

Product Tech News

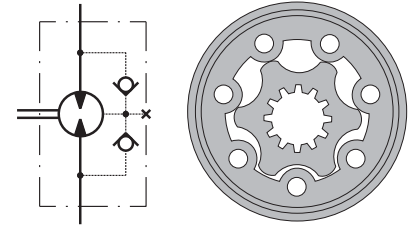
Hydraulic motors type PL...U... series 3

INTRODUCTION

M+S Hydraulic introduces a new improved version of hydraulic motors, type PL with new constructional improvements such as new integrated housing, integrated output shaft supported on needle bearing, new check valves, new high pressure shaft seal. The PL motors are suitable for a wide range of applications where compact and high efficient motors are required.

APPLICATION

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



OPTIONS

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

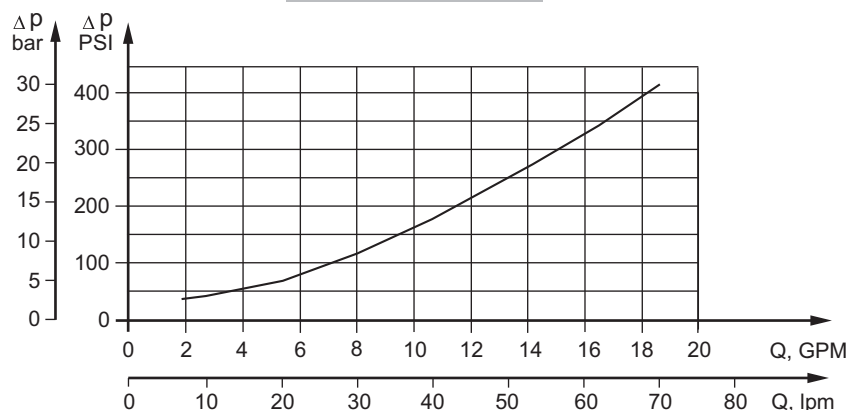
GENERAL

Max Displacement,	cm ³ /rev [in ³ /rev]	396 [24.16]
Max. Speed,	[RPM]	1515
Max. Torque,	daNm [lb-in]	cont.: 50 [4415] int.: 59 [5222]
Max. Output,	kW [HP]	12,5 [16.8]
Max. Pressure Drop,	bar [PSI]	cont.: 140 [2030] int.: 175 [2540]
Max. Oil Flow,	lpm [GPM]	75 [20]
Min. Speed,	[RPM]	10
Pressure fluid		Mineral based- HLP(DIN 51524) or HM(ISO 6743/4)
Temperature range,	°C [°F]	-40÷140 [-40÷284]
Optimal Viscosity range,	mm ² /s [SUS]	20÷75 [98÷347]
Filtration		ISO code 20/16 (Min. recommended fluid filtration of 25 micron)

