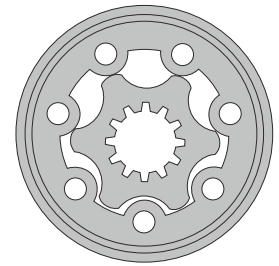


HYDRAULIC MOTORS PL



APPLICATION

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



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Dimensions and mounting ...	11
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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

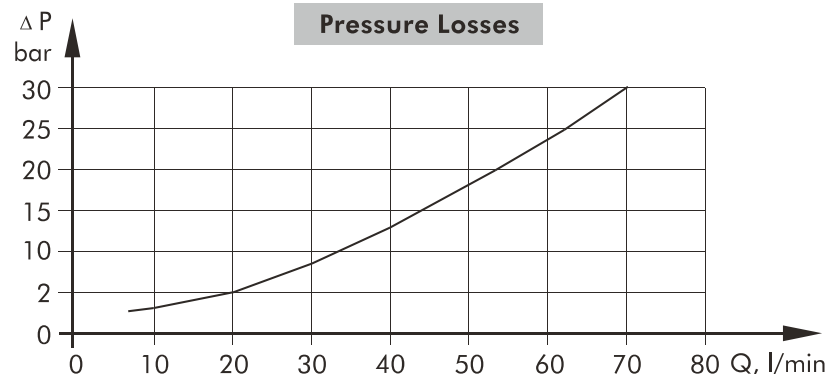
GENERAL

Displacement, [cm ³ /rev.]	49,5 ÷ 396
Max. Speed, [RPM]	150 ÷ 1210
Max. Torque, [daNm]	9,4 ÷ 50
Max. Output, [kW]	9,9 ÷ 11,7
Max. Pressure Drop, [bar]	95 ÷ 140
Max. Oil Flow, [l/min]	60
Min. Speed, [RPM]	10
Permissible Shaft Loads, [daN]	P ₀ = 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)
100	20	2,5
	35	1,8
140	20	3,5
	35	2,8

Pressure Losses



SPECIFICATION DATA

Type	PL 50	PL 80	PL 100	PL 125	PL 160	PL 200	PL 250	PL 315	PL 400	
Displacement, [cm.³/rev.]	49,5	79,2	99	123,8	158,4	198	247,5	316,8	396	
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 [daNm]	Cont.	9,4	15,1	19,3	23,7	31,3	36,6	47,0	48,6	50,0
	Int.*	11,9	19,5	23,7	29,8	37,8	45,6	58,3	56,0	59,0
	Peak**	14,0	22,0	27,0	36,5	42	53,0	67,0	85,0	85,4
Max. Output [kW]	Cont.	9,9	9,9	9,9	9,9	11,7	10,3	9,8	7,6	6,6
	Int.*	12,5	12,5	12,5	12,5	12,5	15,5	17,5	8,2	9,2
Max. Pressure Drop [bar]	Cont.	140	140	140	140	140	140	140	120	95
	Int.*	175	175	175	175	175	175	175	140	115
	Peak**	225	225	225	225	225	225	225	225	180
Max. Oil Flow [l/min]	Cont.	60	60	60	60	60	60	60	60	60
	Int.*	75	75	75	75	75	75	75	75	75
Max. Inlet Pressure [bar]	Cont.	175	175	175	175	175	175	175	175	175
	Int.*	200	200	200	200	200	200	200	200	200
	Peak**	225	225	225	225	225	225	225	225	225
Max. Return Pressure without Drain Line or Max. Pressure in Drain Line, [bar]	Cont. 0-100 RPM	100	100	100	100	100	100	100	100	100
	Cont. 100-300 RPM	50	50	50	50	50	50	50	50	50
	Cont. 300-600 RPM	25	25	25	25	25	25	25	25	25
	Cont. >600 RPM	15	15	15	15	15	15	15	15	15
	Int.* 0-max. RPM	100	100	100	100	100	100	100	100	100
Max. Return Pressure with Drain Line [bar]	Cont.	175	175	175	175	175	175	175	175	175
	Int.*	200	200	200	200	200	200	200	200	200
	Peak**	225	225	225	225	225	225	225	225	225
Max. Starting Pressure with Unloaded Shaft, [bar]	10	10	10	9	8	7	6	5	5	
Min. Starting Torque [daNm]	7,7	14,0	16,8	21,0	28,0	32,2	41,4	43,0	44,0	
Min. Speed***, [RPM]	10	10	10	10	10	10	10	10	10	
Weight, [kg]	8,4	8,5	8,8	8,9	9,1	9,5	10,0	10,7	11,4	

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

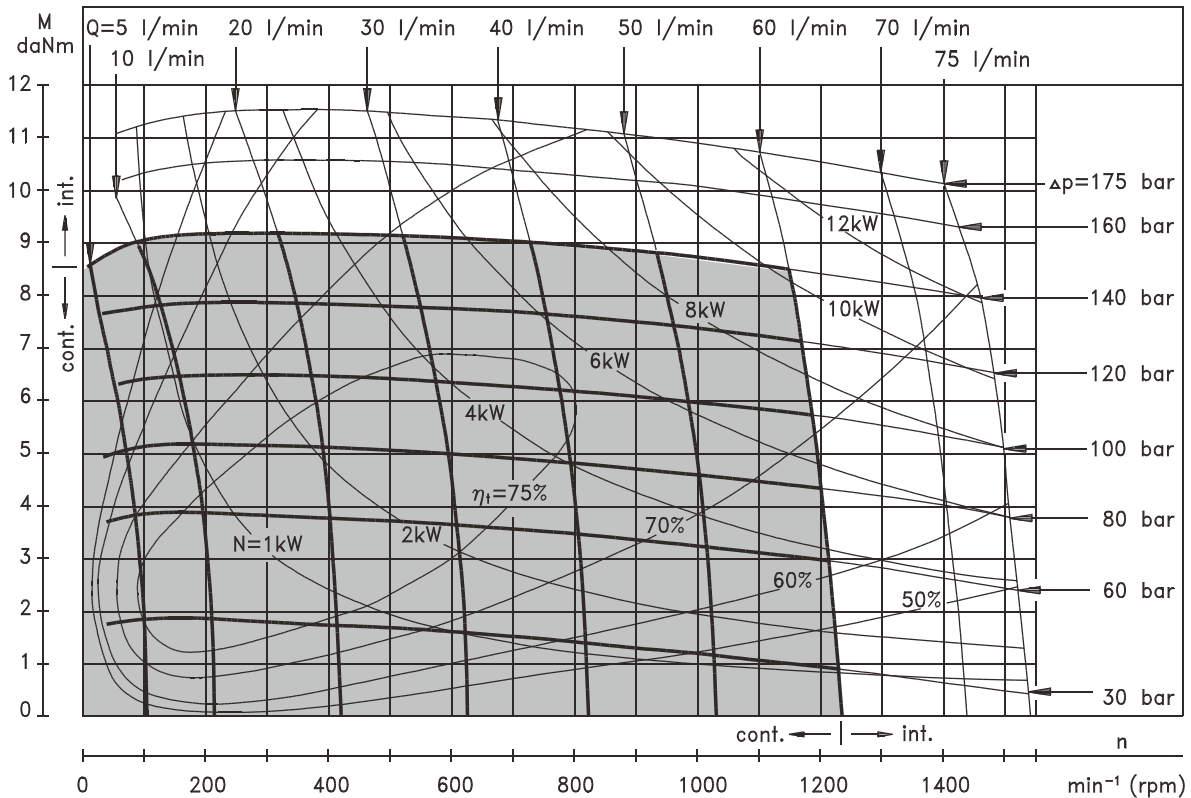
** Peak load: the permissible values may occur for max. 1% of every minute.

*** For speeds of 10 RPM or lower, consult factory or your regional manager.

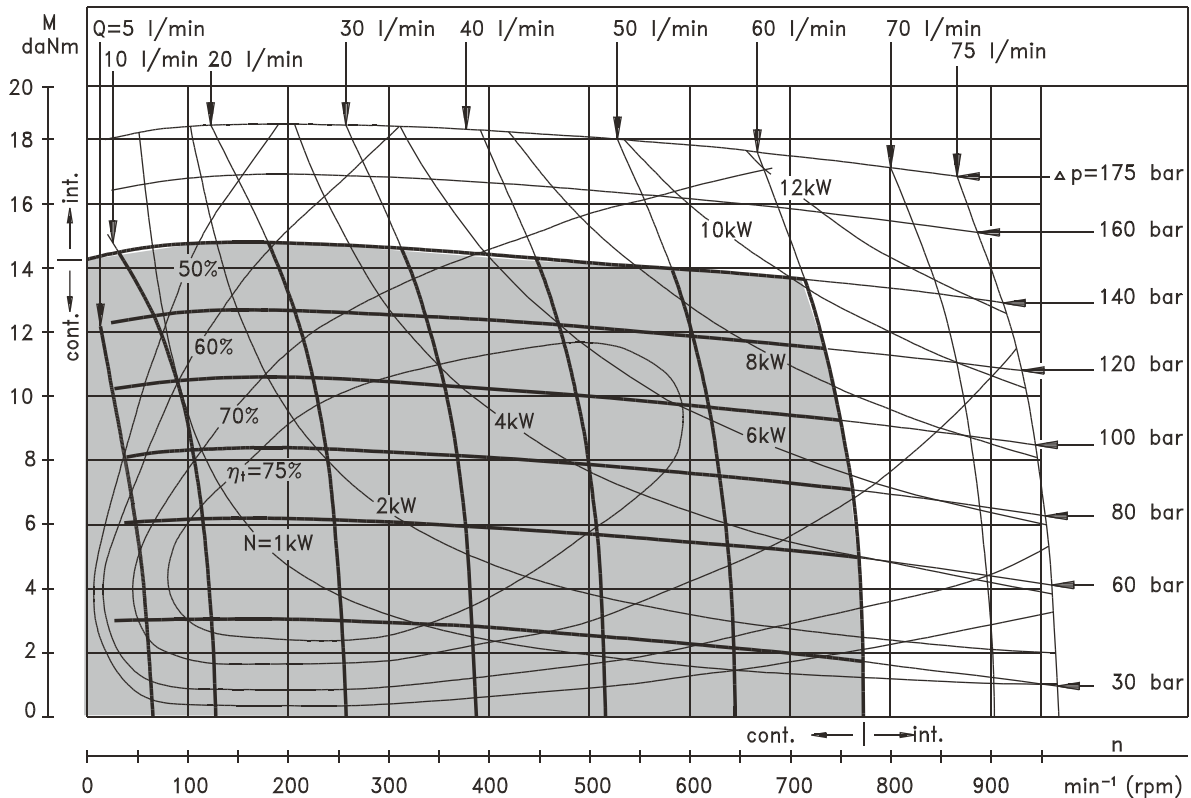
1. Intermittent speed and intermittent pressure drop must not occur simultaneously.
2. Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
3. Recommended using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) or HM (ISO 6743/4).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

