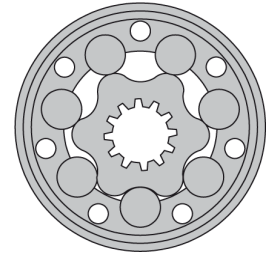


HYDRAULIC MOTORS OR



OIL FLOW IN DRAIN LINE

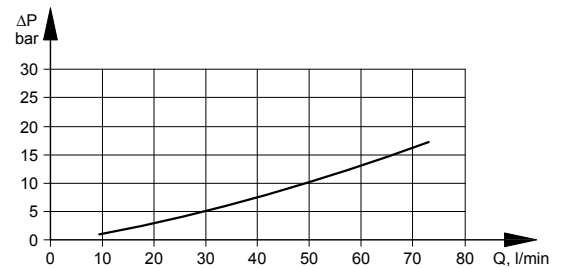
Pressure drop (bar)	Viscosity (mm ² /s)	Oil flow in drain line (l/min)
100	20	2,5
	35	1,8
140	20	3,5
	35	2,8



GENERAL

Displacement, (cm ³ /rev)	51,5 ÷ 397
Max. Speed, (RPM)	775 ÷ 150
Max. Torque, (daNm)	10,1 ÷ 61
Max. Output, (kW)	5 ÷ 13
Max. Pressure Drop, (bar)	175 ÷ 70
Max. Oil Flow, (l/min)	40 ÷ 60
Min. speed, (RPM)	10
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)

PRESSURE LOSSES



SPECIFICATION DATA

Type		OR 50	ORW 50 OR 50...B	OR 80	ORW 80 OR 80...B	OR 100	ORW 100 OR 100...B	OR 125	ORW 125 OR 125...B	OR 160
Displacement [cm ³ /u]		51,5	51,5	80,3	80,3	99,8	99,8	125,7	125,7	159,6
Max. Speed, [RPM]	cont.	775	775	750	750	600	600	475	475	375
	int.	970	970	940	940	750	750	600	600	470
Max. Torque [daNm]	cont.	10,1	10,1	19,5	19,5	24	24	30	30	39
	int.	13	13	22	22	28	28	34	34	43
	peak	17	17	27	27	32	32	37	37	46
Max. Output [kW]	cont.	7	7	12,5	12,5	13	13	12,5	12,5	11,5
	int.	8,5	8,5	15	15	15	15	14,5	14,5	14
Max. Pressure Drop [bar]	cont.	140	140	175	175	175	175	175	175	175
	int.	175	175	200	200	200	200	200	200	200
	peak	225	225	225	225	225	225	225	225	225
Max. Oil Flow [l/min]	cont.	40	40	60	60	60	60	60	60	60
	int.	50	50	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 w/o Drain Line or Max. Pressure in Drain Line, [bar]	cont.	0-100	RPM	150	100	150	100	150	100	150
	cont.	100-300	RPM	75	30	75	30	75	30	75
	cont.	300-600	RPM	50	15	50	15	50	15	50
	cont.	>600	RPM	20	-	20	-	20	-	-
	int.	0-max.	RPM	150	100	150	100	150	100	150
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 Shift, [bar]		10	10	10	10	10	10	9	9	7
Min. Starting Torque [daNm]	at max press. drop cont.	8	8	15	15	20	20	25	25	32
	at max press. drop int.	10	10	17	17	23	23	28	28	37
Min. Speed, [RPM]		10	10	10	10	10	10	10	10	10
Weight avg, [kg]	OR(F)	6,8	6,9	6,9	7,0	7,2	7,3	7,3	7,4	7,5
	ORW	-	10,4	-	10,5	-	10,6	-	10,8	-
	ORQ	6,2	-	6,3	-	6,6	-	6,8	-	7,6

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.

SPECIFICATION DATA

Type		ORW 160	OR	ORW 200	OR	ORW 250	OR	ORW 315	OR	ORW 400
		OR 160...B	200	OR 200...B	250	OR 250...B	315	OR 315...B	400	OR 400...B
Displacement [cm³/u]		159,6	199,8	199,8	250,1	250,1	315,7	315,7	397	397
Max. Speed, [RPM]	cont.	375	300	300	240	240	190	190	150	150
	int.	470	375	375	300	300	240	240	190	190
Max. Torque [daNm]	cont.	39	38,5	45	39	54	39	55	38	61
	int.	43	46	50	58	61	57	63	60	69
	peak	46	56	56	71	71	83	83	87	87
Max. Output [kW]	cont.	11,5	9	11	6,5	10	6	9	4,8	7,8
	int.	14	11,5	13	10,5	12	9,6	11	8,8	10,6
Max. Pressure Drop [bar]	cont.	175	140	175	110	175	90	135	70	115
	int.	200	175	200	175	200	140	160	115	140
	peak	225	225	225	225	225	210	210	175	175
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 w/o Drain Line or Max. Pressure in Drain Line, [bar]	cont.	0-100	RPM	100	150	100	150	100	150	100
	cont.	100-300	RPM	30	75	30	75	30	75	30
	cont.	300-600	RPM	15	50	15	-	-	-	-
	cont.	>600	RPM	-	-	-	-	-	-	-
	int.	0-max.	RPM	100	150	100	150	100	150	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 Shift, [bar]		7	5	5	4	4	3	3	3	3
Min. Starting Torque [daNm]	at max press. drop cont.	32	33	41	31	50	33	50	30	49
	at max press. drop int.	37	40	46	48	55	58	66	50	61
Min. Speed, [RPM]		10	10	10	10	10	10	10	10	10
Weight avg, [kg]	OR(F)	7,6	8	8,1	8,4	8,5	9,1	9,2	9,8	9,9
	ORW	11,1	-	11,6	-	12,1	-	12,6	-	13,3
	ORQ	-	7,2	-	7,8	-	8,6	-	9,3	-

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.

SPECIFICATION DATA for OR...LSV

Low Speed Valve (LSV) "LSV" Series hydraulic motors have been designed to operate with normal pressure drop and to ensure smooth run at low speed (up to 200 RPM), as the best security for operation is guaranteed at frequency of rotation 20 ± 50 RPM. They have an increased starting pressure drop and are not recommended for using at pressure less than 40 bar.