Oil flow in drain line

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

Pressure Losses



SPECIFICATION DATA

Type		PL 50	PL 80	PL 100	PL 125	PL 160	PL 200	PL 250	PL 315	PL 400
Displacement, in³/rev [cm³/rev]		49,5 [3.02]	79,2 [4.83]	99 [6.04]	123,8 [7.55]	158,4 [9.66]	198 [12.1]	247,5 [15.1]	316,8 [19.3]	396 [24.16]
Max. Speed, [RPM]	Cont.	1210	755	605	485	378	303	242	190	150
	Int.*	1515	945	755	605	472	378	303	236	189
Max. Torque in-lb [daNm]	Cont.	9,4 [832]	15,1 [1336]	19,3 [1708]	23,7 [2100]	31,3 [2770]	36,6 [3240]	47 [4160]	48,6 [4300]	50 [4425]
	Int.*	11,9 [1054]	19,5 [1725]	23,7 [2097]	29,8 [2637]	37,8 [3345]	45,6 [4035]	58,3 [5160]	56 [4956]	59 [5222]
	Peak**	14,0 [1240]	22,0 [1947]	27,0 [2390]	36,5 [3230]	42 [3717]	53 [4700]	67 [5930]	85 [7523]	85,4 [7560]
Max. Output HP [kW]	Cont.	9,9 [13.3]	9,9 [13.3]	9,9 [13.3]	9,9 [13.3]	11,7 [15.7]	10,3 [13.8]	9,8 [13.1]	7,6 [10.2]	6,6 [8.9]
	Int.*	12,5 [16.8]	12,5 [16.8]	12,5 [16.8]	12,5 [16.8]	12,5 [16.8]	12,5 [16.8]	12,5 [16.8]	10,5 [14]	8,5 [11.4]
Max. Pressure Drop PSI [bar]	Cont.	140 [2030]	140 [2030]	140 [2030]	140 [2030]	140 [2030]	140 [2030]	140 [2030]	120 [1300]	95 [1015]
	Int.*	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	140 [2030]	115 [1665]
	Peak**	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	180 [2610]
Max. Oil Flow GPM [lpm]	Cont.	60 [16]	60 [16]	60 [16]	60 [16]	60 [16]	60 [16]	60 [16]	60 [16]	60 [16]
	Int.*	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]
Max. Inlet Pressure PSI [bar]	Cont.	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]
	Int.*	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]
	Peak**	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]
Max. Return Pressure without Drain Line or Max. Pressure in Drain Line, PSI [bar]	Cont. 0-100 RPM	100 [1450]	100 [1450]	100 [1450]	100 [1450]	100 [1450]	100 [1450]	100 [1450]	100 [1450]	100 [1450]
	Cont. 100-300 RPM	50 [725]	50 [725]	50 [725]	50 [725]	50 [725]	50 [725]	50 [725]	50 [725]	50 [725]
	Cont. 300-600 RPM	25 [365]	25 [365]	25 [365]	25 [365]	25 [365]	25 [365]	25 [365]	25 [365]	25 [365]
	Cont. >600 RPM	15 [220]	15 [220]	15 [220]	15 [220]	15 [220]	15 [220]	15 [220]	15 [220]	15 [220]
Int.* 0-max. RPM	100 [1450]	100 [1450]	100 [1450]	100 [1450]	100 [1450]	100 [1450]	100 [1450]	100 [1450]	100 [1450]	100 [1450]
Max. Return Pressure with Drain Line PSI [bar]	Cont.	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]
	Int.*	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]
	Peak**	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]
Max. Starting Pressure with Unloaded Shaft, PSI [bar]		10 [145]	10 [145]	10 [145]	9 [131]	8 [116]	7 [100]	6 [87]	5 [73]	5 [73]
Min. Starting Torque in-lb [daNm]		7,7 [681]	13 [1150]	16,8 [1487]	21,0 [1860]	28,0 [2478]	32,2 [2850]	41,4 [3665]	43,0 [3805]	44,0 [3900]
Min. Speed***, [RPM]		10	10	10	10	10	10	10	10	10
Weight, lb [kg]		6,8 [15]	7,0 [15.4]	7,1 [15.7]	7,2 [15.9]	7,4 [16.3]	7,6 [16.8]	7,8 [17.2]	8,2 [18]	8,6 [18.9]

