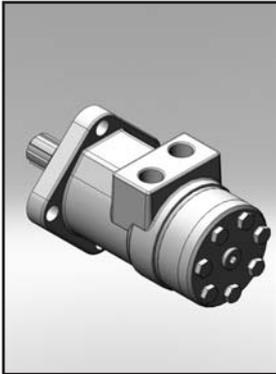
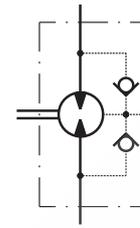


# HYDRAULIC MOTORS PL



## APPLICATION

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



## CONTENTS

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## OPTIONS

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

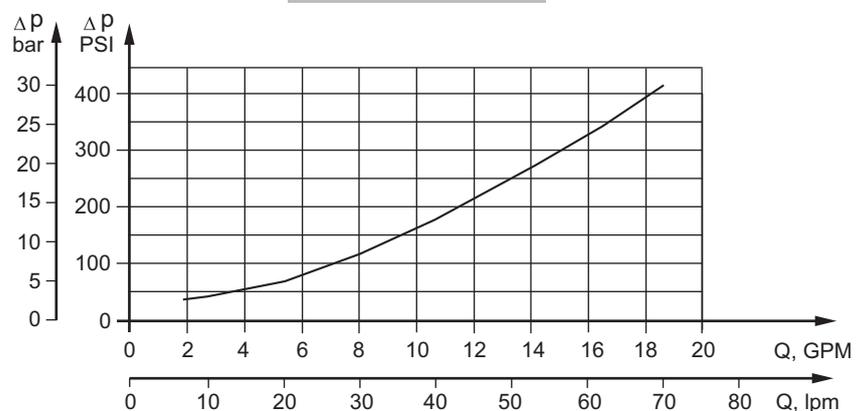
## GENERAL

<b>Max Displacement,</b> cm <sup>3</sup> /rev [in <sup>3</sup> /rev]	396 [24.16]
<b>Max. Speed,</b> [RPM]	1515
<b>Max. Torque,</b> daNm [lb-in]	cont.: 50 [4415] int.: 59 [5222]
<b>Max. Output,</b> kW [HP]	17,5 [23.5]
<b>Max. Pressure Drop,</b> bar [PSI]	cont.: 140 [2030] int.: 175 [2540]
<b>Max. Oil Flow,</b> lpm [GPM]	75 [20]
<b>Min. Speed,</b> [RPM]	10
<b>Pressure fluid</b>	Mineral based- HLP(DIN 51524) or HM(ISO 6743/4)
<b>Temperature range,</b> °C [°F]	-40÷140 [-40÷284]
<b>Optimal Viscosity range,</b> mm <sup>2</sup> /s [SUS]	20÷75 [98÷347]
<b>Filtration</b>	ISO code 20/16 (Min. recommended fluid filtration of 25 microns)

### Oil flow in drain line

Pressure drop bar [PSI]	Viscosity mm <sup>2</sup> /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	
<b>Displacement, cm<sup>3</sup>/rev [in<sup>3</sup>/rev]</b>	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]	
<b>Max. Speed, [RPM]</b>	Cont.	1210	755	605	485	378	303	242	190	150
	Int.*	1515	945	755	605	472	378	303	236	189
<b>Max. Torque daNm [lb-in]</b>	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]
<b>Max. Output kW [HP]</b>	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]
<b>Max. Pressure Drop bar [PSI]</b>	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]
<b>Max. Oil Flow lpm [GPM]</b>	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]
<b>Max. Inlet Pressure bar [PSI]</b>	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]
<b>Max. Return Pressure without Drain Line or Max. Pressure in Drain Line, bar [PSI]</b>	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]
<b>Max. Return Pressure with Drain Line bar [PSI]</b>	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]
<b>Max. Starting Pressure with Unloaded Shaft, bar [PSI]</b>	10 [145]	10 [145]	10 [145]	9 [131]	8 [116]	7 [100]	6 [87]	5 [73]	5 [73]	
<b>Min. Starting Torque, daNm [lb-in]</b>	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]	
<b>Min. Speed***, [RPM]</b>	10	10	10	10	10	10	10	10	10	
<b>Weight, kg [lb]</b>	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]	

