Quality assured company - ISO 9001 *certified*

M+S HYDRAULIC

Product Tech News

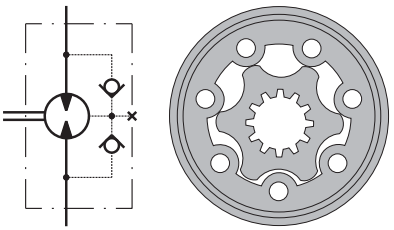
Hydraulic motors type RL...U... series 3

INTRODUCTION

M+S Hydraulic introduces a new improved version of hydraulic motors, type RL 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 RL 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

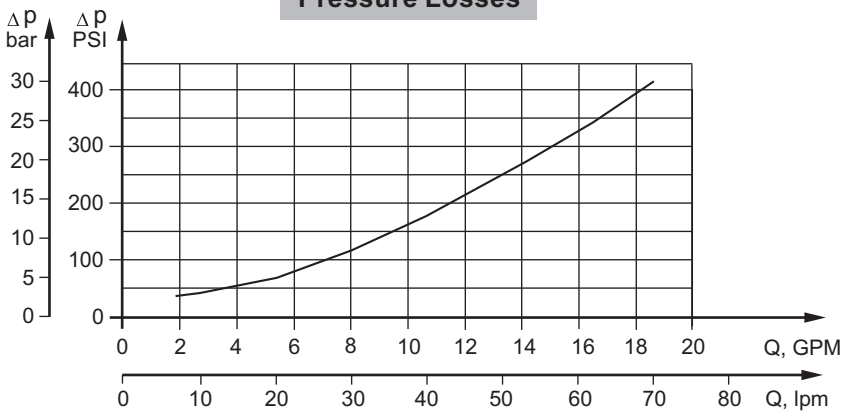
GENERAL

Max. Displacement, cm^3/rev. [in^3/rev.]	397 [24.4]
Max. Speed, [RPM]	970
Max. Torque, daNm [lb-in]	cont.: 61 [5400] int.: 69 [6100]
Max. Output, kW [HP]	15 [20.1]
Max. Pressure Drop, bar [PSI]	cont.:175 [2540] int.: 200 [2900]
Max. Oil Flow, lpm [GPM]	75 [20]
Min. Speed, [RPM]	10
Permissible Shaft Loads, daN [lbs]	P_a=300 [1124]
Pressure fluid	Mineral based- HLP(DIN 51524) or HM(ISO 6743/4)
Temperature range, ^oC [^oF]	-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