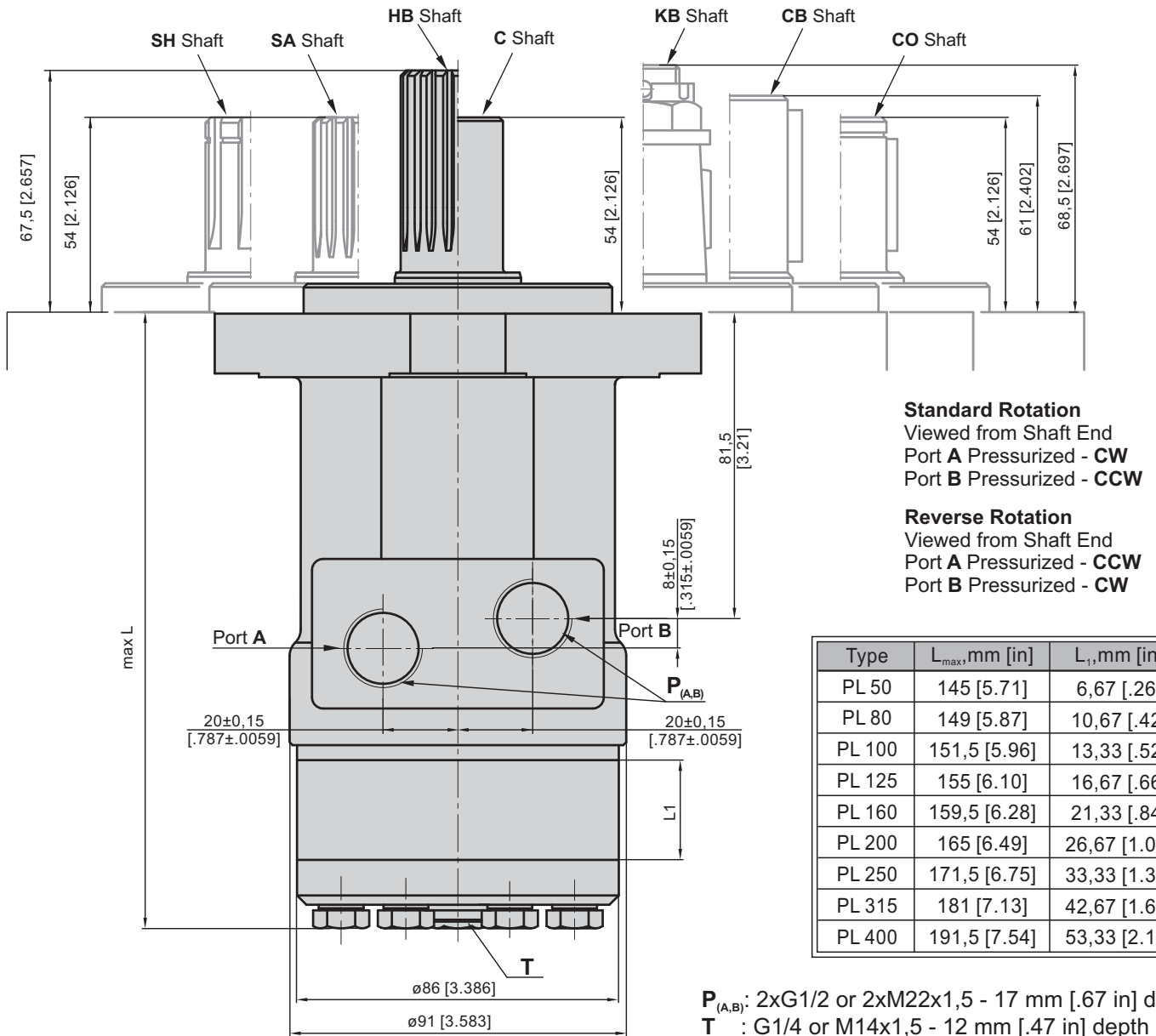
* Intermittent operation: the permissible values may occur for max. 10% of every minute.

