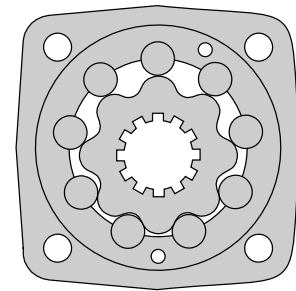


# HYDRAULIC MOTORS MT



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## OPTIONS

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

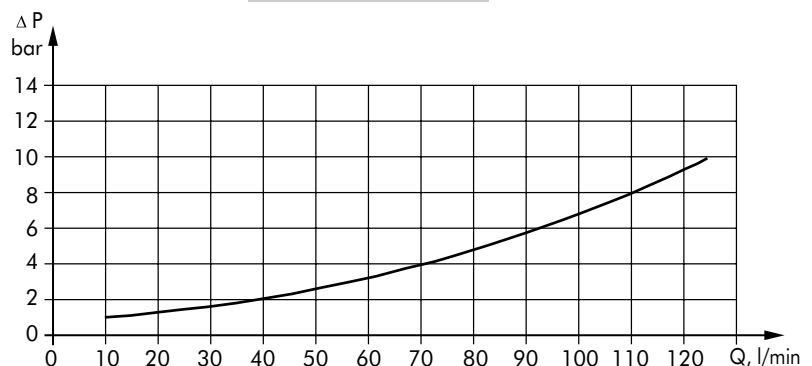
## GENERAL

Displacement, [cm <sup>3</sup> /rev.]	161,1 ÷ 725
Max. Speed, [RPM]	175 ÷ 625
Max. Torque, [daNm]	47 ÷ 125
Max. Output, [kW]	20,2 ÷ 33,5
Max. Pressure Drop, [bar]	115 ÷ 200
Max. Oil Flow, [l/min]	100 ÷ 125
Min. Speed, [RPM]	5 ÷ 10
Permissible Shaft Loads, [daN]	P <sub>a</sub> = 1000
Pressure fluid	Mineral based- HLP(DIN 51524) or HM(ISO 6743/4)
Temperature range, [°C]	-30 ÷ 90
Optimal Viscosity range, [mm <sup>2</sup> /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 <sup>2</sup> /s)	Oil flow in drain line (l/min)
140	20	2,5
	35	1,5
210	20	5
	35	3

### Pressure Losses



## SPECIFICATION DATA

Type	MT 160	MT 200	MT 250	MT 315	MT 400	MT 500	MT 630	MT 725	
Displacement [cm <sup>3</sup> /rev.]	161,1	201,4	251,8	326,3	410,9	523,6	631,2	724,3	
Max. Speed, [RPM]	cont.	625	625	500	380	305	240	197	164
	Int.*	780	750	600	460	365	285	234	199
Max. Torque [daNm]	cont.	47	59	73	95	108	122	138	153
	Int.*	56	71	88	114	126	137	155	172
	peak**	66	82	102	133	144	160	180	200
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	120
	Int.*	240	240	240	240	210	180	160	140
	peak**	280	280	280	280	240	210	190	165
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 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	110	115
Min. Speed***, [RPM]	10	9	8	7	6	5	5	5	
Weight, [kg]	MT	20	20,5	21	22	23	24	23,5	24,5
	MTW	22	22,5	23	24	25	26	25,5	26,5
	MTS	15	15,5	16	17	18	19	18,5	19,5
	MTV	11	11,5	12	13	14	15	14,5	15,5

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

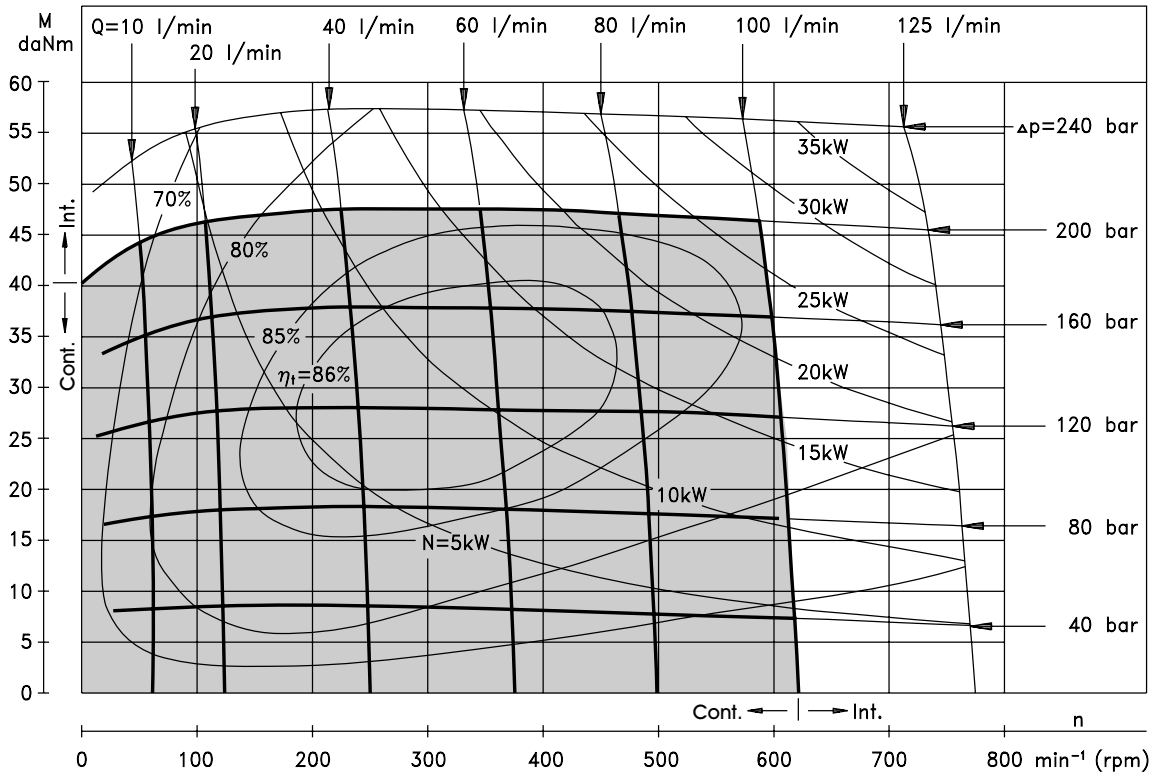
\*\* Peak load: the permissible values may occur for max. 1% of every minute.

