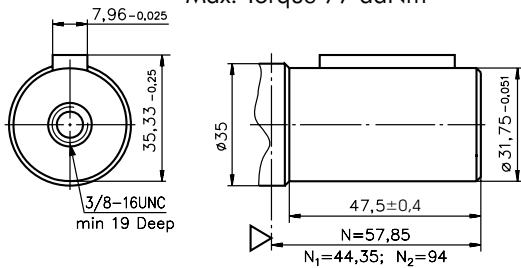
C - $\varnothing 32$ straight, Parallel key A10x8x45 DIN 6885
Max. Torque 77 daNm



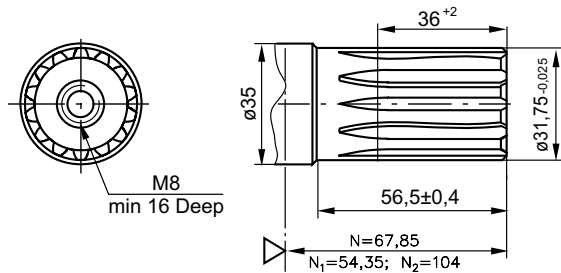
K - tapered 1:10, Parallel key B6x6x20 DIN 6885
Max. Torque 95 daNm



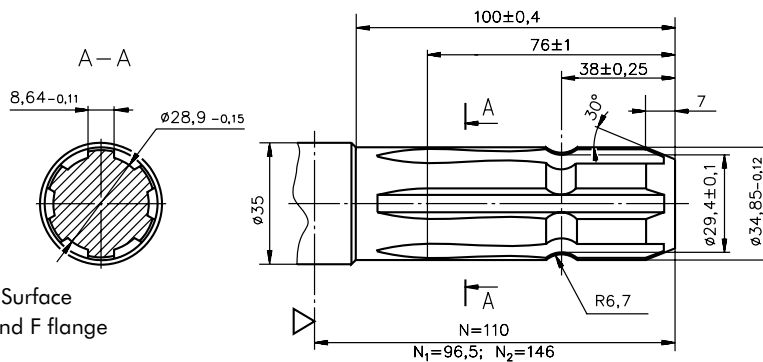
CO - $\varnothing 1\frac{1}{4}$ " straight, Parallel key $\frac{5}{16}$ "x $\frac{5}{16}$ "x $\frac{1}{4}$ "BS46
Max. Torque 77 daNm



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



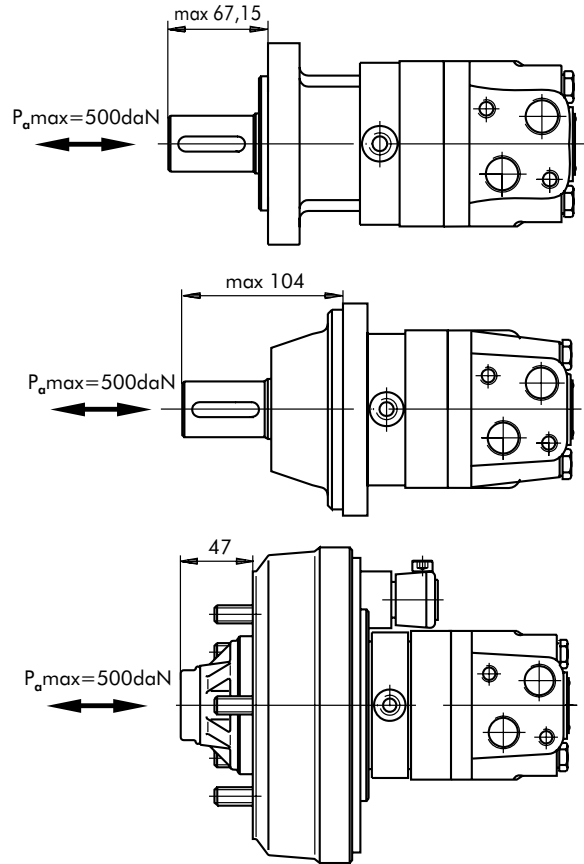
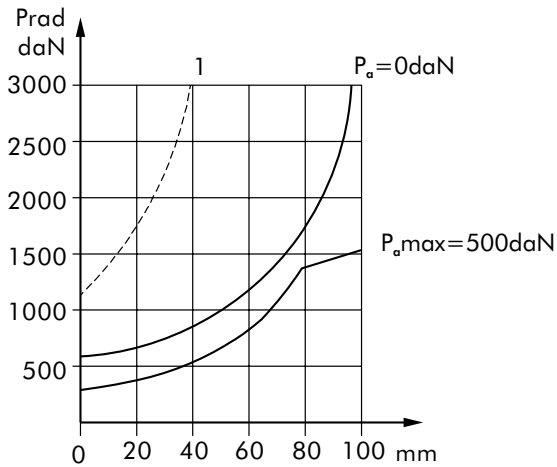
SL - $\varnothing 34,85$ p.t.o. DIN 9611 Form 1
Max. Torque 77 daNm