PL 50



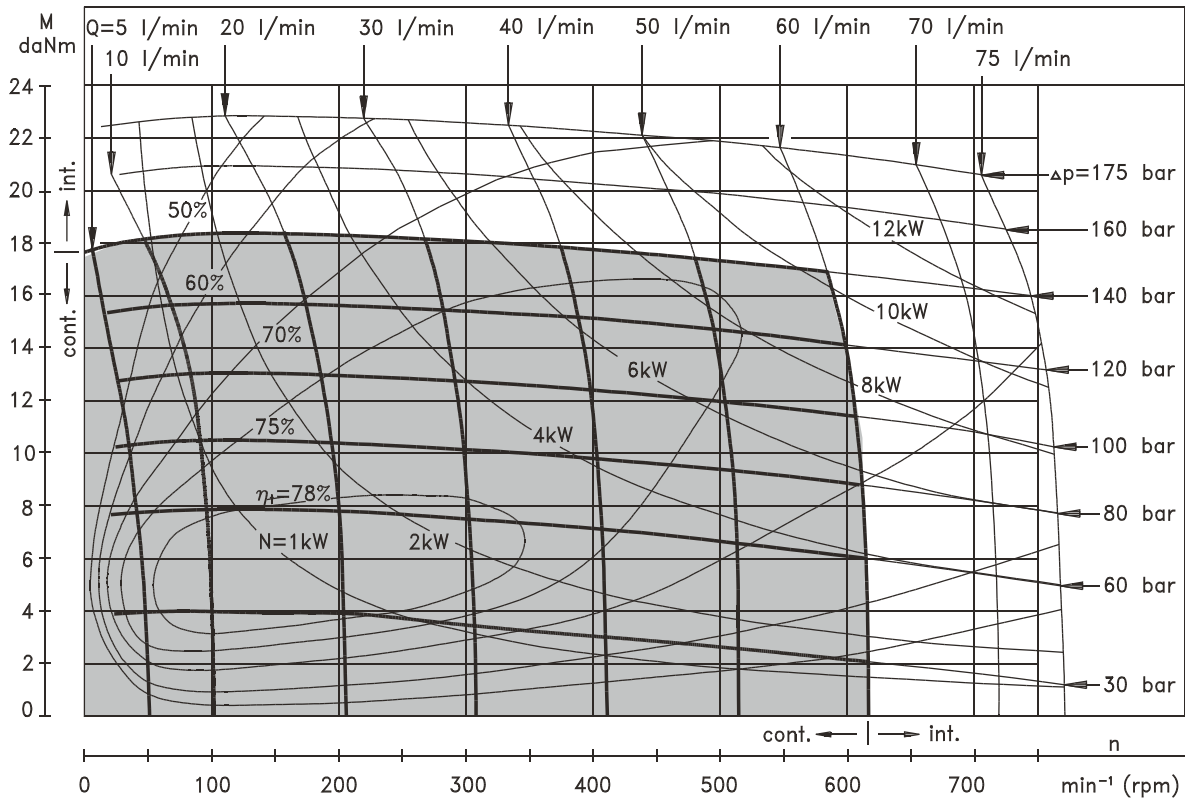
PL 80



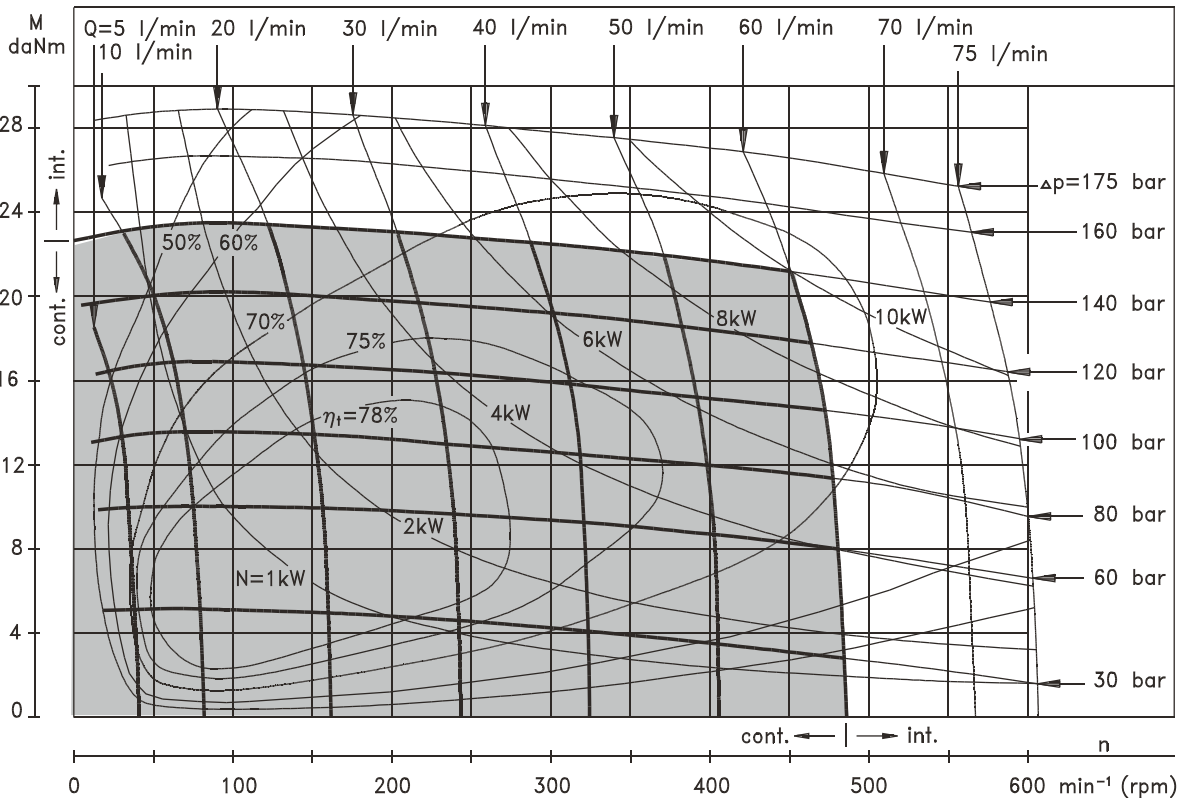
The function diagrams data was collected at back pressure 5 ÷ 10 bar and oil with viscosity of 32 mm²/s at 50° C.

FUNCTION DIAGRAMS

PL 100



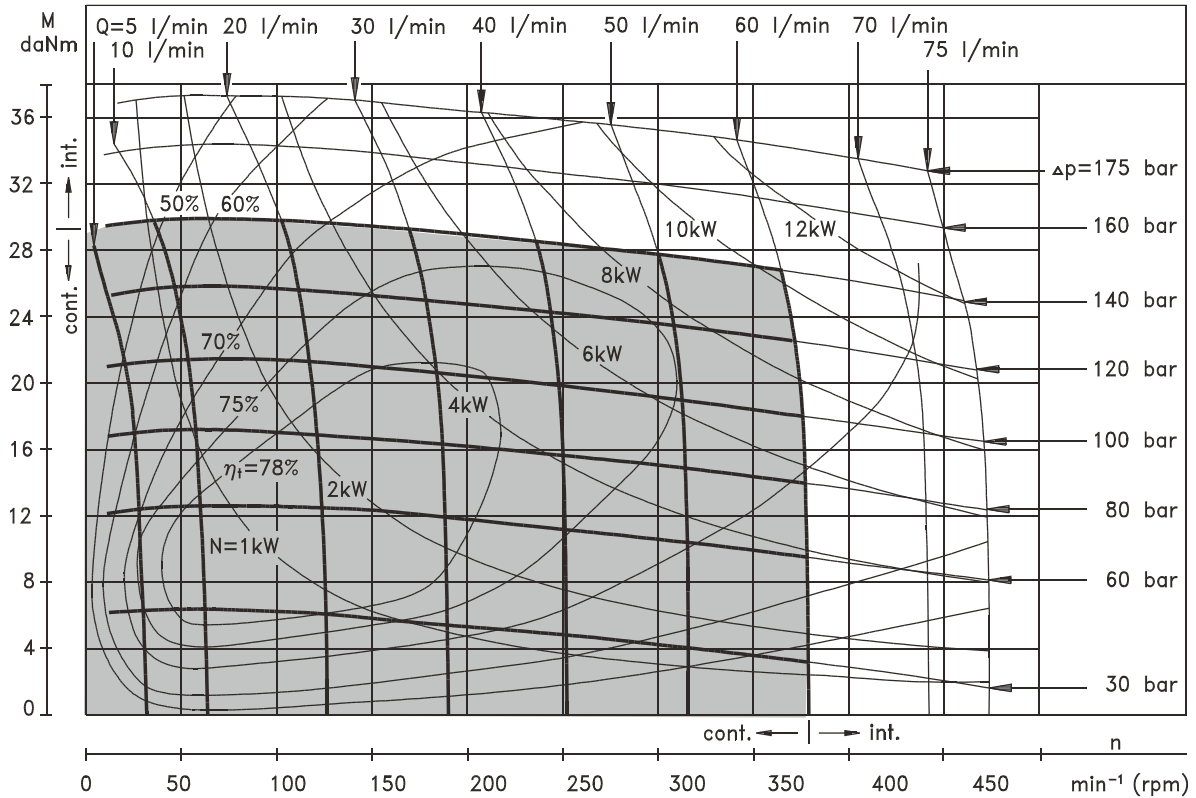
PL 125



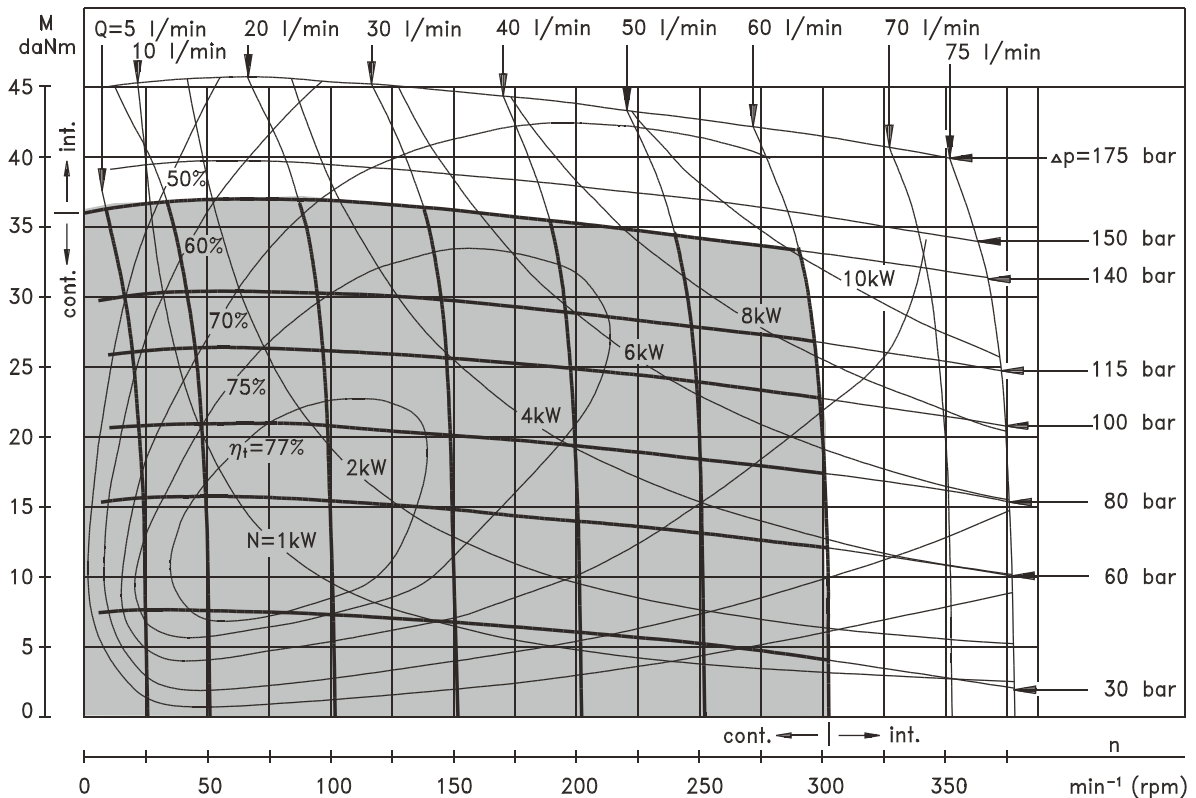
The function diagrams data was collected at back pressure 5 ÷ 10 bar and oil with viscosity of 32 mm²/s at 50° C.