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

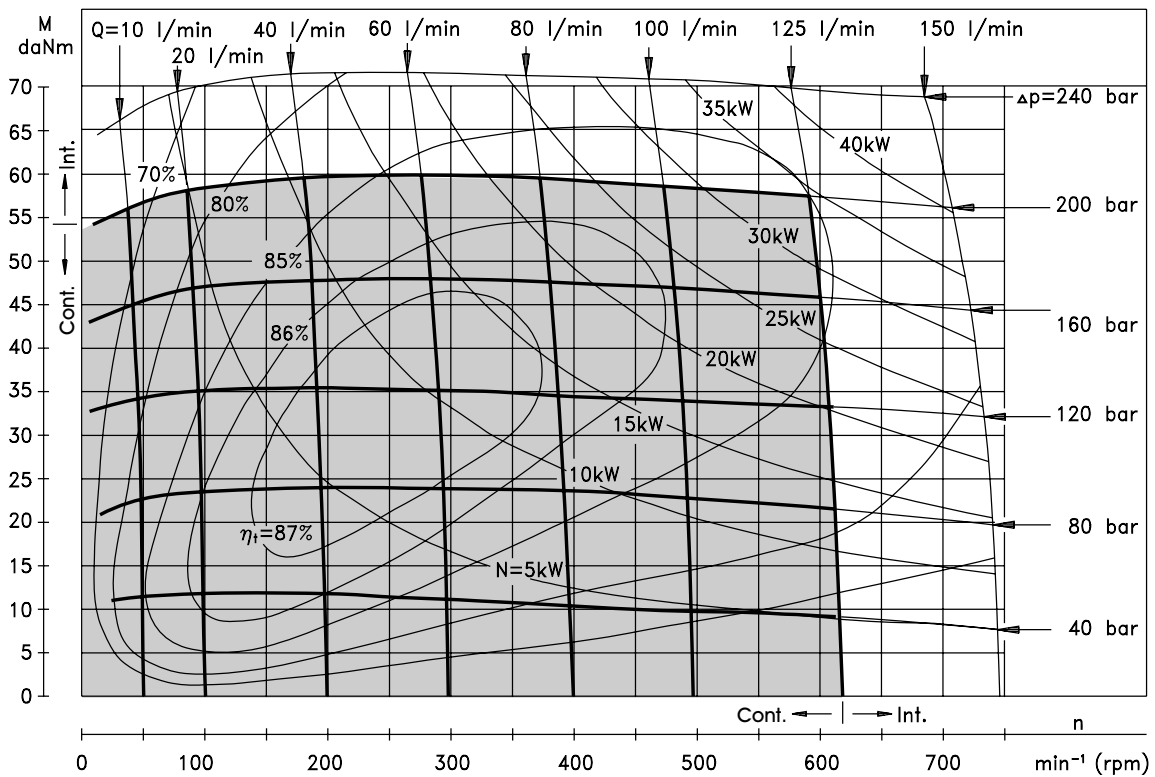
- 1) Intermittent speed and intermittent pressure must not occur simultaneously.
- 2) Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
- 3) Recommend using a premium quality, anti-wear type mineral based hydraulic oil, HLP(DIN51524) or HM(ISO6743/4).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

