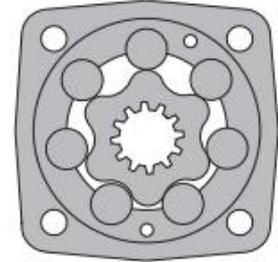




APPLICATION

- » Conveyors;
- » Metal working machines;
- » Machines for agriculture;
- » Road building machines;
- » Mining machinery;
- » Food industries;
- » Special vehicles etc.



CONTENTS

Specification data.....	OS-02+04
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Tacho connection	OS-13
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Order code	OS-22

OPTIONS

- » Model- Disc valve, roll-gerotor
- » Flange and wheel mount;
- » Short motor;
- » Motor with Drum Brake;
- » Tacho and speed sensor connection;
- » Side and rear ports
- » Shafts- straight, splined and tapered;
- » Metric and BSPP ports;
- » Other special features.

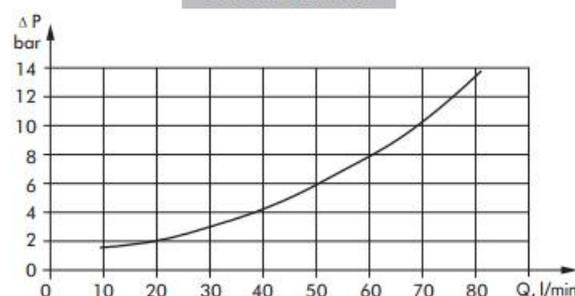
GENERAL

Displacement,	[cm ³ /rev.]	80,5÷711,9
Max. Speed,	[RPM]	810÷105
Max. Torque,	[daNm]	23,5÷58
Max. Output,	[kW]	19,5÷5,4
Max. Pressure Drop,	[bar]	200÷55
Max. Oil Flow,	[l/min]	75
Min. Speed,	[RPM]	10÷5
Permissible Shaft Loads,	[daN]	$P_{rod}=1500; P_o=500$
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)
140	20	1,5
	35	1
210	20	3
	35	2

Pressure Losses



SPECIFICATION DATA

Type	OS 80	OS 100	OS 125	OS 160	OS 200	
Displacement [cm³/rev.]	80,5	100	125,7	159,7	200	
Max. Speed, [RPM]	cont.	810	750	600	470	375
	Int.*	1000	900	720	560	450
Max. Torque [daNm]	cont.	20	25	32	40	46
	Int.*	24	30	38	48	60
	peak**	26	32	40	51	65
Max. Output [kW]	cont.	16	17,5	17,5	17,5	15,5
	int.*	19	21	21	21	22
Max. Pressure Drop [bar]	cont.	175	175	175	175	160
	Int.*	210	210	210	210	210
	peak**	250	250	225	225	225
Max. Oil Flow [l/min]	cont.	65	75	75	75	75
	Int.*	80	90	90	90	90
Max. Inlet Pressure [bar]	cont.	210	210	210	210	210
	Int.*	250	250	250	250	250
	peak**	300	300	300	300	300
Max. Return Pressure without Drain Line or Max. Pressure in Drain Line, [bar]	cont. 0-100 RPM	100	100	100	100	100
	cont. 100-300 RPM	50	50	50	50	50
	cont. >300 RPM	20	20	20	20	20
	Int.* 0-max. RPM	100	100	100	100	100
Max. Return Pressure with Drain Line [bar]	cont.	140	140	140	140	140
	Int.*	175	175	175	175	175
	peak**	210	210	210	210	210
Max. Starting Pressure with Unloaded Shaft, [bar]	12	10	10	8	8	
Min. Starting Torque [daNm]	at max. press. drop cont.	16,5	20,5	26	28	33
	at max. press. drop Int.*	19,5	25	31	39	41
Min. Speed***, [RPM]	10	10	8	8	6	
Weight, [kg]	OSFE	9,8[10,2]	10[10,4]	10,3[10,7]	10,7[11,1]	11,1[11,5]
	OSWE	10,3[10,7]	10,5[10,9]	10,8[11,2]	11,2[11,6]	11,6[12]
	OSZE	7,8[8,2]	8[8,4]	8,3[8,7]	8,7[9,1]	9,1[9,5]
	OSVE	5,7[6,1]	5,9[6,3]	6,2[6,6]	6,6[7]	7[7,4]
	OSQE	10,2[10,6]	10,4[10,8]	10,7[11,1]	11,1[11,5]	11,5[11,9]
	OSBE	16,8[17,2]	17,0[17,4]	17,3[17,7]	17,7[18,1]	18,1[18,5]

* 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 5 RPM 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 13mm²/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.

SPECIFICATION DATA (continued)

Type		OS 250	OS 315	OS 400	OS 475	OS 525	OS 565
Displacement [cm ³ /rev.]		250	314,9	397	474,6	522,7	564,9
Max. Speed, [RPM]	cont.	300	240	185	160	145	130
	Int.*	360	290	230	190	175	160
Max. Torque [daNm]	cont.	50	63	67	58	58	58
	Int.*	63	79	79	68	69	69
	peak**	69	84	85	84	85	85
Max. Output [kW]	cont.	13,5	11,0	10,5	8,4	7,6	6,9
	int.*	19	18	15	11,3	10,4	9,6
Max. Pressure Drop [bar]	cont.	140	140	120	85	80	75
	Int.*	175	175	140	100	90	85
	peak**	200	185	140	115	105	100
Max. Oil Flow [l/min]	cont.	75	75	75	75	75	75
	Int.*	90	90	90	90	90	90
Max. Inlet Pressure [bar]	cont.	210	210	210	210	210	210
	Int.*	250	250	250	250	250	250
	peak**	300	300	300	300	300	300
Max. Return Pressure without Drain Line or Max. Pressure in Drain Line, [bar]	cont. 0-100 RPM	100	100	100	100	100	100
	cont. 100-300 RPM	50	50	50	50	50	50
Max. Return Pressure with Drain Line [bar]	cont. >300 RPM	-	-	-	-	-	-
	Int.* 0-max. RPM	100	100	100	100	100	100
Max. Starting Pressure with Unloaded Shaft, [bar]	cont.	140	140	140	140	140	140
	Int.*	175	175	175	175	175	175
	peak**	210	210	210	210	210	210
Min. Starting Torque [daNm]	at max. press. drop cont.	8	8	8	8	8	8
	at max. press. drop Int.*	36	44	47	47	47	47
Min. Speed***, [RPM]		44	52	55	55	55	55
Weight, [kg]	OSFE	6	5	5	5	5	5
	OSWE	11,6[12]	12,3[12,7]	13,2[13,6]	14[14,4]	14,9[15,3]	14,9[15,3]
	OSZE	12,1[12,5]	12,8[13,2]	13,7[14,1]	14,5[14,9]	15,4[15,8]	15,4[15,8]
	OSVE	9,6[10]	10,3[10,7]	11,2[11,6]	12[12,4]	12,9[13,3]	12,9[13,3]
	OSQE	7,5[7,9]	8,2[8,6]	9,1[9,5]	9,9[10,3]	10,8[11,2]	10,8[11,2]
	OSBE	12[12,4]	12,7[13,1]	13,6[14]	14,4[14,8]	15,3[15,7]	15,3[15,7]
		18,6[19]	19,3[19,7]	20,2[20,6]	21[21,4]	21,9[22,3]	21,9[22,3]

* 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.

*** For speeds of 5 RPM 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 13mm²/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.

SPECIFICATION DATA for OS...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 min⁻¹), as the best security for operation is guaranteed at frequency of rotation $20 \pm 50 \text{ min}^{-1}$. They have an increased starting pressure drop and are not recommended for using at pressure less than 40 bars.

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		OS 80	OS 100	OS 125	OS 160	OS 200	OR 250	OS 315	OS 400
Max. Speed, [RPM]	Cont.	200	200	200	200	200	200	200	185
	Int.*	250	250	250	250	250	250	250	225
Max. Output [kW]	Cont.	4,6	6,0	7,4	8,0	8,0	8,8	10,6	9,5
	Int.*	6,5	8,4	10,0	12,2	12,4	13,4	15,0	12,8
Max. Oil Flow [l/min]	Cont.	16	20	25	32	40	50	65	75
	Int.*	20	25	32	40	50	62,5	80	90
Max. Starting Pressure with Unloaded Shaft, [bar]		25	20	20	15	15	15	15	15

SPECIFICATION DATA for OS...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.