FUNCTION DIAGRAMS

PL 160



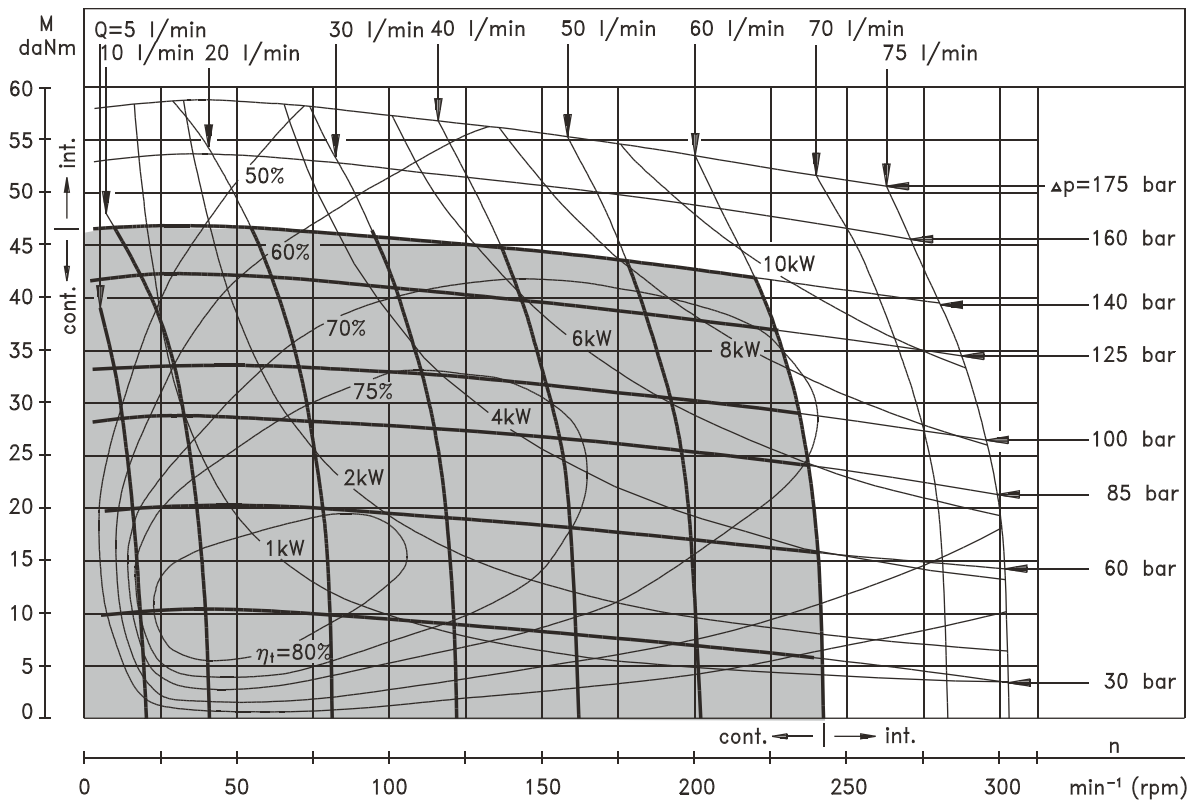
PL 200



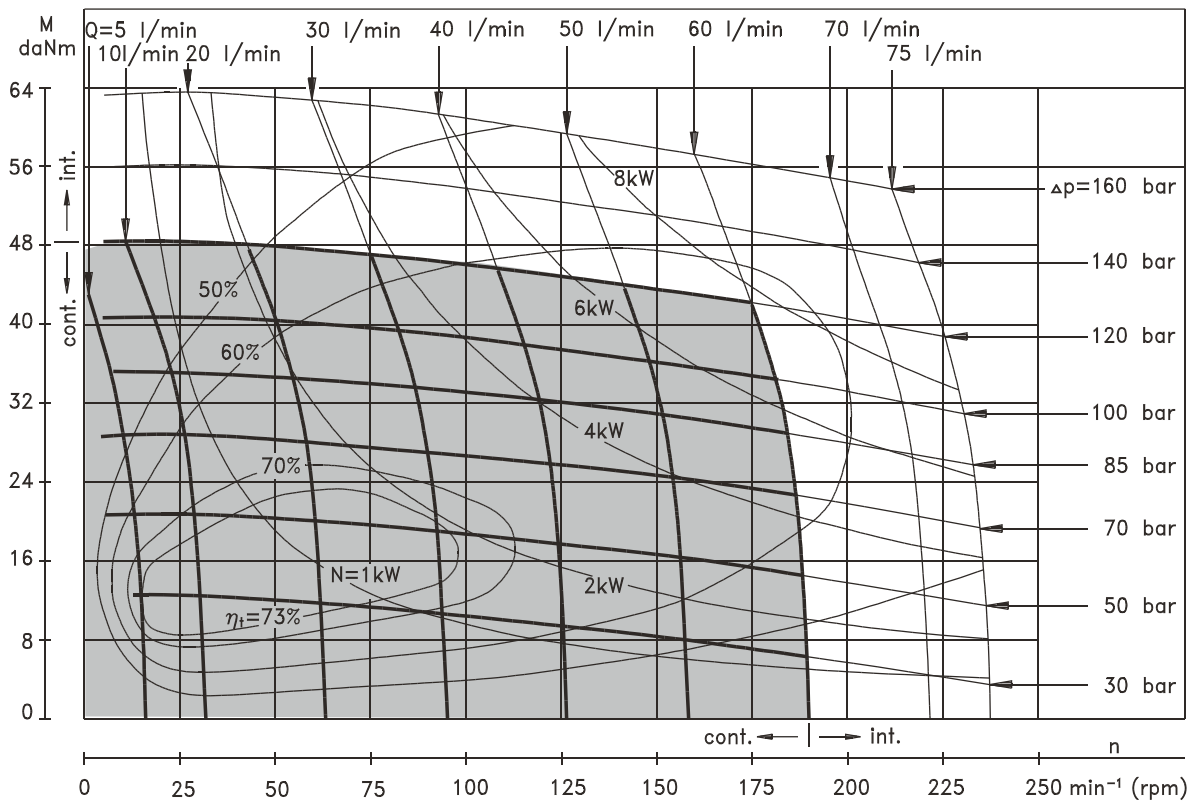
The function diagrams data was collected at back pressure 5 ÷ 10 bar and oil with viscosity of 32 mm²/s at 50° C.

FUNCTION DIAGRAMS

PL 250



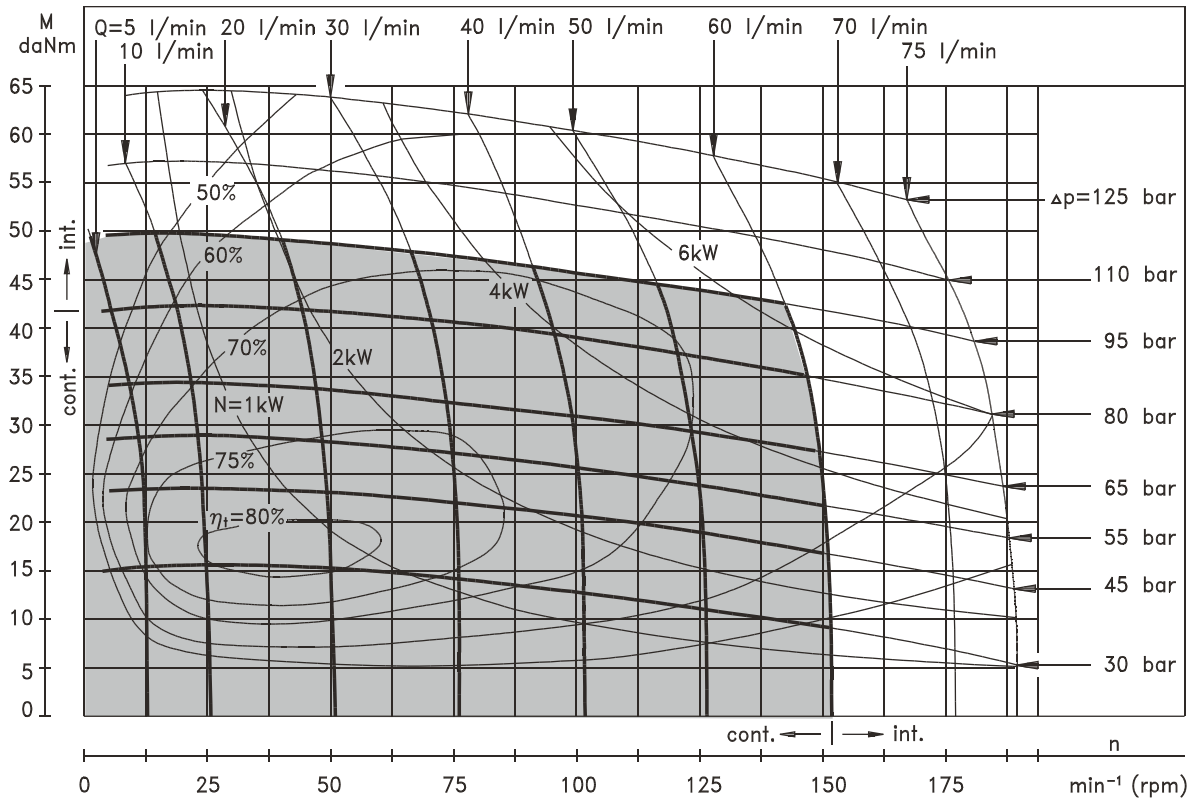
PL 315



The function diagrams data was collected at back pressure 5 ÷ 10 bar and oil with viscosity of 32 mm²/s at 50° C.

