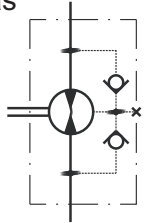


HYDRAULIC MOTORS MSY



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 load and speed drop.



OPTIONS

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

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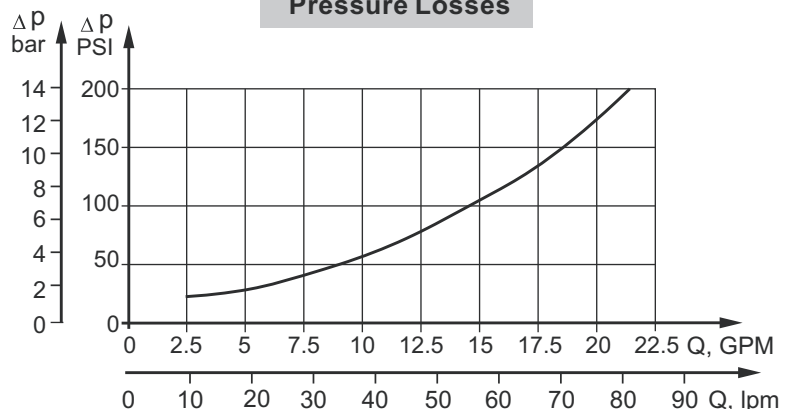
GENERAL

Displacement,	cm ³ /rev [in ³ /rev]	200÷474,6 [12.2÷28.96]
Max. Speed,	[RPM]	155÷375
Max. Torque,	daNm [lb-in]	61÷92 [5399 ÷ 8143]
Max. Output,	kW [HP]	13,5÷21,5 [18.1÷28.8]
Max. Pressure Drop,	bar [PSI]	200÷140 [2230÷2900]
Max. Oil Flow,	lpm [GPM]	75 [20]
Min. Speed,	[RPM]	5÷8
Permissible Shaft Loads	daN [lbs]	P _a =500 [1125]
Pressure fluid		Mineral based- HLP(DIN 51524) or HM(ISO 6743/4)
Temperature range,	°C [°F]	-30÷90 [-22÷194]
Optimal Viscosity range,	mm ² /s [SUS]	20÷75 [98÷347]
Filtration		ISO code 20/16 (Min. recommended fluid filtration of 25 micron)

Oil flow in drain line

Pressure drop bar [PSI]	Viscosity mm ² /s [SUS]	Oil flow in drain line lpm [GPM]
140 [2030]	20 [98]	1,5 [.396]
	35 [164]	1 [.264]
210 [3045]	20 [98]	3 [.793]
	35 [164]	2 [.528]

Pressure Losses



SPECIFICATION DATA

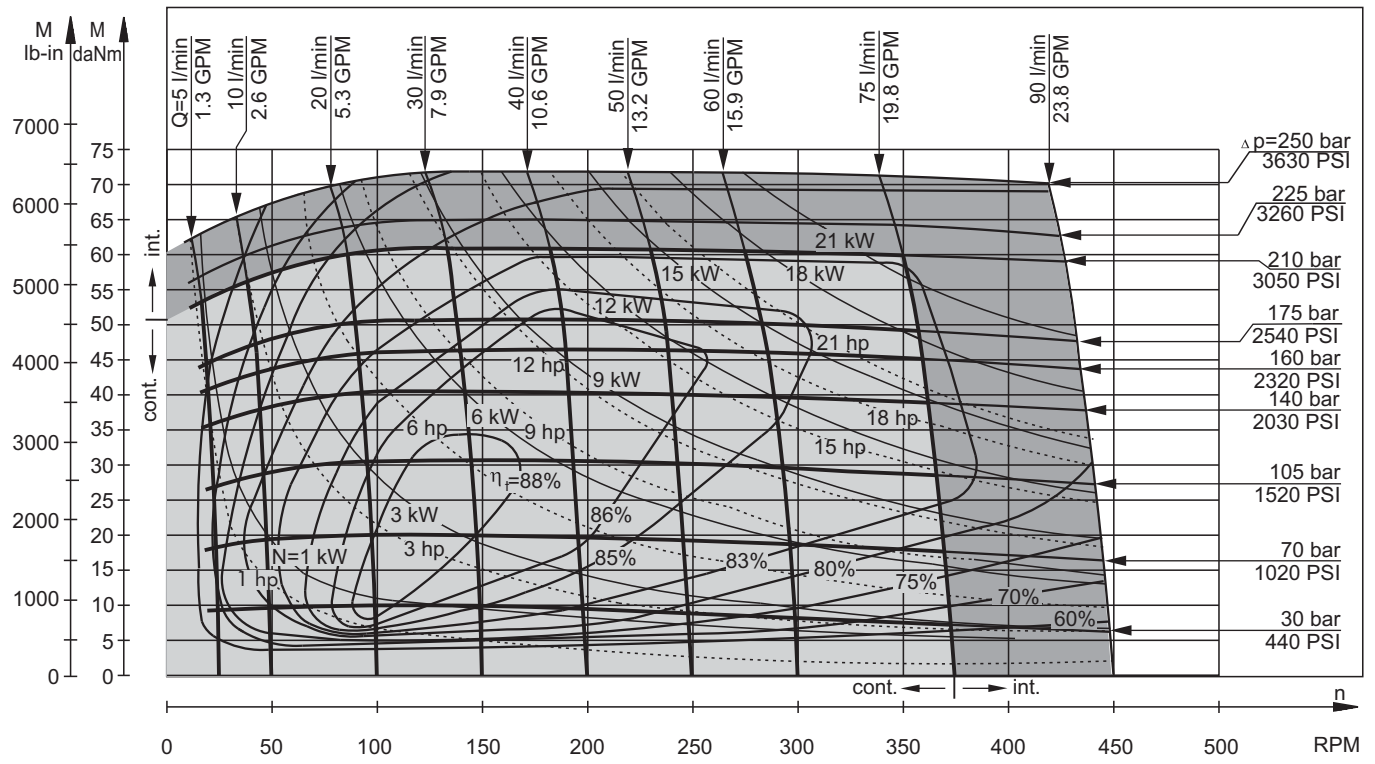
Type		MSY 200	MSY 250	MSY 315	MSY 400	MSY 475
Displacement, cm ³ /rev [in ³ /rev]		200 [12.2]	250 [15.3]	314,9 [19.2]	397 [24.2]	474,6 [28.96]
Max. Speed, [RPM]	cont.	375	300	240	185	155
	int.*	450	360	285	225	185
Max. Torque daNm [lb-in]	cont.	61,0 [5399]	72,0 [6372]	90,0 [7965]	92,0 [8143]	85,0 [7523]
	int.*	72,0 [6372]	87,0 [7700]	100 [8851]	100 [8851]	100 [8851]
Max. Output kW [HP]	cont.	21,5 [28.8]	20,5 [27.5]	20,5 [27.5]	15,5 [20.8]	13,5 [18.1]
	int.*	29,5 [39.5]	29 [38.9]	26 [34.9]	20,5 [27.5]	17,5 [23.5]
Max. Pressure Drop bar [PSI]	cont.	210 [3046]	200 [2900]	200 [2900]	160 [2320]	130 [1885]
	int.*	250 [3626]	250 [3626]	225 [3270]	175 [2540]	150 [2175]
	peak**	300 [4351]	300 [4351]	275 [3988]	225 [3270]	225 [3270]
Max. Oil Flow lpm [GPM]	cont.	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]
	int.*	90 [24]	90 [24]	90 [24]	90 [24]	90 [24]
Max. Inlet Pressure bar [PSI]	cont.	210 [3045]	210 [3045]	210 [3045]	210 [3045]	210 [3045]
	int.*	250 [3625]	250 [3625]	250 [3625]	250 [3625]	250 [3625]
	peak**	300 [4350]	300 [4350]	300 [4350]	300 [4350]	300 [4350]
Max. Return Pressure with Drain Line bar [PSI]	cont.	140 [2030]	140 [2030]	140 [2030]	140 [2030]	140 [2030]
	int.*	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]
	peak**	210 [3045]	210 [3045]	210 [3045]	210 [3045]	210 [3045]
Max. Starting Pressure with Unloaded Shaft, bar [PSI]		8 [115]	8 [115]	8 [115]	8 [115]	8 [115]
Min. Starting Torque daNm [lb-in]	at max. press. drop cont.	47,0 [4160]	56,0 [4956]	73,0 [6461]	72,0 [6370]	66,0 [5842]
	at max. press. drop Int.*	56,0 [4956]	70,0 [6195]	85,0 [7523]	84,0 [7435]	77,0 [6815]
Min. Speed***, [RPM]		6	6	5	5	5
Weight, kg [lb]	MSY (F)	11,2 [24.7]	11,7 [25.8]	12,4 [27.3]	13,3 [29.3]	14,4 [31.8]
For Rear Ports + 0,40 [.88]	MSYW	11,7 [25.8]	12,2 [26.9]	12,9 [28.4]	13,8 [30.8]	15,0 [33.0]
	MSYQ	11,6 [25.6]	12,1 [26.7]	12,8 [28.2]	13,7 [30.2]	14,9 [32.8]

- * Intermittent operation: the permissible values may occur for max. 10% of every minute.
- ** Peak load: the permissible values may occur for max. 1% of every minute.
- *** For speeds lower than given, consult factory or your regional manager.