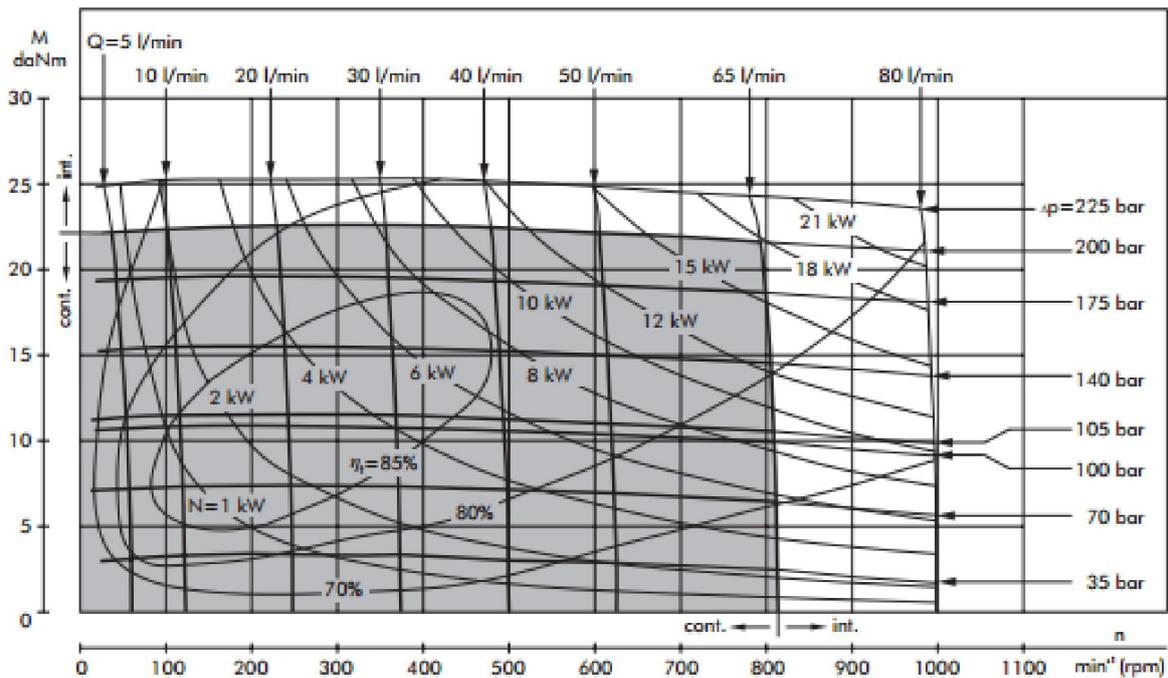
For this version is permissible decreasing of the maximal torque with up to 5% (at middle speed) and up to 10% (at high speed) in comparison to the standard versions of motors.

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

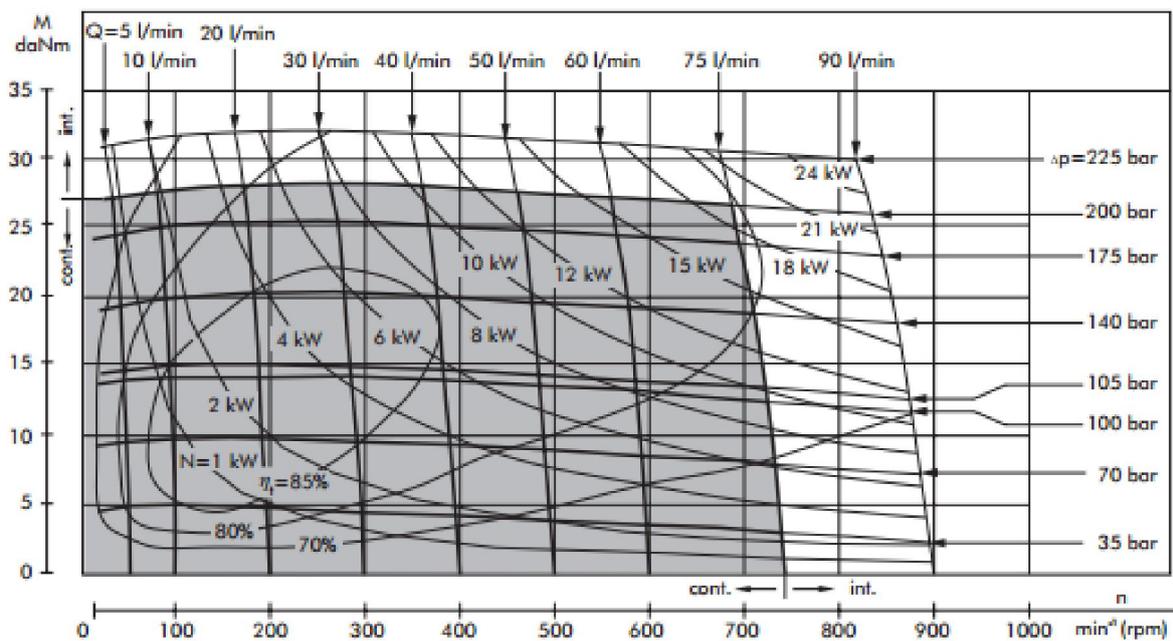
Type		OS 80	OS 100	OS 125	OS 160	OS 200	OS 250	OS 315	OS 400
Max. Torque [daNm]	Cont.	22,9	28,5	36,4	33,2	39,0	43,8	52,6	56,5
	Int.*	25,2	31,1	39,6	46,8	48,8	52,6	61,4	67,2
Max. Output [kW]	Cont.	17,8	19,3	19,3	14,8	13,3	11,8	10,9	9,5
	Int.*	19,3	21,3	21,4	20,0	16,6	14,2	12,8	12,3
Min. Starting Torque [daNm]	Cont.	18,7	23,2	29,6	27,3	32,2	35,1	43,0	45,8
	Int.*	20,3	25,9	32,3	38,0	40,0	43,0	50,7	53,6

FUNCTION DIAGRAMS

OS 80



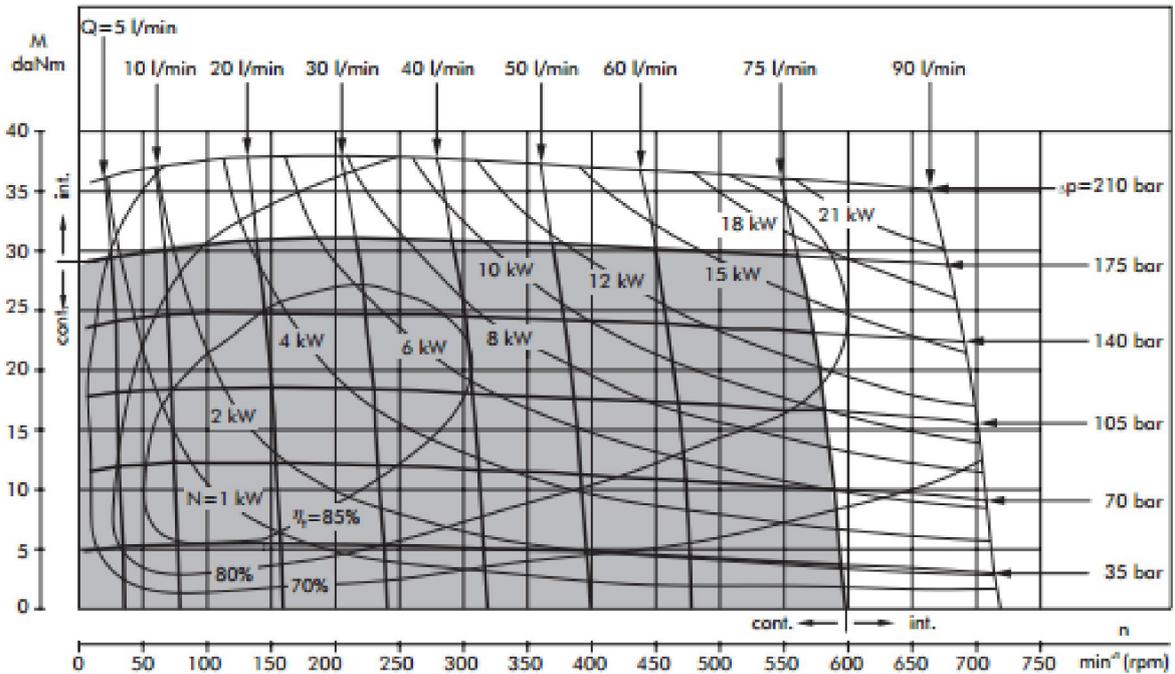
OS 100



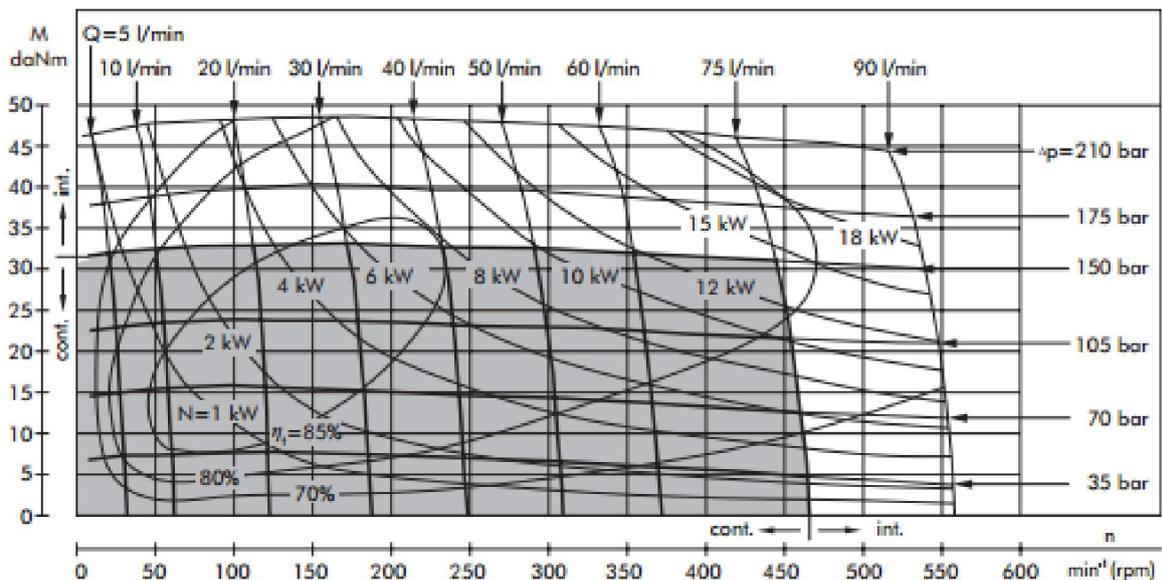
The function diagrams data was collected at back pressure 5+10 bar and oil with viscosity of 32 mm²/s at 50° C.

