



M+S HYDRAULIC

DISC VALVE HYDRAULIC MOTORS

TYPE MS
MSY
MT
MV



DISC VALVE HYDRAULIC MOTORS

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ГИДРОМОТОРЫ С КЛАПАННЫМ РАСПРЕДЕЛИТЕЛЕМ

ДИСКОВЫЙ КЛАПАННЫЙ РАСПРЕДЕЛИТЕЛЬ распределяет поток в роликовом качающем узле. Сбалансированная по давлениюю уплотняющая поверхность клапана и отдельный приводной вал минимизируют утечки и механические потери. Это дает высокую эффективность мотора даже при высоких давлениях, и хорошие характеристики при страгивании.

Роликовый качающий узел минимизирует трение и тем самым повышает эффективность, обеспечивая при этом плавное вращение вала.

MS, MT и MV пригодны для непрерывной работы в тяжелых условиях - высоких давлениях, жидких маслах, частых реверсах. Роликовые конические подшипники допускают высокие радиальные нагрузки.

Стандартные моторы

В стандартном моторе монтажный фланец расположен настолько ближе к выходному валу, насколько это возможно. Этот тип установки совмещает точку крепления мотора с точкой нагрузки на вал. Данный монтажный фланец также совместим со многими стандартными редукторами и коробками передач.

Мотор-колесо

Монтажный фланец мотор-колеса расположен вблизи центра двигателя, который позволяет частично или полностью разместить мотор внутри колеса или валика ступицы. При применении в тыловом приводе, нагрузки могут быть расположены над подшипниками мотора для продления срока службы подшипника. Монтажный фланец мотор-колеса обеспечивает гибкость конструкции во многих областях применения.

Короткие моторы

Этот мотор собран без выходного вала, подшипников и корпусов подшипника и имеет те же компоненты привода как и стандартные и кмотор-колесо. Короткий двигатель особенно подходит для таких применений, как коробки передач, лебедки, барабана и роликовых дисков. Механизмы с применением коротких моторов должны быть разработаны с упорным подшипником и сопряжением с моторным приводом. Механизмы с использованием этих гидромоторов обеспечивают значительную экономию средств.

Low Leakage

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.
This version is available for the EPMS motors.

Low Speed Valve

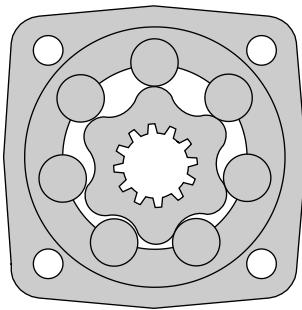
LSV Series hydraulic motors have been designed to operate with normal pressure drop and to ensure smooth run at low speed (up to 200 min^{-1}), as the best security for operation is guaranteed at frequency of rotation $20 \div 50 \text{ min}^{-1}$. They have an increased starting pressure drop and are not recommended for using at pressure less than 40 bar.
This version is available for the EPMS motors.

HYDRAULIC MOTORS MS



APPLICATION

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



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OPTIONS

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

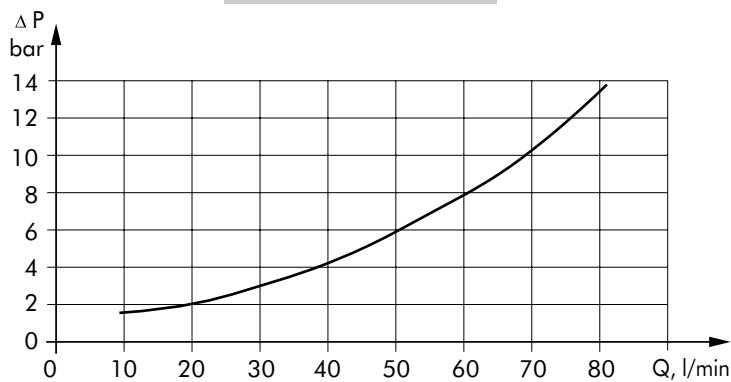
GENERAL

Displacement, [cm ³ /rev.]	80,5÷564,9
Max. Speed, [RPM]	130÷810
Max. Torque, [daNm]	20÷58
Max. Output, [kW]	20÷6,9
Max. Pressure Drop, [bar]	100÷200
Max. Oil Flow, [l/min]	75
Min. Speed, [RPM]	5÷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)
140	20	1,5
	35	1
210	20	3
	35	2

Pressure Losses



SPECIFICATION DATA

Type	MS 80	MS 100	MS 125	MS 160	MS 200
Displacement [cm³/rev.]	80,5	100	125,7	159,7	200
Max. Speed, [RPM]	cont. Int.*	810 1000	750 900	600 720	470 560
Max. Torque [daNm]	cont. Int.* peak**	20 24 26	29,2 32 32	37,4 41 41	46 51,5 51,5
Max. Output [kW]	cont. int.*	16,4 22	19,5 26	20 24	15,5 21,9
Max. Pressure Drop [bar]	cont. Int.* peak**	175 210 225	205 225 225	205 225 225	160 210 225
Max. Oil Flow [l/min]	cont. Int.*	65 80	75 90	75 90	75 90
Max. Inlet Pressure [bar]	cont. Int.* peak**	210 250 300	210 250 300	210 250 300	210 250 300
Max. Return Pressure with Drain Line [bar]	cont. Int.* peak**	140 175 210	140 175 210	140 175 210	140 175 210
Max. Starting Pressure with Unloaded Shaft, [bar]	12	10	10	8	8
Min. Starting Torque [daNm]	at max. press. drop cont. at max. press. drop Int.*	16,5 19,4	23,9 26,4	26 31	36,9 40,5
Min. Speed***, [RPM]		10	10	8	6
Weight, [kg]	MS(F) MSW MSS MSV MSQ MSB	9,9 10,4 7,9 5,8 10,3 16,9	10,1 10,6 8,1 6 10,5 17,1	10,4 10,9 8,4 6,3 10,8 17,4	10,8 11,3 8,8 6,7 11,2 17,8
For Rear Ports +0,4 kg					11,2 11,7 9,2 7,1 11,6 18,2

* Int. Периодическая работа: допустимые значения по длительности не более 10% каждую минуту.

** Peak load Пиковая нагрузка: допустимые значения по длительности не более 1% каждую минуту.

*** Для скорости 5 RPM или ниже, консультируйтесь с производителем или региональным представителем

1. Прерывистая скорость вращения и резкие перепады давления не должны происходить одновременно

2. Рекомендуемая тонкость фильтрации по ISO 20/16. Абсолютная фильтрация 25 мкм либо тоньше.

3. Рекомендуется использование высококачественного гидравлического масла противоизносного типа на минеральной основе HLP(DIN51524) or HM (ISO 6743/4). При использовании синтетических жидкостей проконсультируйтесь с производителем альтернативных материалов уплотнений.

4. Рекомендуемая минимальная вязкость масла 13 mm²/s при температуре 50°C.

5. Рекомендуемая максимальная рабочая температура в системе составляет 82°C.

6. Для того, чтобы обеспечить максимальный срок службы мотора, перед первым запуском необходимо заполнить маслом и обкатать при умеренной нагрузке и скорости в течение 10-15 минут.

SPECIFICATION DATA (continued)

Type	MS 250	MS 315	MS 400	MS 475	MS 525	MS 565
Displacement [cm ³ /rev.]	250	314,9	397	474,6	522,7	564,9
Max. Speed, [RPM]	cont. Int.*	300 360	240 290	190 230	160 190	145 175
Max. Torque [daNm]	cont. Int.* peak**	50 63 72	54 63 84	58 69 85	58 68 84	58 69 85
Max. Output [kW]	cont. int.*	13,5 21	11,5 13,5	10 13	8,4 11,3	7,6 10,4
Max. Pressure Drop [bar]	cont. Int.* peak**	140 175 200	120 140 185	100 120 140	85 100 115	80 90 105
Max. Oil Flow [l/min]	cont. Int.*	75 90	75 90	75 90	75 90	75 90
Max. Inlet Pressure [bar]	cont. Int.* peak**	210 250 300	210 250 300	210 250 300	210 250 300	210 250 300
Max. Return Pressure with Drain Line [bar]	cont. Int.* peak**	140 175 210	140 175 210	140 175 210	140 175 210	140 175 210
Max. Starting Pressure with Unloaded Shaft, [bar]	8	8	8	8	8	8
Min. Starting Torque [daNm]	at max. press. drop cont. at max. press. drop Int.*	40 50	51 65	54 63	47 55	47 55
Min. Speed***, [RPM]		6	5	5	5	5
Weight, [kg]	MS(F) MSW MSS MSV MSQ MSB	11,7 12,2 9,7 7,6 12,1 18,7	12,4 12,9 10,4 8,3 12,8 19,4	13,3 13,8 11,3 9,2 13,7 20,3	14,4 14,6 12,1 10 14,5 21,1	14,6 15,1 12,6 10,5 15,0 21,6
For Rear Ports +0,4 kg						

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

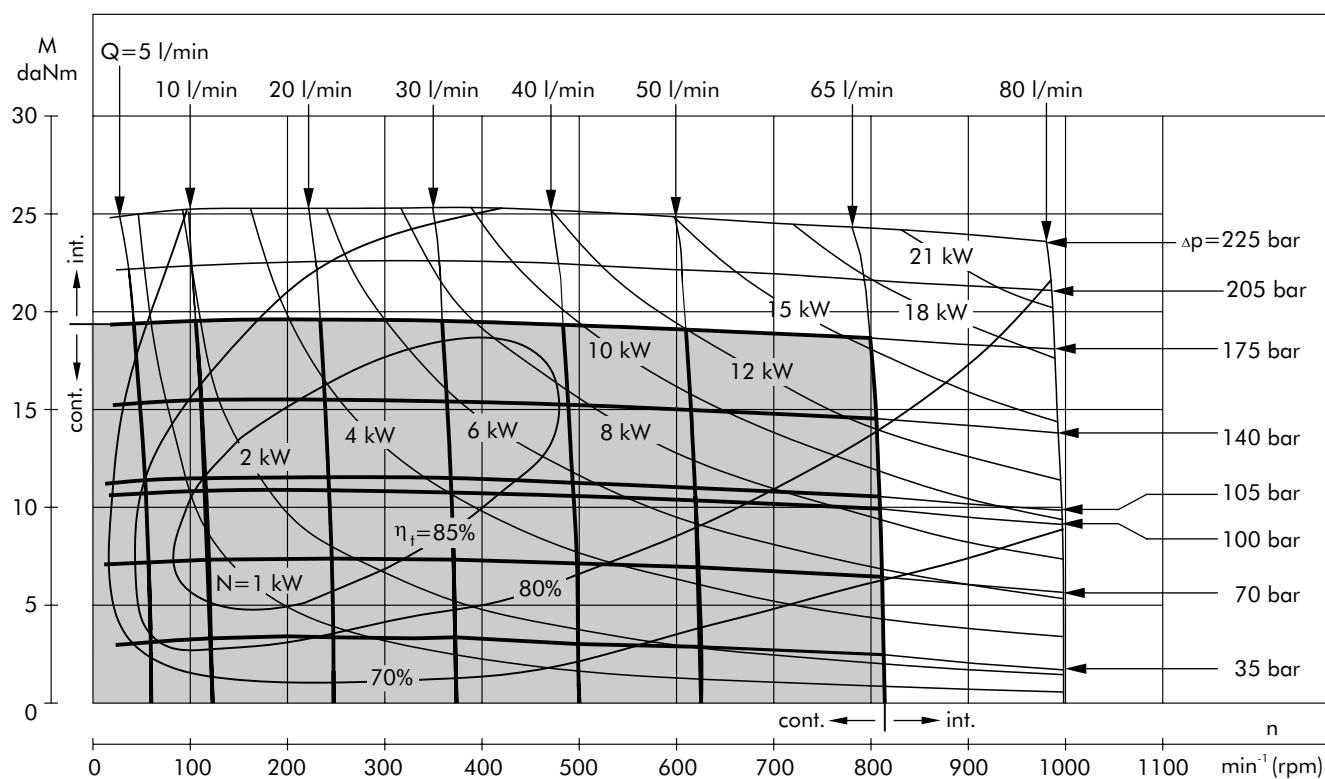
** Peak load: the permissible values may occur for max. 1% of every minute.

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

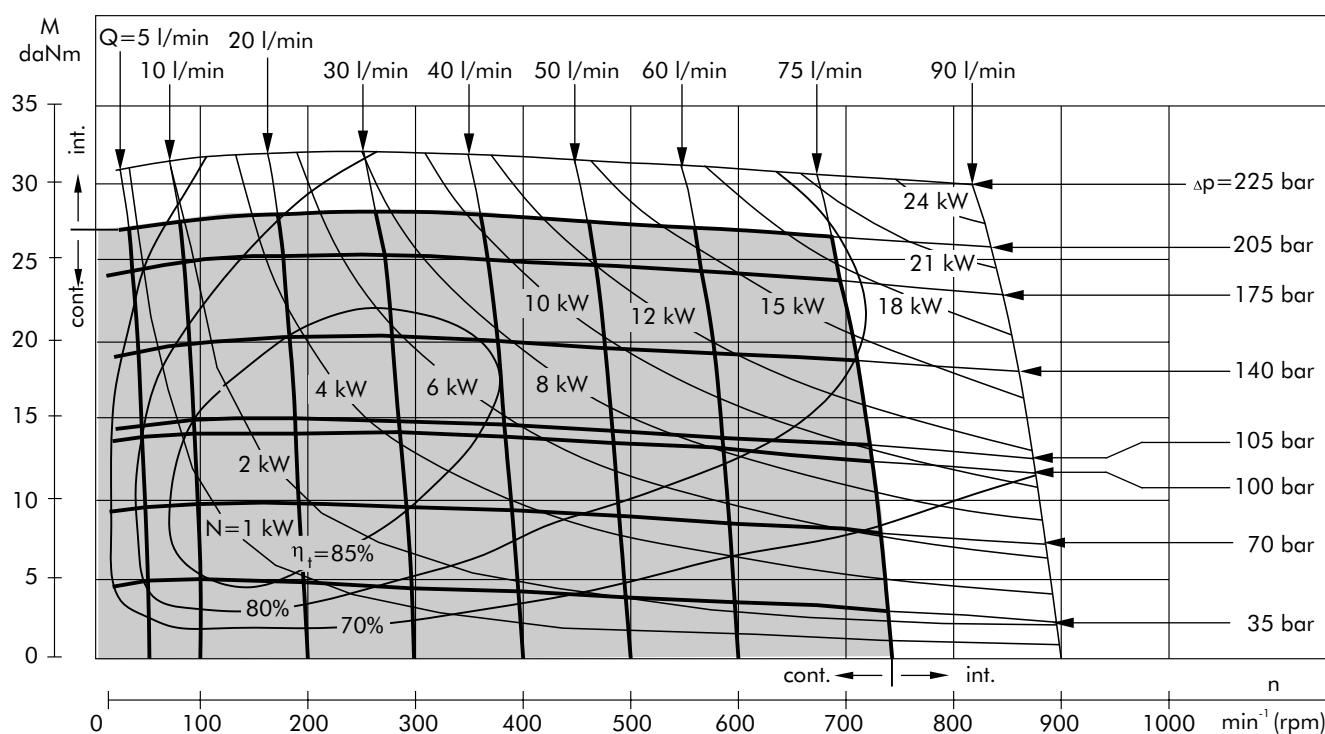
- 1) Intermittent speed and intermittent pressure must not occur simultaneously.
- 2) Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
- 3) Recommend using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) or HM (ISO 6743/4). If using synthetic fluids consult the factory for alternative seal materials.
- 4) Recommended minimum oil viscosity 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

MS 80



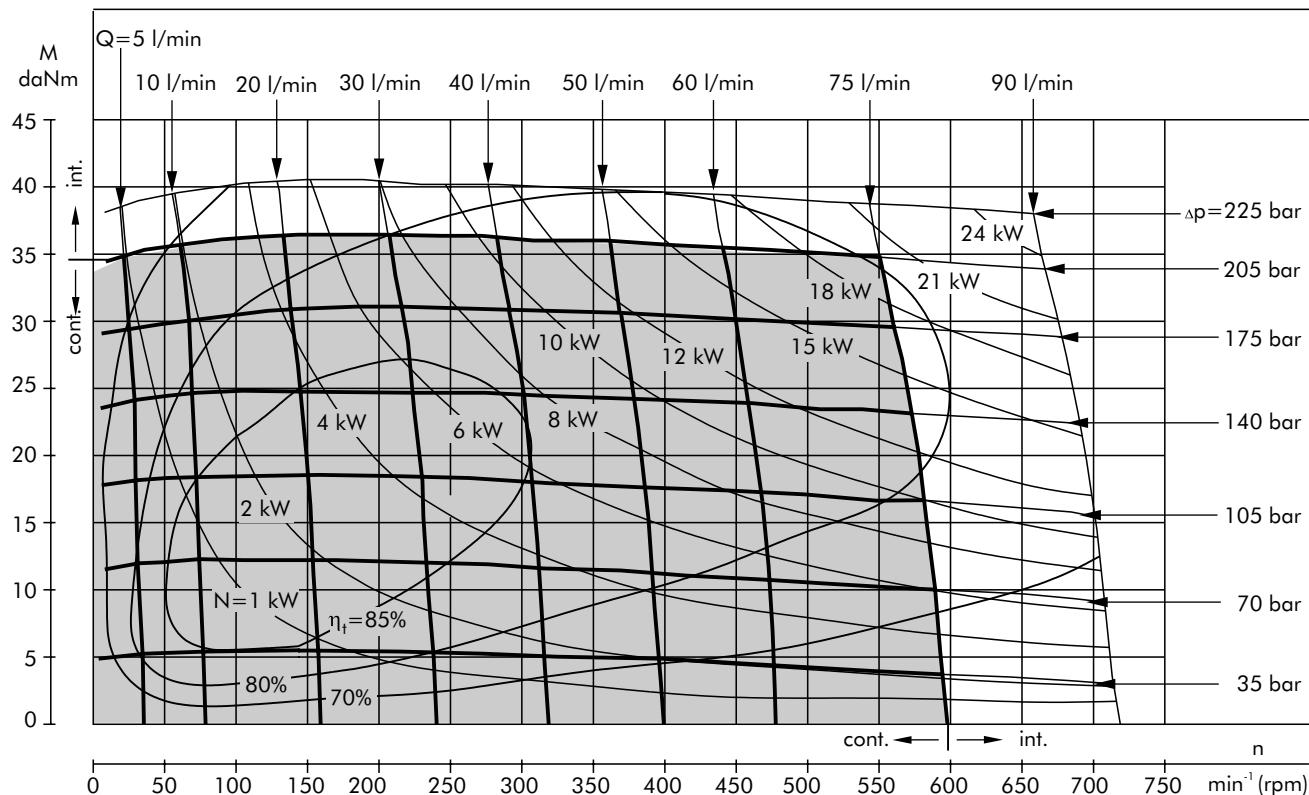
MS 100



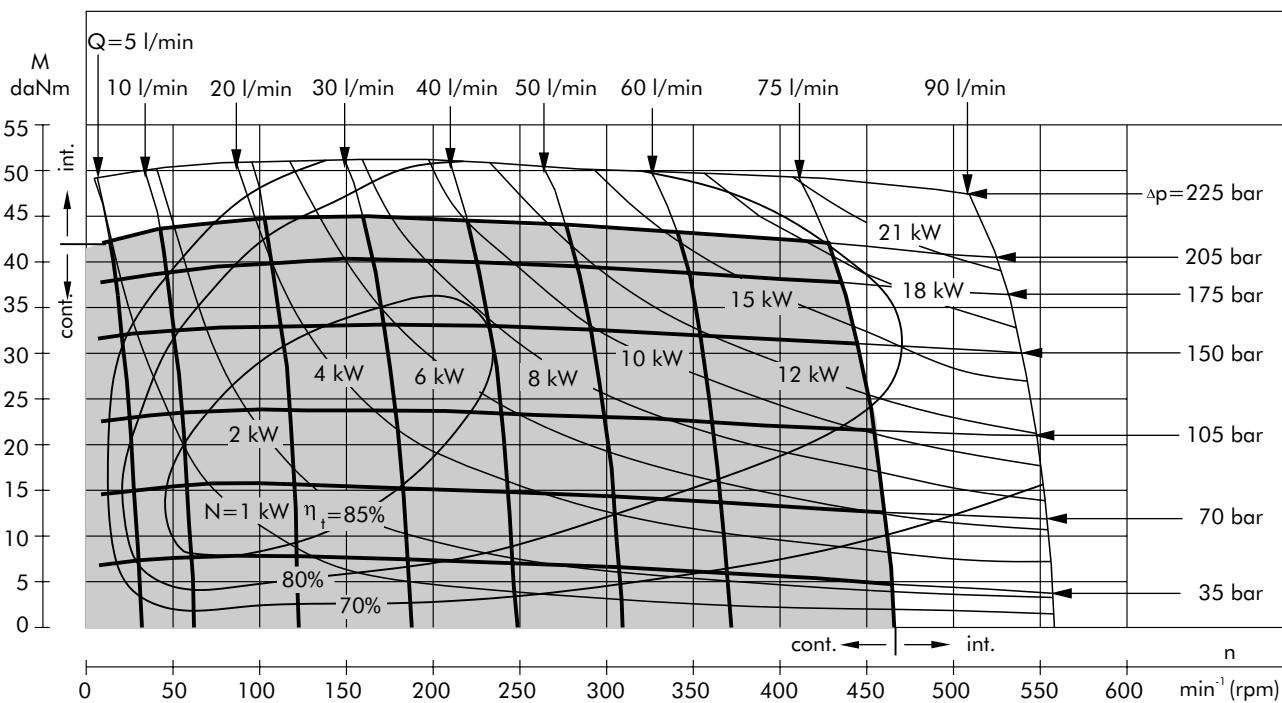
The function diagrams data was collected at back pressure 5÷10 bar
and oil with viscosity of 32 mm²/s at 50° C.

FUNCTION DIAGRAMS

MS 125



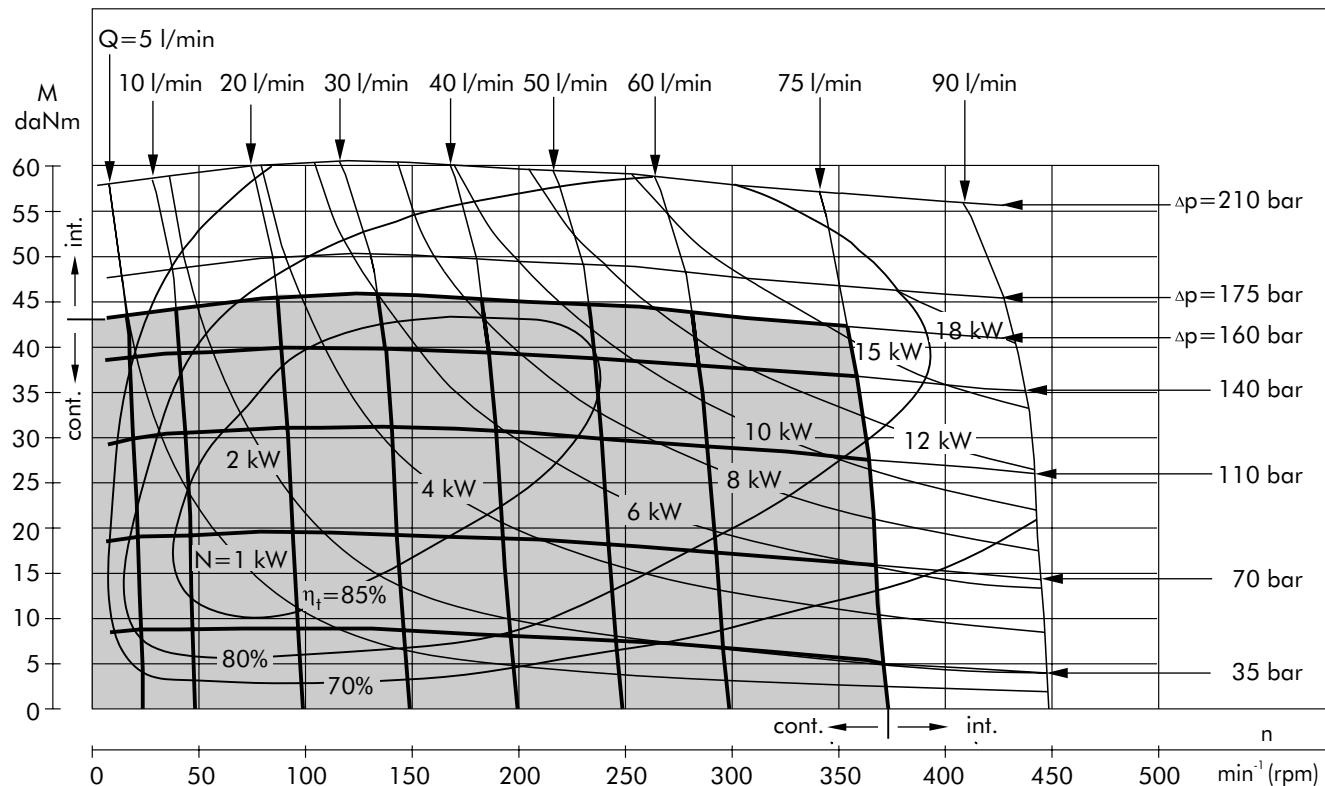
MS 160



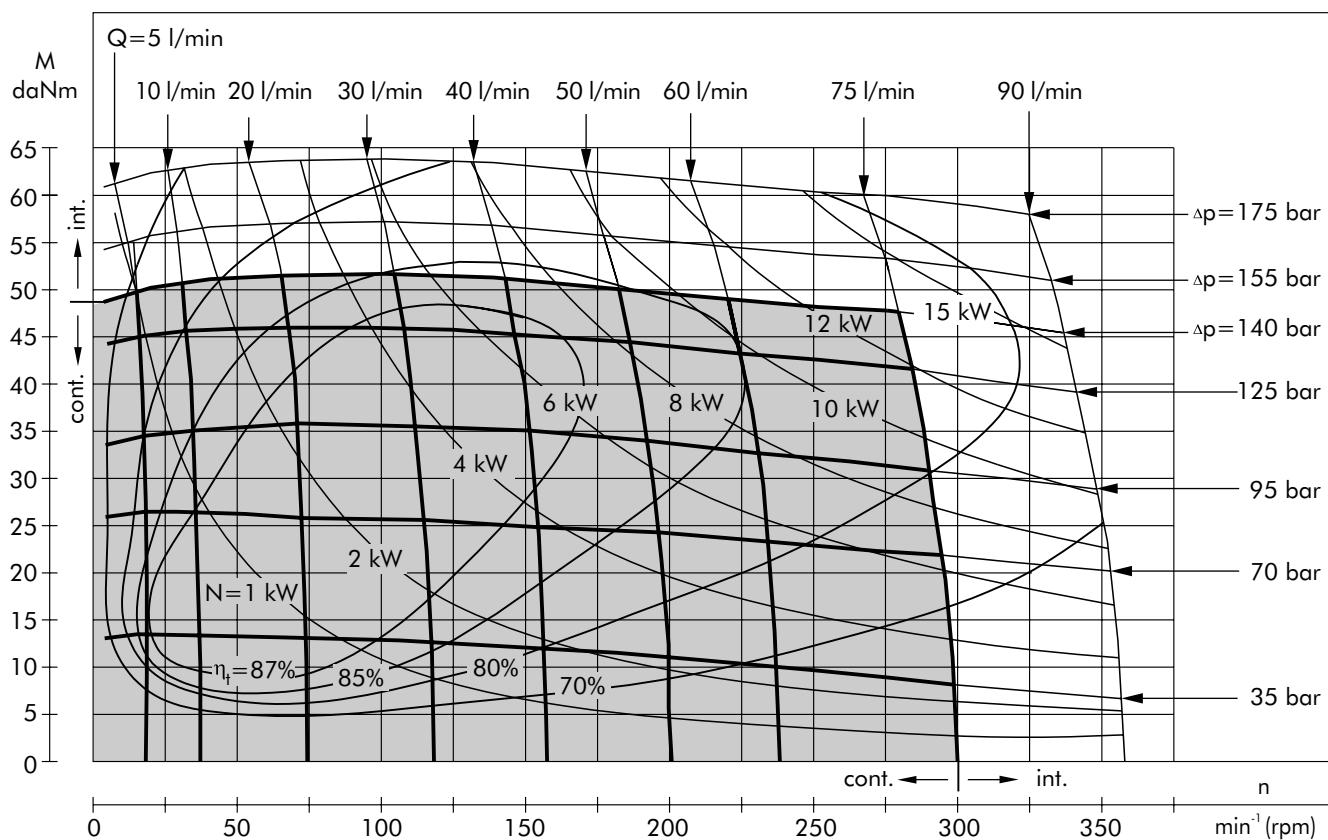
The function diagrams data was collected at back pressure 5÷10 bar
and oil with viscosity of $32 \text{ mm}^2/\text{s}$ at 50°C .

