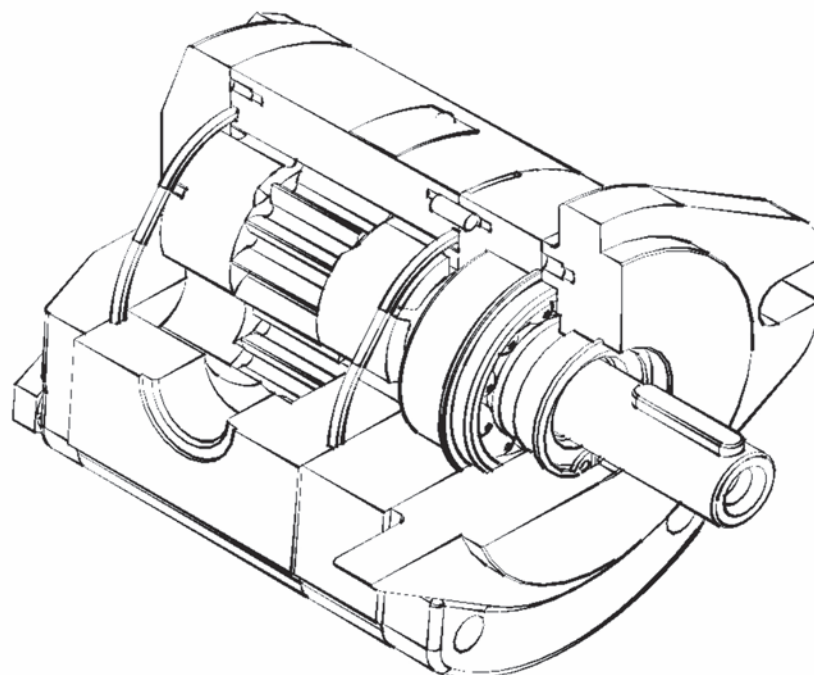


**Displacement** from 4 to 31 ccm  
**Pressure** up to 270 bar  
**Speed** from 500 to 4000 RPM

**GEAR MOTORS**  
**TM3**

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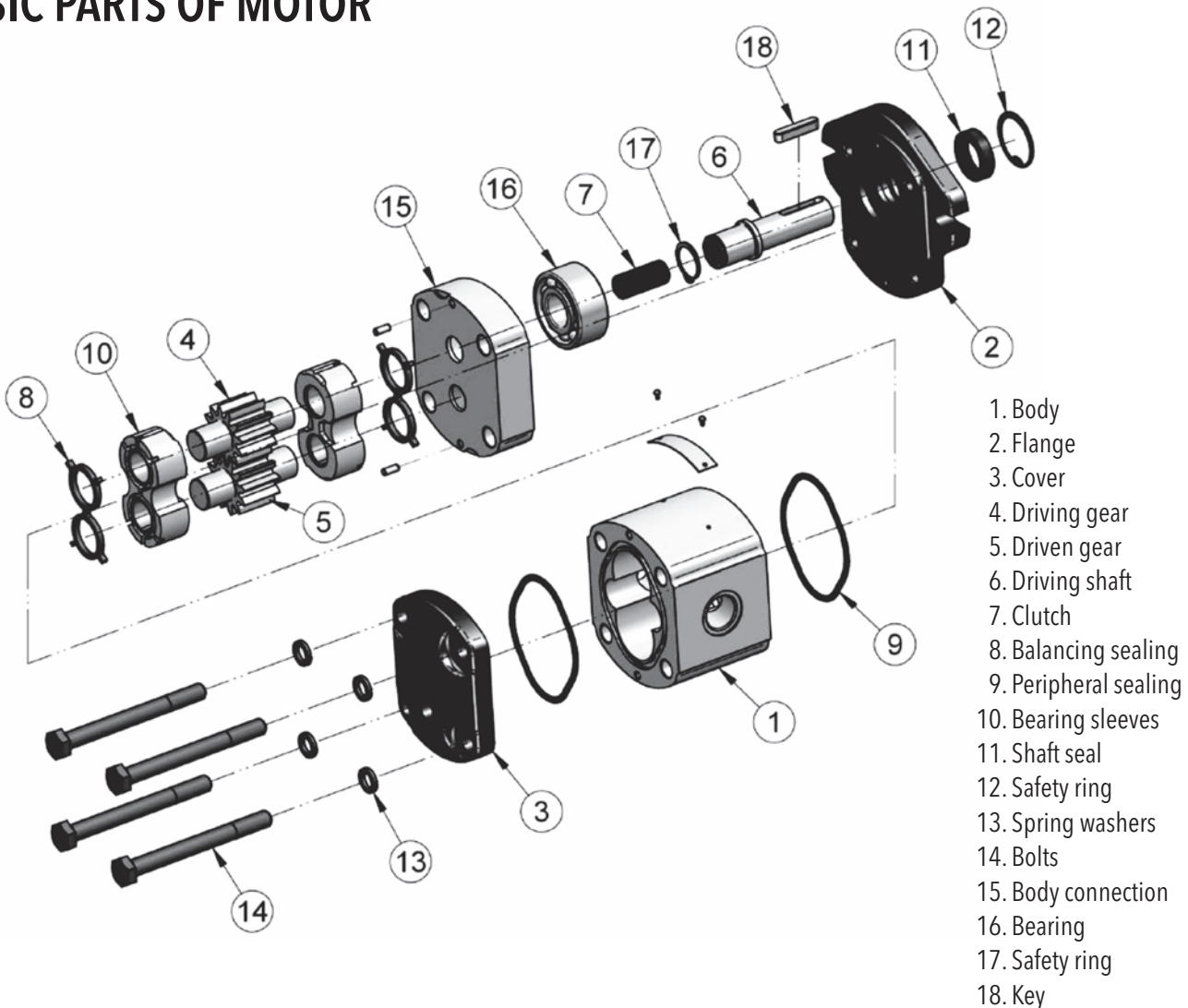
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## DESCRIPTION