FUNCTION DIAGRAMS

OS 125



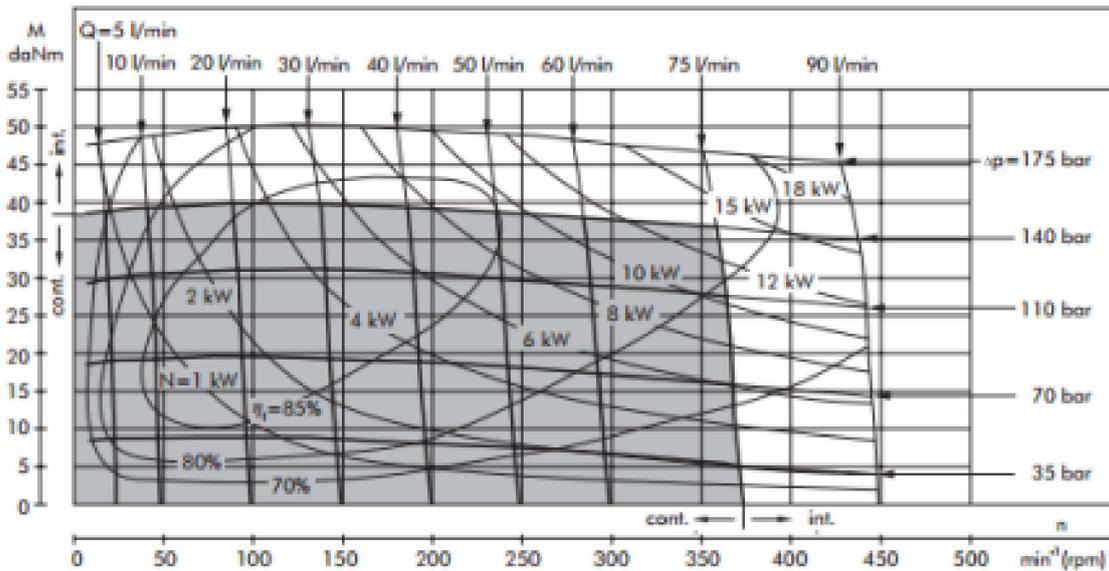
OS 160



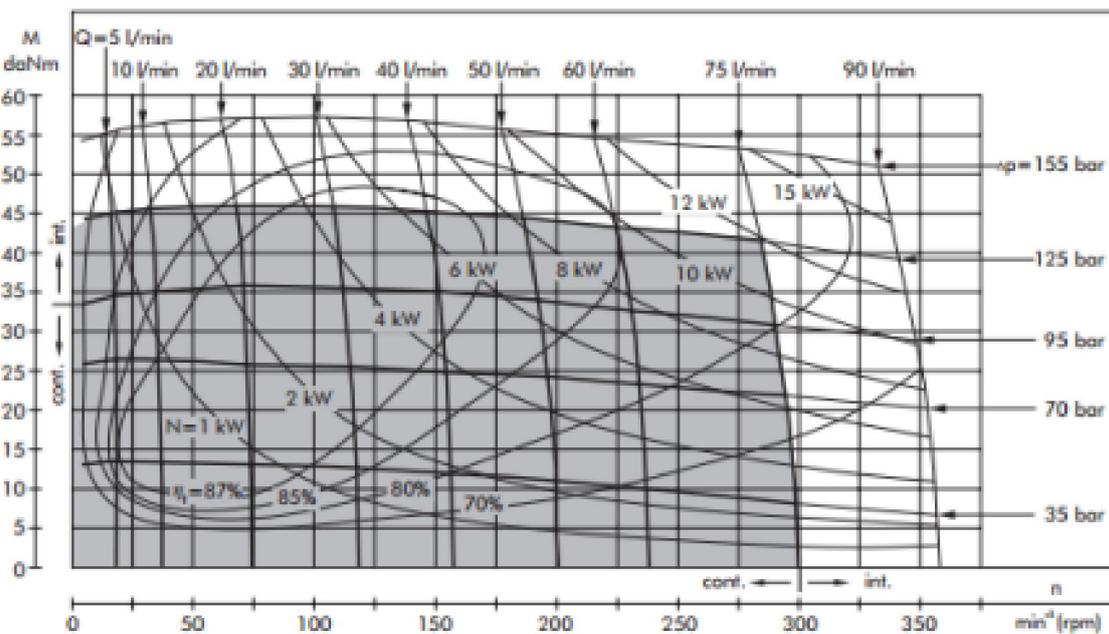
The function diagrams data was collected at back pressure 5+10 bar and oil with viscosity of 32 mm^2/s at 50° C.

FUNCTION DIAGRAMS

OS 200



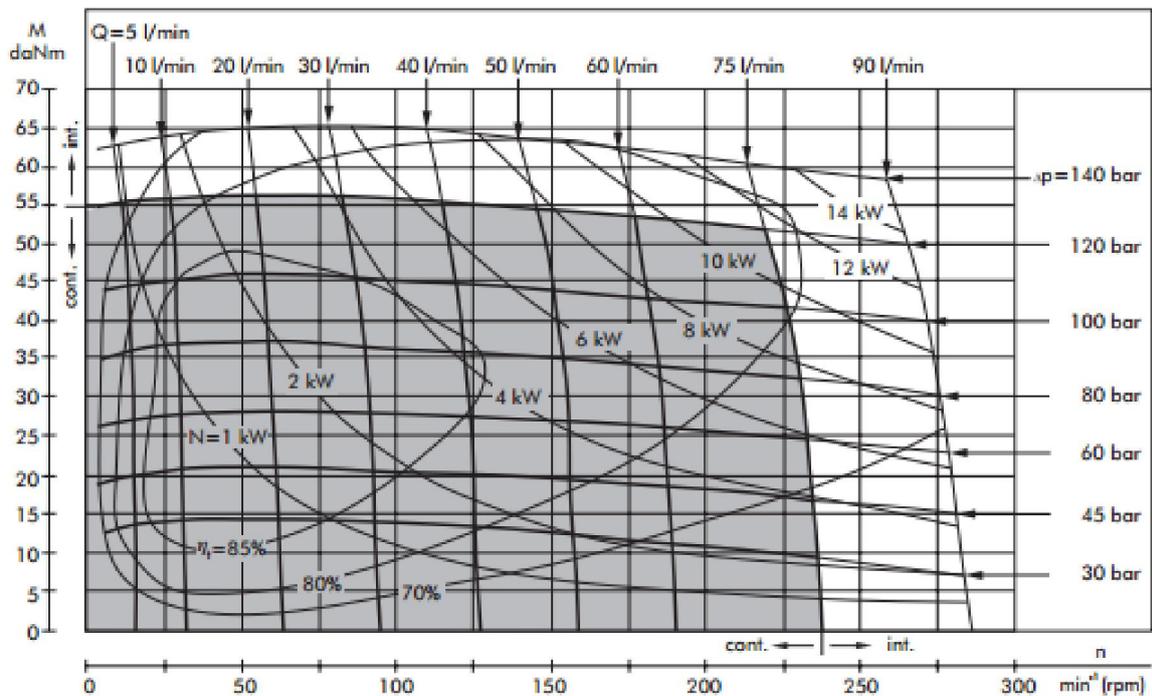
OS 250



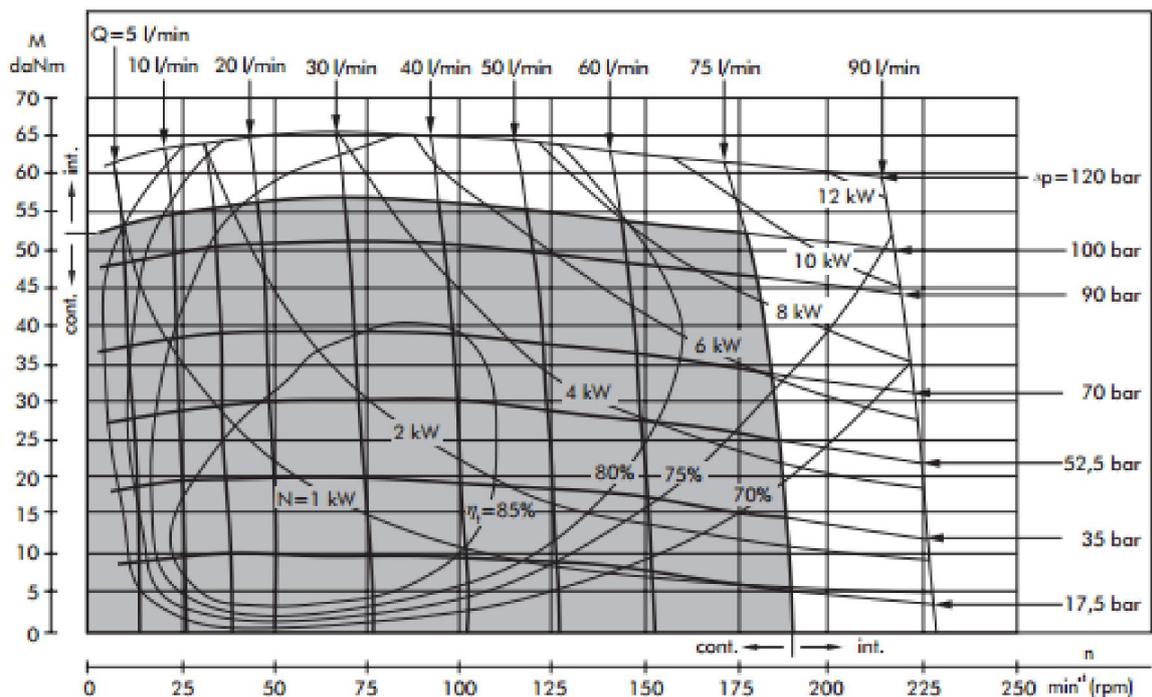
The function diagrams data was collected at back pressure 5+10 bar and oil with viscosity of 32 mm²/s at 50° C.