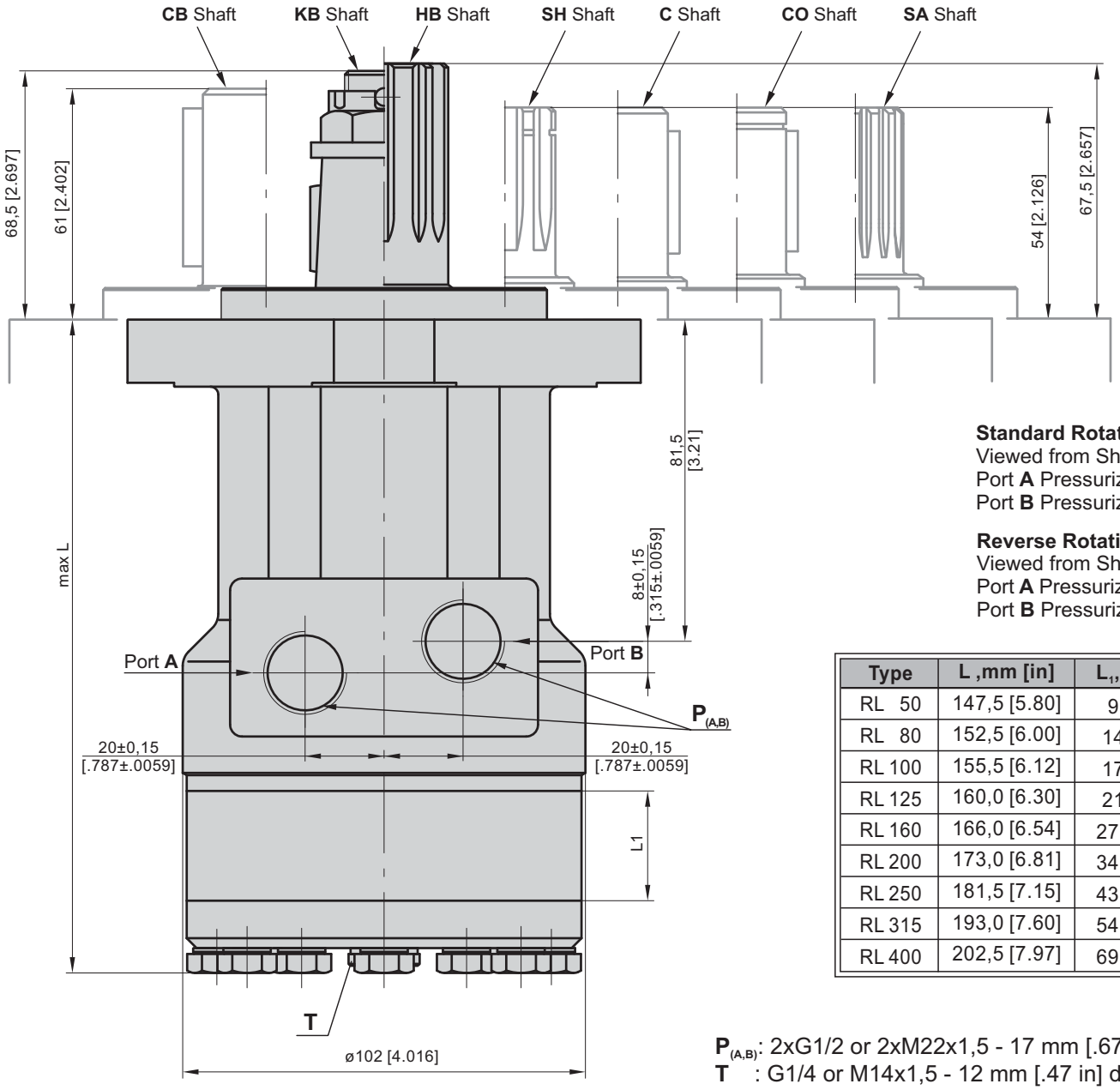
SPECIFICATION DATA

Type		RL 50	RL 80	RL 100	RL 125	RL 160	RL 200	RL 250	RL 315	RL 400
Displacement, cm³/rev [in³/rev]		51,5 [3.14]	80,3 [4.90]	99,8 [6.09]	125,7 [7.67]	159,6 [9.74]	199,8[12.19]	250,1[15.26]	315,7[19.26]	397 [24.4]
Max. Speed,	Cont.	775	750	600	475	375	300	240	190	150
[RPM]	Int.*	970	940	750	600	470	375	300	240	190
Max. Torque,	Cont.	10 [885]	19,5 [1725]	24 [2125]	30 [2655]	38 [3360]	45 [4000]	54 [4780]	55 [4870]	61 [5400]
daNm [lb-in]	Int.*	13 [1150]	22 [1947]	28 [2480]	34 [3010]	43 [3805]	50 [4425]	61 [5400]	69 [6100]	69 [6100]
	Peak**	17 [1505]	27 [2390]	32 [2832]	37 [3275]	46 [4070]	56 [4960]	71 [6280]	84 [77430]	87 [7700]
Max. Output	Cont.	7 [9.5]	12,5 [17]	13 [17.4]	12,5 [16.8]	12,5 [16.8]	11 [14.8]	10 [13.4]	9 [12]	7,5 [10]
kW [HP]	Int.*	8,5 [11.9]	15 [20.1]	15 [20.1]	14,5 [19]	14 [18.8]	13 [17.4]	12 [16.1]	10 [13.4]	9 [12]
Max. Pressure Drop	Cont.	140 [2030]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	135 [1960]	110 [1600]
bar [PSI]	Int.*	175 [2540]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	175 [2540]	140 [2030]
	Peak**	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	225 [3260]	210 [3045]	175 [2540]
Max. Oil Flow	Cont.	40 [11]	60 [16]	60 [16]	60 [16]	60 [16]	60 [16]	60 [16]	60 [16]	60 [16]
lpm [GPM]	Int.*	50 [13]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]	75 [20]
Max. Inlet Pressure	Cont.	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]
bar [PSI]	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 Pres-	Cont. 0-100 RPM	100 [1450]	100 [1450]	100 [1450]	100 [1450]	100 [1450]	100 [1450]	100 [1450]	100 [1450]	100 [1450]
sure without Drain	Cont. 100-300 RPM	50 [725]	50 [725]	50 [725]	50 [725]	50 [725]	50 [725]	50 [725]	50 [725]	50 [725]
Line or Max. Pres-	Cont. 300-600 RPM	25 [365]	25 [365]	25 [365]	25 [365]	25 [365]	25 [365]	25 [365]	25 [365]	25 [365]
sure in Drain Line,	Cont. >600 RPM	15 [220]	15 [220]	15 [220]	15 [220]	15 [220]	15 [220]	15 [220]	15 [220]	15 [220]
bar [PSI]	Int.* 0-max. RPM	100 [1450]	100 [1450]	100 [1450]	100 [1450]	100 [1450]	100 [1450]	100 [1450]	100 [1450]	100 [1450]
Max. Return Pres-	Cont.	140 [2030]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]	175 [2540]
sure with Drain Line	Int.*	175 [2540]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]	200 [2900]
bar [PSI]	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, bar [PSI]		10 [145]	10 [145]	10 [145]	9 [130]	102 [7]	5 [73]	5 [73]	5 [73]	5 [73]
Min. Starting Torque daNm [lb-in]		8 [710]	15 [1330]	20 [1770]	25 [2215]	32 [2835]	37 [3275]	45 [3983]	45 [3983]	49 [4335]
Min. Speed***, [RPM]		10	10	10	10	10	10	10	10	10
Weight, kg [lb]		7,7 [17]	7,8 [17.2]	8,1 [17.8]	8,2 [18]	8,4 [18.5]	8,9 [19.6]	9,3 [20.5]	10,0 [22]	10,7 [23.6]