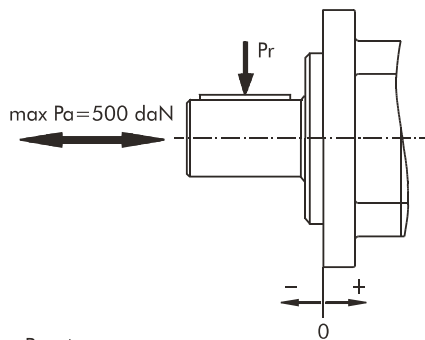
FUNCTION DIAGRAM

PL 400

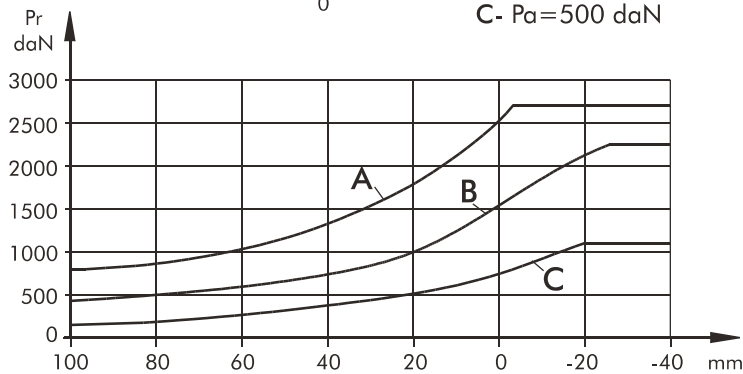


The function diagram data was collected at back pressure 5 ÷ 10 bar and oil with viscosity of 32 mm²/s at 50° C.

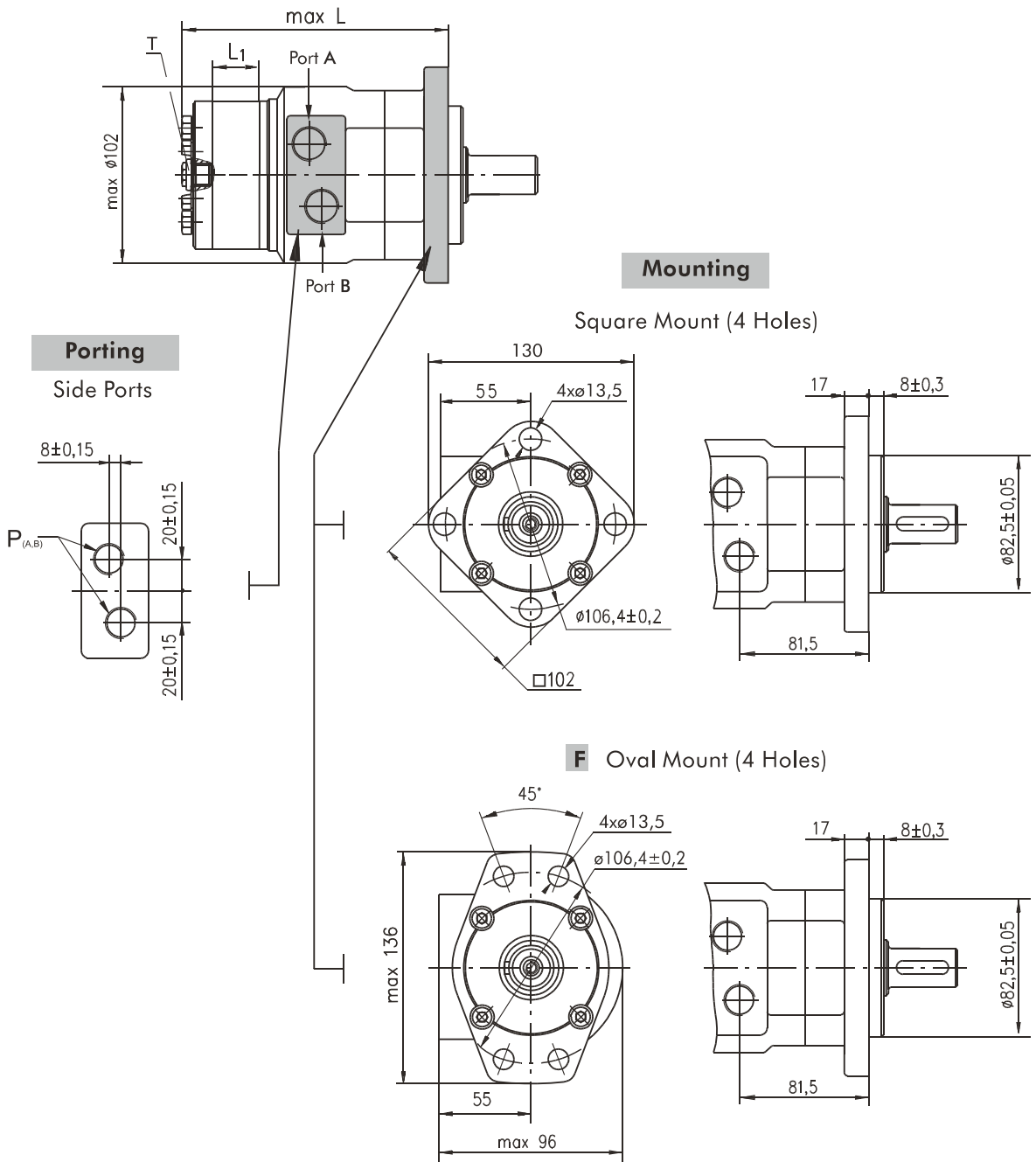
Permissible Shaft Loads PL



- A- Static load
- B- $Pa = 200 \text{ daN}$
- C- $Pa = 500 \text{ daN}$



DIMENSIONS AND MOUNTING DATA



Type	L, mm	L1, mm
PL 50	148	6,67
PL 80	152	10,67
PL 100	155	13,33
PL 125	158	16,67
PL 160	163	21,33
PL 200	168	26,67
PL 250	175	33,33
PL 315	184	42,67
PL 400	195	53,33

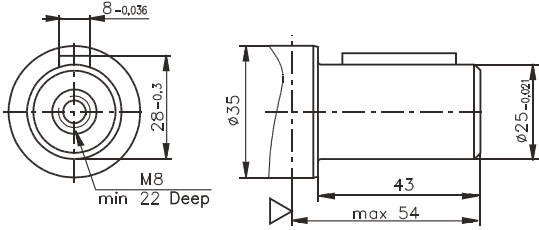
P_(A, B): 2xG1/2 or 2xM22x1,5 - 15 mm depth
T : G1/4 or M14x1,5 - 12 mm depth (plugged)

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

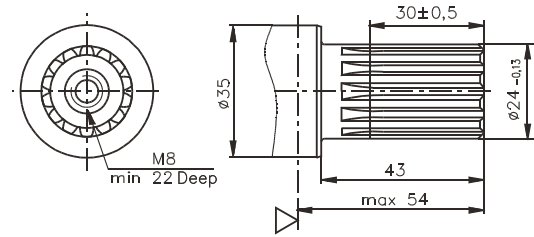
Reverse Rotation
 Viewed from Shaft End
 Port A Pressurized - CCW
 Port B Pressurized - CW

SHAFT EXTENSIONS

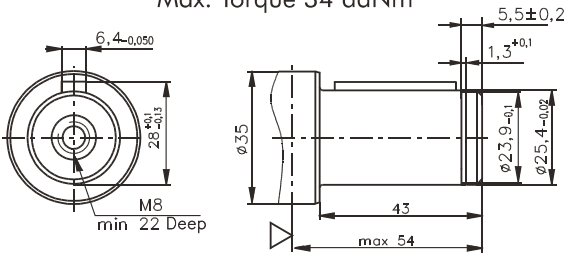
C - $\phi 25$ straight, Parallel key A8x7x30 DIN 6885
Max. Torque 34 daNm



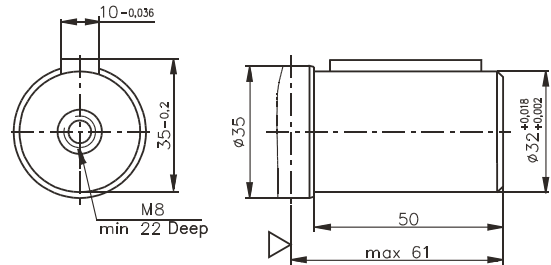
SA - splined B25x22 DIN 5482
Max. Torque 40 daNm



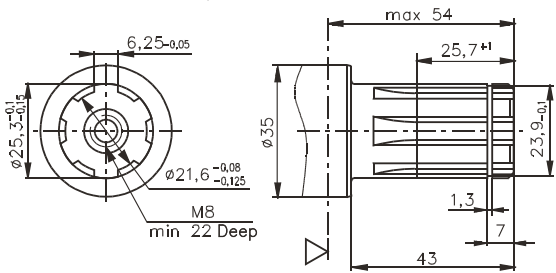
CO - $\phi 1$ " straight, Parallel key $1/4 \times 1/4 \times 1/4$ " BS46
Max. Torque 34 daNm



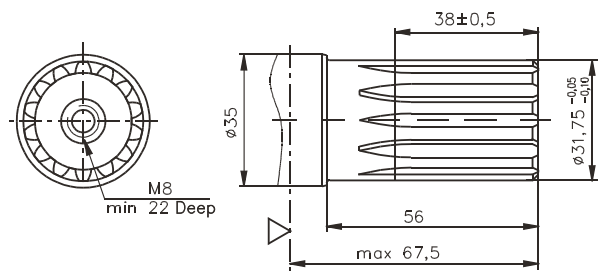
CB - $\phi 32$ straight, Parallel key A10x8x40 DIN 6885
Max. Torque 77 daNm



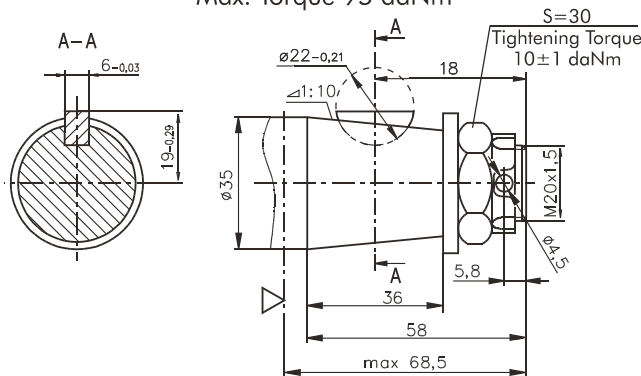
SH - splined, BS 2059 (SAE 6B)
Max. Torque 40 daNm



HB - $\phi 1 1/4$ " splined 14T, DP12/24 ANSI B92.1-1976
Max. Torque 95 daNm



KB - tapered 1:10, Woodruff key 6x9 DIN6888
Max. Torque 95 daNm



▽ - Motor Mounting Surface

ORDER CODE

	1	2	3	4	5	6
P L						

Pos.1 - Mounting Flange

omit - Square mount, four holes

F - Oval mount, four holes

Pos.2 - Displacement code

50 - 49,5 [cm³/rev]

80 - 79,2 [cm³/rev]

100 - 99,0 [cm³/rev]

125 - 123,8 [cm³/rev]

160 - 158,4 [cm³/rev]

200 - 198,0 [cm³/rev]

250 - 247,5 [cm³/rev]

315 - 316,8 [cm³/rev]

400 - 396,0 [cm³/rev]

Pos.3 - Shaft extensions*

C - ø25 straight, Parallel key A8x7x30 DIN6885

CO - ø1" straight, Parallel key ¼"x¼"x1¼" BS46

SH - ø25,3 splined BS 2059 (SAE 6B)

SA - ø24 splined B 25x22 DIN 5482

CB - ø32 straight, Parallel key A10x8x40 DIN6885

HB - ø1¼" splined 14T ANSI B92.1 - 1976

KB - ø35 tapered 1:10, Woodruff key 6x9 DIN6888

Pos. 4 - Ports

omit - BSPP (ISO 228)

M - Metric (ISO 262)

Pos. 5 - Special Features (see page 53)

Pos. 6 - Design Series

omit - Factory specified

NOTES:

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

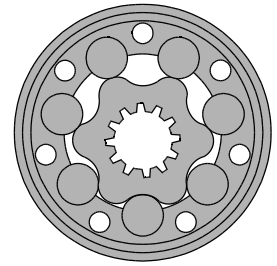
The hydraulic motors are manganophosphatized as standard.