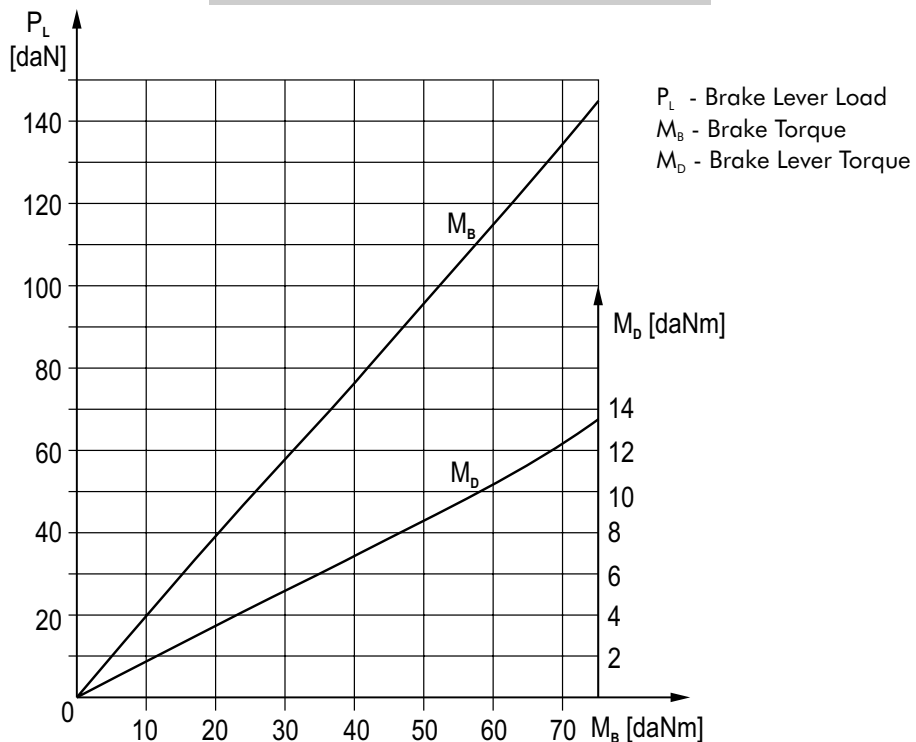
▽ - Motor Mounting Surface
N - for standart, A and F flange
N₁ - for Q flange
N₂ - for W flange

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.

