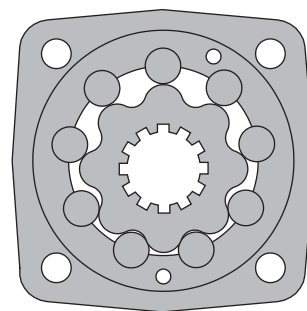


HYDRAULIC MOTORS OT



APPLICATION

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



CONTENTS

Specification data	OT-02
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Dimensions and mounting- OTS, V	OT-08÷09
Internal Spline data	OT-10
Permissible shaft loads	OT-10
Tacho connection	OT-13
Order code	OT-13

OPTIONS

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

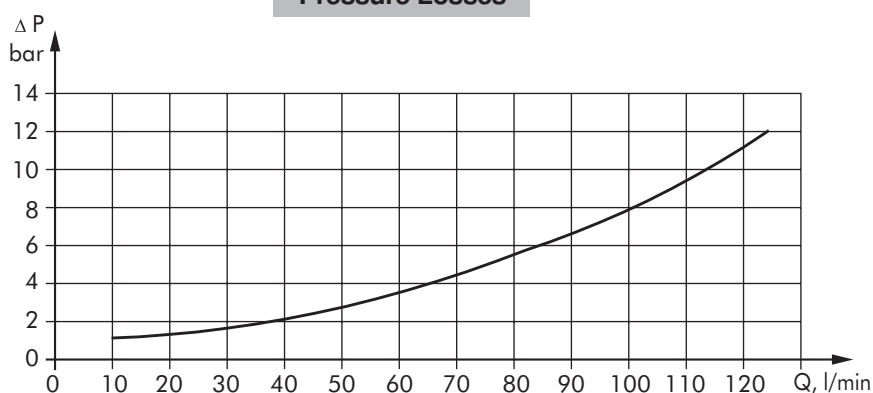
GENERAL

Displacement,	[cm ³ /rev.]	161,1 ÷ 725
Max. Speed,	[RPM]	625 ÷ 175
Max. Torque,	[daNm]	47 ÷ 125
Max. Output,	[kW]	20,2 ÷ 33,5
Max. Pressure Drop,	[bar]	200 ÷ 115
Max. Oil Flow,	[l/min]	100 ÷ 125
Min. Speed,	[RPM]	10 ÷ 5
Permissible Shaft Loads,	[daN]	P _{rad} = 1700; P _a = 1000
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		OT 160	OT 200	OT 250	OT 315	OT 400	OT 500	OT 630	OT 725
Displacement [cm³/rev.]		161,1	201,4	251,8	326,3	410,9	523,6	612,3	725
Max. Speed, [RPM]	cont.	625	625	500	380	305	240	206	172
	Int.*	780	750	600	460	365	285	247	205
Max. Torque [daNm]	cont.	47	59	73	95	108	122	123	125
	Int.*	56	71	88	114	126	137	138	140
	peak**	66	82	102	133	144	160	161	165
Max. Output [kW]	cont.	26,5	33,5	33,5	33,5	30	26,5	24,3	20,2
	int.*	32	40	40	40	35	30	27,5	26,8
Max. Pressure Drop [bar]	cont.	200	200	200	200	180	160	140	115
	Int.*	240	240	240	240	210	180	160	130
	peak**	280	280	280	280	240	210	190	160
Max. Oil Flow [l/min]	cont.	100	125	125	125	125	125	125	125
	Int.*	125	150	150	150	150	150	151,4	151,4
Max. Inlet Pressure [bar]	cont.	210	210	210	210	210	210	210	210
	Int.*	250	250	250	250	250	250	250	250
	peak**	300	300	300	300	300	300	300	300
Max. Return Pressure without Drain Line or Max. Pressure in Drain Line, [bar]	cont. 0-100 RPM	75	75	75	75	75	75	75	75
	cont. 100-300 RPM	40	40	40	40	40	40	40	40
	cont. >300 RPM	20	20	20	20	20	-	-	-
	Int.* 0-max. RPM	75	75	75	75	75	75	75	75
Max. Return Pressure with Drain Line [bar]	cont.	140	140	140	140	140	140	140	140
	Int.*	175	175	175	175	175	175	175	175
	peak**	210	210	210	210	210	210	210	210
Max. Starting Pressure with Unloaded Shaft, [bar]		10	10	10	10	10	10	10	10
Min. Starting Torque [daNm]	at max. press. drop cont.	34	43	53	74	84	95	95	95
	at max. press. drop Int.*	41	52	63	89	97	106	108	110
Min. Speed***, [RPM]		10	9	8	7	6	5	5	5
Weight, [kg]	OT	20	20,5	21	22	23	24	25	26
	OTW	22	22,5	23	24	25	26	27	28
	OTS	15	15,5	16	17	18	19	20	21
	OTV	11	11,5	12	13	14	15	16	17