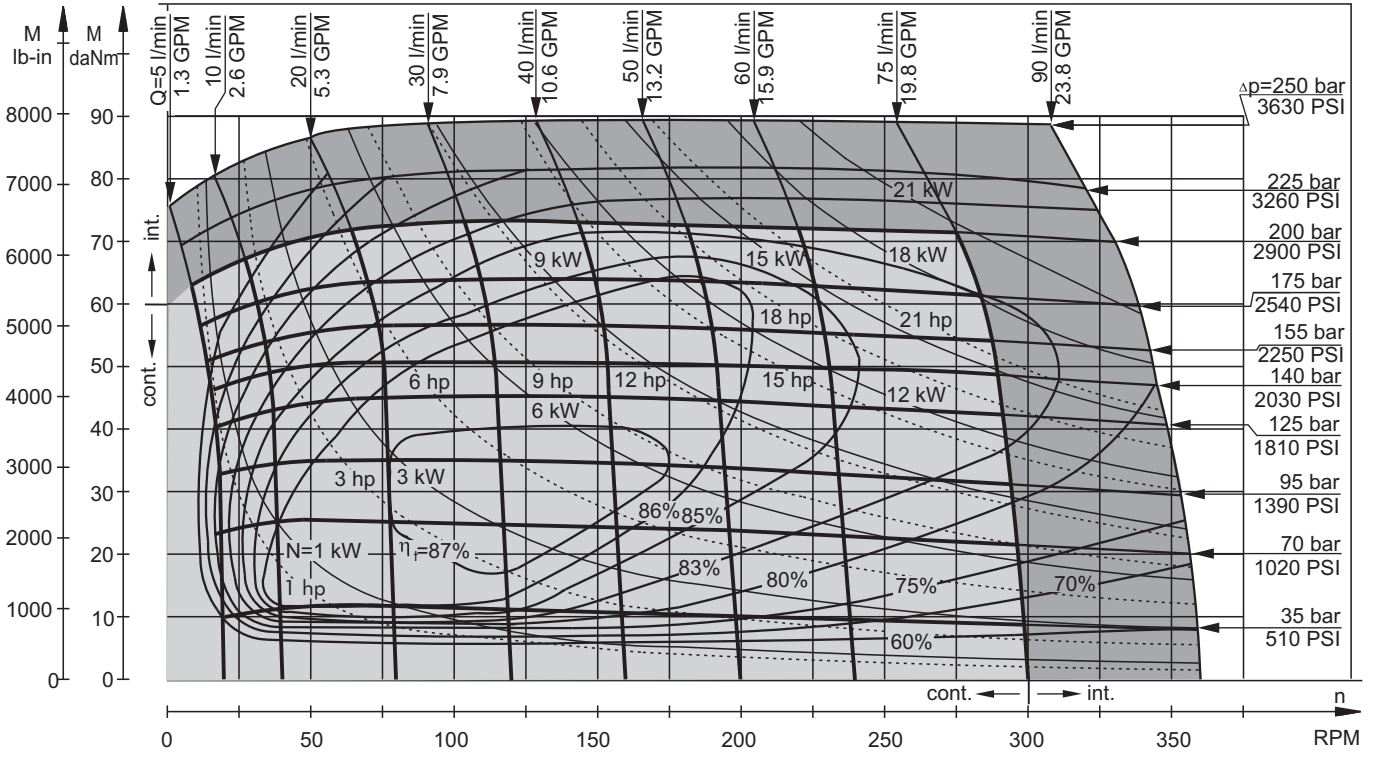
1. Intermittent speed and intermittent pressure must not occur simultaneously.
2. Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
3. Recommend using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) orHM (ISO 6743/4).
If using synthetic fluids consult the factory for alternative seal materials.
4. Recommended minimum oil viscosity 13 mm²/s [70 SUS] at 50°C [122°F].
5. Recommended maximum system operating temperature is 82°C [180°F].
6. To assure optimum motor life fill with fluid prior to loading and run at moderate load and speed for 10-15 minutes.

FUNCTION DIAGRAMS

MSY 200



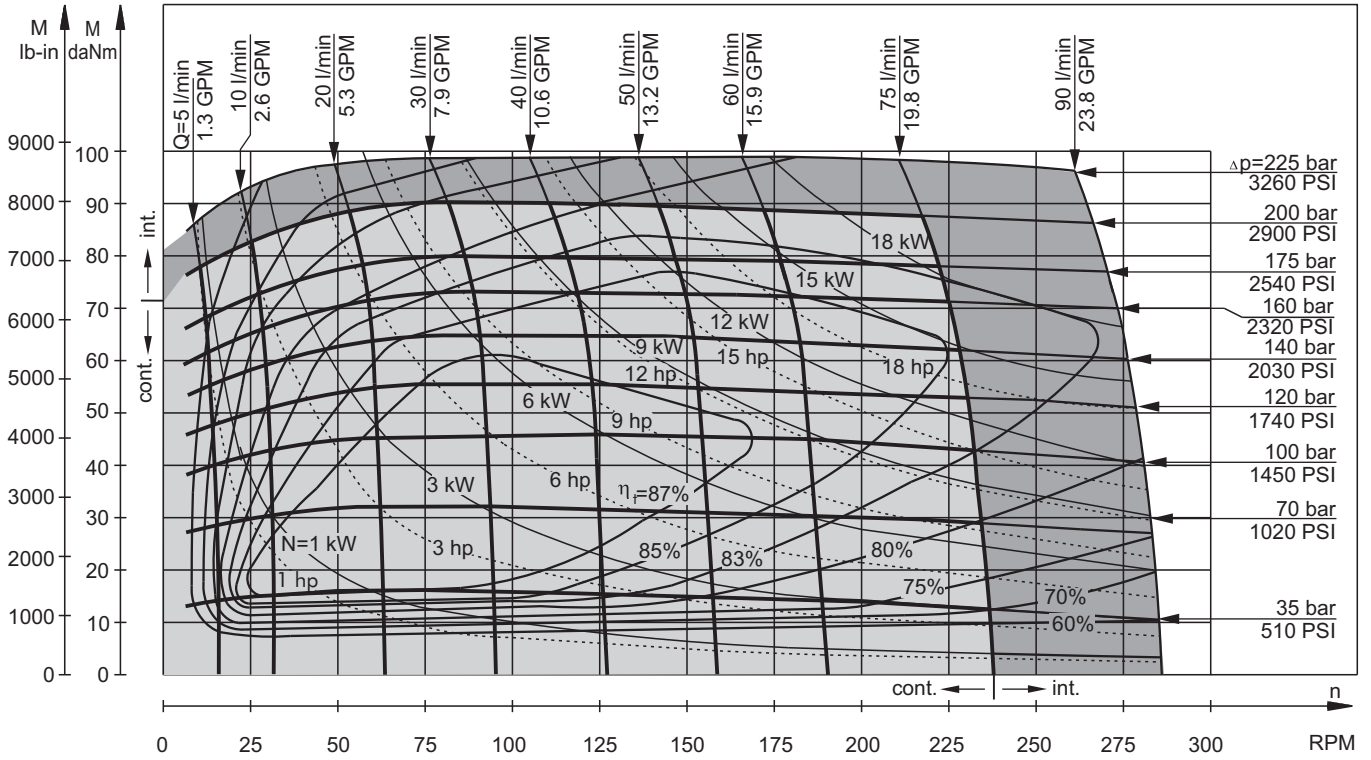
MSY 250



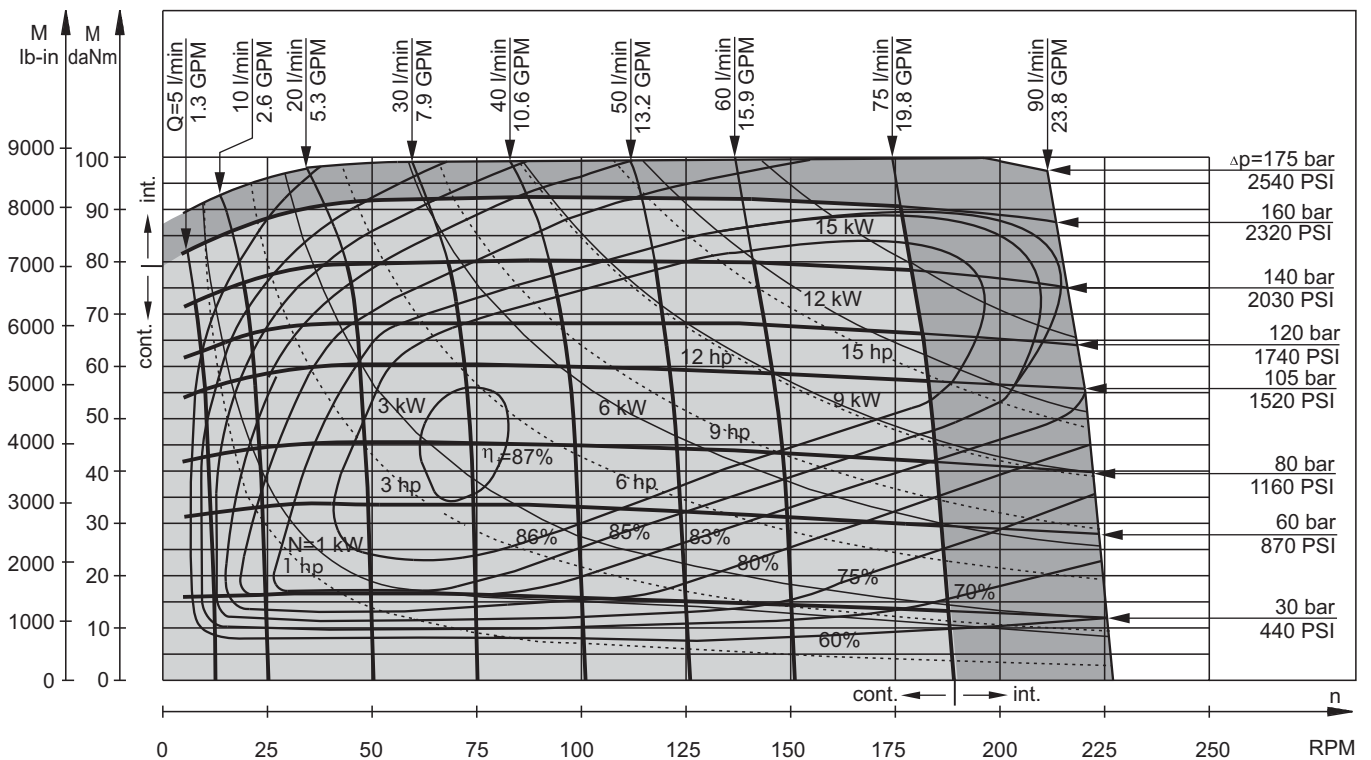
The function diagrams data is for average performance of randomly selected motors at back pressure 5÷10 bar [72.5÷145 PSI] and oil with viscosity of 32 mm²/s [150 SUS] at 50°C [122°F].