FUNCTION DIAGRAMS

OS 315

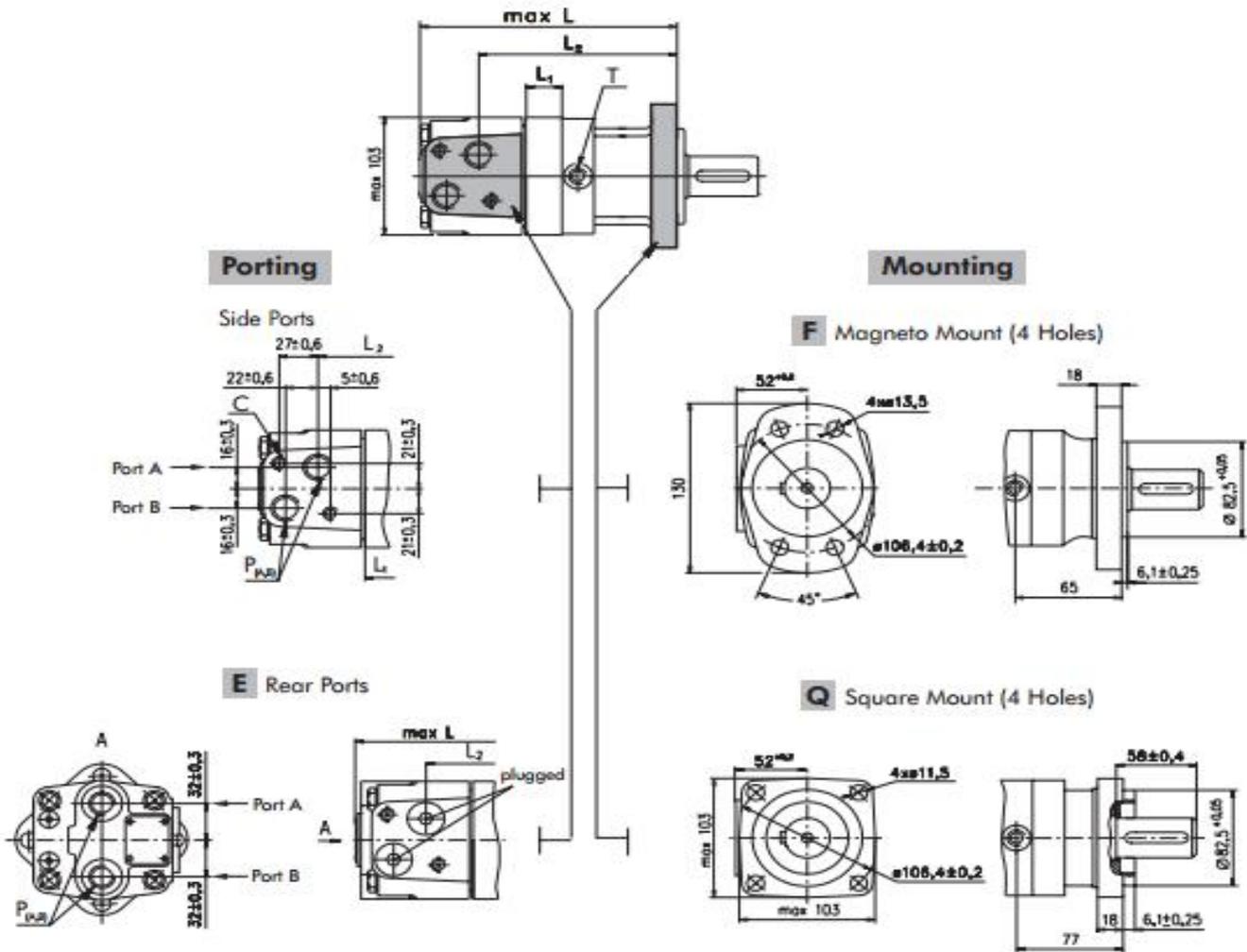


OS 400



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

DIMENSIONS AND MOUNTING DATA



C: 2xM10-12 mm depth
 P_(A,B): 2xG1/2 or 2xM22x1,5-15 mm depth
 T: G 1/4 or M14x1,5- 12 mm depth (plugged)

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

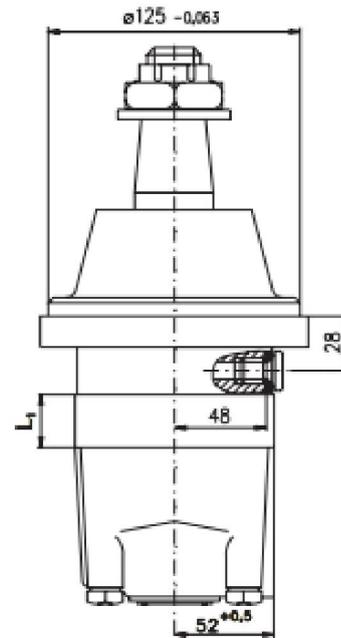
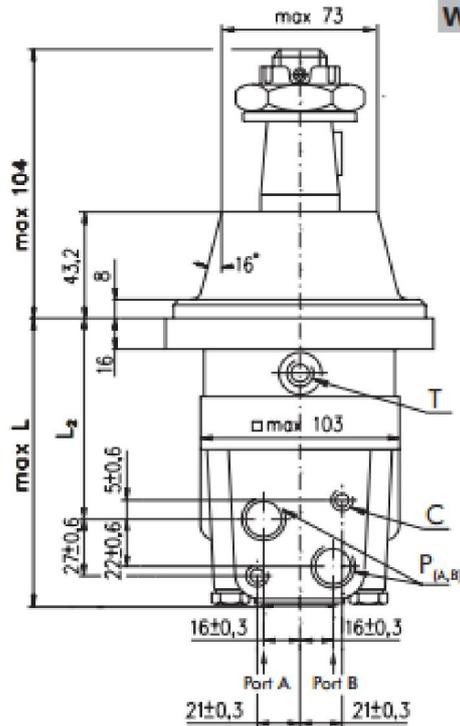
Reverse Rotation
 Viewed from Shaft End
 Port A Pressurized - CCW
 Port B Pressurized - CW

Type	L ₁ , mm	L ₂ , mm	Type	L ₁ , mm	L ₂ , mm	Type	L ₁ , mm	Type	L ₁ , mm	*L ₁ , mm
OSF 80	166	121	OSQ 80	177	133	OSFE 80	173	OSQE 80	185	11
OSF 100	169	125	OSQ 100	181	137	OSFE 100	177	OSQE 100	189	14,4
OSF 125	174	129	OSQ 125	185	141	OSFE 125	181	OSQE 125	193	18,8
OSF 160	180	135	OSQ 160	191	147	OSFE 160	187	OSQE 160	199	24,8
OSF 200	187	142	OSQ 200	198	154	OSFE 200	194	OSQE 200	206	31,8
OSF 250	195	151	OSQ 250	207	163	OSFE 250	203	OSQE 250	215	40,5
OSF 315	207	162	OSQ 315	218	174	OSFE 315	214	OSQE 315	226	51,8
OSF 400	221	176	OSQ 400	233	189	OSFE 400	228	OSQE 400	241	66,4
OSF 475	235	190	OSQ 475	245	202	OSFE 475	242	OSQE 475	254	79,6
OSF 565	250	206	OSQ 565	261	217	OSFE 565	257	OSQE 565	269	95,3
OSF 715	276	231	OSQ 715	287	243	OSFE 715	283	OSQE 715	295	121,2

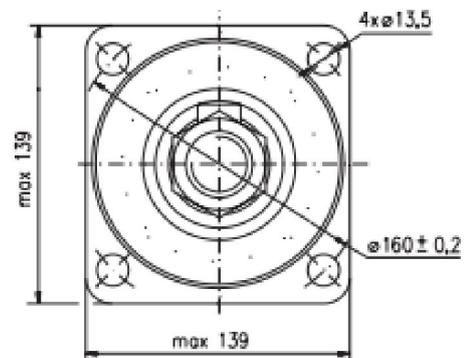
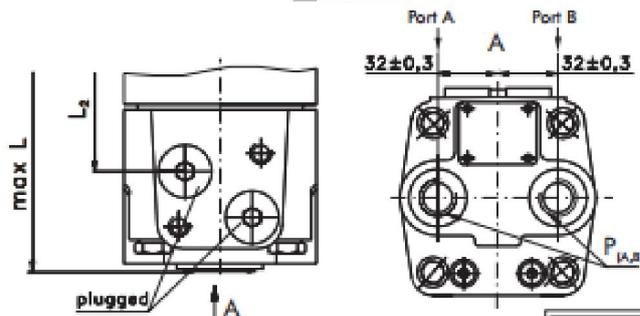
* The width of the gerolor is 3 mm greater than L₁.