Look at specification data for hydraulic motors standard version. The modification concerns only the following parameters: maximum speed, maximum output, maximum Oil flow and maximum starting pressure.

Type		OR 50	OR 80	OR 100	OR 125	OR 160	OR 200	OR 250	OR 315	OR 400
Max. Speed, [RPM]	cont.	200	200	200	200	200	200	160	126	100
	int.	250	250	250	250	250	250	200	158	126
Max. Output [kW]	cont.	2	4,0	5,0	6,2	7,0	6,8	6,2	5,8	5,2
	int.	3	5,7	7,3	8,5	8,8	8,3	7,8	7,6	6,8
Max. Oil Flow [l/min]	cont.	13	23	26	33	40	40	40	40	40
	int.	16	31	34	45	50	50	50	50	50
Max. Starting Pressure with Unloaded Shift, [bar]		20	20	20	20	15	15	15	12	12

SPECIFICATION DATA for OR...LL

Low Leakage (LL) "LL" Series hydraulic motors have been designed to operate at the whole standard range of working conditions (pressure drop and frequency of rotation), but with considerable decreased volumetric losses in the drainage ports. Their main purpose is to operate as series-connected motors in hydraulic systems. For this version is permissible decreasing of the maximal torque with up to 5% (at middle speed) and up to 10% (at high speed) in comparison to the standard versions of motors.

Look at specification data for hydraulic motors series OR standard version. The modification concerns only the parameters: maximum torque, maximum output, minimum starting torque.

Type		OR 50	OR 80	OR 100	OR 125	OR 160	OR 200	OR 250	OR 315	OR 400
Max. Torque [daNm]	cont.	9,6	18,5	22,8	28,5	37,1	42,8	51,3	52,2	58,0
	int.	12,4	20,9	26,6	32,3	40,9	47,5	58,0	60,0	65,6
Max. Output [kW]	cont.	9,0	12,3	12,8	12,4	11,4	10,9	9,9	8,9	7,7
	int.	11,9	14,8	14,8	14,3	13,8	12,8	11,8	10,9	10,5
Max. Pressure Drop [bar]	cont.	140	175	175	175	175	175	175	135	115
	int.	175	200	200	200	200	200	200	160	140
Min. Starting Torque [daNm]	cont.	7,6	14,2	19,0	23,8	30,4	39,0	47,5	47,5	46,5
	int.	9,5	16,2	21,8	26,6	35,2	43,7	52,2	62,7	58,0

SPECIFICATION DATA for OR...FR

Free Running version "FR": These are the hydraulic motors with reduced mechanical losses, for which at disengaged condition / unconnected with driving mechanism / the rotation of the shaft could be realized by means of small torque. This advantage is especially useful at operating with high frequencies of rotation /over 300min / and low pressure drop, which is inbred for types with displacements of up to 200 cm³. It is normal for these for the different condition of operation to have high torque, as well as high volume losses: the values of the volumetric efficiency are lower (up to 5 % for middle and up to 10% for high values of the pressure drop), than those of the normal versions. That's why the recommended operating for "FR" version is for applications with pressure drop up to 100 bar.

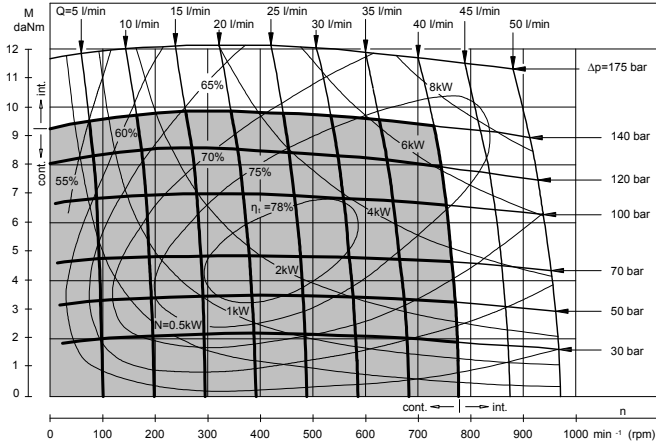
Additional advantages of "FR" version are prolonging of the life of the hydraulic motors at high frequencies of rotation, as well as the possibility to use them in systems with big variation of the loading.

Look at specification data for hydraulic motors series OR standard version. Only the parameter Starting Pressure is modified.

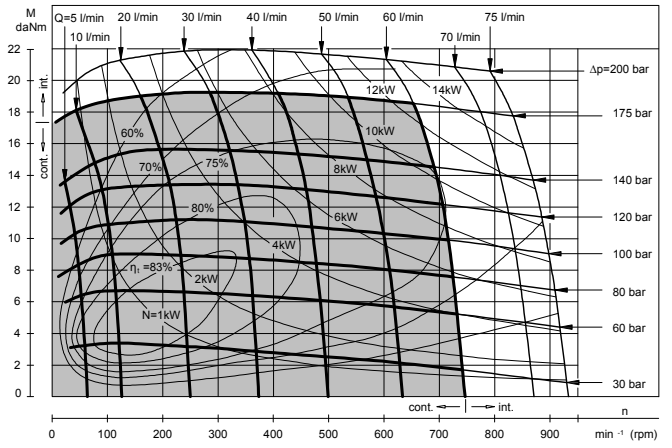
Type	OR 50	OR 80	OR 100	OR 125	OR 160	OR 200
Max. Starting Pressure with Unloaded Shaft, [bar]	8	8	8	7,5	5,5	4