FUNCTION DIAGRAMS

MSY 315



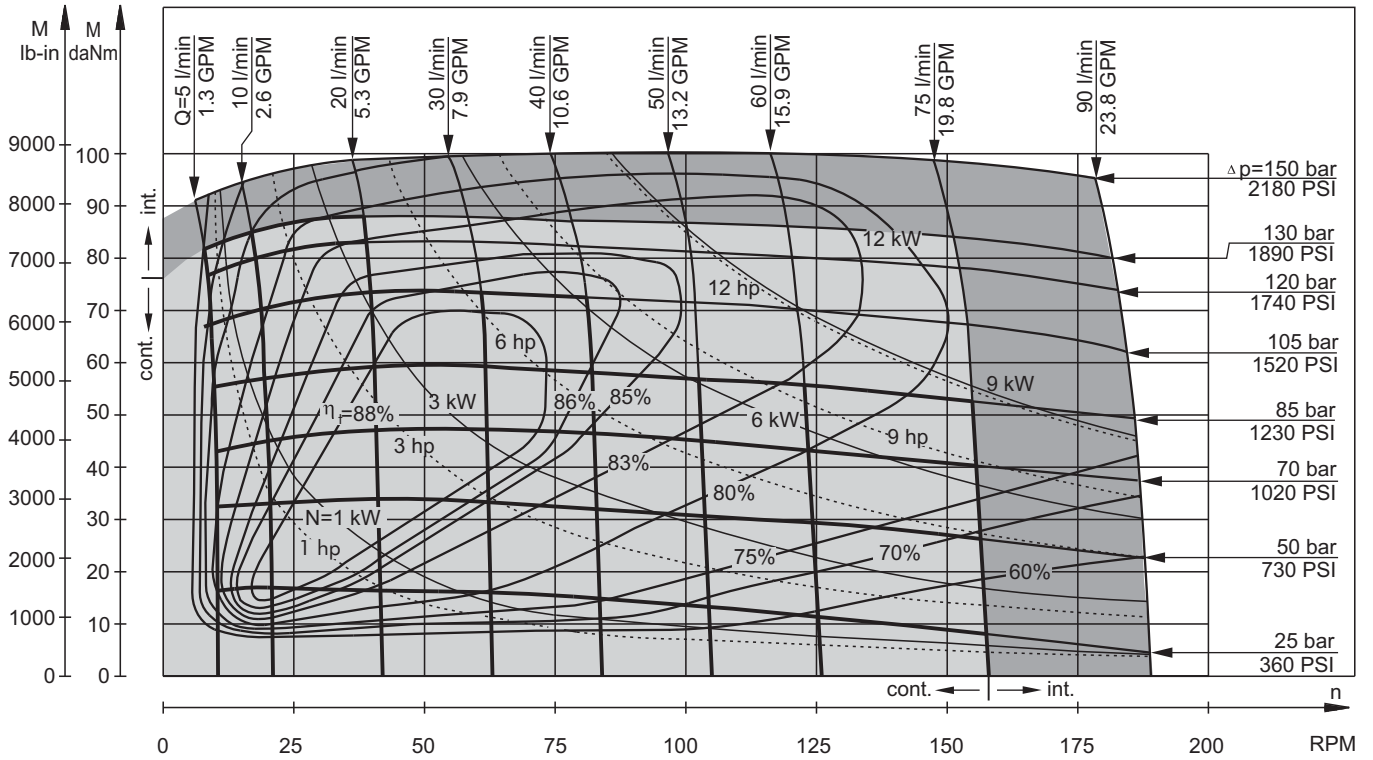
MSY 400



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

FUNCTION DIAGRAMS

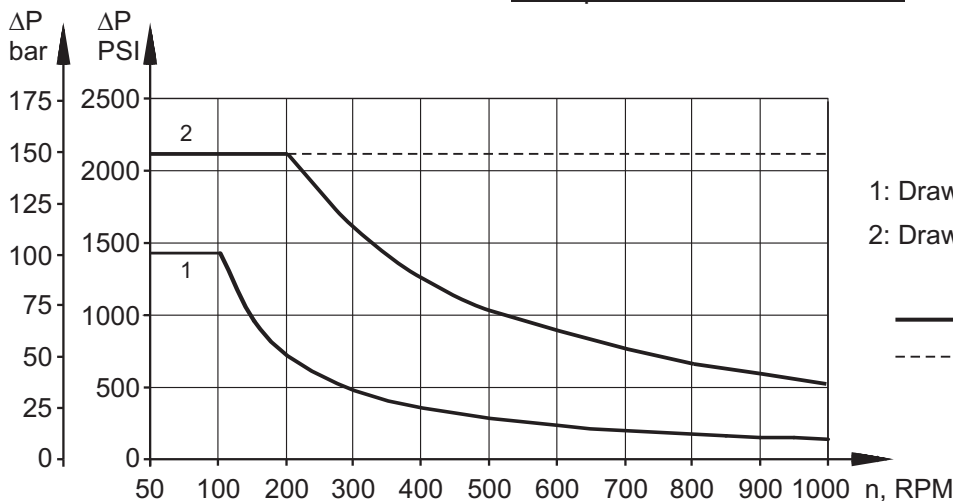
MSY 475



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

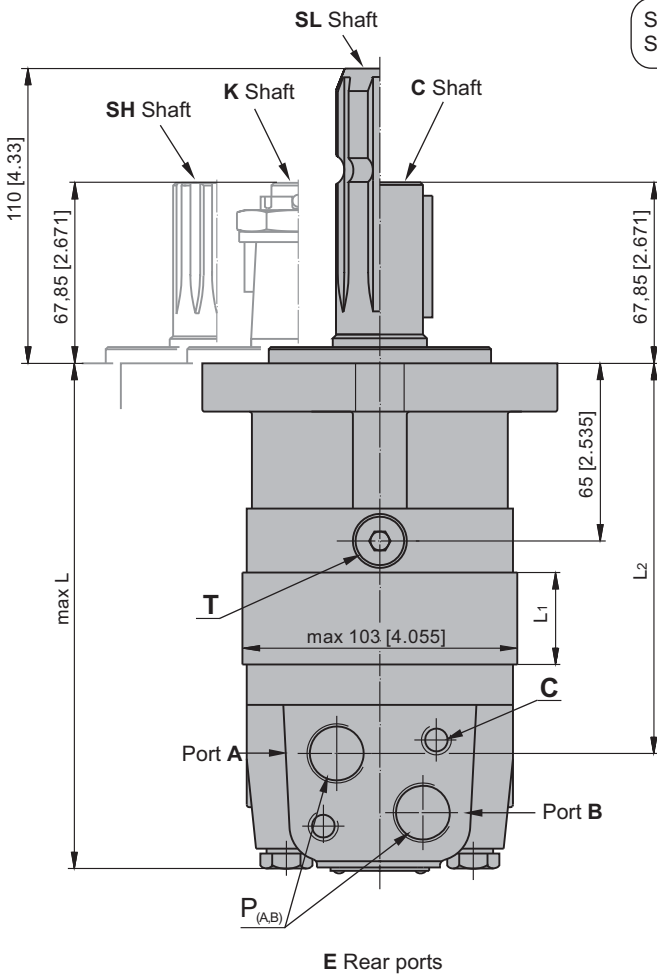
MAX. PERMISSIBLE SHAFT SEAL PRESSURE

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

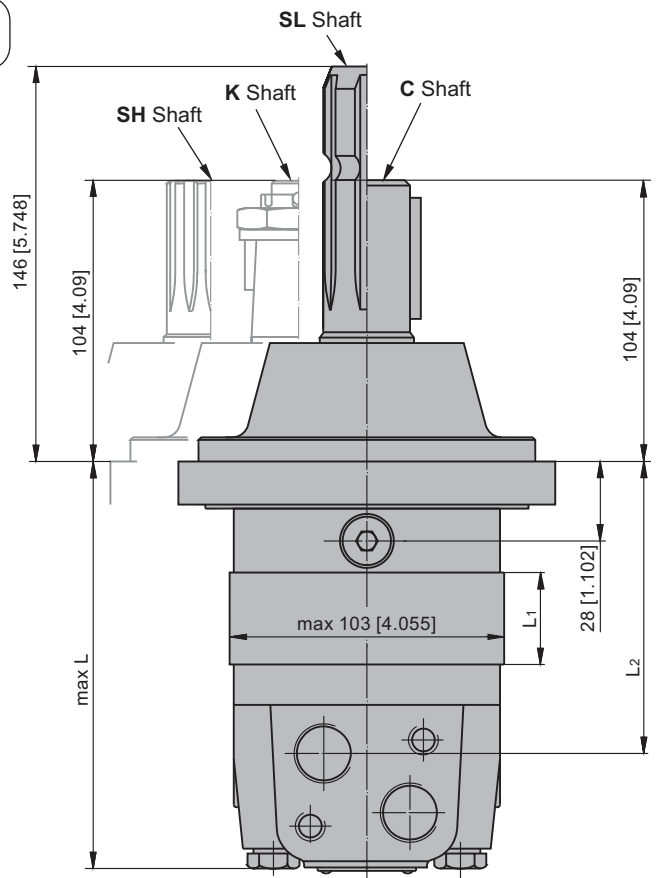


- 1: Drawing for Standard Shaft Seal
- 2: Drawing for High Pressure Seal ("U" Seal)
- - continuous operations
- - - - intermittent operations

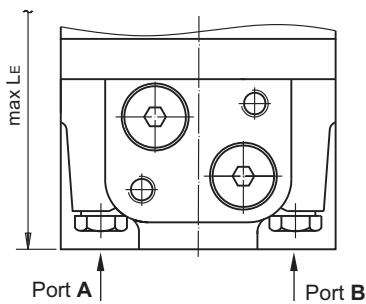
DIMENSIONS AND MOUNTING DATA
MSY, MSYF, MSYA, MSYW



Shaft Dim.
See Page 9



Flange Dim.
See Page 8



Port Dim.
See Page 9



- C** : 2xM10 - 12 mm [.47 in] depth
- P_(A,B)** : 2xG1/2 or 2xM22x1,5 - 15 mm [.59 in] depth
- T** : G ¼ or M14x1,5 - 12 mm [.47 in] depth (plugged)