**MT 160**



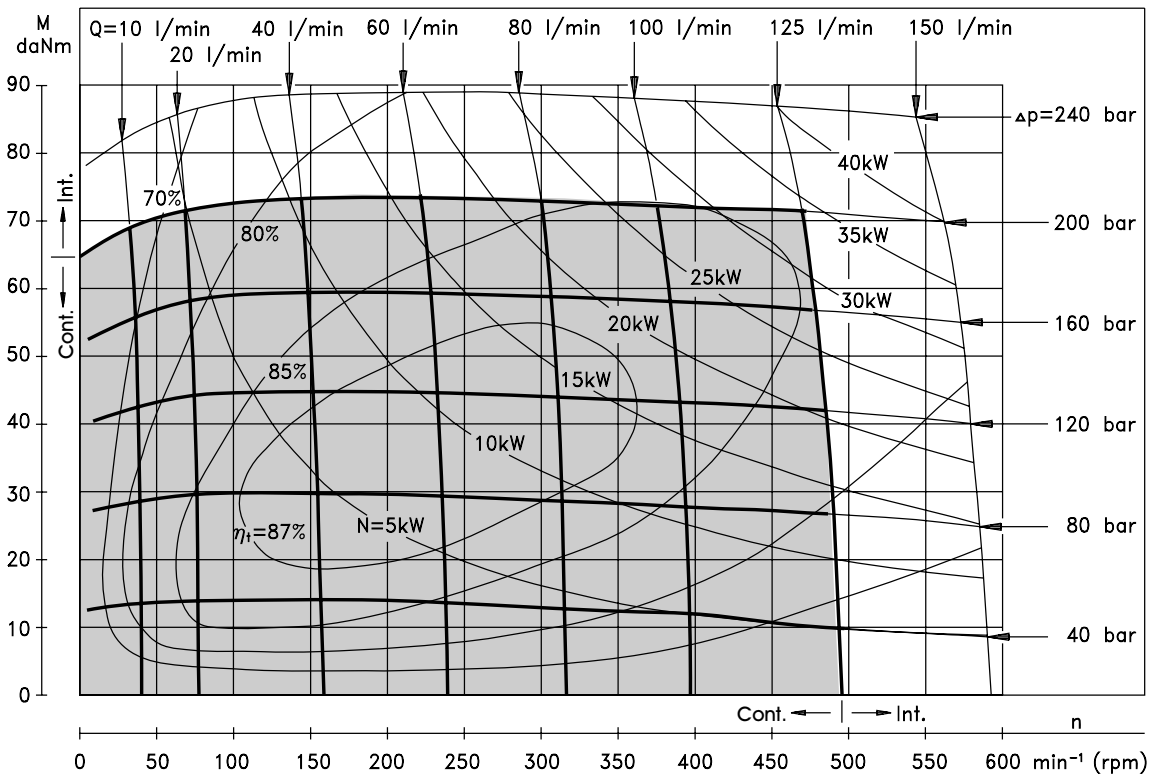
**MT 200**



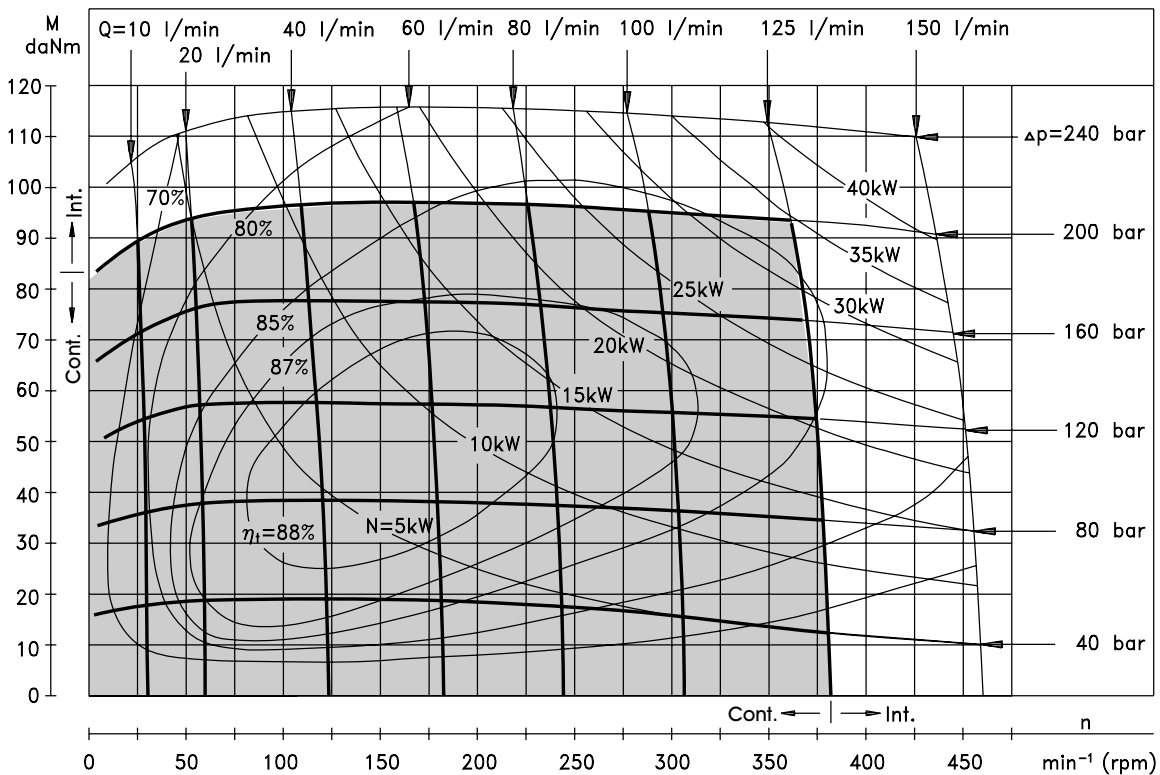
The function diagrams data was collected at back pressure 5 ÷ 10 bar and oil with viscosity of 32 mm<sup>2</sup>/s at 50° C.