FUNCTION DIAGRAMS

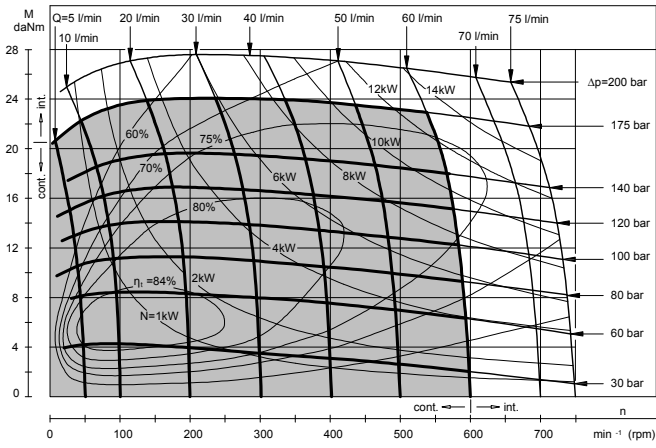
OR 50



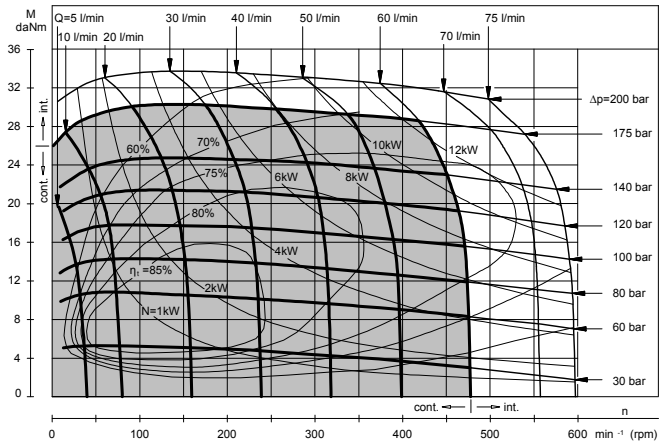
OR 80



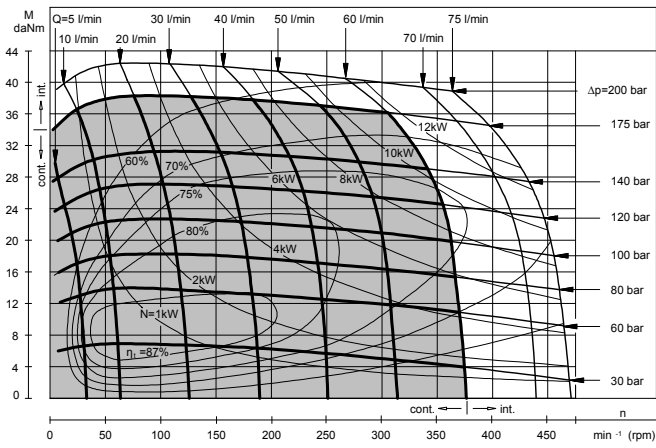
OR 100



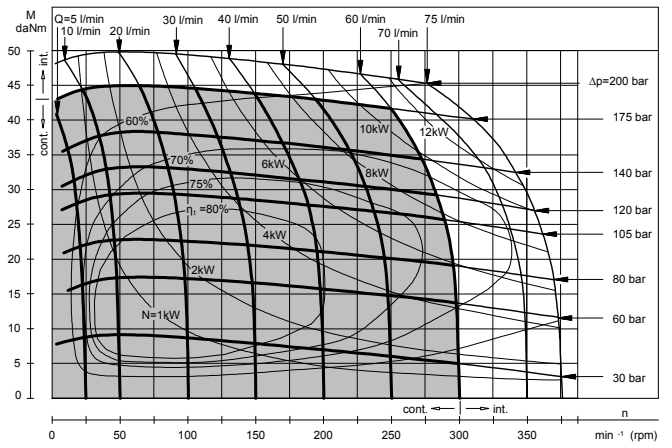
OR 125



OR 160



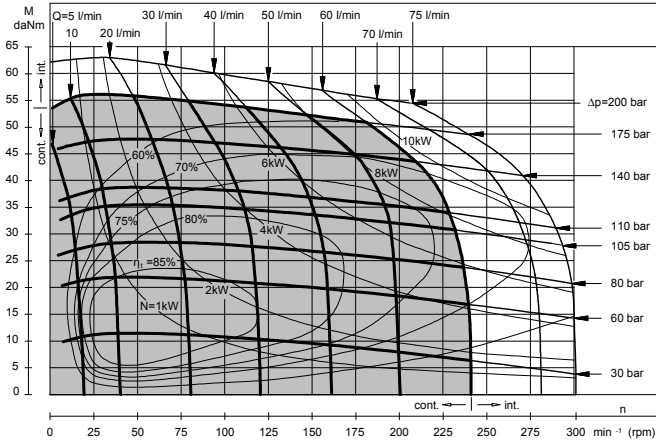
OR 200



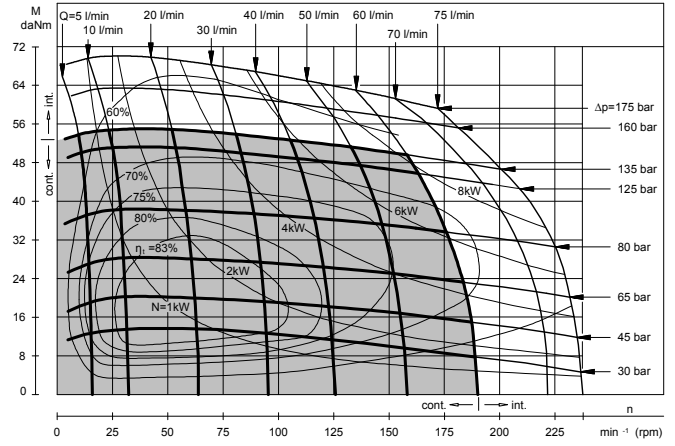
The function diagrams data was collected at back pressure 5+10 bar and oil with viscosity of 32 mm²/s at 50° C.