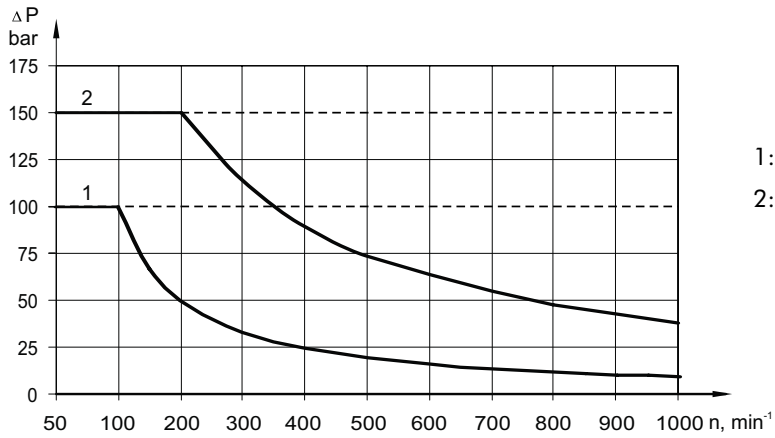


FUNCTION DIAGRAM MSB



MAX. PERMISSIBLE SHAFT SEAL PRESSURE

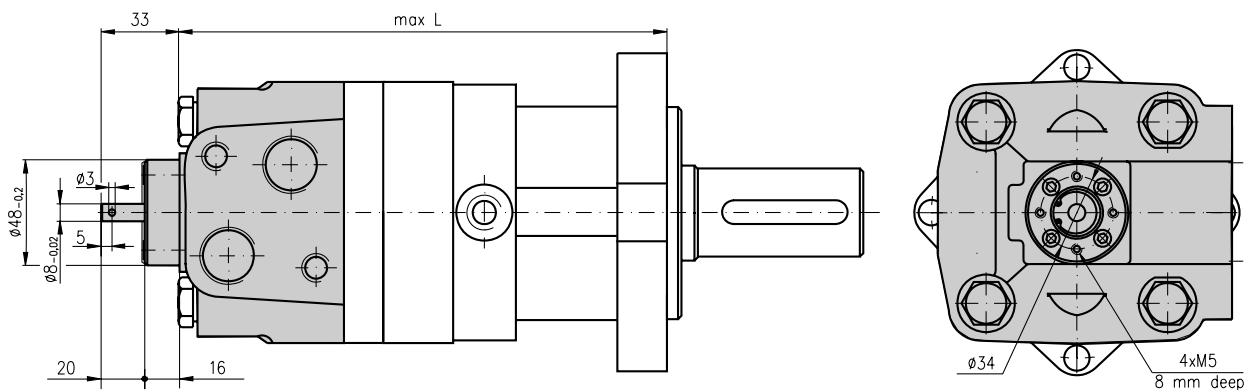
**Max. return pressure without drain line or
max. pressure in the drain line**



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

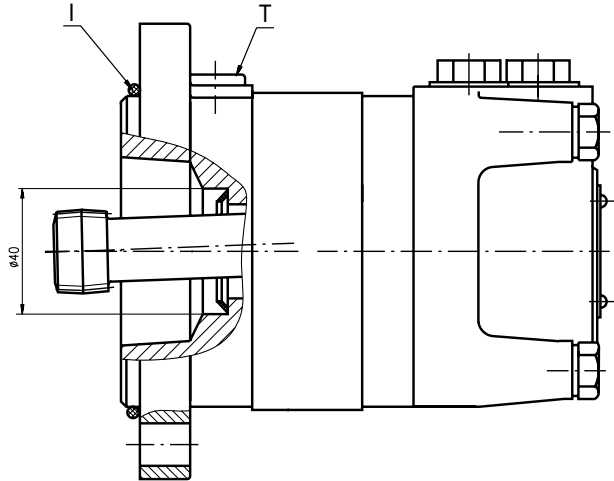
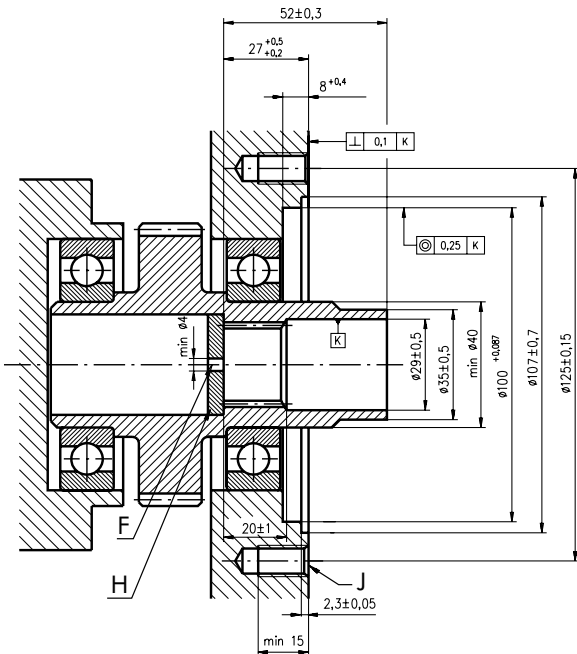
— - continuous operations
- - - - - intermittent operations