* 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) or HM (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.

DIMENSIONS AND MOUNTING DATA



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

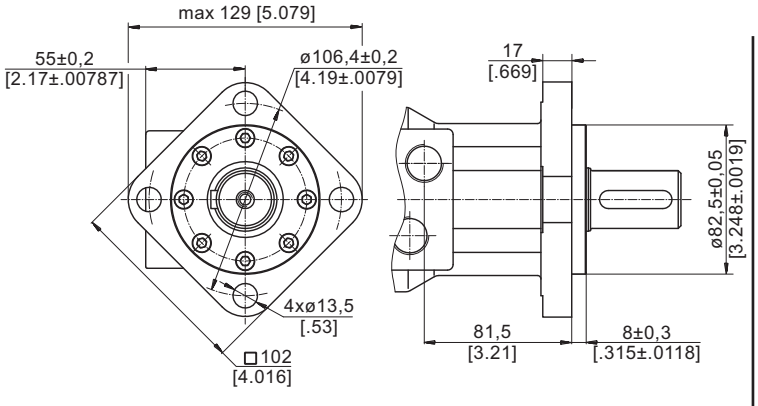
Reverse Rotation
Viewed from Shaft End
Port **A** Pressurized - **CCW**
Port **B** Pressurized - **CW**

Type	L ,mm [in]	L_1,mm [in]
RL 50	147,5 [5.80]	9,0 [.35]
RL 80	152,5 [6.00]	14,0 [.55]
RL 100	155,5 [6.12]	17,4 [.69]
RL 125	160,0 [6.30]	21,8 [.86]
RL 160	166,0 [6.54]	27,8 [1.09]
RL 200	173,0 [6.81]	34,8 [1.37]
RL 250	181,5 [7.15]	43,5 [1.71]
RL 315	193,0 [7.60]	54,8 [2.16]
RL 400	202,5 [7.97]	69,4 [2.73]

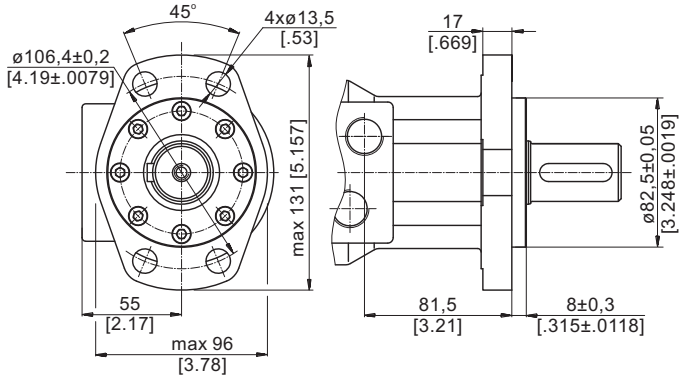
$P_{(A,B)}$: 2xG1/2 or 2xM22x1,5 - 17 mm [.67 in] depth
T : G1/4 or M14x1,5 - 12 mm [.47 in] depth

MOUNTING

Square Mount (4 Holes)



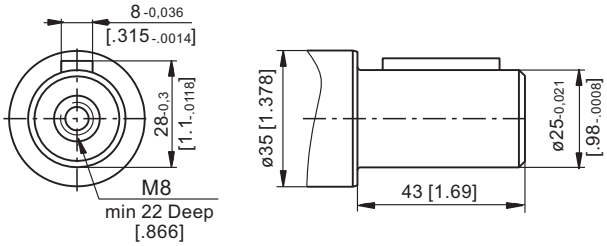
F Oval Mount (4 Holes)