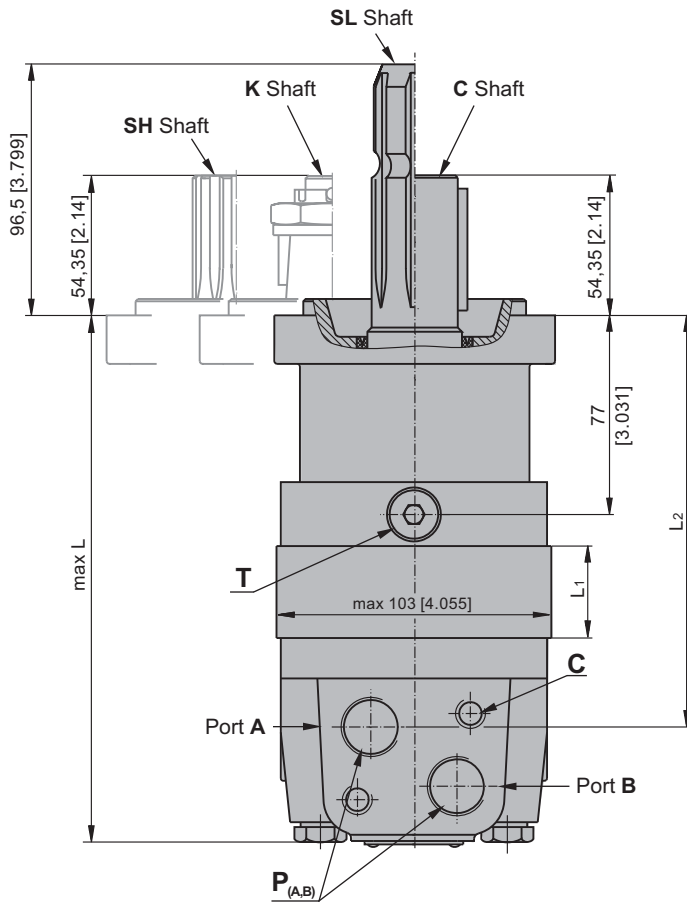
Standard Rotation
Viewed from Shaft End
Port A Pressurized - **CW**
Port B Pressurized - **CCW**

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

Type	L, mm [in]	L ₂ , mm [in]	*L _E , mm [in]	Type	L, mm [in]	L ₂ , mm [in]	*L _E , mm [in]	L ₁ , mm [in]
MSY (F, A) 200	189 [7.44]	145 [5.71]	194 [7.64]	MSYW 200	150 [5.91]	108 [4.25]	159 [6.26]	34,8 [1.37]
MSY (F, A) 250	197 [7.76]	154 [6.06]	203 [7.99]	MSYW 250	159 [6.26]	117 [4.61]	168 [6.62]	43,5 [1.71]
MSY (F, A) 315	209 [8.23]	165 [6.50]	214 [8.43]	MSYW 315	170 [6.69]	128 [5.04]	179 [7.05]	54,8 [2.16]
MSY (F, A) 400	223 [8.78]	179 [7.05]	228 [8.98]	MSYW 400	184 [7.24]	143 [5.63]	194 [7.64]	69,4 [2.73]
MSY (F, A) 475	237 [9.33]	193 [7.60]	242 [9.53]	MSYW 475	198 [7.79]	156 [6.14]	207 [8.15]	82,6 [3.25]

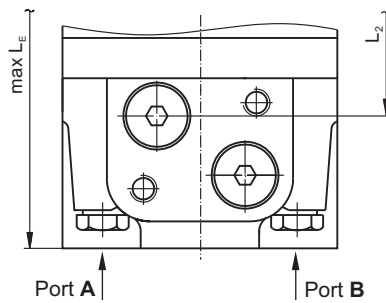
* - For Rear Ported Motors.

DIMENSIONS AND MOUNTING DATA - MSYQ



Shaft Dim.
See Page 9

E Rear ports



Port Dim.
See Page 9



- C** : 2xM10-12 mm [.47 in] depth
- P_(A,B)** : 2xG1/2 or 2xM22x1,5-15 mm [.59 in] depth
- T** : G ¼ or M14x1,5- 12 mm [.47 in] depth (plugged)

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

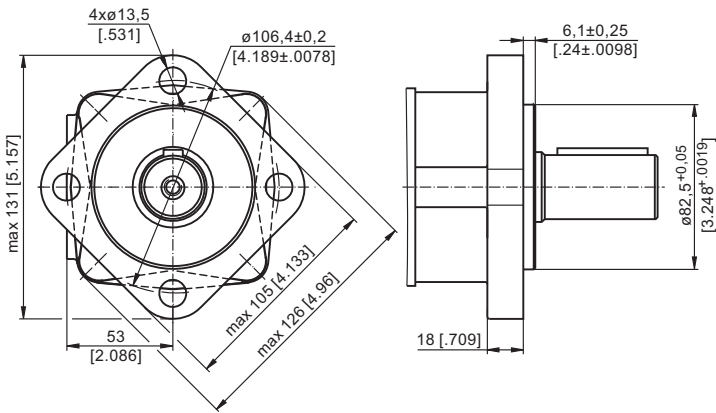
Reverse Rotation
Viewed from Shaft End
Port A Pressurized - **CCW**
Port B Pressurized - **CW**

Type	L, mm [in]	L ₂ , mm [in]	*L _E , mm [in]	L ₁ , mm [in]
MSYQ 200	200 [7.87]	157 [6.18]	206 [8.11]	34,8 [1.37]
MSYQ 250	209 [8.23]	166 [6.54]	215 [8.46]	43,5 [1.71]
MSYQ 315	220 [8.66]	177 [6.67]	226 [8.90]	54,8 [2.16]
MSYQ 400	235 [9.25]	192 [7.56]	241 [9.49]	69,4 [2.73]
MSYQ 475	247 [9.72]	205 [8.07]	254 [10.0]	82,6 [3.25]

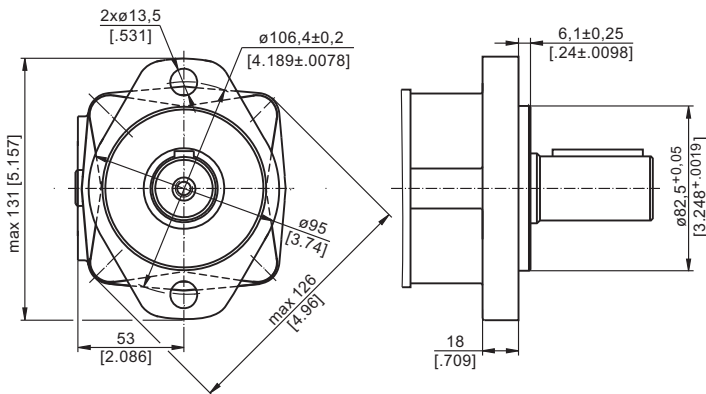
* - For Rear Ported Motors.

MOUNTING

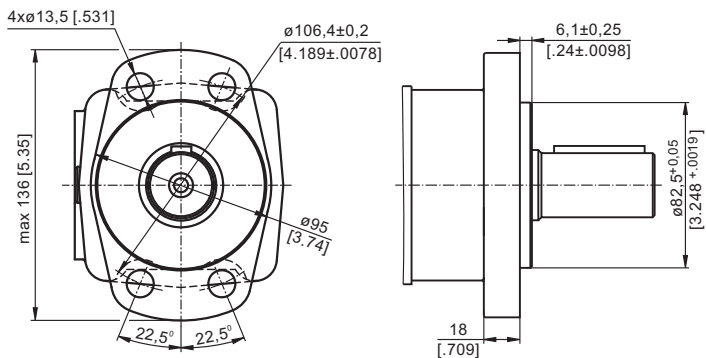
SAE A-4 Mount (4 Holes)



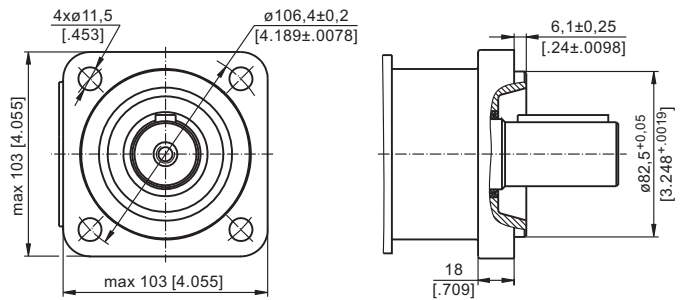
A SAE A-2 Mount (2 Holes)



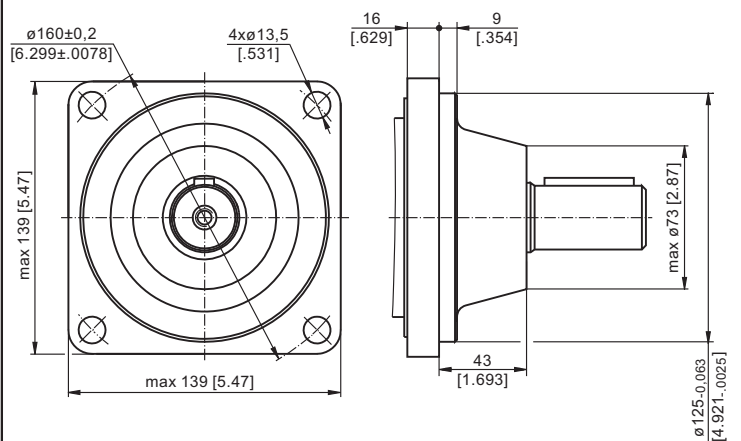
F Magneto Mount (4 Holes)



Q Square Mount (4 Holes)

