MANNESMANN REXROTH

Hydraulic Motor (Radial Piston) Type MKM/MRM, Series 1X

Sizes 11 to 160	up to 315 bar	up to 161 cm³	up to 750 Nm

RE 15 190/02.92

Replaces: 10.90

– wide speed range

– control plate with backlash compensation

– smooth rotation even at very low speeds

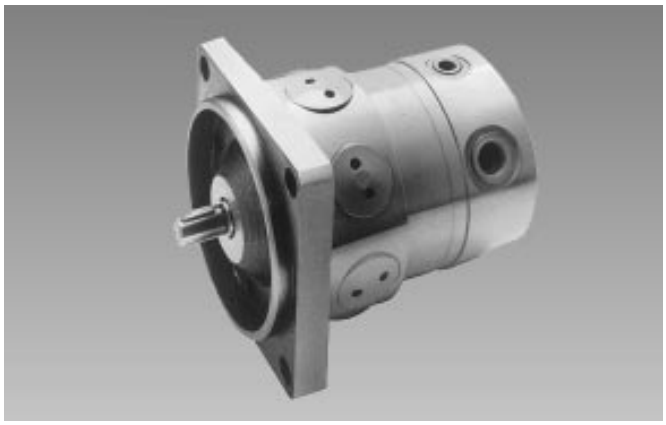
– extremely small moment of inertia permitting high reversal frequency

– very suitable for control applications

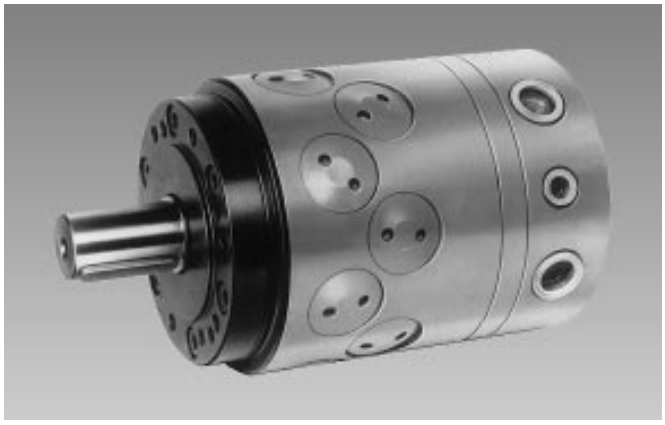
– suitable for fire resistant fluids

– very low operating noise level

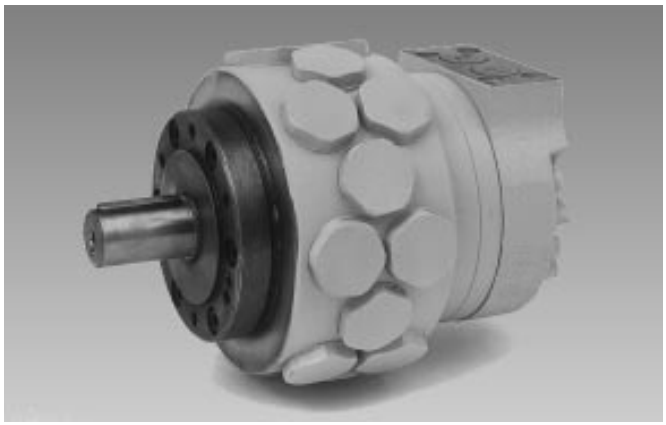
– model with:
  - shaft for tachometer
  - through shaft
  - built-on valves
  - brake (on request)



Type MKM 11 AZ 1X/M2 A0



Type MKM 40 AZ 1X/M1 A0



Type MKM 90 AZ 1X/M1 A1

Type MRM 160 AZ 1X/M1 A0

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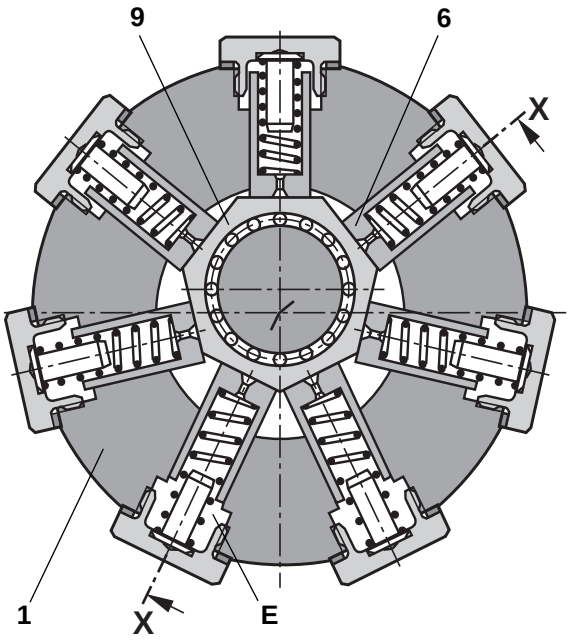
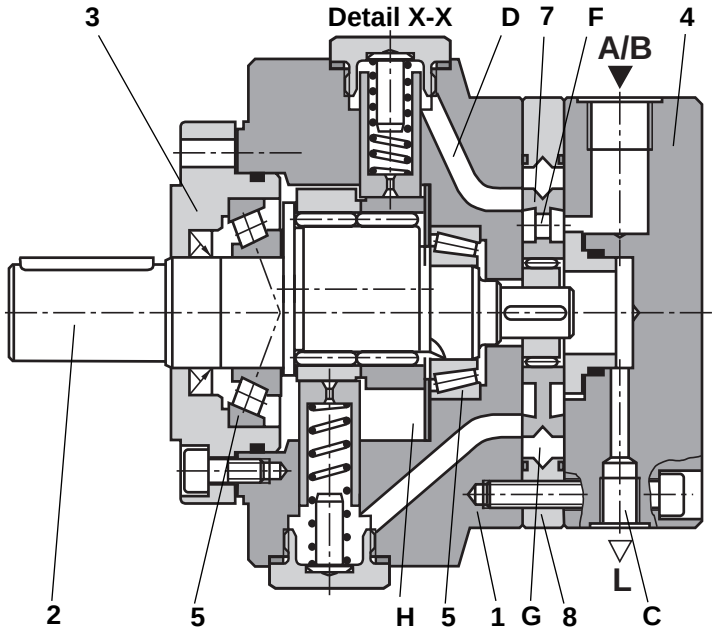
Functional Description, Section





Type MKM and MRM hydraulic motors are constant displacement external radial piston motors.

Structure
The chief components are housing (1), crankshaft (2), cover (3), locking cover (4), tapered roller bearings (5), pistons (6), control (7).

Transmission details
The radial pistons (6) act on the crankshaft (2) via needle bearings (9) or via heptagonal rings with needle bearings.
Crankshaft bearings:
pre-stressed, generously-proportioned tapered roller bearings (5) with inner rings facing.
Power transmission pistons (6) - crankshaft (2):
Via needle bearings (9) (or heptagon ring with needle bearings Low friction losses, very long life, not sensitive to contamination, also suitable for maximum pressures and motor speeds, high starting torque, no stick/slip at low motor speeds, minimal leakage and high efficiency.

Fluid operating medium, feed and return
The fluid is supplied to and carried away from the motor by way of ports A or B. The cylinder chambers (E) are filled or emptied by way of the control and the channels (D) in the housing (1).

Torque generation; operating stroke
The fluid medium in the cylinder chambers (E), which are at present connected to the supply, is placed under pressure. The pistons (6) are pushed from outside (external loading) on to the crankshaft eccentric (operating stroke) and the crankshaft rotates.

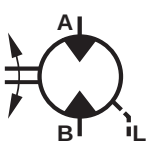
Return of fluid medium
The pistons (6), which are again pushed outwards by the rotation of the crankshaft (2) eccentric, expel the fluid from the cylinder chambers (E) which are at present connected to the return flow line.

Control
Construction:
Flat distributor plate with radial movement and pressure compensation to counter internal leakage and backlash-compensating seal against external leakage.
Purpose:
Distribution of incoming volumetric flow to the cylinder chambers, collection of return volumetric flow.
Operating principle:
The control plate (7) incorporates an inner annular area (F) and forms with the annulus (8) an external annular chamber (G). By offsetting the control plate (7) radially between the motor housing (1) and locking cover (4) with the help of the eccentric which is connected firmly relative to the crankshaft (2) in the inner and the outer annular areas are alternately brought into contact with the cylinders. The annular areas themselves open out into ports A or B on the outside.

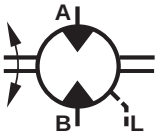
Leakages
Leakages occurring at pistons (6) and control (7) are collected up in the motor casing (H) and discharged via drain port (C).

Symbols

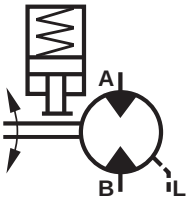
with 1st shaft end



with 2nd shaft end

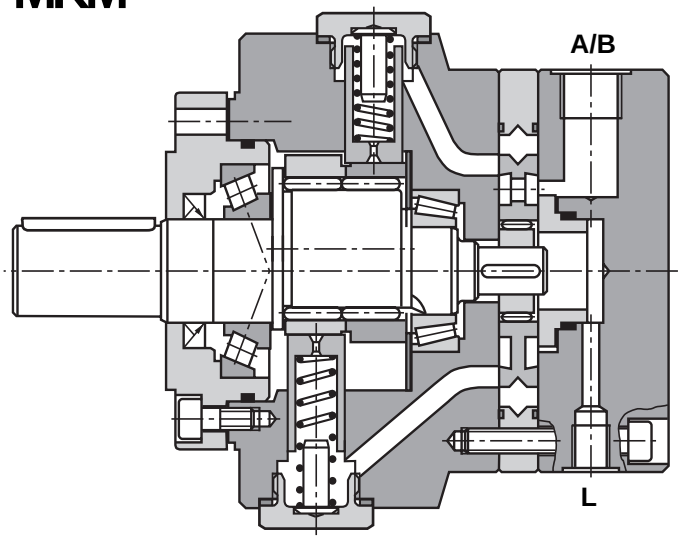


with brake (on request)



Motor types | **Caracteristics**

MKM



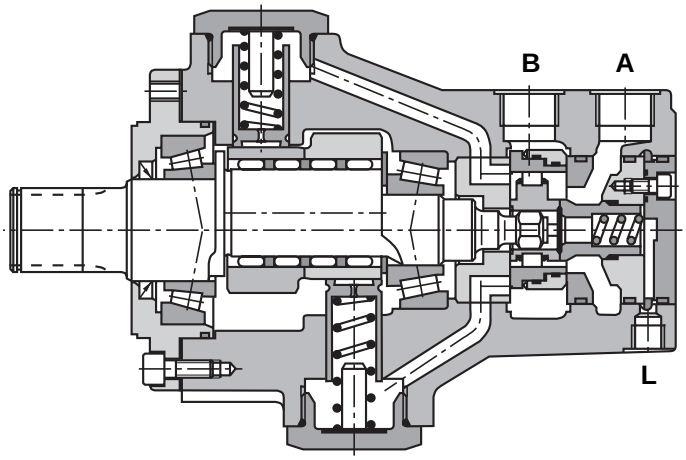
Transmission

- 7, 14 or 21 radial arrangement pistons
- Power transmission piston - crankshaft: by means of pistons ia needle bearings or heptagonal ring with needle bearings

Control

- needle bearings between control plate and eccentric.
- flat distributor with radial movement and balanced sealing to reduce leakage.
- hydrostatic contact pressure plate with spring back-up.
- reduction in external leakage with minimal friction losses

MRM



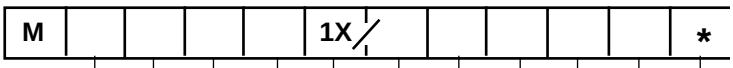
Transmission

- 5 or 10 radially arranged pistons
- power transmission piston - crankshaft: by means of hydrostatically balanced pistons and pentagonal ring with needle bearings

Control

- Roller bearings between control rings and eccentric
- Flat distributor with radial movement and backlash compensation
- Hydrostatic contact with spring back-up between control rings and flat surfaces
- Hydrostatic backlash compensation at eccentric flat surfaces, with spring back-up
- Reliable backlash compensation even at high reversing frequencies
- Only very slight leakage with minimal friction losses
- Miniaturised change-over valve: ensures that it is always the higher of the pressures in the vicinity of the motor which is present in the annular area between the control rings.

Order codes



Motor type
Standard motor (size 11, 20, 32, 40, 63, 90, 110) **= KM**
Motor with running clearance (size 80, 125, 160) **= RM**

Displacement – size

11 cm³ = size 11	**= 11**
20 cm³ = size 20	**= 20**
33 cm³ = size 32	**= 32**
40 cm³ = size 40	**= 40**
66 cm³ = size 63	**= 63**
81 cm³ = size 80 (RM)	**= 80**
89 cm³ = size 90	**= 90**
110 cm³ = size 110	**= 110**
126 cm³ = size 125 (RM)	**= 125**
161 cm³ = size 160 (RM)	**= 160**

1st shaft end
cylindrical, key DIN 6885 **= A**
Splined shaft DIN 5480 (motor type **MRM only**) **= K**
Internally splined shaft DIN 5480 (motor type **MKM only**) **= H**

2nd shaft end
without 2nd shaft end **= Z**
cylindrical 10 mm dia. for tacho connection **= M**
splined ,dia 28 mm DIN 5480 (motor type **MKM only**) **= M10-**

Series 10 to 19 (10 to 19, installation and connection dimensions remain unchanged) **= 1X**

M = NB Rseals, suitable for HLP mineral oil nach to 51 524 part 2
V = Viton seals suitable, for HFD for HFB and HFC-pressures reduced to 70%

Flange design
1 = face mounting, standard design (**not** for type MKM 11)
2 = flange mounting
3 = face mounting (**only** for sizes 32, 63, 90, 110)

Line connections
A0 = threaded connection radial
A1 = flanges connection radial (for sizes 80, 125, 160-SAE 3/4")
B5 = threaded connection axial (sizes **only** 20, 32, 40, 63, 90, 110)

Servo quality
No code = standard (size 11, 80, 125, 160)
E2 = reduced clearances (sizes **only** 32, 63, 90, 110)

Built-on valves/manifolds (only in conjunction with **A1 line**)
No code = no additional items
N = pressure feed valve (State pressure range in clear text)
N6 = pressure feed valve valve port size 6 to DIN 24 340
N10 = pressure feed valve valve port size 10 to DIN 24 340

furter information in clear text e. g. brakes/gear unit tacho/valves

Preferred Types (short term delivery)

MKM 11 AM 1X/VFA

MKM ... AZ 1X/M2 A0
MKM ... AZ 1X/M2 A1
MKM ... AM 1X/M2 A0
MKM ... AM 1X/M2 A1

MRM

MRM ... AZ 1X/M1 A0
MRM ... KZ 1X/M1 A0
MRM ... AM 1X/M1 A0
MRM ... KM 1X/M1 A0

Technical data (for applications outside these parameters please consult us)

General

Design			Radial piston motor, fixed displacement								
Type designation			MKM; MRM								
Type of mounting			Flange/face mounted								
Type of connection			Threaded/flange (depending on model)								
Installation position			Optional								
Shaft loading, bearing life			see page 6								
Moment of inertia	*J*	kg cm²	2,63	2,97	2,80	3,00	3,30	17	3,90	4,10	17	23
Weight	*m*	kg	12	14	17,4	16	18,8	40	21,4	21,4	40	58

Hydraulic

Size		*NG*		11	20	32	40	63	80	90	110	125	160
Displacement		*V*	cm³	11	20	33	40	66	81	89	110	126	161
Torque	specific theoretic	*T*	Nm/bar	0,17	0,32	0,52	0,64	1,05	1,29	1,41	1,75	2,00	2,56
	specific mean	*T*	Nm/bar	0,15	0,27	0,48	0,54	0,95	1,16	1,27	1,59	1,80	2,38
	continuous	*T*	Nm	21	27	76,8	54	152	290	178	223	360	595
	max.	*T*	Nm	31,5	43,2	120	86,4	237	365	266	334	567	750
Pressure difference	– continuous pressure	*Δp*	bar	140	100	160	100	160	250	140	140	200	250
	– operating pressure	*Δp*	bar	210	160	250	160	250	315	210	210	315	315
	– max. pressure*)	*Δp*	bar	250	200	315	200	315	400	250	250	350	400
Summated pressure at port A + B		*p*	bar	250	200	315	200	315	400	250	250	350	400
Case drain pressure		*p*	bar	1,5 bar (special seal for higher pressures on request)									
Speed range		*n*	rpm	10 to 3000	10 to 2000	10 to 1500	5 to 1500	5 to 1200	5 to 1000	5 to 900	5 to 750	5 to 800	5 to 1000
				Please refer to Operating Manual for speeds ≤ 20 rpm; depending on operating conditions minimum speeds of up to 0,1 rpm are possible in the closed loop control circuit.									
Max. power.		*P*	kW	9,8	9	18,8	13,5	29,7	38,2	25	26,2	47,5	78,5
				In continuous operation without motor flushing approx. 50 % of corner power can be achieved.									
Hydraulic fluid				HLP mineral oil to DIN 51 524 part 2									
				HFB and HFC fluids – reduce pressure to 70 %. Calculate bearing life accordingly.									
				HFD, Viton seals required.									
Hydraulic fluid Temperature range		*δ*	°C	– 30 to + 90									
Viscosity range		*v*	mm²/s	20 to 150 Recommended operating range 30 to 50 up to 1000 on start-up									
Fluid cleanliness				Max. permissible level of contamination of hydraulic fluid to NAS 1638 class 9. For this we recommend a filter with a minimum retention rate of $ß_{10} \geq 100$. To ensure longer life we recommend NAS 1638 class 8. Can be achieved using with minimum retention rate of $ß_5 \geq 100$.									