**FUNCTION DIAGRAMS**

**MT 250**

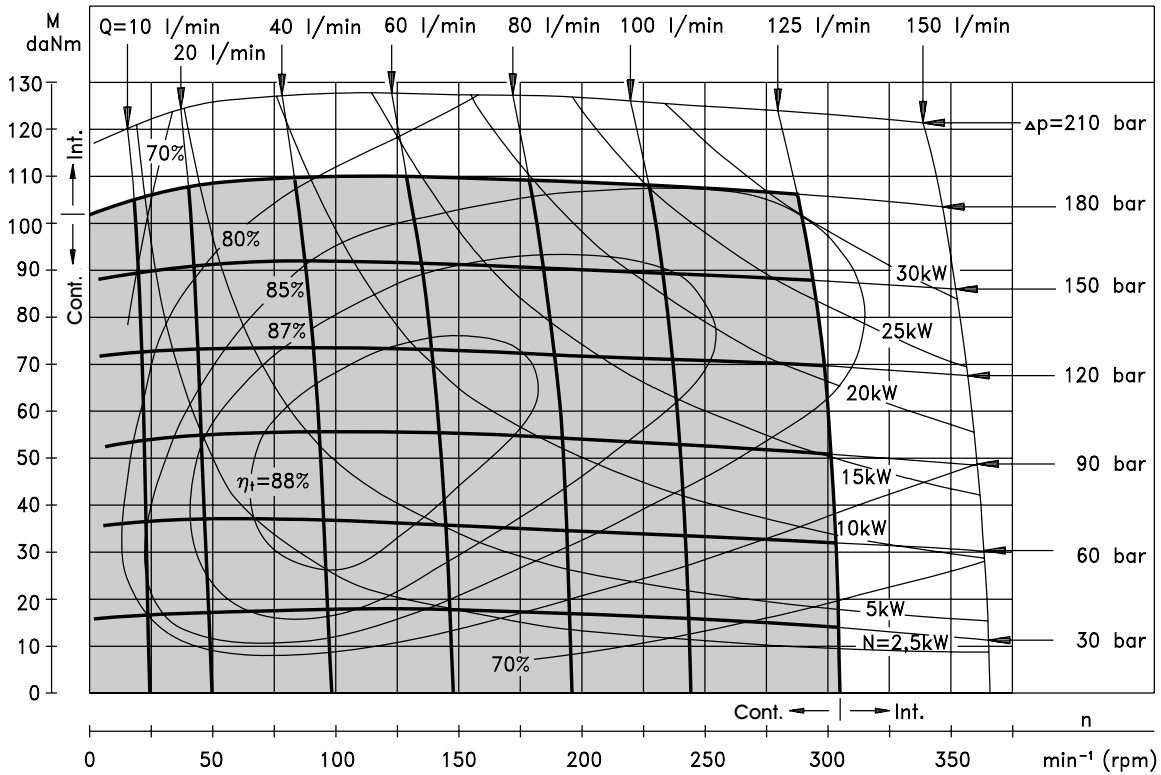


**MT 315**

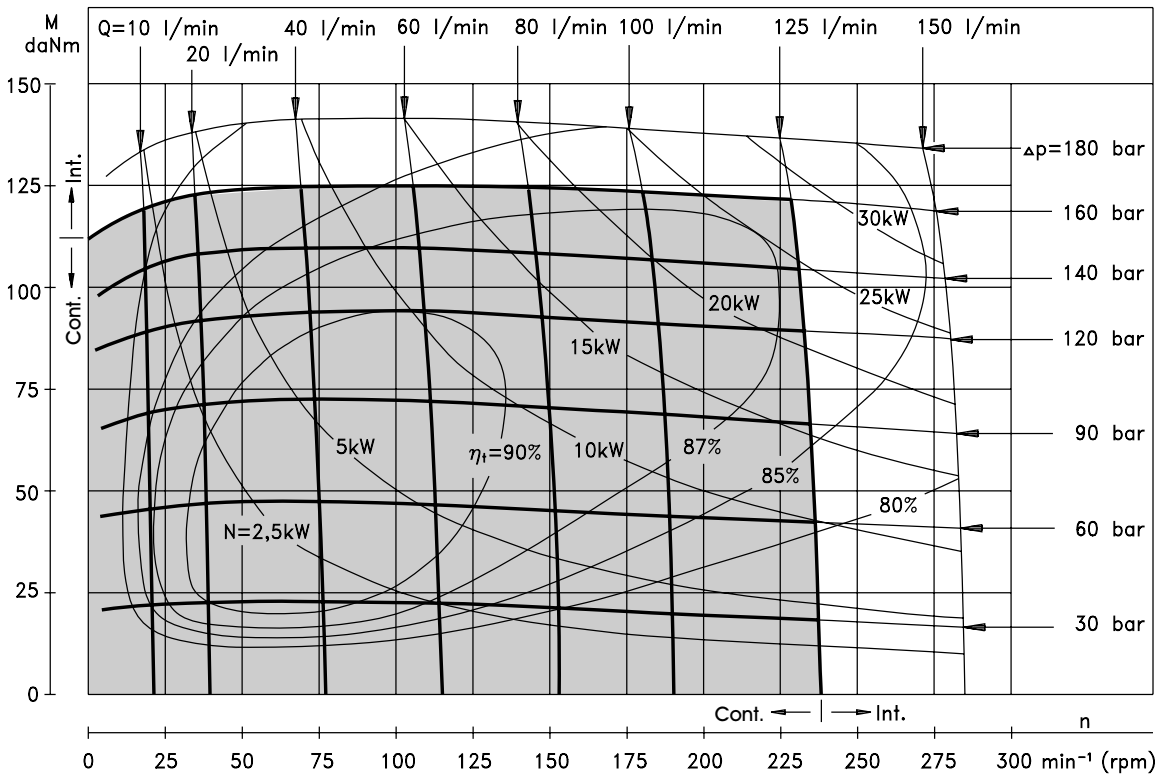


**FUNCTION DIAGRAMS**

**MT 400**



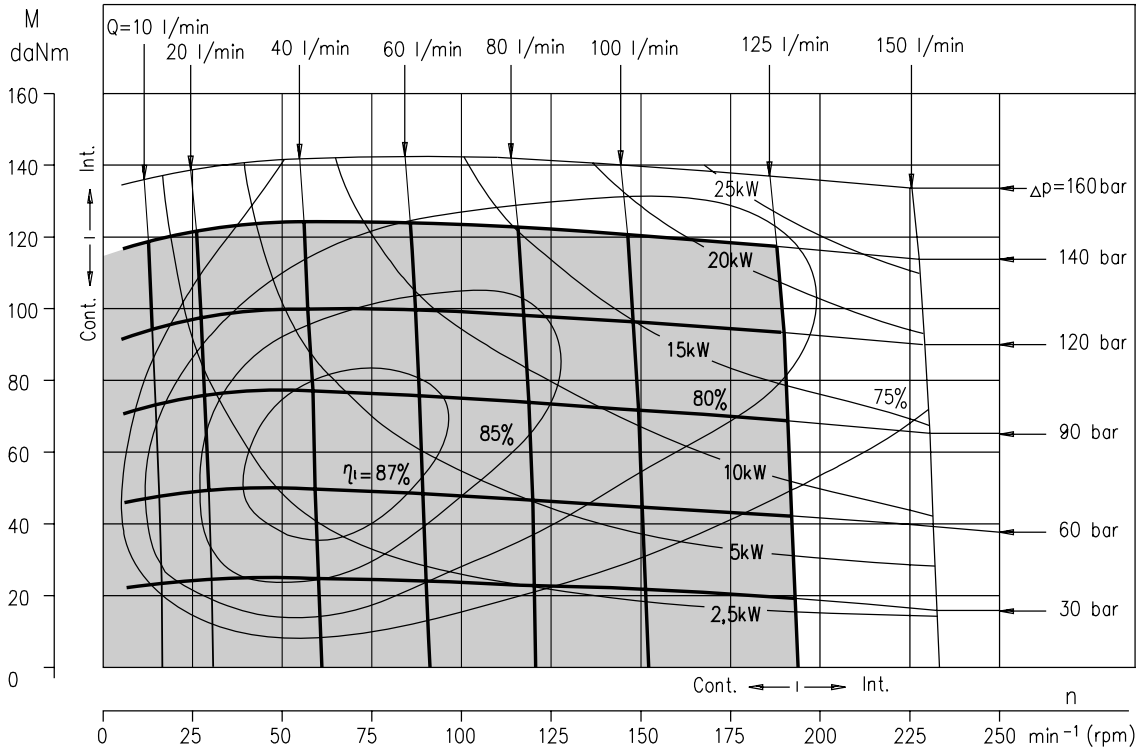
**MT 500**



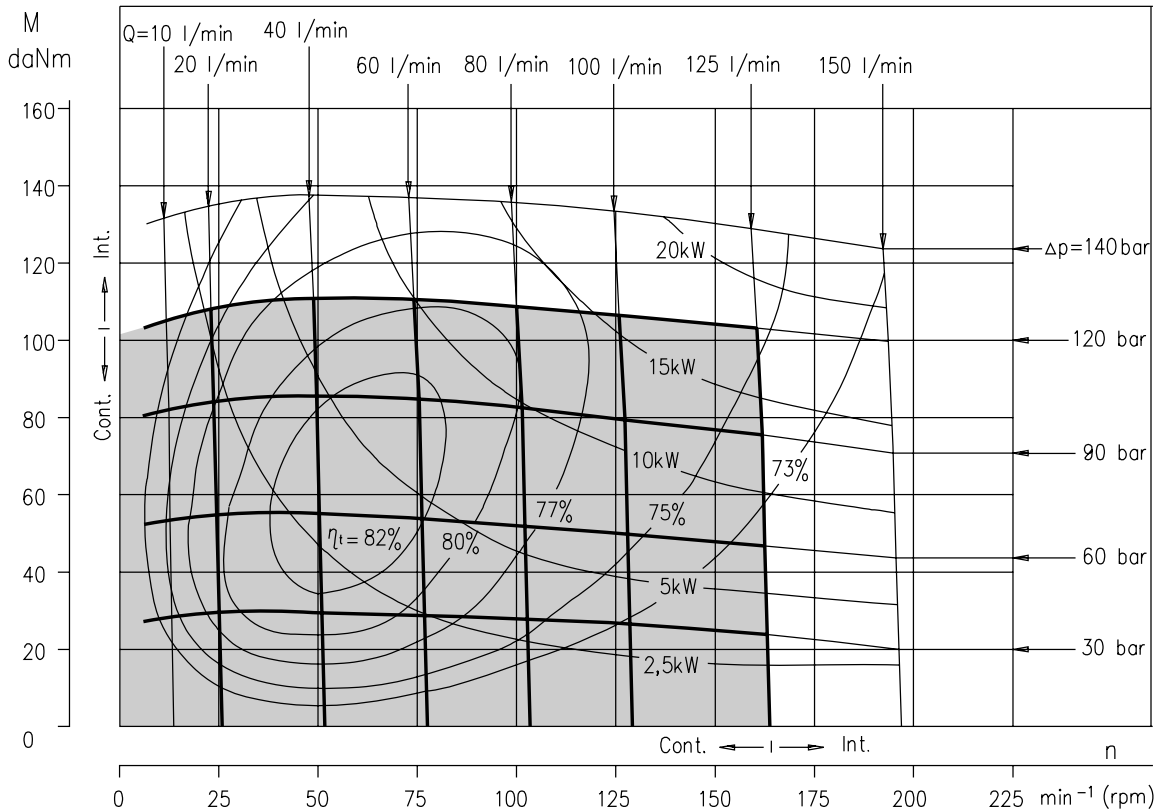
The function diagrams data was collected at back pressure 5 ÷ 10 bar and oil with viscosity of 32 mm<sup>2</sup>/s at 50° C.