HYDRAULIC MOTORS RL



APPLICATION

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



CONTENTS

Specification data	15
Function diagrams	16 ÷ 20
Permissible shaft loads	20
Dimensions and mounting ...	21
Shaft extensions	22
Order code	23

OPTIONS

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

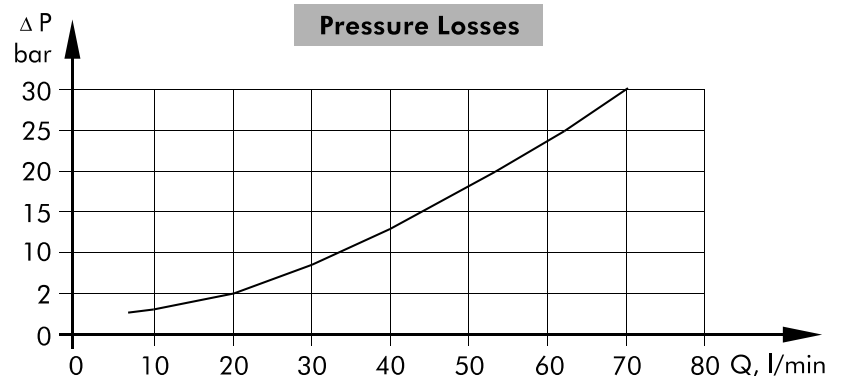
GENERAL

Displacement, [cm ³ /rev.]	51,5 ÷ 397
Max. Speed, [RPM]	150 ÷ 775
Max. Torque, [daNm]	10,1 ÷ 61
Max. Output, [kW]	7 ÷ 13
Max. Pressure Drop, [bar]	115 ÷ 175
Max. Oil Flow, [l/min]	60
Min. Speed, [RPM]	10
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)
100	20	2,5
	35	1,8
140	20	3,5
	35	2,8

Pressure Losses



SPECIFICATION DATA

Type	RL 50	RL 80	RL 100	RL 125	RL 160	RL 200	RL 250	RL 315	RL 400	
Displacement, [cm.³/rev.]	51,5	80,3	99,8	125,7	159,6	199,8	250,1	315,7	397	
Max. Speed, [RPM]	Cont.	775	750	600	475	375	300	240	190	150
	Int.*	970	940	750	600	470	375	300	240	190
Max. Torque [daNm]	Cont.	10,1	20,0	24,0	30,0	39,0	45,0	54,0	55,0	61,0
	Int.*	13,0	22,0	28,0	34,0	43,0	50,0	61,0	63,0	69,0
	Peak**	17,0	27,0	32,0	37,0	46,0	56,0	71,0	83,0	87,0
Max. Output [kW]	Cont.	7	12,5	13,0	12,5	11,5	11,0	10,0	9,0	7,8
	Int.*	8,5	15,0	15,0	16,0	14,0	13,0	12,0	11,0	10,6
Max. Pressure Drop [bar]	Cont.	140	175	175	175	175	175	175	135	115
	Int.*	175	200	200	200	200	200	200	160	140
	Peak**	225	225	225	225	225	225	225	210	175
Max. Oil Flow [l/min]	Cont.	40	60	60	60	60	60	60	60	60
	Int.*	50	75	75	75	75	75	75	75	75
Max. Inlet Pressure [bar]	Cont.	175	175	175	175	175	175	175	175	175
	Int.*	200	200	200	200	200	200	200	200	200
	Peak**	225	225	225	225	225	225	225	225	225
Max. Return Pressure without Drain Line or Max. Pressure in Drain Line, [bar]	Cont. 0-100 RPM	100	100	100	100	100	100	100	100	100
	Cont. 100-300 RPM	50	50	50	50	50	50	50	50	50
Max. Return Pressure with Drain Line [bar]	Cont. 300-600 RPM	25	25	25	25	25	25	25	25	25
	Cont. >600 RPM	15	15	15	15	15	15	15	15	15
	Int.* 0-max. RPM	100	100	100	100	100	100	100	100	100
Max. Starting Pressure with Unloaded Shaft, [bar]	Cont.	140	175	175	175	175	175	175	175	175
	Int.*	175	200	200	200	200	200	200	200	200
	Peak**	225	225	225	225	225	225	225	225	225
Min. Starting Torque [daNm]	8	15	20	25	32	37	45	45	49	
Min. Speed***, [RPM]	10	10	10	10	10	10	10	10	10	
Weight, [kg]	8,5	8,6	8,9	9,0	9,2	9,6	10,1	10,8	11,5	

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

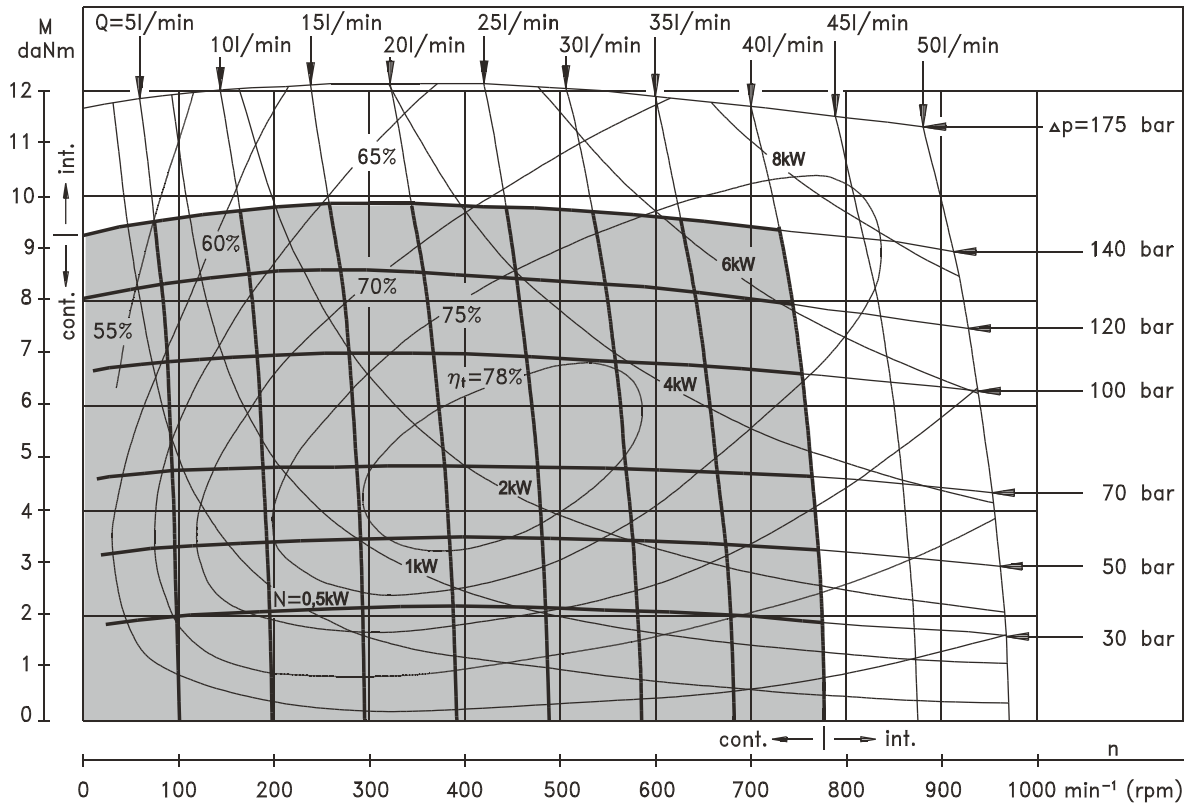
** Peak load: the permissible values may occur for max. 1% of every minute.

*** For speeds of 10 RPM or lower, consult factory or your regional manager.

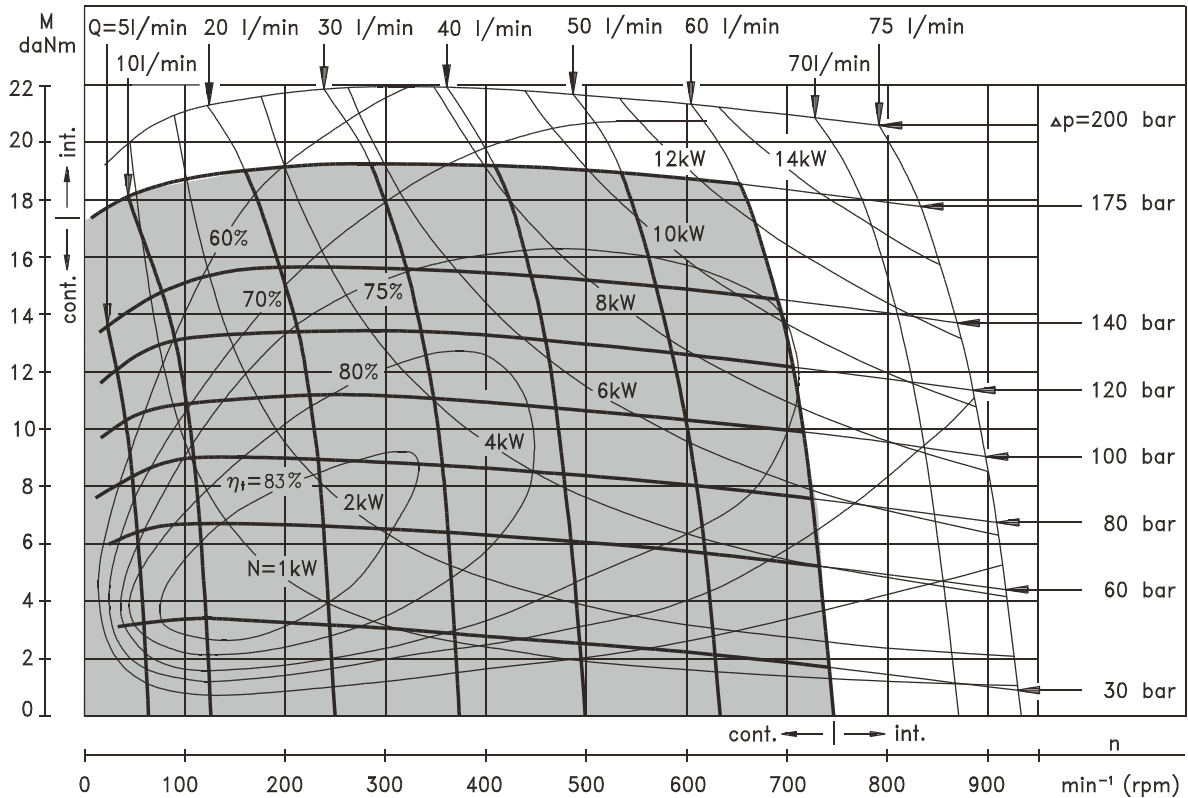
1. Intermittent speed and intermittent pressure drop must not occur simultaneously.
2. Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
3. Recommended using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) or HM (ISO 6743/4).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