*) Definition to DIN 24 312 Maximum pressure = pressure curve which temporarily exceeds the maximum operating pressure and at which the motor continues to remain operable.

Bearing life, shaft strength

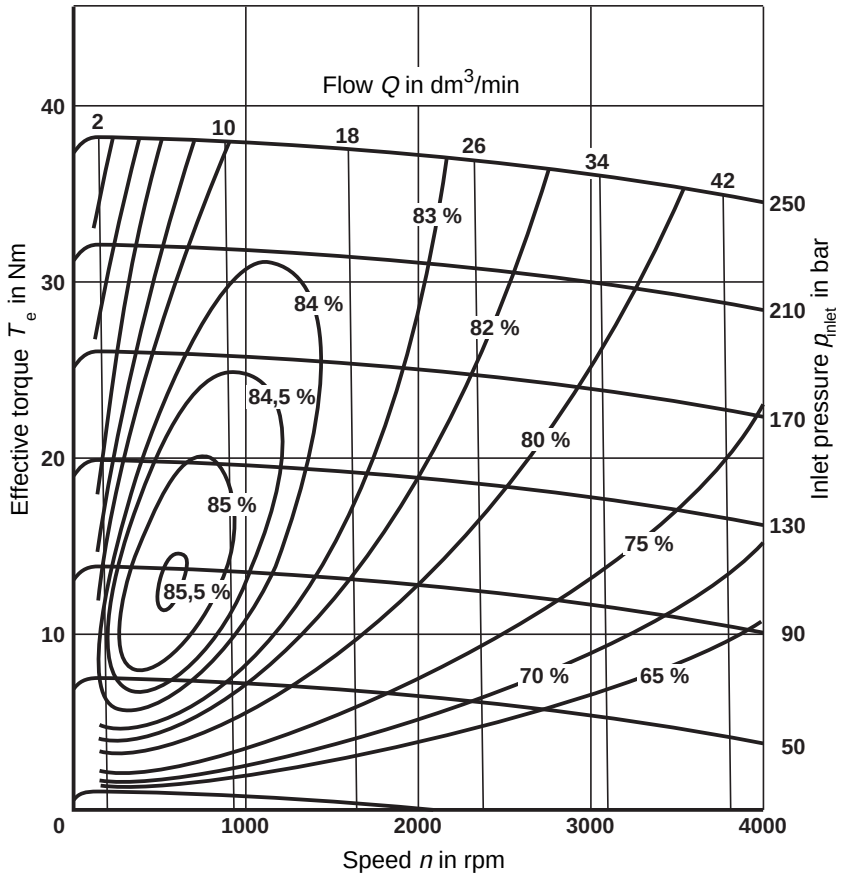
$L_{(n\text{-}hyd)10}$ is the modified nominal bearing life using mineral oil with a viscosity of v - 36 mm²/s in operating hours where 10% of the bearings may fail. 90% achieve a higher bearing life. The average mean bearing life $L_{(n\text{-}hyd)50}$ with mineral oil is approximately 5x$L_{(n\text{-}hyd)10}$. In practice a minimum of $L_{(n\text{-}hyd)50}$ can be expected for hydraulic drives with mineral oil. As the operating speed is incorporated in the calculation roughly as a proportionate figure, the table value is converted accordingly.

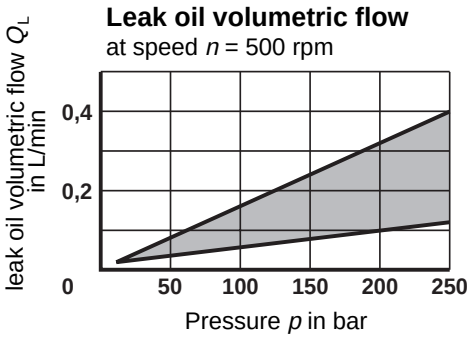
Type	Speed n in rpm	$L_{n\text{-}hyd10}$ in operating hours at pre-set pressure drop and speed With no external forces on drive shaft 100 bar	140 bar	160 bar	180 bar	210 bar	250 bar	315 bar
MKM 11	1000	100 000	91 945	58 914	39 784	23 799		
MKM 20	500	100 000	38 128	24 431				
MKM 40	500	12 785	4 165	2 668				
MKM 32	500	100 000	33 990	21 779	14 707	8 797	589	
MKM 63	350	15 022	4 101	2 628	1 774	1 061	593	
MKM 90	250	4 531	1 476	945	638	382		
MKM 110	250	4 531	1 476	945	638	382		
MRM 80	400	100 000	100 000	100 000	100 000	84 887	47 482	21 972
MRM 125	400	100 000	74 087	47 472	32 057	19 176	10 724	4 963
MRM 160	400	100 00	38 878	24 911	16 822	10 063	5 627	2 604

Type	Speed n in rpm	$L_{n\text{-}hyd10}$ in operating hours at pre-set pressure drop and speed MKM 11, 20, 40, 32, 63 max. permissible radial load at the centre of the output shaft 4500 N MKM 90, 110 max. permissible radial load at the centre of the output shaft 3000 N MRM 80, 125, 160 max. permissible radial load at the centre of the output shaft 10 000 N 100 bar	140 bar	160 bar	180 bar	210 bar	250 bar	315 bar
MKM 11	1000	5141	4588	4300	4014	3601		
MKM 20	500	6965	5697	4724				
MKM 40	500	6435	2763	1918				
MKM 32	500	4566	3320	2824	2406	1904	1412	
MKM 63	350	4993	2316	1650	1207	786	474	
MKM 90	250	3858	1349	880	602	365		
MKM 110	250	3858	1349	880	602	365		
MRM 80	400	88325	57527	46768	38288	28749	20102	11853
MRM 125	400	48594	26523	20102	15473	10731	6884	3659
MRM 160	400	42448	24433	17115	12345	7923	4712	2312

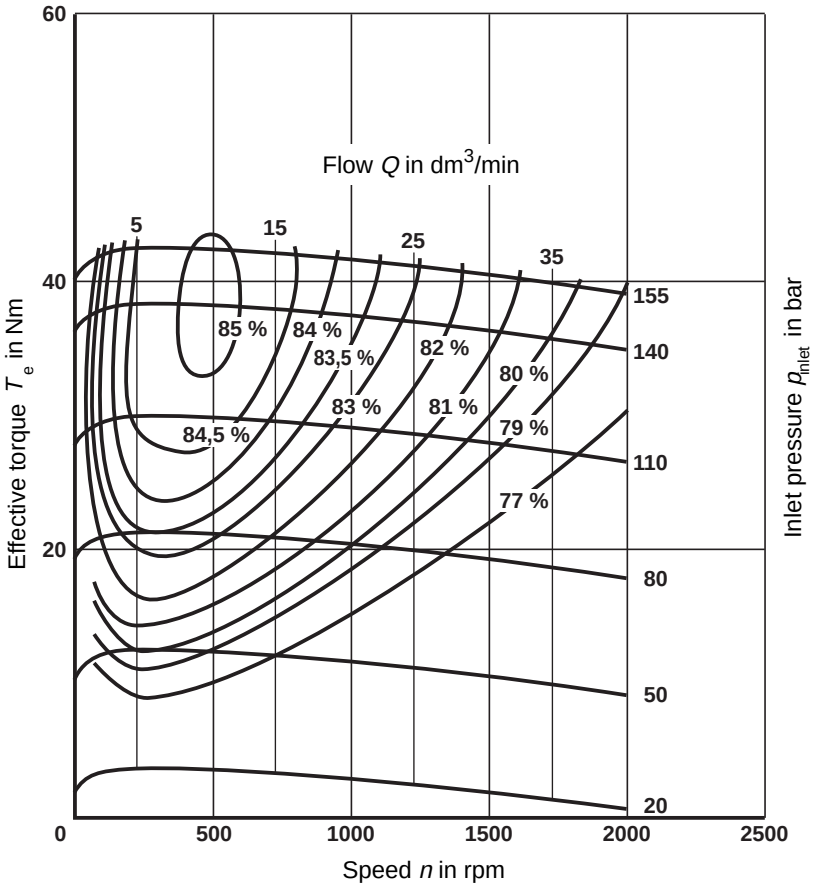
Performance curves (average value) measured at ν = 36 mm²/s; δ = 50 °C; p_{outlet} = 0 bar; $p_{leakage\ oil}$ = 0 bar

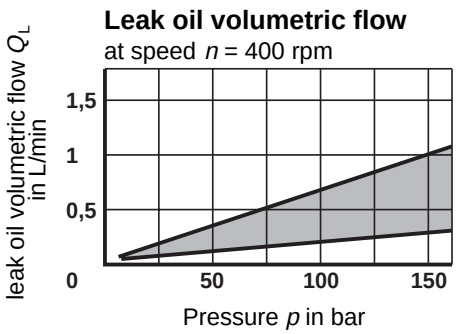
MKM 11





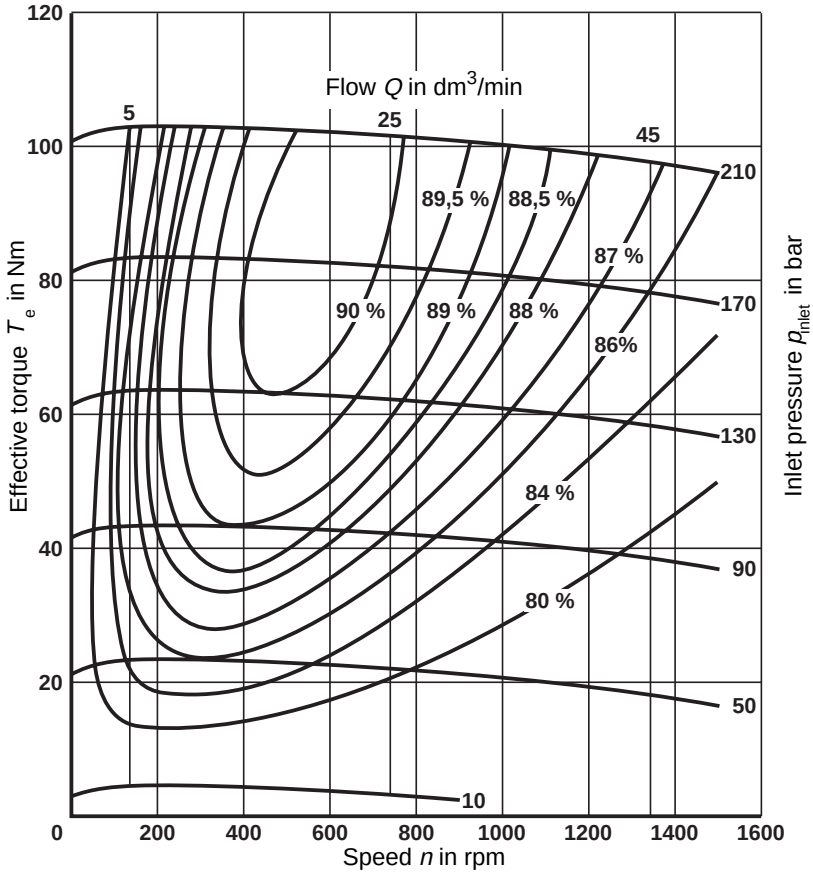
MKM 20



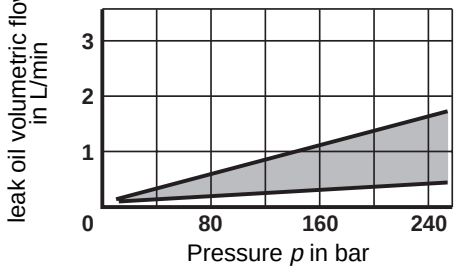


Performance curves (average value) measured at ν = 36 mm²/s; δ = 50 °C; p_{outlet} = 0 bar; $p_{leakage\ oil}$ = 0 bar

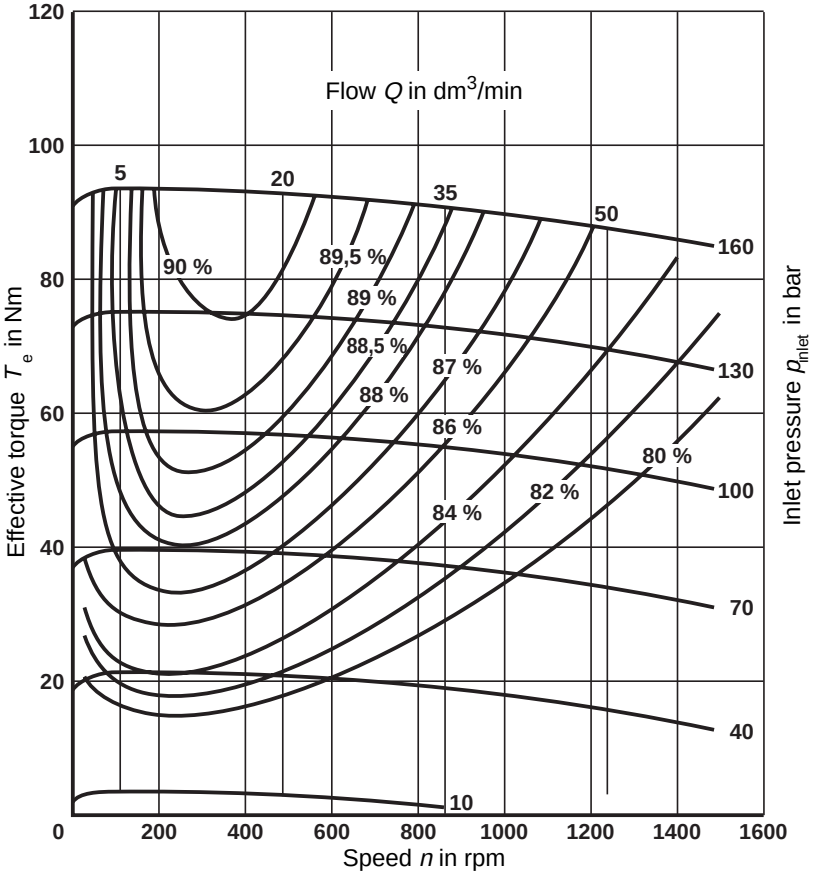
MKM 32



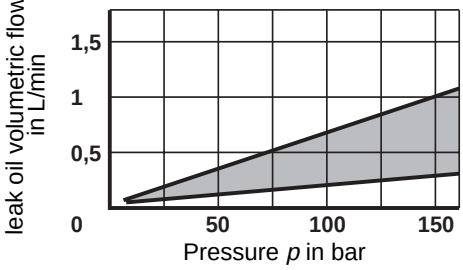
Leak oil volumetric flow
at speed n = 500 rpm