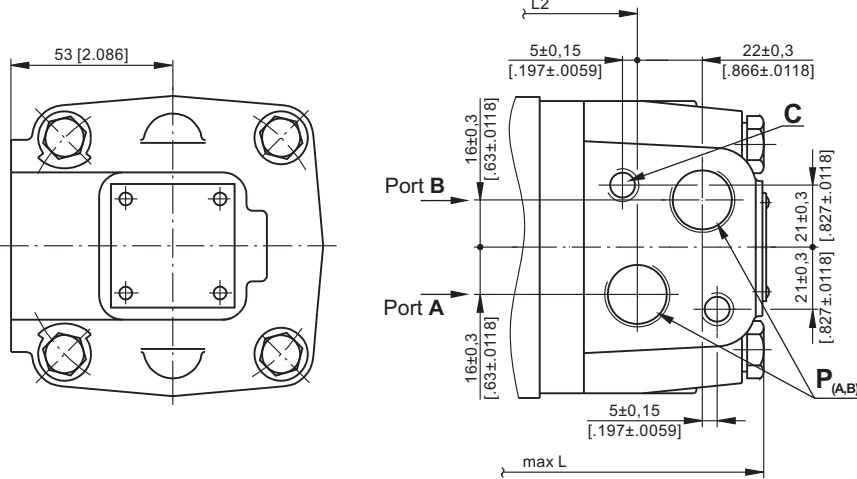


W Wheel Mount

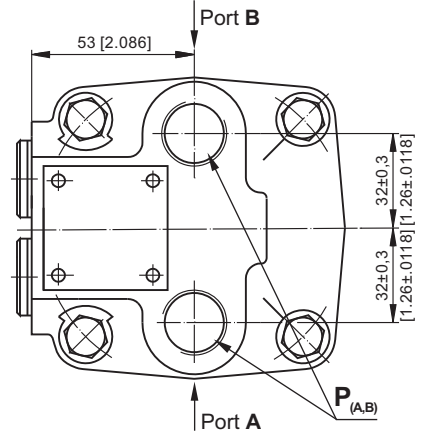


PORTS

Side Ports



E Rear Ports



Standard Rotation

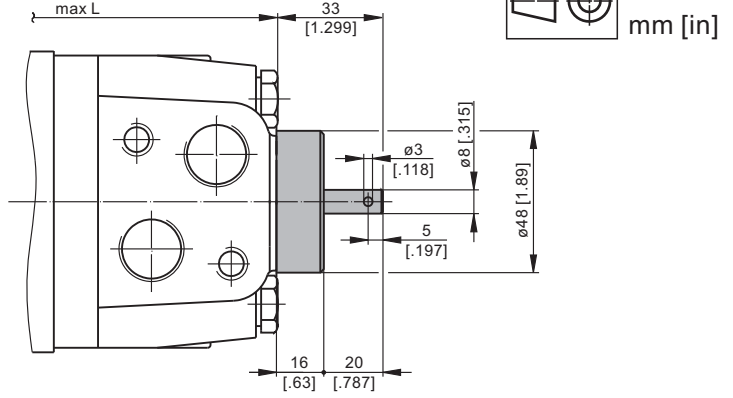
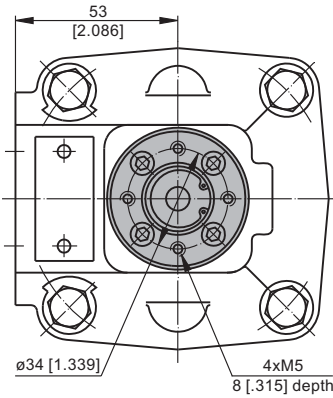
Viewed from Shaft End
Port A Pressurized - CW
Port B Pressurized - CCW

Reverse Rotation

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

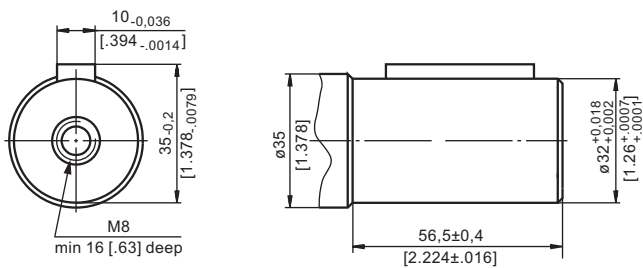
C : 2xM10-12 mm [.47 in] depth
P_(A,B) : 2xG1/2 or 2xM22x1,5-15 mm [.59 in] depth
T : G 1/4 or M14x1,5- 12 mm [.47 in] depth (plugged)

MOTORS WITH TACHO CONNECTION

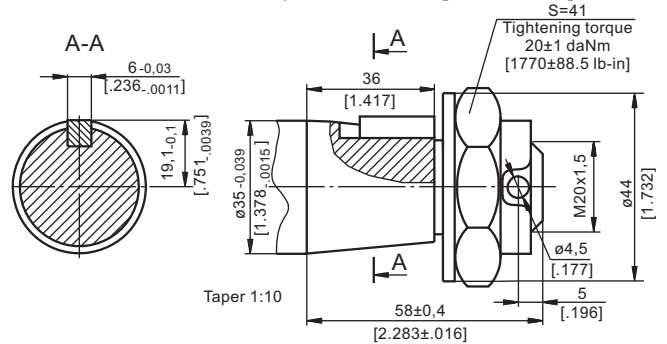


SHAFT EXTENSIONS

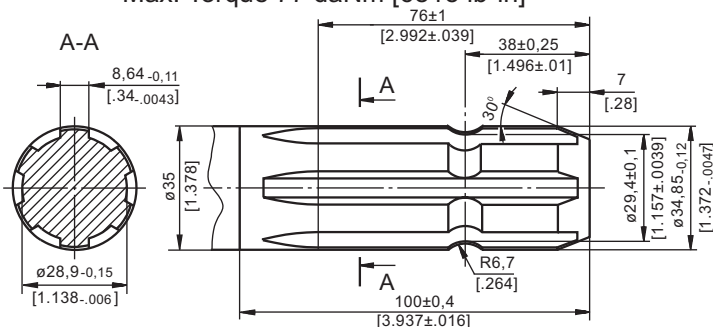
C - ø32 straight, Parallel key A10x8x45 DIN 6885
Max. Torque 77 daNm [6815 lb-in]



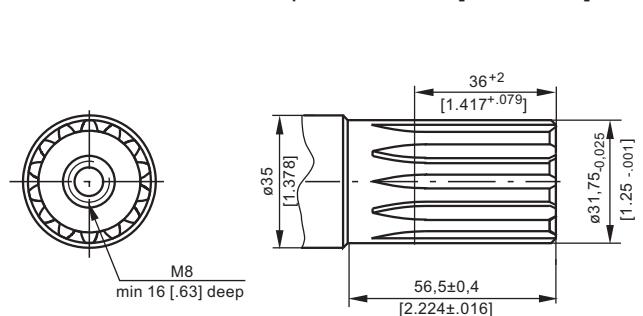
K - tapered 1:10, Parallel key B6x6x20 DIN 6885
Max. Torque 95 daNm [8400 lb-in]



SL - ø34,85 p.t.o. DIN 9611 Form 1
Max. Torque 77 daNm [6815 lb-in]

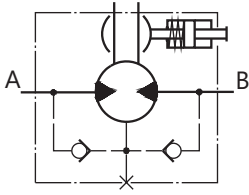


SH - ø1 1/4" splined 14T, DP12/24 ANS B92.1-1970
Max. Torque 95 daNm [8400 lb-in]



DIMENSIONS AND MOUNTING DATA

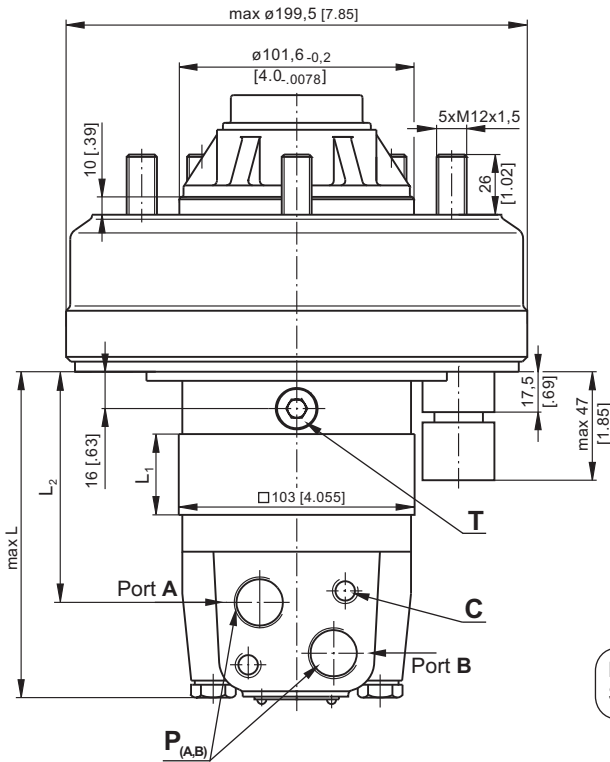
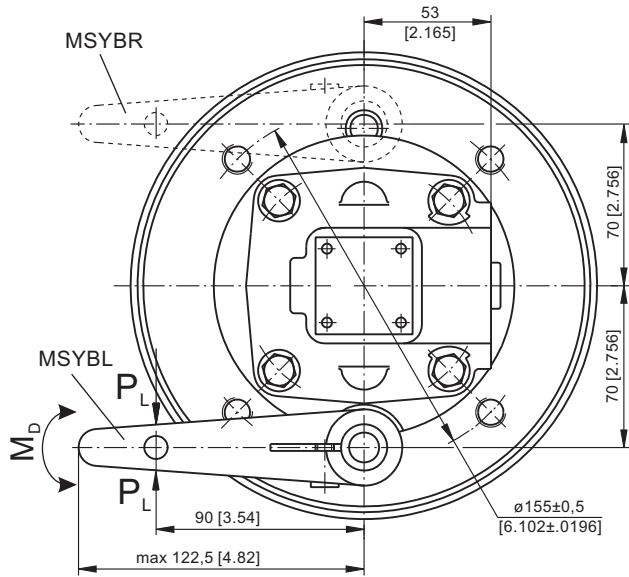
MSYB Motor with Drum Brake