FUNCTION DIAGRAMS

MS 200



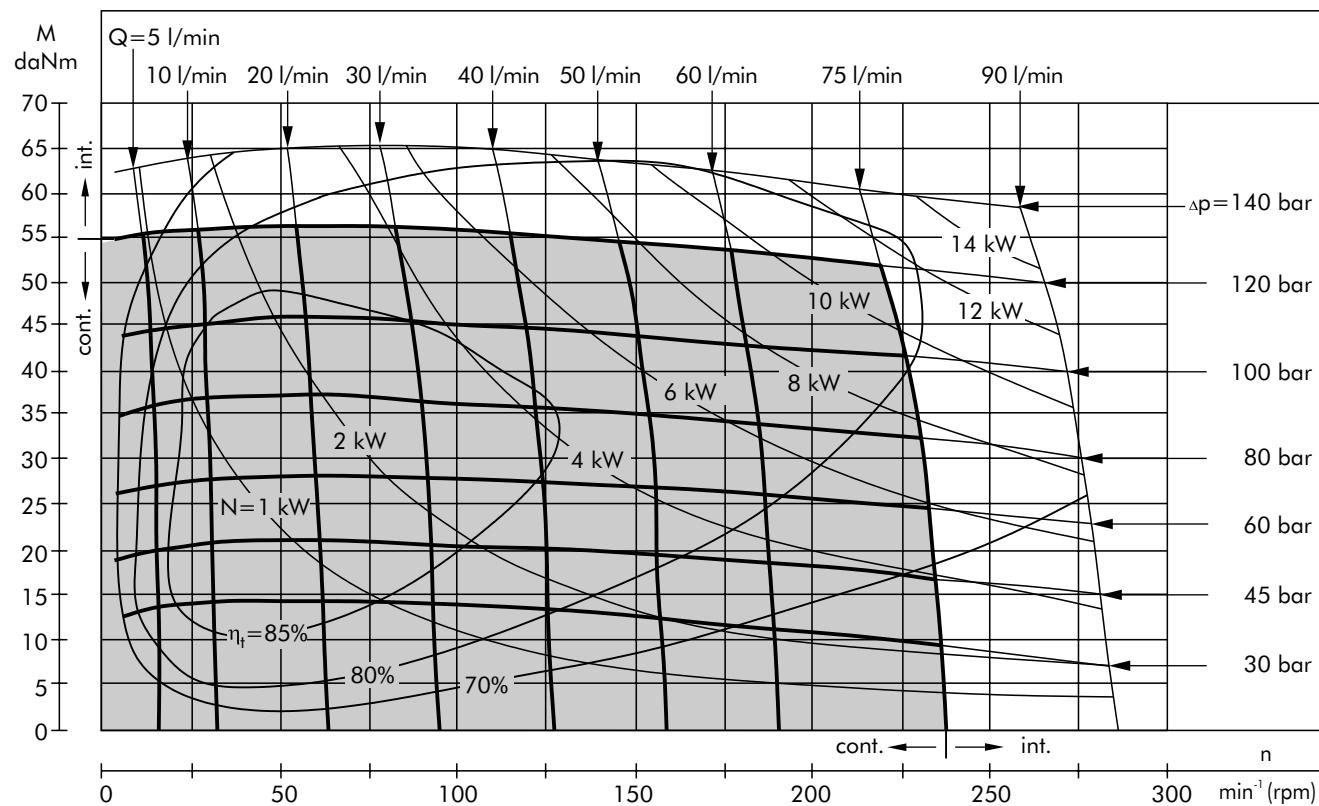
MS 250



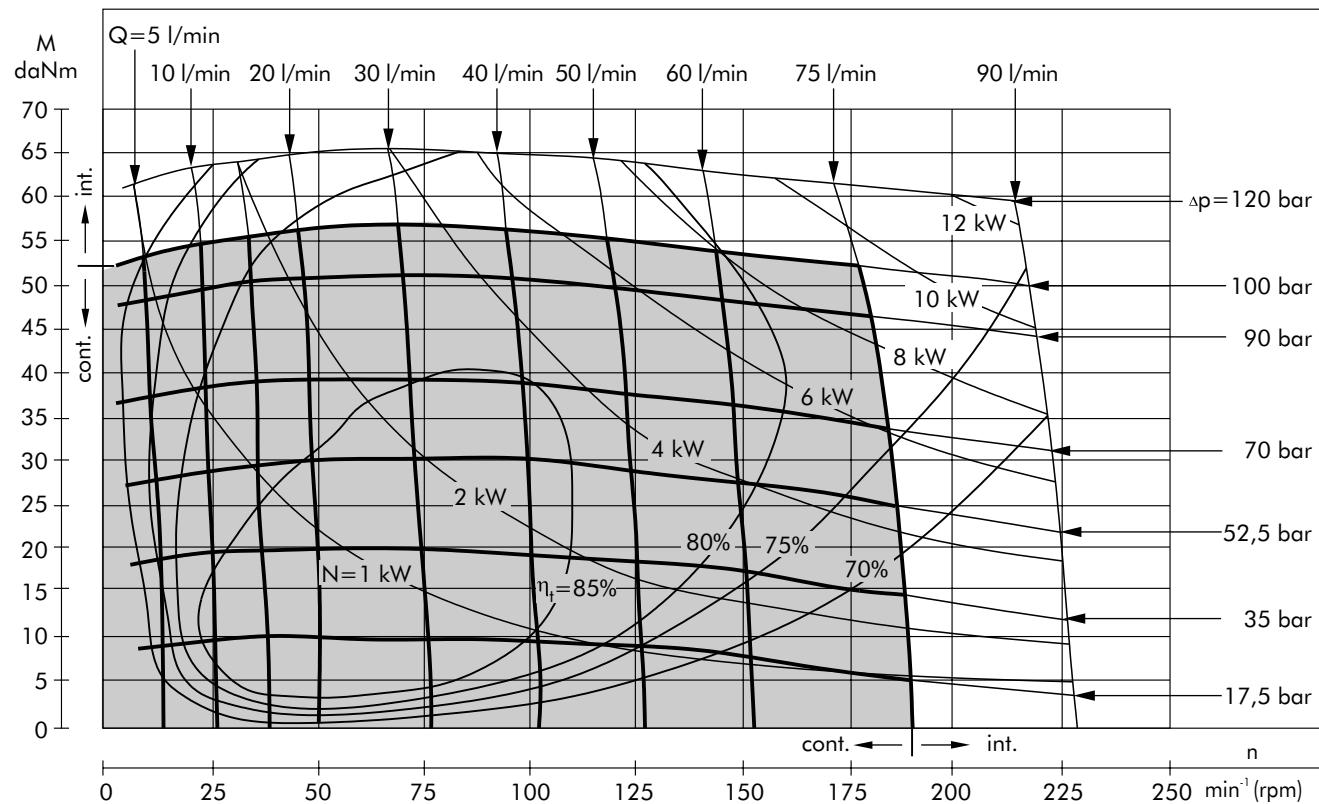
The function diagrams data was collected at back pressure $5 \div 10 \text{ bar}$
and oil with viscosity of $32 \text{ mm}^2/\text{s}$ at 50° C .

FUNCTION DIAGRAMS

MS 315



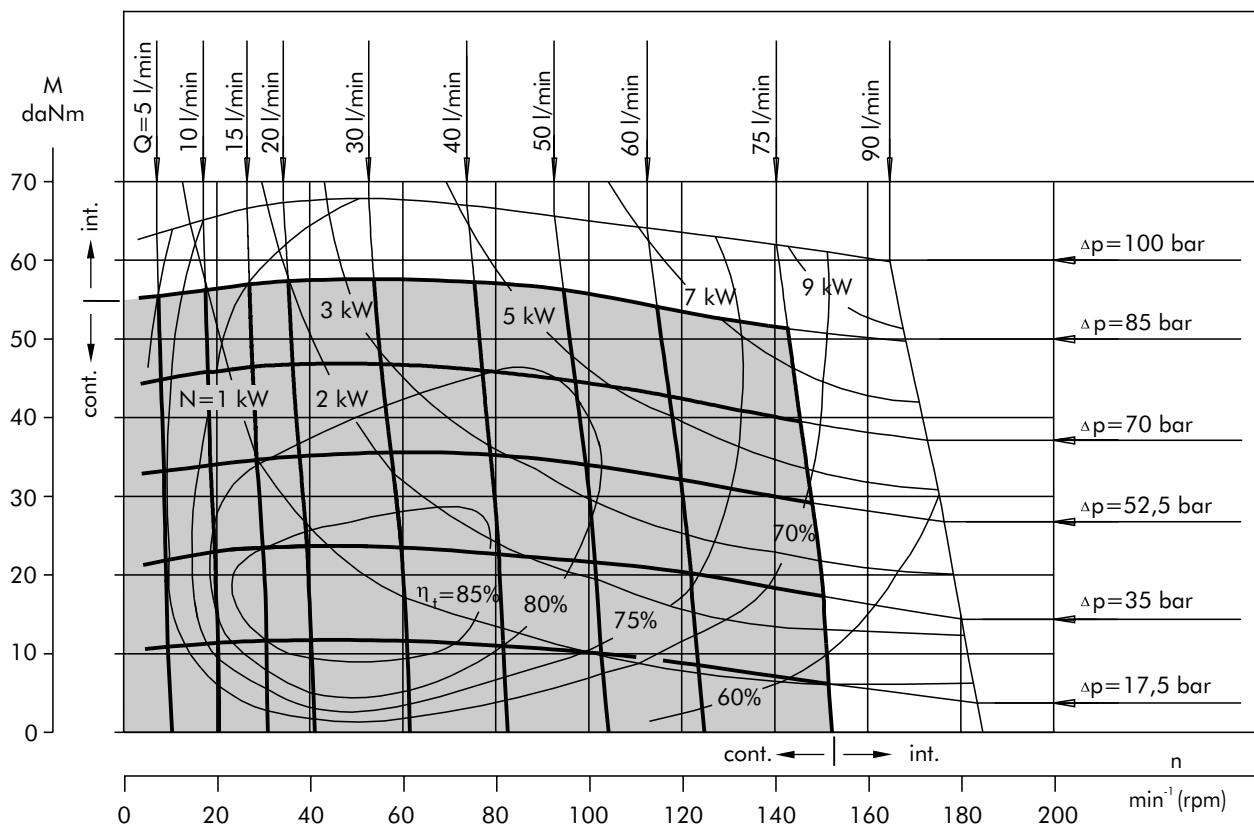
MS 400



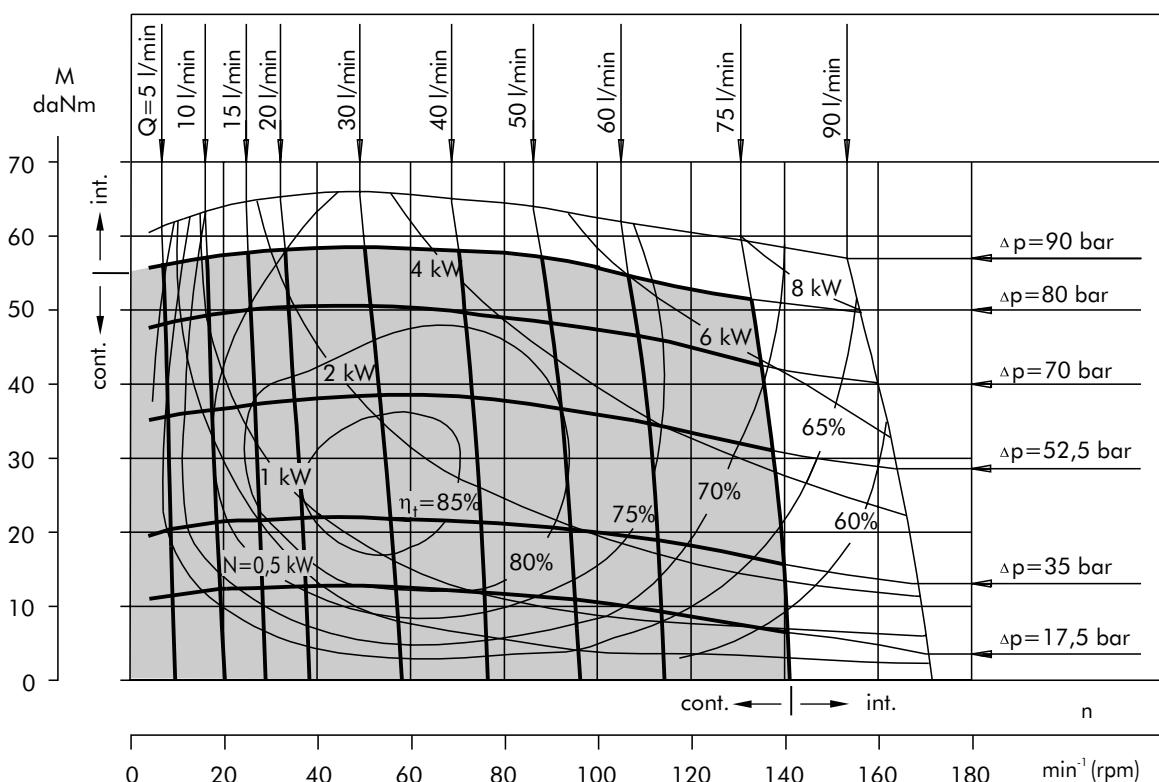
The function diagrams data was collected at back pressure 5÷10 bar
and oil with viscosity of 32 mm^2/s at 50° C.

FUNCTION DIAGRAMS

MS 475



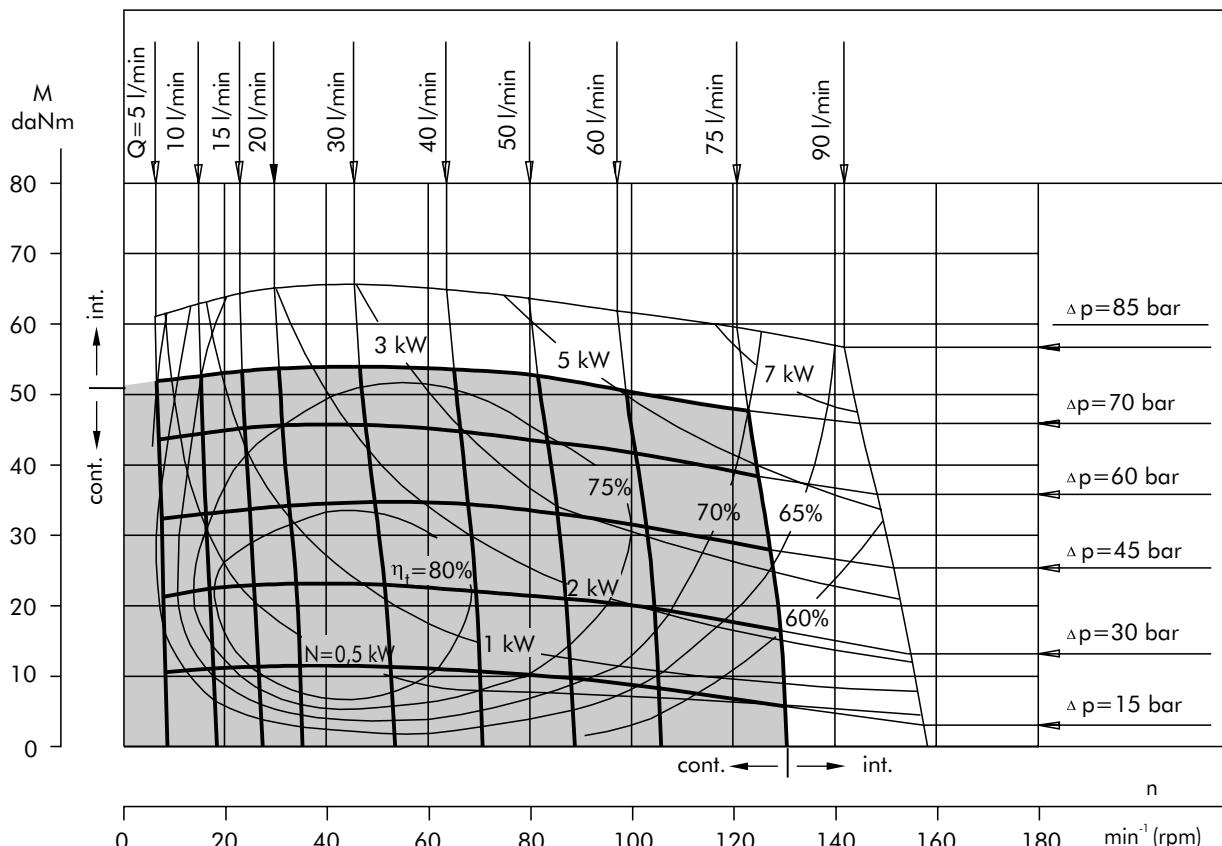
MS 525



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

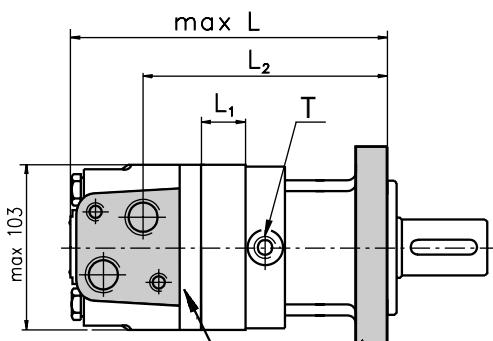
FUNCTION DIAGRAMS

MS 565



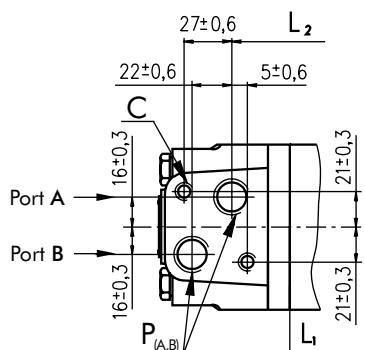
The function diagrams data was collected at back pressure $5 \div 10 \text{ bar}$
and oil with viscosity of $32 \text{ mm}^2/\text{s}$ at 50° C .

DIMENSIONS AND MOUNTING DATA



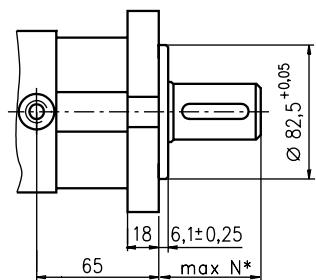
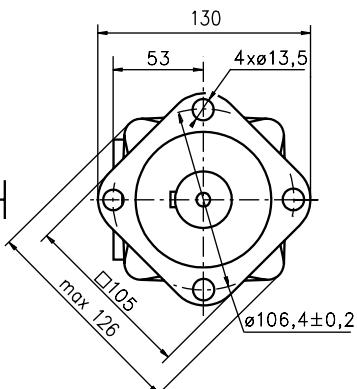
Porting

Side Ports

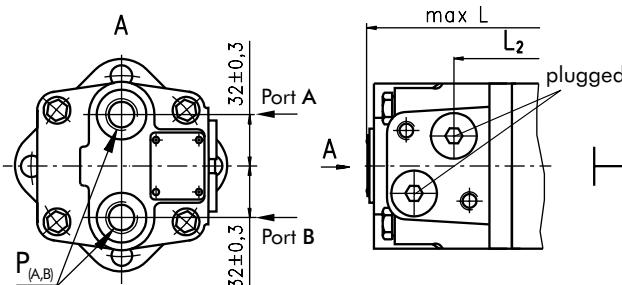


Mounting

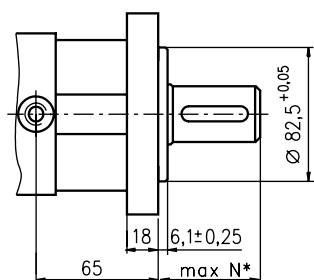
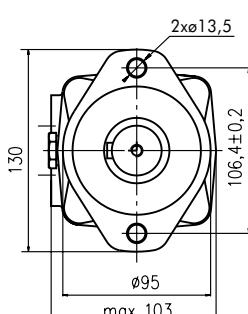
SAE A-4 Mount (4 Holes)



E Rear Ports



A SAE A-2 Mount (2 Holes)



*For N see page 17

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

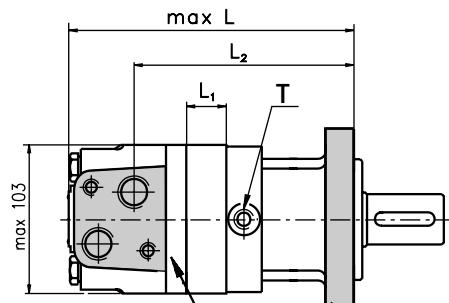
Viewed from Shaft End

Port A Pressurized - CCW

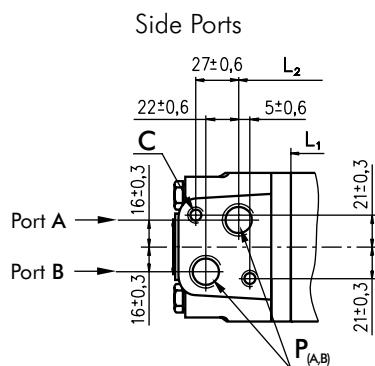
Port B Pressurized - CW

Type	L, mm	L ₂ , mm	Type	L, mm	L ₁ , mm
MS(A) 80	168	124	MS(A)E 80	173	14
MS(A) 100	171	129	MS(A)E 100	177	17,4
MS(A) 125	176	132	MS(A)E 125	181	21,8
MS(A) 160	182	138	MS(A)E 160	187	27,8
MS(A) 200	189	145	MS(A)E 200	194	34,8
MS(A) 250	197	154	MS(A)E 250	203	43,5
MS(A) 315	209	165	MS(A)E 315	214	54,8
MS(A) 400	223	179	MS(A)E 400	228	69,4
MS(A) 475	237	193	MS(A)E 475	242	82,6
MS(A) 525	229	185	MS(A)E 525	234	74,5
MS(A) 565	235	191	MS(A)E 565	240	80,2

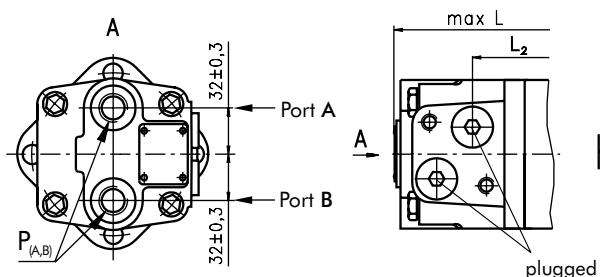
DIMENSIONS AND MOUNTING DATA



Porting



E Rear Ports



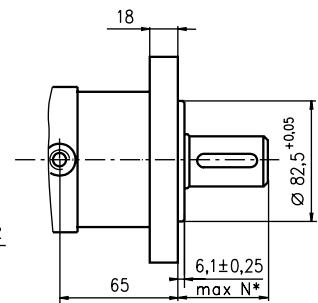
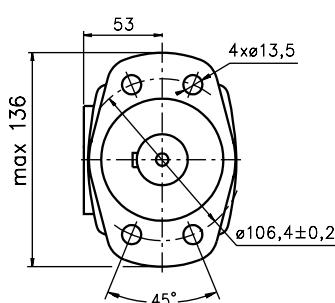
C: 2xM10-12 mm depth

P_(A,B): 2xG1/2 or 2xM22x1,5-15 mm depth

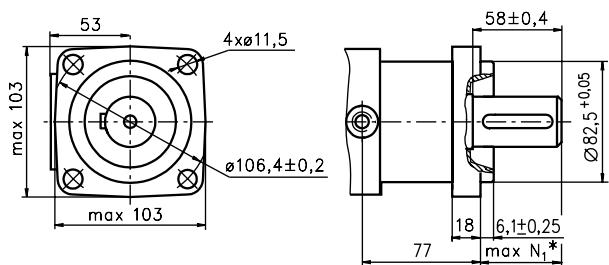
T: G 1/4 or M14x1,5- 12 mm depth (plugged)

Mounting

F Magneto Mount (4 Holes)



Q Square Mount (4 Holes)



*For N and N₁ see page 17

Standard Rotation

Viewed from Shaft End

Port A Pressurized - CW

Port B Pressurized - CCW

Reverse Rotation

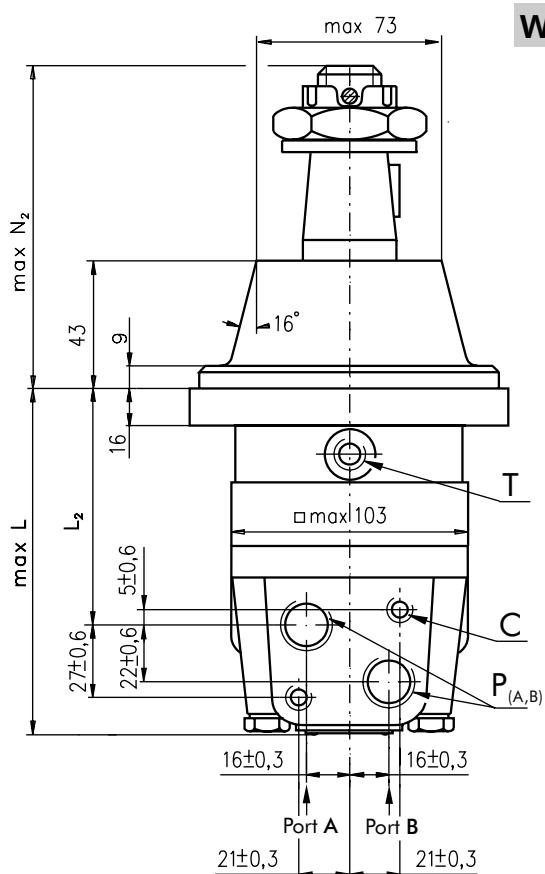
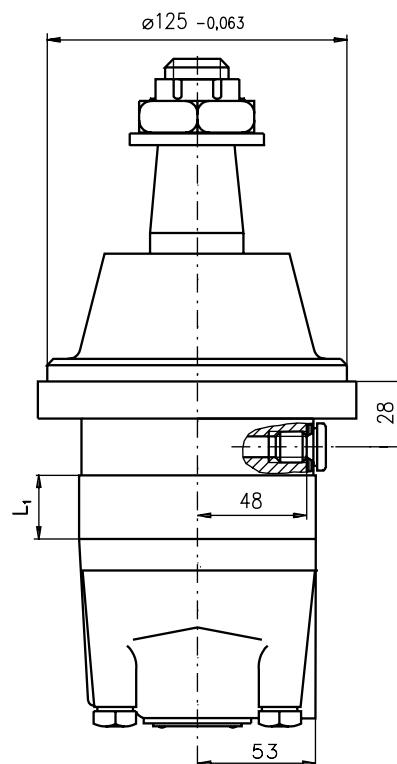
Viewed from Shaft End

Port A Pressurized - CCW

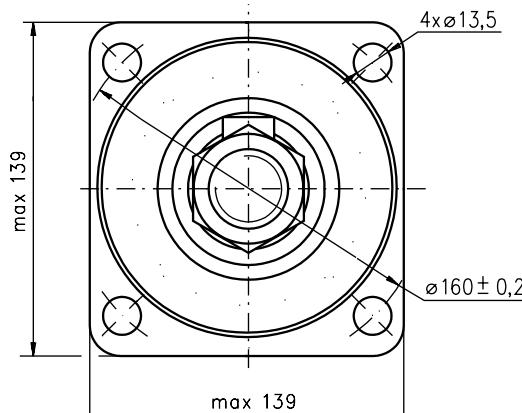
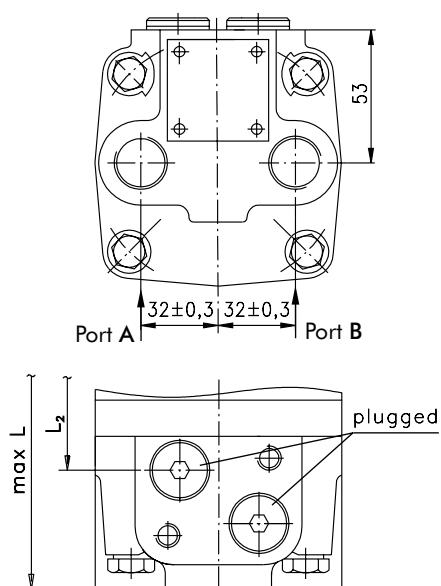
Port B Pressurized - CW