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

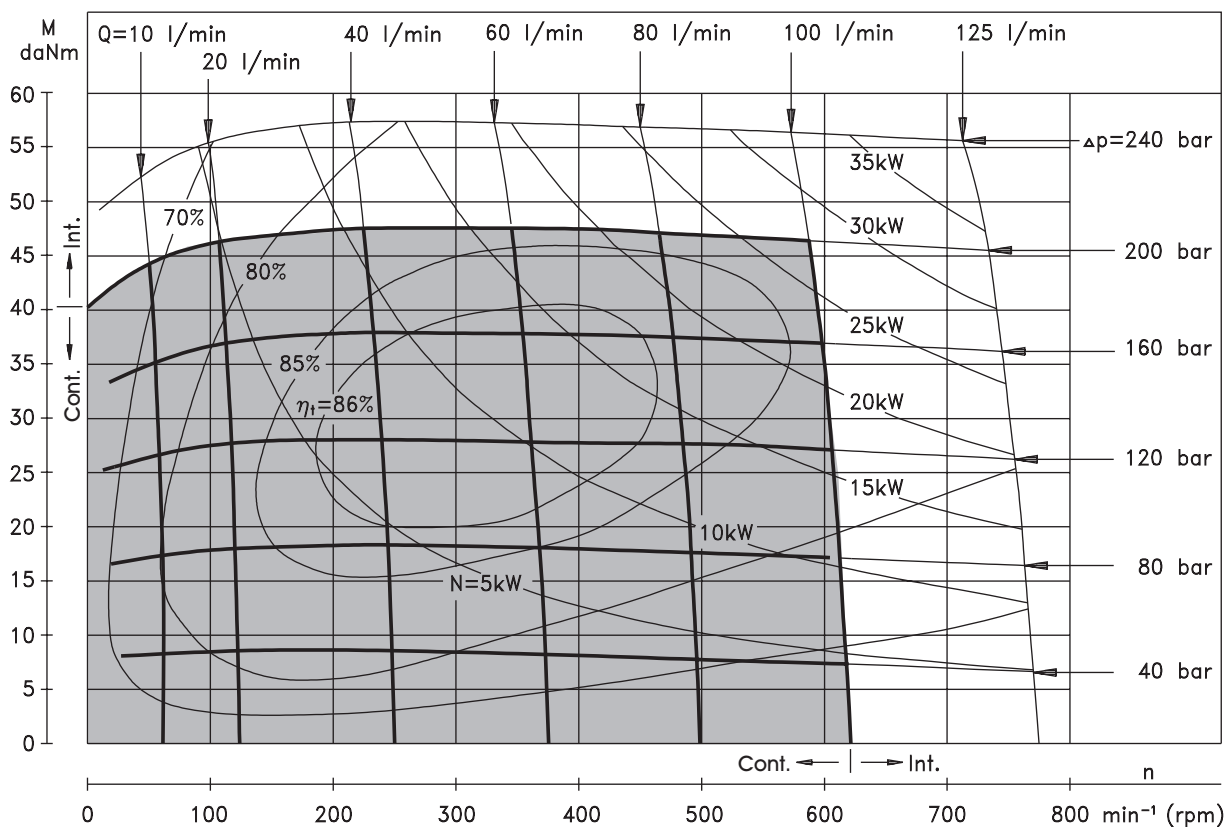
** Peak load: the permissible values may occur for max. 1% of every minute.

*** For speeds of 5 RPM lower than given, consult factory or your regional manager.

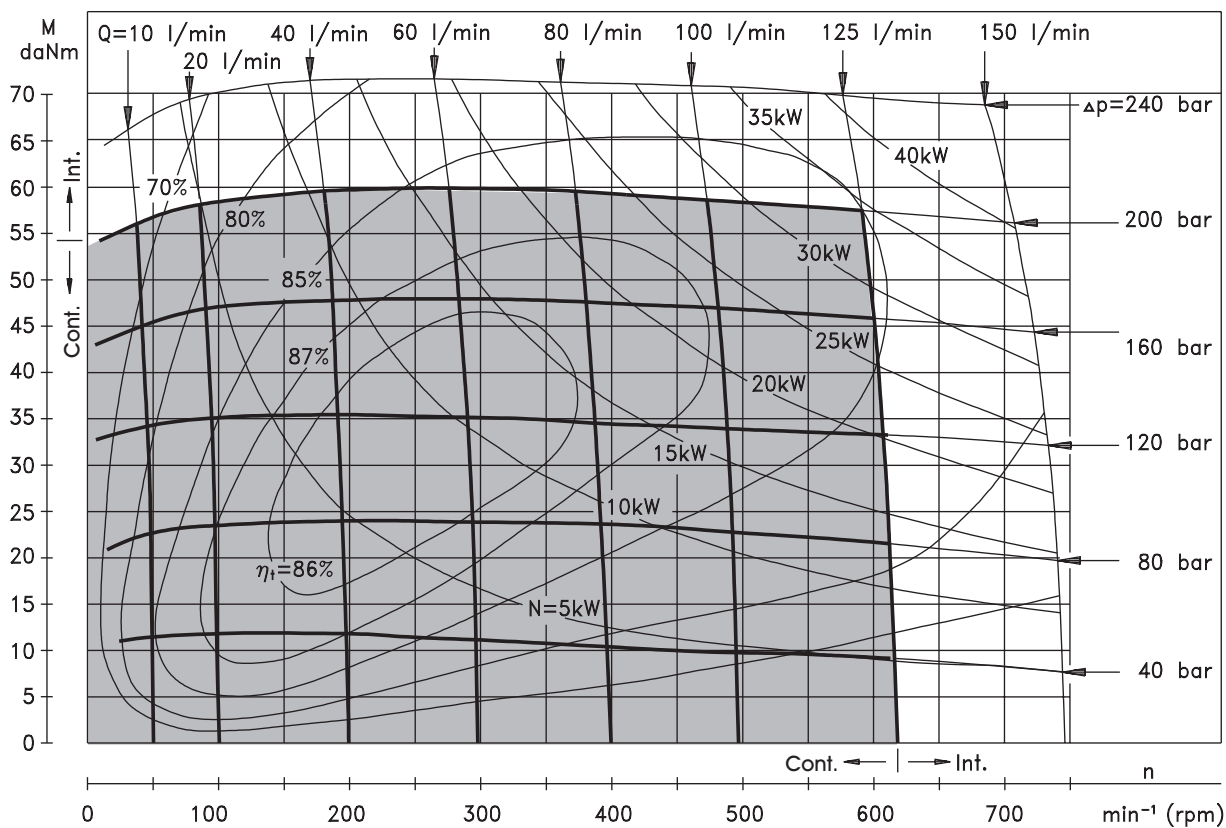
- 1) Intermittent speed and intermittent pressure must not occur simultaneously.
- 2) Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
- 3) Recommend using a premium quality, anti-wear type mineral based hydraulic oil, HLP(DIN51524) or HM(ISO6743/4).
If using synthetic fluids consult the factory for alternative seal materials.
- 4) Recommended minimum oil viscosity 13 mm²/s at 50°C.
- 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