FUNCTION DIAGRAMS

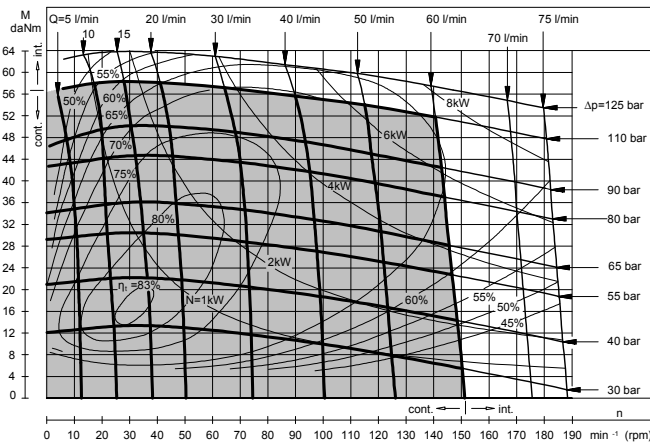
OR 250



OR 315

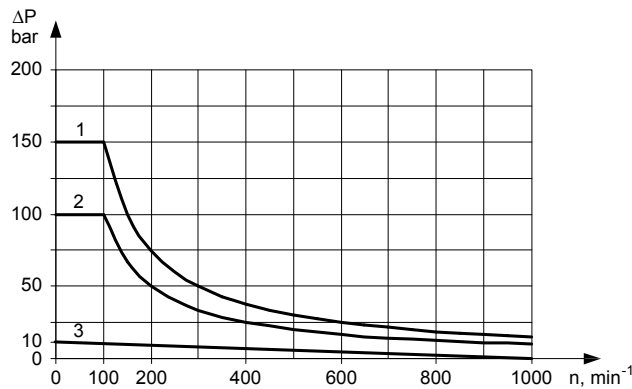


OR 400



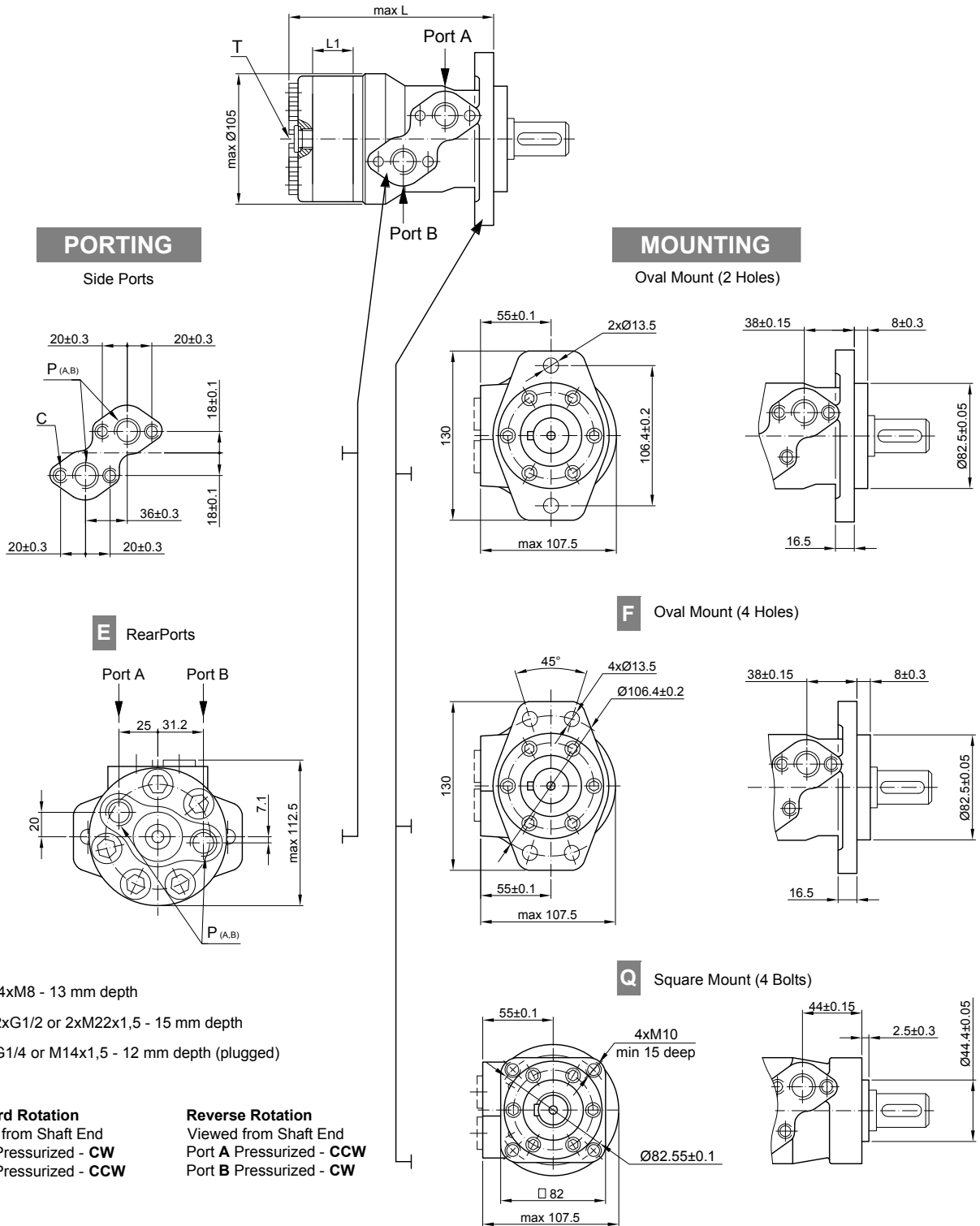
The function diagrams data was collected at back pressure 5÷10 bar and oil with viscosity of 32 mm²/s at 50° C.

Max. Permissible Shaft Seal Pressure for OP and OR Motors



- 1: Drawing for "D" Seal
- 2: Drawing for "...B" Shaft Seal
- 3: Drawing for Quadring

DIMENSIONS AND MOUNTING DATA



- C : 4xM8 - 13 mm depth
- P_(A,B) : 2xG1/2 or 2xM22x1,5 - 15 mm depth
- T : G1/4 or M14x1,5 - 12 mm depth (plugged)