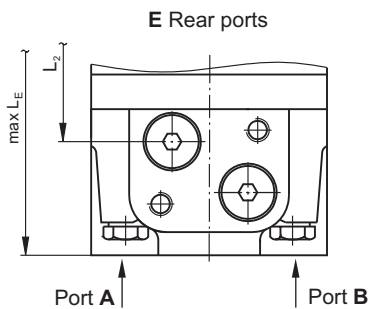
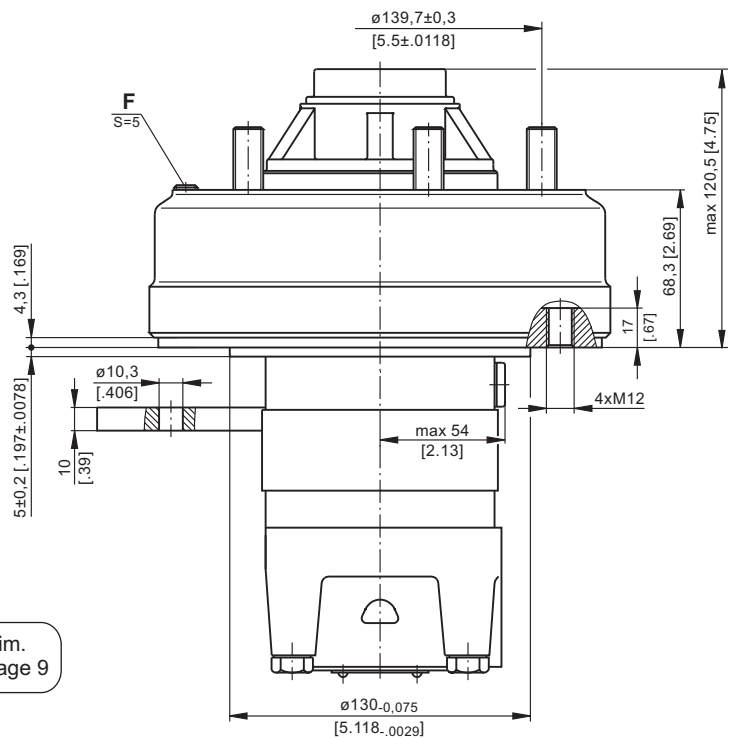
Actuating the brake level, the brake shaft is turned. The rectangular shape of the inner part of this shaft forces the brake pads to be pressed against the brake drum. This brakes the wheel or the winch drum.

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.



Port Dim.
See Page 9



- C** : 2xM10-12 mm [.47 in] depth
- F** : Inspection hole for checking brake lining
- P_(A,B)** : 2xG1/2 or 2xM22x1,5-15 mm [.59 in] depth
- T** : G ¼ or M14x1,5- 12 mm [.47 in] depth (plugged)

Type	L, mm [in]	L ₁ , mm [in]	L ₂ , mm [in]	*L _E , mm [in]
MSB 200	139 [5.47]	34,8 [1.37]	95 [3.74]	147 [5.79]
MSB 250	148 [5.83]	43,5 [1.71]	110 [4.33]	156 [6.14]
MSB 315	159 [6.26]	54,8 [2.16]	115 [4.53]	167 [6.57]
MSB 400	174 [6.85]	69,4 [2.73]	130 [5.12]	182 [7.17]
MSB 475	188 [7.40]	82,6 [3.25]	143 [5.63]	196 [7.72]

* - For Rear Ported Motors.

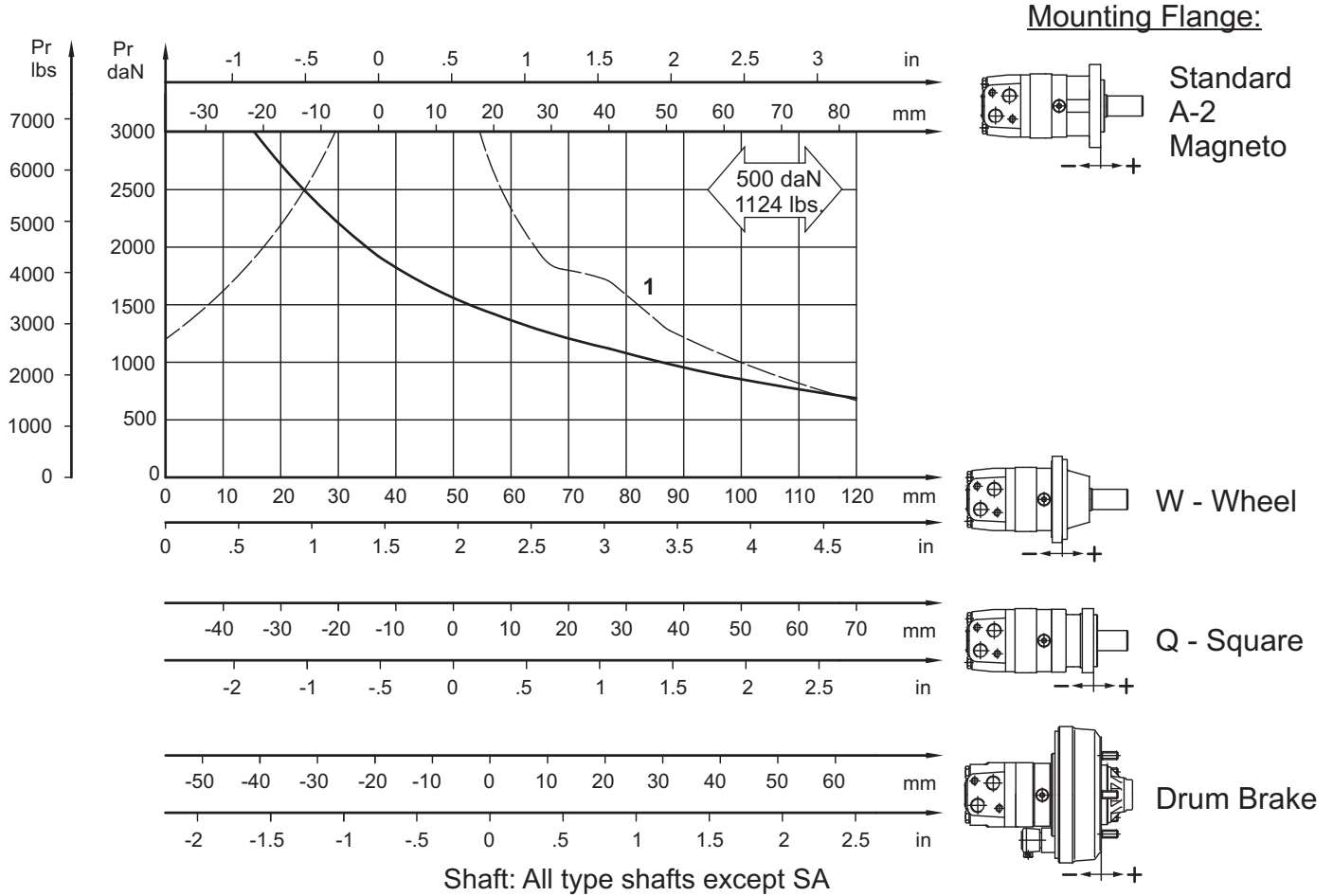
Standard Rotation
Viewed from Shaft End
Port A Pressurized - CW
Port B Pressurized - CCW

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

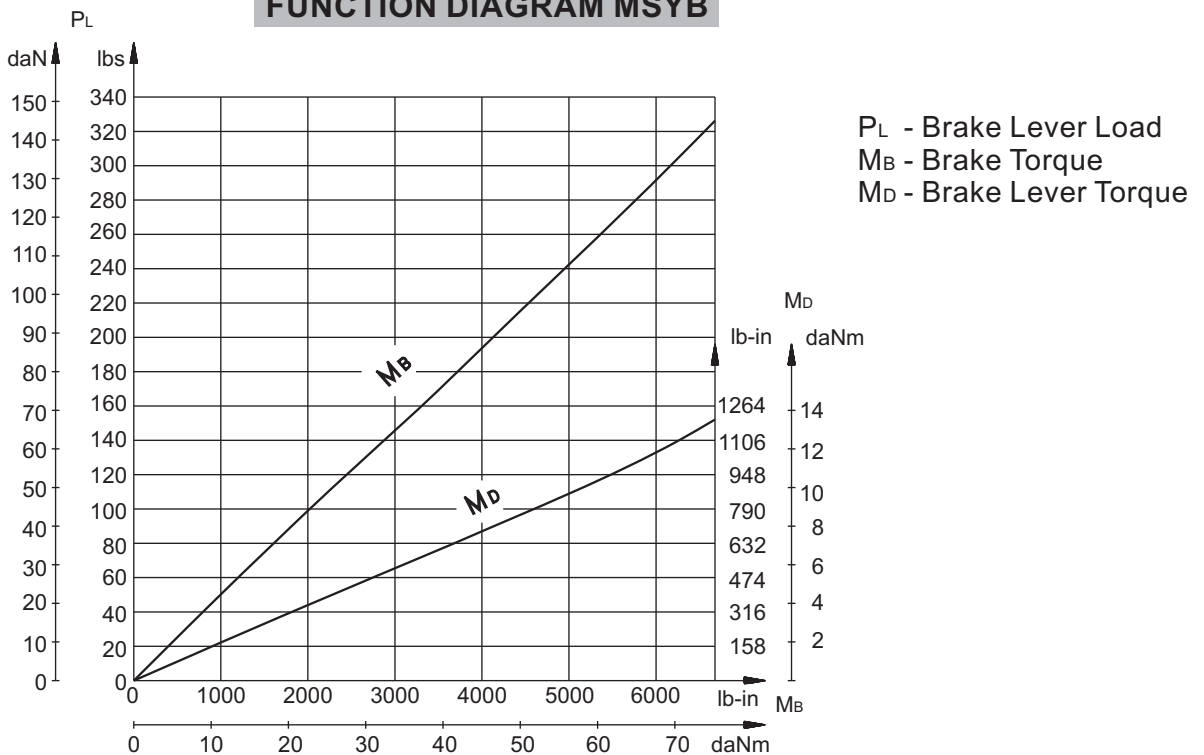
PERMISSIBLE SHAFT LOADS

The output shaft runs in tapered bearings that permit high axial and radial forces. The permissible radial load on the shaft is shown for an axial load of 0 N as function of the distance from the mounting flange to the point of load application. The curves apply to a B10 bearing life of 2000 hours at 100 RPM .