RL 50



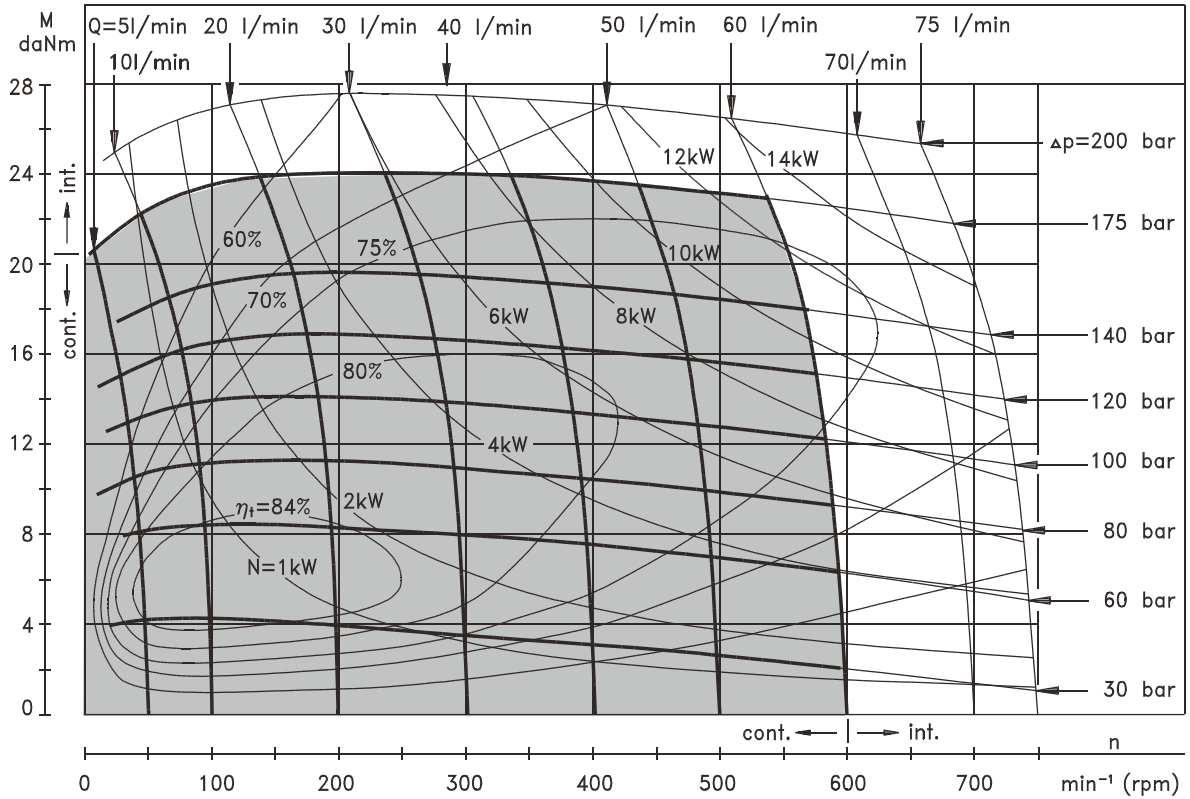
RL 80



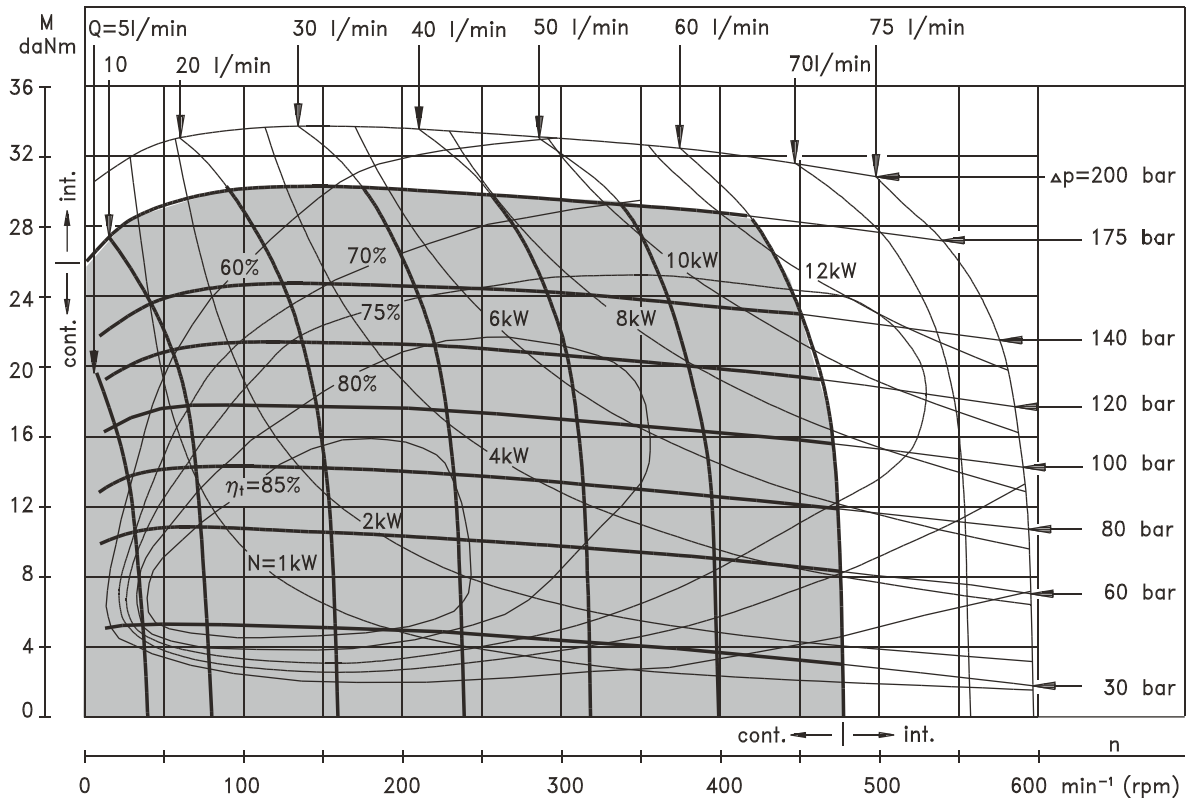
The function diagrams data was collected at back pressure 5 ÷ 10 bar and oil with viscosity of 32 mm²/s at 50° C.