MKM 40

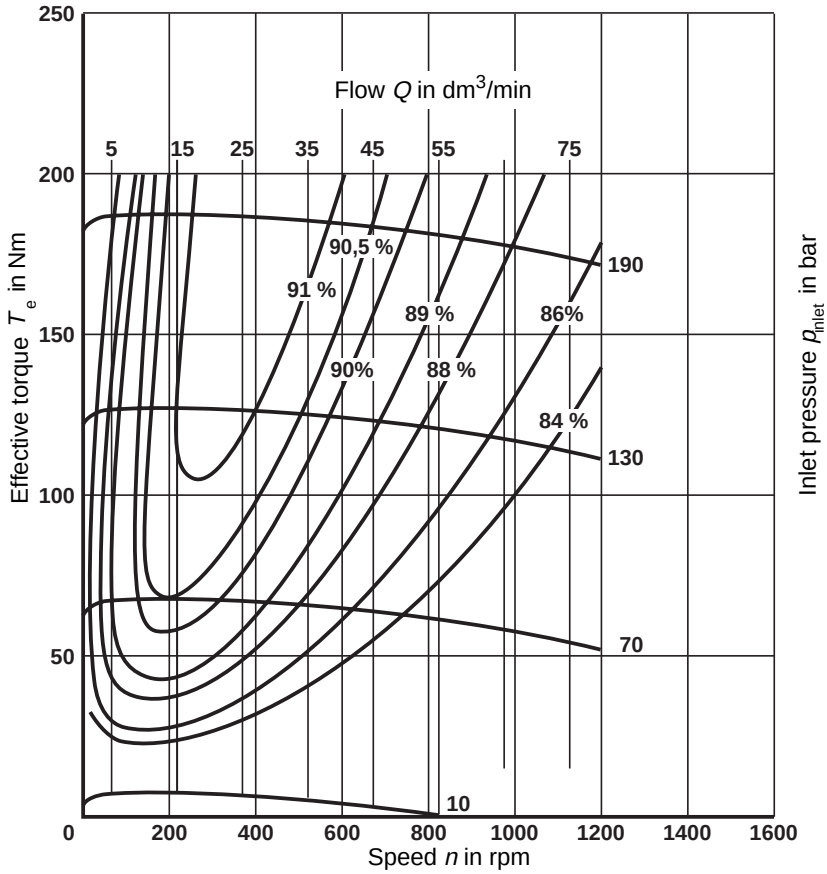


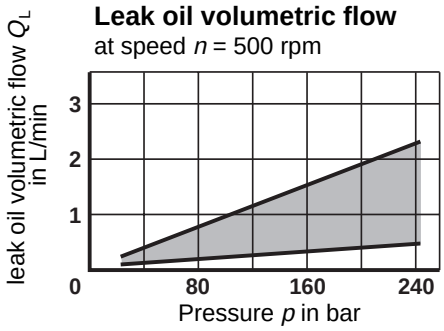
Leak oil volumetric flow
at speed n = 400 rpm



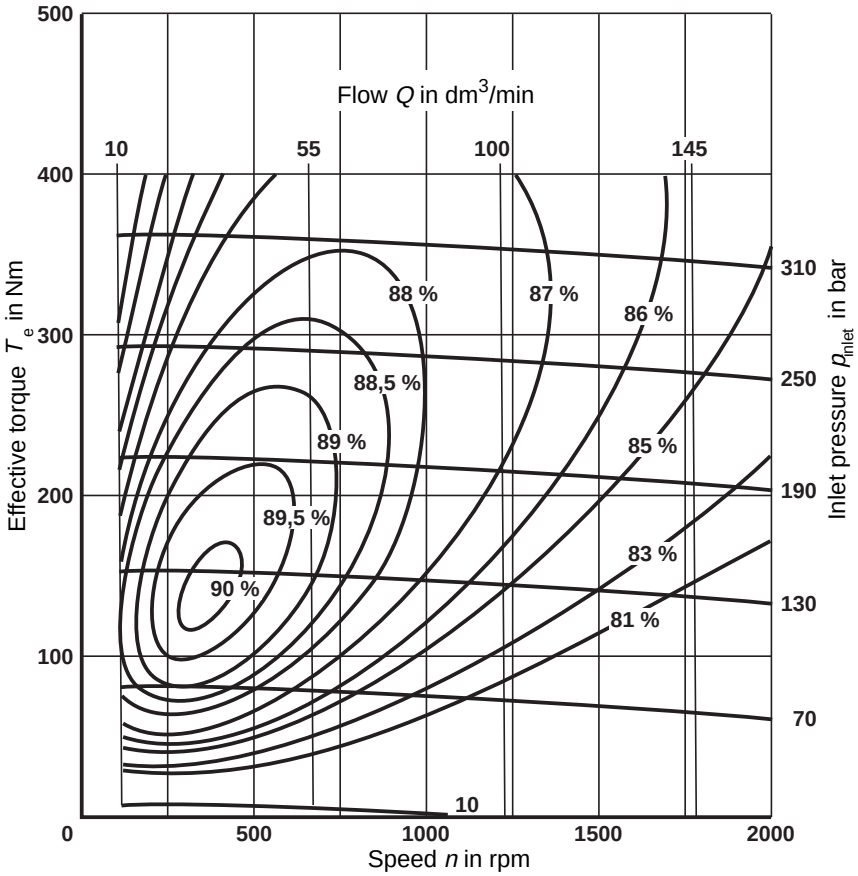
Performance curves (average value) measured at ν = 36 mm²/s; δ = 50 °C; p_{outlet} = 0 bar; $p_{leakage\ oil}$ = 0 bar

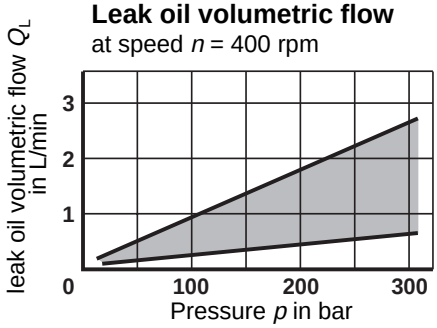
MKM 63





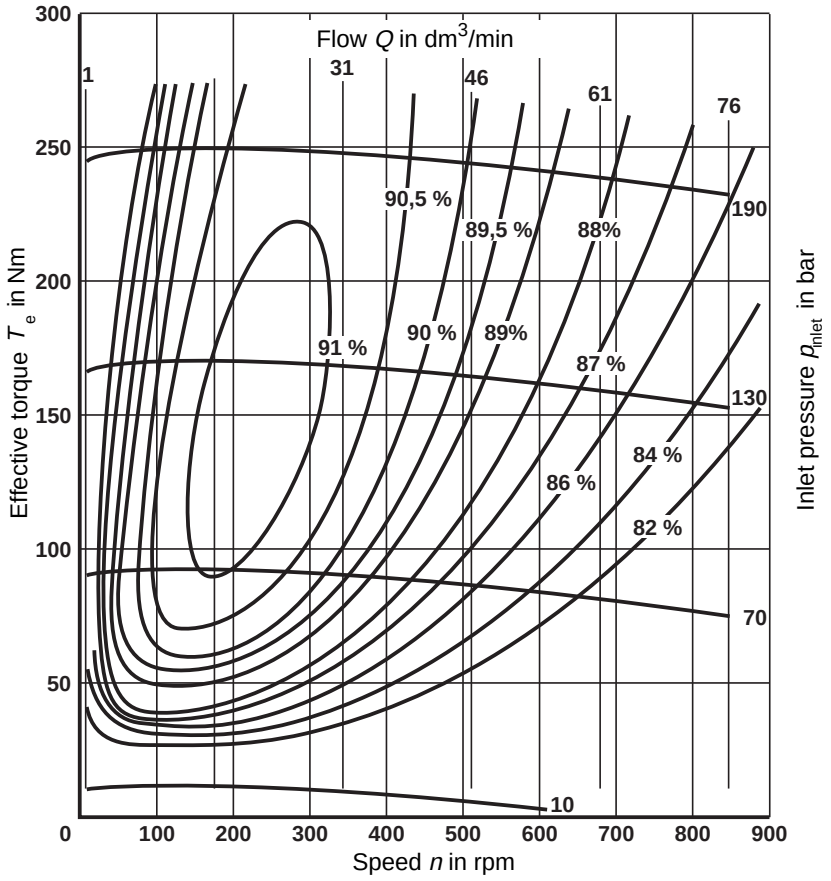
MRM 80

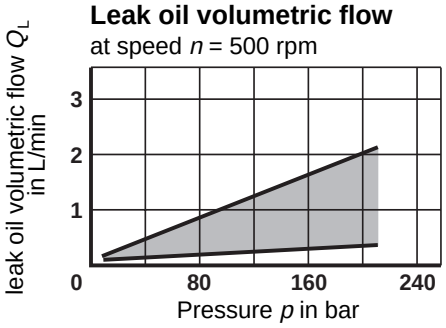




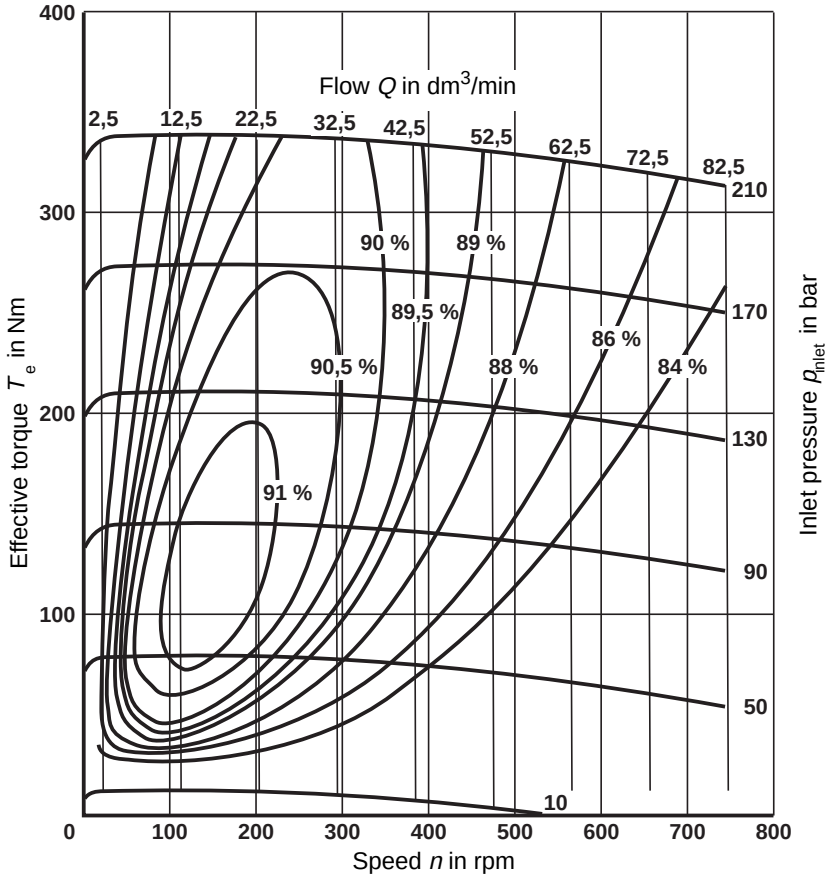
Performance curves (average value) measured at $\nu = 36\ mm^2/s$; $\delta = 50\ °C$; $p_{outlet} = 0\ bar$; $p_{leakage\ oil} = 0\ bar$