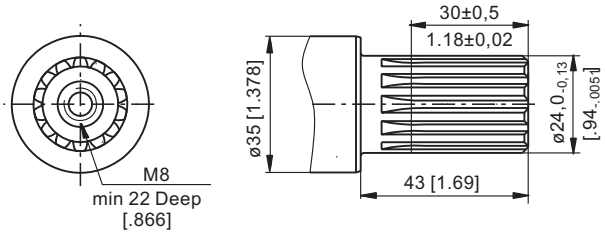
mm [in]

SHAFT EXTENSIONS

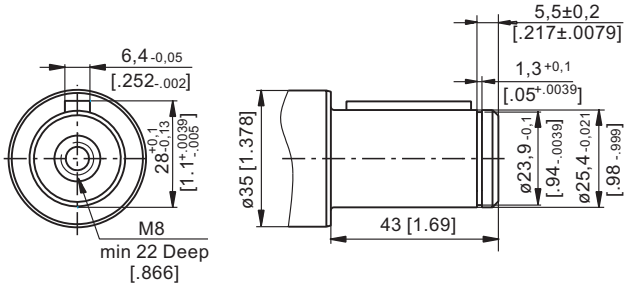
C - ø25 straight, Parallel key A8x7x35 DIN 6885
Max. Torque 34 daNm [3010 lb-in]



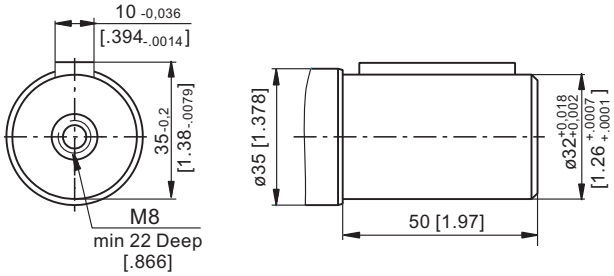
SA - splined B25x22 DIN 5482
Max. Torque 40 daNm [3540 lb-in]



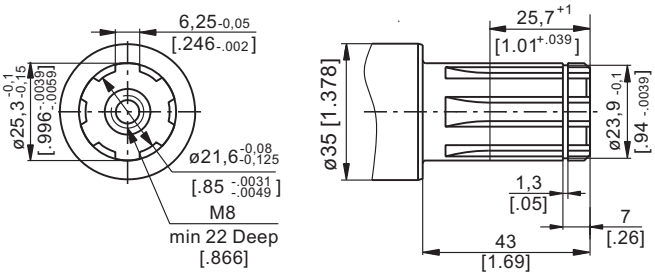
CO - ø1" straight, Parallel key ¼"x¼"x1¼" BS46
Max. Torque 34 daNm [3010 lb-in]



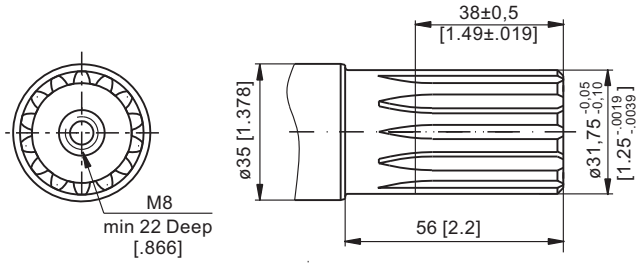
CB - ø32 straight, Parallel key A10x8x40 DIN 6885
Max. Torque 77 daNm [6815 lb-in]



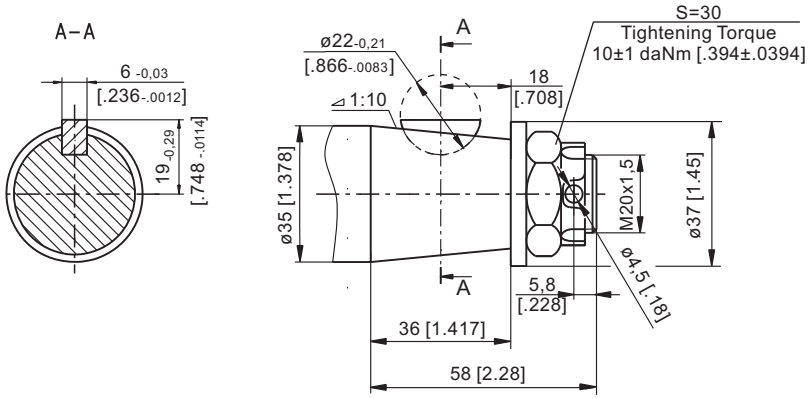
SH - splined, BS 2059 (SAE 6B)
Max. Torque 40 daNm [3540 lb-in]