FUNCTION DIAGRAMS

RL 100



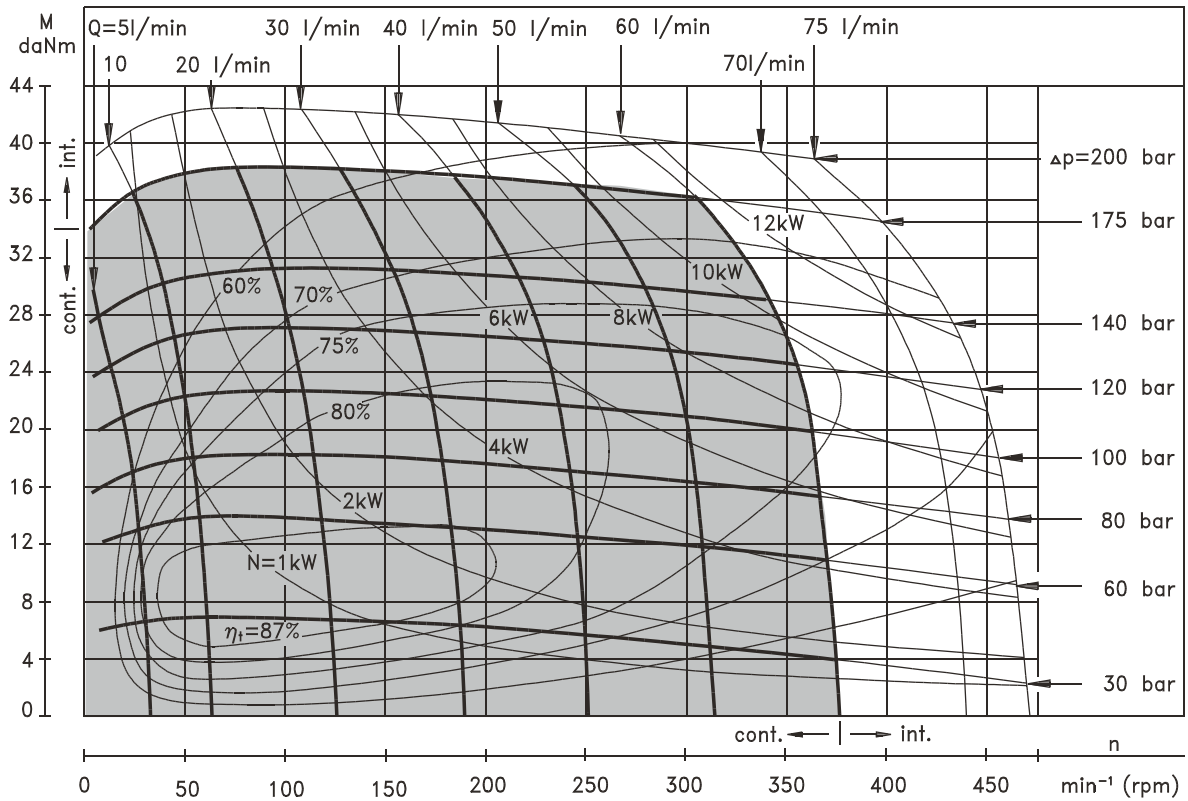
RL 125



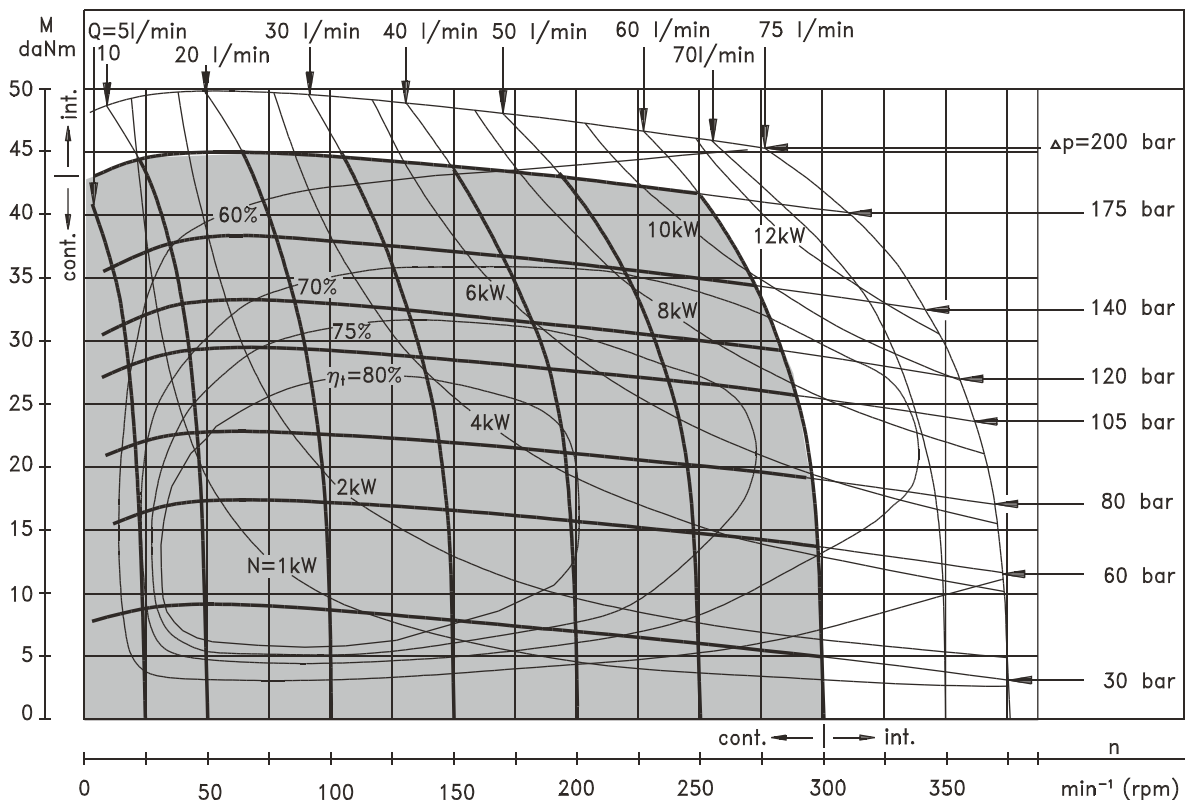
The function diagrams data was collected at back pressure $5 \div 10$ bar and oil with viscosity of $32 \text{ mm}^2/\text{s}$ at 50°C .

FUNCTION DIAGRAMS

RL 160



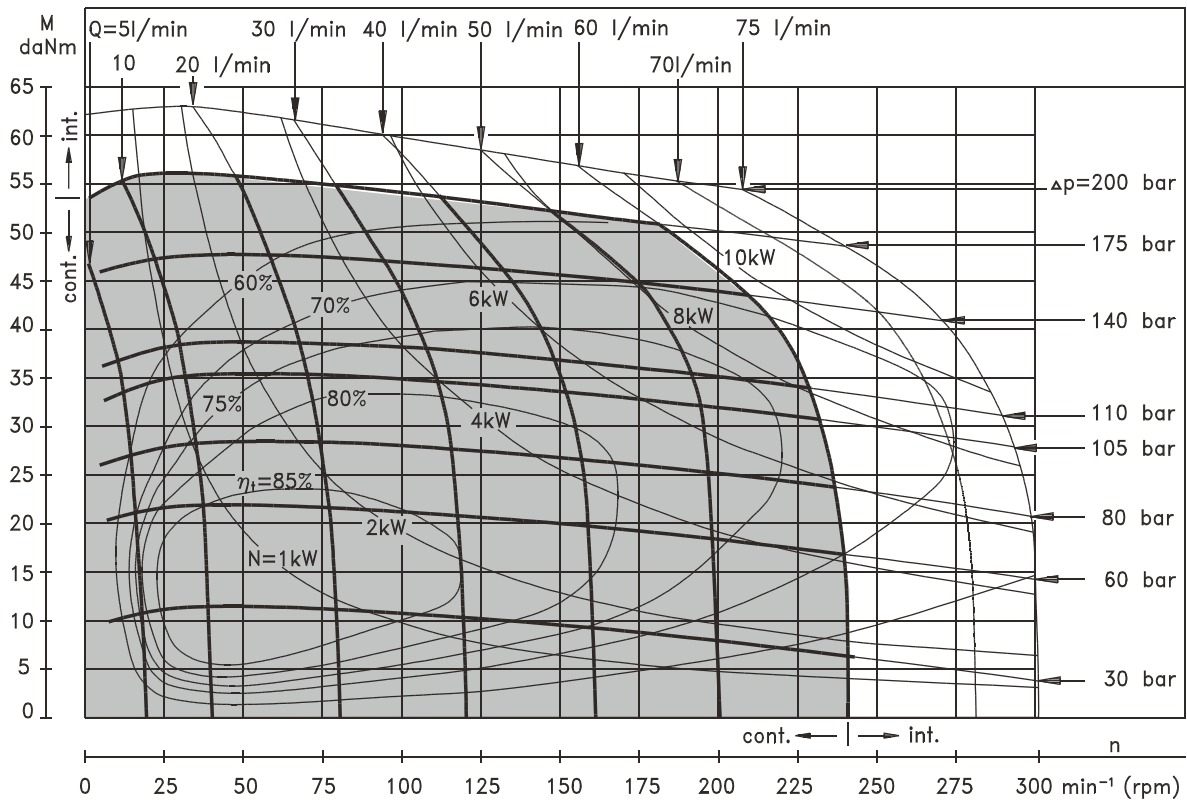
RL 200



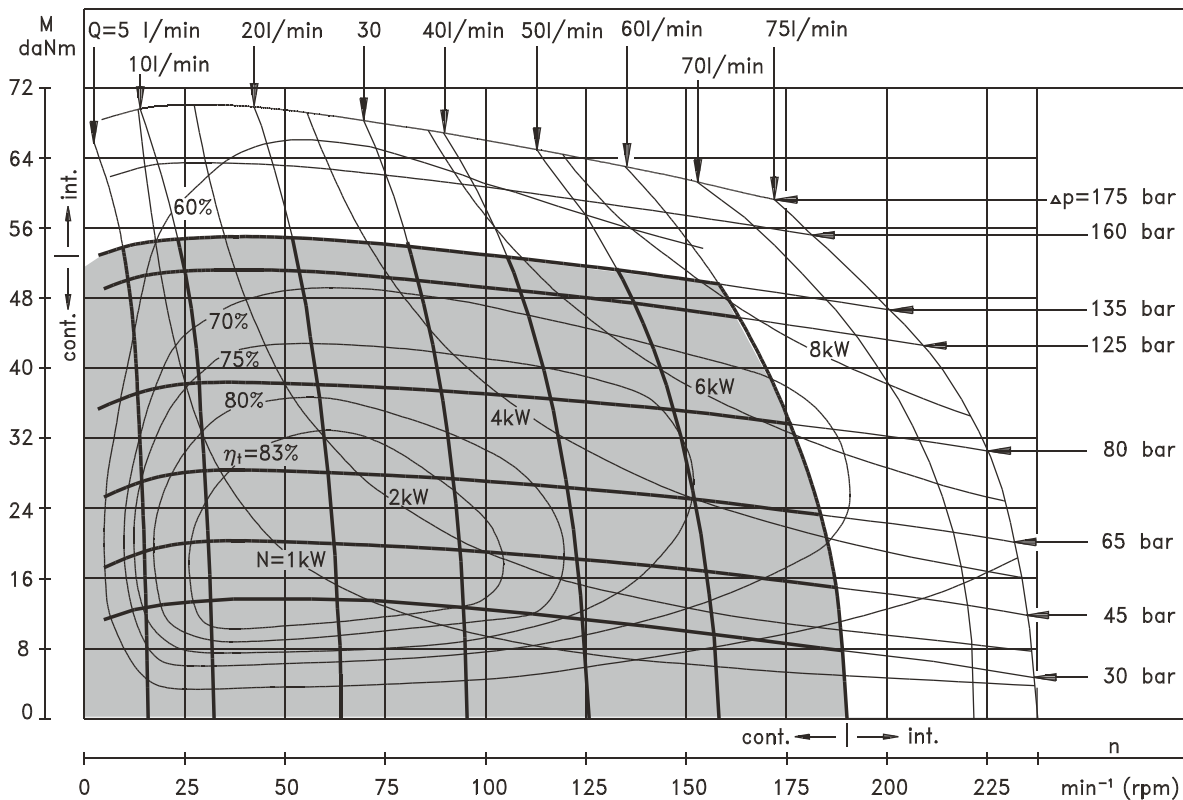
The function diagrams data was collected at back pressure 5 ÷ 10 bar and oil with viscosity of 32 mm²/s at 50° C.

FUNCTION DIAGRAMS

RL 250



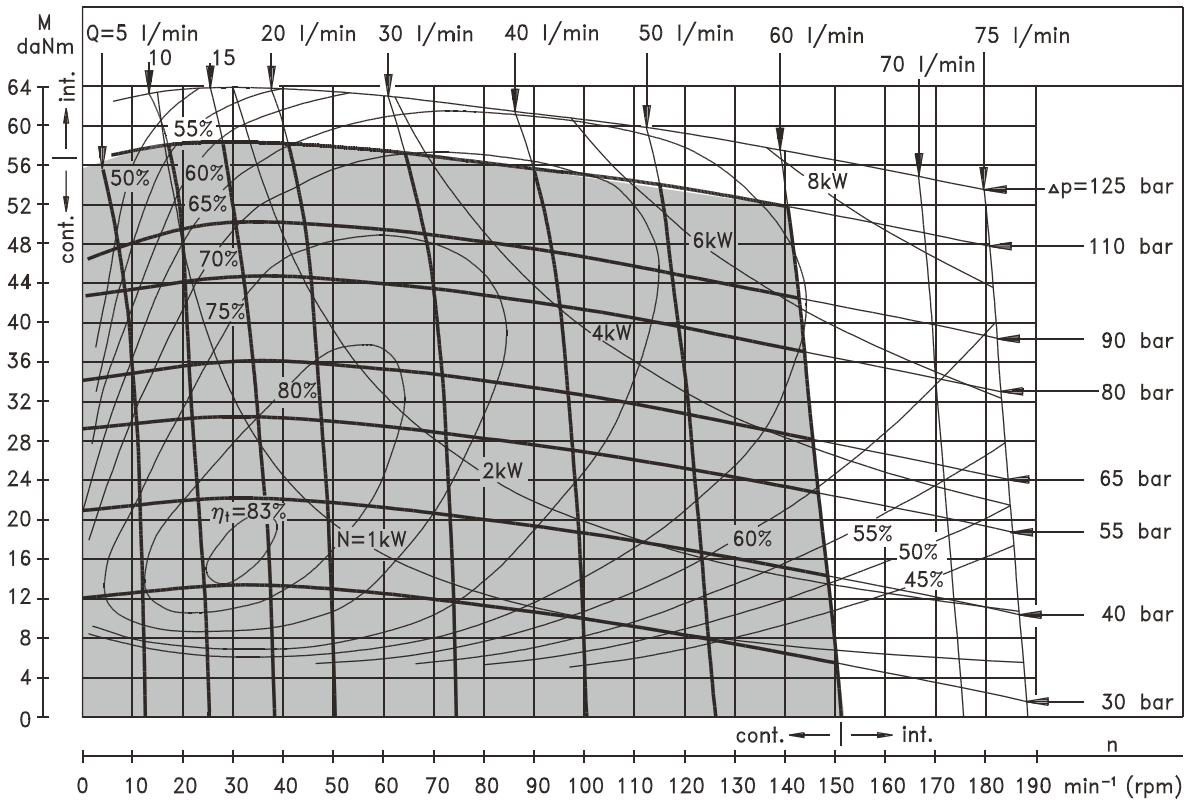
RL 315



The function diagrams data was collected at back pressure 5 ÷ 10 bar and oil with viscosity of 32 mm²/s at 50° C.