**FUNCTION DIAGRAMS**

**MT 630**

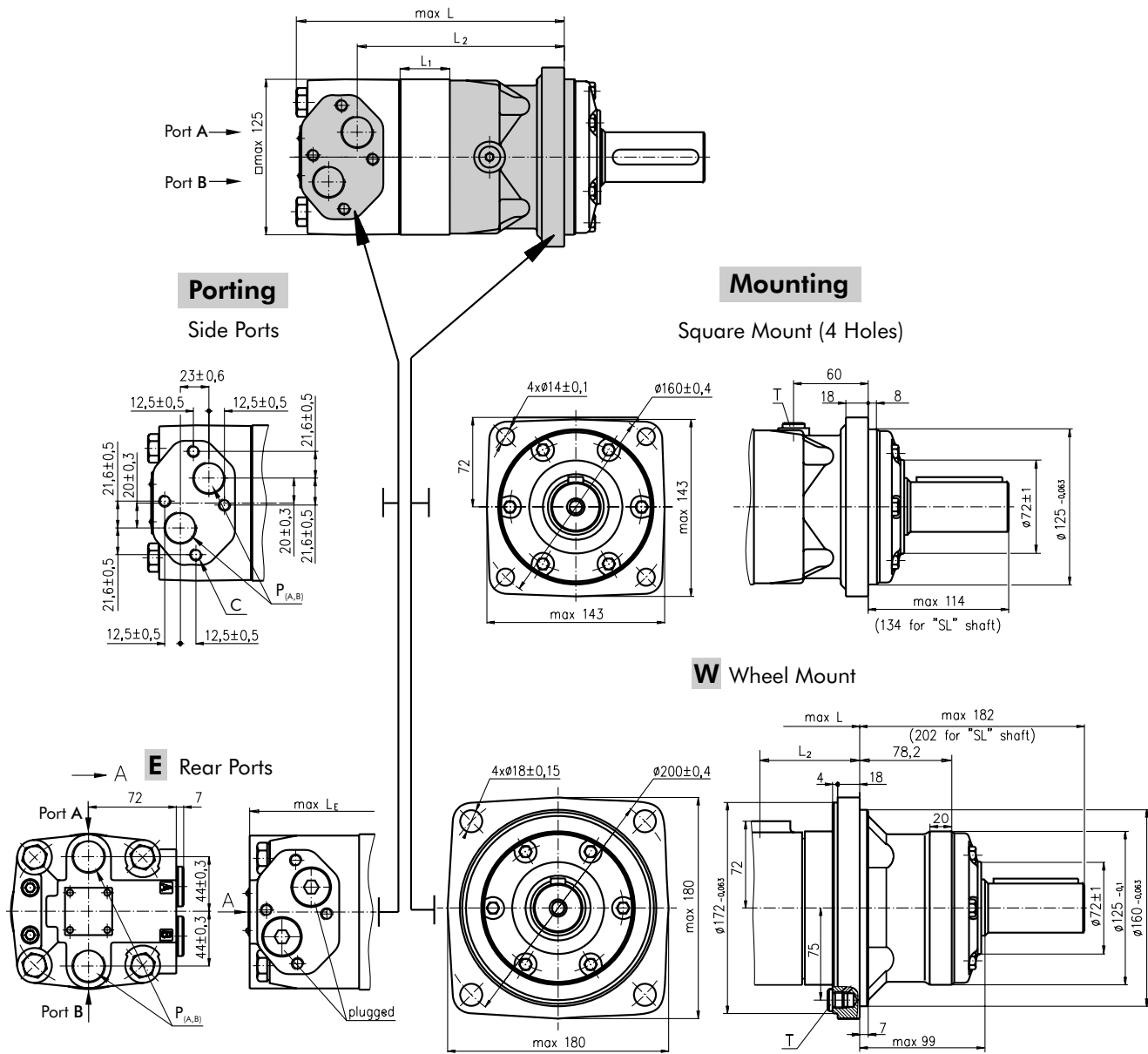


**MT 725**



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

## 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

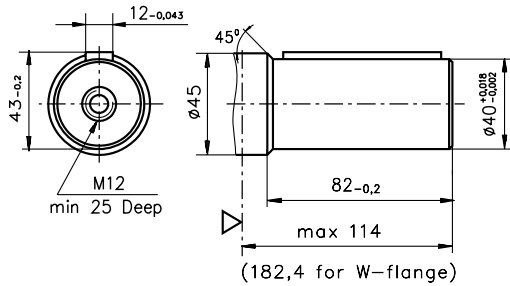
**C:** 4xM10-10 mm depth  
**P<sub>(A,B)</sub>:** 2xG3/4 or 2xM27x2-17 mm depth  
**T:** G 1/4 or M14x1,5 - 12 mm depth (plugged)

Type	L, mm	Type	L, mm	L <sub>2</sub> , mm	Type	L, mm	Type	L, mm	L <sub>2</sub> , mm	*L <sub>1</sub> , mm
MT 160	190	MTE 160	200	140	MTW 160	123	MTWE 160	133	73	16,5
MT 200	195	MTE 200	205	145	MTW 200	128	MTWE 200	138	78	21,5
MT 250	201	MTE 250	211	151	MTW 250	134	MTWE 250	144	84	27,8
MT 315	211	MTE 315	221	161	MTW 315	144	MTWE 315	154	94	37,0
MT 400	221	MTE 400	231	171	MTW 400	154	MTWE 400	164	104	47,5
MT 500	235	MTE 500	245	185	MTW 500	168	MTWE 500	178	118	61,5
MT 630	231	MTE 630	241	181	MTW 630	164	MTWE 630	174	114	57,5
MT 725	240	MTE 725	250	190	MTW 725	173	MTWE 725	183	123	66,5

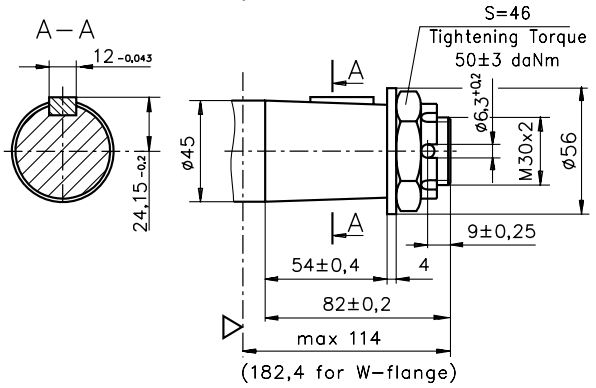
\* The width of the roll-gerotor is 3,5 mm greater than L<sub>1</sub>.