- Gear motors are used for transformation of liquid pressure head in mechanical energy. TM3 series motors with external teeth are due to their simple construction, compact dimensions and a wide range of types applicable in modern hydraulic systems, handling equipment as well as mobile hydraulic systems. Flange types used as well as the form of working liquid inlet and outlet comply with all worldwide standards. The PM23 series covers the range of displacements from 9 to 31 cm<sup>3</sup>/rev.
- The basic version consists of several parts. The body is made of a heavy duty aluminium alloy, engine cover and flange of grey iron or eventually aluminium alloy, and gear wheels of heavy duty steel. Axle pins with a high surface duality are imbedded in sliding sleeves, continuously lubricated and cooled by a stream of working liquid. The axial pump balancing is performed using sliding aluminium alloy bearing sleeves in which a shape sealing of balancing surface is located in grooves. TM3 series motors can be delivered in one-way design as clockwise or anti-clockwise rotating engines; they are also available in reversible version.

## BASIC PARTS OF MOTOR



## PARAMETER TABLE

### One direction motors

Nominal Size Parameters		Sym.	Unit	TM3 4	TM3 6	TM3 8	TM3 12	TM3 16	TM3 20	TM3 25	TM3 31
Actual displacement		$V_g$	[cm <sup>3</sup> ]	4.03	6.02	8.05	12.08	16.10	20.12	25.16	31.21
Rotation speed	nominal	$n_n$	[min <sup>-1</sup> ]	1500	1500	1500	1500	1500	1500	1500	1500
	minimum	$n_{min}$	[min <sup>-1</sup> ]	500	500	500	500	500	500	500	500
	maximum	$n_{max}$	[min <sup>-1</sup> ]	4000	4000	3600	3600	3200	3200	2800	2200
Pressure at outlet	minimum	$p_{1min}$	[bar]	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
	maximum	$p_{1max}$	[bar]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Pressure at inlet	max. continuous	$p_{2n}$	[bar]	270	270	270	250	250	200	180	150
	maximum	$p_{2max}$	[bar]	290	290	290	270	270	240	200	170
	peak	$p_3$	[bar]	310	310	310	290	290	260	220	190
Nominal input flow rate (max.) at $n_n$ and $p_{2n}$		$Q_n$	[dm <sup>3</sup> .min <sup>-1</sup> ]	7.06	10.59	13.64	20.45	26.67	33.33	41.67	51.67
Maximum input flow rate at $n_{max}$ and $p_{2max}$		$Q_{max}$	[dm <sup>3</sup> .min <sup>-1</sup> ]	17.02	25.53	30.64	45.96	54.47	68.09	74.47	72.55
Nominal output power (min.) at $n_n$ and $p_{2n}$		$P_n$	[kW]	2.19	3.28	4.47	6.21	8.46	8.46	9.52	9.83
Maximum output power at $n_{max}$ and $p_{2max}$		$P_{max}$	[kW]	6.82	10.23	12.28	17.15	20.32	22.58	20.58	17.04
Nominal Torque at $n_n$ and $p_{2n}$		$M$	[Nm]	15.47	23.20	30.94	42.97	57.30	57.30	64.46	66.61
Weight		$m$	[kg]	2.60	2.65	2.75	2.95	3.10	3.35	3.50	3.80