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

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

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

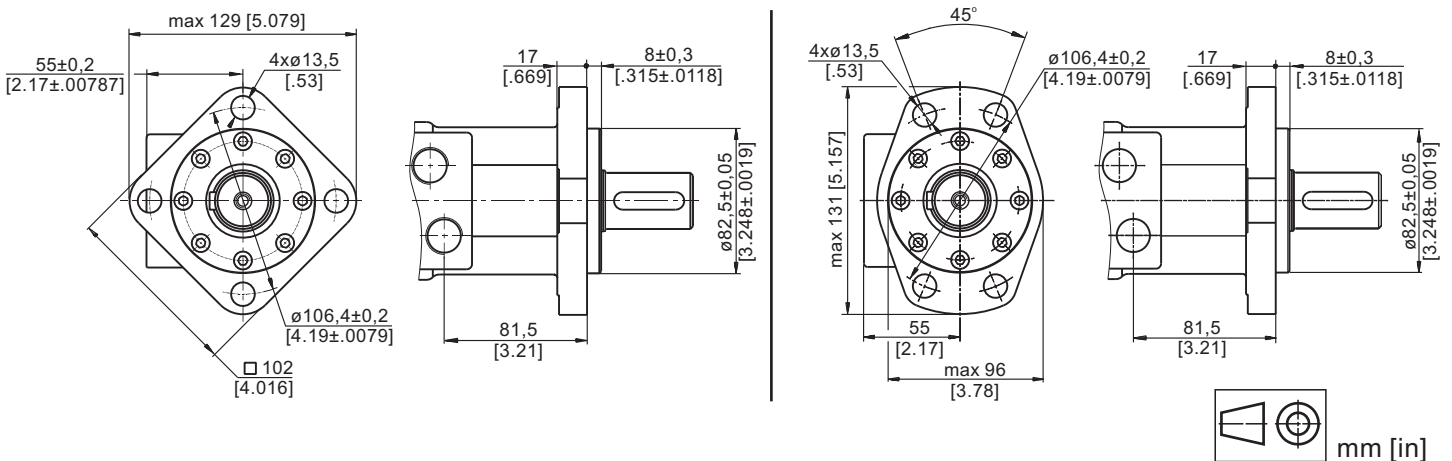
DIMENSIONS AND MOUNTING DATA



MOUNTING

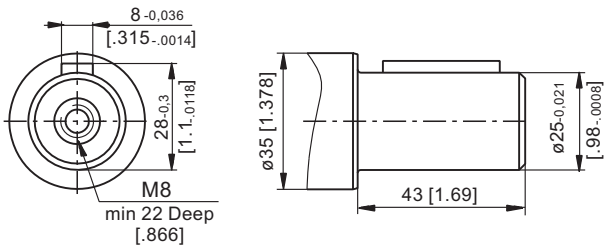
Square Mount (4 Holes)

F Oval Mount (4 Holes)

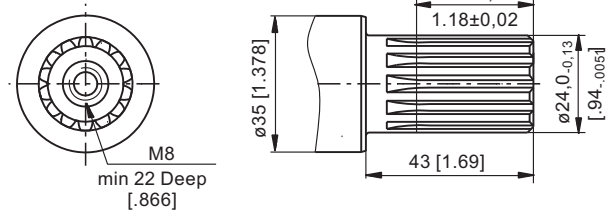


SHAFT EXTENSIONS

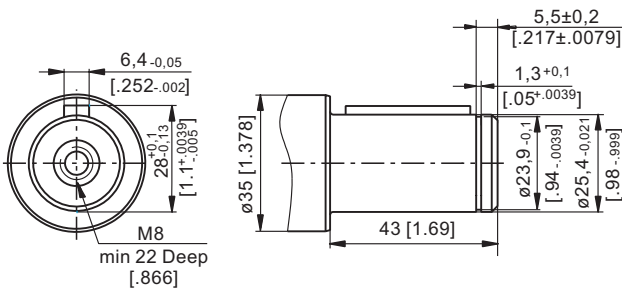
C - $\varnothing 25$ straight, Parallel key A8x7x35 DIN 6885
Max. Torque 34 daNm [3010 lb-in]



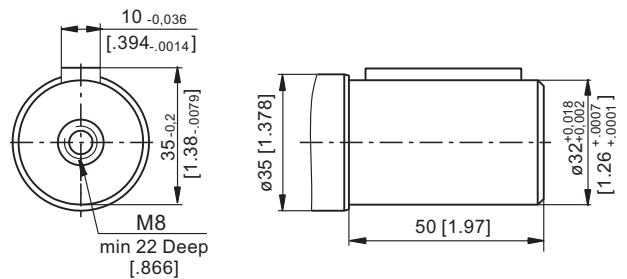
SA - splined B25x22 DIN 5482
Max. Torque 40 daNm [3540 lb-in]