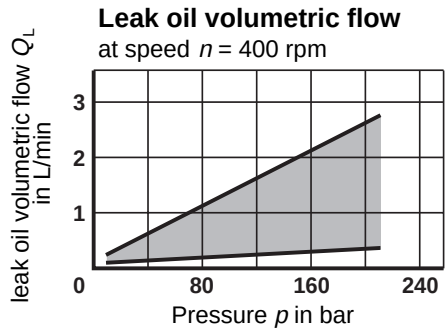
MKM 90





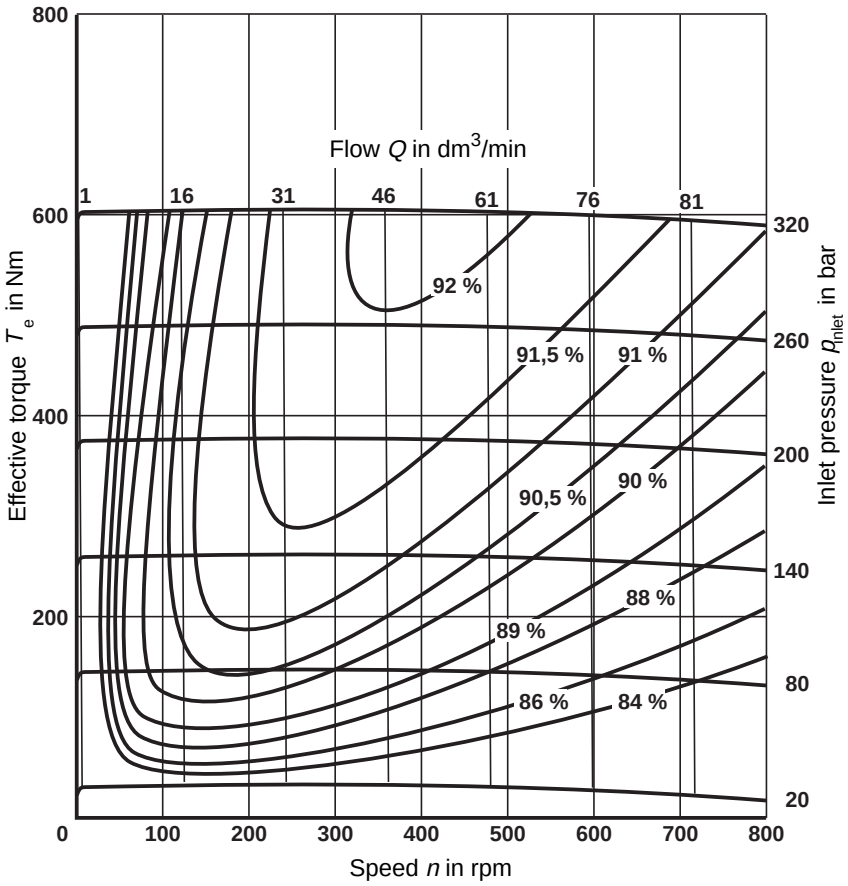
MKM 110

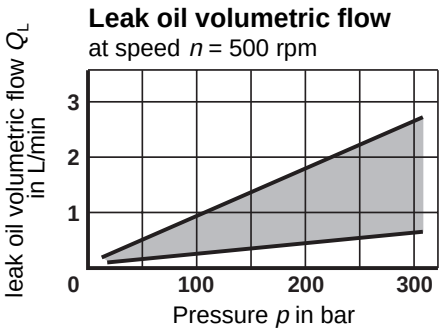




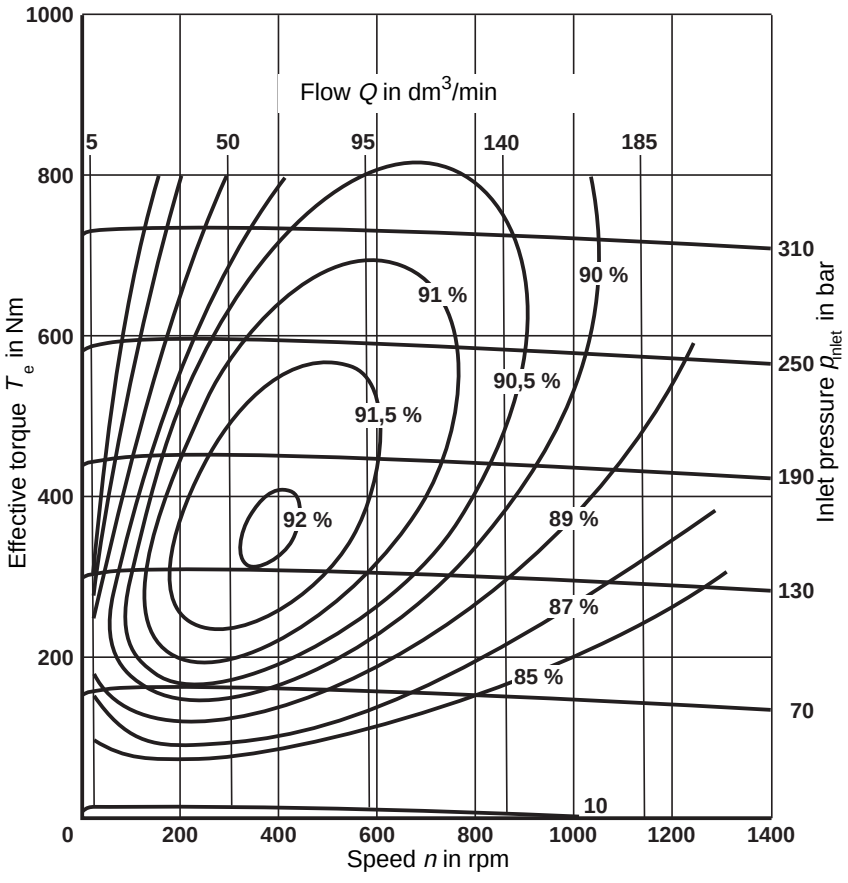
Performance curves (average value) measured at ν = 36 mm²/s; δ = 50 °C; p_{outlet} = 0 bar; $p_{leakage\ oil}$ = 0 bar

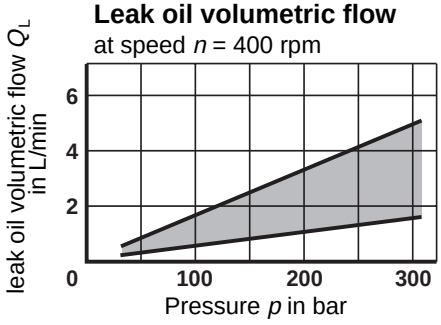
MRM 125





MRM 160

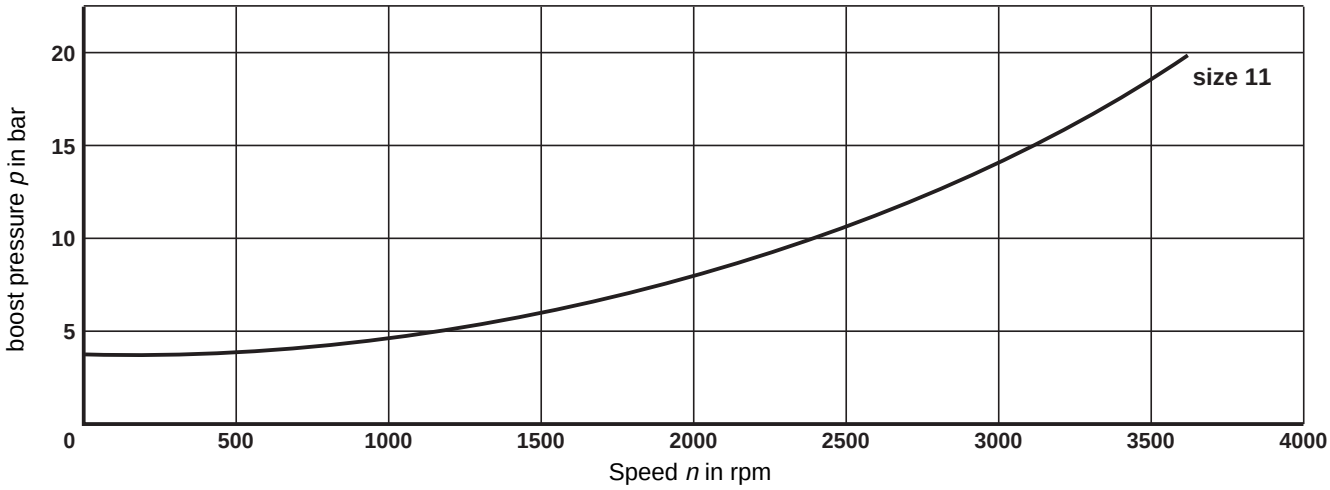


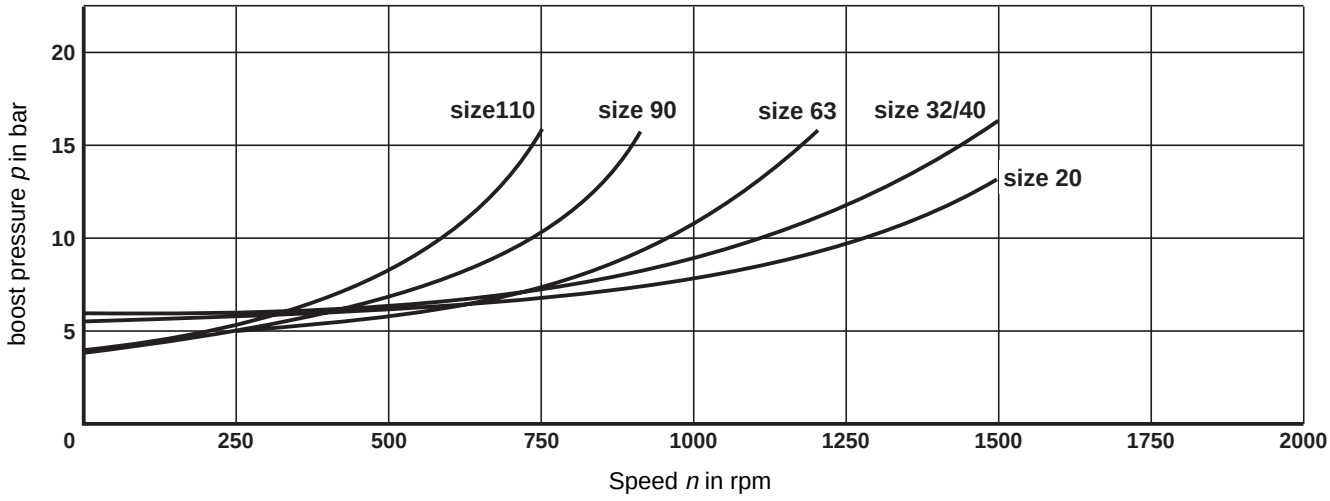


Performance curves (average value) measured at $\nu = 36 mm^2/s$ and $t = 50°C$;and $p_{leakage\ oil} \leq 1$ bar

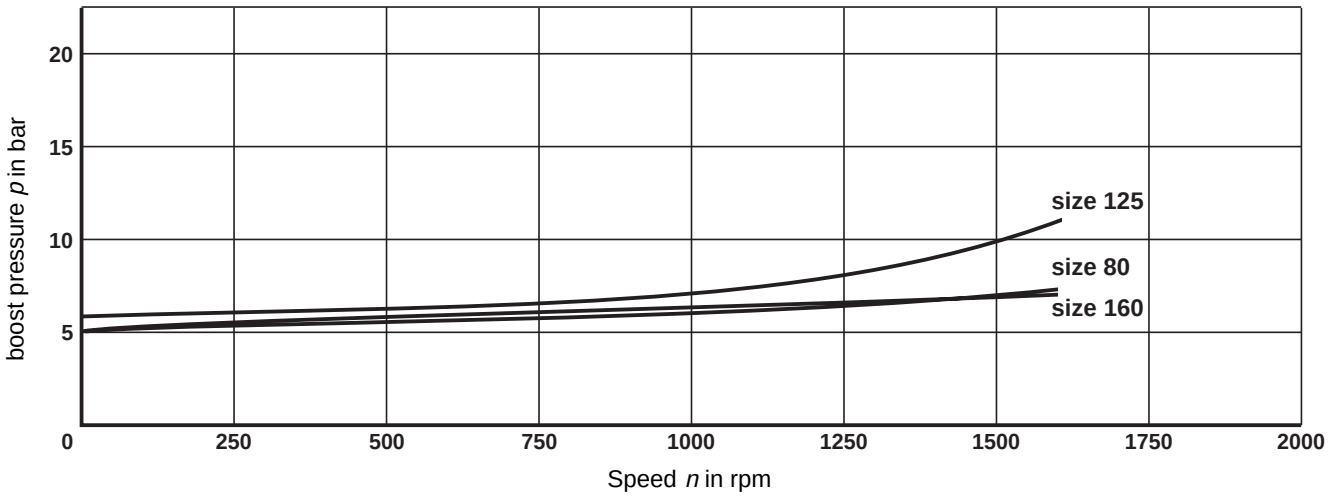
The minumum feed pressure required during pumping (overrun) operation is obtained from the value plotted plus the actual leakage oil pressure at the motor port.

MKM



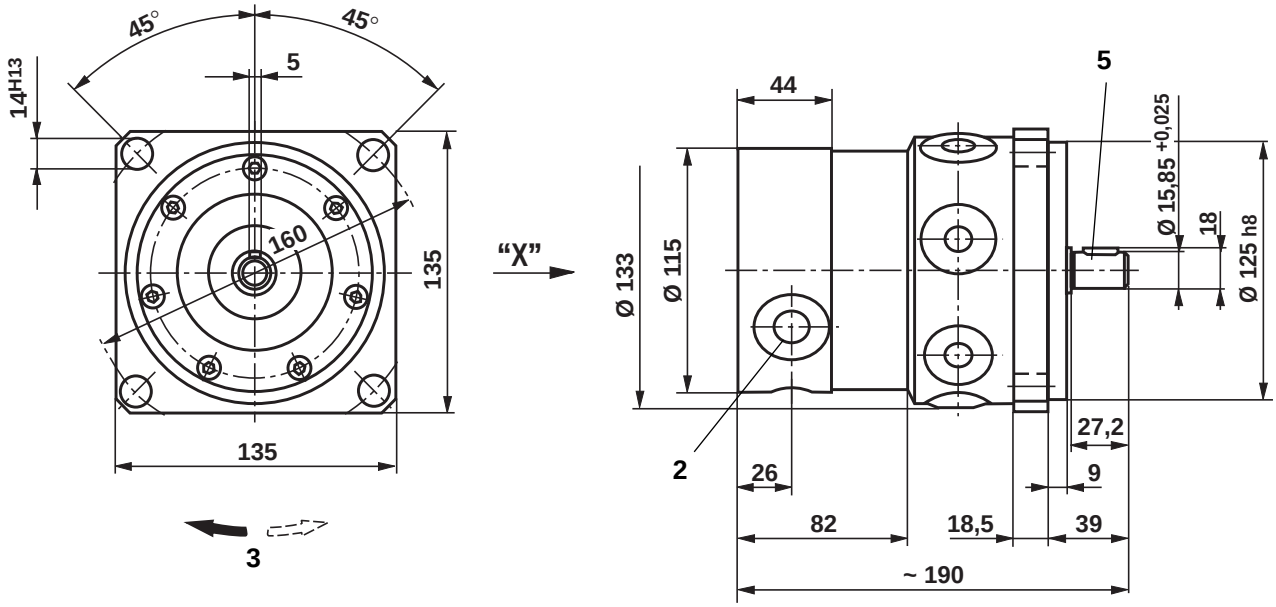


MRM

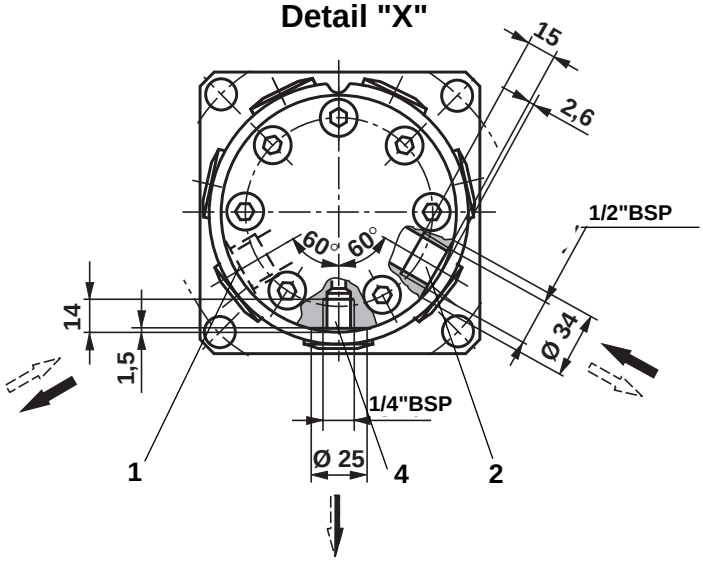


Unit Dimensions: MKM 11 (Dimensions in mm)

for flange type“2” (ISO 3019/2) line connection points “A0”



Detail "X"



1 Port A

2 Port B

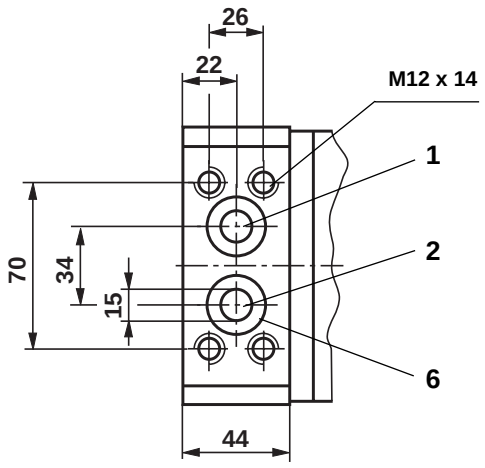
3 Direction of rotation viewed on shaft end
Right: with through flow from port B to A
Left: with through flow from port A to B

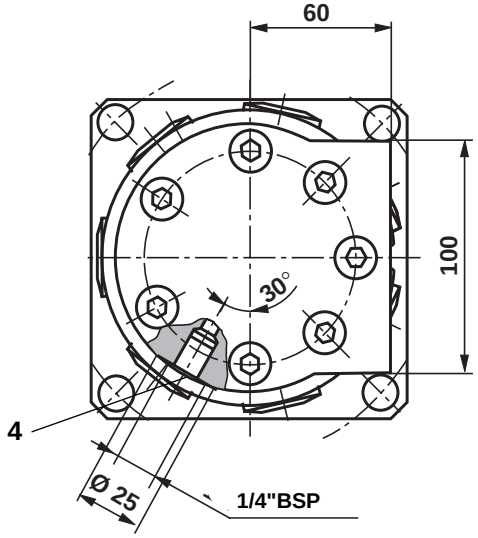
4 Leakage port

5 Key A 5 x 5 x 20 DIN 6885

6 Recess for O ring 21.89 x 2.62

line connection points “A1”