### Reversible motors

Nominal Size Parameters		Sym.	Unit	TM3 4	TM3 6	TM3 8	TM3 12	TM3 16	TM3 20	TM3 25	TM3 31
Actual displacement		$V_g$	[cm <sup>3</sup> ]	4.03	6.02	8.05	12.08	16.10	20.12	25.16	31.21
Rotation speed	nominal	$n_n$	[min <sup>-1</sup> ]	1500	1500	1500	1500	1500	1500	1500	1500
	minimum	$n_{min}$	[min <sup>-1</sup> ]	500	500	500	500	500	500	500	500
	maximum	$n_{max}$	[min <sup>-1</sup> ]	4000	4000	3600	3600	3200	3200	2800	2200
Pressure at outlet	minimum	$p_{1min}$	[bar]	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
	maximum	$p_{1max}$	[bar]	210	210	210	210	200	160	140	100
Pressure at inlet	max. continuous	$p_{2n}$	[bar]	270	270	270	250	250	200	180	150
	maximum	$p_{2max}$	[bar]	290	290	290	270	270	240	200	170
	peak	$p_3$	[bar]	310	310	310	290	290	260	220	190
Nominal input flow rate (max.) at $n_n$ and $p_{2n}$		$Q_n$	[dm <sup>3</sup> .min <sup>-1</sup> ]	7.06	10.59	13.64	20.45	26.67	33.33	41.67	51.67
Maximum input flow rate at $n_{max}$ and $p_{2max}$		$Q_{max}$	[dm <sup>3</sup> .min <sup>-1</sup> ]	17.02	25.53	30.64	45.96	54.47	68.09	74.47	72.55
Nominal output power (min.) at $n_n$ and $p_{2n}$		$P_n$	[kW]	2.19	3.28	4.47	6.21	8.46	8.46	9.52	9.83
Maximum output power at $n_{max}$ and $p_{2max}$		$P_{max}$	[kW]	6.82	10.23	12.28	17.15	20.32	22.58	20.58	17.04
Nominal Torque at $n_n$ and $p_{2n}$		$M$	[Nm]	15.47	23.20	30.94	42.97	57.30	57.30	64.46	66.61
Weight		$m$	[kg]	2.60	2.65	2.75	2.95	3.10	3.35	3.50	3.80

## FORMULAS USED FOR CALCULATION

Flow rate  
**Q**

$$Q = \frac{V_g \cdot n}{1000} \cdot \eta_v \quad [\text{dm}^3 \cdot \text{min}^{-1}]$$

$V_g$  [cm<sup>3</sup>] pump displacement  
 $n$  [min<sup>-1</sup>] rotation speed  
 $\eta_v$  [-] volumetric efficiency

Displacement  
**V<sub>g</sub>**

$$V_g = \frac{Q \cdot 1000}{n \cdot \eta_v} \quad [\text{cm}^3]$$

Torque  
**M<sub>k</sub>**

$$M_k = \frac{V_g \cdot p}{20 \cdot \pi \cdot \eta_m} \quad [\text{Nm}]$$

$p$  [bar] required pressure at outlet  
 $\eta_m$  [-] mechanical efficiency

Input power  
**P**

$$P = \frac{V_g \cdot n \cdot p}{600 \cdot 1000 \cdot \eta_t} \quad [\text{kW}]$$

$\eta_t$  [-] total efficiency

## PUMP EFFICIENCIES

Volumetric efficiency

**$\eta_v$**

It determines the amount of flow losses. Its value is  $\eta_v = 0,92 \div 0,98$  (depending on rotation speed, viscosity of working liquid and outlet pressure). It can be expressed as follows:

$$\eta_v = \frac{Q_{act.}}{Q_{theor}} \quad [-]$$

$Q_{act.}$  [dm<sup>3</sup> · min<sup>-1</sup>] actual flow rate  
 $Q_{theor}$  [dm<sup>3</sup> · min<sup>-1</sup>] theoretical flow rate