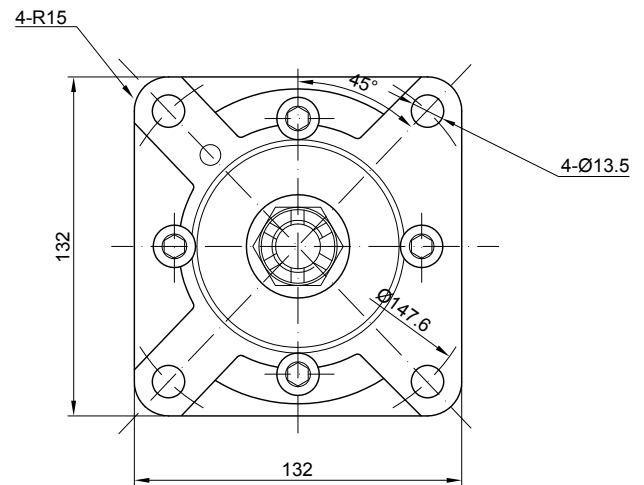
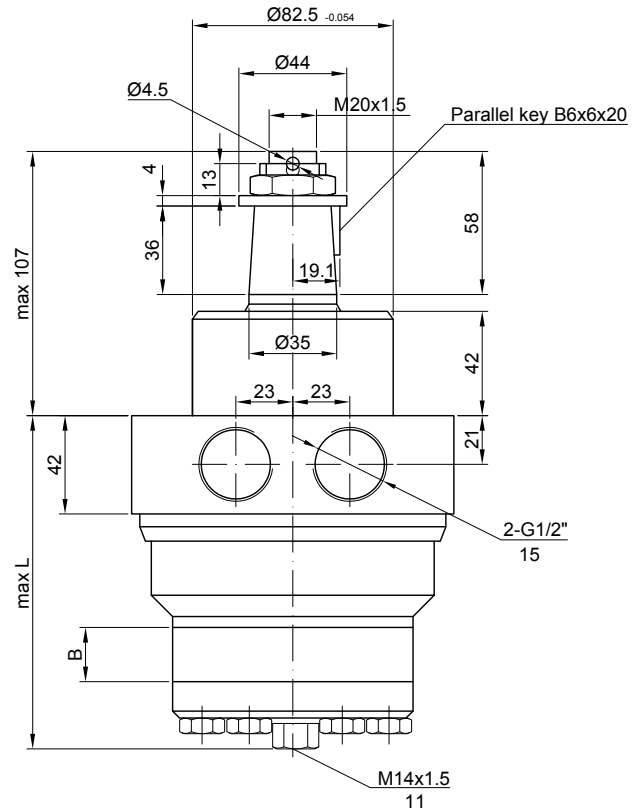
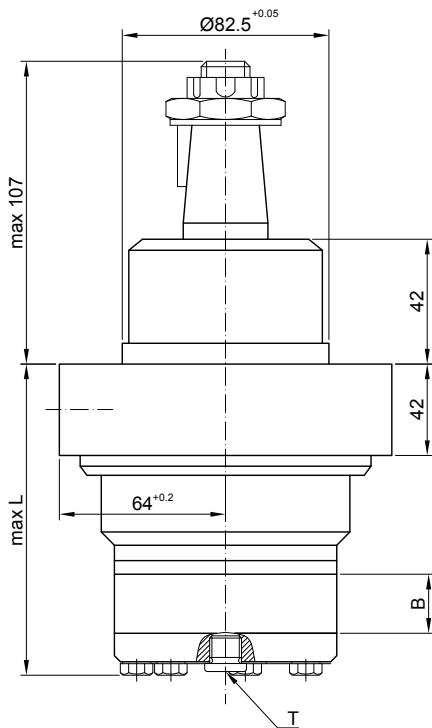
Standard Rotation
 Viewed from Shaft End
 Port A Pressurized - CW
 Port B Pressurized - CCW

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

Type	L, mm	Type	L, mm	Type	L, mm	Type	L, mm	L1, mm
OR(F) 50	140	ORQ 50	145,5	ORFE 50	159,5	ORQE 50	165,5	10
OR(F) 80	146	ORQ 80	151,5	ORFE 80	165,5	ORQE 80	171,5	16
OR(F) 100	150	ORQ 100	156	ORFE 100	169,5	ORQE 100	175,5	20
OR(F) 125	155	ORQ 125	161	ORFE 125	174,5	ORQE 125	180,5	25
OR(F) 160	161,5	ORQ 160	167,5	ORFE 160	181	ORQE 160	187	30,5
OR(F) 200	170	ORQ 200	176	ORFE 200	190	ORQE 200	195,5	38,1
OR(F) 250	180	ORQ 250	186	ORFE 250	200	ORQE 250	206	58
OR(F) 315	192	ORQ 315	198	ORFE 315	212	ORQE 315	218	62
OR(F) 400	204	ORQ 400	210	ORFE 400	224	ORQE 400	230	74

DIMENSIONS AND MOUNTING DATA - ORW

W Wheel Mount

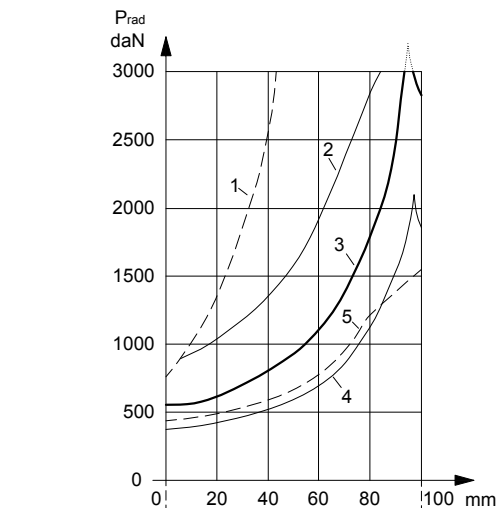


$P_{(A,B)}$: 2xG1/2 or 2xM22x1,5 - 15 mm depth
 T : G1/4 or M14x1,5 - 12 mm depth (plugged)

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

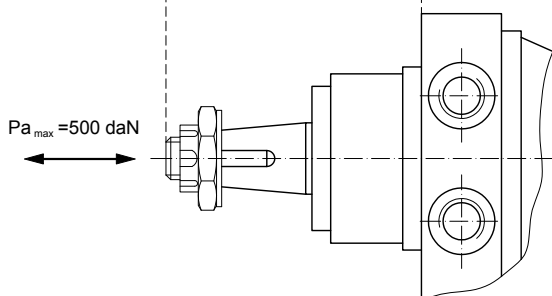
Reverse Rotation
 Viewed from Shaft End
 Port A Pressurized - CCW
 Port B Pressurized - CW

Permissible Shaft Loads ORW



$L_h = 2500h$

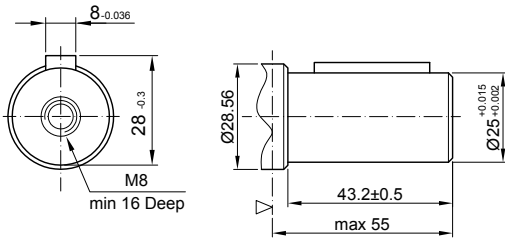
1. Permissible radial shaft load
2. Drawing by $n = 50 \text{ min}^{-1}$
3. Drawing by $n = 200 \text{ min}^{-1}$
4. Drawing by $n = 800 \text{ min}^{-1}$
5. Drawing by $n = 200 \text{ min}^{-1}$ and $P_a \text{ max} = 500 \text{ daN}$