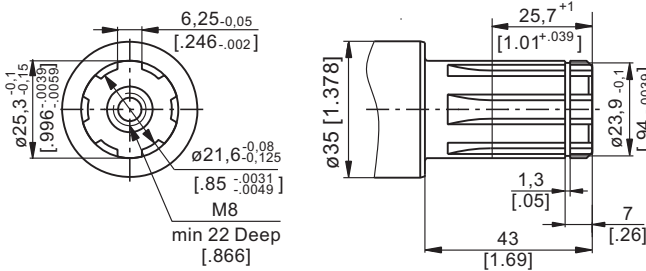
CO - $\varnothing 1"$ straight, Parallel key $\frac{1}{4}" \times \frac{1}{4}" \times 1\frac{1}{4}"$ BS46
Max. Torque 34 daNm [3010 lb-in]



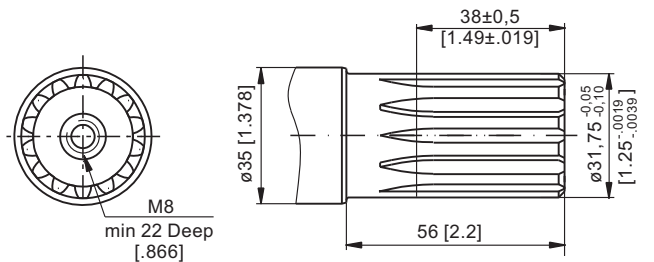
CB - $\varnothing 32$ straight, Parallel key A10x8x40 DIN 6885
Max. Torque 77 daNm [6815 lb-in]



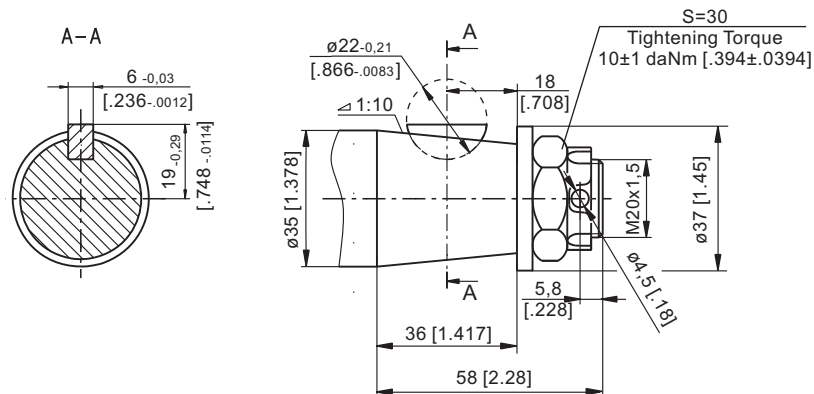
SH - splined, BS 2059 (SAE 6B)
Max. Torque 40 daNm [3540 lb-in]



HB - $\varnothing 1\frac{1}{4}"$ splined 14T, DP12/24 ANSI B92.1-1976
Max. Torque 95 daNm [8410 lb-in]

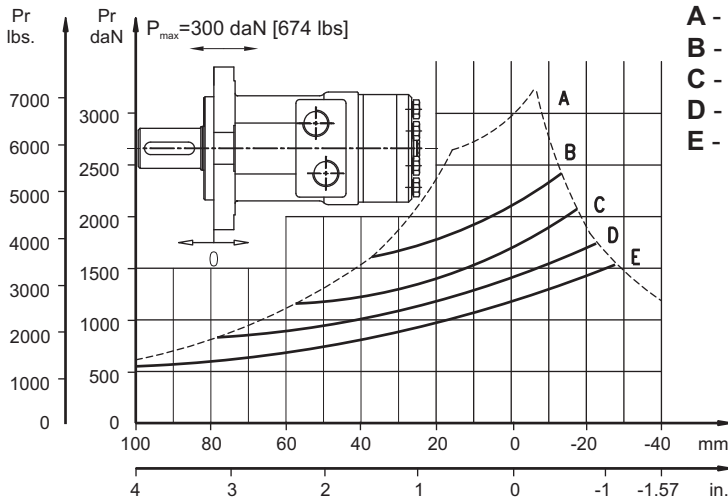


KB - tapered 1:10, Woodruff key 6x9 DIN6888
Max. Torque 95 daNm [8410 lb-in]