OT 160



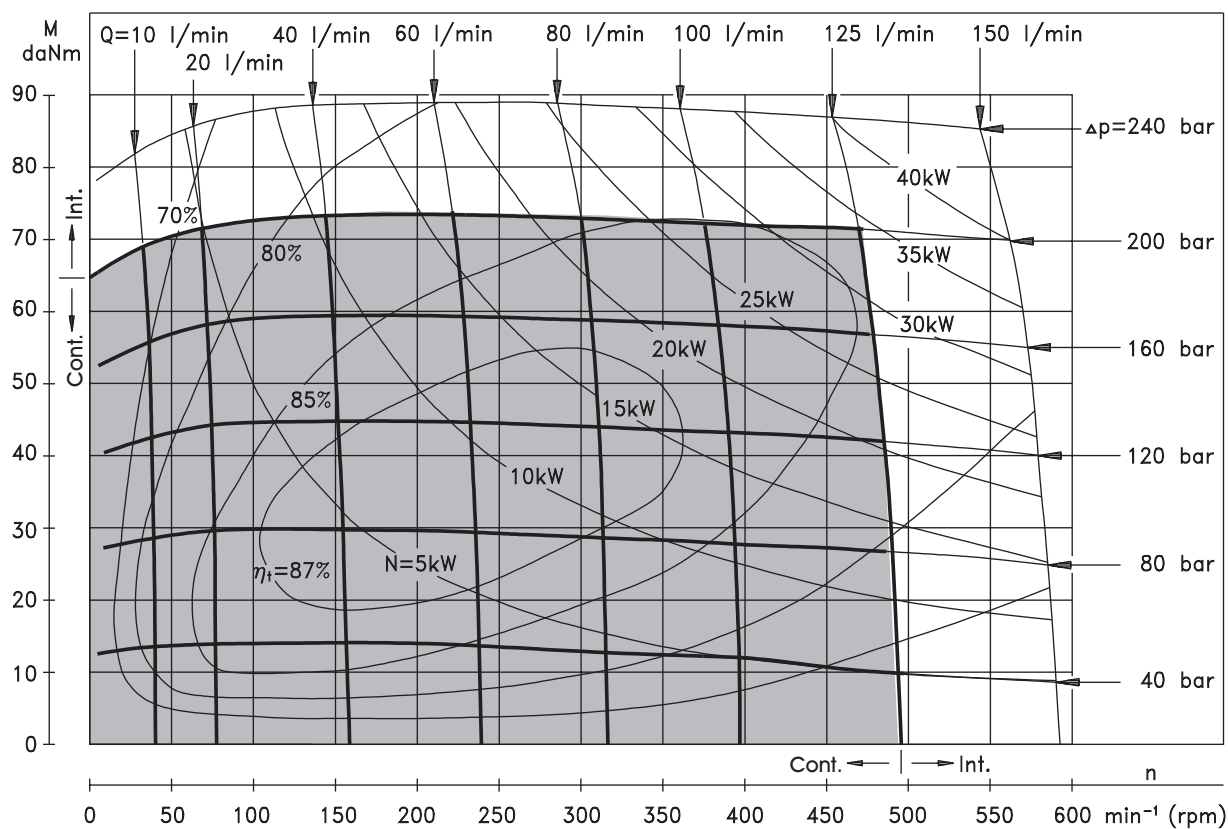
OT 200



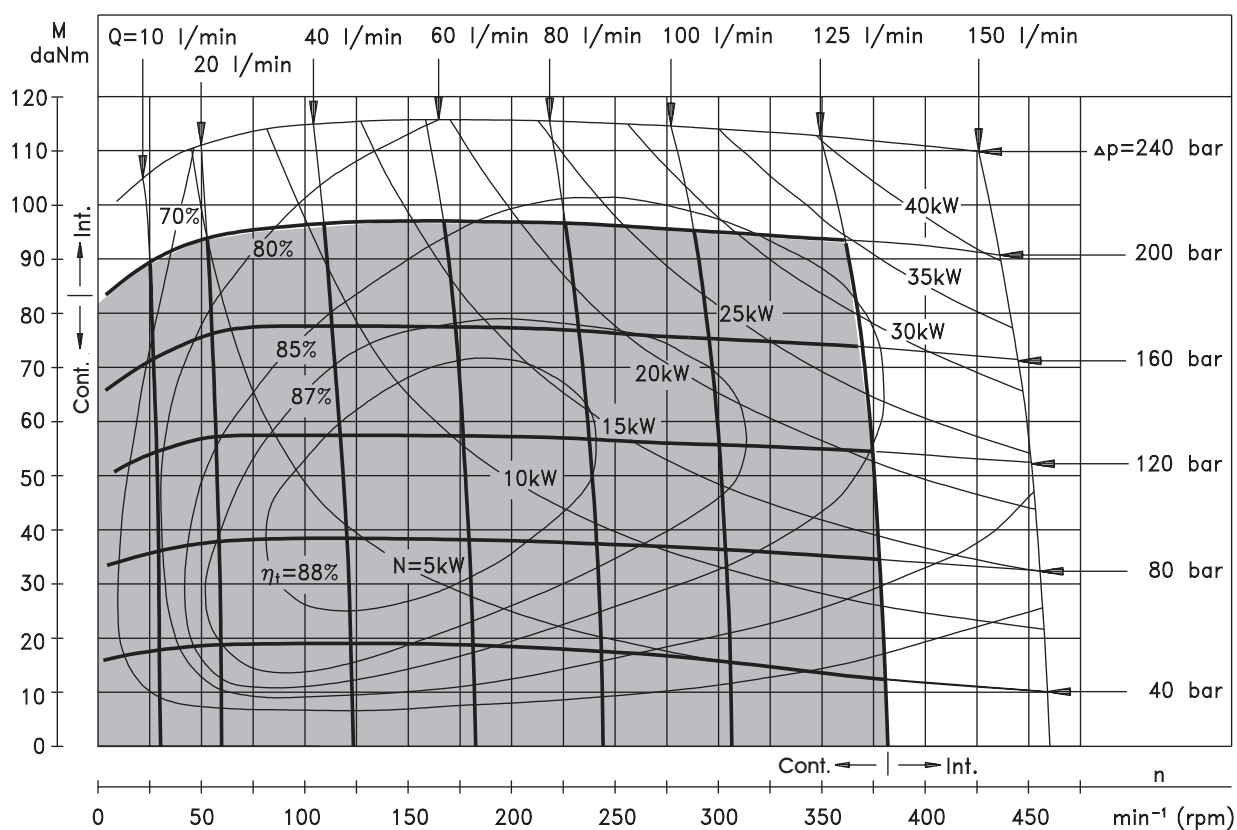
The function diagrams data was collected at back pressure 5÷10 bar and oil with viscosity of 32 mm²/s at 50° C.