DIMENSIONS AND MOUNTING DATA - OSW

W Wheel Mount



E Rear Port



C: 2xM10-12 mm depth
 P_(A,B): 2xG1/2 or 2xM22x1,5-15 mm depth
 T: G 1/4 or M14x1,5 - 12 mm depth(plugged)

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

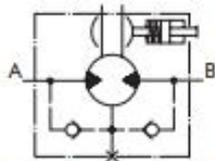
Reverse Rotation
 Viewed from Shaft End
 Port A Pressurized - CCW
 Port B Pressurized - CW

Type	L, mm	*L ₁ , mm	L ₂ , mm	Type	L, mm
OSW 80	127	11,0	84	OSWE 80	138
OSW 100	131	14,4	88	OSWE 100	142
OSW 125	135	18,8	92	OSWE 125	146
OSW 160	141	24,8	98	OSWE 160	152
OSW 200	148	31,8	105	OSWE 200	159
OSW 250	157	40,5	114	OSWE 250	168
OSW 315	168	51,8	125	OSWE 315	179
OSW 400	182	66,4	140	OSWE 400	194
OSW 475	196	79,6	153	OSWE 475	207
OSW 565	211	95,3	168	OSWE 565	222
OSW 715	237	121,2	194	OSWE 715	248

* The width of the gerolor is 3 mm greater than L₁.

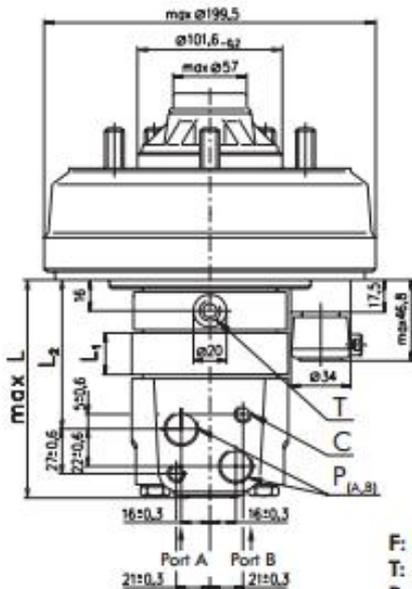
DIMENSIONS AND MOUNTING DATA - OSB

B Motor with Brum Brake



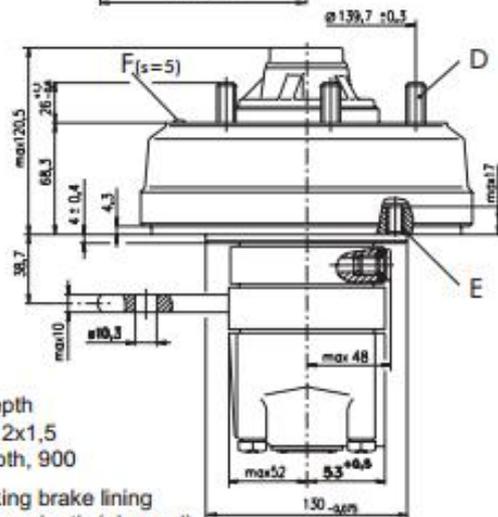
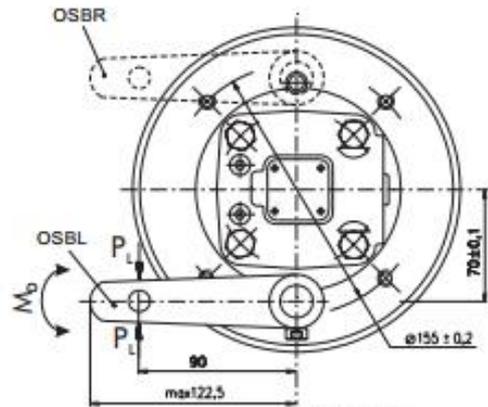
Actuating the brake level, the brake shaft is turned. The rectangular shape of the inner part of this shaft forces the brake pads to be pressed against the brake drum. This brakes the wheel or the winch drum.

Releasing the level, the springs pull it and the brake pads back to the initial position. The motor output shaft is released. Minimum angle adjustment is 10°. It can be adjusted by dismantling the level. Depending on the application You can choose the actuating direction of the brake level. The rod connection actuating the brake should be capable of moving at last 25 mm from neutral to extreme position.

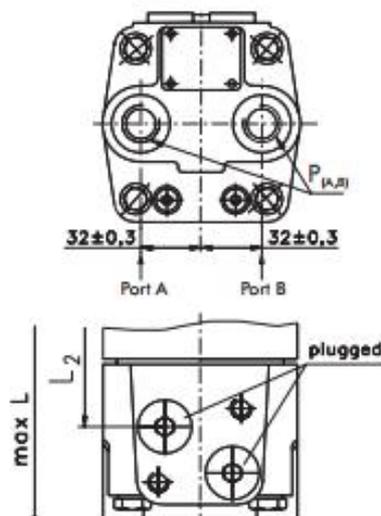


- C: 2xM10-12 mm depth
- D: Wheel bolts 5xM12x1,5
- E: 4xM12; 17mm depth, 900

- F: Inspection hole for checking brake lining
- T: G 1/4 or M14x1,5 - 12 mm depth (plugged)
- P_{A,B}: 2xG1/2 or 2xM22x1,5-15 mm depth



E Rear Port



Type	L ₁ , mm	*L _{1r} , mm	L ₂ , mm	Type	L ₁ , mm
OSB 80	117	11,0	71	OSBE 80	127
OSB 100	120	14,4	74	OSBE 100	130
OSB 125	124	18,8	79	OSBE 125	134
OSB 160	130	24,8	85	OSBE 160	140
OSB 200	137	31,8	92	OSBE 200	147
OSB 250	146	40,5	107	OSBE 250	156
OSB 315	157	51,8	112	OSBE 315	167
OSB 400	172	66,4	127	OSBE 400	182
OSB 475	186	79,6	140	OSBE 475	196
OSB 565	201	95,3	155	OSBE 565	211
OSB 715	227	121,2	181	OSBE 715	237

* The width of gerolor is 3 mm greater than L₁.

Standard Rotation

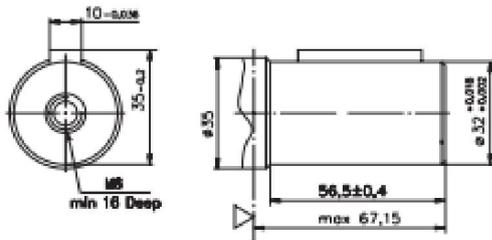
Viewed from Shaft End
Port A Pressurized - CW
Port B Pressurized - CCW

Reverse Rotation

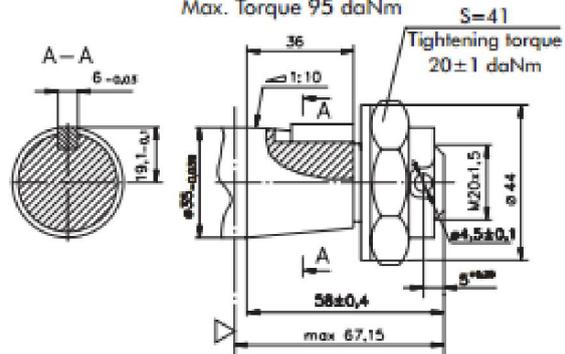
Viewed from Shaft End
Port A Pressurized - CCW
Port B Pressurized - CW

SHAFT EXTENSIONS

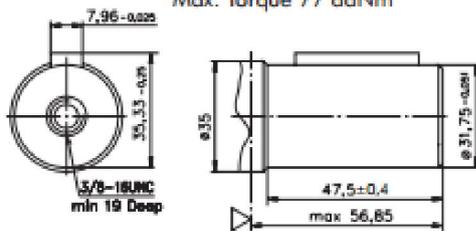
C - $\varnothing 32$ straight, Parallel key A10x8x45 DIN 6885
Max. Torque 77 daNm



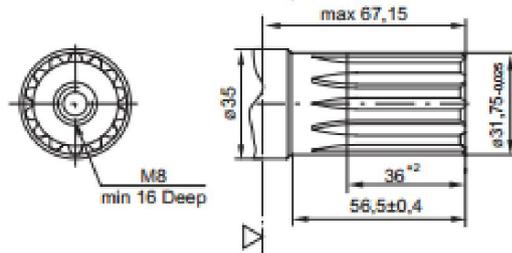
K - tapered 1:10, Parallel key B6x6x20 DIN 6885
Max. Torque 95 daNm



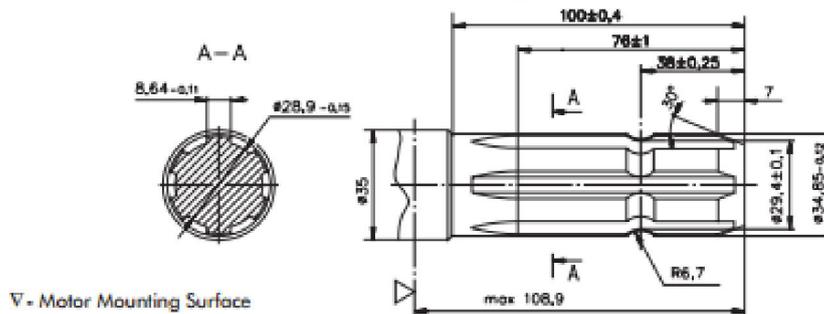
CO - $\varnothing 1\frac{1}{4}$ " straight, Parallel key $\frac{5}{16}$ "x $\frac{5}{16}$ "x $\frac{1}{4}$ " BS46
Max. Torque 77 daNm