Mechanical efficiency

**$\eta_m$**

It determines mechanical losses. Its value is about  $\eta_m = 0,85$ . It can be expressed as follows:

$$\eta_m = \frac{M_{theor}}{M_{act.}} \quad [-]$$

$M_{act.}$  [Nm] actual torque  
 $M_{theor}$  [Nm] theoretical torque

Total efficiency

**$\eta_t$**

It is defined as product of  $\eta_n$  and  $\eta_m$  and determines difference between theoretical and actual required input power:

$$\eta_t = \eta_v \cdot \eta_m = \frac{P_{theor}}{P_{act.}} \quad [-]$$

$P_{act.}$  [kW] actual input power  
 $P_{theor}$  [kW] theoretical input power

## WORKING LIQUID

- Mineral oils for hydraulic drives
- Hydraulic liquids based on plant oils suitable for hydraulic drives

### Liquid temperature

- $t = -20 \div +80$  [°C]  
when used with FKM (Viton) seal up to 120 [°C]

### Cinematic viscosity

- Recommended (during continuous operation):  $\nu = 20 \div 80 \cdot 10^{-6} [\text{m}^2 \cdot \text{s}^{-1}]$
- Maximum (cold starting, at viscosity  $>1000$ , operating pressure  $<10$  bar is permissible, speed  $<1500 \cdot \text{min}^{-1}$ ):  $\nu = 1200 \cdot 10^{-6} [\text{m}^2 \cdot \text{s}^{-1}]$
- Minimum (operating mode at  $10 \cdot 10^{-6}$  up  $20 \cdot 10^{-6}$  should be consulted with manufacturer):  $\nu = 10 \cdot 10^{-6} [\text{m}^2 \cdot \text{s}^{-1}]$

### Filtration coefficient $\beta_\alpha$

$\beta_{25\ 75} \geq$  (for pressure  $p_2 < 200$  bar)  
 $\beta_{10\ 75} \geq$  (for pressure  $p_2 > 200$  bar)

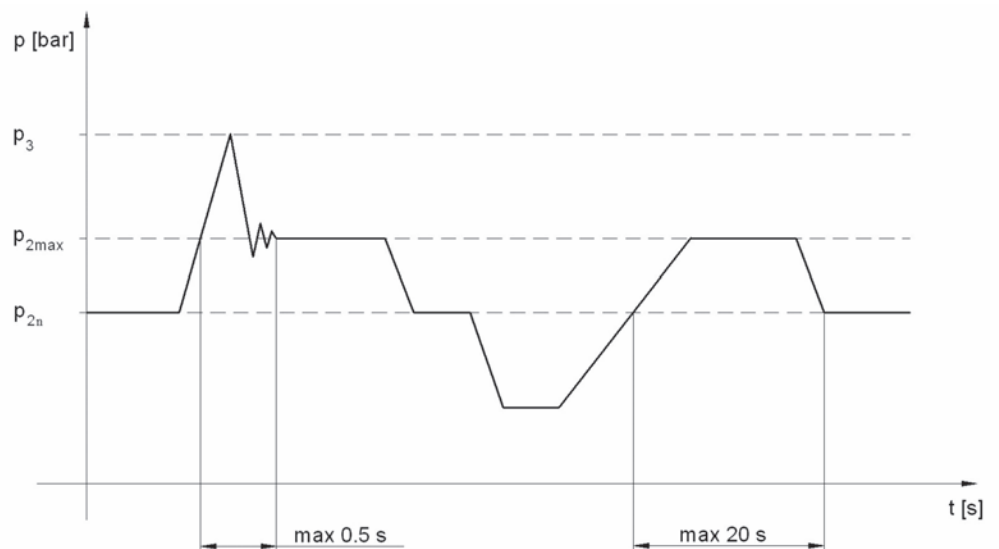
### Liquid contamination class according to ISO 4406

21/18/15 (for pressure  $p_2 < 200$  bar)  
20/17/14 (for pressure  $p_2 > 200$  bar)