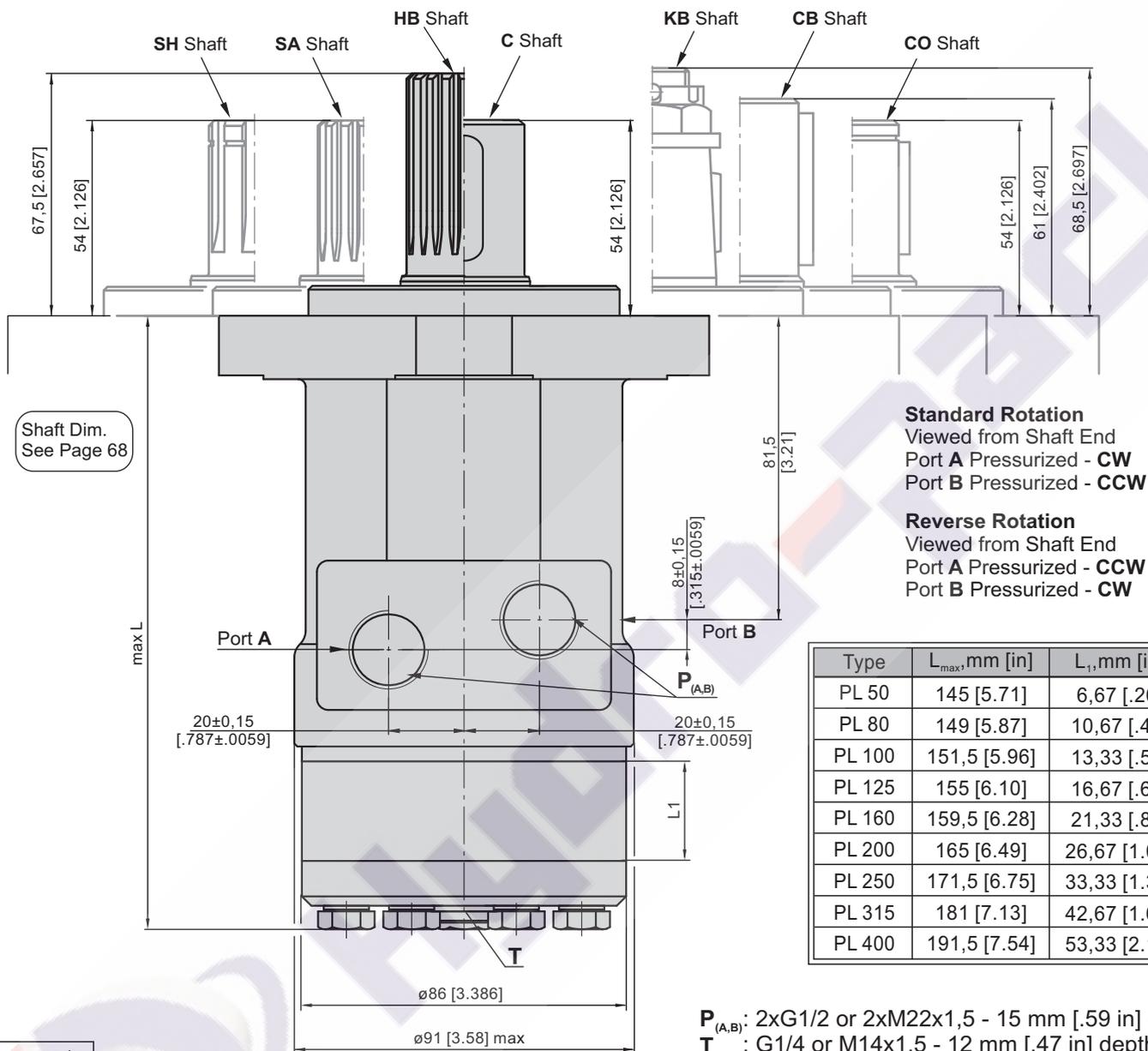
\* Intermittent operation: the permissible values may occur for max. 10% of every minute.