MOTORS WITH TACHO CONNECTION



DIMENSIONS OF THE ATTACHED COMPONENT

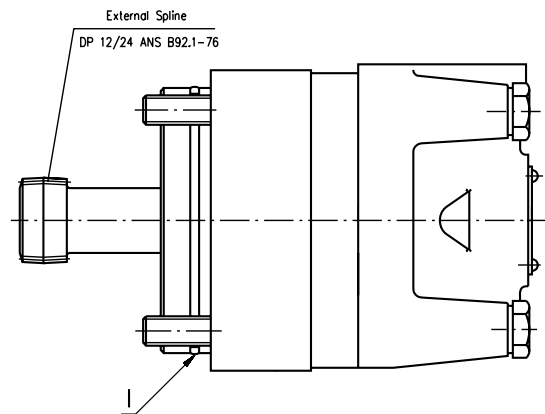
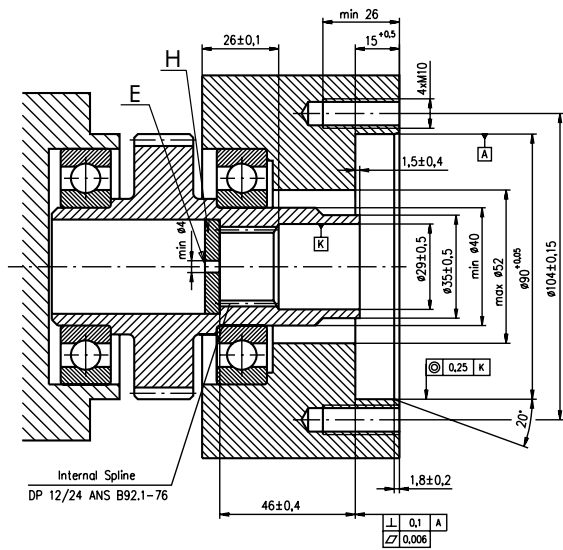
For MSS