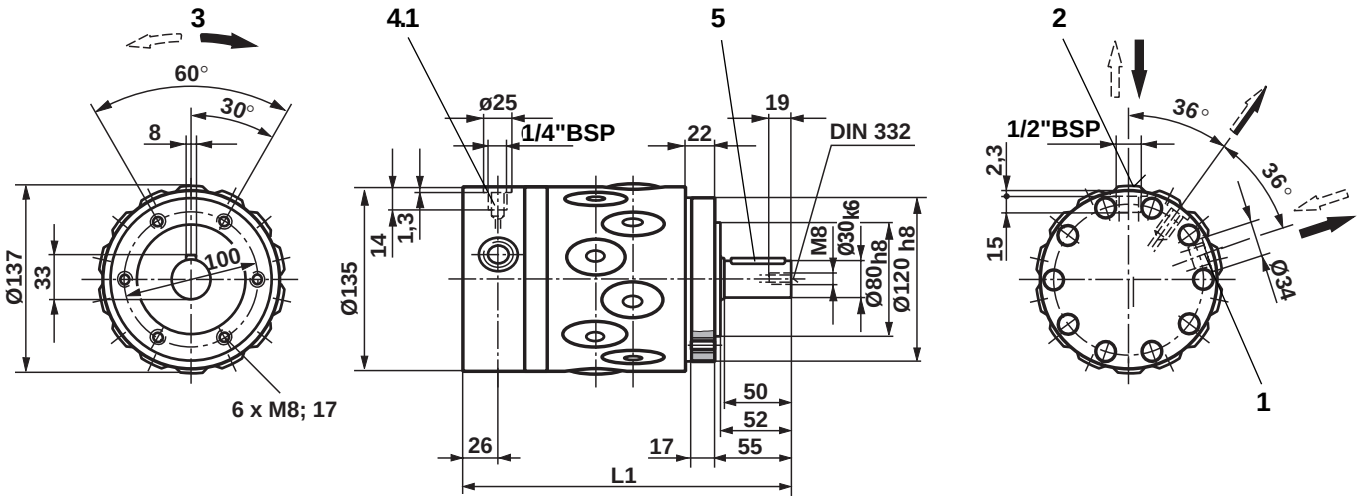




Unit Dimensions: MKM 20 and 40

(Dimensions in mm)

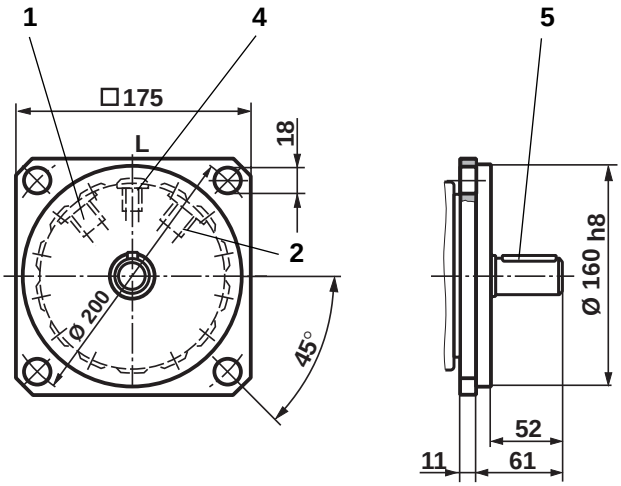
for flange type “1”
line connection points “A0”



Type	L1
MKM 20	215
MKM 40	241

for flange type “2”

DIN ISO 3019/2



1 Port A

2 Port B

3 Direction of rotation viewed on shaft end
Right: with through flow from port B to A
Left: with through flow from port A to B

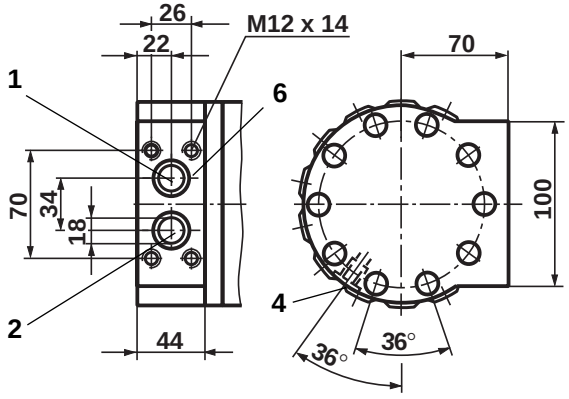
4 Leakage port

4.1 Leakage port, drawn off-sett

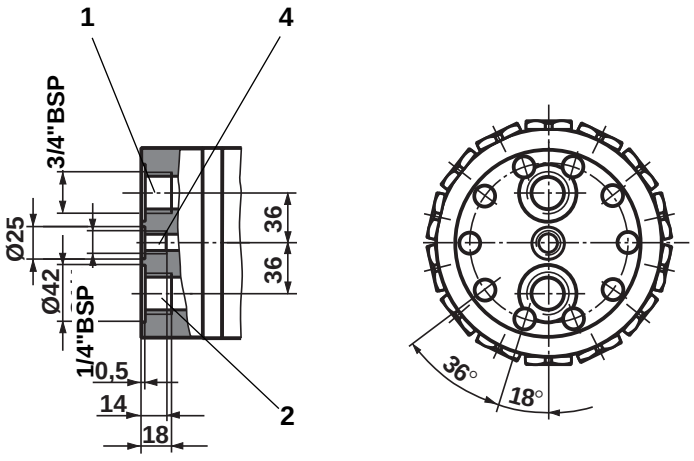
5 Key A 8 x 7 x 45
DIN 6885

6 Recess for O ring 21.89 x 2.62

line connection points “A1”

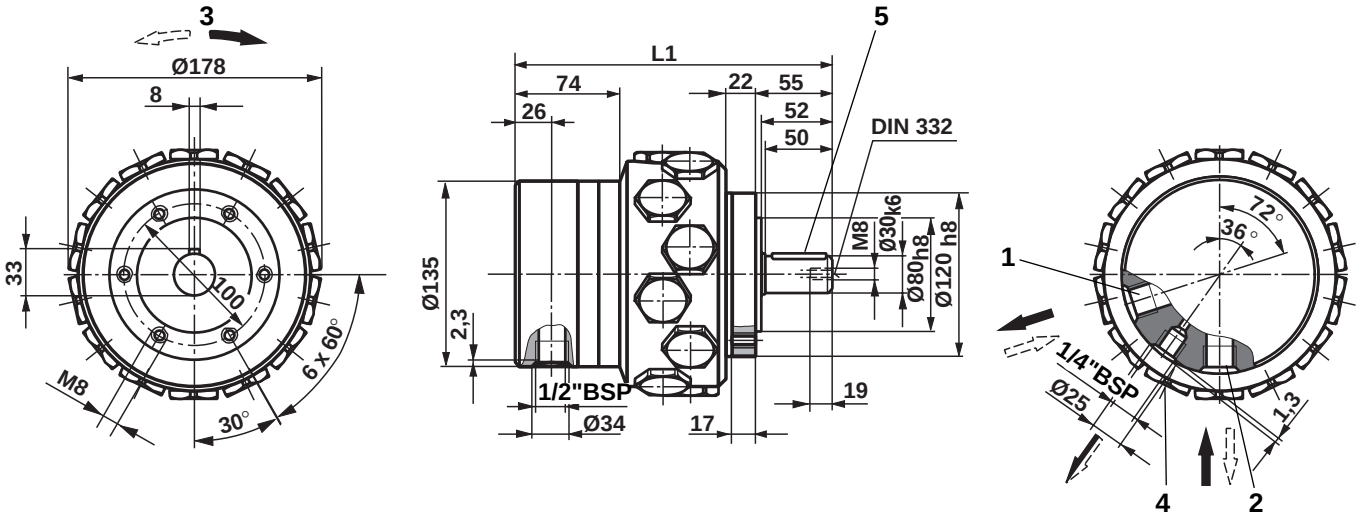


line connection points “B5”



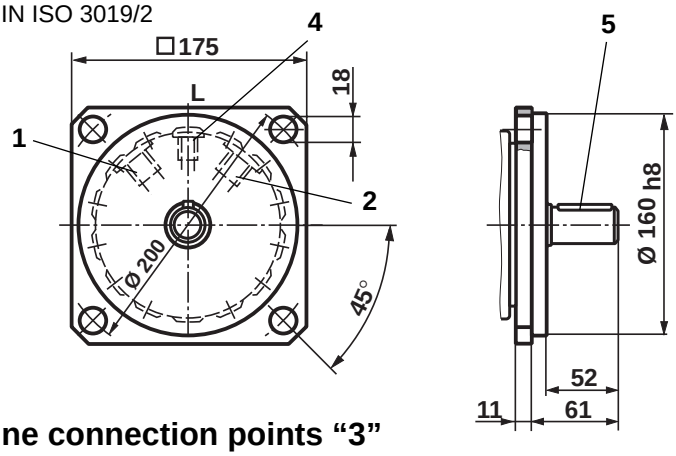
Unit Dimensions: MKM 32, 63, 90 and 110 (Dimensions in mm)

for flange type “1”
line connection points “A0”



for flange type “2”

DIN ISO 3019/2



Type	L1
MKM 32	203
MKM 63	221
MKM 90	243
MKM 110	243

1 Port A

2 Port B

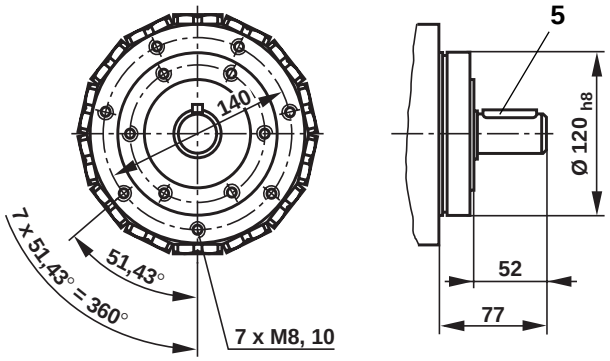
3 Direction of rotation viewed on shaft end
Right: with through flow from port B to A
Left: with through flow from port A to B

4 Leakage port

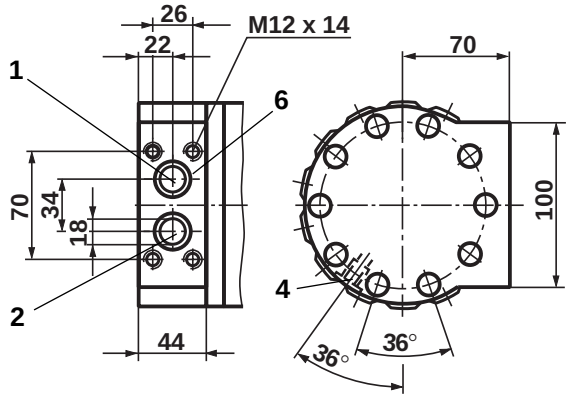
5 Key A 8 x 7 x 45 DIN 6885

6 Recess for O ring 21.89 x 2.62

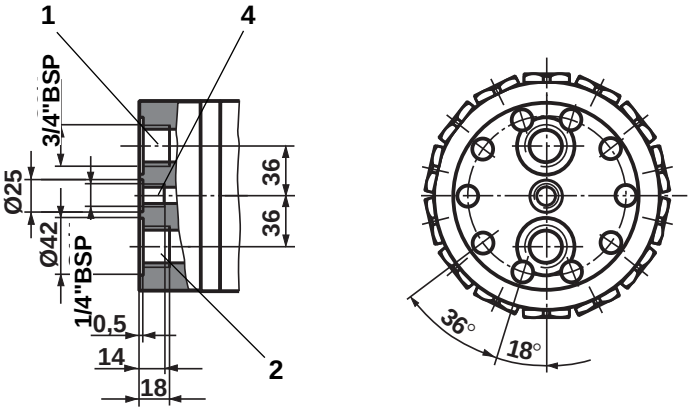
line connection points “3”



line connection points “A1”



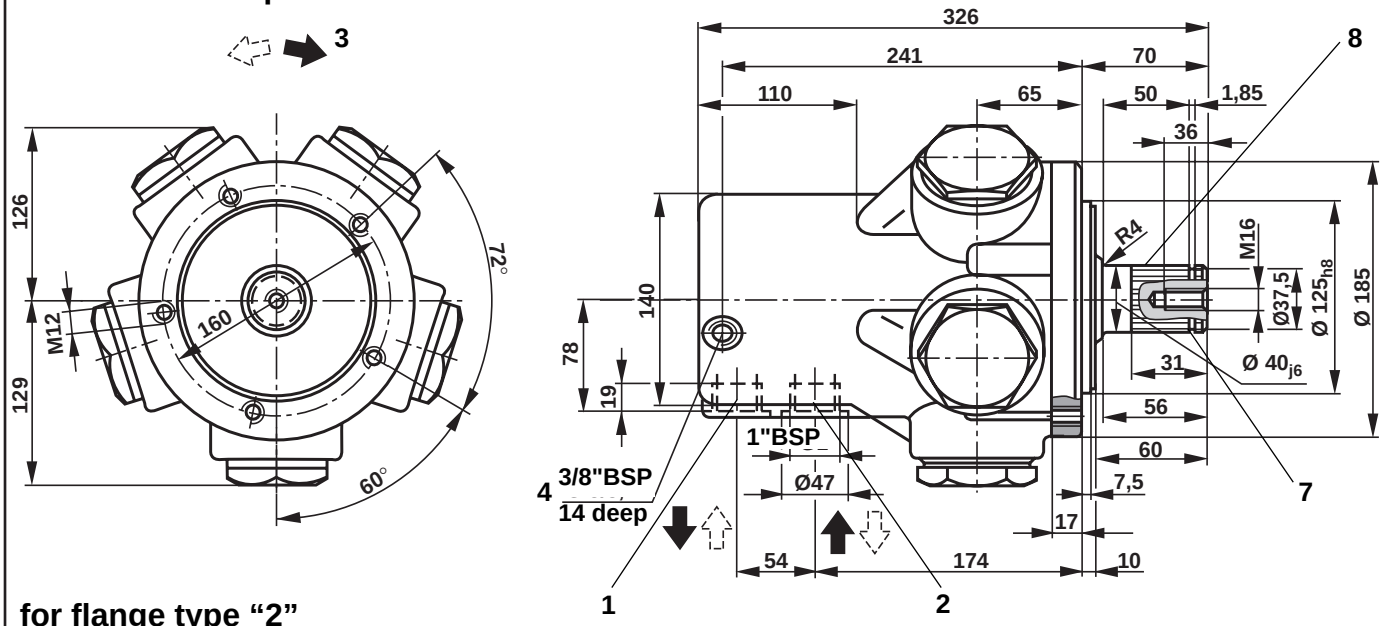
line connection points “B5”



Unit Dimensions: MRM 80 and 125

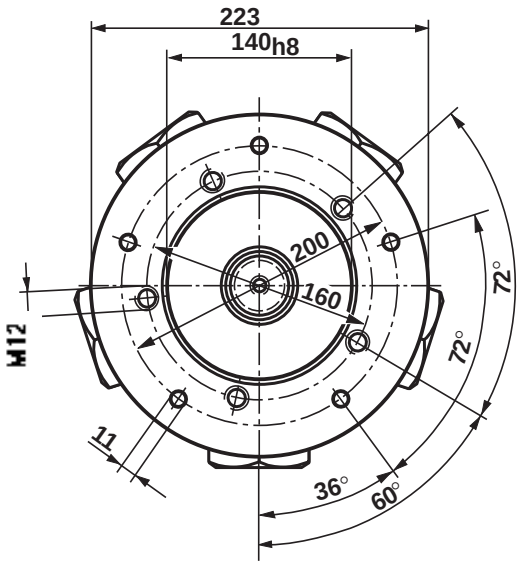
(Dimensions in mm)

for flange type “1”
with splined “K”
line connection points “A0”



for flange type “2”

with through holes



1 Port A

2 Port B

3 Direction of rotation viewed on shaft end
Right: with through flow from port B to A
Left: with through flow from port A to B