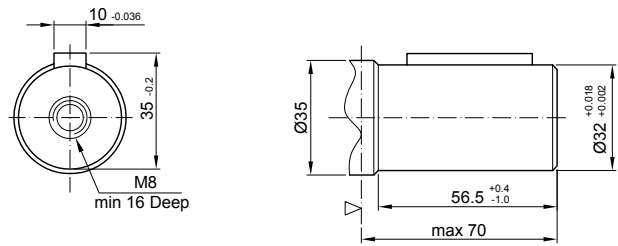
Type	B, mm	L, mm
ORW 050	9	125
ORW 080	14	130
ORW 100	17,5	134
ORW 125	22	138
ORW 160	28	144
ORW 200	35	151
ORW 250	44	160
ORW 315	56	172
ORW 400	70	186

SHAFT EXTENSIONS FOR OP AND OR MOTORS

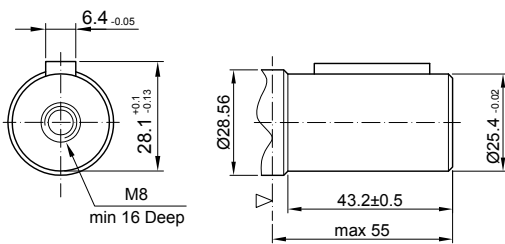
C Ø25 straight, Parallel key A8x7x32 DIN 6885
Max. Torque 44 daNm



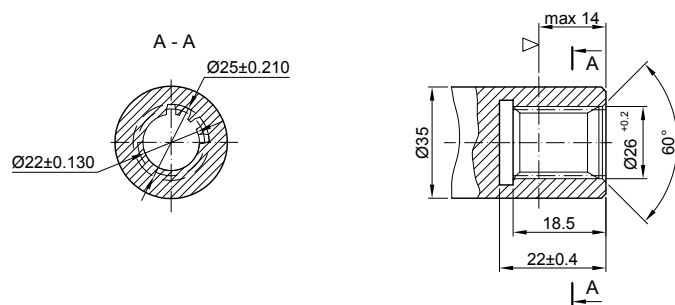
CB Ø32 Straight, Parallel key A10x8x45 DIN 6885
Max. Torque 77 daNm



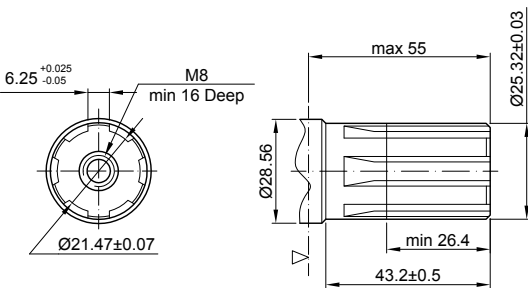
CO Ø1" straight, Parallel key 1/4"x1/4"x1 1/4" BS46
Max. Torque 44 daNm



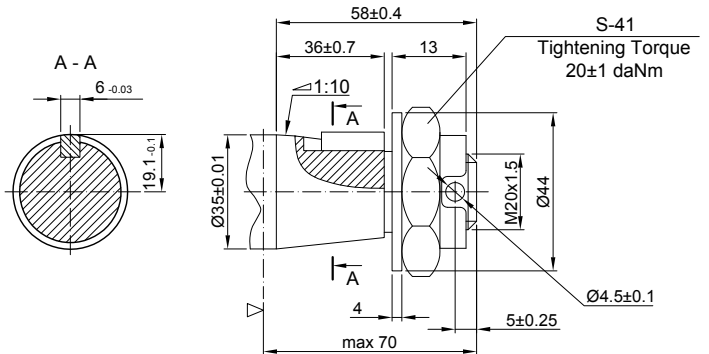
SB splined A25x22xH10 DIN 5482
Max. Torque 44 daNm



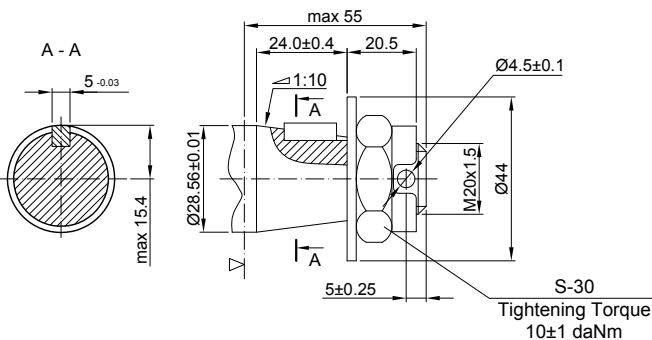
SH splined, BS 2059 (SAE 6B)
Max. Torque 44 daNm



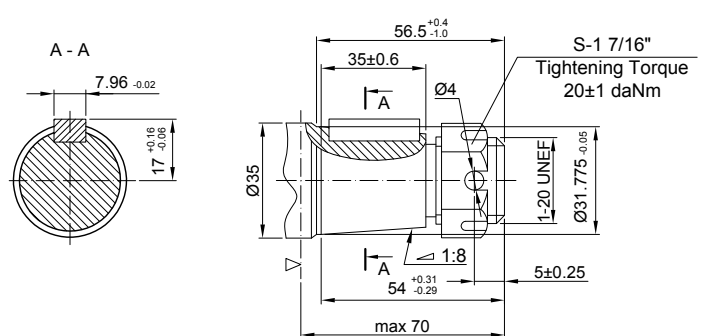
KB tapered 1:10, Parallel key B6x6x20 DIN 6885
Max. Torque 77 daNm



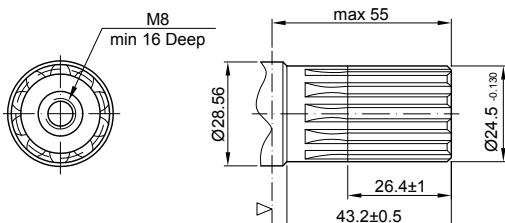
K tapered 1:10, Parallel key B5x5x14 DIN 6885
Max. Torque 40 daNm