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

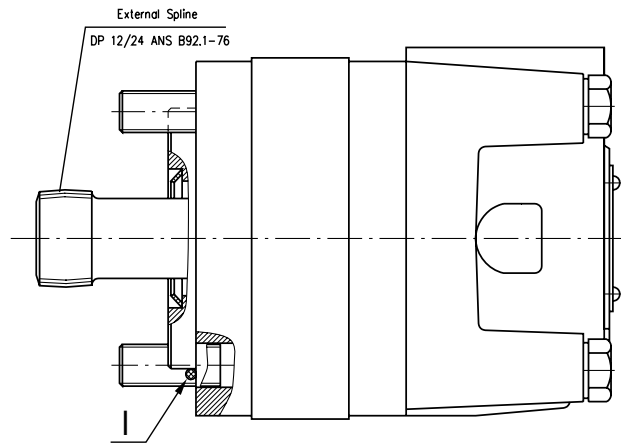
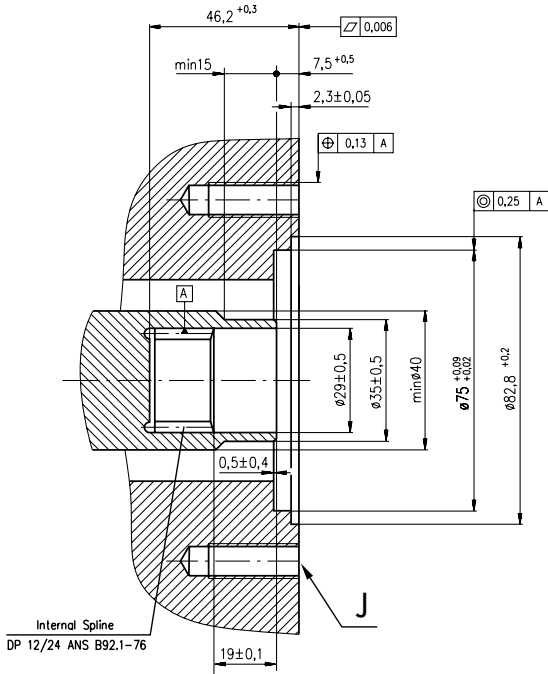
For MSV



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.

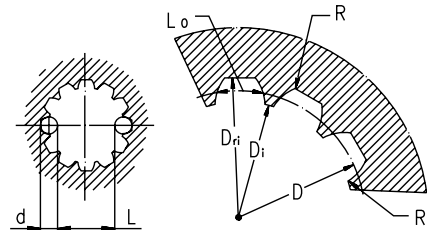
The drain line must be possible for oil to flow freely between motor and attached component and must be led to the tank. The maximum pressure in the drain line is limited by the attached component and its seal.

INTERNAL SPLINE DATA FOR THE ATTACHED COMPONENT

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

Parameter	Symbol	mm
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

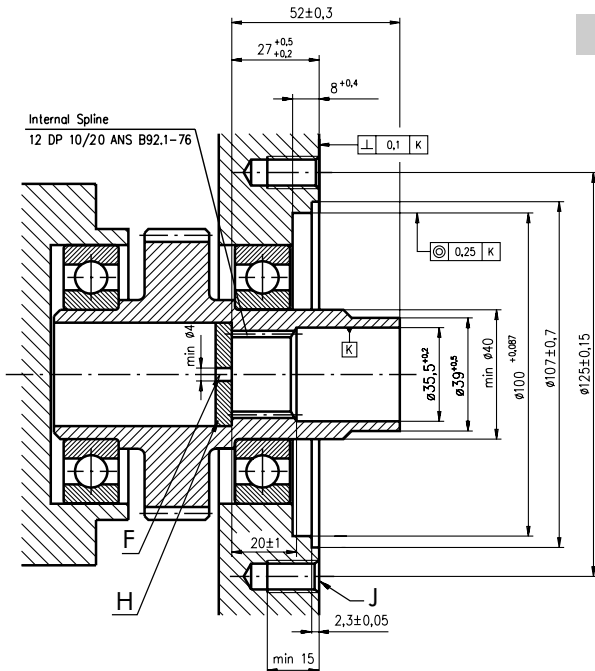


Hardening Specification:
HV=750±50 on the surface
HV=560 at 0,7±0,2 mm case depth
Material 20 MoCr4 EN 10084 or better

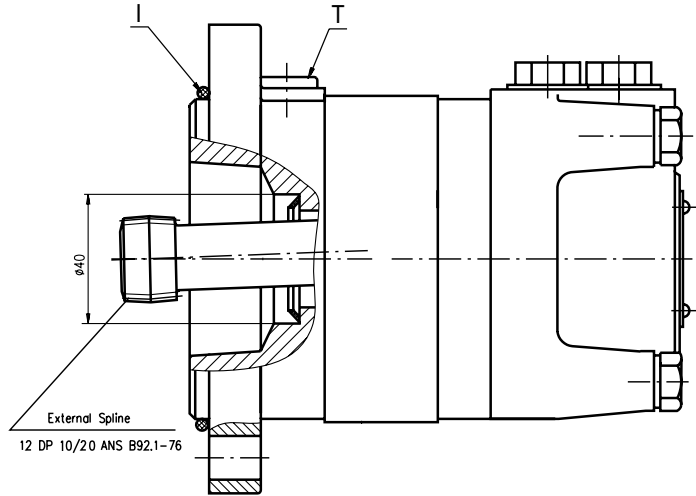
The dimensions, mounting data, shaft extensions and permissible shaft loads are the same as at hydraulic motors type MS except following below.