4 Leakage port
Recess dia. 28 mm, 72° offset in relation to ports A and B

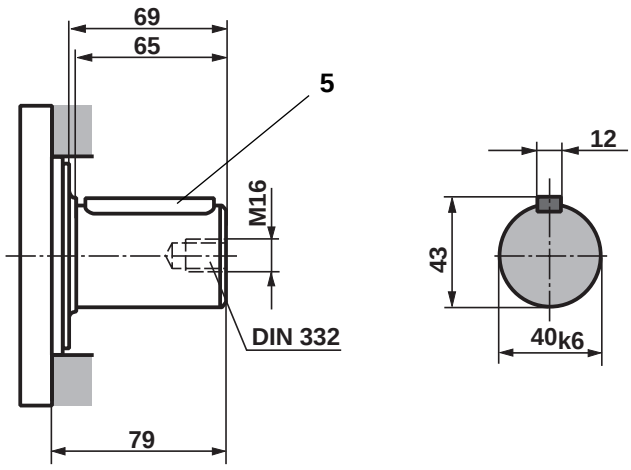
5 Key A 12 x 8 x 56 DIN 6885

7 Shaft groove for retaining ring DIN 471

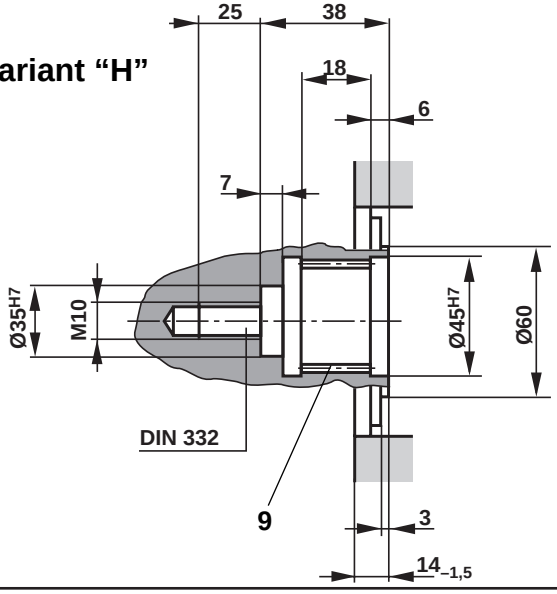
8 Splined shaft connection DIN 5480
W40 x 2 x 18 x7h

9 Splined shaft connection DIN 5480
N45 x 2 x 21 x 9H

shaft variant “A”



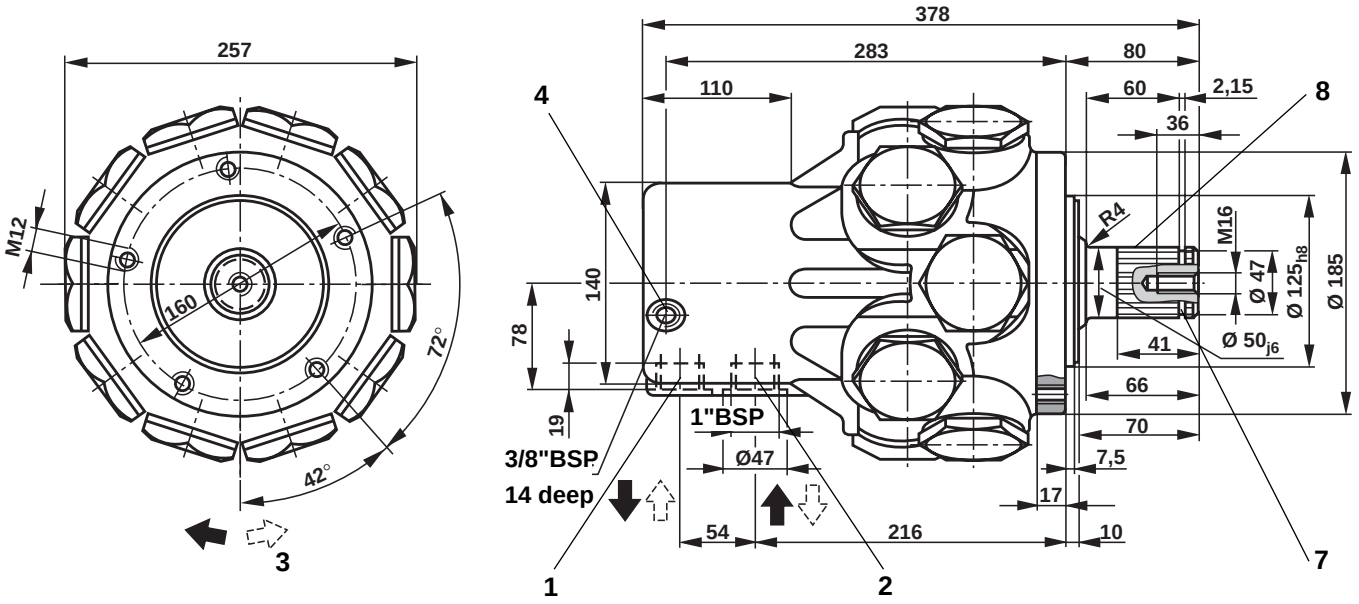
shaft variant “H”



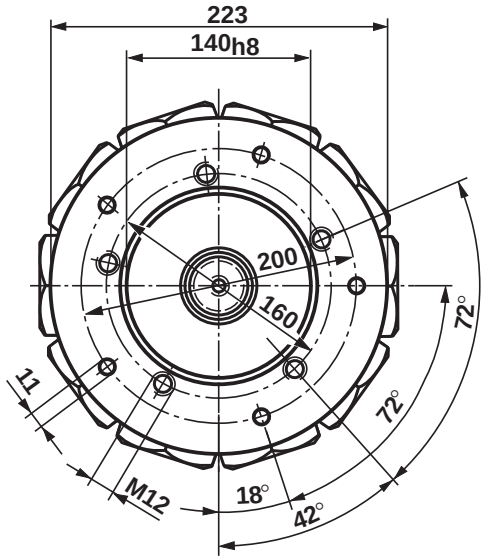
Unit Dimensions: MRM 160

(Dimensions in mm)

for flange type “1”
with splined “K”
line connection points “A0”

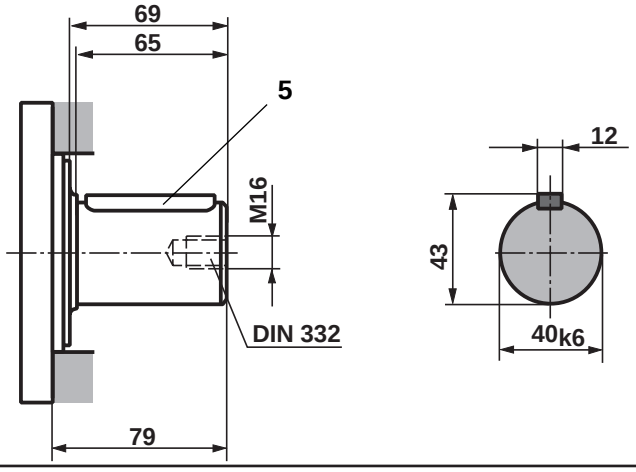


for flange type “2”
with through holes

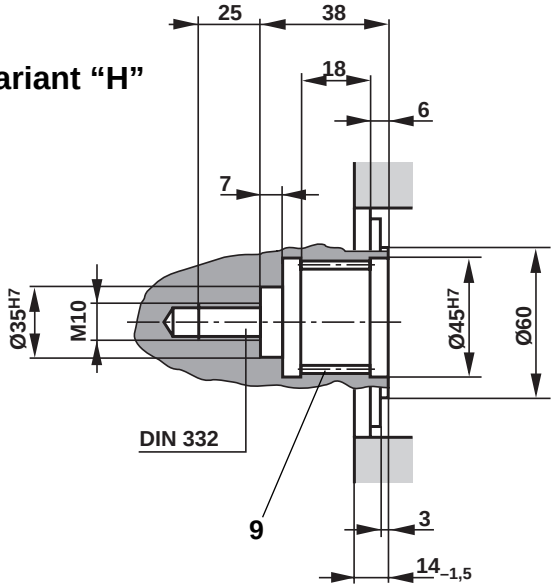


1 Port A
2 Port B
3 Direction of rotation viewed on shaft end
Right: with through flow from port B to A
Left: with through flow from port A to B
4 Leakage port
Recess dia. 28 mm, 72° offset in relation to ports A and B
5 Key A 14 x 9 x 70 DIN 6885
7 Shaft groove for retaining ring DIN 471
8 Splined shaft connection DIN 5480
W50 x 2 x 24 x 7h
9 Splined shaft connection DIN 5480
N45 x 2 x 21 x 9H

shaft variant “A”



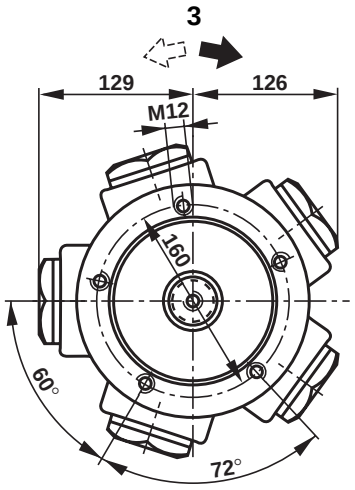
shaft variant “H”

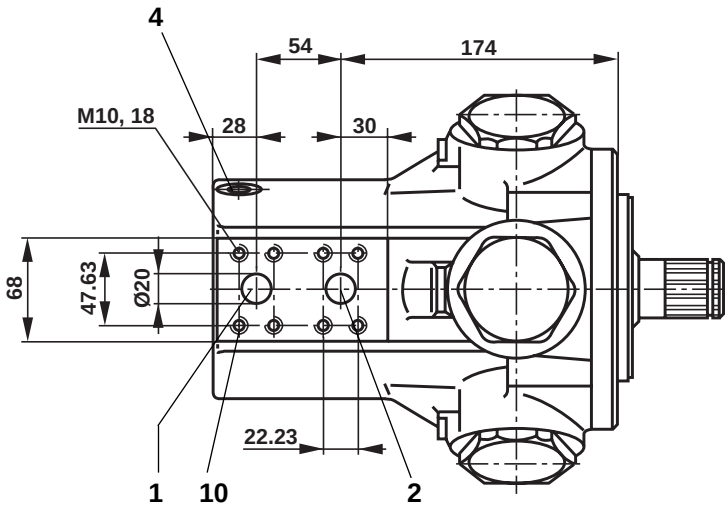


Unit Dimensions: MRM 80, 125 and 160 (Dimensions in mm)

MRM 80, MRM 125
for flange type “1”
with splined “K”
line connection points “A1”

dimension
see page 16





1 Port A SAE J 518 3/4" Standard

2 Port B SAE J 518 3/4" Standard

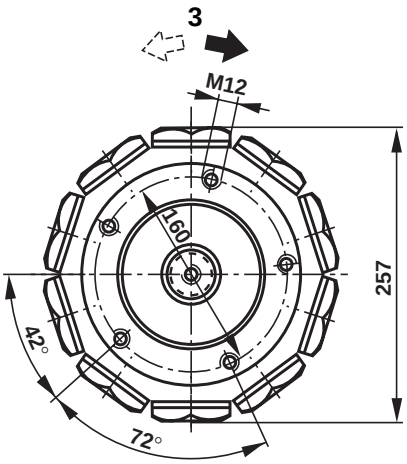
3 Direction of rotation viewed on shaft end
Right: with through flow from port B to A
Left: with through flow from port A to B

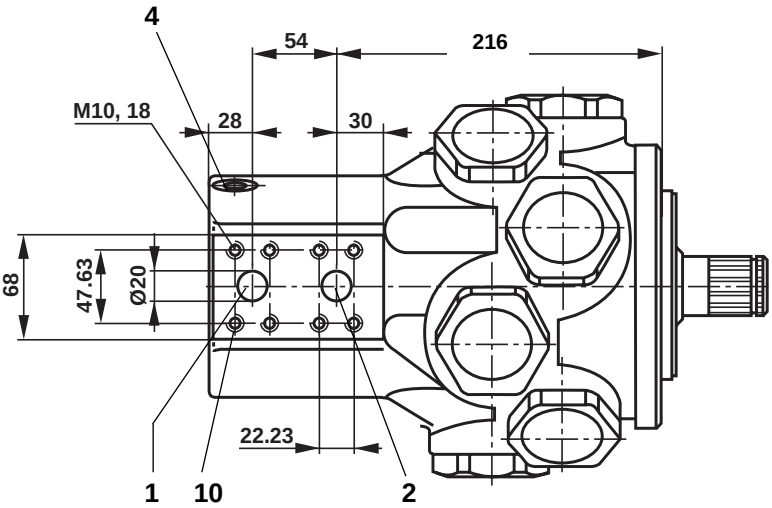
4 Leakage port 3/8"BSP
Recess dia. 28 mm, 72° offset in relation to ports A and B

10 Flange height from centre of shaft $80^{+0,5}$ mm

MRM 160
for flange type “1”
with splined “K”
line connection points “A1”

dimension
see page 17

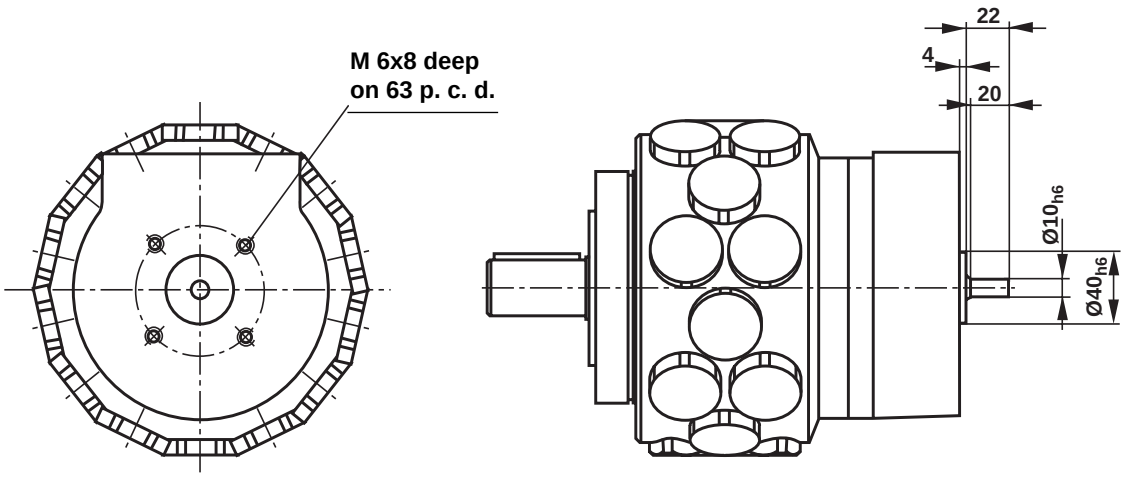




Unit Dimensions: Motor with Parallel Tacho-Shaft (Dimensions in mm)

Order Codes **“M”**

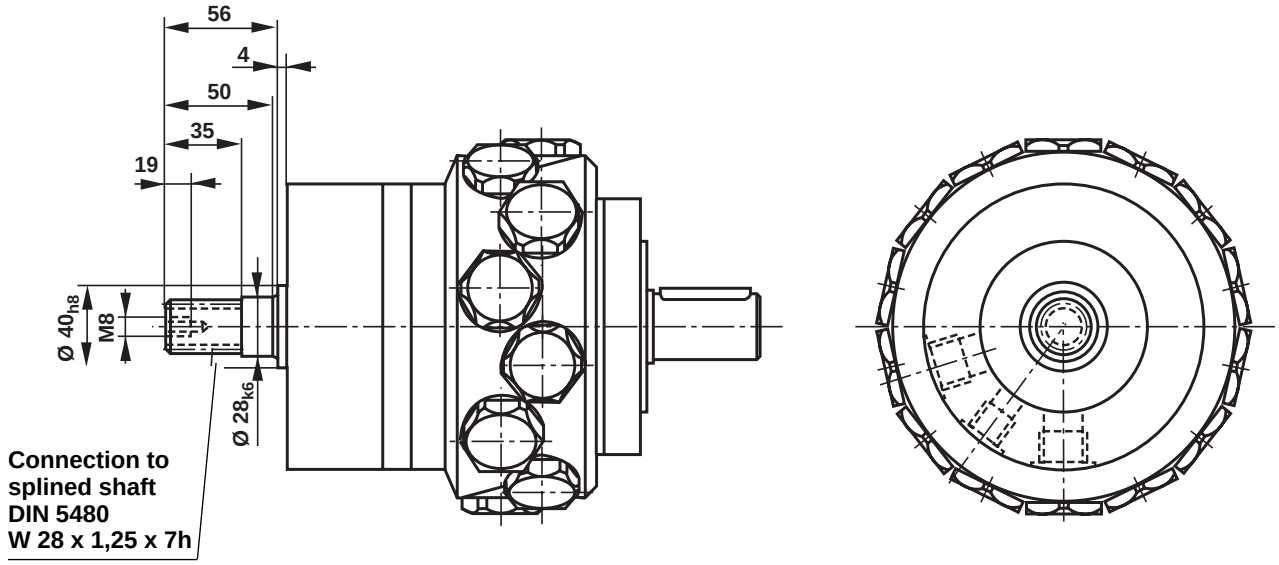
One size parallel tacho-shaft for all types, for measuring motor speed, transmits a maximum torque of 5 Nm (for higher output torques please consult us).