**SHAFT EXTENSIONS**

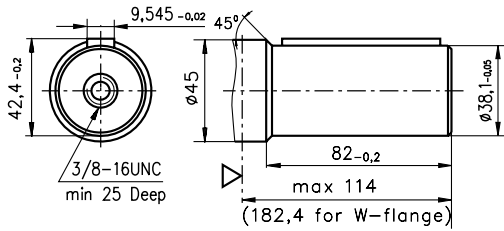
**C** - $\phi 40$  straight, Parallel key A12x8x70 DIN 6885  
Max. Torque 132,8 daNm



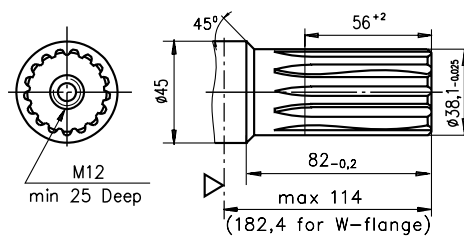
**K** -tapered 1:10, Parallel key B12x8x28 DIN 6885  
Max. Torque 210,7 daNm



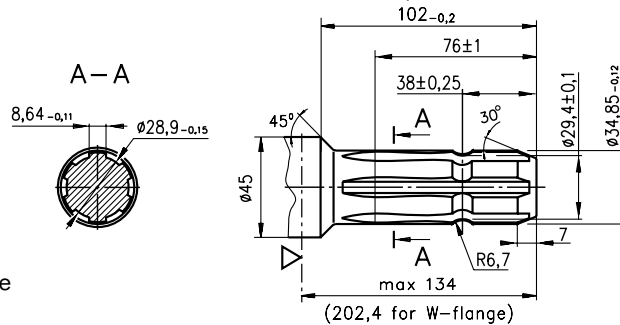
**CO** - $\phi 1\frac{1}{2}$ " straight, Parallel key  $\frac{3}{8}$ "x  $\frac{3}{8}$ "x 2 $\frac{1}{4}$ " BS46  
Max. Torque 132,8 daNm



**SH** - $\phi 1\frac{1}{2}$ " splined 17T, DP 12/24 ANSI B92.1-1976  
Max. Torque 132,8 daNm



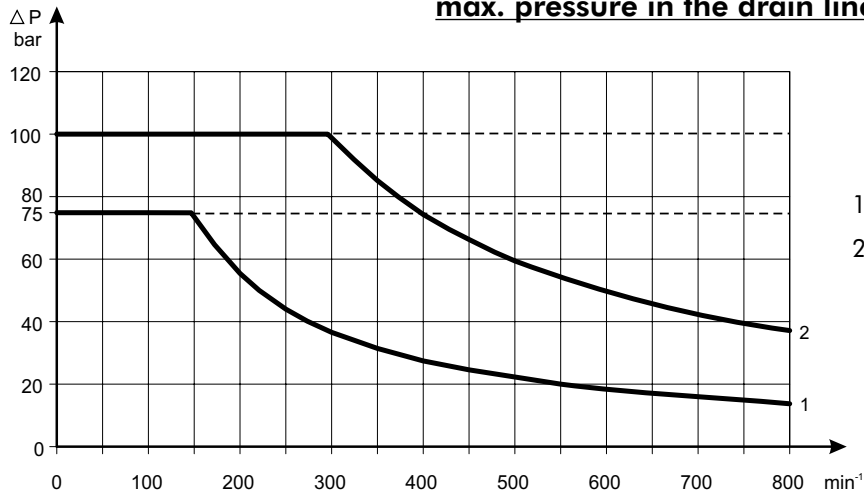
**SL** - $\phi 34,85$  p.t.o. DIN 9611 Form 1  
Max. Torque 77 daNm