FUNCTION DIAGRAMS

OT 250

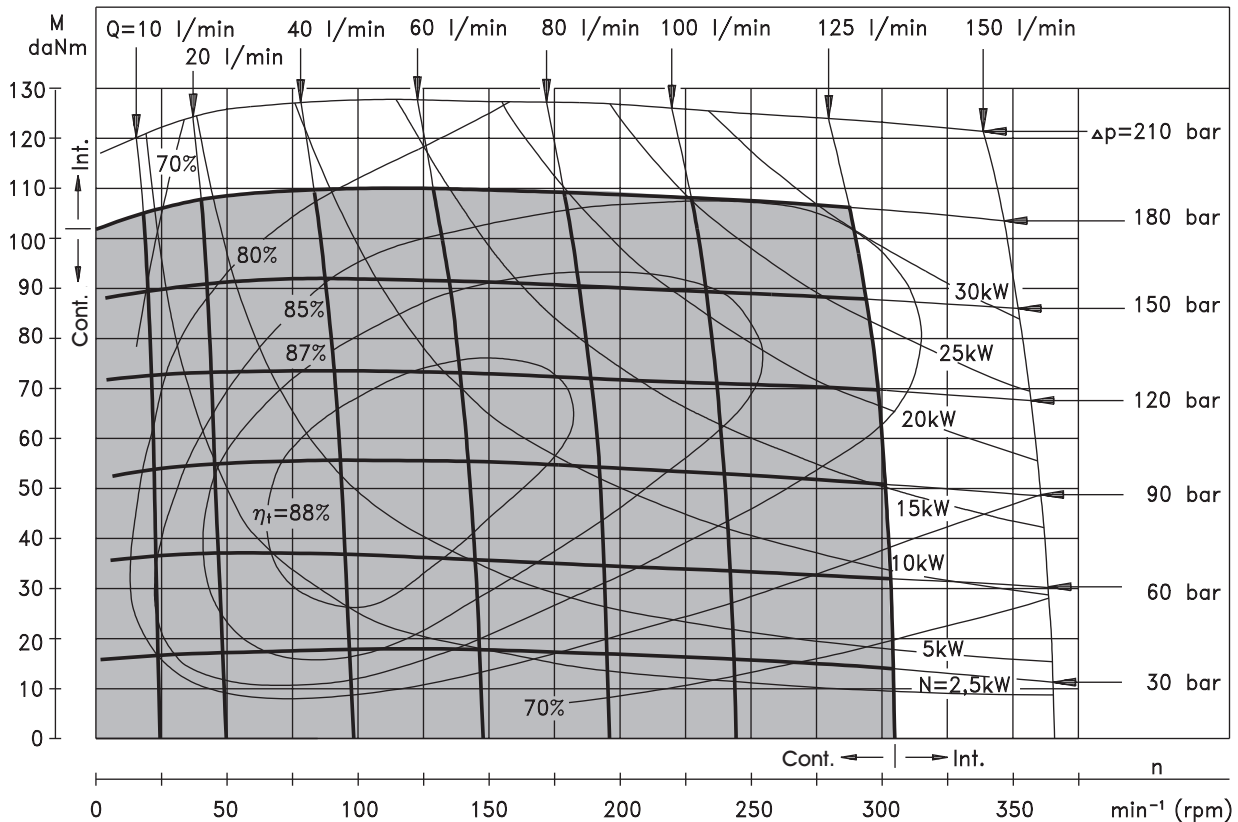


OT 315

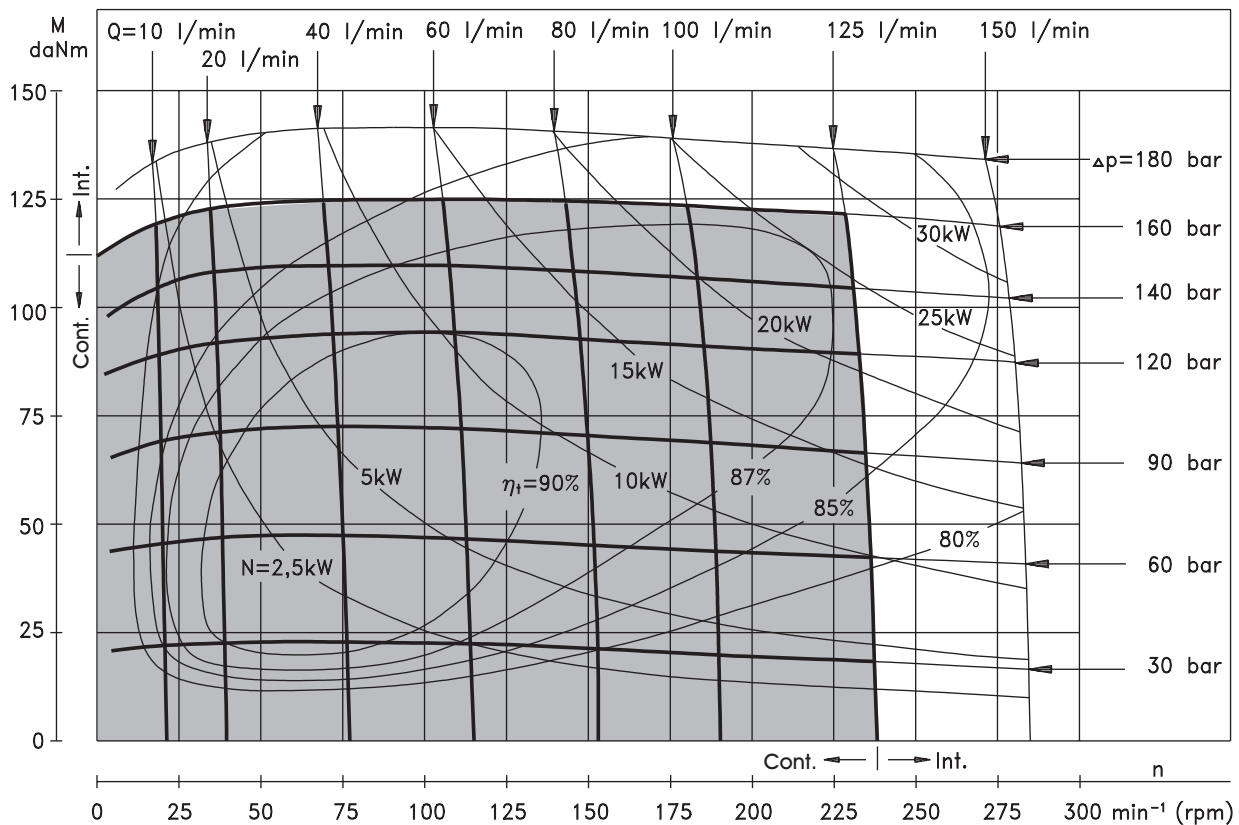


FUNCTION DIAGRAMS

OT 400



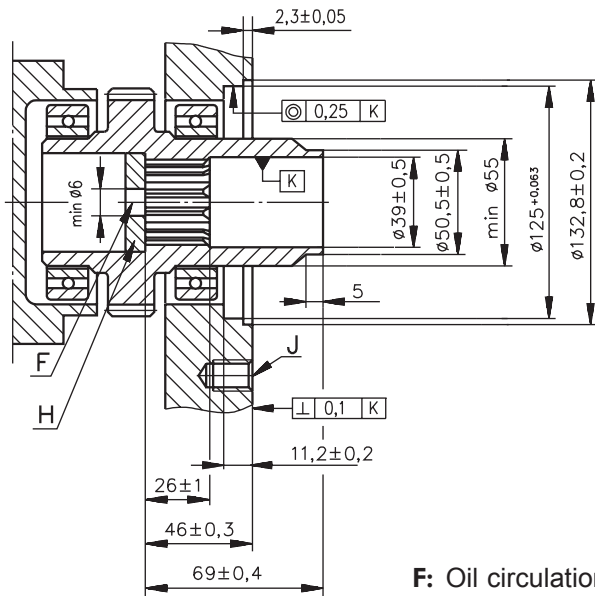
OT 500



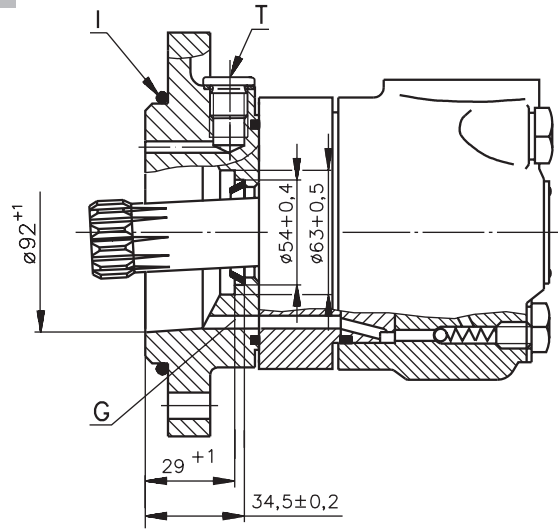
The function diagrams data was collected at back pressure 5÷10 bar and oil with viscosity of 32 mm²/s at 50° C.