Type	L, mm	L ₂ , mm	Type	L, mm	L ₂ , mm	Type	L, mm	Type	L, mm	L ₁ , mm
MSF 80	168	124	MSQ 80	179	136	MSFE 80	173	MSQE 80	185	14
MSF 100	171	129	MSQ 100	183	140	MSFE 100	177	MSQE 100	189	17,4
MSF 125	176	132	MSQ 125	187	144	MSFE 125	181	MSQE 125	193	21,8
MSF 160	182	138	MSQ 160	193	150	MSFE 160	187	MSQE 160	199	27,8
MSF 200	189	145	MSQ 200	200	157	MSFE 200	194	MSQE 200	206	34,8
MSF 250	197	154	MSQ 250	209	166	MSFE 250	203	MSQE 250	215	43,5
MSF 315	209	165	MSQ 315	220	177	MSFE 315	214	MSQE 315	226	54,8
MSF 400	223	179	MSQ 400	235	192	MSFE 400	228	MSQE 400	241	69,4
MSF 475	237	193	MSQ 475	247	205	MSFE 475	242	MSQE 475	254	82,6
MSF 525	229	185	MSQ 525	240	197	MSFE 525	234	MSQE 525	246	74,5
MSF 565	235	191	MSQ 565	246	203	MSFE 565	240	MSQE 565	252	80,2

DIMENSIONS AND MOUNTING DATA -MSW

**W** Wheel Mount

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)

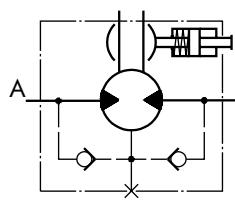
E Rear Port*For N_2 see page 17

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
MSW 80	129	14	87	MSWE 80	138
MSW100	133	17,4	91	MSWE 100	142
MSW 125	137	21,8	95	MSWE 125	146
MSW 160	143	27,8	101	MSWE 160	152
MSW 200	150	34,8	108	MSWE 200	159
MSW 250	159	43,5	117	MSWE 250	168
MSW 315	170	54,8	128	MSWE 315	179
MSW 400	184	69,4	143	MSWE 400	194
MSW 475	198	82,6	156	MSWE 475	207
MSW 525	190	74,5	148	MSWE 525	199
MSW 565	196	80,2	154	MSWE 565	205

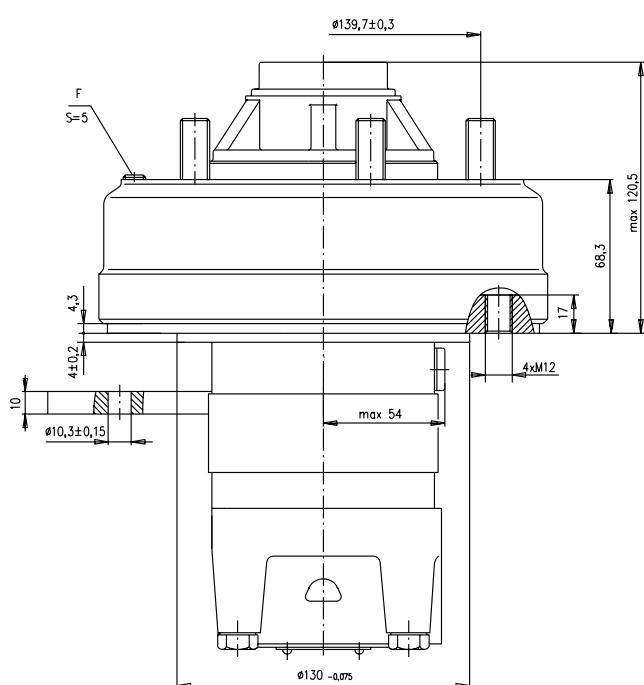
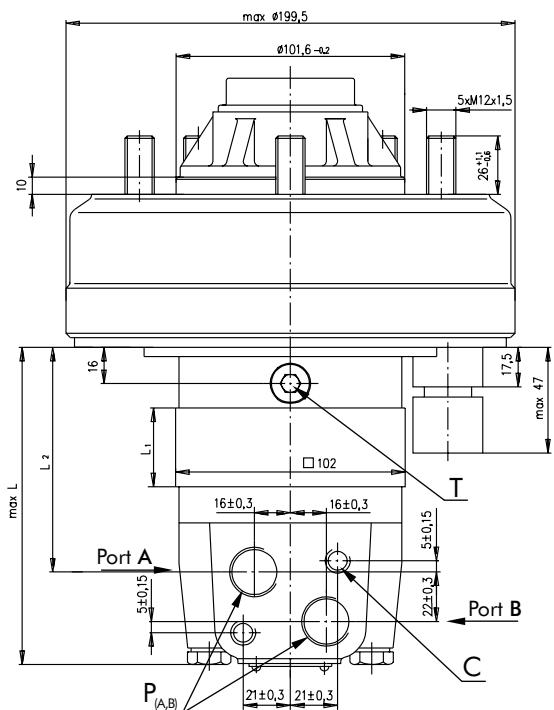
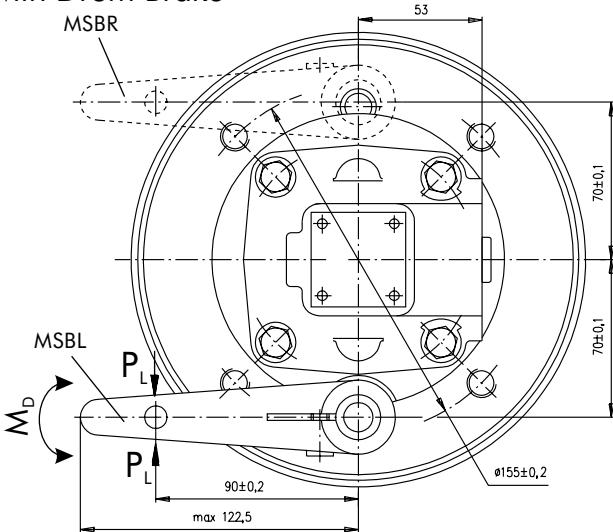
DIMENSIONS AND MOUNTING DATA -MSB



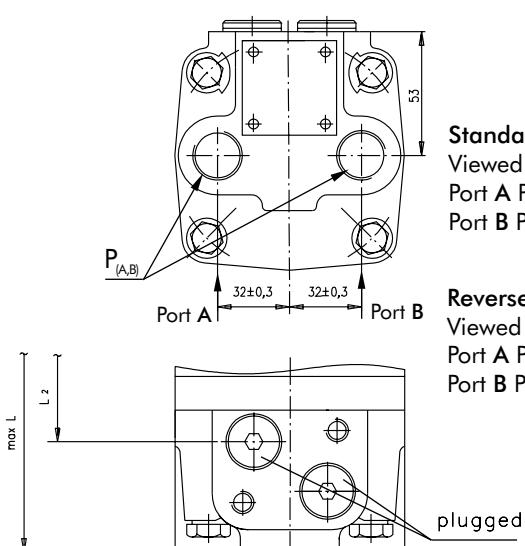
Actuating the brake level, the brake shaft is turned. The rectangular shape of the inner part of this shaft forces the brake pads to be pressed against the brake drum. This brakes the wheel or the winch drum.

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 dismounting 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.

B Motor with Drum Brake



E Rear Port



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: 2xM10-12 mm depth

F: Inspection hole for checking brake lining

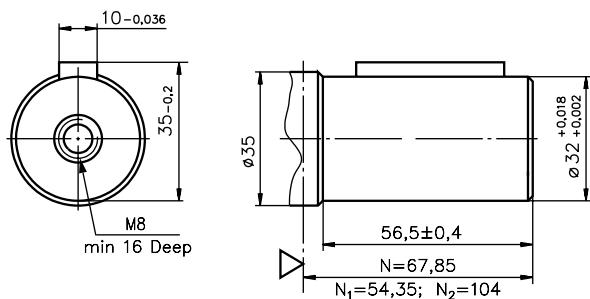
T: G 1/4 or M14x1,5 - 12 mm depth (plugged)

P_(A,B): 2xG1/2 or 2xM22x1,5-15 mm depth

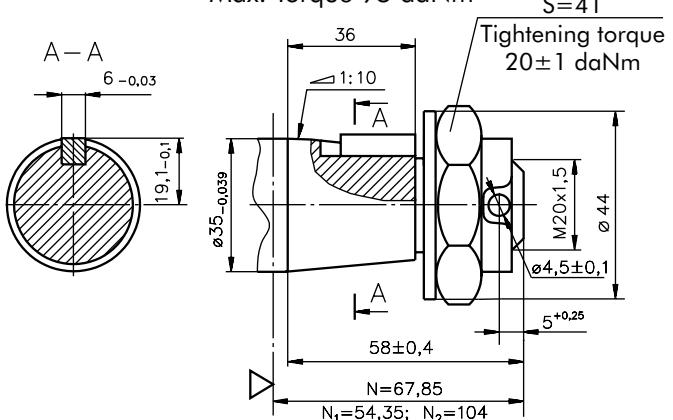
Type	L, mm	L ₁ , mm	L ₂ , mm	Type	L, mm
MSB 80	119	14	74	MSBE 80	127
MSB100	122	17,4	77	MSBE 100	130
MSB 125	126	21,8	82	MSBE 125	134
MSB 160	132	27,8	88	MSBE 160	140
MSB 200	139	34,8	95	MSBE 200	147
MSB 250	148	43,5	110	MSBE 250	156
MSB 315	159	54,8	115	MSBE 315	167
MSB 400	174	69,4	130	MSBE 400	182
MSB 475	188	82,6	143	MSBE 475	196
MSB 525	180	74,5	135	MSBE 525	188
MSB 565	186	80,2	141	MSBE 565	192

SHAFT EXTENSIONS

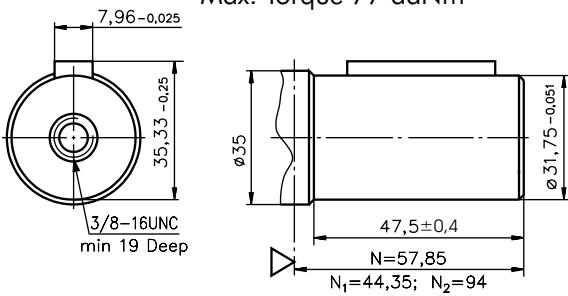
C - $\varnothing 32$ straight, Parallel key A10x8x45 DIN 6885
Max. Torque 77 daNm



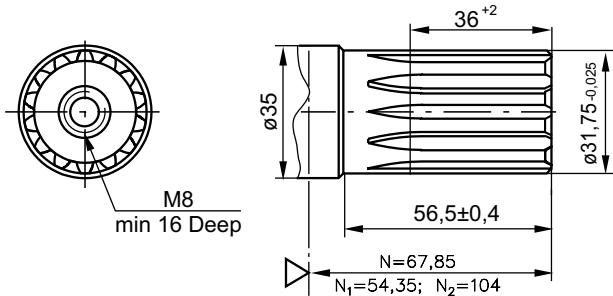
K - tapered 1:10, Parallel key B6x6x20 DIN 6885
Max. Torque 95 daNm



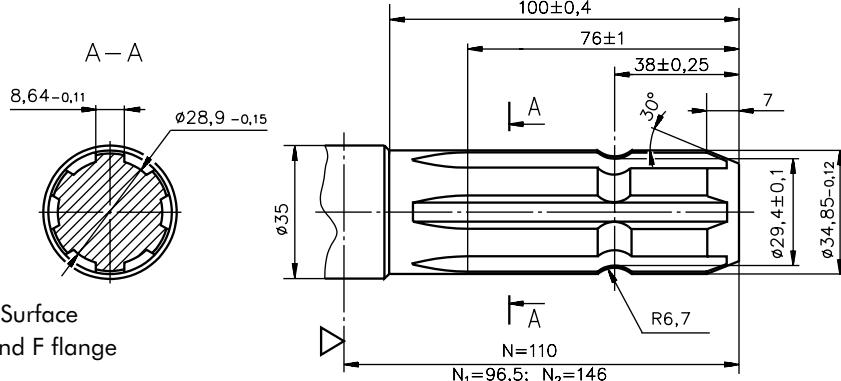
CO - $\varnothing 1\frac{1}{4}$ " straight, Parallel key $\frac{5}{16}" \times \frac{5}{16}" \times 1\frac{1}{4}"$ BS46
Max. Torque 77 daNm



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



▽ - Motor Mounting Surface

N - for standard, A and F flange

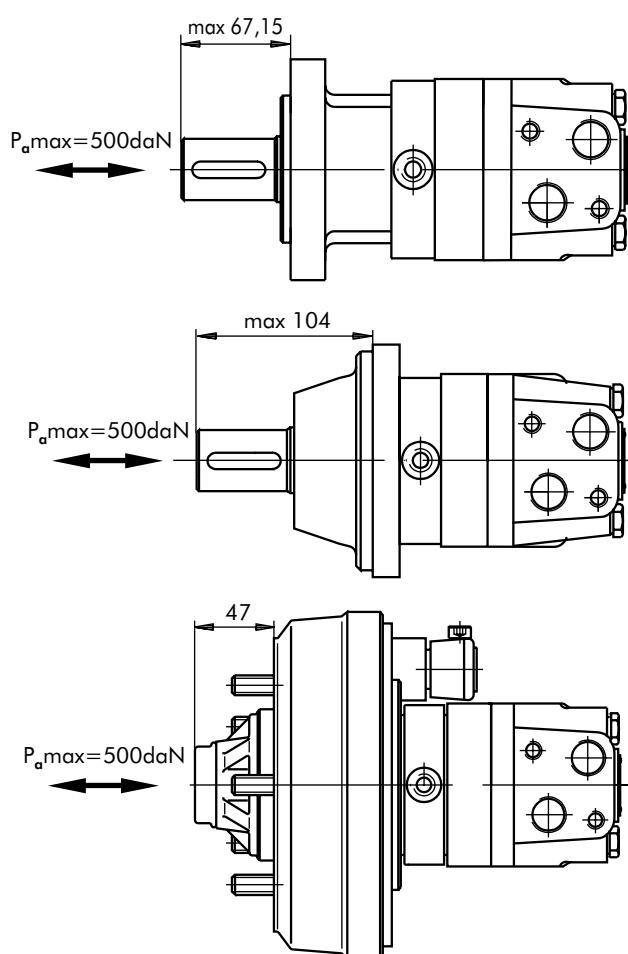
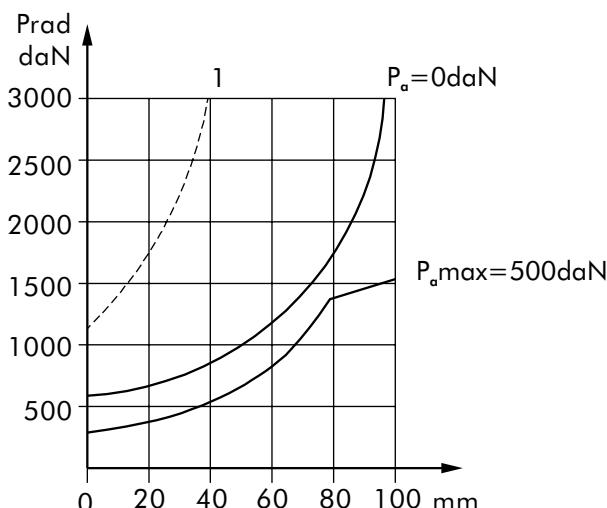
N₁ - for Q flange

N₂ - for W flange

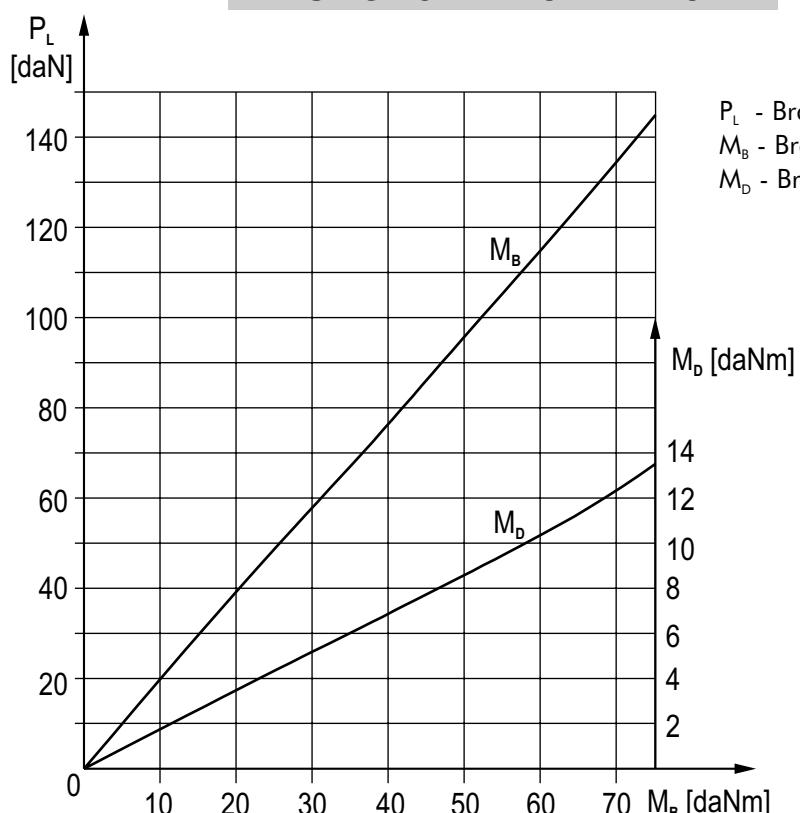
PERMISSIBLE SHAFT LOADS

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.



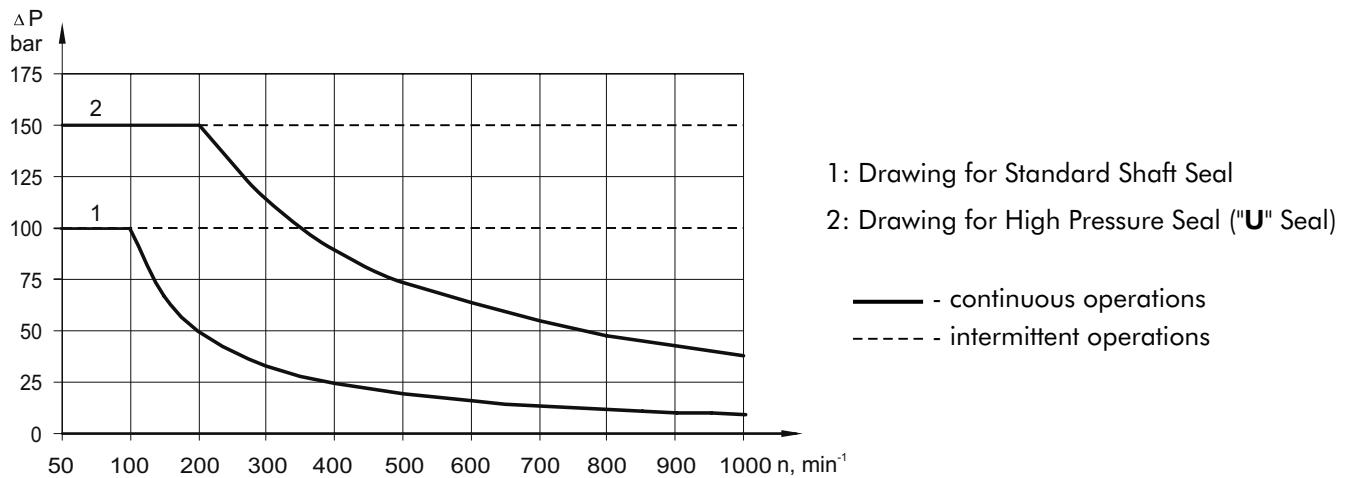
FUNCTION DIAGRAM MSB



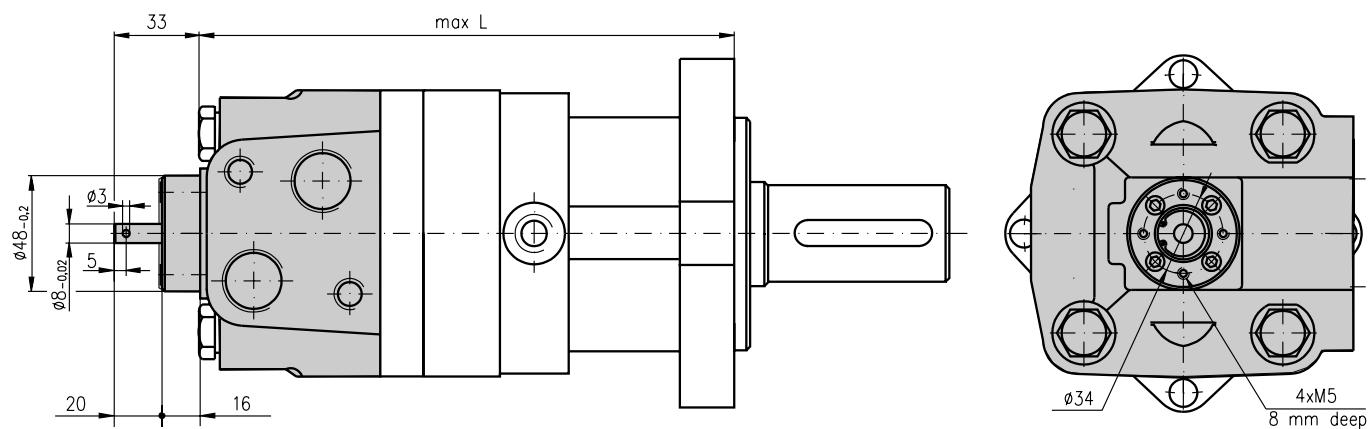
P_L - Brake Lever Load
 M_B - Brake Torque
 M_D - Brake Lever Torque

MAX. PERMISSIBLE SHAFT SEAL PRESSURE

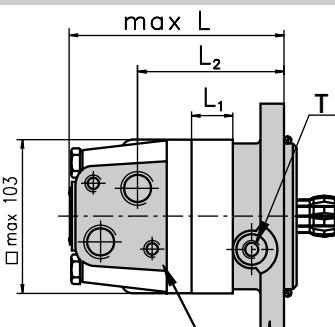
**Max. return pressure without drain line or
max. pressure in the drain line**



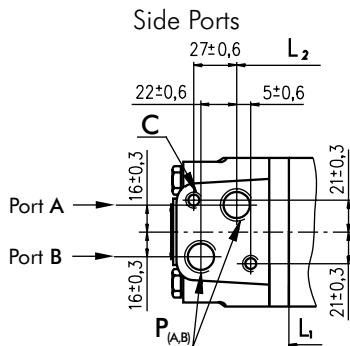
MOTORS WITH TACHO CONNECTION



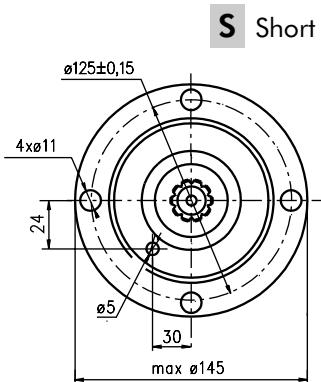
DIMENSIONS AND MOUNTING DATA - MSS, MSV and MSU



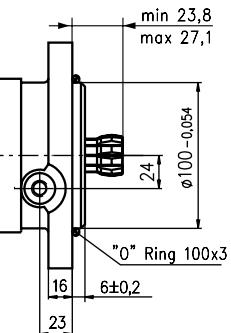
Porting



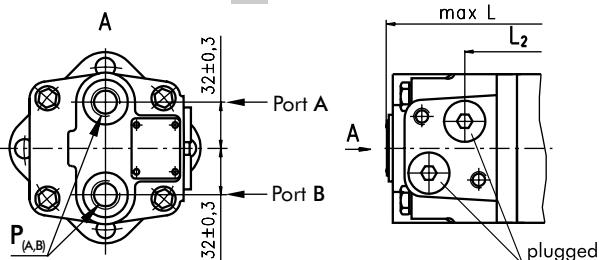
Mounting



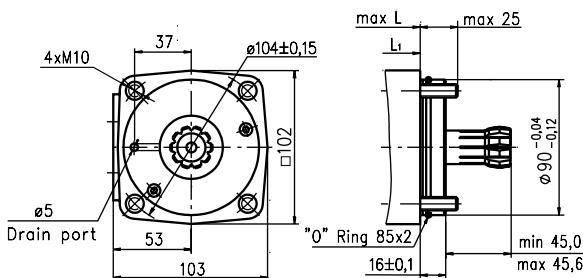
S Short Mount



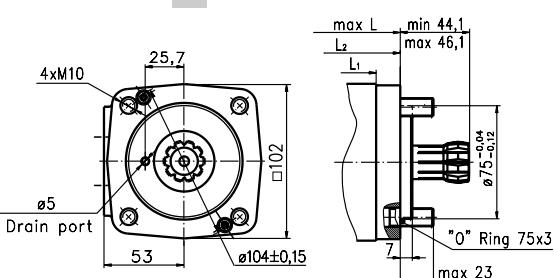
E Rear Ports



V Very Short Mount



U Ultra Short Mount



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

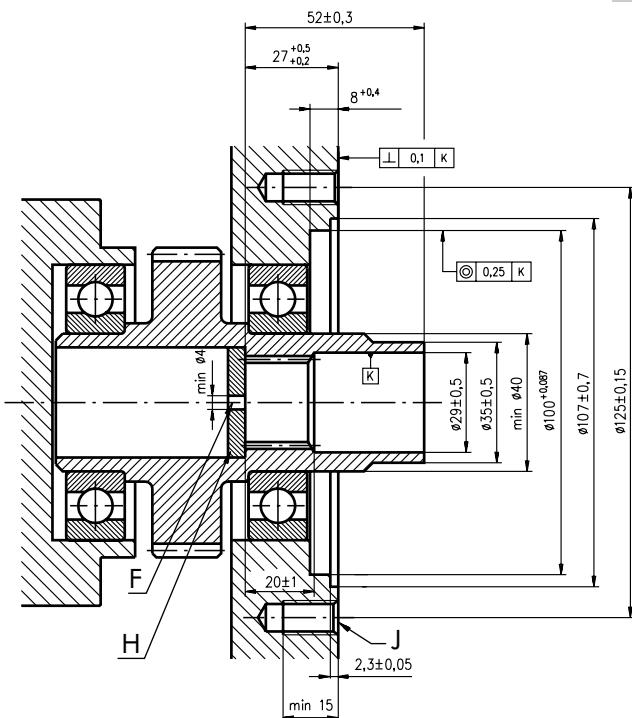
Port A Pressurized - CCW

Port B Pressurized - CW

Type	L , mm	L_2 , mm	Type	L , mm	Type	L , mm	L_2 , mm	Type	L , mm	Type	L , mm	L_2 , mm	Type	L , mm	L_1 , mm
MSS 80	125	83	MSSE 80	134	MSV 80	91	52	MSVE 80	97	MSU 80	105,5	63	MSUE 80	111,5	14
MSS 100	129	87	MSSE 100	138	MSV 100	94	55,5	MSVE 100	100	MSU 100	109	66,5	MSUE 100	115	17,4
MSS 125	133	90	MSSE 125	141	MSV 125	100	60	MSVE 125	105	MSU 125	113	71	MSUE 125	119	21,8
MSS 160	139	96	MSSE 160	147	MSV 160	106	66	MSVE 160	111	MSU 160	119	77	MSUE 160	125	27,8
MSS 200	146	103	MSSE 200	154	MSV 200	113	73	MSVE 200	118	MSU 200	126	84	MSUE 200	132	34,8
MSS 250	155	112	MSSE 250	163	MSV 250	121	81,5	MSVE 250	126	MSU 250	135	92,5	MSUE 250	141	43,5
MSS 315	166	123	MSSE 315	174	MSV 315	133	93	MSVE 315	138	MSU 315	146	104	MSUE 315	152	54,8
MSS 400	181	138	MSSE 400	189	MSV 400	147	108	MSVE 400	153	MSU 400	160	119	MSUE 400	167	69,4
MSS 475	194	152	MSSE 475	203	MSV 475	161	121	MSVE 475	166	MSU 475	174	132	MSUE 475	180	82,6
MSS 525	186	144	MSSE 525	195	MSV 525	153	113	MSVE 525	158	MSU 525	166	124	MSUE 525	172	74,5
MSS 565	192	150	MSSE 565	201	MSV 565	159	119	MSVE 565	164	MSU 565	172	130	MSUE 565	178	80,2