### Liquid contamination class according to NAS 1638

10 (for pressure  $p_2 < 200$  bar)  
8 (for pressure  $p_2 > 200$  bar)

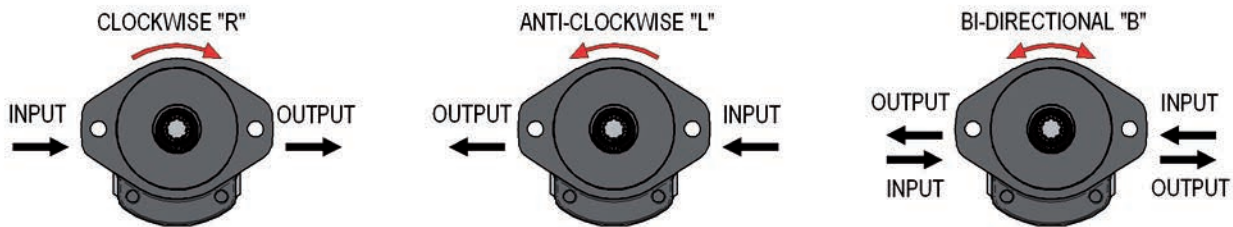
## PRESSURE LOAD



- $p_{2n}$  **max. contin. pressure** Max. working pressure, at which the pump can be operated without time limitation.
- $p_{2max}$  **max. pressure** Maximum pressure permissible for a short time, max. 20s.
- $p_3$  **peak pressure** Short-time pressure (fractions of a second) arising in case of a sudden change of the operating mode; any excess of this pressure during operation is impermissible.

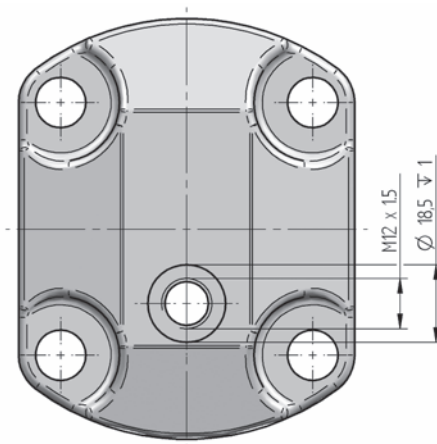
## DIRECTION OF ROTATION

- Determine direction of rotation by looking at the drive shaft. The motor can only be used in the specified direction of rotation.

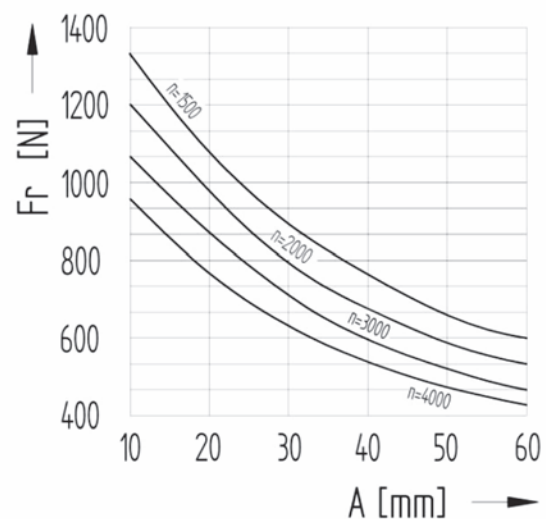
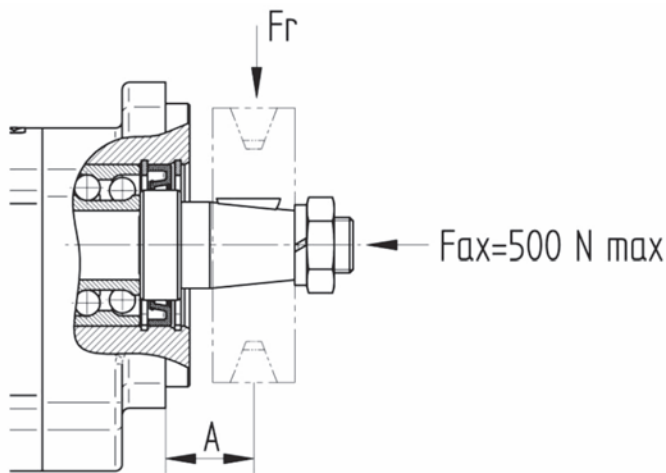


## REVERSIBLE DESIGN

- The motors with the possibility of bidirectional rotation have a different internal arrangement requiring drainage. Two types are used - internal and external. The internal drainage is always interconnected with the outlet by means of valves. The external drainage is solved by an orifice located in the cover opposite the driven gear.