\*\* 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 mm<sup>2</sup>/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.

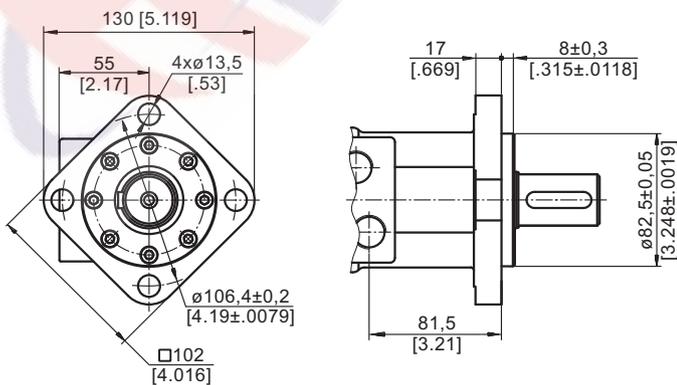
**DIMENSIONS AND MOUNTING DATA**



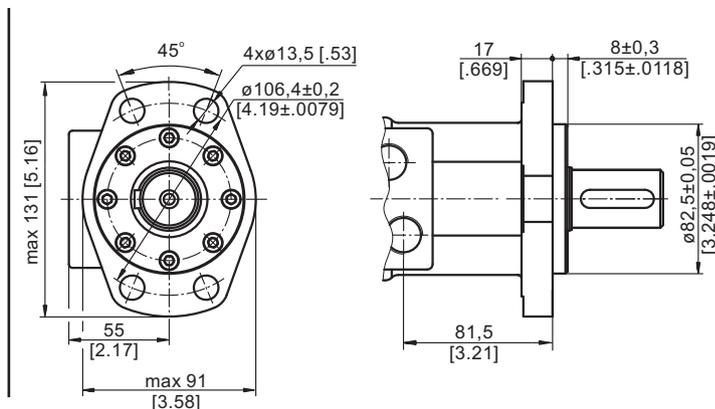
$P_{(A,B)}$ : 2xG1/2 or 2xM22x1,5 - 15 mm [.59 in] depth  
T : G1/4 or M14x1,5 - 12 mm [.47 in] depth

**MOUNTING**

**Square Mount (4 Holes)**

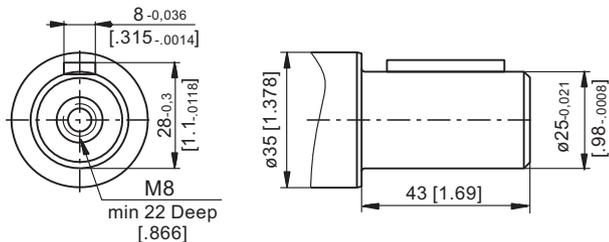


**F Oval Mount (4 Holes)**

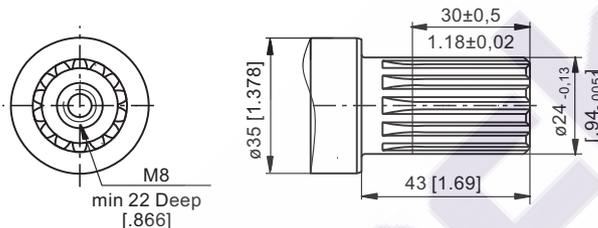


**SHAFT EXTENSIONS**

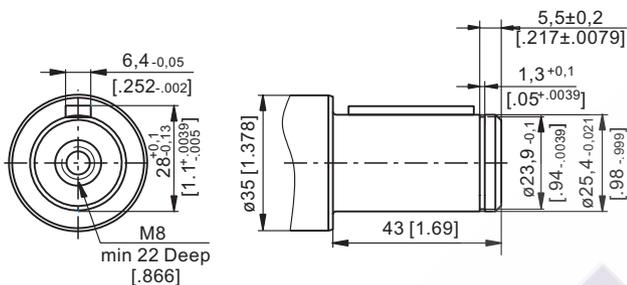
**C** -  $\varnothing 25$  straight, Parallel key A8x7x30 DIN 6885  
Max. Torque 34 daNm [3010 lb-in]