DIMENSIONS OF THE ATTACHED COMPONENT

OTS

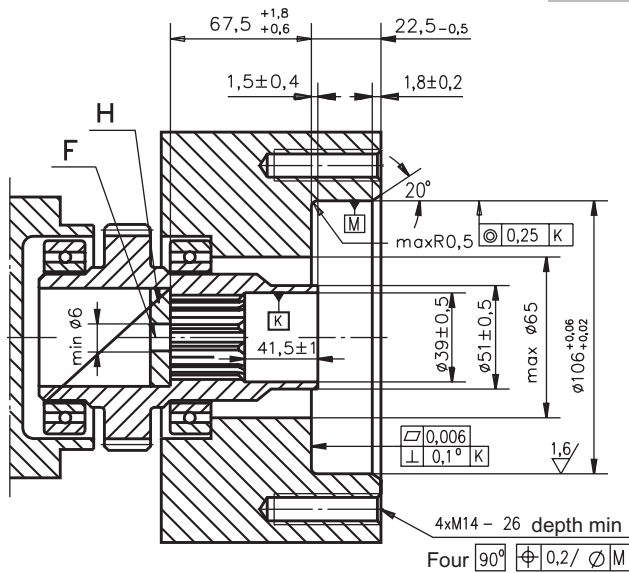


F: Oil circulation hole
G: Internal drain channel
H: Hardened stop plate

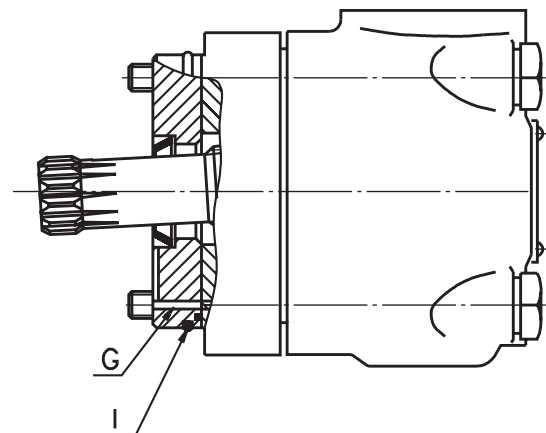


I: O- Ring 125x3mm
J: 4xM12-18 mm depth, 90°
T: Drain connection G1/4 or M14x1,5

OTV



F: Oil circulation hole
G: Internal drain channel



H: Hardened stop plate
I: O- Ring 100x3mm

DRAIN CONNECTION

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

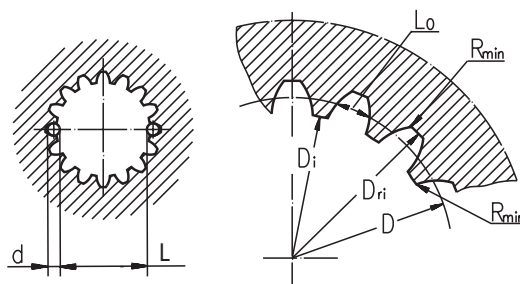
- For OTS at the drain port of the motor;
- For OTV at the drain connection of the attached component. The maximum pressure in the drain line is limited by the attached component and its shaft seal.

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
 $[m = 2 \cdot 1166; \text{corrected } x.m = +1,0]$

Fillet Root Side Fit		mm
Number of Teeth	z	16
Diametral Pitch	DP	12/24
Pressure Angle		30°
Pitch Dia.	D	33,8656
Major Dia.	D _{ri}	38,4 ^{+0,4}
Minor Dia.	D _i	32,15 ^{+0,04}
Space Width [Circular]	L _o	4,516±0,037
Fillet Radius	R _{min}	0,5
Max. Measurement between Pin	L	26,9 ^{+0,10}
Pin Dia.	d	4,835±0,001



Hardening Specification:

HRC 60±2

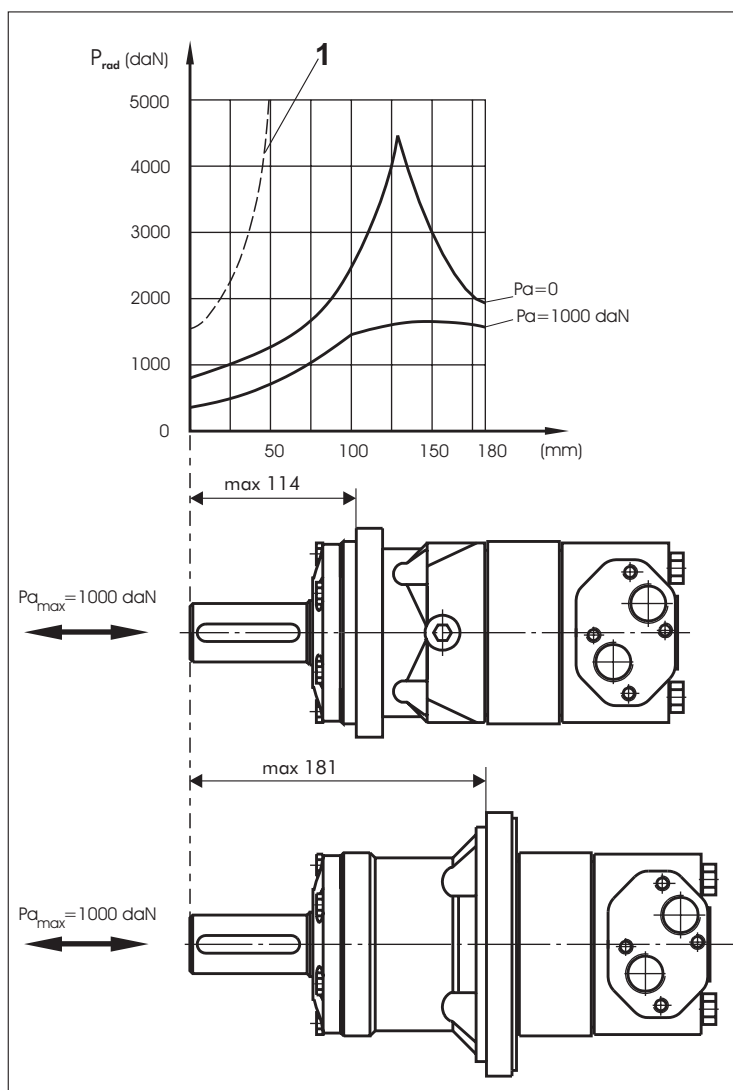
HRC 52

0,7±0,2 mm effective case depth

Material 20 MoCr4 DIN 17210 or better

PERMISSIBLE SHAFT LOADS

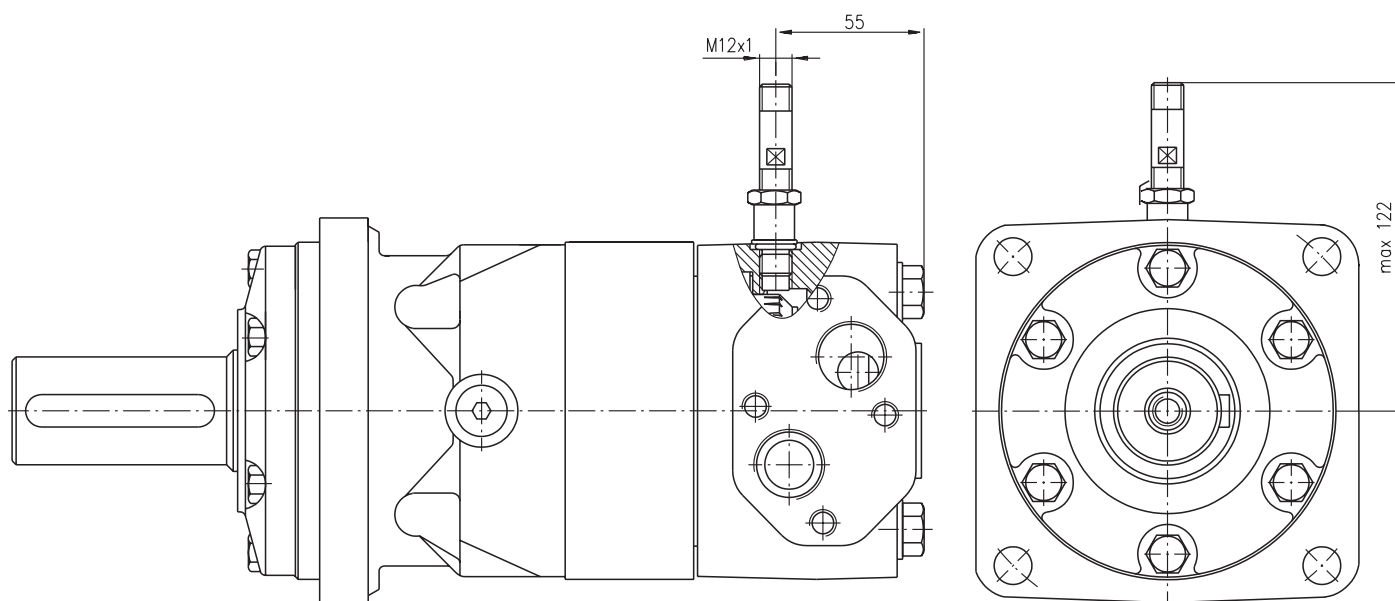
The output shaft runs in tapered bearings that permit high axial and radial forces. Curve "1" shows max. radial shaft load. Any shaft load exceeding the values quoted in the curve will seriously reduce motor life. The two other curves apply to a B10 bearing life of 3000 hours at 200 RPM.



Hydraulic motors with speed sensor type OT...RS

Meta Hydraulic is introducing a 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.



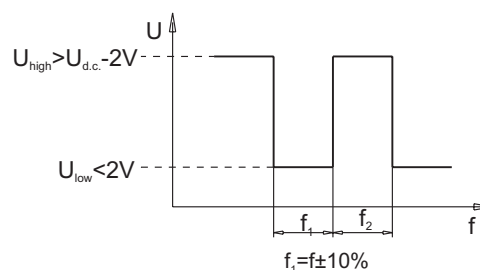
This performance is applicable for all motors of OT series. The main technical features correspond to the standard motors series OT.