DIMENSIONS OF THE ATTACHED COMPONENT

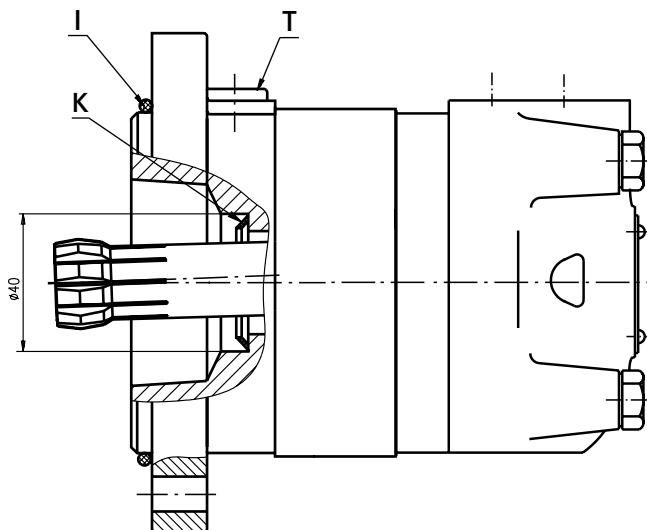
For MSS



F: Oil circulation hole

H: Hardened stop plate

J: 4xM10-16 mm depth, 90°

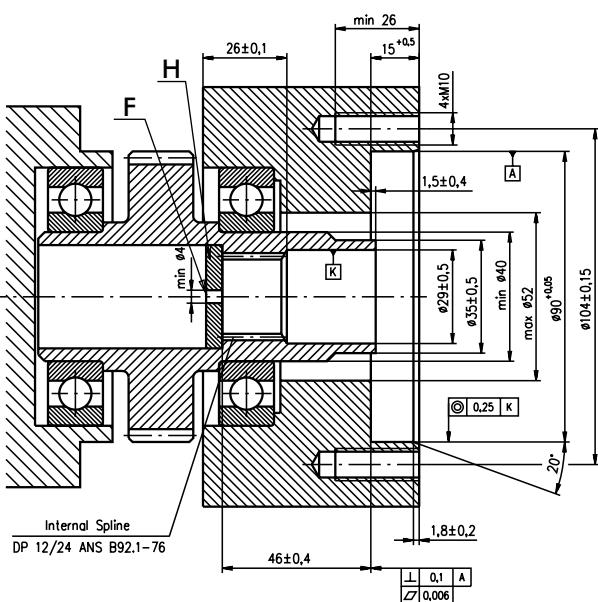


I: O- Ring 100x3mm

K: Conical seal ring

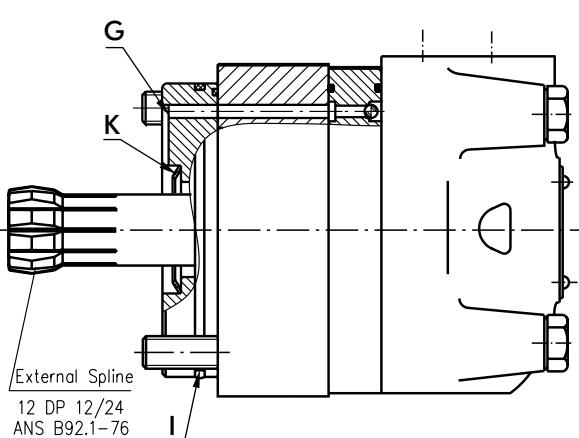
T: Drain connection G1/4 or M14x1,5

For MSV



F: Oil circulation hole

G: Internal drain channel

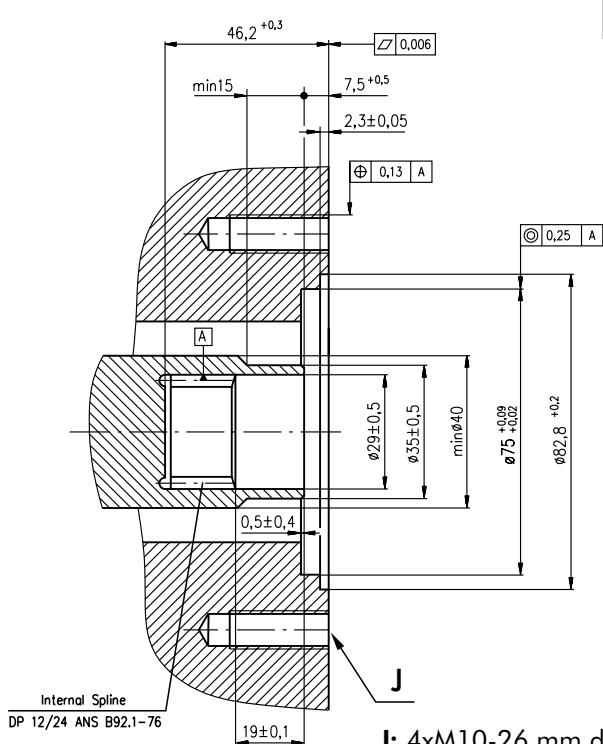


H: Hardened stop plate

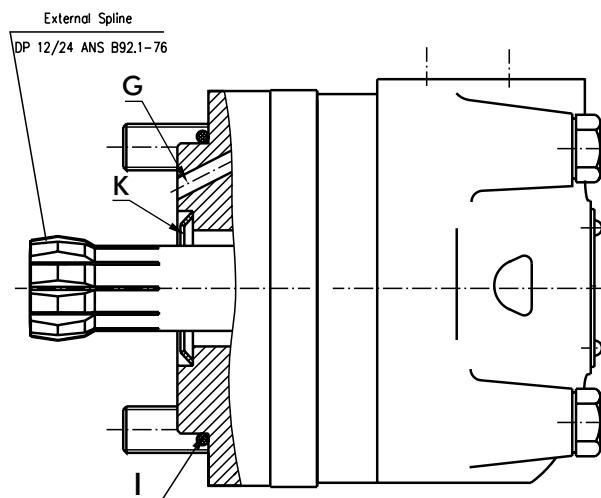
I: O- Ring 85x2mm

K: Conical seal ring

DIMENSIONS OF THE ATTACHED COMPONENT(continued)



For MSU



J: 4xM10-26 mm depth, 90°, ø104
I: O- Ring 75x3 mm

G: Internal drain channel
K: Conical seal ring

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 MSS at the drain port of the motor;
- For MSV and MSU 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.

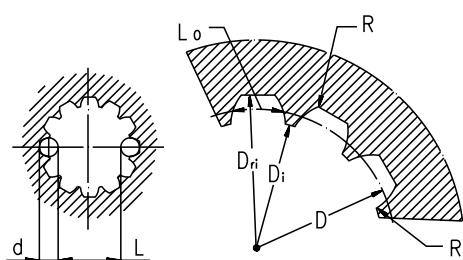
The drain line must be possible for oil to flow freely between motor and attached component and must be led to the tank. The maximum pressure in the drain line is limited by the attached component and its seal.

INTERNAL SPLINE DATA FOR THE ATTACHED COMPONENT

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

Fillet Root Side Fit	mm
Number of Teeth	z
Diametral Pitch	DP
Pressure Angle	30°
Pitch Dia.	D
Major Dia.	D _{ri}
Minor Dia.	D _i
Space Width [Circular]	L _o
Fillet Radius	R
Max. Measurement between Pin	L
Pin Dia.	d

Above are when hardened



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

ORDER CODE

M S	1	2	3	4	5	6	7	8	9
------------	---	---	---	---	---	---	---	---	---

Pos. 1 - Mounting Flange

- omit - SAE A-4 mount, four holes
- A** - SAE A-2 mount, two holes
- F** - Magneto mount, four holes
- Q** - Square mount, four holes
- B** - Motor with drum brake
- S** - Short mount
- V** - Very short mount
- U** - Ultra short mount
- W** - Wheel mount

Pos. 5 - Shaft Seal Version (see page 19)

- omit - Low pressure seal
- U** - High pressure seal

Pos. 6 - Ports

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

Pos. 7 - Actuating Direction**

- /R** - Right
- /L** - Left

Pos. 8 - Special Features (see page 53)

- omit - Factory specified

Pos. 3 - Displacement code

- 80** - 80,5 [cm³/rev]
- 100** - 100,0 [cm³/rev]
- 125** - 125,7 [cm³/rev]
- 160** - 159,7 [cm³/rev]
- 200** - 200,0 [cm³/rev]
- 250** - 250,0 [cm³/rev]
- 315** - 314,9 [cm³/rev]
- 400** - 397,0 [cm³/rev]
- 475** - 474,6 [cm³/rev]
- 525** - 522,7 [cm³/rev]
- 565** - 564,9 [cm³/rev]

Pos. 4 - Shaft Extensions*

- omit - for **B, S, U** and **V** mounting flange
- C** - ø32 straight, Parallel key A10x8x45 DIN6885
- CO** - ø1 ¼" straight, Parallel key 5/16" x 5/16" x 1 ¼" BS46
- K** - ø35 tapered 1:10, Parallel key B6x6x20 DIN6885
- SL** - ø34,85 p.t.o. DIN 9611 Form 1
- SH** - ø1 ¼" splined 14T ANSI B92.1-1976

NOTES:

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

** Only for MSB

The hydraulic motors are mangano-phosphatized as standard.

HYDRAULIC MOTORS MSY

MSY is the new hydraulic motor in a family of "disc valve" series which has dimensions and mounting data the same as at hydraulic motors type MS.

This motor is described with 15÷20% higher technical data-max. Torque and max. Pressure drop, thereby higher power. This makes it suitable for vehicles with greater loads and speed drop.



CONTENTS

Specification data	25
Function diagrams	26÷28
Dimensions and mounting	13÷14
Wheel motor	15
Motor with Drum Brake - MSYB	16
Shaft extensions	17
Permissible shaft loads	18
Function diagram for MSYB	18
Permissible Shaft Seal Pressure.....	19
Dimensions and mounting- MSYS, V	29
Internal Spline data	30
Order code	30

OPTIONS

- » Model- Disc valve, roll-gerotor
- » Flange and wheel mount
- » Short motor
- » Side and rear ports
- » Shafts- straight, splined and tapered
- » Other special features

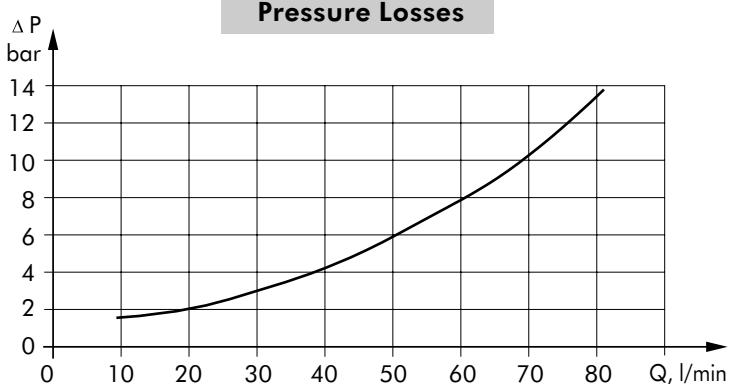
GENERAL

Displacement, [cm ³ /rev.]	200÷474,6
Max. Speed, [RPM]	155÷375
Max. Torque, [daNm]	56,6÷91
Max. Output, [kW]	9÷18,1
Max. Pressure Drop, [bar]	140÷200
Max. Oil Flow, [l/min]	75
Min. Speed, [RPM]	5÷8
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)
140	20	1,5
	35	1
210	20	3
	35	2

Pressure Losses



SPECIFICATION DATA FOR MSY

Type	MSY 200	MSY 250	MSY 315	MSY 400	MSY 475
Displacement [cm³/rev.]	200	250	314,9	397	474,6
Max. Speed, [RPM]	cont. Int.*	375 450	300 360	240 285	185 225
Max. Torque [daNm]	cont. Int.* peak**	56,6 64,5 65	70,8 80,6 80,6	90,0 96,0 108	90,0 97,0 110
Max. Output [kW]	cont. int.*	18,1 24,0	18,0 23,8	17 20,2	11,0 12
Max. Pressure Drop [bar]	cont. Int.* peak**	200 225 225	200 225 225	200 220 225	160 175 200
Max. Oil Flow [l/min]	cont. Int.*	75 90	75 90	75 90	75 90
Max. Inlet Pressure [bar]	cont. Int.* peak**	210 250 300	210 250 300	210 250 300	210 250 300
Max. Return Pressure with Drain Line [bar]	cont. Int.* peak**	140 175 210	140 175 210	140 175 210	140 175 210
Max. Starting Pressure with Unloaded Shaft, [bar]	8	8	8	8	8
Min. Starting Torque [daNm]	at max. press. drop cont. at max. press. drop Int.*	46,2 50,7	58,0 63,6	73,8 79,2	72,0 78,7
Min. Speed***, [RPM]		6	6	5	5
Weight, [kg]	MSY (F)	11,2	11,7	12,4	13,3
For Rear Ports	MSYW	11,7	12,2	12,9	13,8
+0,4 kg	MSYQ	11,6	12,1	12,8	14,9

* Int. Периодическая работа: допустимые значения по длительности не более 10% каждую минуту.

** Peak load Пиковая нагрузка: допустимые значения по длительности не более 1% каждую минуту.

*** Для скорости 5 RPM или ниже, консультируйтесь с производителем или региональным представителем

1. Прерывистая скорость вращения и резкие перепады давления не должны происходить одновременно

2. Рекомендуемая тонкость фильтрации по ISO 20/16. Абсолютная фильтрация 25 мкм либо тоньше.

3. Рекомендуется использование высококачественного гидравлического масла противоизносного типа на минеральной основе HLP(DIN51524) or HM (ISO 6743/4). При использовании синтетических жидкостей проконсультируйтесь с производителем альтернативных материалов уплотнений.

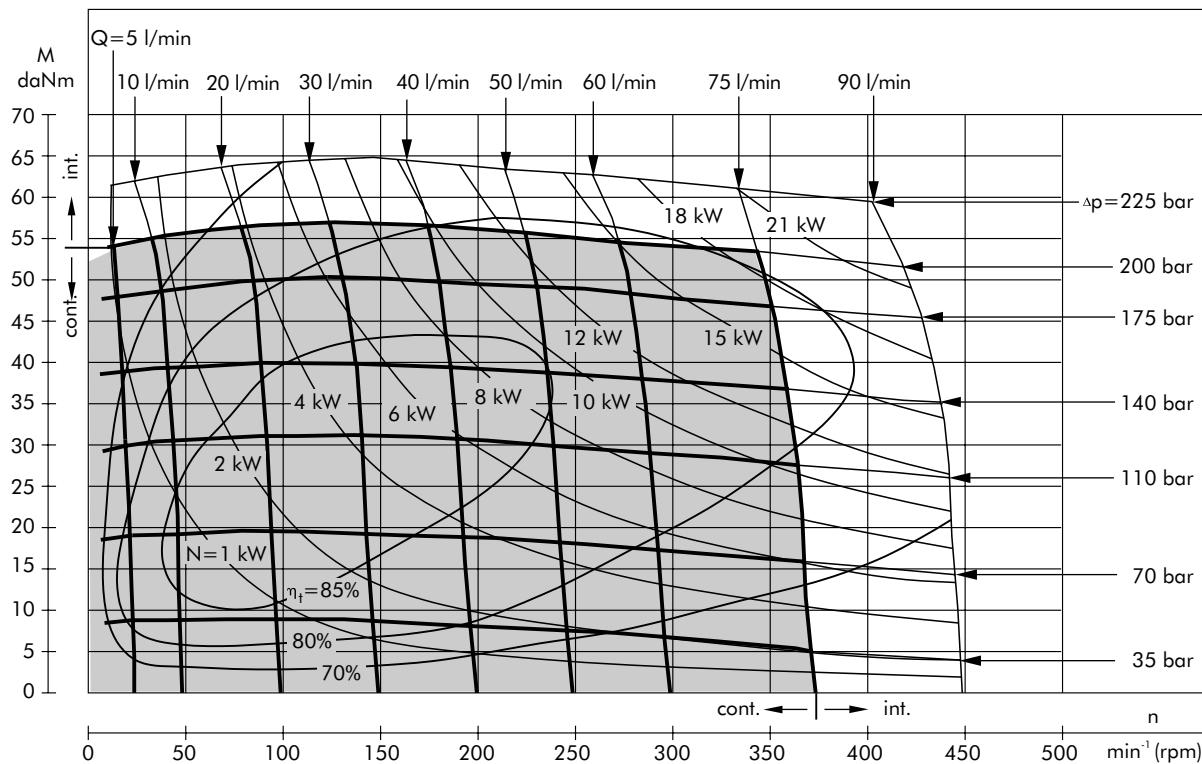
4. Рекомендуемая минимальная вязкость масла 13 mm²/s при температуре 50°C.

5. Рекомендуемая максимальная рабочая температура в системе составляет 82°C.

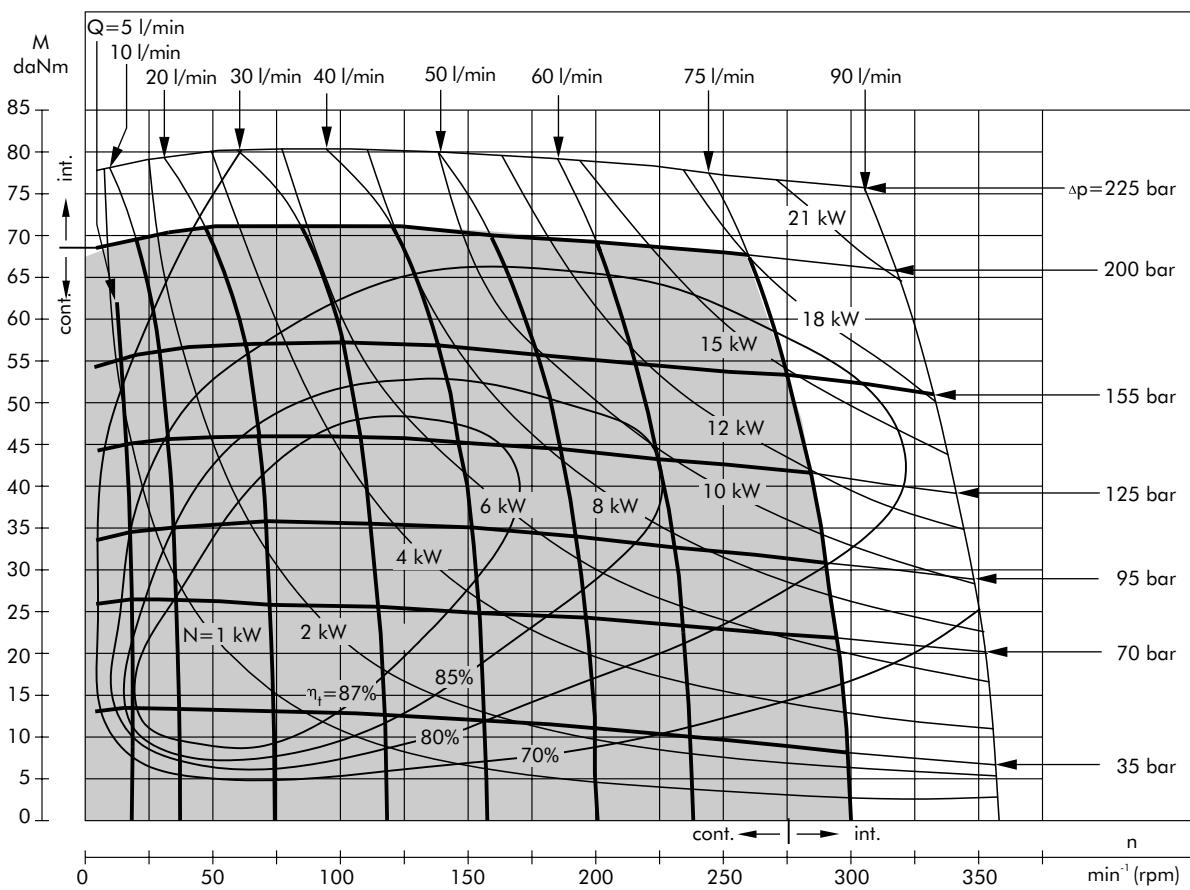
6. Для того, чтобы обеспечить максимальный срок службы мотора, перед первым запуском необходимо заполнить маслом и обкатать при умеренной нагрузке и скорости в течение 10-15 минут.

FUNCTION DIAGRAMS

MSY 200



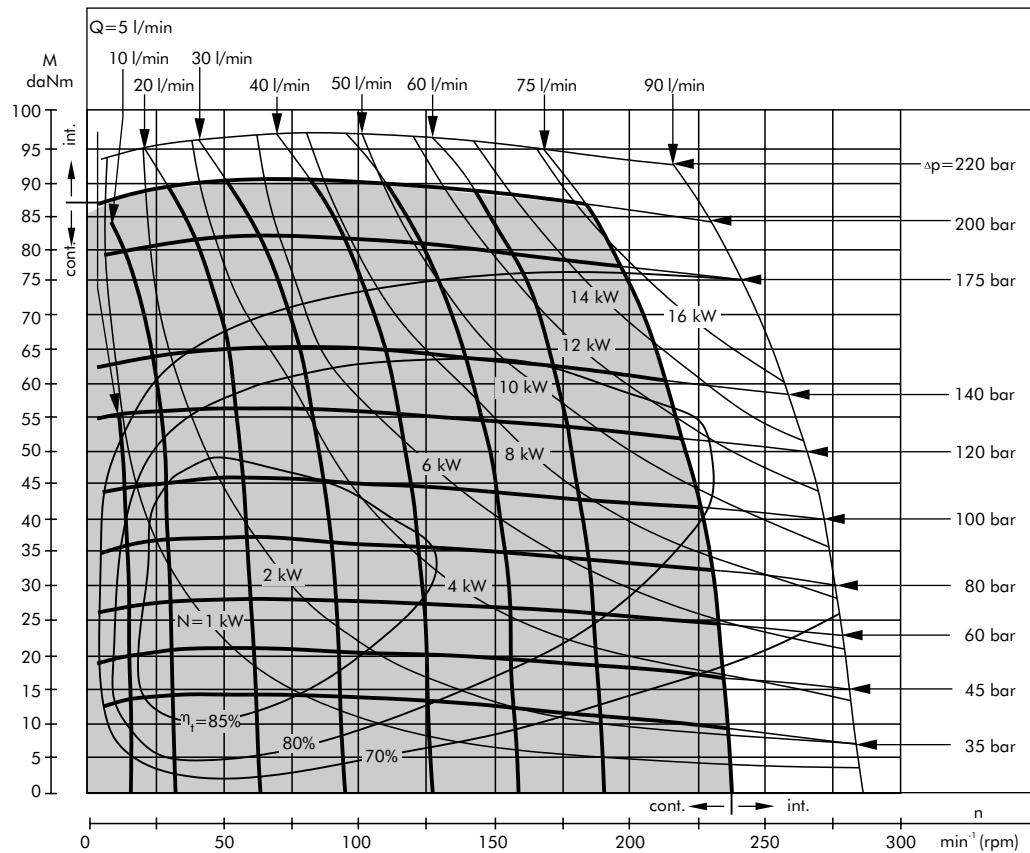
MSY 250



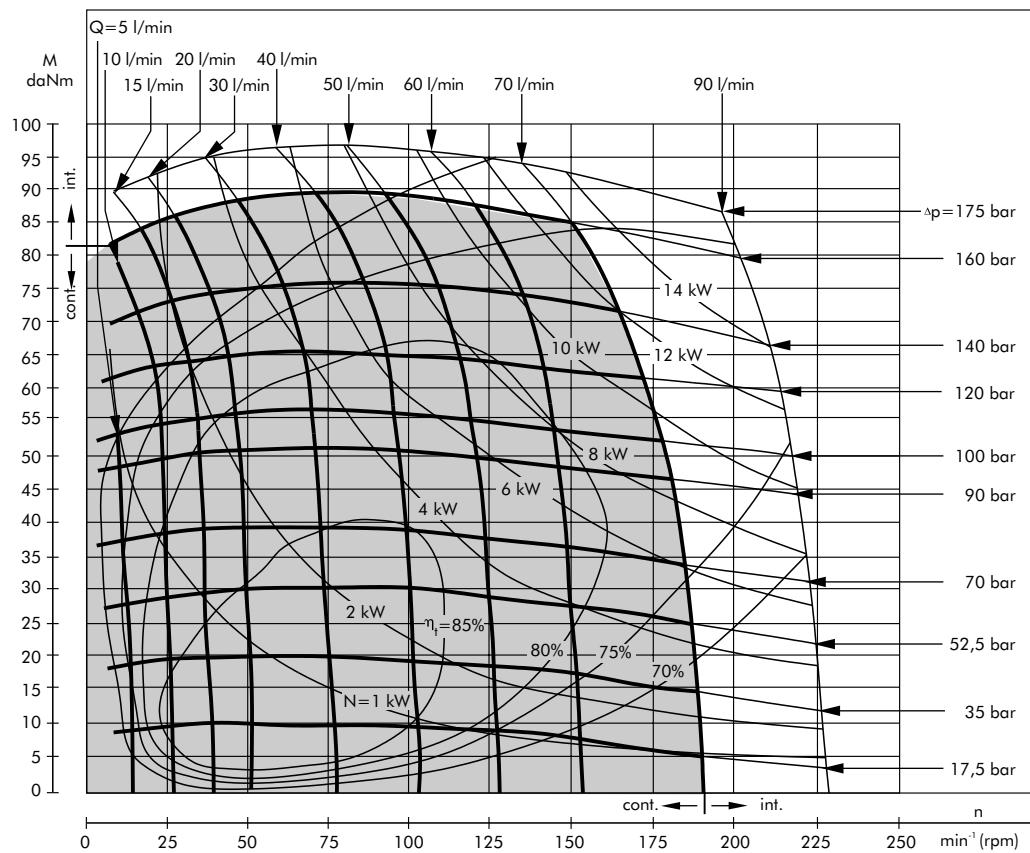
The function diagrams data was collected at back pressure 5÷10 bar and oil with viscosity of 32 mm²/s at 50° C.