Unit Dimensions: Motor with Through Output Shaft (Dimensions in mm)

Order Codes **“M10–”**

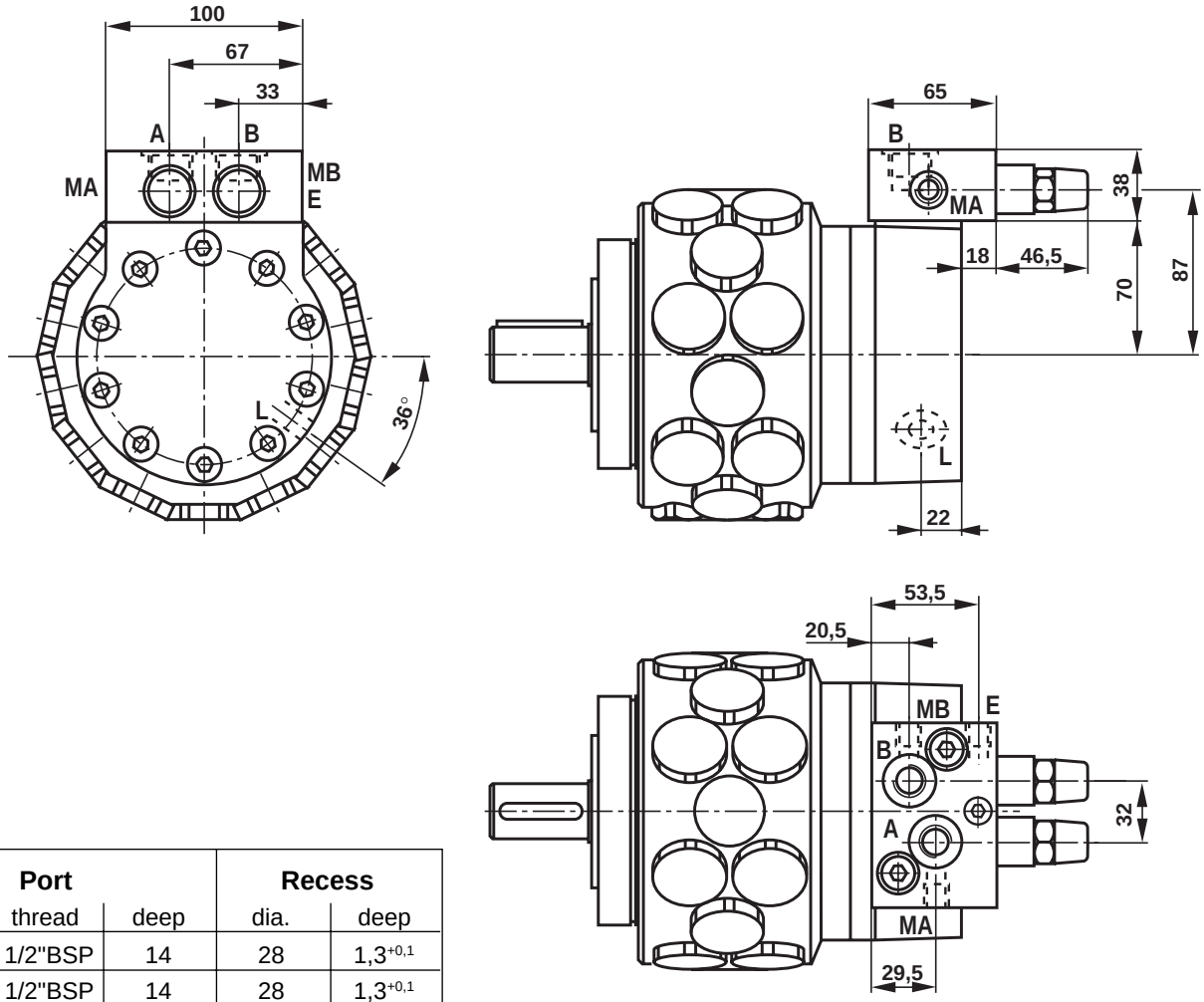
All radial piston motors in series MKM can be supplied with a through output shaft, order code M10-, for full motor torque transmission.



Valve Structure: Pressure Limiting, feed, MKM

(Dimensions in mm)

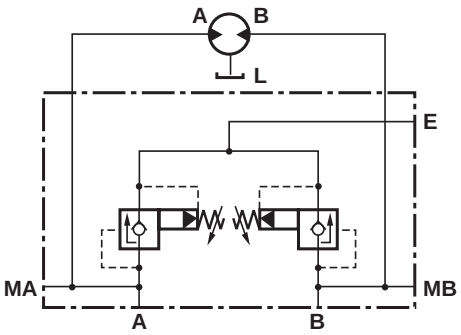
Series MKM radial piston motors with two boost pressure-feed valves, pilot control (RE 64 642), gauge ports 1/4"BSP, feed 1/4"BSP and line connection points 1/2"BSP.



	Port		Recess	
	thread	deep	dia.	deep
A	1/2"BSP	14	28	$1,3^{+0,1}$
B	1/2"BSP	14	28	$1,3^{+0,1}$
L	1/4"BSP	14	25	$1,3_{-0,3}$
E	1/4"BSP	12	20	0,5
MA	1/4"BSP	12	20	0,5
MB	1/4"BSP	12	20	0,5

Note: Valve cartridges are **not** included in the supply and must be ordered separately!

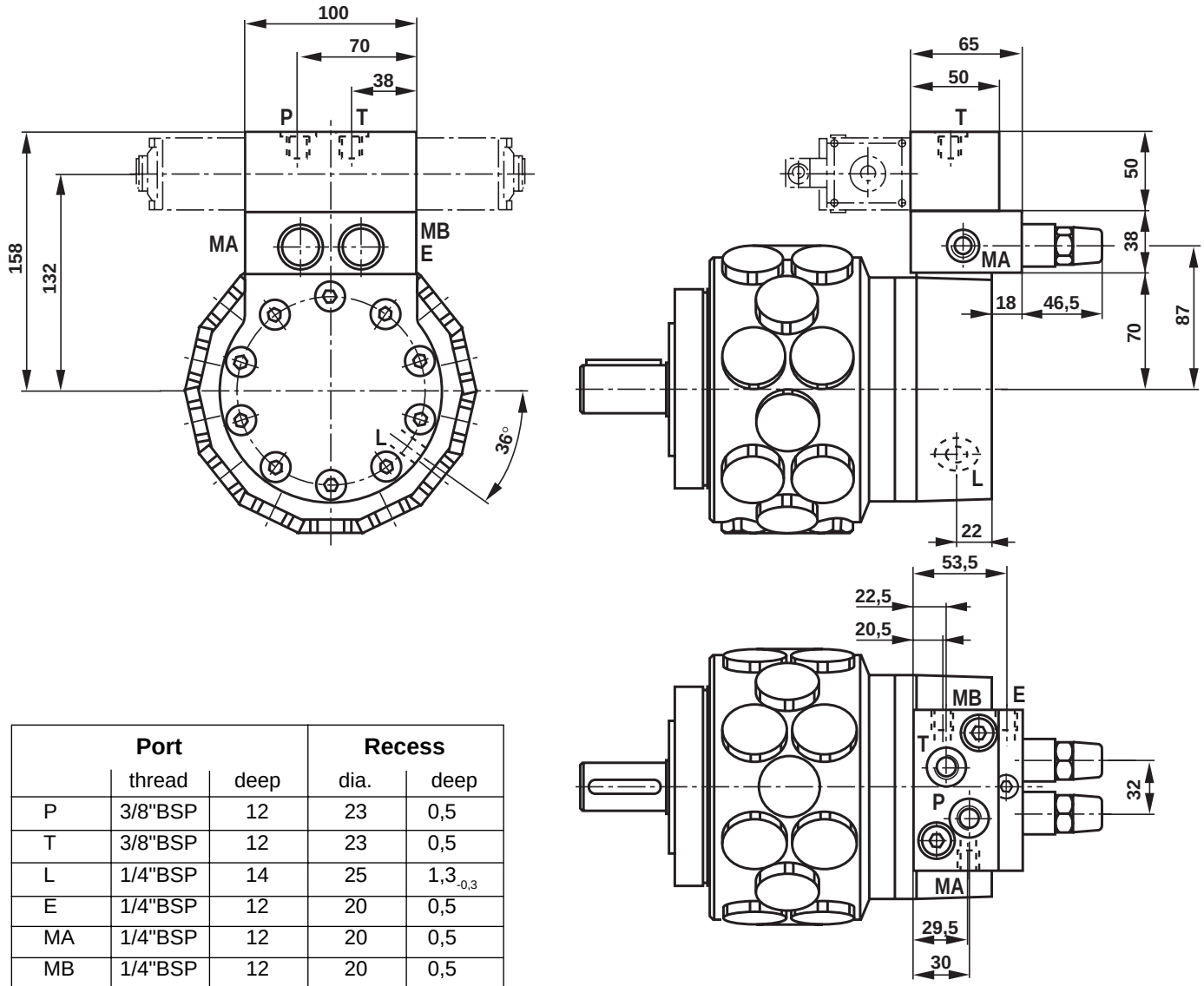
Symbol, functional description



Two pressure relief valves MHDBN 16K2-1X/.. protect the drive from overloads. The maximum operating pressure can be set individually for each direction of rotation. The leakage occurring is fed back by way of feed valves at port E. The minimum feed pressure required for the different types of motor, depending on operating speed, can be calculated from the performance curves on page 12 plus 1.5 bar opening pressure at the feed valve.

Valve Structure: Pressure Limiting, CETOP 3 - Mounting Pattern, MKM (Dimensions in mm)

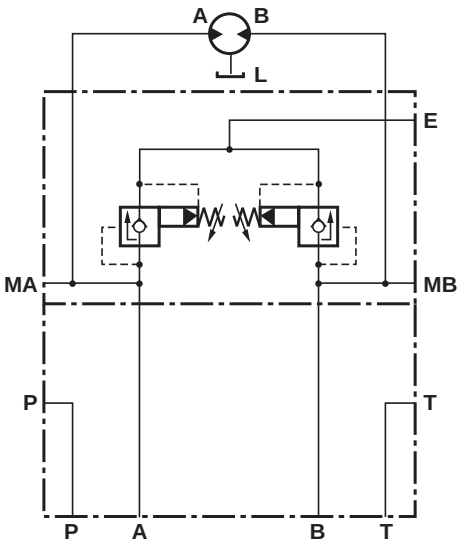
Radial piston motors series MKM with two boost pressure-feed valves, pilot control (RD 64 642), gauge ports 1/4"BSP, feed 1/4"BSP and valve connection CETOP 3, mounting pattern to DIN 24340 form A6.



	Port		Recess	
	thread	deep	dia.	deep
P	3/8"BSP	12	23	0,5
T	3/8"BSP	12	23	0,5
L	1/4"BSP	14	25	$1{,}3_{-0{,}3}$
E	1/4"BSP	12	20	0,5
MA	1/4"BSP	12	20	0,5
MB	1/4"BSP	12	20	0,5

Note: Valve cartridges are **not** included in the supply and must be ordered separately!

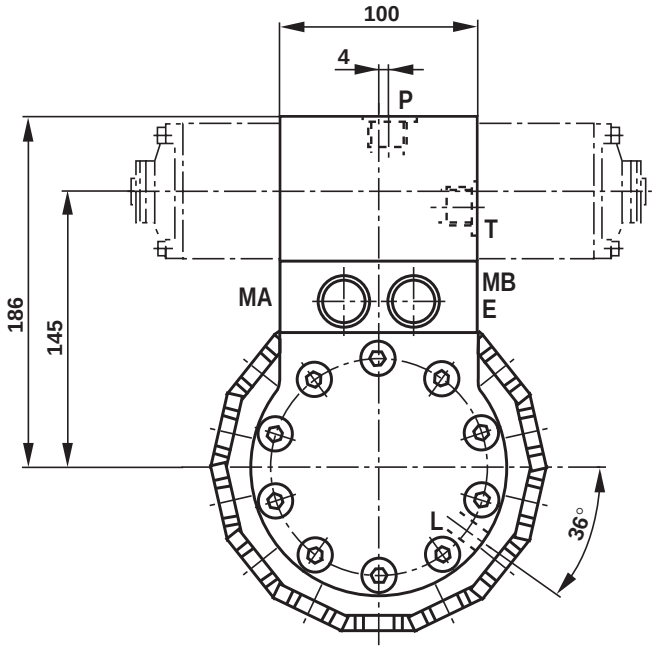
Symbol, functional description

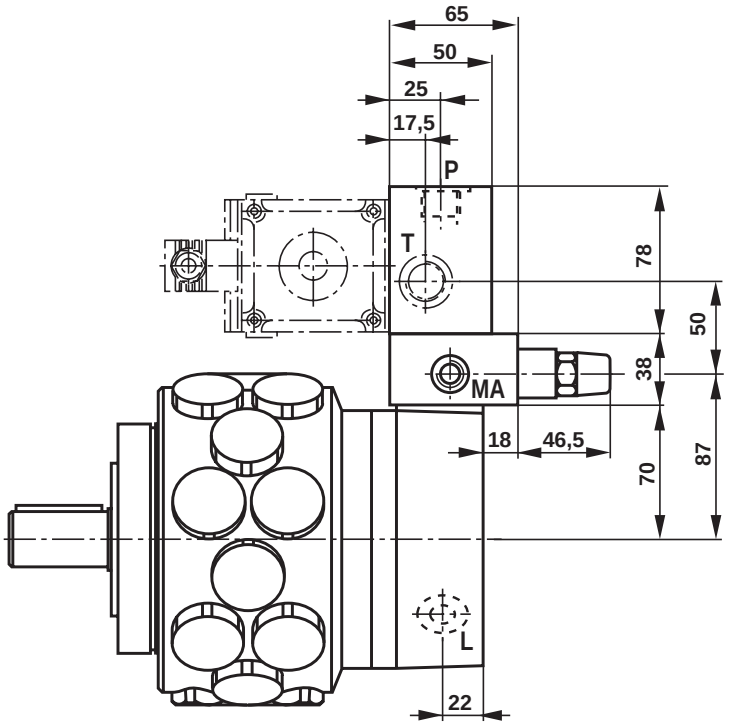


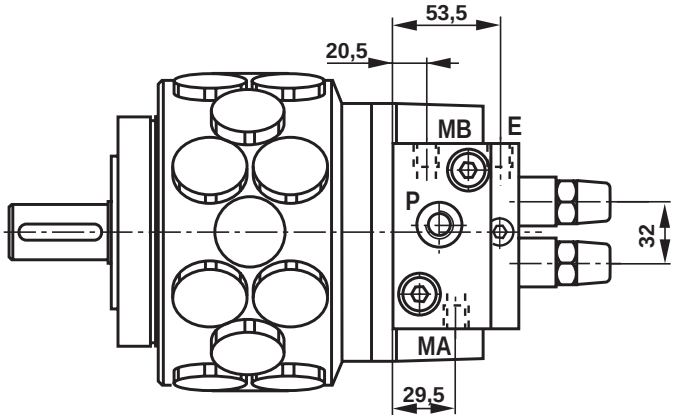
This block structure features valves with ports to DIN 24340 form A6 which are screwed directly on to the motor in order to achieve better control and regulation of the drive through the smaller volume of oil incorporated.
Two pressure reducing valves MHDBN 16K2-1X/.. protect the drive from overloading. Maximum operating pressure can be individually set for each direction of rotation. Any leakage occurring is fed back by way of feed valves at port E. The necessary minimum feed pressure for the different motor types is calculated from the performance curves on page 12 plus 1.5 bar operating pressure at the feed valve.