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

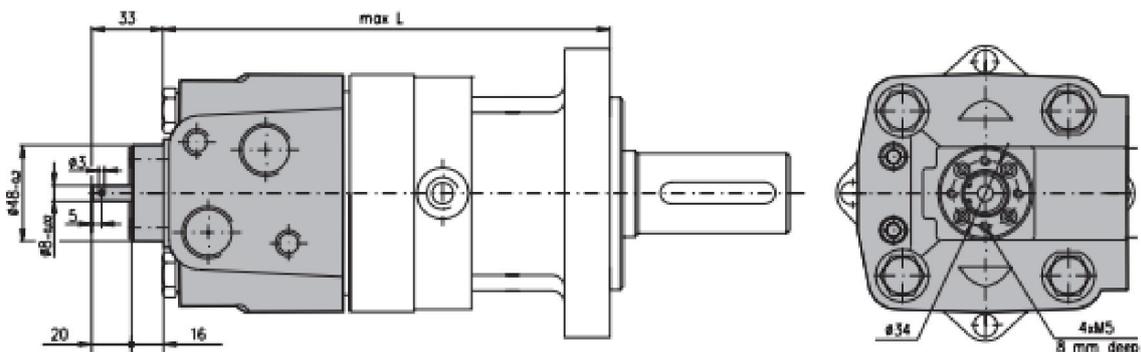


SL - $\varnothing 34,85$ p.t.o. DIN 9611 Form 1
Max. Torque 77 daNm



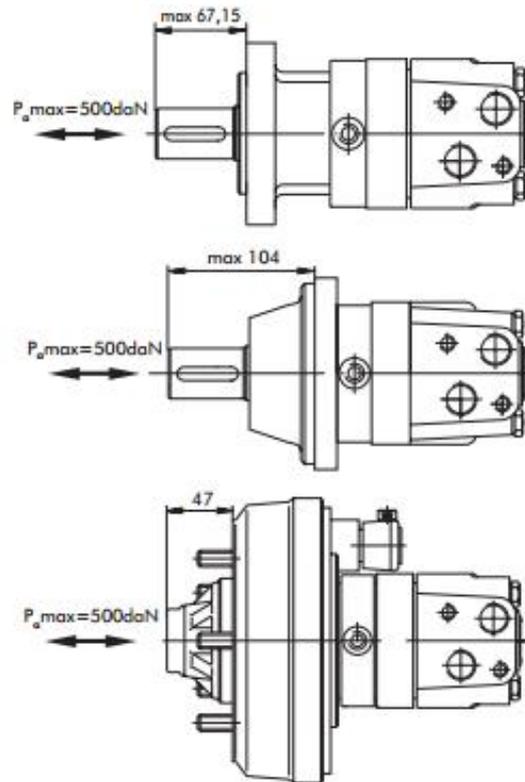
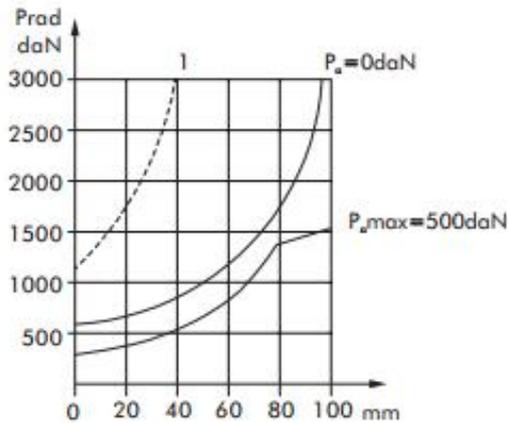
V - Motor Mounting Surface

MOTORS WITH TACHO CONNECTION - Option "T"

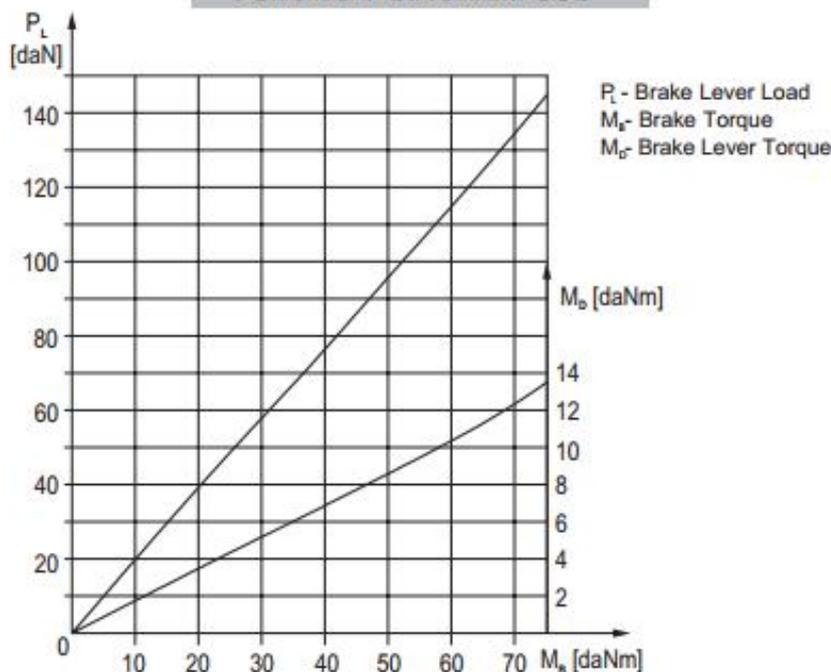


PERMISSIBLE SHAFT LOADS

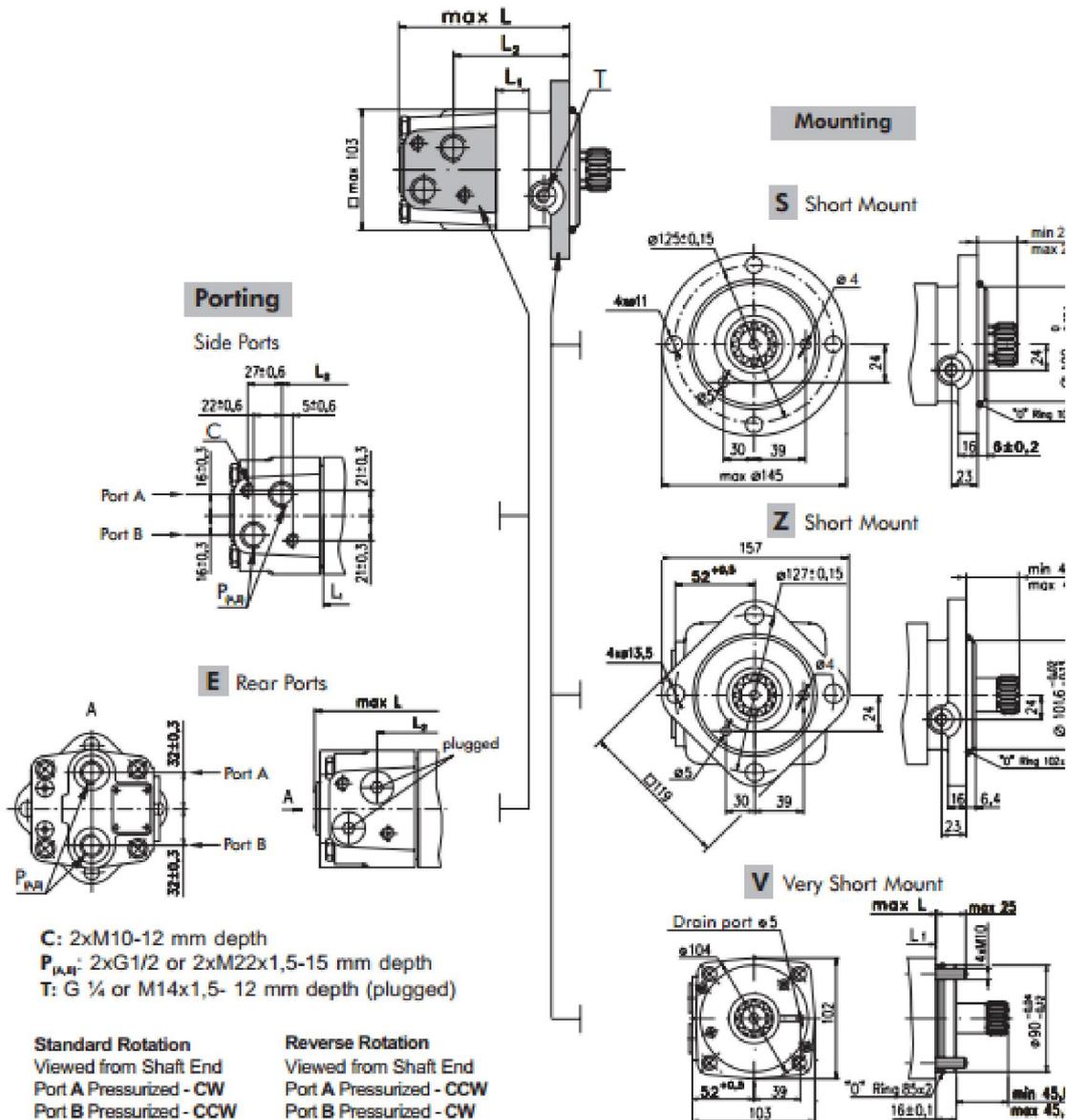
The output shaft runs in tapered bearings that permit high axial and radial forces. Curve "1" shows max. radial shaft load. Any shaft load exceeding the values quoted in the curve will seriously reduce motor life. The two other curves apply to a B10 bearing life of 3000 hours at 200 RPM.