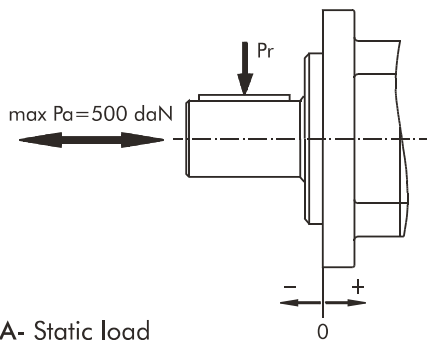
FUNCTION DIAGRAM

RL 400

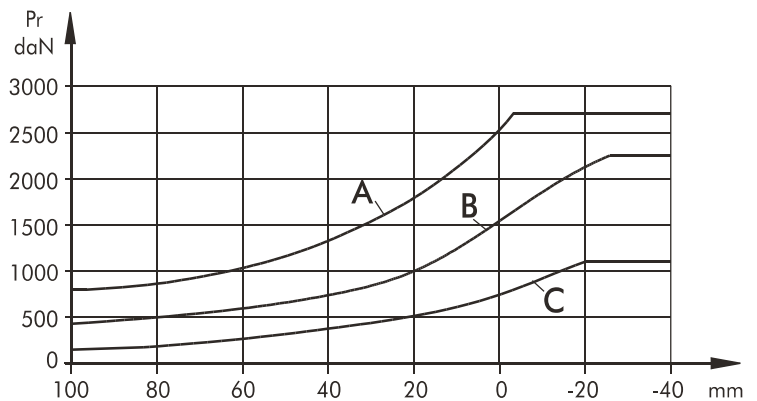


The function diagram data was collected at back pressure 5 ÷ 10 bar and oil with viscosity of 32 mm²/s at 50° C.

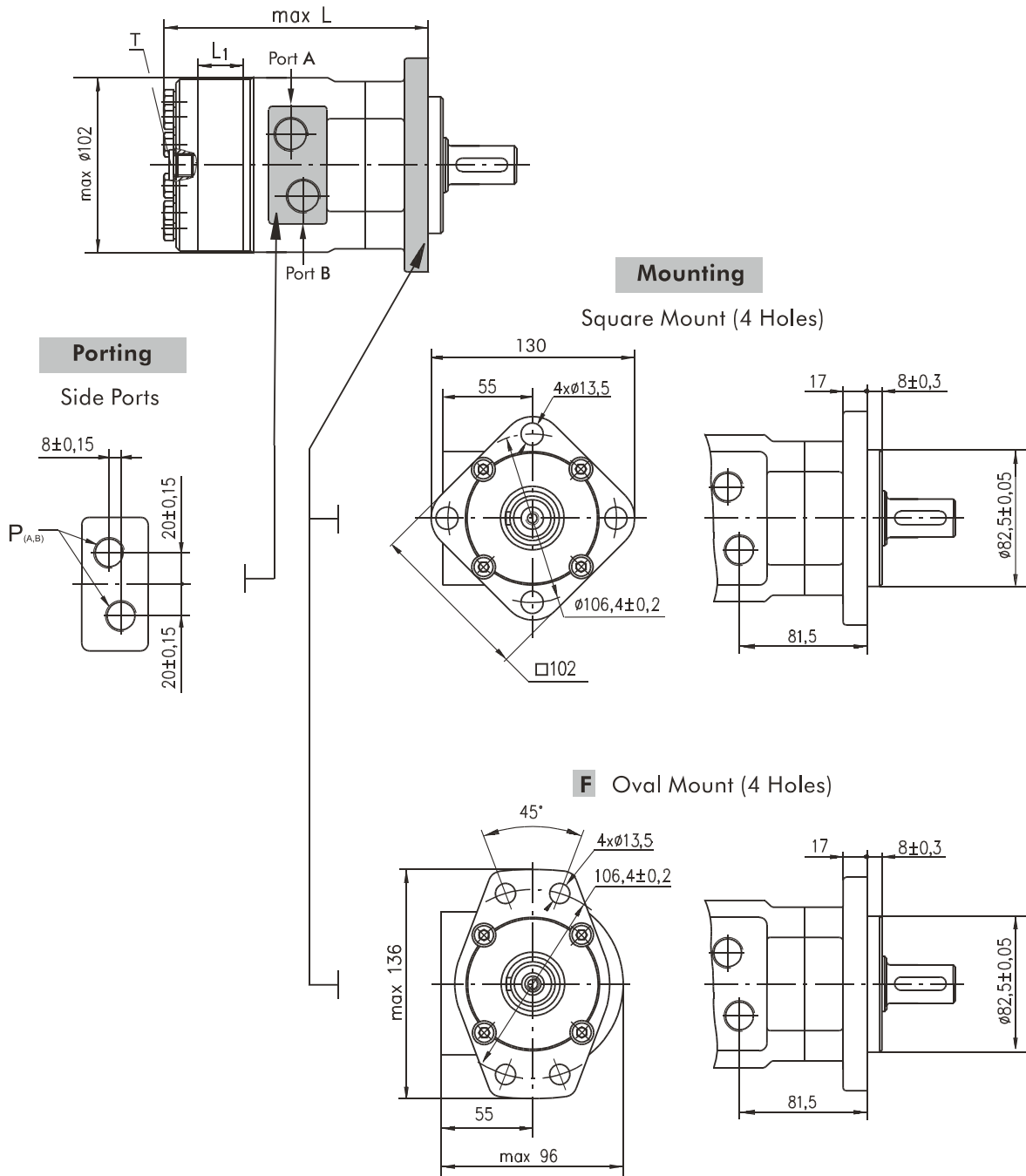
Permissible Shaft Loads RL



- A- Static load
- B- $P_a = 200 \text{ daN}$
- C- $P_a = 500 \text{ daN}$



DIMENSIONS AND MOUNTING DATA



Type	L, mm	L ₁ , mm
RL 50	152	9,0
RL 80	157	14,0
RL 100	160	17,4
RL 125	165	21,8
RL 160	171	27,8
RL 200	178	34,8
RL 250	187	43,5
RL 315	198	54,8
RL 400	212	69,4

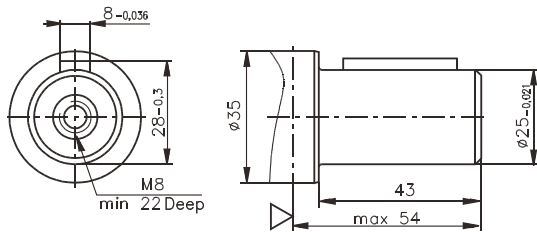
P_(A, B): 2xG1/2 or 2xM22x1,5 - 15 mm depth
T : G1/4 or M14x1,5 - 12 mm depth (plugged)

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

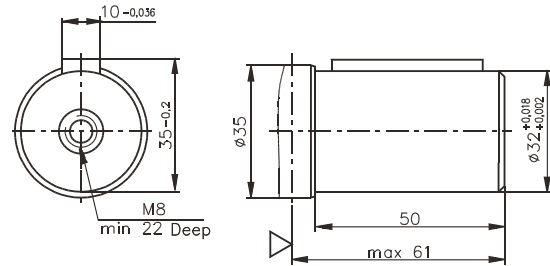
Reverse Rotation
 Viewed from Shaft End
 Port A Pressurized - CCW
 Port B Pressurized - CW

SHAFT EXTENSIONS

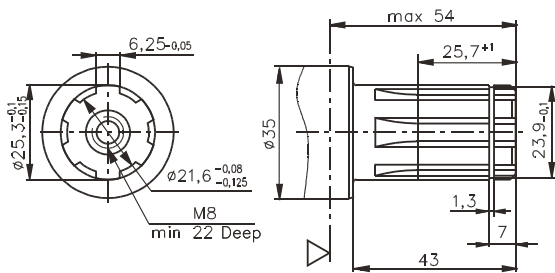
C - $\varnothing 25$ straight, Parallel key A8x7x30 DIN 6885
Max. Torque 34 daNm



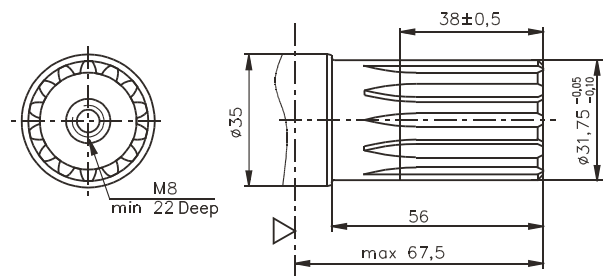
CB - $\varnothing 32$ straight, Parallel key A10x8x40 DIN 6885
Max. Torque 77 daNm



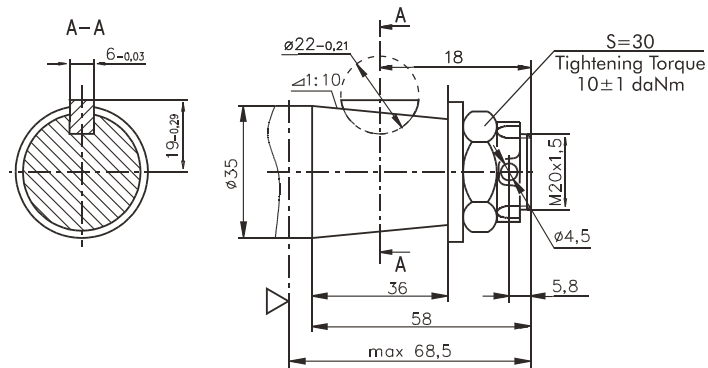
SH - splined, BS 2059 (SAE 6B)
Max. Torque 40 daNm



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



KB - tapered 1:10, woodruff key 6x9 DIN6888
Max. Torque 95 daNm



ORDER CODE

	1	2	3	4	5	6
RL						

Pos.1 - Mounting Flange

omit - Square mount, four holes

F - Oval mount, four holes

Pos.2 - Displacement code

50 - 51,5 [cm³/rev]

80 - 80,3 [cm³/rev]

100 - 99,8 [cm³/rev]

125 - 125,7 [cm³/rev]

160 - 159,6 [cm³/rev]

200 - 199,8 [cm³/rev]

250 - 250,1 [cm³/rev]

315 - 315,7 [cm³/rev]

400 - 397,0 [cm³/rev]

Pos.3 - Shaft Extensions*

C - ø25 straight, Parallel key A8x7x30 DIN6885

CB - ø32 straight, Parallel key A10x8x40 DIN6885

SH - ø25,3 splined BS 2059 (SAE 6B)

HB - ø1 ¼" splined 14T ANSI B92.1 - 1976

KB - ø35 tapered 1:10, Woodruff key 6x9 DIN6888

Pos. 4 - Ports

omit - BSPP (ISO 228)

M - Metric (ISO 262)

Pos. 5 - Special Features (see page 53)

Pos. 6 - Design series

omit - Factory specified

NOTES:

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

The hydraulic motors are mangano-phosphatized as standard.