FUNCTION DIAGRAMS

MSY 315



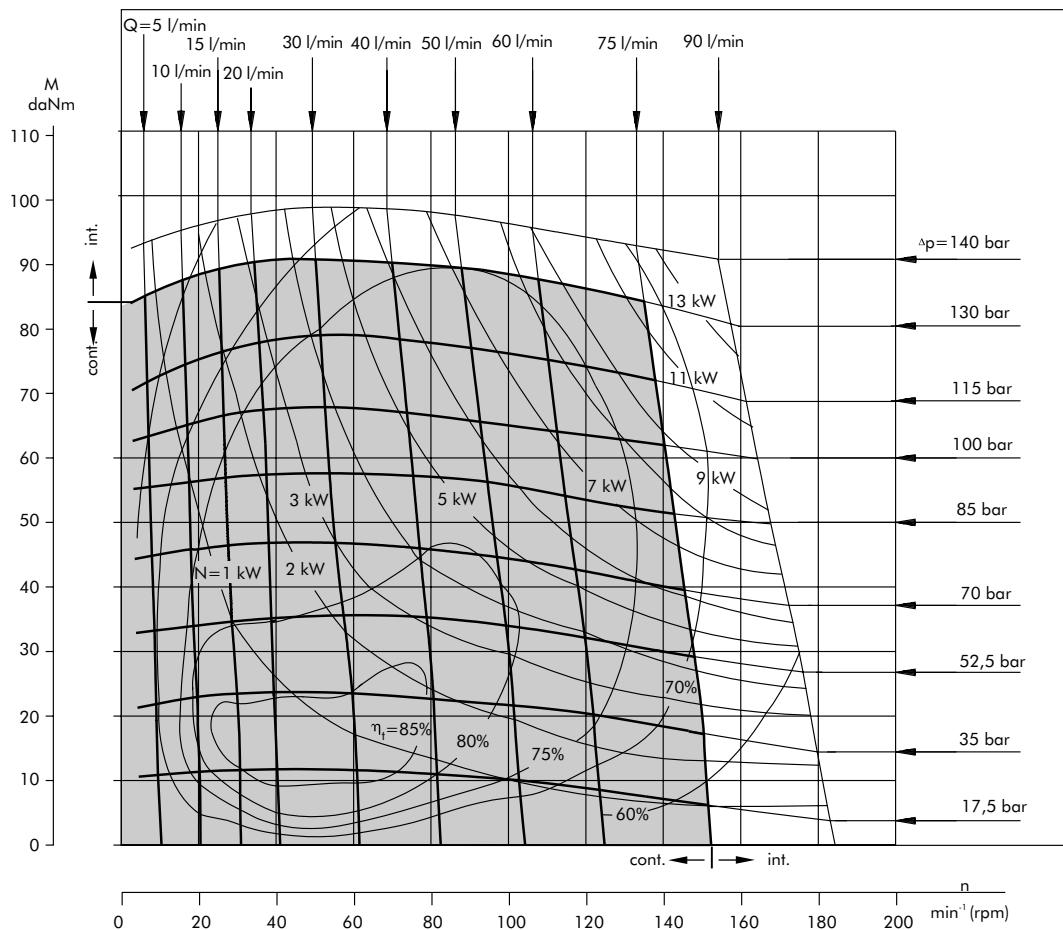
MSY 400



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

MSY 475

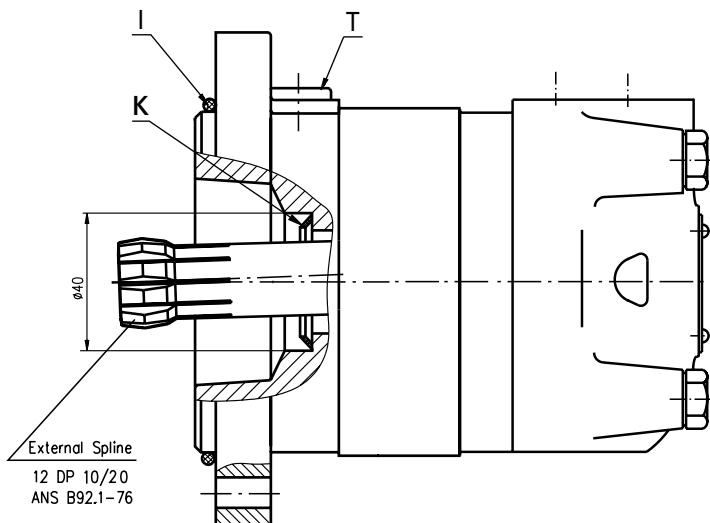
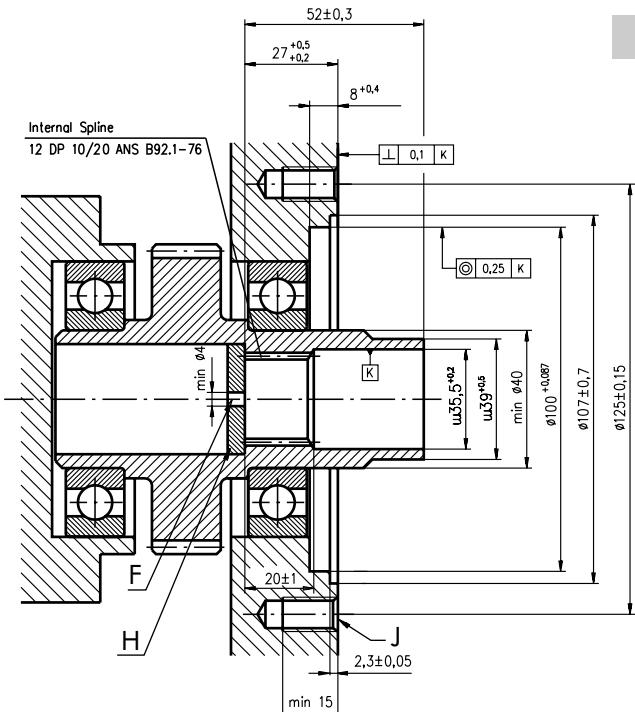


The function diagrams data was collected at back pressure 5÷10 bar and oil with viscosity of 32 mm^2/s at 50° C.

The dimensions, mounting data, shaft extensions and permissible shaft loads are the same as at hydraulic motors type MS except following below.

DIMENSIONS OF THE ATTACHED COMPONENT

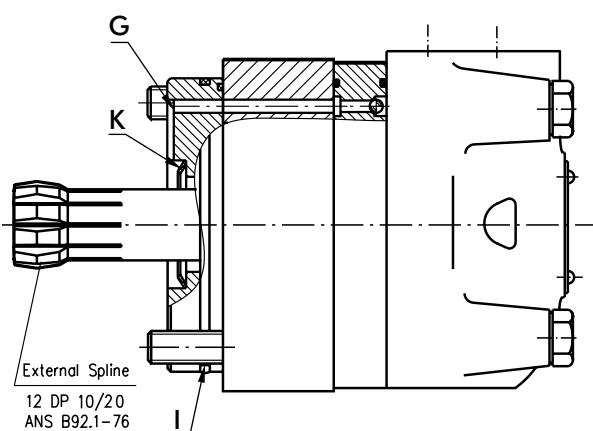
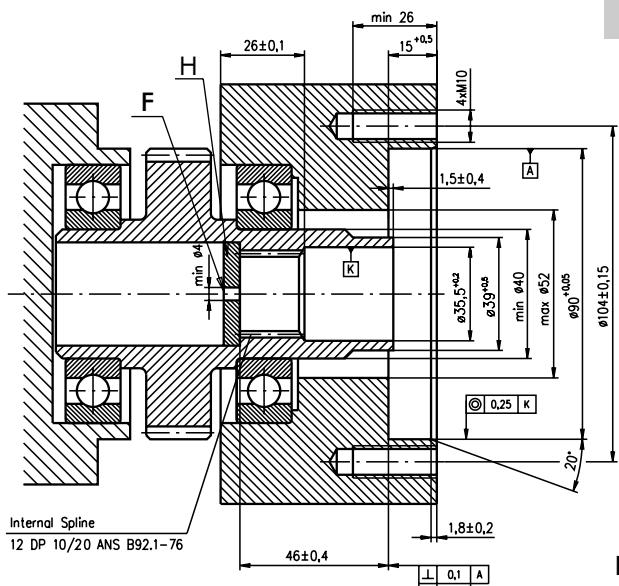
For MSYS



- F: Oil circulation hole
- H: Hardened stop plate
- J: 4xM10-16 mm depth, 90°

- I: O- Ring 100x3mm
- K: Conical seal ring
- T: Drain connection G1/4 or M14x1,5

For MSYV



- F: Oil circulation hole
- G: Internal drain channel

- H: Hardened stop plate
- I: O- Ring 85x2mm
- K: Conical seal ring

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 MSYS at the drain port of the motor;
- For MSYV 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.

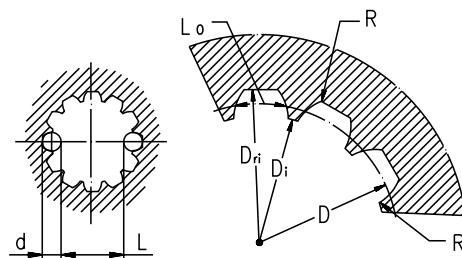
The drain line must be possible for oil to flow freely between motor and attached component and must be led to the tank. The maximum pressure in the drain line is limited by the attached component and its seal.

INTERNAL SPLINE DATA FOR THE ATTACHED COMPONENT

Standard 12 DP 10/20 ANS B92.1-1976, class 5
 $[m=2.54; \text{corrected } x.m=+0,4]$

Fillet Root Side Fit	mm
Number of Teeth	z
Diametral Pitch	DP
Pressure Angle	30°
Pitch Dia.	D
Major Dia.	D _{ri}
Minor Dia.	D _i
Space Width [Circular]	L _o
Fillet Radius	R _{min}
Max. Measurement between Pin	L
Pin Dia.	d
	$4,835 \pm 0,001$

Above are when hardened



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

ORDER CODE

1	2	3	4	5	6	7	8	9
M	S	Y						

Pos. 1 - Mounting Flange

omit - SAE A-4 mount, four holes

A	- SAE A-2 mount, two holes
F	- Magneto mount, four holes
Q	- Square mount, four holes
B	- Motor with drum brake
S	- Short mount
V	- Very short mount
W	- Wheel mount

Pos. 2 - Port type

omit - Side ports

E	- Rear ports
----------	--------------

Pos. 3 - Displacement code

200	- 200,0 [cm ³ /rev]
250	- 250,0 [cm ³ /rev]
315	- 314,9 [cm ³ /rev]
400	- 397,0 [cm ³ /rev]
475	- 474,5 [cm ³ /rev]

Pos. 4 - Shaft Extensions*

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

C	- ø32 straight, Parallel key A10x8x45 DIN6885
K	- ø35 tapered 1:10, Parallel key B6x6x20 DIN6885
SL	- ø34,85 p.t.o. DIN 9611 Form 1
SH	- ø1 1/4" splined 14T ANS B92.1-1976

Pos. 5 - Shaft Seal Version (see page 19)

omit - Low pressure seal

U	- High pressure seal
----------	----------------------

Pos. 6 - Ports

omit - BSPP (ISO 228)

M	- Metric (ISO 262)
----------	--------------------

Pos. 7 - Actuating Direction**

/R	- Right
/L	- Left

Pos. 8 - Special Features (see page 53)

Pos. 9 - Design Series

omit - Factory specified

NOTES:

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

** Only for MSYB

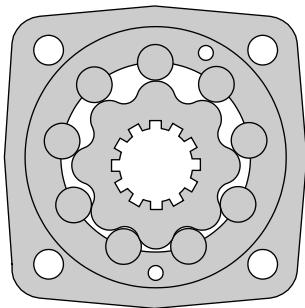
The hydraulic motors are mangano-phosphatized as standard.

HYDRAULIC MOTORS MT



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	32
Function diagrams	33÷36
Dimensions and mounting	37
Shaft extensions	38
Permissible Shaft Seal pressure	38
Dimensions and mounting- MTS, V	39÷40
Internal Spline data	41
Permissible shaft loads	41
Tacho connection	42
Order code	42

OPTIONS

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

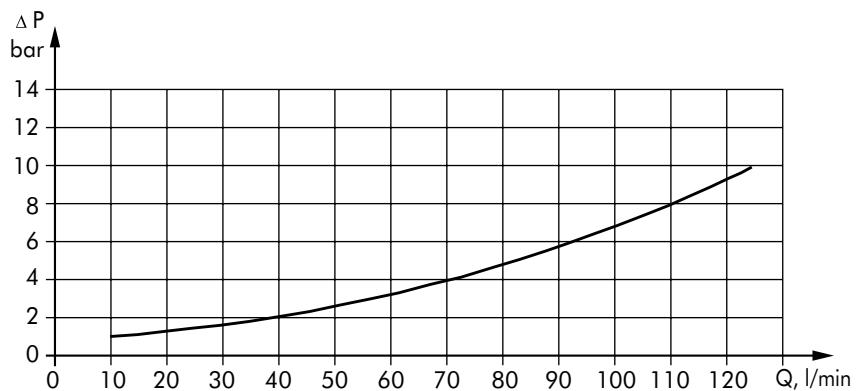
GENERAL

Displacement,	[cm ³ /rev.]	161,1÷725
Max. Speed,	[RPM]	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 _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	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 ³ /rev.]	161,1	201,4	251,8	326,3	410,9	523,6	631,2	724,3
Max. Speed, [RPM]	cont. Int.*	625 780	625 750	500 600	380 460	305 365	240 285	197 234
Max. Torque [daNm]	cont. Int.* peak**	47 56 66	59 71 82	73 88 102	95 114 133	108 126 144	122 137 160	138 155 180
Max. Output [kW]	cont. int.*	26,5 32	33,5 40	33,5 40	33,5 40	30 35	26,5 30	24,3 27,5
Max. Pressure Drop [bar]	cont. Int.* peak**	200 240 280	200 240 280	200 240 280	180 210 240	160 180 210	140 160 190	120 140 165
Max. Oil Flow [l/min]	cont. Int.*	100 125	125 150	125 150	125 150	125 150	125 150	125 151,4
Max. Inlet Pressure [bar]	cont. Int.* peak**	210 250 300	210 250 300	210 250 300	210 250 300	210 250 300	210 250 300	210 250 300
Max. Return Pressure with Drain Line [bar]	cont. Int.* peak**	140 175 210	140 175 210	140 175 210	140 175 210	140 175 210	140 175 210	140 175 210
Max. Starting Pressure with Unloaded Shaft, [bar]	10	10	10	10	10	10	10	10
Min. Starting Torque [daNm]	at max. press. drop cont. at max. press. drop Int.*	34 41	43 52	53 63	74 89	84 97	95 106	95 110
Min. Speed***, [RPM]		10	9	8	7	6	5	5
Weight, [kg]	MT MTW MTS MTV	20 22 15 11	20,5 22,5 15,5 11,5	21 23 16 12	22 24 17 13	23 25 18 14	24 26 19 15	23,5 25,5 18,5 14,5
								24,5 26,5 19,5 15,5

* Int. Периодическая работа: допустимые значения по длительности не более 10% каждую минуту.

** Peak load Пиковая нагрузка: допустимые значения по длительности не более 1% каждую минуту.

*** Для скорости 5 RPM или ниже, консультируйтесь с производителем или региональным представителем

1. Прерывистая скорость вращения и резкие перепады давления не должны происходить одновременно

2. Рекомендуемая тонкость фильтрации по ISO 20/16. Абсолютная фильтрация 25 мкм либо тоньше.

3. Рекомендуется использование высококачественного гидравлического масла противоизносного типа на минеральной основе

HLP(DIN51524) or HM (ISO 6743/4). При использовании синтетических жидкостей проконсультируйтесь с производителем альтернативных материалов уплотнений.

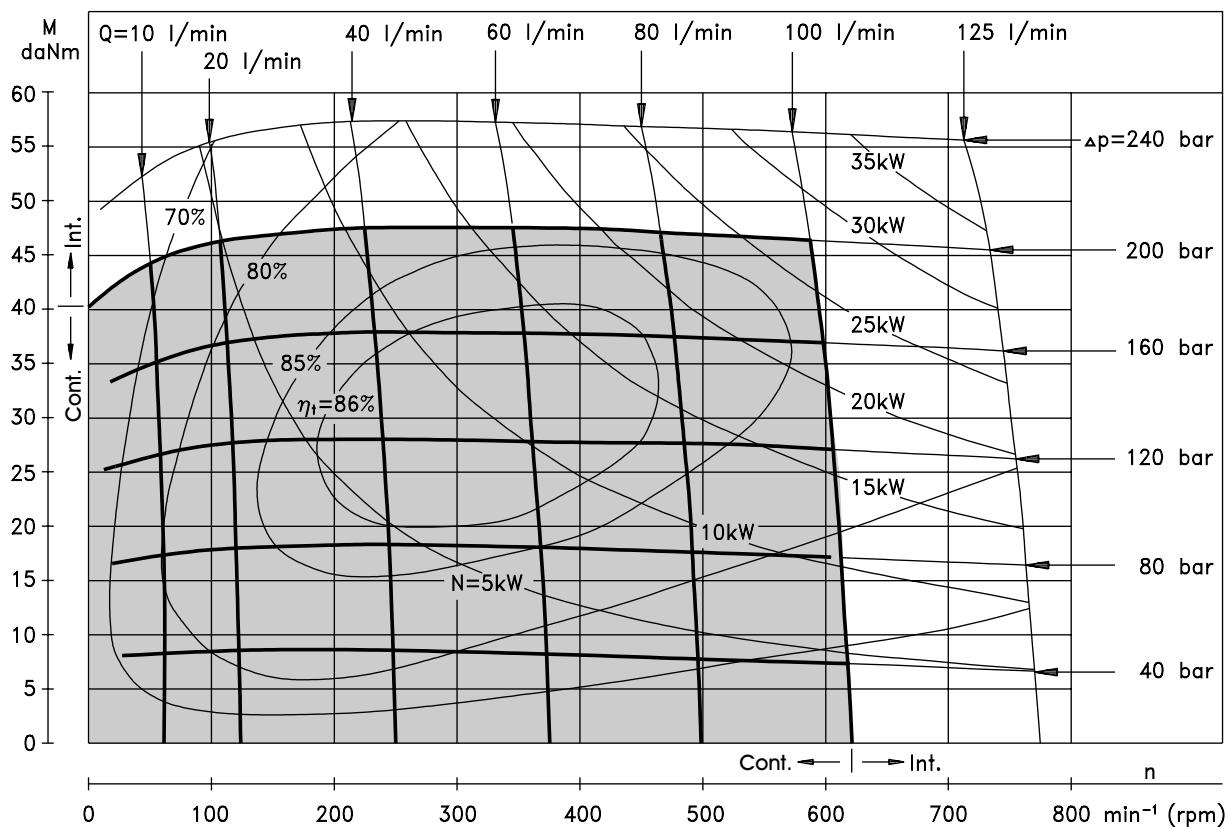
4. Рекомендуемая минимальная вязкость масла 13 mm²/s при температуре 50°C.

5. Рекомендуемая максимальная рабочая температура в системе составляет 82°C.

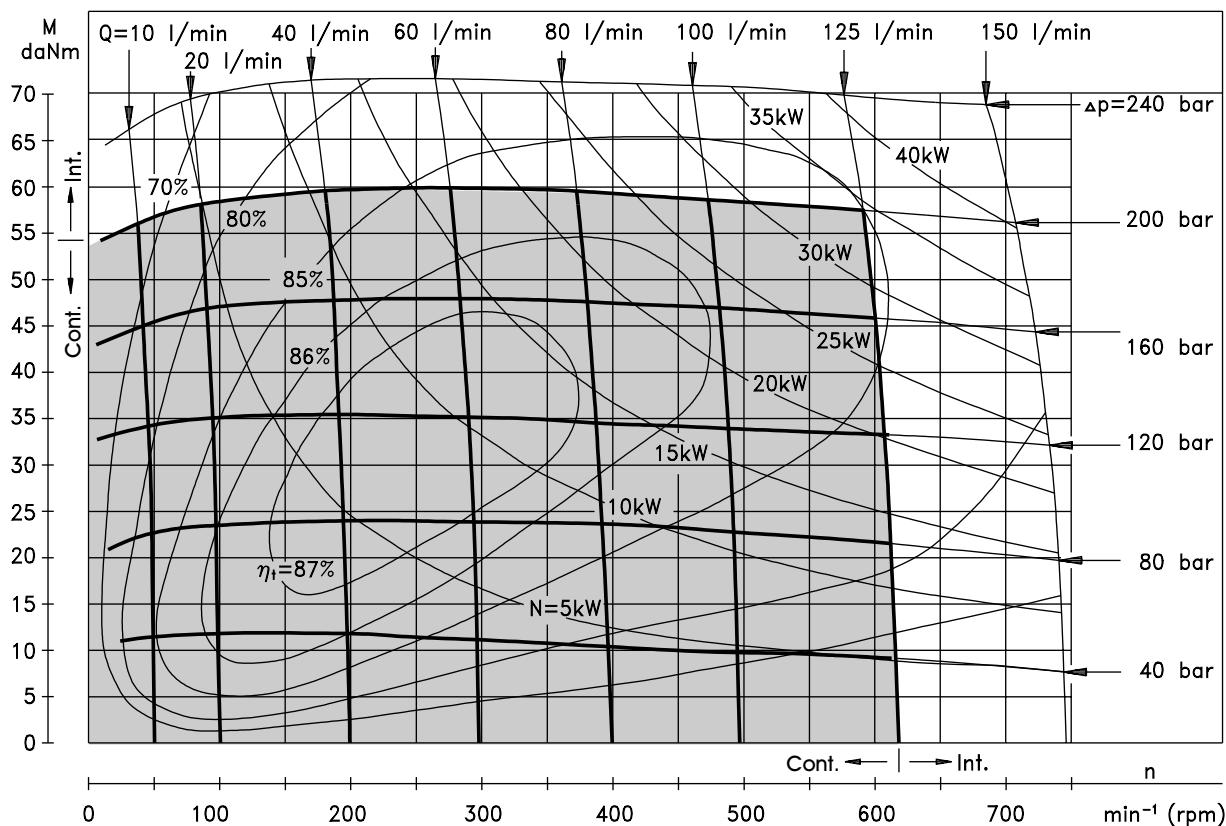
6. Для того, чтобы обеспечить максимальный срок службы мотора, перед первым запуском необходимо заполнить маслом и обкатать при умеренной нагрузке и скорости в течение 10-15 минут.

FUNCTION DIAGRAMS

MT 160



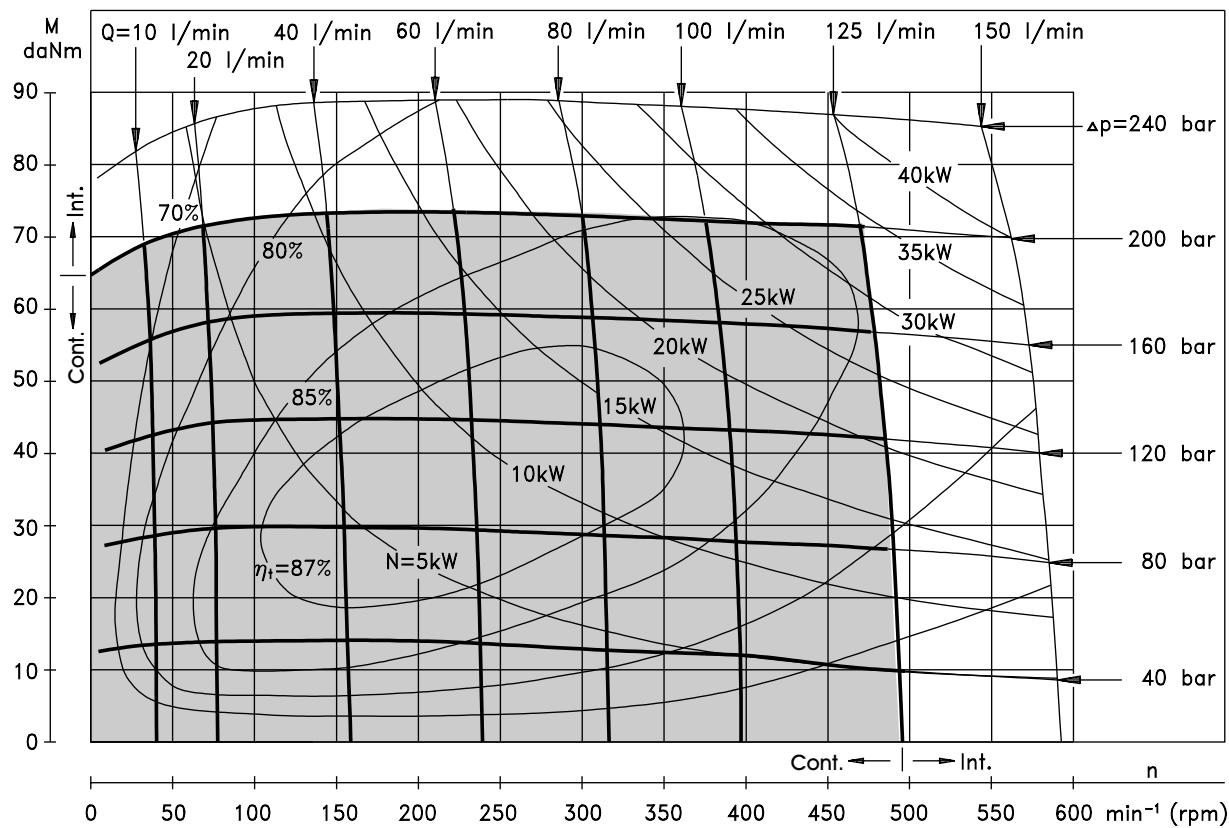
MT 200



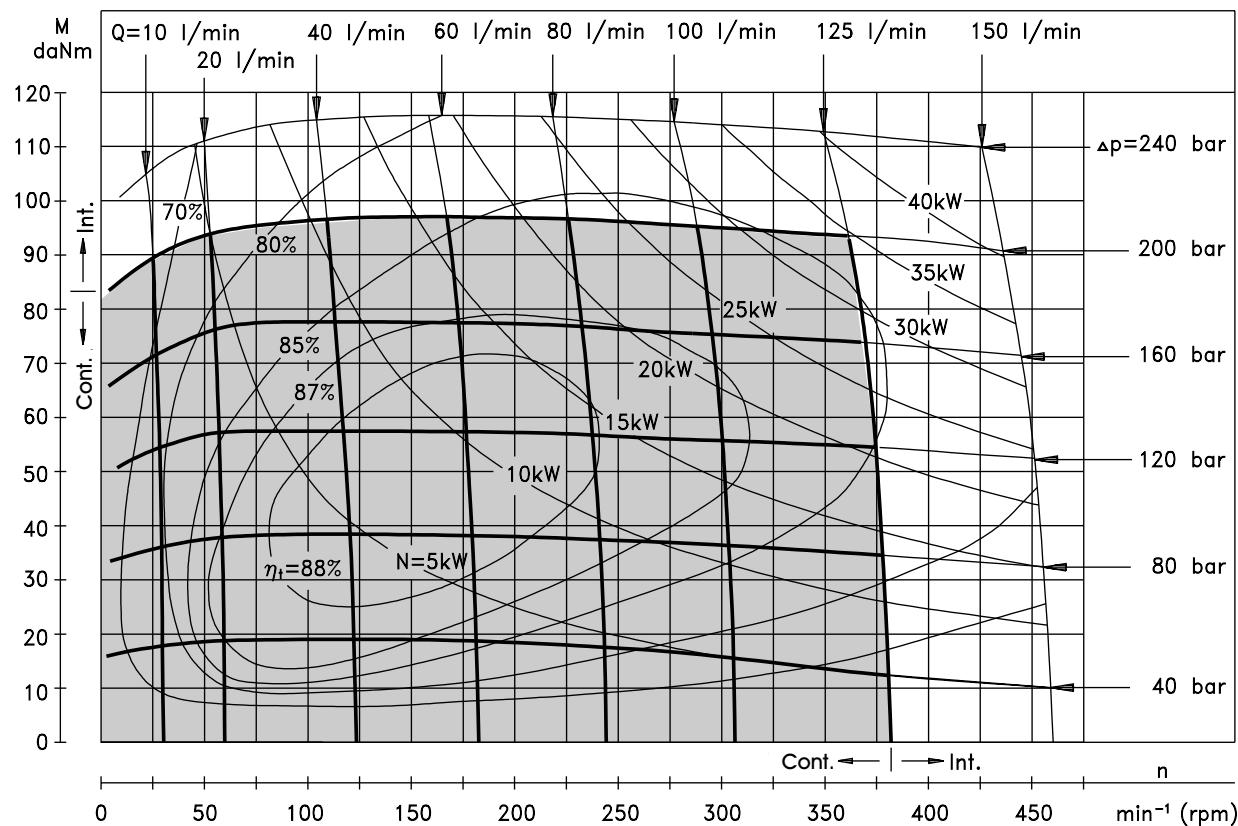
The function diagrams data was collected at back pressure 5÷10 bar
and oil with viscosity of 32 mm²/s at 50° C.