FUNCTION DIAGRAM OSB



DIMENSIONS AND MOUNTING DATA - OSS, OSV and OSZ



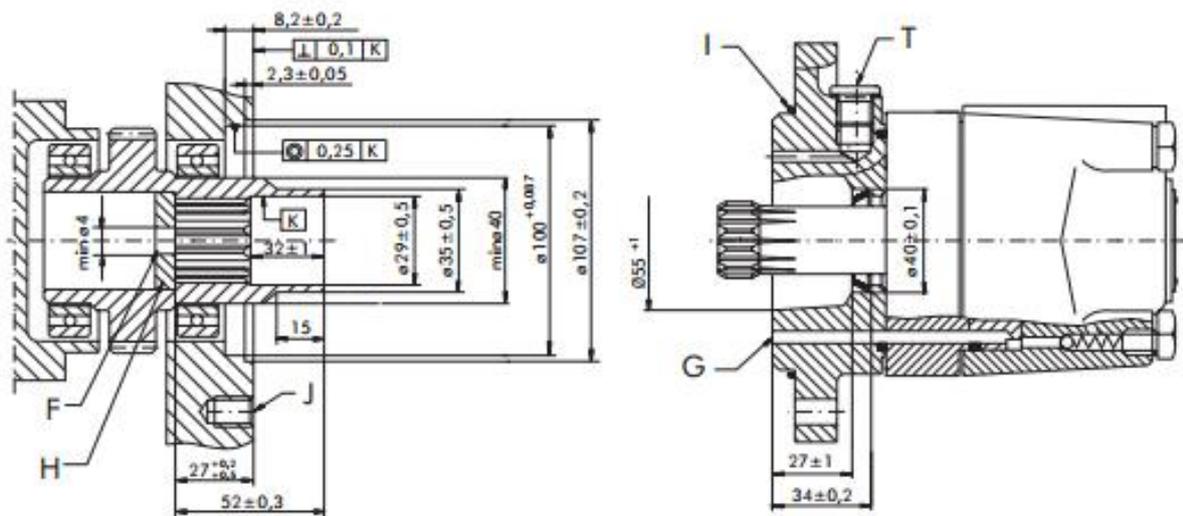
Type**	L ₁ , mm	L ₂ , mm	Type	L ₁ , mm	L ₂ , mm	Type	L ₁ , mm	Type	L ₁ , mm	L ₂ , mm
OSS 80	123	80	OSV 80	89	49	OSSE 80	134	OSVE 80	97	11
OSS 100	127	84	OSV 100	92	52,5	OSSE 100	138	OSVE 100	100	14,4
OSS 125	131	87	OSV 125	97	57	OSSE 125	141	OSVE 125	105	18,8
OSS 160	137	93	OSV 160	103	63	OSSE 160	147	OSVE 160	111	24,8
OSS 200	144	100	OSV 200	110	70	OSSE 200	154	OSVE 200	118	31,8
OSS 250	153	109	OSV 250	118	78,5	OSSE 250	163	OSVE 250	126	40,5
OSS 315	164	120	OSV 315	130	90	OSSE 315	174	OSVE 315	138	51,8
OSS 400	179	135	OSV 400	144	105	OSSE 400	189	OSVE 400	153	66,4
OSS 475	192	149	OSV 475	158	118	OSSE 475	203	OSVE 475	166	79,6
OSS 565	207	164	OSV 565	173	133	OSSE 565	218	OSVE 565	181	95,3
OSS 715	233	190	OSV 715	199	159	OSSE 715	244	OSVE 715	207	121,2

* The width of the geroler is 3 mm greater than L₂.

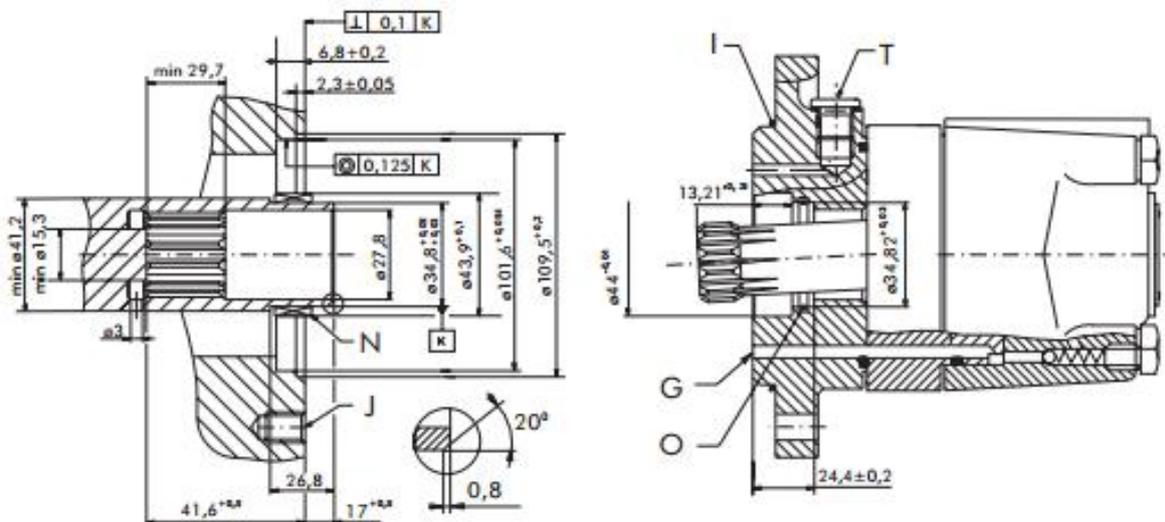
** OSZ(E) have the same dimension as type OSS(E)

DIMENSIONS OF THE ATTACHED COMPONENT

For OSS



For OSZ

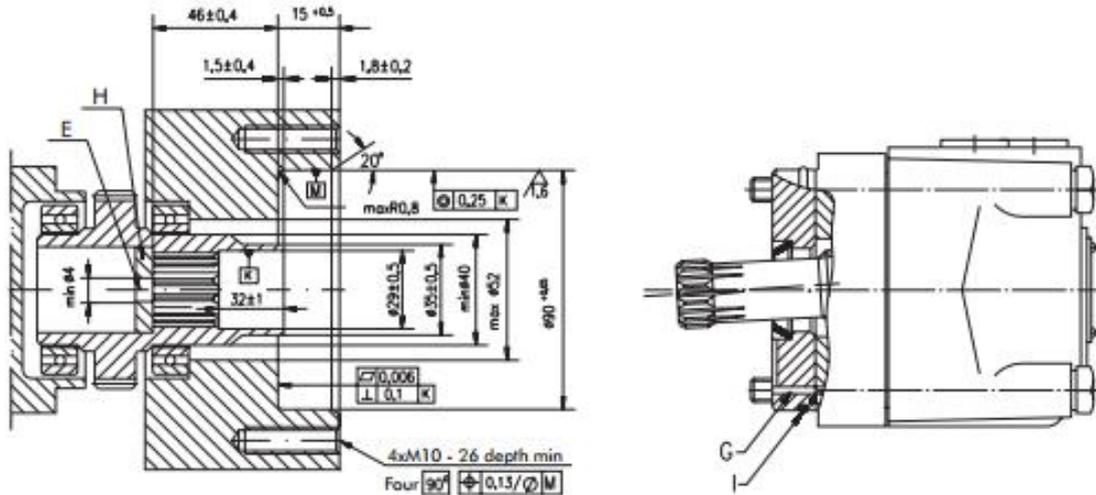


F: Oil circulation hole
 G: Internal drain channel
 H: Hardened stop plate
 I: O- Ring 100x3mm (for OSS) or 102x3mm (for OSZ)

J: 4xM10-16 mm depth (for OSS) or 4xM12-20 mm depth (for OSZ), 90°
 N: Needle bearing 1 3/4"x1 1/2"
 O: O- Ring 34,5x3mm
 T: Drain connection G1/4 or M14x1,5

DIMENSIONS OF THE ATTACHED COMPONENT (continued)

For OSV



E: External drain channel
G: Internal drain channel

H: Hardened stop plate
I: O- Ring 85x2mm

DRAIN CONNECTION

A drain line ought to be used when pressure in the return line can exceed the permissible pressure. It can be connected:

- For OSZ at the drain port of the motor;
- For OSV at the drain connection of the attached component. The maximum pressure in the drain line is limited by the attached component and its shaft seal.

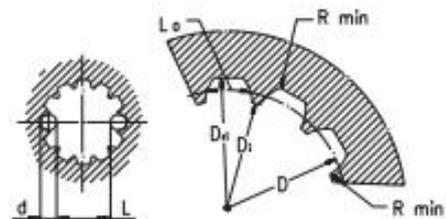
The drain line must be possible for oil to flow freely between motor and attached component and must be led to the tank. The maximum pressure in the drain line is limited by the attached component and its seal.