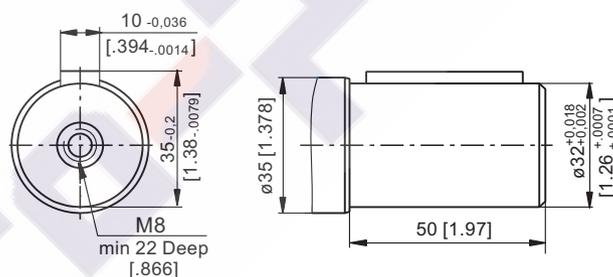
**SA** - splined B25x22 DIN 5482  
Max. Torque 40 daNm [3540 lb-in]



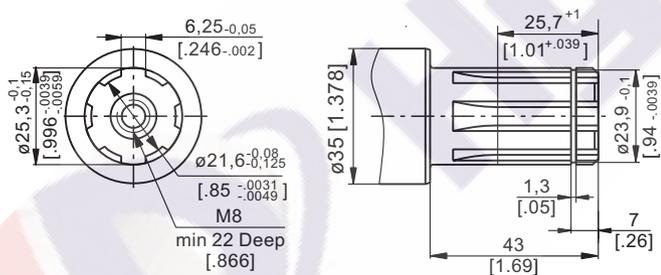
**CO** -  $\varnothing 1$ " straight, Parallel key  $\frac{1}{4}$ "x $\frac{1}{4}$ "x $\frac{1}{4}$ " BS46  
Max. Torque 34 daNm [3010 lb-in]



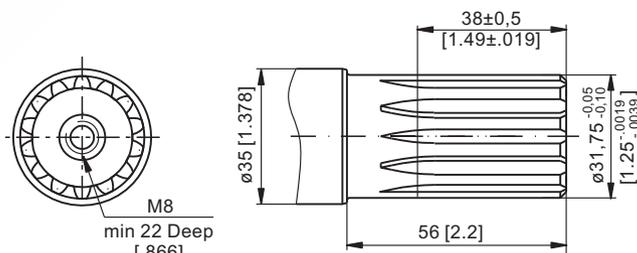
**CB** -  $\varnothing 32$  straight, Parallel key A10x8x40 DIN 6885  
Max. Torque 77 daNm [6815 lb-in]



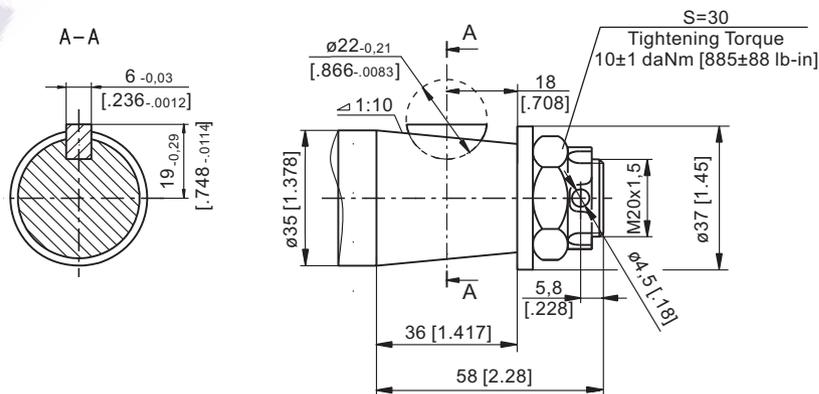
**SH** - splined, BS 2059 (SAE 6B)  
Max. Torque 40 daNm [3540 lb-in]