▽ - Motor Mounting Surface

**MAX. PERMISSIBLE SHAFT SEAL PRESSURE for MT motors**

Max. return pressure without drain line or  
max. pressure in the drain line

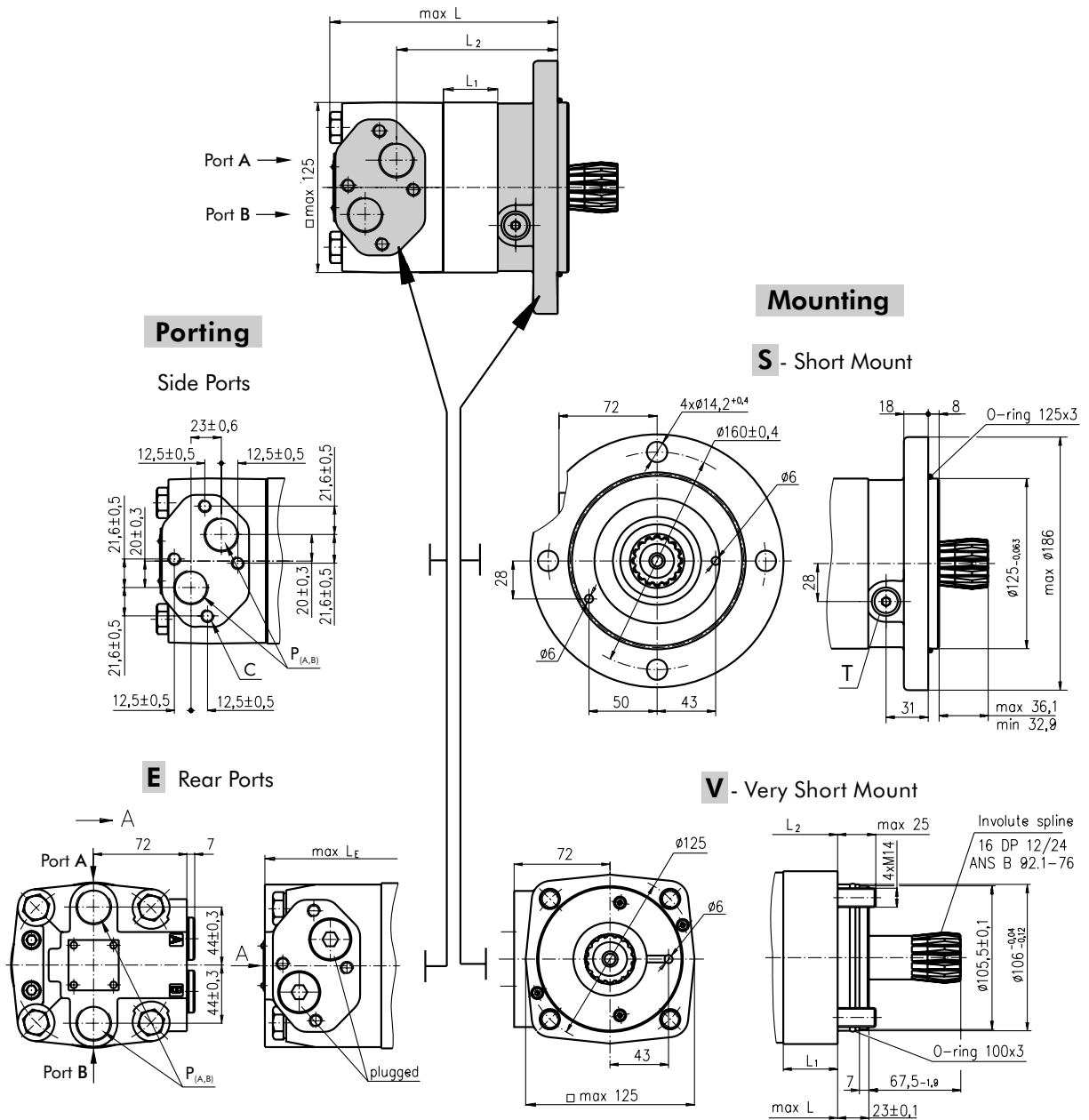


1: Drawing for Standard Shaft Seal  
2: Drawing for High Pressure Seal ("U" Seal)

— - continuous operations  
- - - - intermittent operations



## DIMENSIONS AND MOUNTING DATA - MTS and MTV



**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

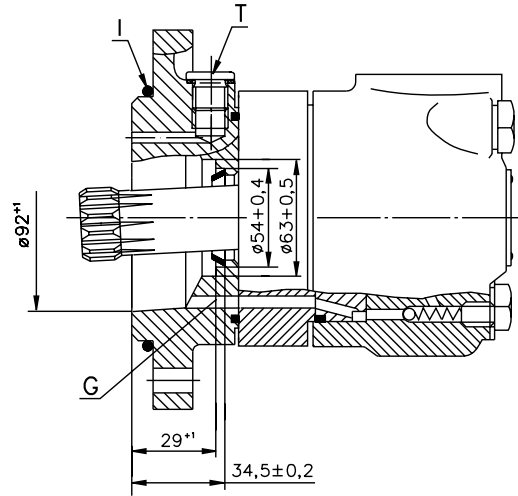
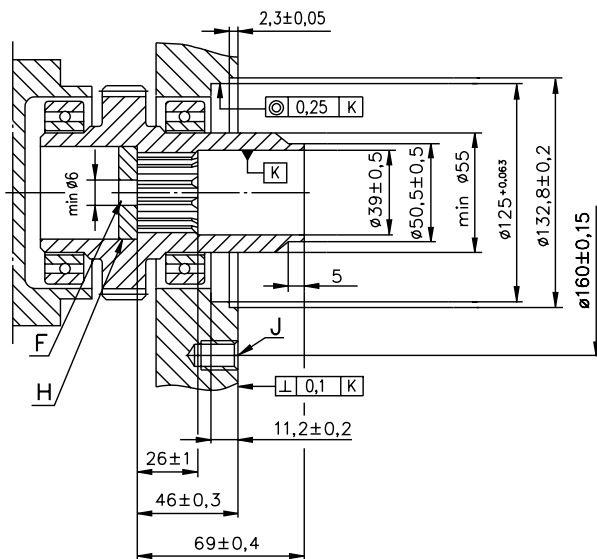
**C:** 4xM10-10 mm depth  
**P<sub>(A,B)</sub>:** 2xG3/4 or 2xM27x2-17 mm depth  
**T:** G 1/4 or M14x1,5 - 12 mm depth (plugged)

Type	L, mm	Type	L, mm	L <sub>2</sub> , mm	Type	L, mm	Type	L, mm	L <sub>2</sub> , mm	*L <sub>1</sub> , mm
MTS 160	146	MTSE 160	156	96	MTV 160	101	MTVE 160	111	51,5	16,5
MTS 200	151	MTSE 200	161	101	MTV 200	106	MTVE 200	116	56,5	21,5
MTS 250	157	MTSE 250	167	107	MTV 250	112	MTVE 250	122	62,8	27,8
MTS 315	166	MTSE 315	176	116	MTV 315	121	MTVE 315	131	72	37,0
MTS 400	177	MTSE 400	187	127	MTV 400	132	MTVE 400	142	82,5	47,5
MTS 500	191	MTSE 500	201	142	MTV 500	146	MTVE 500	156	96,5	61,5
MTS 630	187	MTSE 630	197	138	MTV 630	142	MTVE 630	152	92,5	57,5
MTS 725	196	MTSE 725	206	147	MTV 725	151	MTVE 725	161	101,5	66,5

\* The width of the roll-gerotor is 3,5 mm greater than L<sub>1</sub>.

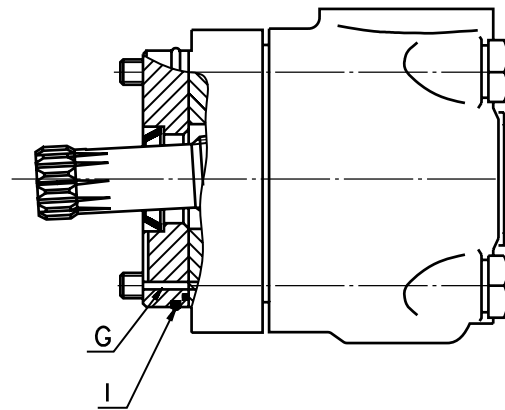
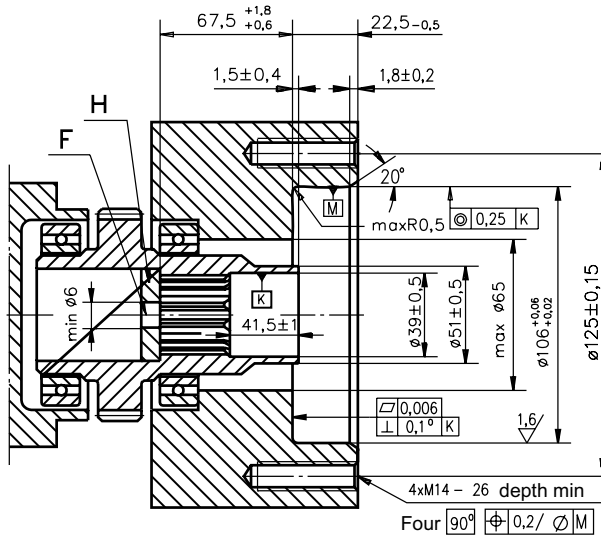
**DIMENSIONS OF THE ATTACHED COMPONENT**

**MTS**



- 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

**MTV**



- 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:

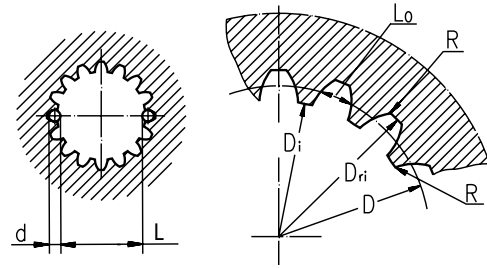
- For MTS at the drain port of the motor;
- For MTV at the drain connection of the attached component. The maximum pressure in the drain line is limited by the attached component and its shaft seal.