FUNCTION DIAGRAMS

MT 250

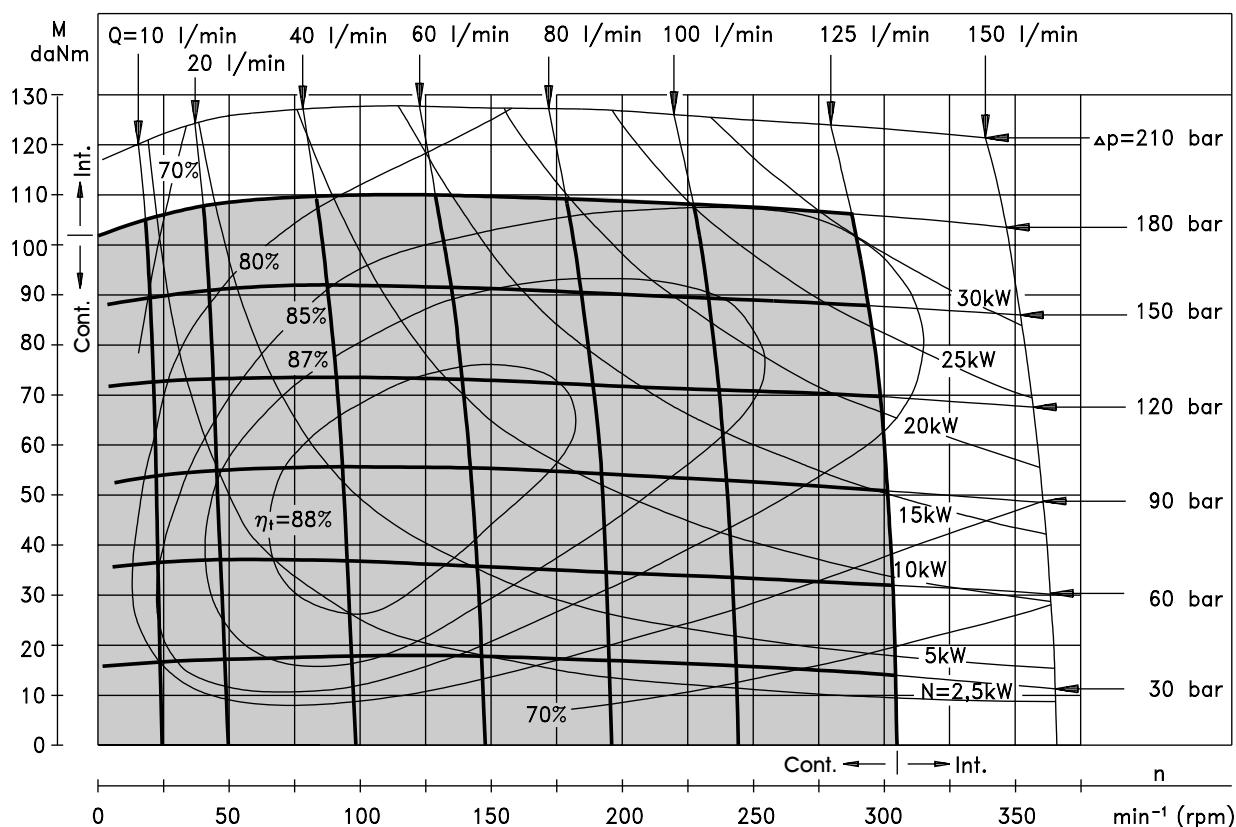


MT 315

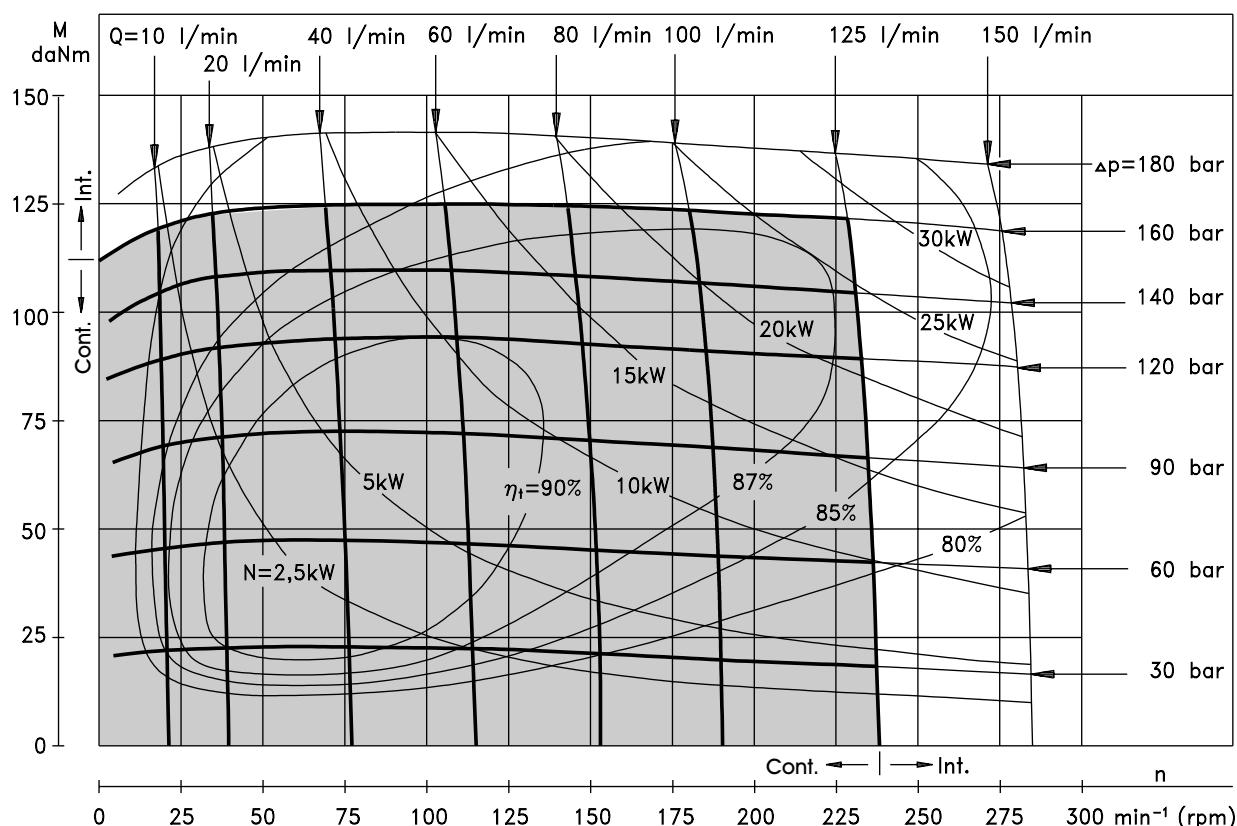


FUNCTION DIAGRAMS

MT 400



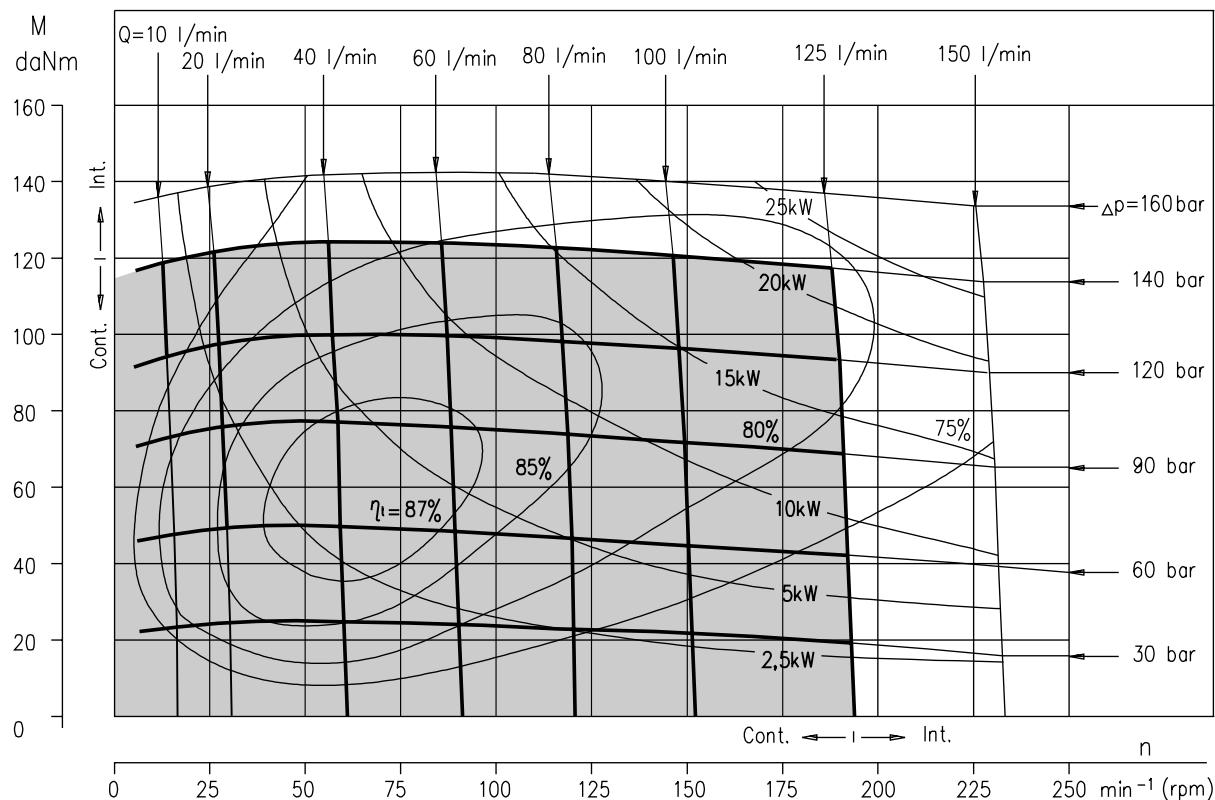
MT 500



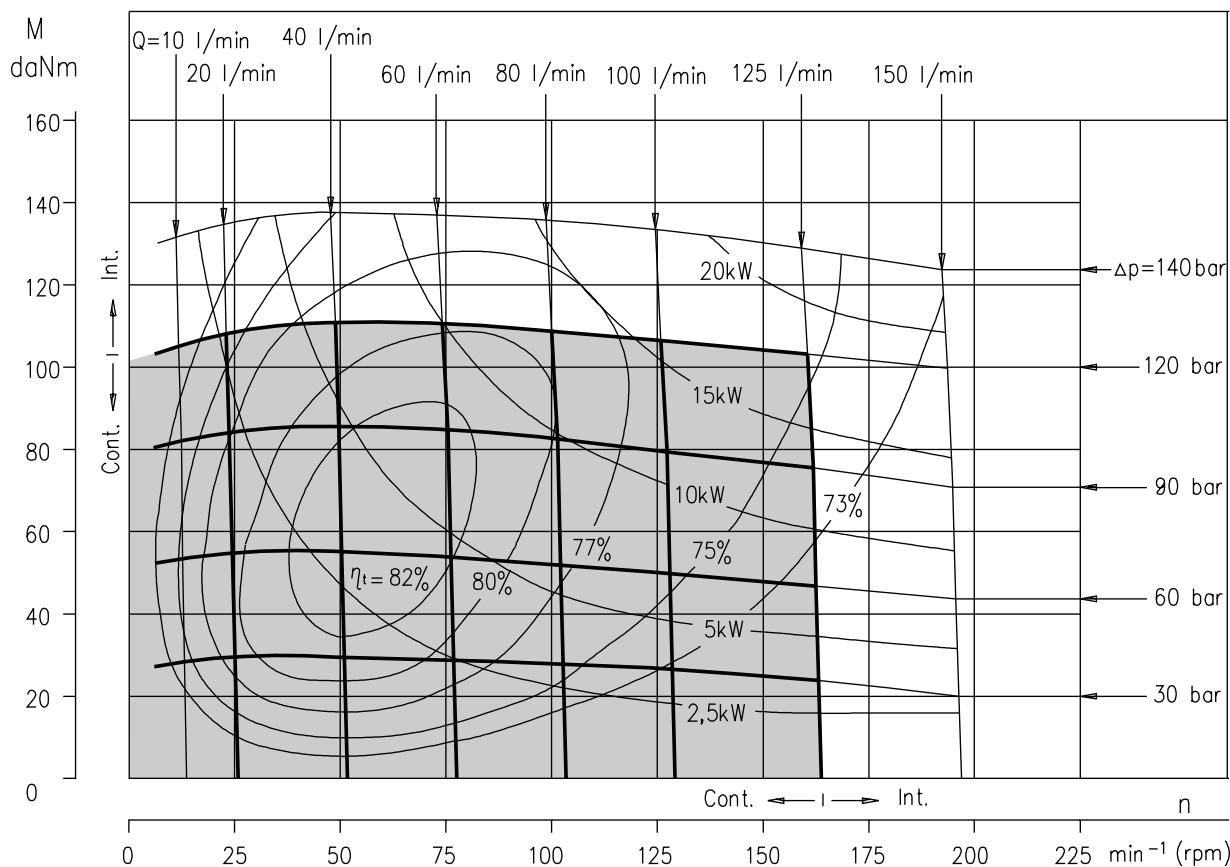
The function diagrams data was collected at back pressure $5 \div 10 \text{ bar}$ and oil with viscosity of $32 \text{ mm}^2/\text{s}$ at 50° C .

FUNCTION DIAGRAMS

MT 630

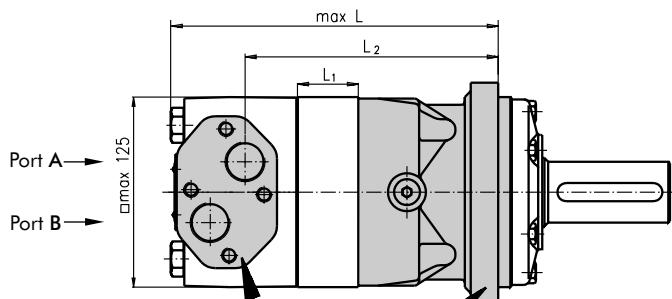


MT 725



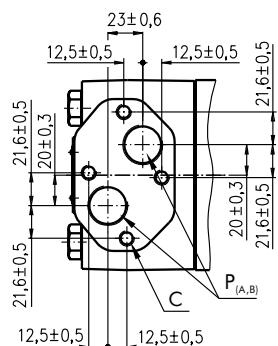
The function diagrams data was collected at back pressure 5÷10 bar and oil with viscosity of 32 mm²/s at 50° C.

DIMENSIONS AND MOUNTING DATA

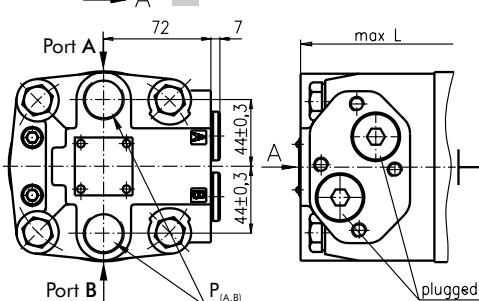


Porting

Side Ports

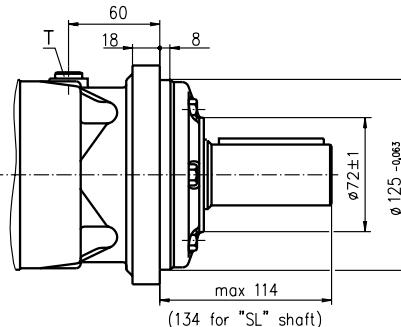
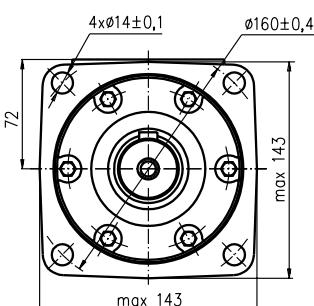


E Rear Ports

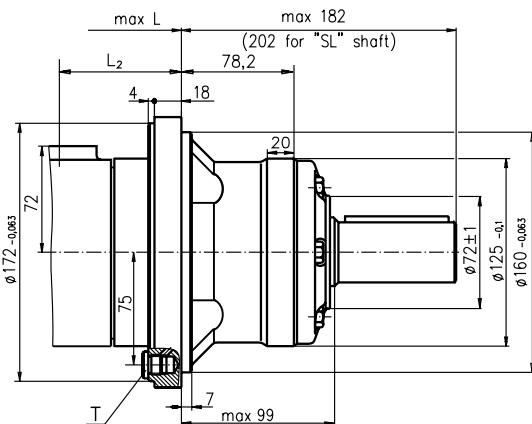
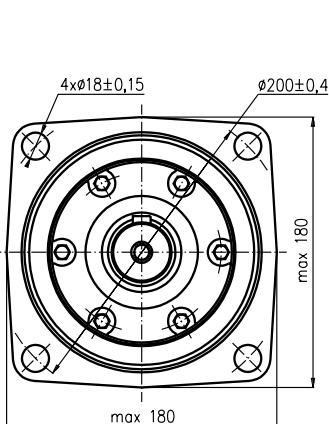


Mounting

Square Mount (4 Holes)



W Wheel Mount



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_(A,B): 2xG3/4 or 2xM27x2-17 mm depth

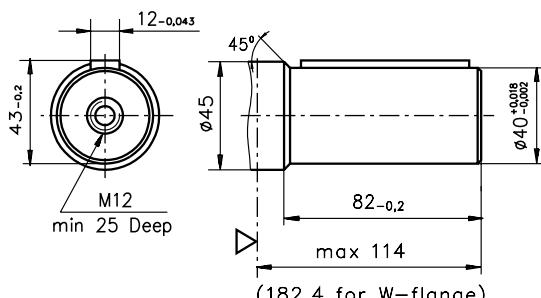
T: G 1/4 or M14x1,5 - 12 mm depth (plugged)

Type	L, mm	Type	L, mm	L ₂ , mm	Type	L, mm	Type	L, mm	L ₂ , mm	*L ₁ , 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

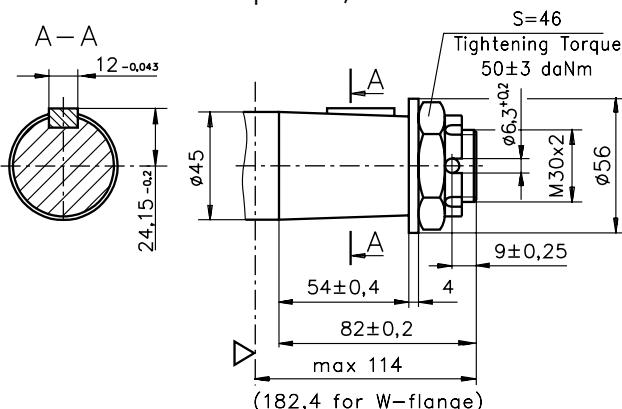
* The width of the roll-gerotor is 3,5 mm greater than L₁.

SHAFT EXTENSIONS

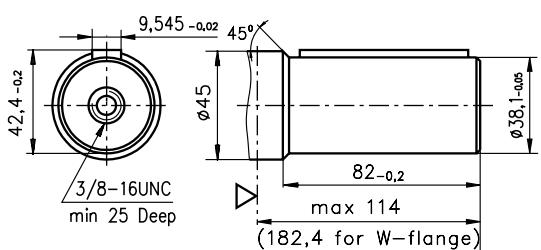
C - $\varnothing 40$ straight, Parallel key A12x8x70 DIN 6885
Max. Torque 132,8 daNm



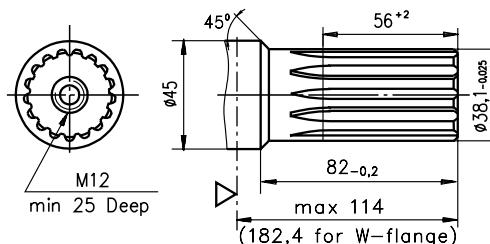
K -tapered 1:10, Parallel key B12x8x28 DIN 6885
Max. Torque 210,7 daNm



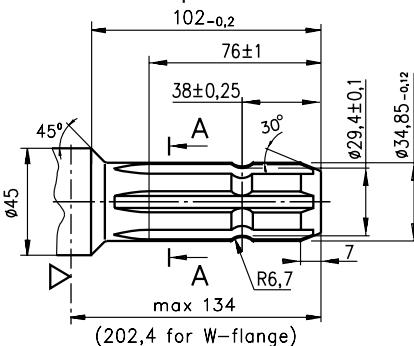
CO - $\varnothing 1\frac{1}{2}$ " straight, Parallel key $\frac{3}{8}'' \times \frac{3}{8}'' \times 2\frac{1}{4}''$ BS46
Max. Torque 132,8 daNm



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



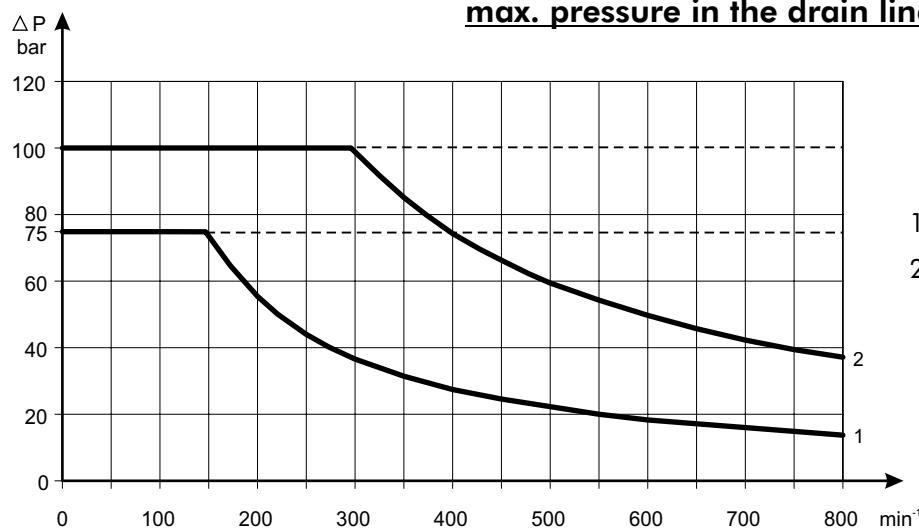
SL - $\varnothing 34,85$ p.t.o. DIN 9611 Form 1
Max. Torque 77 daNm



▽ - Motor Mounting Surface

MAX. PERMISSIBLE SHAFT SEAL PRESSURE for MT motors

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

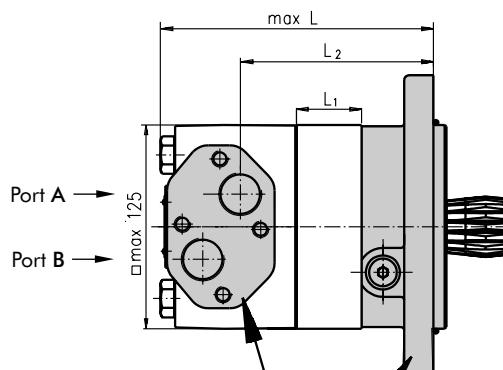


1: Drawing for Standard Shaft Seal

2: Drawing for High Pressure Seal ("U" Seal)

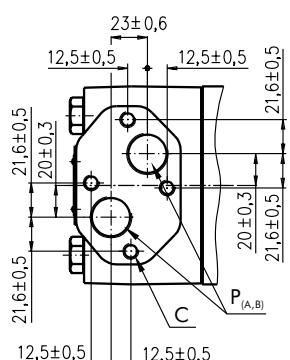
— continuous operations
- - - - - intermittent operations

DIMENSIONS AND MOUNTING DATA - MTS and MTV



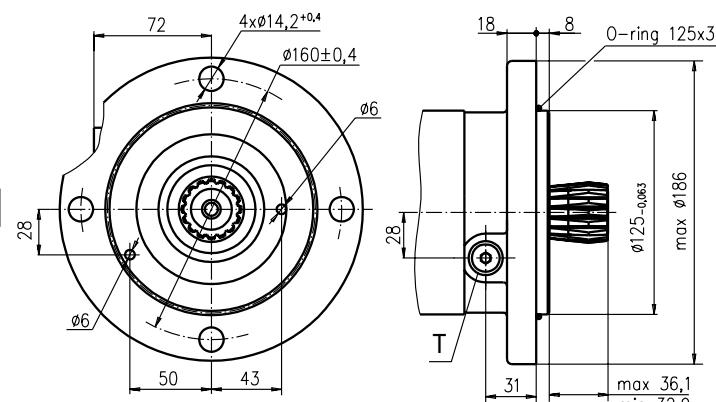
Porting

Side Ports

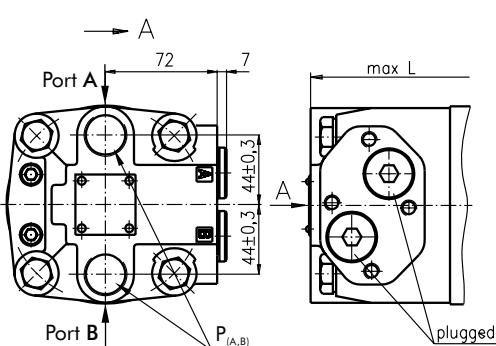


Mounting

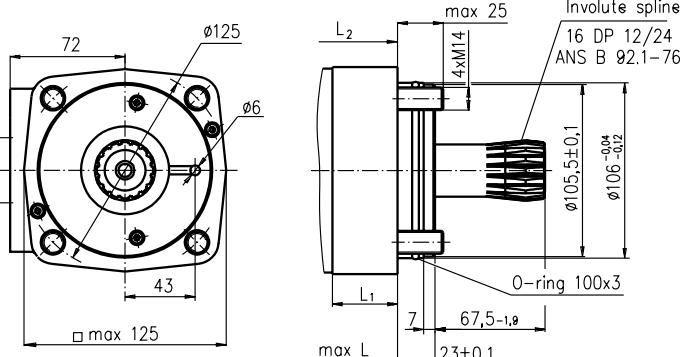
S - Short Mount



E - Rear Ports



V - Very Short Mount



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_(A,B): 2xG3/4 or 2xM27x2-17 mm depth

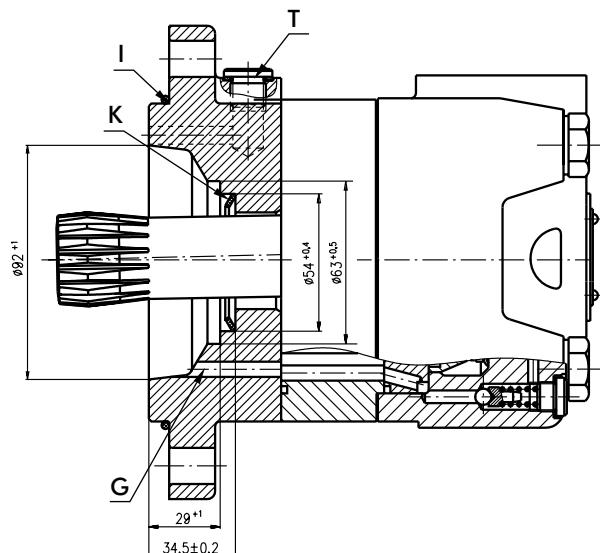
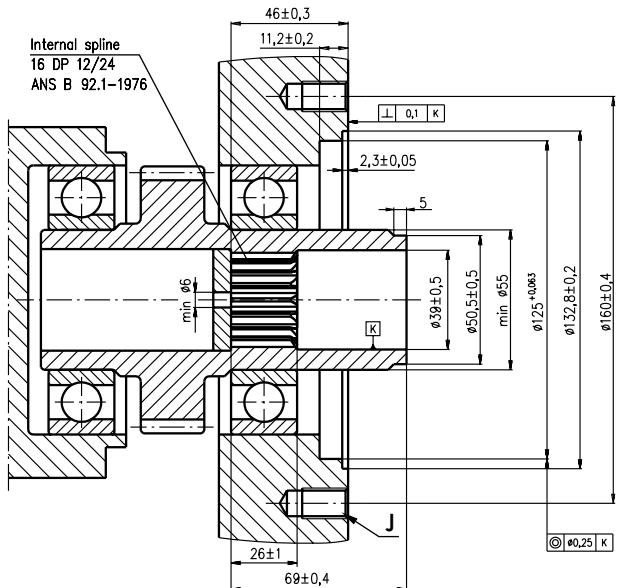
T: G 1/4 or M14x1,5 - 12 mm depth (plugged)

Type	L, mm	Type	L, mm	L ₂ , mm	Type	L, mm	Type	L, mm	L ₂ , mm	*L ₁ , 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 L₁.

DIMENSIONS OF THE ATTACHED COMPONENT

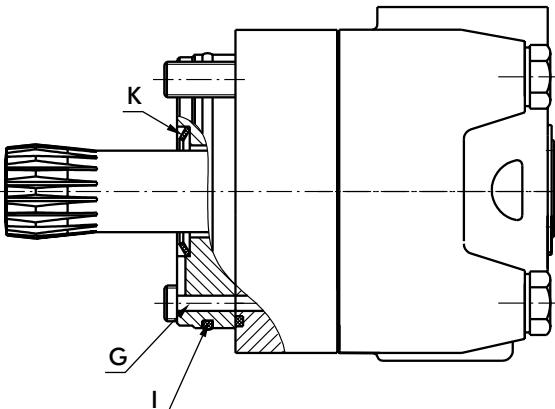
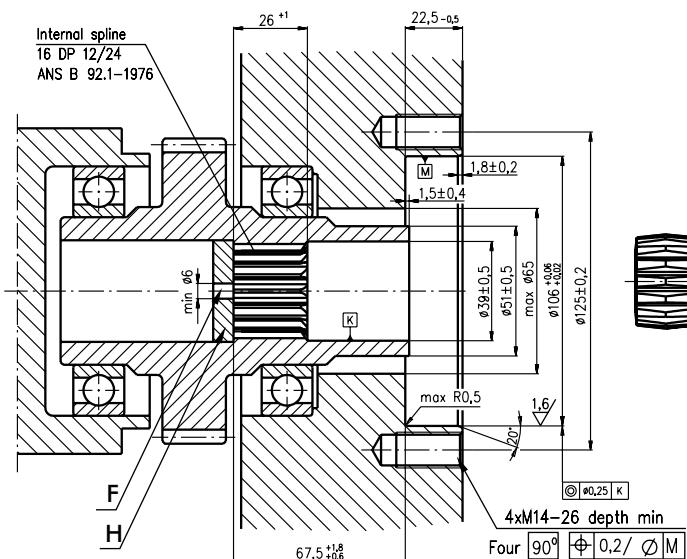
MTS



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

I: O- Ring 125x3mm
 J: 4xM12-18 mm depth, 90°
 K: Conical seal ring
 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
 K: Conical seal ring

DRAIN CONNECTION

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

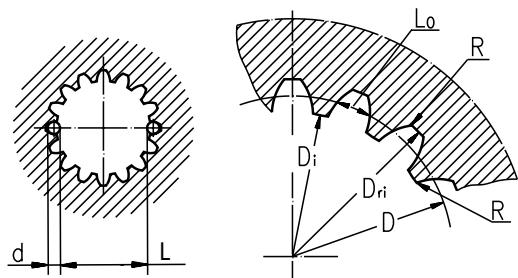
- For MTS at the drain port of the motor;
- For MTV at the drain connection of the attached component. The maximum pressure in the drain line is limited by the attached component and its shaft seal.