DIMENSIONS OF THE ATTACHED COMPONENT

For MSYS

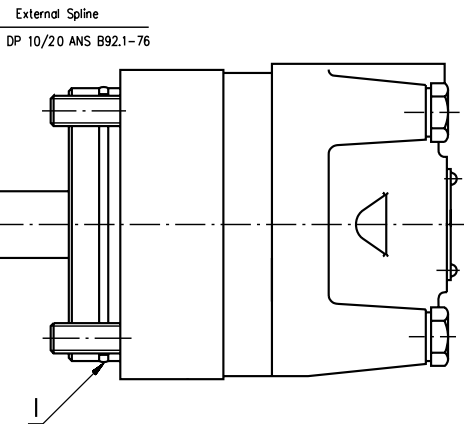
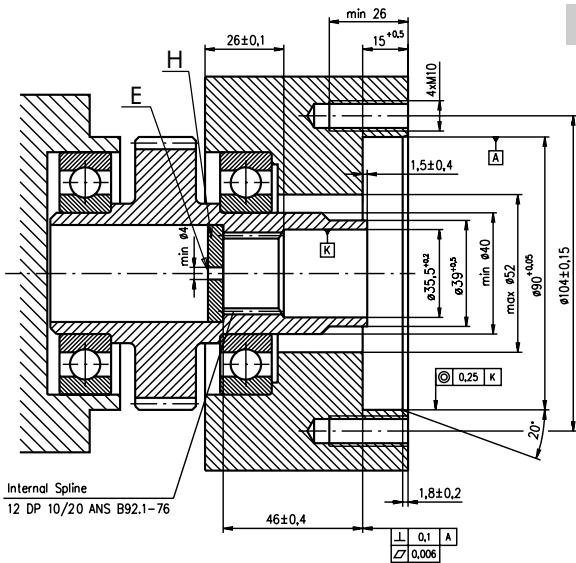


- F: Oil circulation hole
- H: Hardened stop plate



- 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.

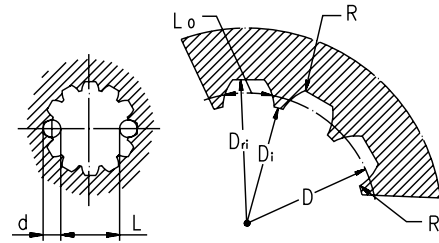
The drain line must be possible for oil to flow freely between motor and attached component and must be led to the tank. The maximum pressure in the drain line is limited by the attached component and its seal.

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 ^{+0,2}
Minor Dia.	D _i	27,8 ^{+0,1}
Space Width [Circular]	L _o	4,45 ^{+0,071} _{+0,026}
Fillet Radius	R _{min}	0,2
Max. Measurement between Pin	L	23,39 ^{+0,17} _{+0,06}
Pin Dia.	d	4,835±0,001

Above are when hardened



Hardening Specification:
HV=750±50 on the surface
HV=560 at 0,7±0,2 mm case depth
Material 20 MoCr4 EN 10084 or better

ORDER CODE

	1	2	3	4	5	6	7	8	9
MSY									

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
- 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*

omit - for **B**, **S** and **V** mounting flange

- 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 19)

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 53)

Pos. 9 - Design Series

omit - Factory specified

NOTES:

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

** Only for MSYB

The hydraulic motors are mangano-phosphatized as standard.