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  $x.m=+1,0$ ]

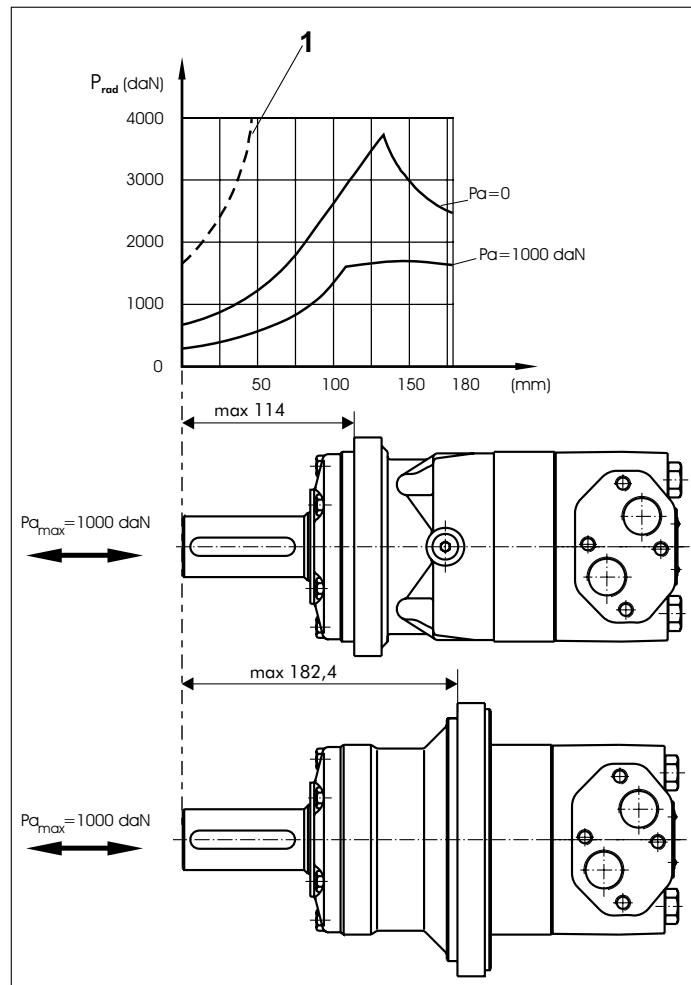
Fillet Root Side Fit		mm
Number of Teeth	z	16
Diametral Pitch	DP	12/24
Pressure Angle		30°
Pitch Dia.	D	33,8656
Major Dia.	D <sub>ri</sub>	38,4 <sup>+0,4</sup>
Minor Dia.	D <sub>i</sub>	32,15 <sup>+0,04</sup>
Space Width [Circular]	Lo	4,516±0,037
Fillet Radius	R	0,5
Max. Measurement between Pin	L	26,9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



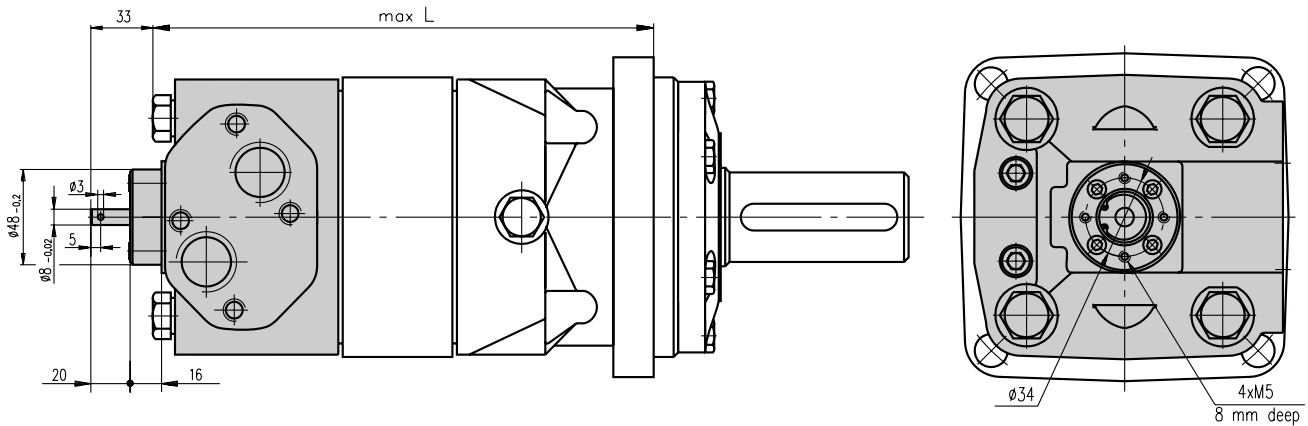
**Hardening Specification:**  
 HV=750±50 on the surface  
 HV=560 at 0,7±0,2 mm case depth  
 Material 20 MoCr4 EN 10084 or better

**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.



**MOTORS WITH TACHO CONNECTION**



**ORDER CODE**

	1	2	3	4	5	6	7	8
<b>MT</b>								

**Pos.1 - Mounting Flange**

omit - Square mount, four holes

**S** - Short mount

**V** - Very short mount

**W** - Wheel mount

**Pos.2 - Port type**

omit - Side ports

**E** - Rear ports

**Pos.3 - Displacement code**

**160** - 161,1 [cm<sup>3</sup>/rev]

**200** - 201,4 [cm<sup>3</sup>/rev]

**250** - 251,8 [cm<sup>3</sup>/rev]

**315** - 326,3 [cm<sup>3</sup>/rev]

**400** - 410,9 [cm<sup>3</sup>/rev]

**500** - 523,6 [cm<sup>3</sup>/rev]

**630** - 631,2 [cm<sup>3</sup>/rev]

**725** - 724,3 [cm<sup>3</sup>/rev]

**Pos.4 - Shaft Extensions\***

omit - for **S** and **V** mounting flange

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

**CO** -  $\varnothing 1\frac{1}{2}$ " straight, Parallel key  $\frac{3}{8}$ "x $\frac{3}{8}$ "x $2\frac{1}{4}$ " 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 - Shaft Seal Version (see page 38)**

omit - Low pressure seal

**U** - High pressure seal

**Pos.6 - Ports**

omit - BSPP (ISO 228)

**M** - Metric (ISO 262)

**Pos.7 - Special Features (see page 53)**

**Pos.8 - Design Series**

omit - Factory specified

**NOTES:**

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

The hydraulic motors are mangano-phosphatized as standard.