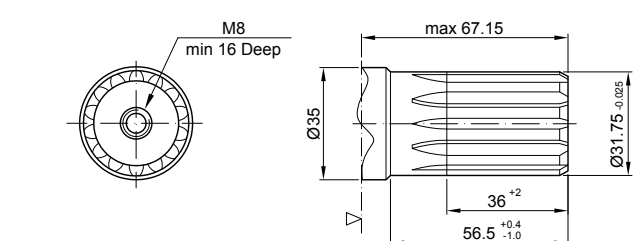
OB tapered 1:8 SAEJ 501, Parallel key 5/16"x5/16"x1 1/4" BS46
Max. Torque 77 daNm



SA splined, B25x22h9 DIN 5482
Max. Torque 40 daNm



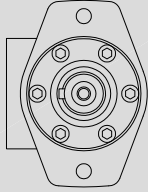
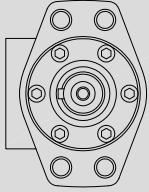
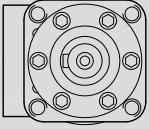
HB Ø1 1/4" splined 14T, ANSI B92.1-1976 Norm
Max. Torque 77 daNm



▽ Motor Mounting Surface

PERMISSIBLE SHAFT LOADS FOR OR MOTORS

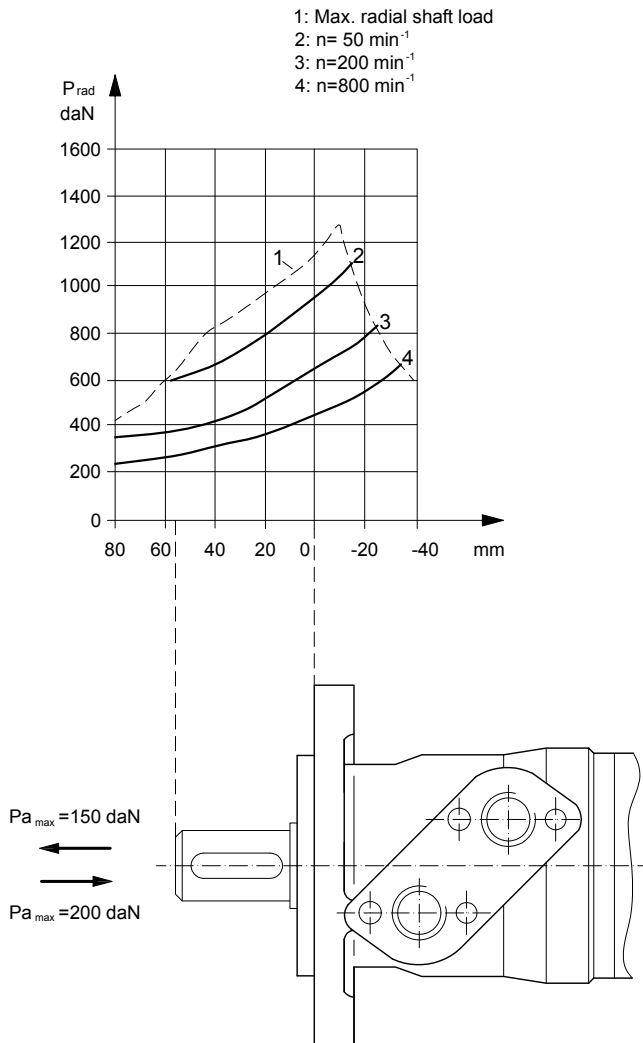
The permissible radial shaft load P_{rad} depends on the speed (RPM) and distance (L) from the point of load to the mounting flange.

Mounting Flange			
Shaft Version	cylindrical - C, CO tapered - K, splined - SH	splined - HB cylindrical - CB	cylindrical - C, CO
Radial Shaft Load P_{rad}	$\frac{800}{n} \times \frac{25000}{95+L}$, daN	$\frac{800}{n} \times \frac{18750}{95+L}$, daN	$\frac{800}{n} \times \frac{25000}{101+L}$, daN

$n < 200 \text{ min}^{-1}$; max $P_{rad} = 800 \text{ daN}$
 $n > 200 \text{ min}^{-1}$; $L < 55 \text{ mm}$

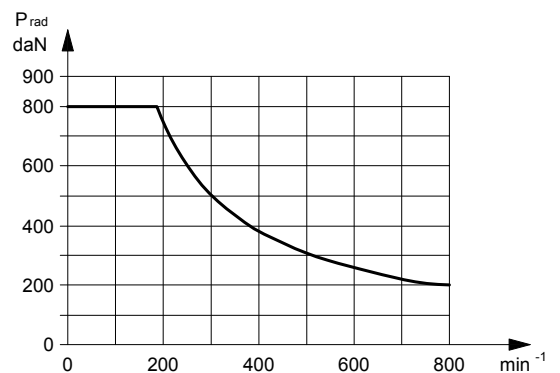
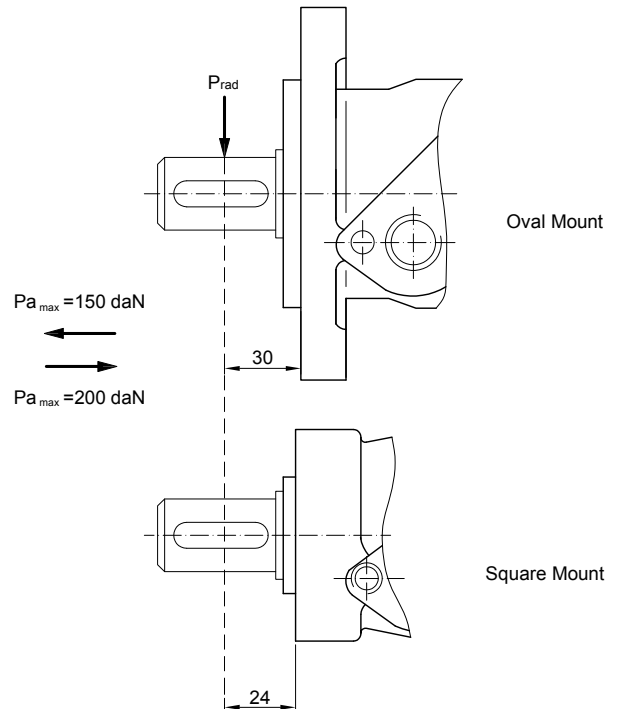
ORN

The curves apply to a B_{10} bearing life of 2000 hours.