HB - ø1¼" splined 14T, DP12/24 ANSI B92.1-1976
Max. Torque 95 daNm [8410 lb-in]



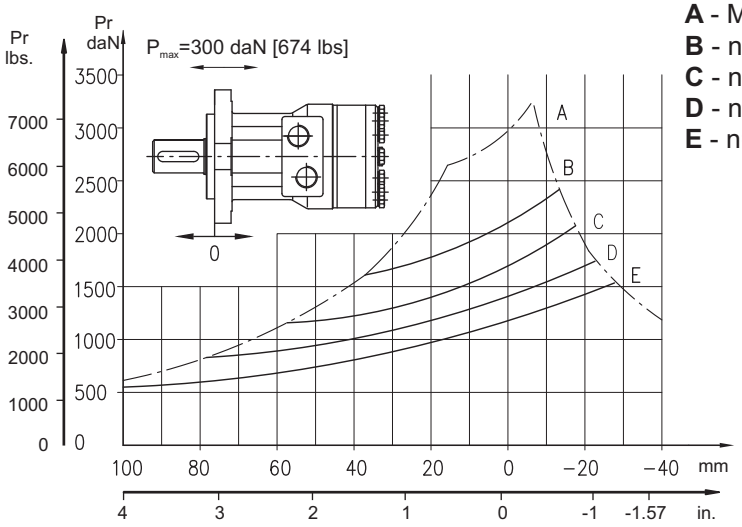
KB - tapered 1:10, Woodruff key 6x9 DIN6888
Max. Torque 95 daNm [8410 lb-in]



mm [in]

Permissible Shaft Loads PL and RL

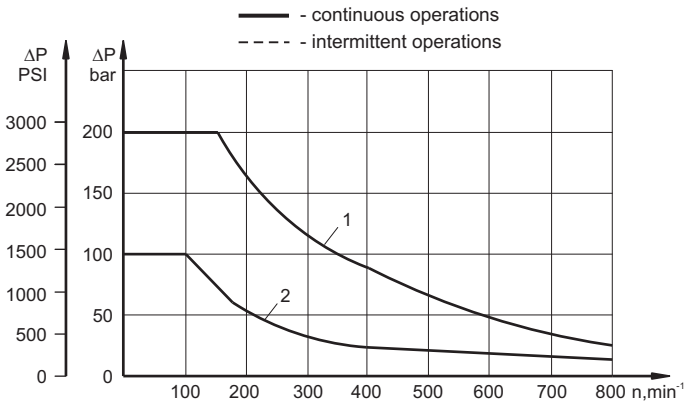
The curves apply to a B10 bearings life of 2000 hrs



A - Max. radial shaft load.
B - n=50 min^{-1}
C - n=100 min^{-1}
D - n=200 min^{-1}
E - n=400 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
R L									

Pos.1 - Mounting Flange

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

Pos.2 - Displacement code*

50 - 51,5 cm^3/rev [3.14 in^3/rev]
80 - 80,3 cm^3/rev [4.90 in^3/rev]
100 - 99,8 cm^3/rev [6.09 in^3/rev]
125 - 125,7 cm^3/rev [7.67 in^3/rev]
160 - 159,6 cm^3/rev [9.74 in^3/rev]
200 - 199,8 cm^3/rev [12.19 in^3/rev]
250 - 250,1 cm^3/rev [15.26 in^3/rev]
315 - 315,7 cm^3/rev [19.26 in^3/rev]
400 - 397,0 cm^3/rev [24.40 in^3/rev]

Pos.3 - Shaft Extensions**

C - ø25 straight, Parallel key A8x7x35 DIN6885
CO - ø1" straight, Parallel key $^1/_4$"x$^1/_4$"x1$^1/_4$" BS46
SH - ø25,3 splined, BS 2059 (SAE 6B)
SA - ø24 splined, B 25x22 DIN 5482
CB - ø32 straight, Parallel key A10x8x40 DIN6885
HB - ø1$^1/_4$" splined 14T ANSI B92.1-1976
KB - ø35 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 -

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

Pos.9 -

omit - Factory specified

*Notes:** *For the Function Diagrams data please look at "M+S Hydraulic" Catalogue for MR motors, pages 35 39.*
*** 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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