Permissible Shaft Loads PL and RL

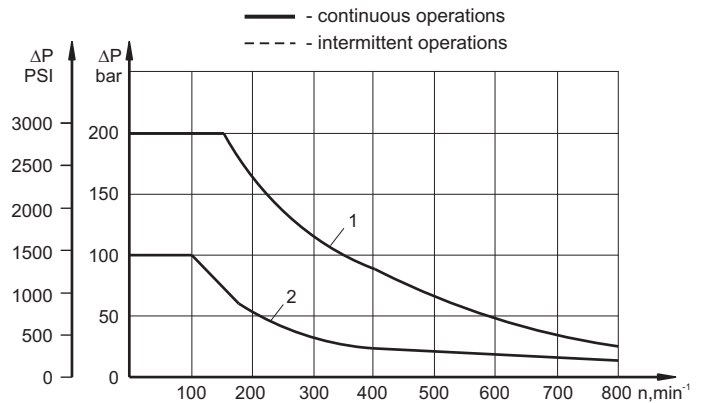
The curves apply to a B10 bearings life of 2000 hrs



- A** - Max. radial shaft load.
- B** - $n=50 \text{ min}^{-1}$
- C** - $n=100 \text{ min}^{-1}$
- D** - $n=200 \text{ min}^{-1}$
- E** - $n=400 \text{ min}^{-1}$

MAX. PERMISSIBLE SHAFT SEAL PRESSURE

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



ORDER CODE

	1	2	3	4	5	6	7	8	9
PL									

Pos.1 - Mounting Flange

- omit - Square mount, four holes
- F** - Oval mount, four holes

Pos.2 - Displacement code*

- 50** - 49,5 cm³/rev [3.02 in³/rev]
- 80** - 79,2 cm³/rev [4.83 in³/rev]
- 100** - 99,0 cm³/rev [6.04 in³/rev]
- 125** - 123,8 cm³/rev [7.55 in³/rev]
- 160** - 158,4 cm³/rev [9.66 in³/rev]
- 200** - 198,0 cm³/rev [12.10 in³/rev]
- 250** - 247,5 cm³/rev [15.10 in³/rev]
- 315** - 316,8 cm³/rev [19.30 in³/rev]
- 400** - 396,0 cm³/rev [24.16 in³/rev]

Pos.3 - Shaft Extensions**

- C** - $\varnothing 25$ straight, Parallel key A8x7x35 DIN6885
- CO** - $\varnothing 1$ " straight, Parallel key $1/4 \times 1/4 \times 1/4$ " BS46
- SH** - $\varnothing 25,3$ splined, BS 2059 (SAE 6B)
- SA** - $\varnothing 24$ splined, B 25x22 DIN 5482
- CB** - $\varnothing 32$ straight, Parallel key A10x8x40 DIN6885
- HB** - $\varnothing 1 1/4$ " splined 14T ANSI B92.1-1976
- KB** - $\varnothing 35$ tapered 1:10, Woodruff key 6x9 DIN6888

Pos.4 - Shaft Seal Version

- omit - Standad shaft seal
- U** - High pressure shaft seal

Pos.5 - Ports

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

Pos.6 - Special Features

- omit - none
- LSV** - Low Speed Valving
- LL** - Low Leakage

Pos.7 - Rotation

- omit - Standad Rotation
- R** - Reverse Rotation

Pos.8 - Option [Paint]**

- omit - no Paint
- P** - Painted
- PC** - Corrosion Protected Paint

Pos.9 - Design Series

- omit - Factory specified

Notes:* For the Function Diagrams data please look at "M+S Hydraulic" Catalogue for MP motors, pages 18 24.

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

*** Color at customer's request.

The hydraulic motors are mangano-phosphatized as standard.



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