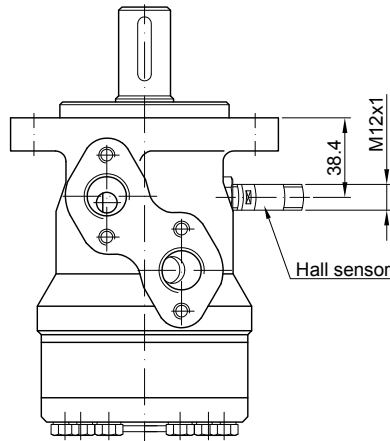
OR

Radial Shaft Load P_{rad} for C, CO Shaft Extensions by $L=30$ (24) mm

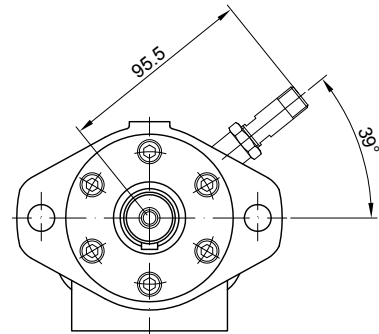


HYDRAULIC MOTORS WITH SPEED SENSOR TYPE

Meta Hydraulic is introducing hydraulic motor with a new generation of speed sensor. The electric output signal is a standard voltage signal that can be used for regulating the speed of a motor.
The speed is measured by a sensor in accordance with the Hall principle. Signal processing and amplification are performed in the sensor housing. Connection is provided in the housing by a Plug connector M12 Series.



OR...RS



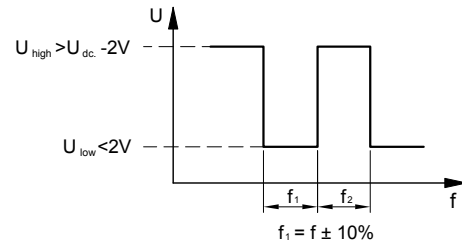
This performance is applicable for all motors of OR series. The main technical features correspond to the standard motors series OR.

DIFFERENTIAL HALL SENSOR

TECHNICAL DATA

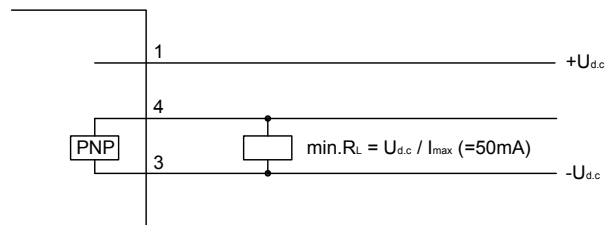
Frequency range	3...20 000 Hz
Output	PNP
Power supply	10...36 VDC
Current input	20 mA (@24 VDC)
Current load	500 mA (@24 VDC;24°C)
Ambient Temperature	minus 40... plus 125°C
Protection	IP 67
Plug connector	M12-Series
Mounting principle	ISO 6149
Pulses per revolution	36

OUTPUT SIGNAL

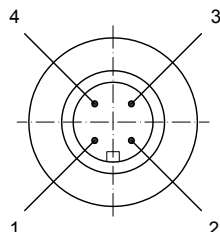


Load max.: $I_{high}=I_{low}<50\text{mA}$
No load current, max: 20 mA

WIRING DIAGRAM



STICK TYPE



Terminal No.	Connection
1	Ud.c. (+supply)
2	No connection
3	Ud.c. (-supply)
4	Output signal

ORDER CODE

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

1 Shaft Seal Version (see page OR-04)

omit	Low pressure seal or Seal for "...B" shaft
D	High pressure seal not for "...B" shaft

2 Case Drain

omit	with drain port
U	without drain port

3 Mounting Flange

omit	Oval mount, two holes
F	Oval mount, four holes
Q	Square mount, four bolts
W*	Wheel mount

4 Option (needle bearings)

omit	none
N	with needle bearings (not valid for ORW)

5 Port type

omit	Side ports
E	Rear ports

6 Displacement code

50	51,5 [cm ³ /rev]
80	80,3 [cm ³ /rev]
100	99,8 [cm ³ /rev]
125	125,7 [cm ³ /rev]
160	159,6 [cm ³ /rev]
200	199,8 [cm ³ /rev]
250	250,1 [cm ³ /rev]
315	315,7 [cm ³ /rev]
400	397,0 [cm ³ /rev]

7 Shaft Extensions (see page OR - 08)

C	ø25 straight, Parallel key A8x7x32 DIN6885
VC	ø25 straight, Parallel key A8x7x32 DIN6885 with corrosion resistant bushing
CO	ø1" straight, Parallel key 1/4"x1/4"x1 1/4" BS46
VCO	ø1" straight, Parallel key 1/4"x1/4"x1 1/4" BS46 with corrosion resistant bushing
SH	ø25,32 splined BS 2059 (SAE 6B)
VSH	ø25,32 splined BS 2059 (SAE 6B) with corrosion resistant bushing
K	ø28,56 tapered 1:10, Parallel key B5x5x14 DIN6885
SA	ø24,5 splined B 25x22 DIN 5482
VSA	ø24,5 splined B 25x22 DIN 5482 with corrosion resistant bushing
CB	ø32 straight, Parallel key A10x8x45 DIN6885
KB	ø35 tapered 1:10, Parallel key B6x6x20 DIN6885
SB	splined A 25x22 DIN 5482
OB	ø1 1/4" tapered 1:8, Parallel key 5/16"x5/16"x1 1/4" BS46
HB	ø1 1/4" splined 14T ANSI B92.1 - 1976

8 Ports

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

9 Special Features (see Specification data on page OR - 03)

omit	none
LL	Low Leakage
LSV	Low Speed Valve
FR	Free Running

10 Rotation

omit	Standard Rotation
R	Reverse Rotation

11 Option (Paint)

omit	no paint
P	Painted
PC	Corrosion Protected Paint

12 Speed Monitoring

omit	none
RS-P	with speed sensor (PNP pull-down resistor)
RS-N	with speed sensor (NPN pull-up resistor)

The permissible output torque for shafts must be not exceeded!
 The following combinations are not allowed - **Q, W, N** options with "...B" shafts.
 *ORW is available only with CB, KB and OB shafts