Curve "1" shows max. radial shaft load. Any shaft load exceeding the values shown by the curve will seriously reduce motor life.



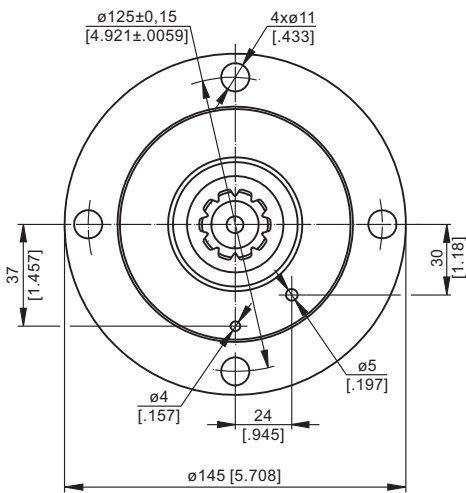
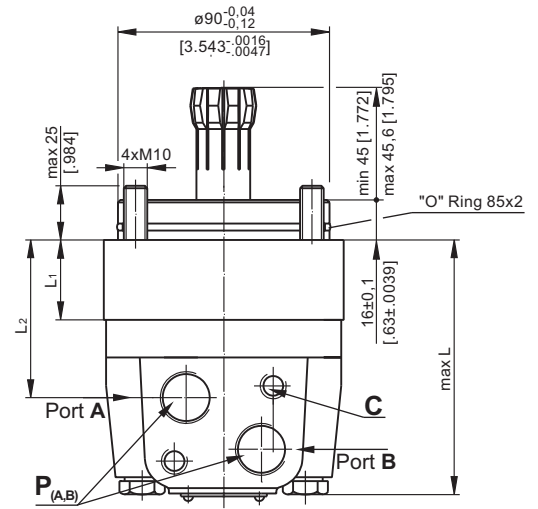
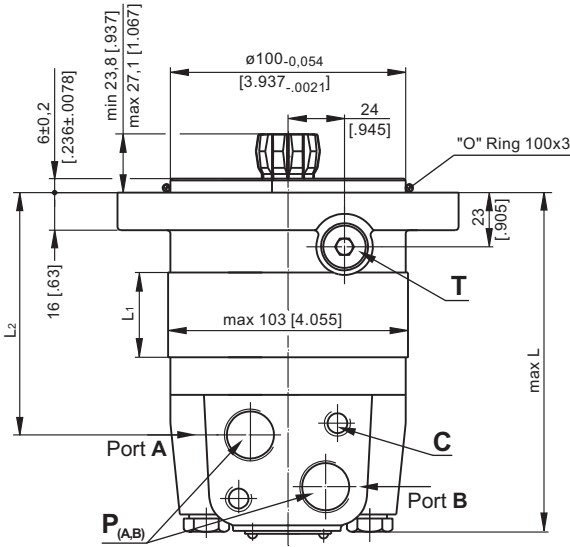
FUNCTION DIAGRAM MSYB



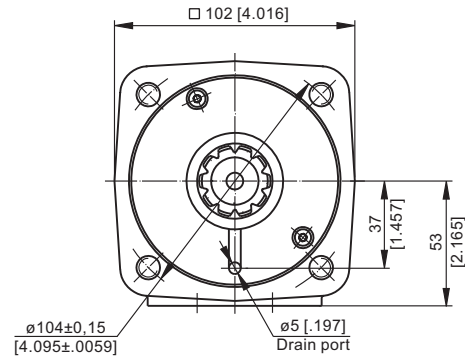
DIMENSIONS AND MOUNTING DATA - MSYS and MSYV

S Short Mount

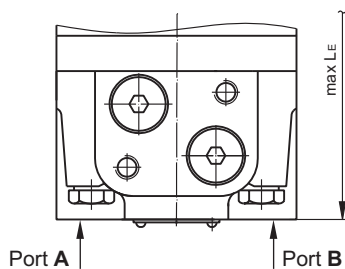
V Very Short Mount



Port Dim.
See Page 9



E Rear ports



- C:** 2xM10-12 mm [.47 in] depth
- P_(A,B):** 2xG1/2 or 2xM22x1,5-15 mm [.59 in] depth
- T:** G ¼ or M14x1,5- 12 mm [.47 in] depth (plugged)



Standard Rotation

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

Reverse Rotation

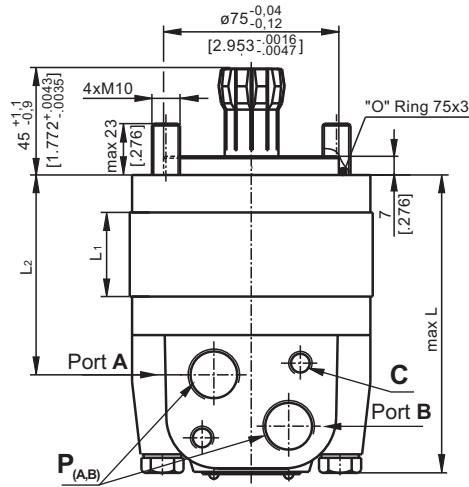
Viewed from Shaft End
Port **A** Pressurized - **CCW**
Port **B** Pressurized - **CW**

Type	L,mm [in]	L ₂ ,mm [in]	*L _E ,mm [in]	Type	L,mm [in]	L ₂ ,mm [in]	*L _E ,mm [in]	L ₁ ,mm [in]
MSYS 200	146 [5.75]	103 [4.05]	154 [6.06]	MSYV 200	112 [4.41]	68,0 [2.78]	118 [4.64]	34,8 [1.37]
MSYS 250	155 [6.10]	112 [4.41]	163 [6.42]	MSYV 250	120 [4.72]	76,5 [3.01]	126 [4.96]	43,5 [1.71]
MSYS 315	166 [6.54]	123 [4.84]	174 [6.85]	MSYV 315	132 [5.20]	88,0 [3.46]	138 [5.43]	54,8 [2.16]
MSYS 400	181 [7.13]	138 [5.43]	189 [7.44]	MSYV 400	146 [5.75]	103,0 [4.05]	153 [6.02]	69,4 [2.73]
MSYS 475	194 [7.64]	152 [5.98]	203 [7.99]	MSYV 475	160 [6.30]	116,0 [4.57]	166 [6.54]	82,6 [3.25]

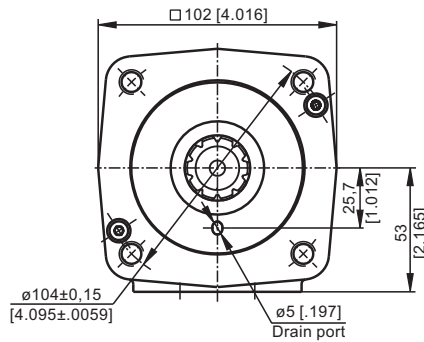
* - For Rear Ported Motors.

DIMENSIONS AND MOUNTING DATA - MSYU

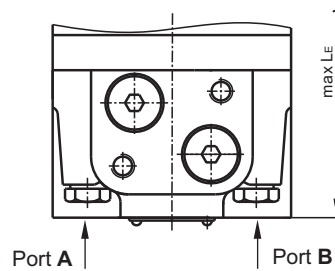
U Ultra Short Mount



Port Dim.
See Page 9



E Rear ports



- C:** 2xM10-12 mm [.47 in] depth
- P_(A,B):** 2xG1/2 or 2xM22x1,5-15 mm [.59 in] depth
- T:** G ¼ or M14x1,5- 12 mm [.47 in] depth (plugged)

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

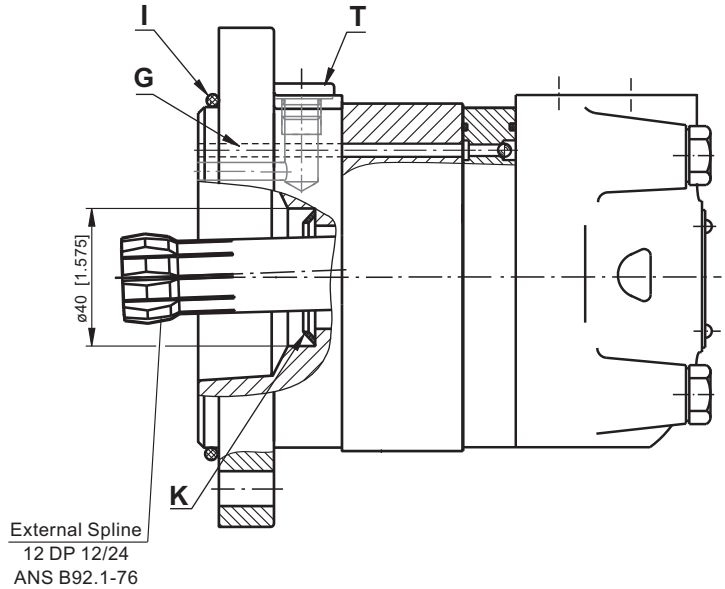
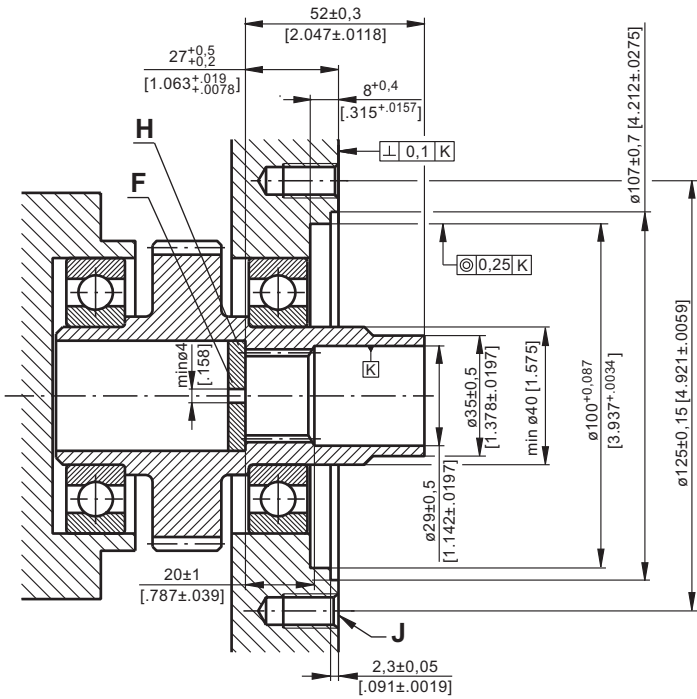
- Reverse Rotation**
Viewed from Shaft End
Port **A** Pressurized - **CCW**
Port **B** Pressurized - **CW**