Valve Structure: Pressure Limiting, CETOP-5 Mounting Pattern, MKM (Dimensions in mm)

Radial piston motors, series MKM, with two. boost pressure-feed valves, pilot control (RE 64 642), gauge ports 1/4"BSP, feed 1/4"BSP and valve port CETOP 5, mounting pattern to DIN 24340 form A10



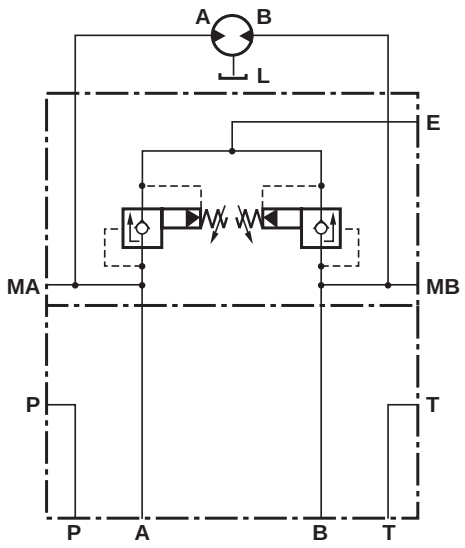




	Port		Recess	
	thread	deep	dia.	deep
P	1/2"BSP	14	28	0,5
T	1/2"BSP	14	28	0,5
L	1/4"BSP	14	25	$1,3_{-0,3}$
E	1/4"BSP	12	20	0,5
MA	1/4"BSP	12	20	0,5
MB	1/4"BSP	12	20	0,5

Note: Valve cartridges are **not** included in the supply and must be ordered separately!

Symbol, functional description

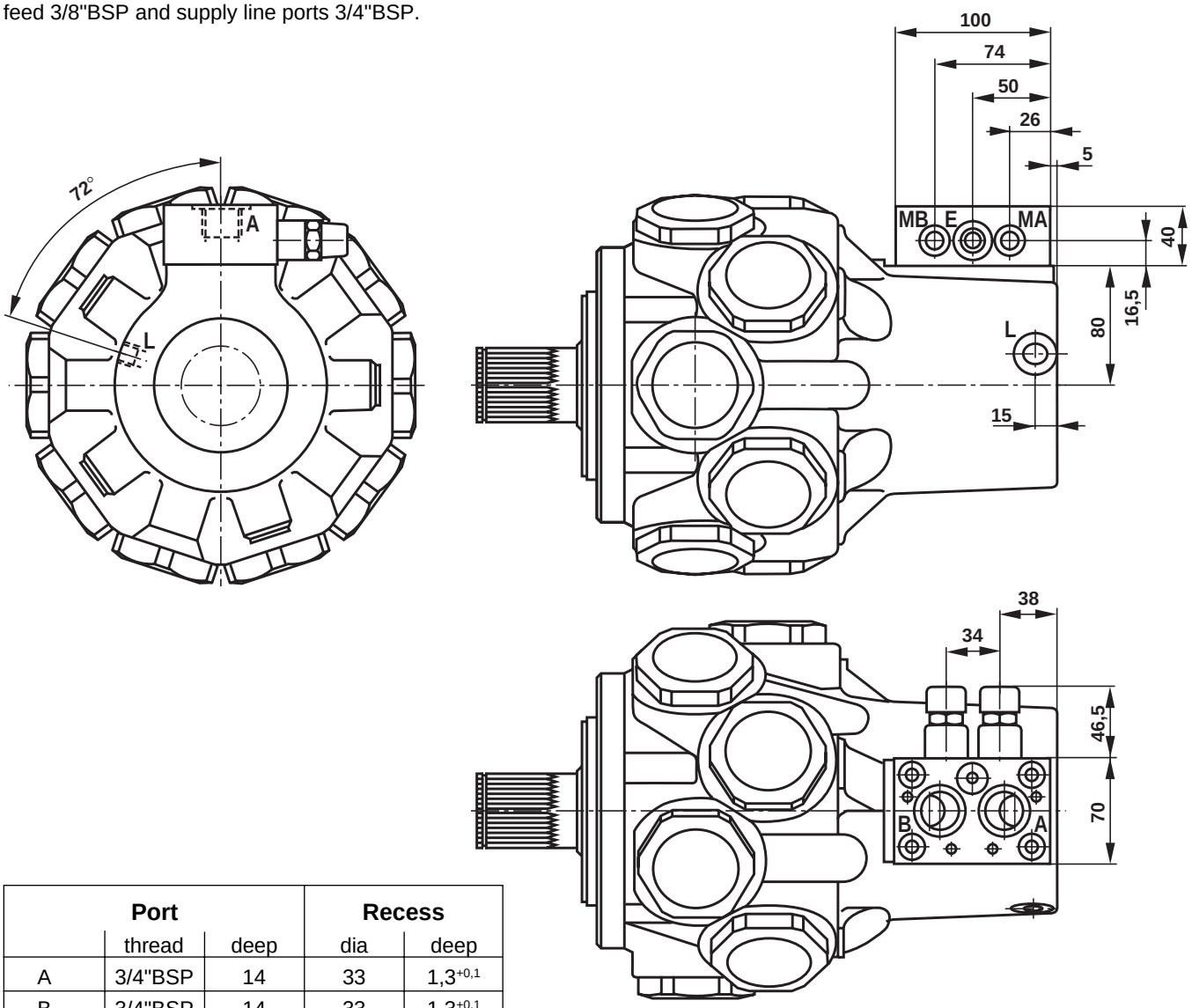


This block structure features valves with ports conforming to DIN 24340 form A 10 which are screwed directly on to the motor so as to achieve improved control and regulation of the drive by means of the smaller incorporated volume of oil. Two pressure relief valves MHDBN 16K2-1X/.. protect the drive from overloading. Maximum operating pressure can be individually set for each direction of rotation. Any leakage arising is fed back by way of feed valves at port E. The necessary minimum feed pressure for the different types of motor, depending on the operating motor speed, is calculated from the performance curves on page 12 plus 1.5 bar opening pressure at the feed valve.

Valve Structure: Pressure Limiting, MRM

(Dimensions in mm)

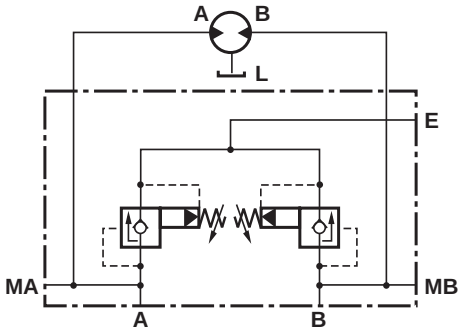
Radial piston motors, series MRM, with two boost pressure-feed valves, pilot control (RE 64 642), gauge ports 1/4"BSP, feed 3/8"BSP and supply line ports 3/4"BSP.



	Port		Recess	
	thread	deep	dia	deep
A	3/4"BSP	14	33	$1,3^{+0,1}$
B	3/4"BSP	14	33	$1,3^{+0,1}$
L	3/8"BSP	14	28	1,5
E	3/8"BSP	12	25	0,5
MA	1/4"BSP	12	20	0,5
MB	1/4"BSP	12	20	0,5

Note: Valve cartridges are **not** included in the supply and must be ordered separately!

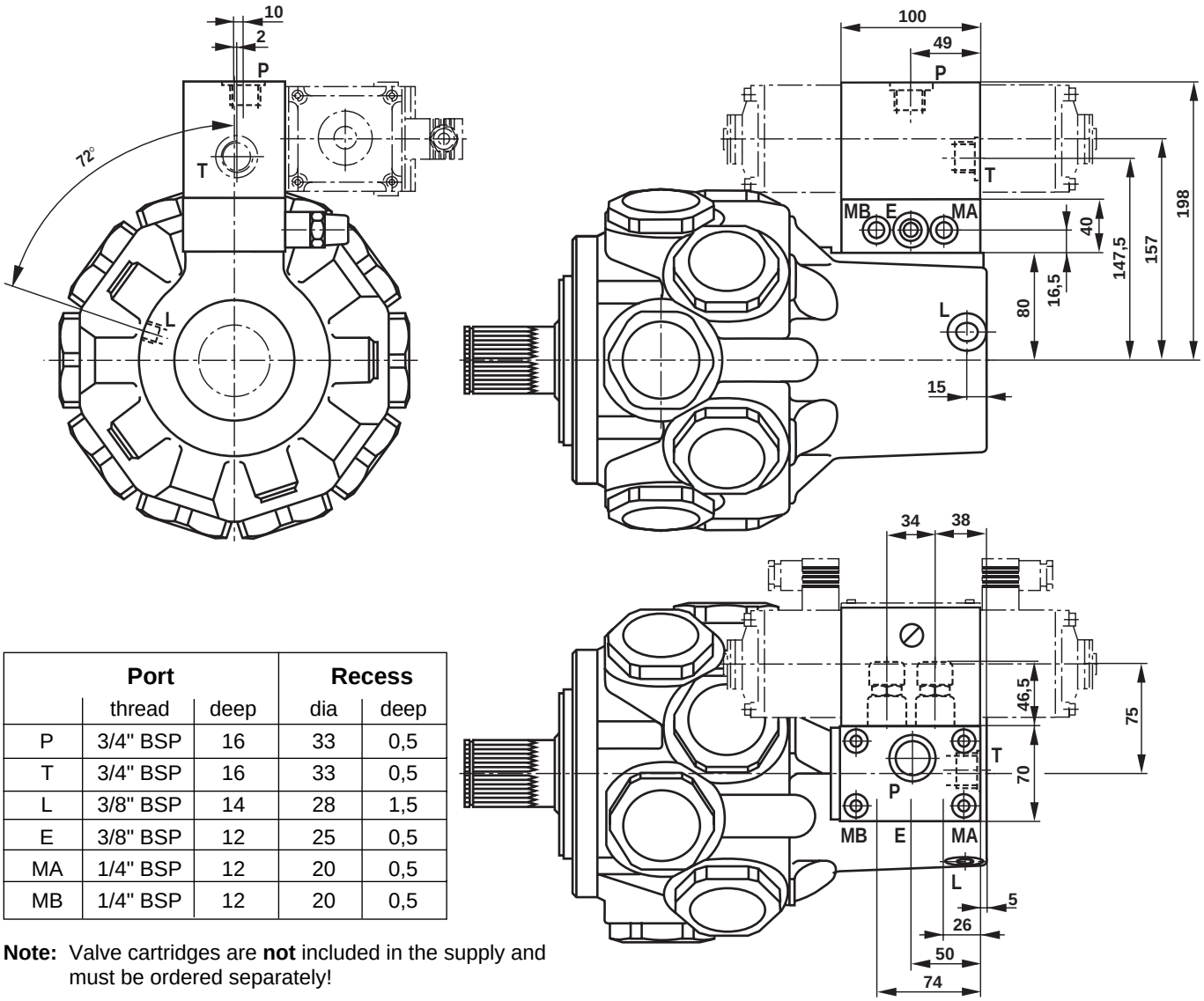
Symbol, functional description



Two pressure relief valves MHDBN 16K2-1X/... protect the drive from overloading. The maximum operating pressure can be individually set for each direction of rotation. Any leakage occurring is fed back by way of feed valves at port E. The required minimum feed pressure for the different types of motor, depending on the operating motor speed, is calculated from the performance curves on page 12 plus 1.5 bar opening pressure at the feed valve.

Valve Structure: Pressure Limiting, CETOP 5-mounting pattern, MRM (Dimensions in mm)

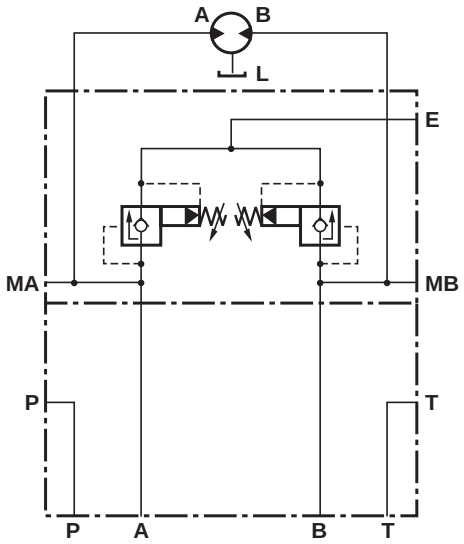
Radial piston motors series MRM with two boost pressure-feed valves, pilot control (RE 64 642), gauge ports 1/4"BSP, feed 3/8"BSP and valve port CETOP 5, mounting pattern to DIN 24340 form A 10.



	Port		Recess	
	thread	deep	dia	deep
P	3/4" BSP	16	33	0,5
T	3/4" BSP	16	33	0,5
L	3/8" BSP	14	28	1,5
E	3/8" BSP	12	25	0,5
MA	1/4" BSP	12	20	0,5
MB	1/4" BSP	12	20	0,5

Note: Valve cartridges are **not** included in the supply and must be ordered separately!

Symbol, functional description



This block structure features valves with ports to DIN 24340 form A 10 which are screwed directly on to the motor in order to achieve improved control and regulation of the drive by means of the smaller incorporated oil volume.
Two pressure relief valves MHDBN 16K2-1X/.. protect the drive from overloading. The maximum operating pressure can be individually set for each direction of rotation. Any leakage occurring is fed back by way of feed valves at port E. The required minimum feed pressure for the different types of motor, depending on the operating motor speed, is calculated from the performance curves on page 12 plus 1.5 bar opening pressure at the feed valve.

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