INTERNAL SPLINE DATA FOR THE ATTACHED COMPONENT

Standard ANSI B92.1-1976, class 5
[m=2.1166; corrected x.m=+0,8]

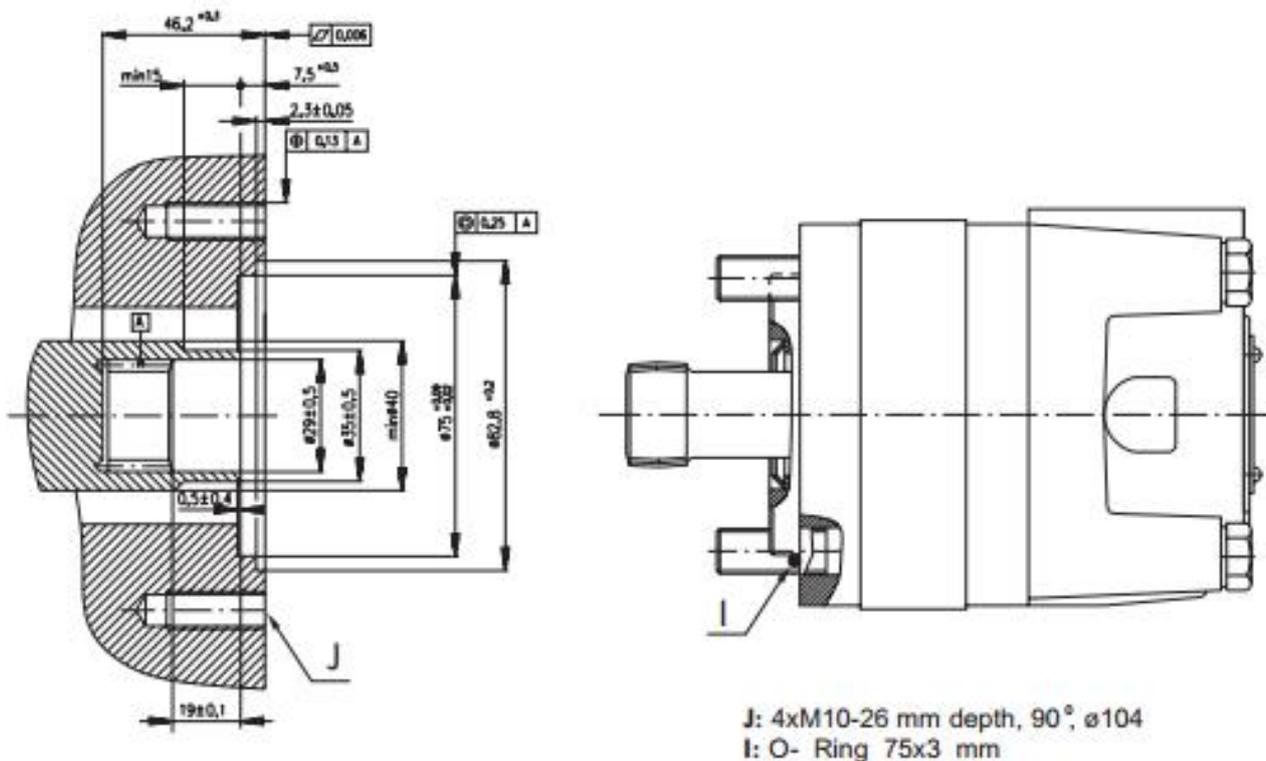
Parameter	Symbol	Value (mm)
Fillet Root Side Fit		
Number of Teeth	z	12
Diametral Pitch	DP	12/24
Pressure Angle		30°
Pitch Dia.	D	25,4
Major Dia.	D _o	28,0±0,1
Minor Dia.	D _i	23,0 ^{+0,033}
Space Width [Circular]	L _o	4,308±0,020
Fillet Radius	R _{min}	0,2
Max. Measurement between Pin	L	17,62 ^{+0,15}
Pin Dia.	d	4,835±0,001

Above are when hardened



Hardening Specification:
HRC 60±2
Effective case depth (HRC 52) 0,7±0,2 mm
Materiall 20 MoCr4 DIN 17210 or better

DIMENSIONS OF THE ATTACHED COMPONENT for OSU

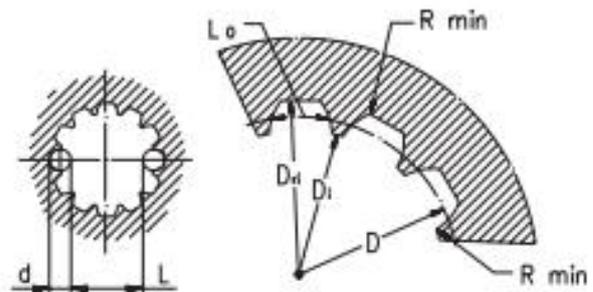


INTERNAL SPLINE DATA FOR THE ATTACHED COMPONENT

Standard ANSI B92.1-1976, class 5
[$m=2.1166$; corrected $x.m=+0,8$]

Parameter	Symbol	mm
Fillet Root Side Fit		
Number of Teeth	z	12
Diametral Pitch	DP	12/24
Pressure Angle		30°
Pitch Dia.	D	25,4
Major Dia.	D_{ri}	28,0 $_{-0,1}$
Minor Dia.	D_i	23,0 $^{+0,033}$
Space Width [Circular]	L_o	4,308 $\pm 0,020$
Fillet Radius	R_{min}	0,2
Max. Measurement between Pin	L	17,62 $^{+0,15}$
Pin Dia.	d	4,835 $\pm 0,001$

Above are when hardened



Hardening Specification:

HRC 60 ± 2

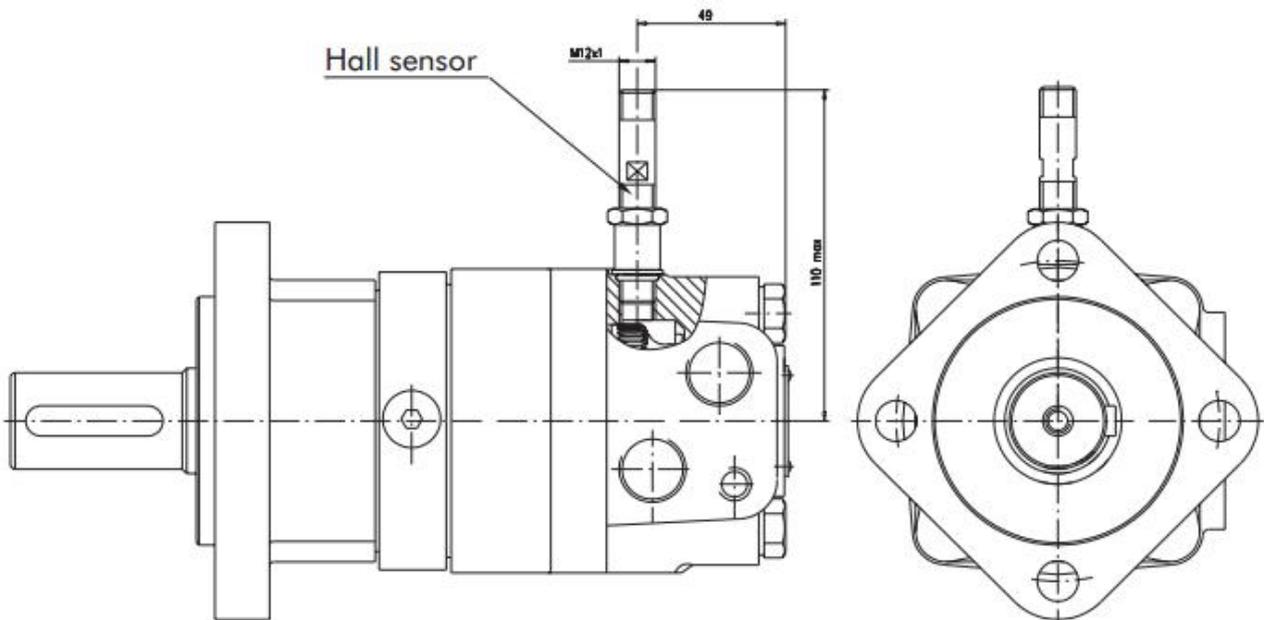
Effective case depth (HRC 52) 0,7 $\pm 0,2$ mm

Material 20 MoCr4 DIN 17210 or better

Hydraulic motors with speed sensor type OS...RS

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. A connection is provided in the housing by a Plug connector M12 Series.



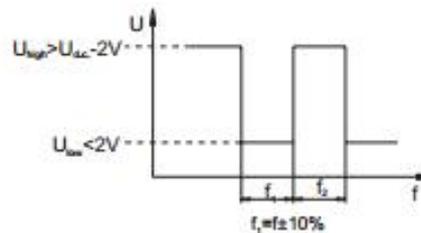
This performance is applicable for all motors of OS series. The main technical features correspond to the standard motors series OS.

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	54

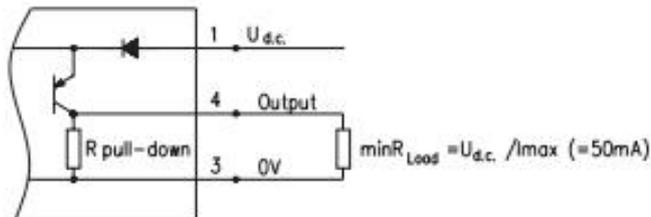
Output signal



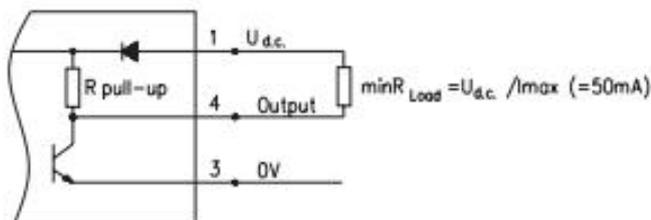
Load max.: $I_{high} = I_{low} < 50\text{mA}$
 No load current, max: 20 mA

Wiring diagram

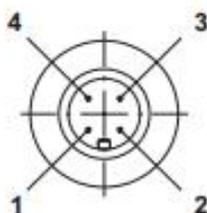
PNP



NPN



Stik type



Terminal No.	Connection
1	$U_{d.c.}$
2	No connection
3	0V
4	Output signal