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 ANS 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 _{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 0,5
Max. Measurement between Pin	L 26,9 ^{+0,10}
Pin Dia.	d 4,835 ± 0,001

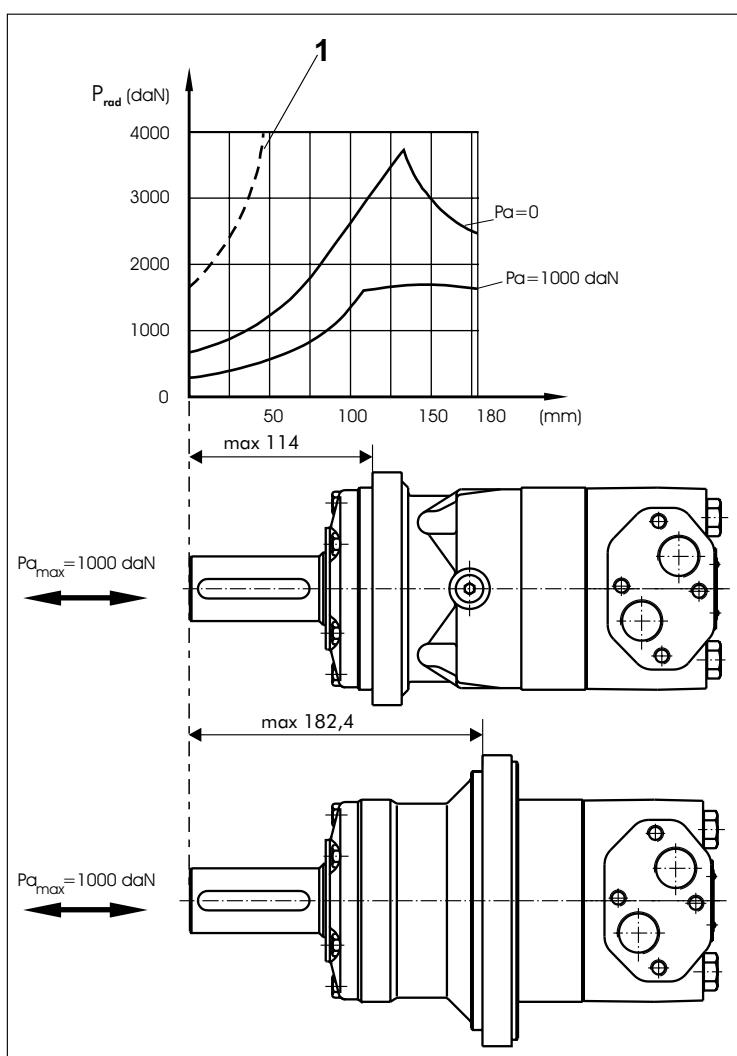


Hardening Specification:
HV=750±50 on the surface
HV=560 at 0,7±0,2 mm case depth
Material 20 MoCr4 EN 10084 or better

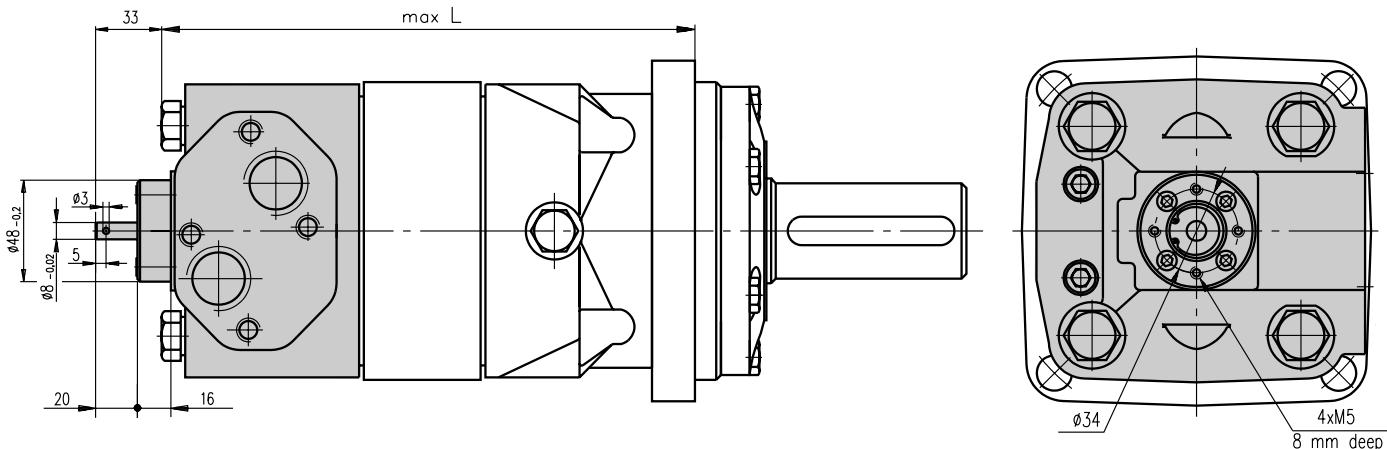
PERMISSIBLE SHAFT LOADS

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

M T	1	2	3	4	5	6	7	8

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 [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** - 631,2 [cm³/rev]**725** - 724,3 [cm³/rev]

Pos.4 - Shaft Extensions*

omit - for **S** and **V** mounting flange**C** - Ø40 straight, Parallel key A12x8x70 DIN6885**CO** - Ø1½" straight, Parallel key ¾"x¾"x2¼" BS46**K** - Ø45 tapered 1:10, Parallel key B12x8x28 DIN6885**SL** - Ø34,85 p.t.o. DIN 9611 Form 1**SH** - Ø1½" splined 17T ANS 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!

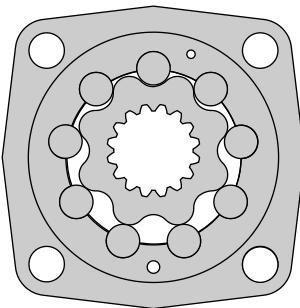
The hydraulic motors are mangano-phosphatized as standard.

HYDRAULIC MOTORS MV



APPLICATION

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



CONTENTS

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Dimensions and mounting	48
Dimensions and mounting- MVS	49
Dimensions and mounting- MVV	50
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Tacho connection	51
Shaft extensions	52
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OPTIONS

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

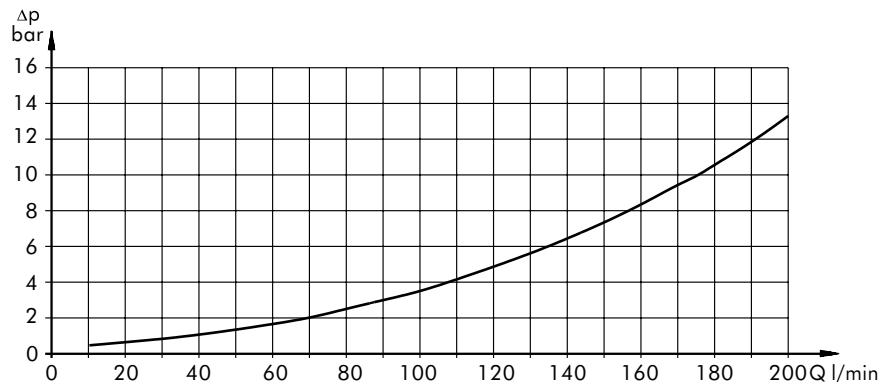
GENERAL

Displacement, [cm ³ /rev.]	314,5÷801,8
Max. Speed, [RPM]	250÷510
Max. Torque, [daNm]	92÷188
Max. Output, [kW]	42,5÷53,5
Max. Pressure Drop, [bar]	160÷200
Max. Oil Flow, [l/min]	160÷200
Min. Speed, [RPM]	5÷10
Permissible Shaft Loads, [daN]	P _a =1500
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	3
	35	2
210	20	6
	35	4

Pressure Losses



SPECIFICATION DATA

Type	MV 315	MV 400	MV 500	MV 630	MV 800
Displacement [cm ³ /rev.]	314,5	400,9	499,6	629,1	801,8
Max. Speed, [RPM]	cont. Int.*	510 630	500 600	400 480	315 380
Max. Torque [daNm]	cont. Int.* peak**	92 111 129	118 141 164	146 176 205	166 194 221
Max. Output [kW]	cont. int.*	42,5 51	53,5 64	53,5 64	48 56
Max. Pressure Drop [bar]	cont. Int.* peak**	200 240 280	200 240 280	200 240 280	180 210 240
Max. Oil Flow [l/min]	cont. Int.*	160 200	200 240	200 240	200 240
Max. Inlet Pressure [bar]	cont. Int.* peak**	210 250 300	210 250 300	210 250 300	210 250 300
Max. Return Pressure without Drain Line or Max. Pressure in Drain Line, [bar]	cont. 0-100 RPM cont. 100-300 RPM cont. >300 RPM Int.* 0-max. RPM	60 30 20 75	60 30 20 75	60 30 20 75	60 30 20 75
Max. Return Pressure with Drain Line [bar]	cont. Int.* peak**	140 175 210	140 175 210	140 175 210	140 175 210
Max. Starting Pressure with Unloaded Shaft, [bar]	8	8	8	8	8
Min. Starting Torque [daNm]	at max. press. drop cont. at max. press. drop Int.*	71 85	91 109	113 136	133 155
Min. Speed***, [RPM]		10	9	8	6
Weight, avg. [kg]	MV MWW MVS	31,8 32,4 22,7	32,6 33,2 23,5	33,5 34,1 24,4	34,9 35,5 25,6
					36,5 37,1 27,7

* Int. Периодическая работа: допустимые значения по длительности не более 10% каждую минуту.

** Peak load Пиковая нагрузка: допустимые значения по длительности не более 1% каждую минуту.

*** Для скорости 5 RPM или ниже, консультируйтесь с производителем или региональным представителем

1. Прерывистая скорость вращения и резкие перепады давления не должны происходить одновременно

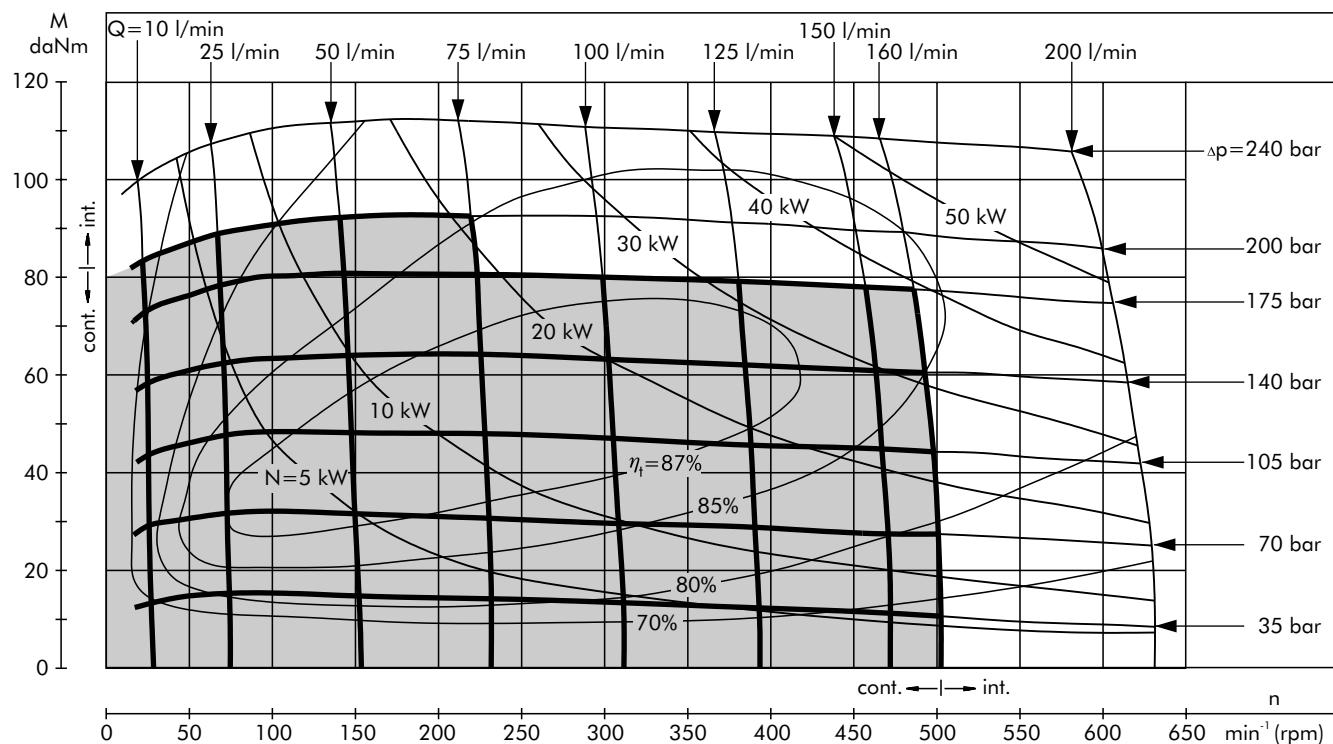
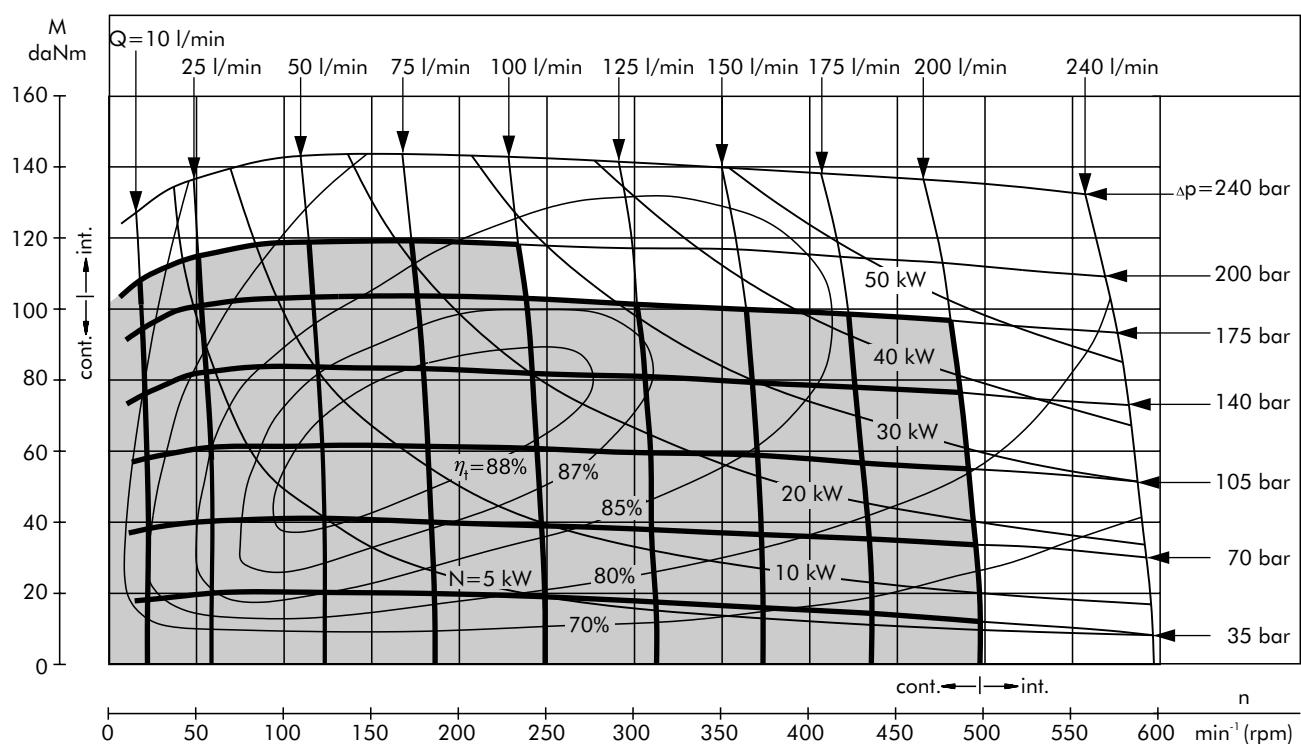
2. Рекомендуемая тонкость фильтрации по ISO 20/16. Абсолютная фильтрация 25 мкм либо тоньше.

3. Рекомендуется использование высококачественного гидравлического масла противоизносного типа на минеральной основе HLP(DIN51524) or HM (ISO 6743/4). При использовании синтетических жидкостей проконсультируйтесь с производителем альтернативных материалов уплотнений.

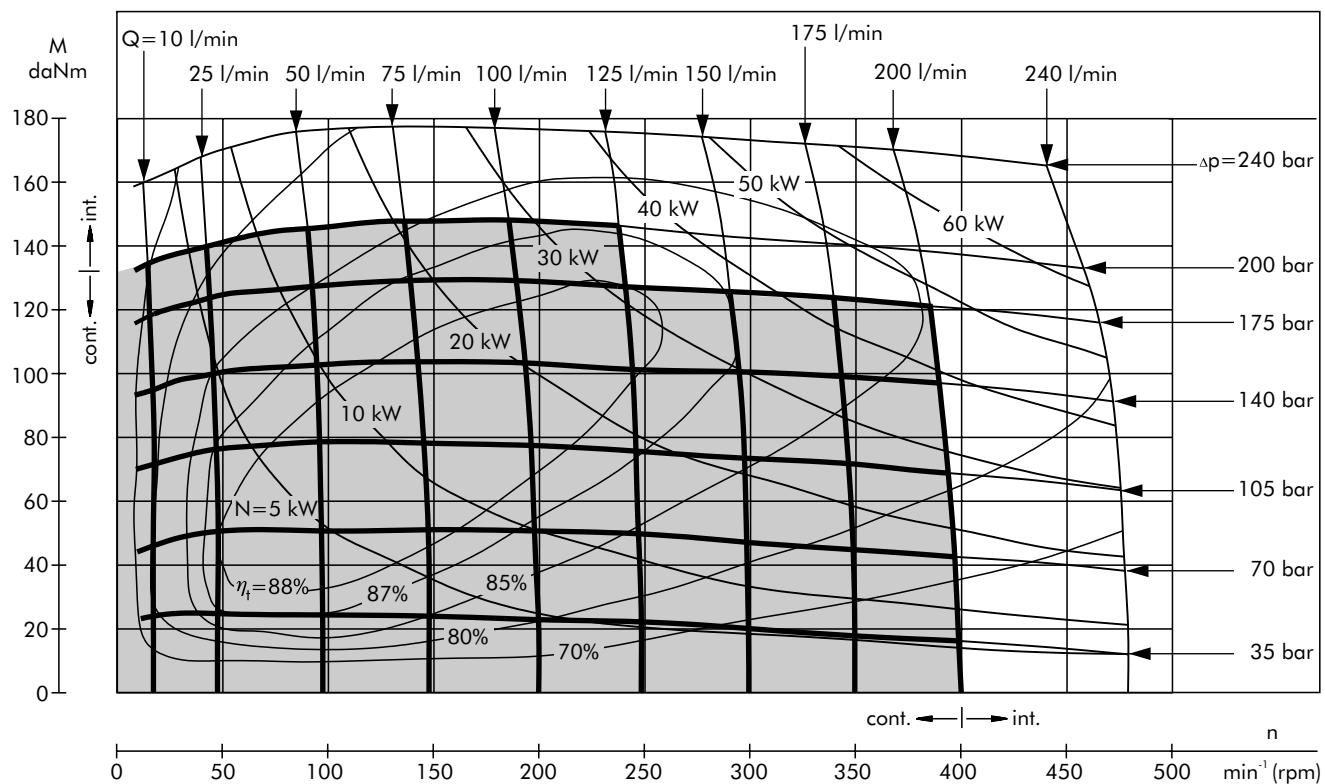
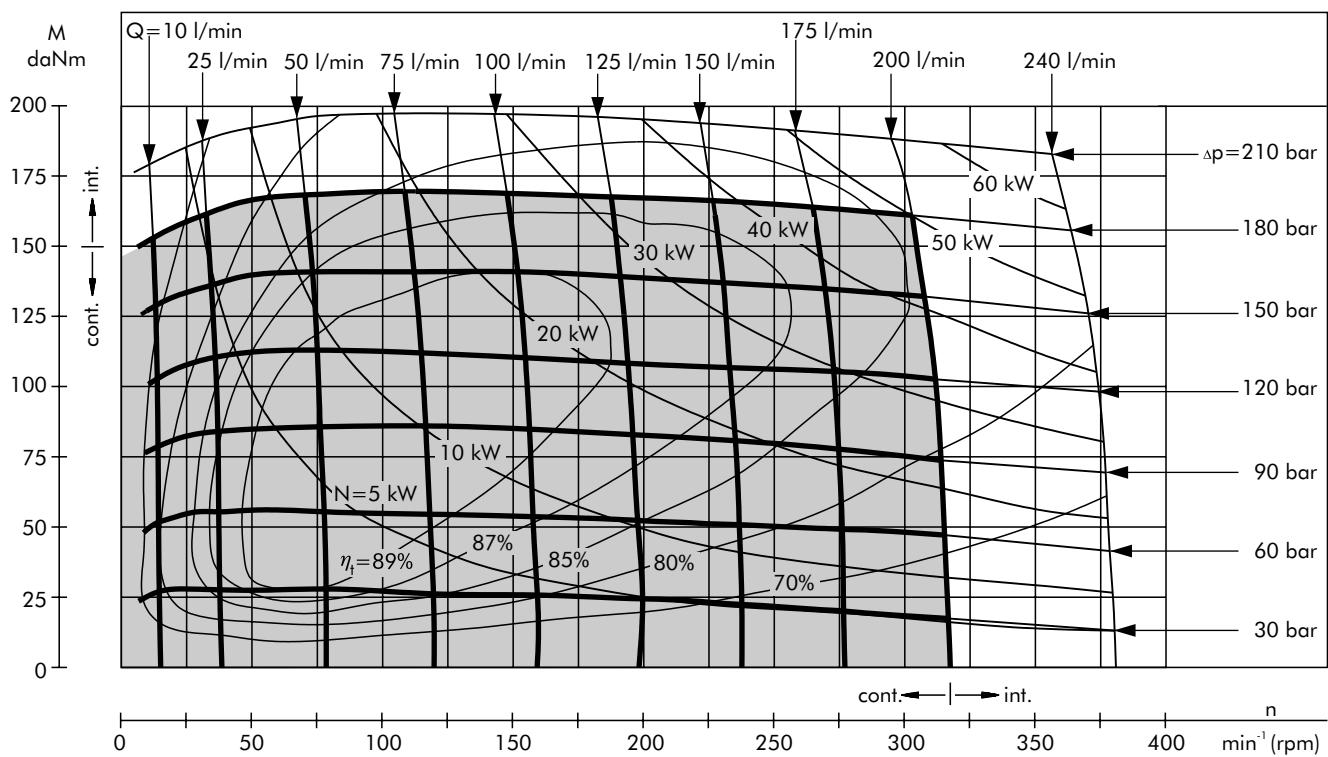
4. Рекомендуемая минимальная вязкость масла 13 mm²/s при температуре 50°C.

5. Рекомендуемая максимальная рабочая температура в системе составляет 82°C.

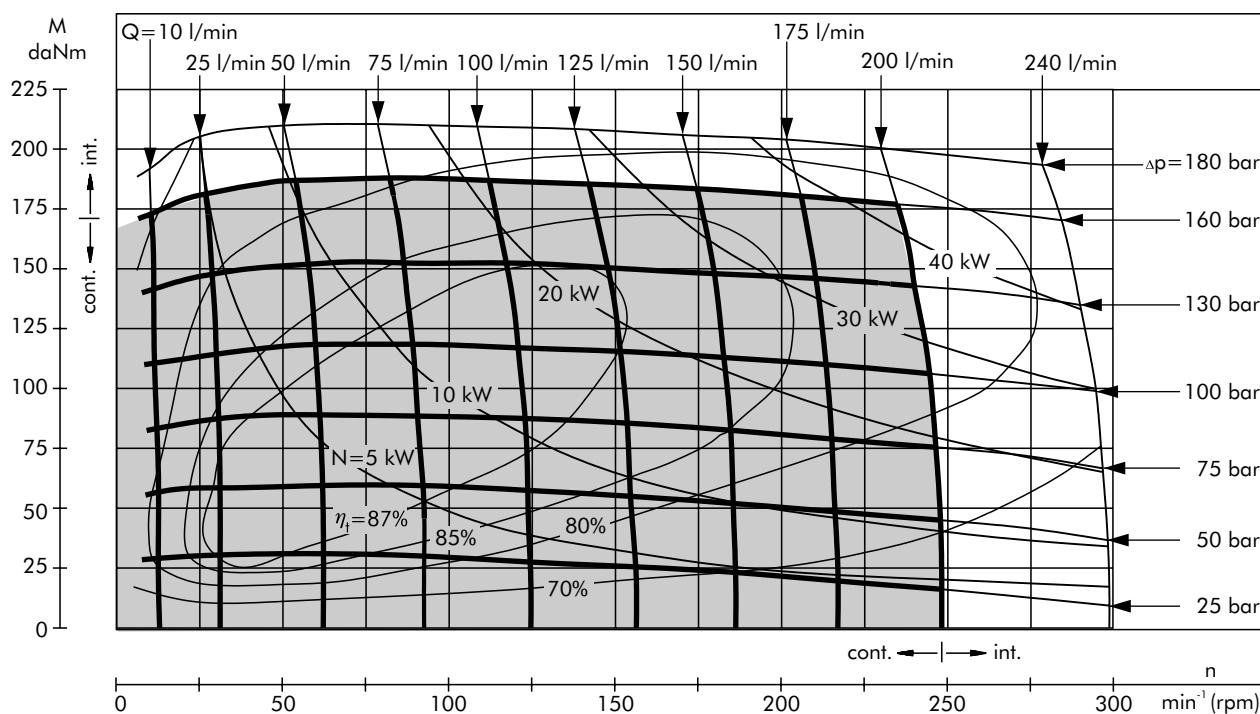
6. Для того, чтобы обеспечить максимальный срок службы мотора, перед первым запуском необходимо заполнить маслом и обкатать при умеренной нагрузке и скорости в течение 10-15 минут.