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	84

Output signal

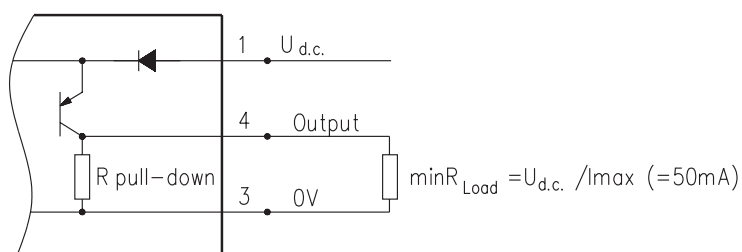


Load max.: $I_{\text{high}} = I_{\text{low}} < 50\text{mA}$

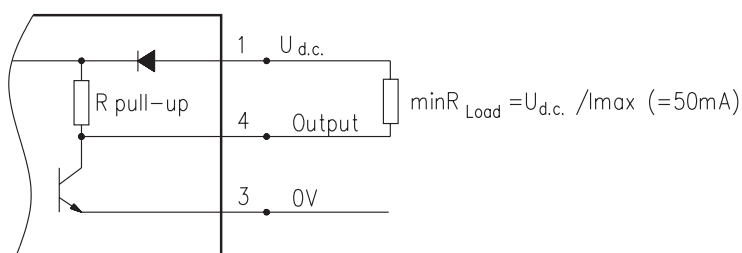
No load current, max: 20 mA

Wiring diagram

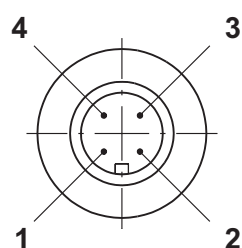
PNP



NPN

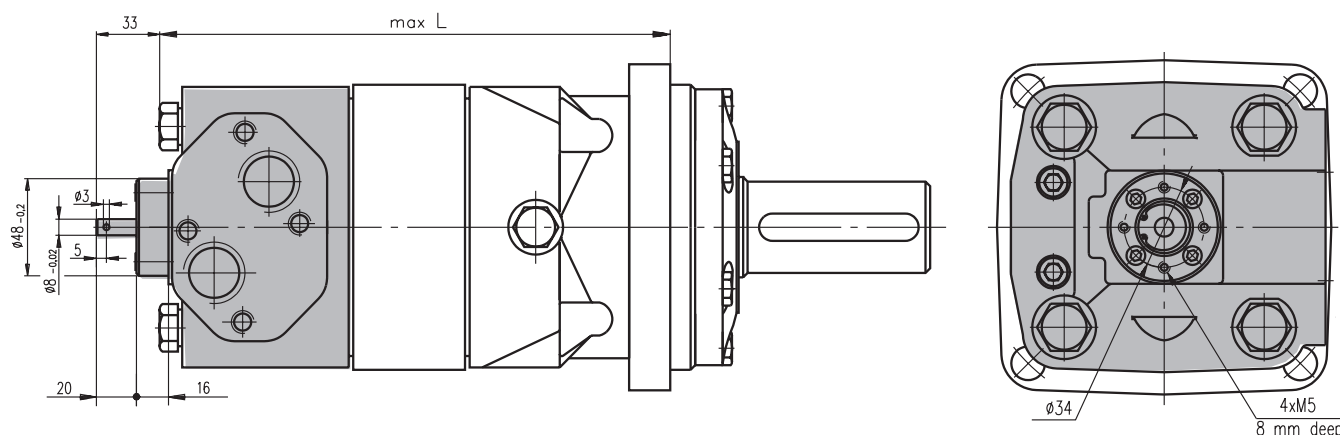


Stik type



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

MOTORS WITH TACHO CONNECTION - Option "T"



ORDER CODE

	1	2	3	4	5	6	7	8	9	10
OT										

Pos. 1 - Mounting Flange

omit - Square mount, four holes

S - Short mount

V - Veryshort mount

W - Wheel mount

Pos. 2 - Port type

omit - Side ports

E - Rear ports

Pos. 3 - Displacement code

160 - 161,1[cm³/rev]

200 - 201,4[cm³/rev]

250 - 251,8[cm³/rev]

315 - 326,3[cm³/rev]

400 - 410,9[cm³/rev]

500 - 523,6[cm³/rev]

630 - 612,3[cm³/rev] (without Function diagram)

725 - 725,0[cm³/rev] (without Function diagram)

Pos. 4 - Shaft Extensions*

C - $\varnothing 40$ straight, Parallel key A12x8x70 DIN6885

CO - $\varnothing 1\frac{1}{2}$ " straight, Parallel key $\frac{3}{8}$ "x $\frac{3}{8}$ "x2 $\frac{1}{4}$ " BS46

K - $\varnothing 45$ tapered 1:10, Parallel key B12x8x28 DIN6885

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

SH - $\varnothing 1\frac{1}{2}$ " splined 17T ANSI B92.1-1976

Pos. 5 - Ports

omit - BSPP (ISO 228)

M - Metric (ISO 262)

Pos. 6 - Speed Monitoring

omit - none

T - with tachometer connection (only for side ports)

RS-P - with speed sensor (PNP pull-down resistor)

RS-N - with speed sensor (NPN pull-up resistor)

Pos. 7 - Special Features

omit - none

LL - Low Leakage

LSV - Low Speed Valve

Pos. 8 - Rotation

omit - Standard Rotation

R - Reverse Rotation

Pos. 9 - Option (Paint)**

omit - no Paint

P - Painted

PC - Corrosion Protected Paint

Pos. 10 - Design Series

omit - Factory specified

NOTES:

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

** Color at customer's request.

The hydraulic motors are mangano-phosphatized as standard.