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

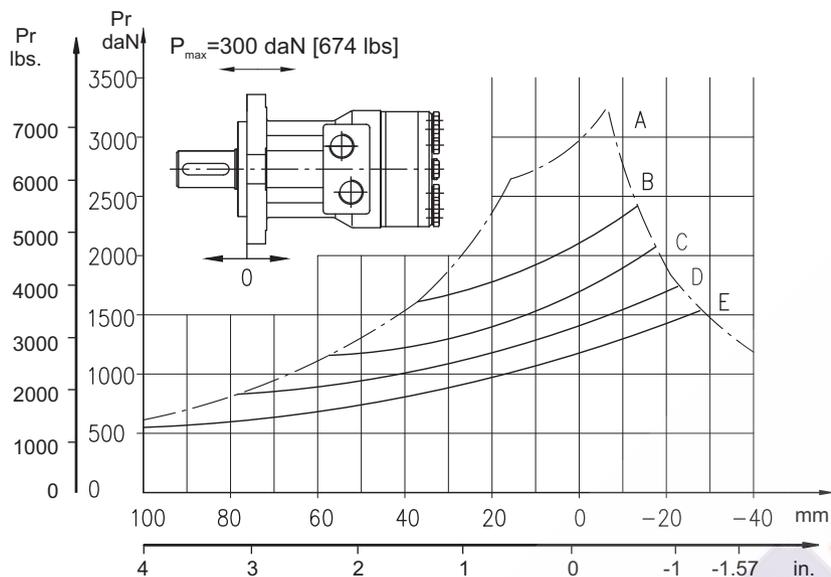


**KB** - tapered 1:10, Woodruff key 6x9 DIN6888  
Max. Torque 95 daNm [8410 lb-in]



**Permissible Shaft Loads PL and RL**

The curves apply to a B10 bearings life of 2000 hrs



**ORDER CODE**

	1	2	3	4	5	6	7
<b>PL</b>							

**Pos.1 - Mounting Flange**

omit - Square mount, four holes

**F** - Oval mount, four holes

**Pos.2 - Displacement code\***

<b>50</b>	- 49,5 cm <sup>3</sup> /rev [3.02 in <sup>3</sup> /rev]
<b>80</b>	- 79,2 cm <sup>3</sup> /rev [4.83 in <sup>3</sup> /rev]
<b>100</b>	- 99,0 cm <sup>3</sup> /rev [6.04 in <sup>3</sup> /rev]
<b>125</b>	- 123,8 cm <sup>3</sup> /rev [7.55 in <sup>3</sup> /rev]
<b>160</b>	- 158,4 cm <sup>3</sup> /rev [9.66 in <sup>3</sup> /rev]
<b>200</b>	- 198,0 cm <sup>3</sup> /rev [12.10 in <sup>3</sup> /rev]
<b>250</b>	- 247,5 cm <sup>3</sup> /rev [15.10 in <sup>3</sup> /rev]
<b>315</b>	- 316,8 cm <sup>3</sup> /rev [19.30 in <sup>3</sup> /rev]
<b>400</b>	- 396,0 cm <sup>3</sup> /rev [24.16 in <sup>3</sup> /rev]

**Pos.3 - Shaft Extensions\*\***

<b>C</b>	- $\varnothing 25$ straight, Parallel key A8x7x30 DIN6885
<b>CO</b>	- $\varnothing 1"$ straight, Parallel key $\frac{1}{4}" \times \frac{1}{4}" \times \frac{1}{4}"$ BS46
<b>SH</b>	- $\varnothing 25,3$ splined, BS 2059 (SAE 6B)
<b>SA</b>	- $\varnothing 24$ splined, B 25x22 DIN 5482
<b>CB</b>	- $\varnothing 32$ straight, Parallel key A10x8x40 DIN6885
<b>HB</b>	- $\varnothing 1\frac{1}{4}"$ splined 14T ANSI B92.1-1976
<b>KB</b>	- $\varnothing 35$ tapered 1:10, Woodruff key 6x9 DIN6888

**Pos.4 - Shaft Seal Version**

omit - Standard shaft seal

**U** - High pressure shaft seal

**Pos.5 - Ports**

omit - BSPP (ISO 228)

**M** - Metric (ISO 262)

**Pos.6 - Special Features (see page 120)**

**Pos.7 - Design Series**

omit - Factory specified

**NOTES:**

\* For the Function Diagrams data please look at "M+S Hydraulic" Catalogue for MP motors, pages 19+23.

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

The hydraulic motors are manganophosphatized as standard.