FUNCTION DIAGRAMS
MV 315

MV 400


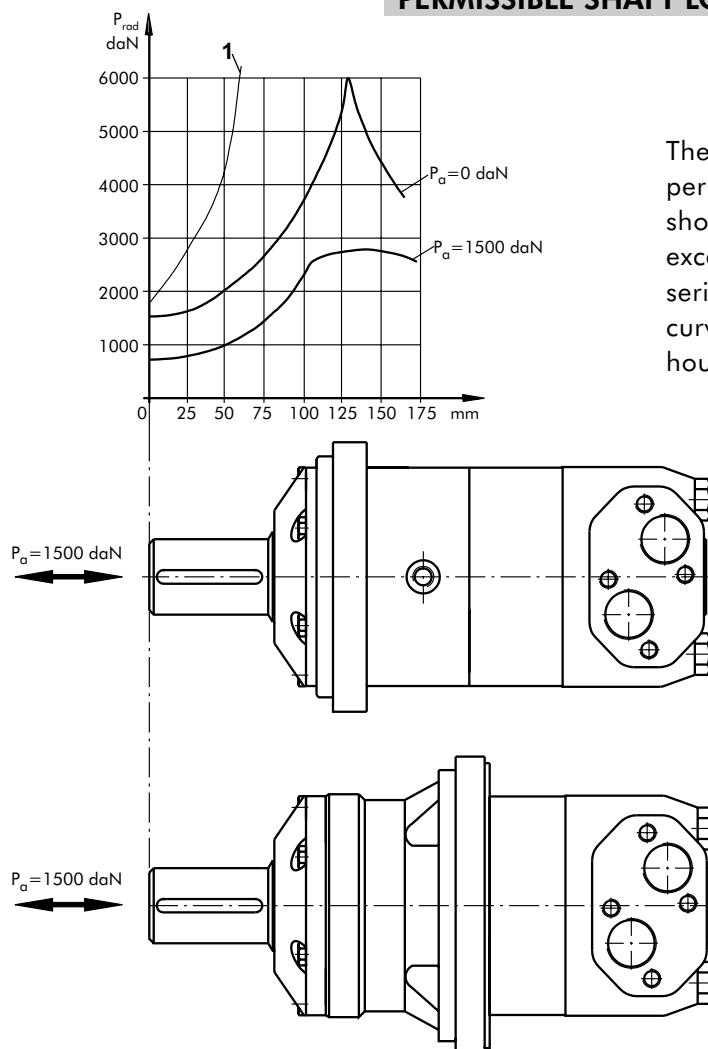
The function diagrams data was collected at back pressure 5÷10 bar
and oil with viscosity of 32 mm²/s at 50° C.

FUNCTION DIAGRAMS
MV 500

MV 630


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

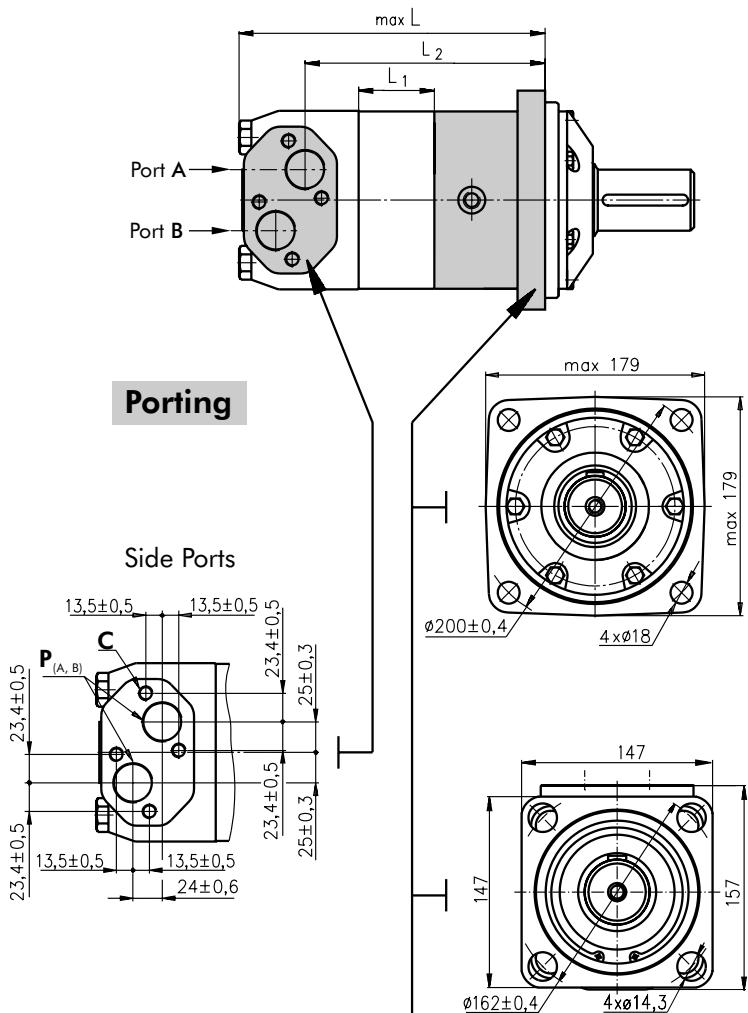
MV 800**FUNCTION DIAGRAMS**

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

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.

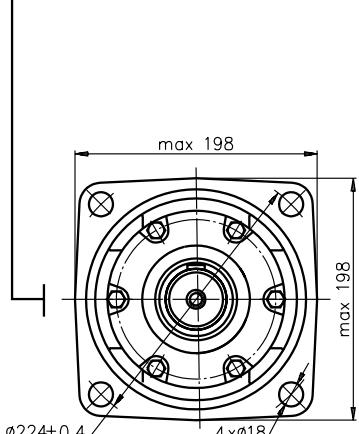
DIMENSIONS AND MOUNTING DATA



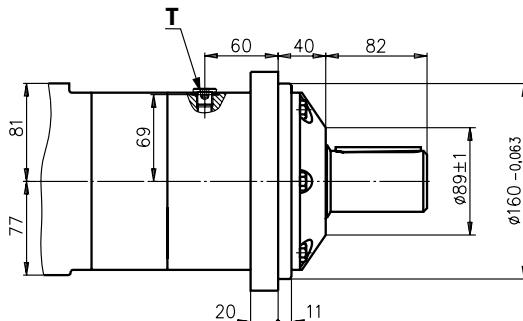
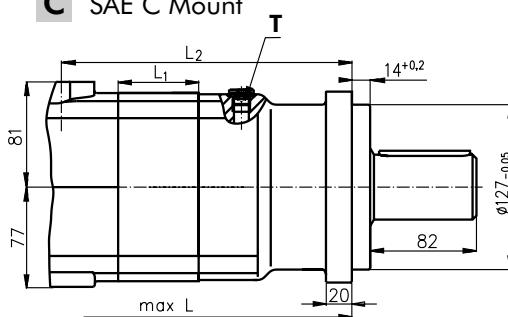
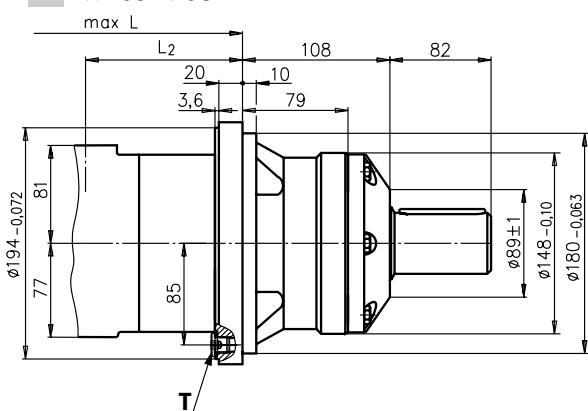
C: 4xM12- 12 mm depth
P_(A,B): 2xG1 - 20 mm depth
T: G 1/4 - 12 mm depth

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

**Mounting**

Square Mount (4 Holes)

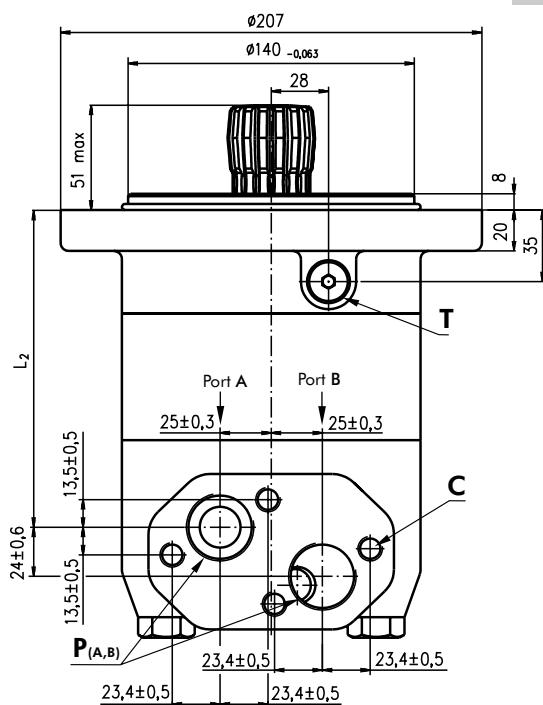
**C SAE C Mount****W Wheel Mount**

Type	L, mm	L ₂ , mm	Type	L, mm	L ₂ , mm	Type	L, mm	L ₂ , mm	*L ₁ , mm
MV 315	214,5	160	MVC 315	238,25	184,26	MVW 315	146	92	21,5
MV 400	221,5	167	MVC 400	245,25	191,26	MVW 400	153	99	28,5
MV 500	229,5	175	MVC 500	253,25	199,26	MVW 500	161	107	36,5
MV 630	240,0	186	MVC 630	263,75	209,76	MVW 630	172	118	47,0
MV 800	254,0	200	MVC 800	277,75	223,76	MVW 800	185	132	61,0

* The width of the roll-gerotor is 4 mm greater than L₁.

DIMENSIONS AND MOUNTING

S Short Mount



C: 4xM12- 12 mm depth

P_(A,B): 2xG1 - 20 mm depth

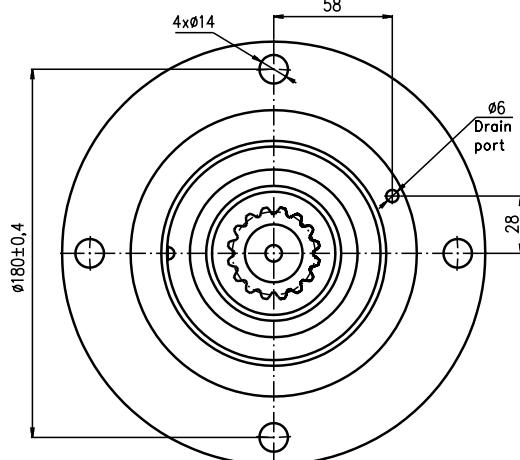
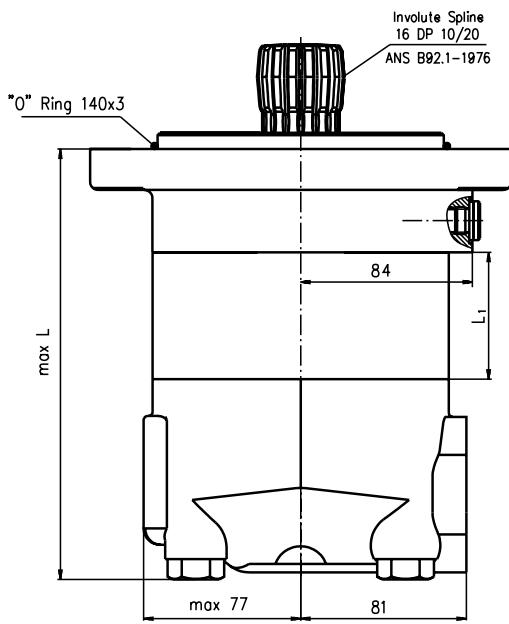
T: G 1/4 - 12 mm depth

Type	L, mm	*L ₁ , mm	L ₂ , mm
MVS 315	171	22,0	117
MVS 400	179	29,0	124
MVS 500	186	37,0	132
MVS 630	197	47,5	143
MVS 800	211	61,5	157

* The width of the gerolor is 4 mm greater than L₁.

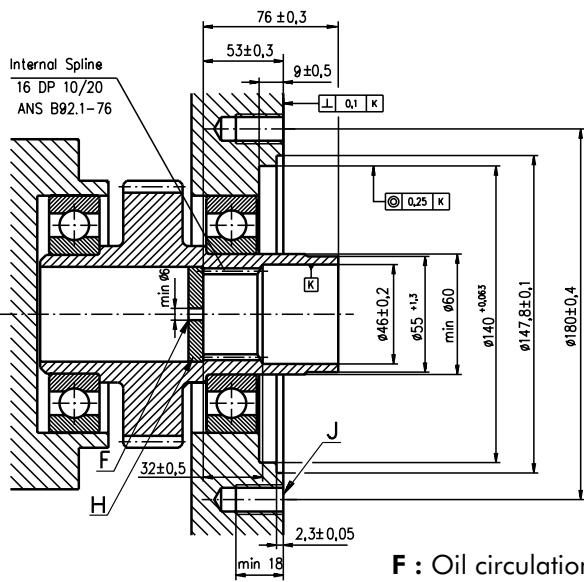
Standard Rotation
Viewed from Shaft End
Port A Pressurized - CW
Port B Pressurized - CCW

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



DIMENSIONS OF THE ATTACHED COMPONENT

MVS

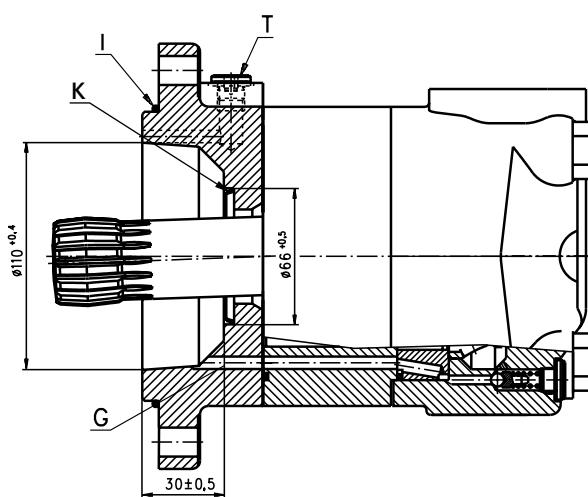


F : Oil circulation hole

G: Internal drain channel

H: Hardened stop plate

I : O- Ring 140x3mm



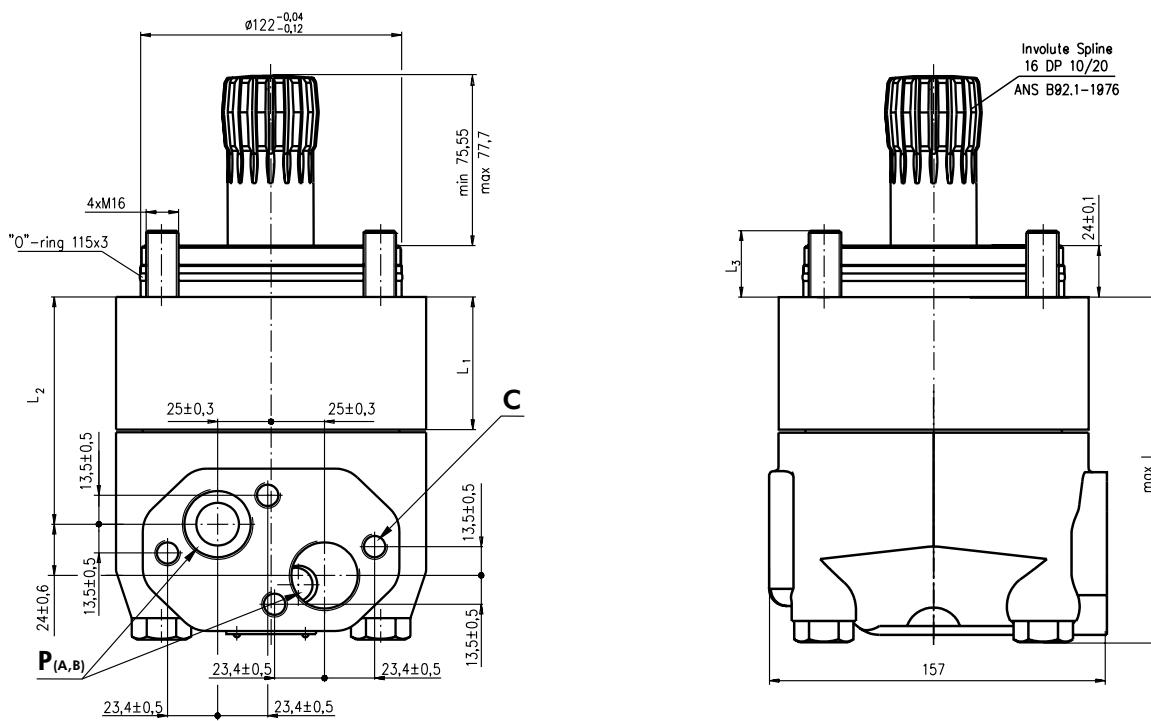
J: 4xM12-18 mm depth, 90°

K: Conical seal ring

T: Drain connection G1/4 - 12 mm depth

DIMENSIONS AND MOUNTING

V Very Short Mount



C: 4xM12- 12 mm depth

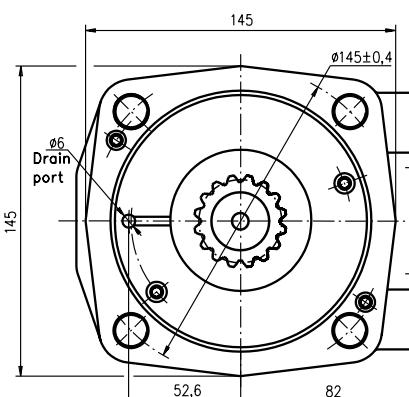
P_(A,B): 2xG1 - 20 mm depth

Type	L, mm	*L ₁ , mm	L ₂ , mm	L ₃ , mm
MVV 315	121,5	22,0	68,0	29,5
MVV 400	128,5	29,0	75,0	32,5
MVV 500	136,5	37,0	83,0	34,5
MVV 630	147,0	47,5	93,0	34,0
MVV 800	161,0	61,5	107,5	30,0

* The width of the roll-gerotor is 4 mm greater than L₁.

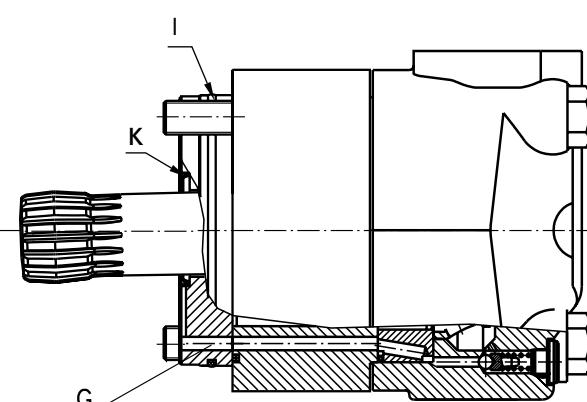
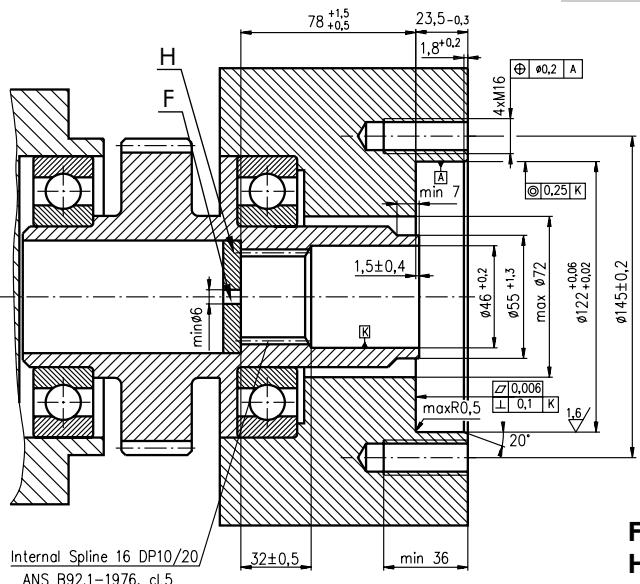
Standard Rotation
Viewed from Shaft End
Port A Pressurized - CW
Port B Pressurized - CCW

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



DIMENSIONS OF THE ATTACHED COMPONENT

MVV



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

I : O- Ring 115x3mm
K: Conical seal ring

DRAIN CONNECTION

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

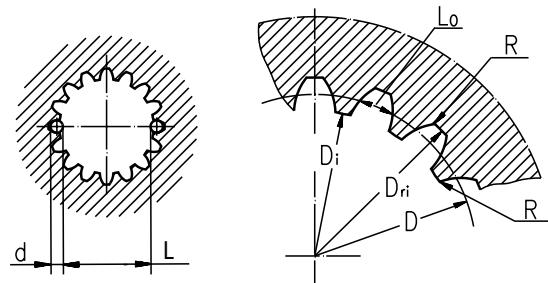
- For MVS at the drain port of the motor;
- For MVV at the drain connection of the attached component. The maximum pressure in the drain line is limited by the attached component and its shaft seal.

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

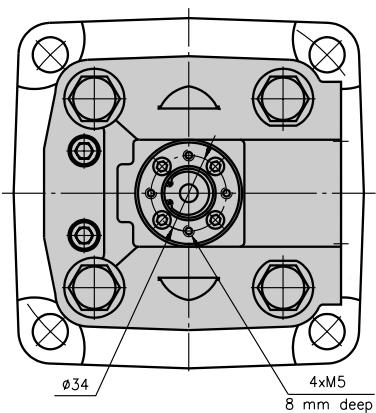
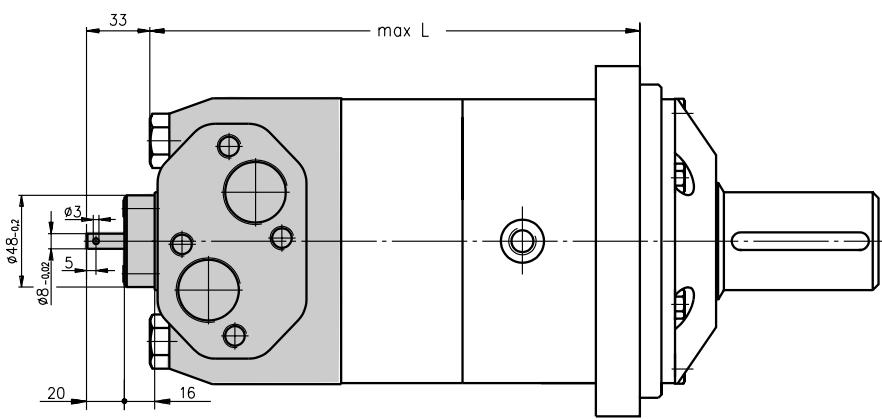
Standard ANS B92.1-1976, class 5
[$m=2.54$; corrected $x.m=+1,0$]

Fillet Root Side Fit	mm
Number of Teeth	$z = 16$
Diametral Pitch	DP 10/20
Pressure Angle	30°
Pitch Dia.	$D = 40,640$
Major Dia.	$D_{ri} = 45,2^{+0,4}$
Minor Dia.	$D_i = 38,5^{+0,039}$
Space Width [Circular]	$L_o = 5,18 \pm 0,037$
Fillet Radius	$R_{min} = 0,4$
Max. Measurement between Pin	$L = 32,47^{+0,15}$
Pin Dia.	$d = 5,6 \pm 0,001$



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

MOTOR WITH TACHO CONNECTION



MOTOR SPECIAL FEATURES

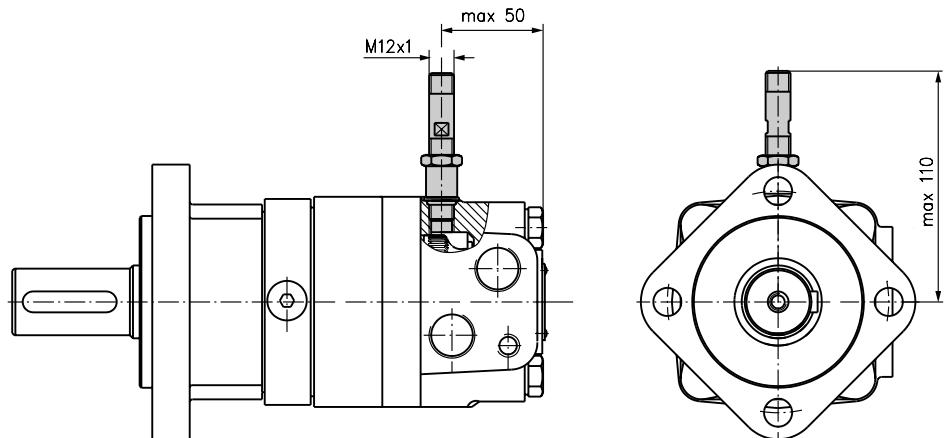
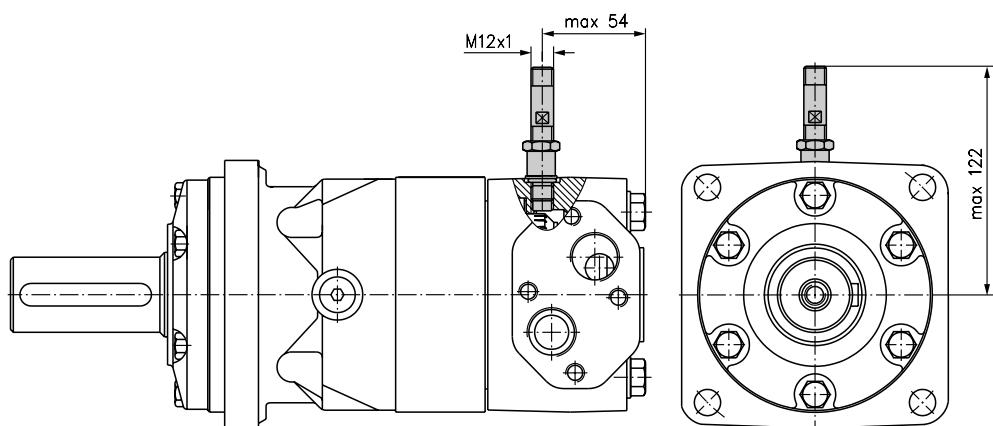
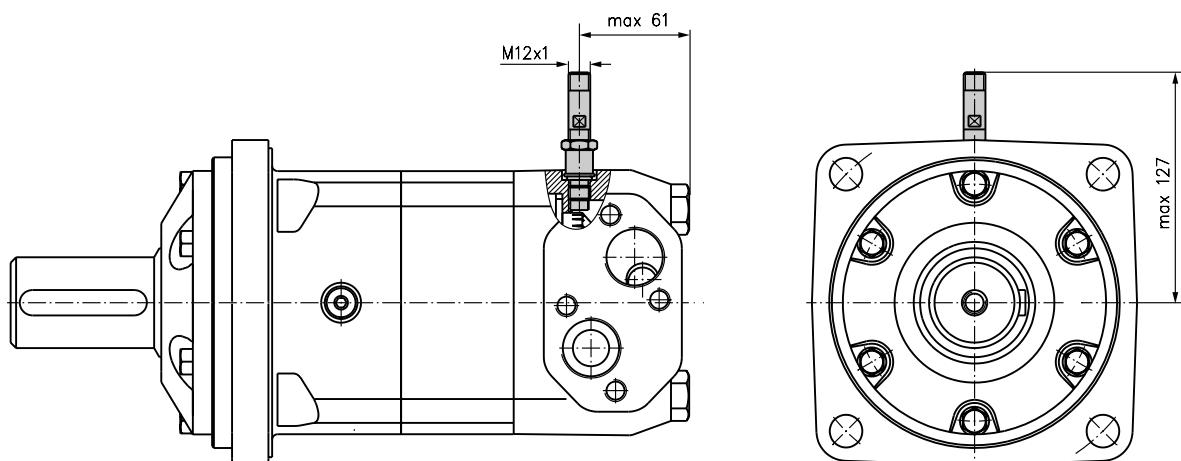
Special Feature Description	Order Code	Motor type			
		MS	MSY	MT	MV
Motor for Speed Sensor*	RS	○	○	○	○
Tacho Connection**	T	○	○	○	○
Low Leakage	LL	○	○	○	○
Low Speed Valving	LSV	○	○	○	○
Reverse Rotation	R	○	○	○	○
Paint***	P	○	○	○	○
Corrosion Protected Paint***	PC	○	○	○	○
Check Valves		S	S	S	S

○ Optional
S Standard

* for sensor ordering see pages 54-55.

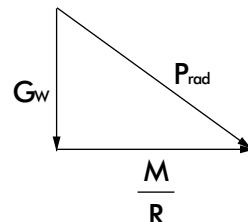
** only for side ports.

*** color at customer's request.

MOTORS WITH SPEED SENSOR**MS(Y)...RS****MT...RS****MV...RS**

9. Radial motor loading: P_{rad} , [daN]

When motor is used for vehicle motion with wheels mounted directly on motor shaft, the total radial loading of motor shaft P_{rad} is a sum of motion force and weight force acting on one wheel.



G_w - Weight held by wheel;

P_{rad} - Total radial loading of motor shaft;

M/R - Motion force.

$$P_{rad} = \sqrt{G_w^2 + \left(\frac{M}{R}\right)^2}$$

In accordance with calculated loadings the suitable motor from the catalogue is selected.

DRAINAGE SPACE AND DRAINAGE PRESSURE

Advantages in oil drainage from drain space: Cleaning; Cooling and Seal lifetime prolonging.