Type	L, mm [in]	L ₂ , mm [in]	*L _E , mm [in]	L ₁ , mm [in]
MSU 200	126 [4.96]	84 [3.31]	132 [5.20]	34,8 [1.37]
MSU 250	135 [5.32]	92,5 [3.64]	141 [5.55]	43,5 [1.71]
MSU 315	146 [5.75]	104 [4.09]	152 [5.98]	54,8 [2.16]
MSU 400	160 [6.30]	119 [4.69]	167 [6.58]	69,4 [2.73]
MSU 475	174 [6.85]	132 [5.20]	180 [7.09]	82,6 [3.25]

* - For Rear Ported Motors.

DIMENSIONS OF THE ATTACHED COMPONENT

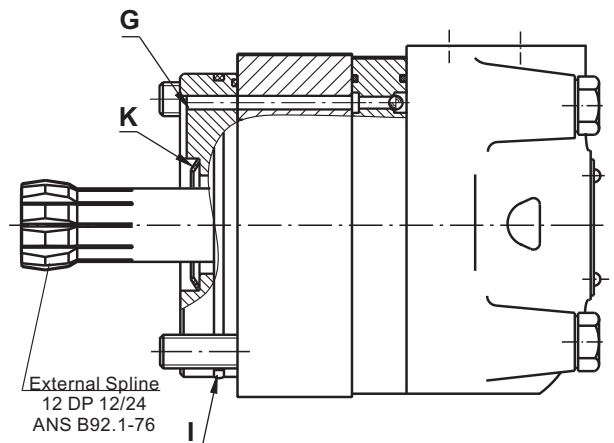
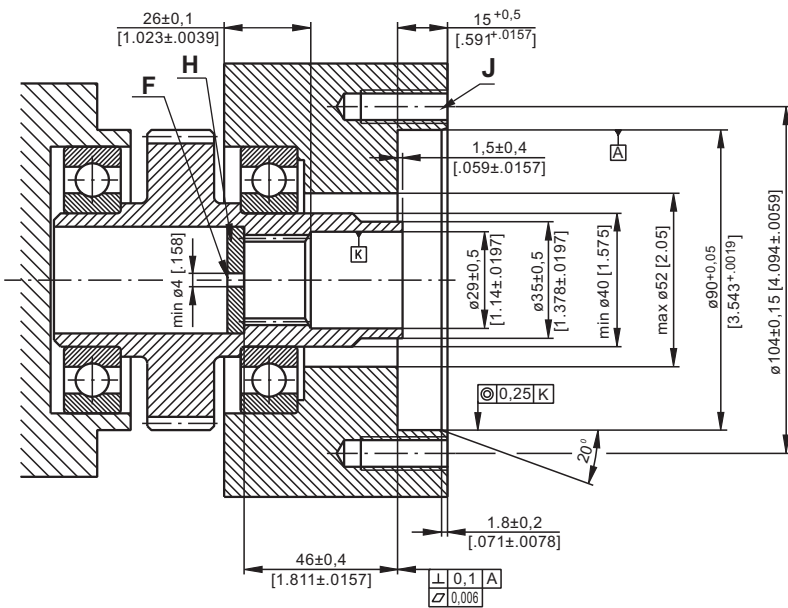
For MSYS



- F** : Oil circulation hole
- H** : Hardened stop plate
- J** : 4xM10-16 mm [.63 in] depth, 90°

- G** : Internal drain channel
- I** : O-Ring 100x3 mm [3.94x.12 in]
- K** : Conical seal ring
- T** : Drain connection G1/4 or M14x1,5

For MSYV

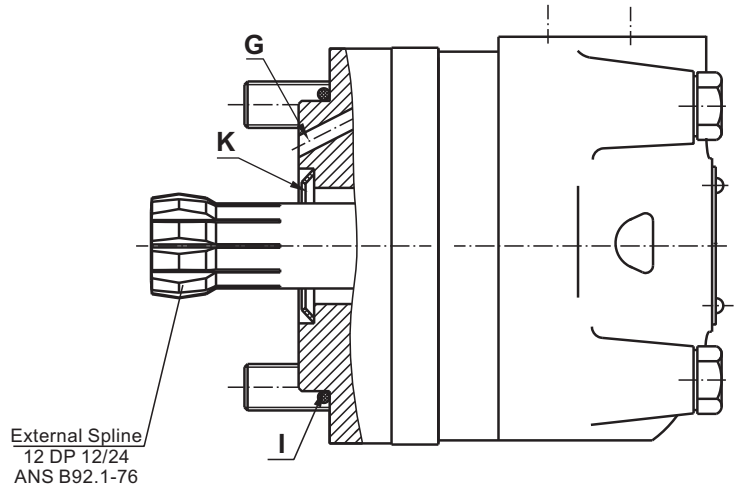
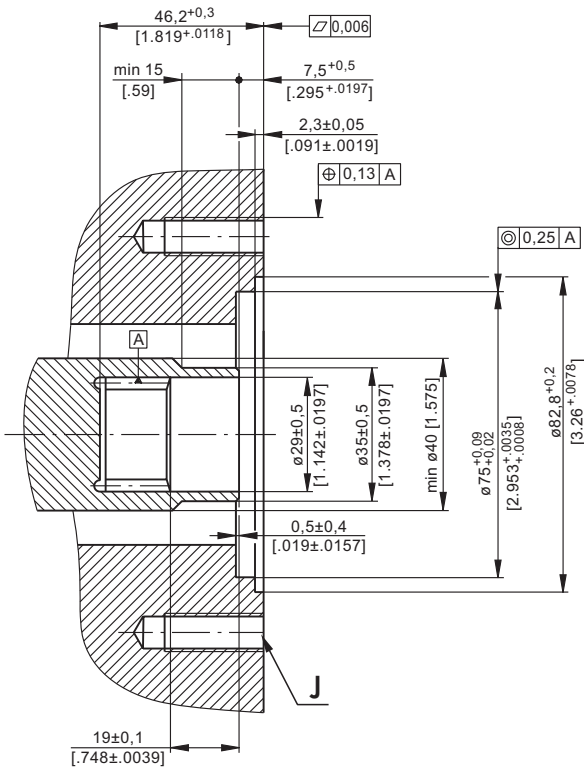


- F** : Oil circulation hole
- H** : Hardened stop plate
- J** : 4xM10-26 mm [1.024 in] depth, 90°

- G** : Internal drain channel
- I** : O-Ring 85x2 mm [3.346x.0787 in]
- K** : Conical seal ring

DIMENSIONS OF THE ATTACHED COMPONENT(continued)

For MSYU



- J** : 4xM10-26 mm [1.024 in] depth, 90°, ø104 [4.094]
- I** : O- Ring 75x3 mm [2.952x.12 in]
- G** : Internal drain channel
- K** : Conical seal ring

DRAIN CONNECTION

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

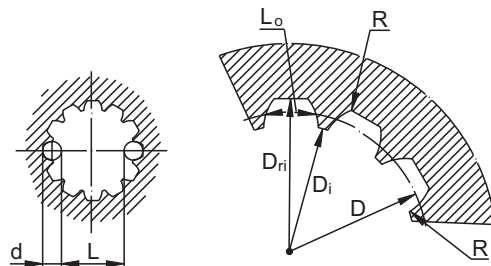
- For MSS at the drain port of the motor;
- For MSV and MSU at the drain connection of the attached component. The maximum pressure in the drain line is limited by the attached component and its shaft seal.

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



Hardening Specification:
 HV=750±50 on the surface
 HV=560 at 0,7±0,2 mm [.035±.019 in] case depth
 Material: 20 MoCr4 EN 10084 or better

ORDER CODE

	1	2	3	4	5	6	7	8	9	10	11	12	13
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

U - Ultra short mount

W - Wheel mount

Pos.2 - Port type

omit - Side ports

E - Rear ports

Pos.3 - Displacement code

200 - 200,0 cm³/rev [12.20 in³/rev]

250 - 250,0 cm³/rev [15.30 in³/rev]

315 - 314,9 cm³/rev [19.20 in³/rev]

400 - 397,0 cm³/rev [24.20 in³/rev]

475 - 474,6 cm³/rev [28.96 in³/rev]

Pos.4 - Shaft Extensions*

omit - for **B**, **S**, **U** 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 ANS B92.1-1970

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

LL - Low Leakage

LSV - Low Speed Valve

Pos.9 - Speed Sensor

omit - without speed sensor

RS - with speed sensor

Pos.10 - Tacho connection

omit - without tacho connection

T - with tacho connection

Pos.11 - Rotation

omit - Standard Rotation

R - Reverse Rotation

Pos.12 - Option (Paint)***

omit - no Paint

P - Painted

PC - Corrosion Protected Paint

PS - Special Paint****

PCS - Special Paint****

Pos.13 - Design Series

omit - Factory specified

NOTES:

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

** For MSYB only!

*** Colour at customer's request.

**** Non painted feeding surfaces, colour at customer's request.

The hydraulic motors are mangano-phosphatized as standard.