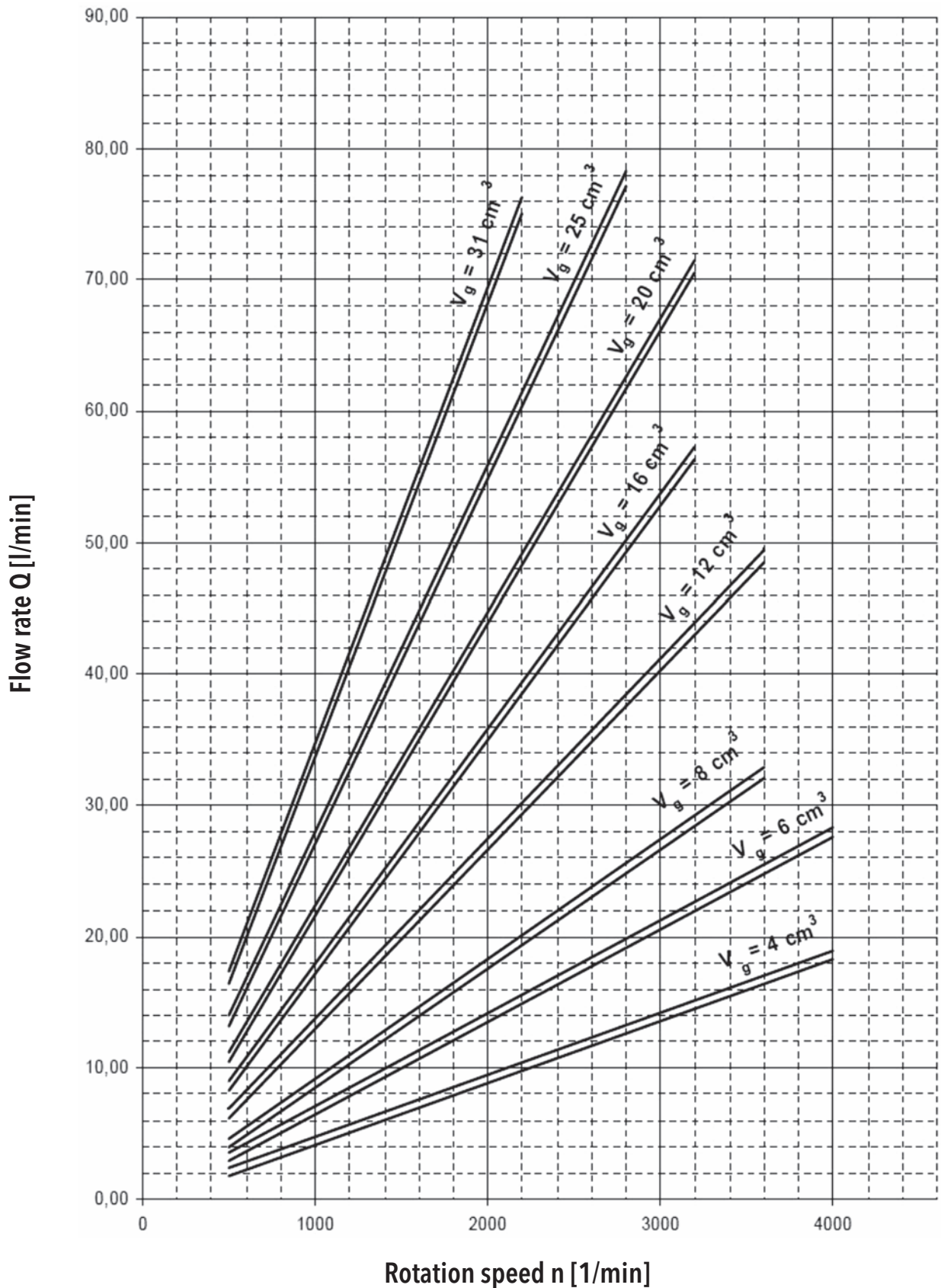


## MOTOR WITH A FRONT-END BEARING



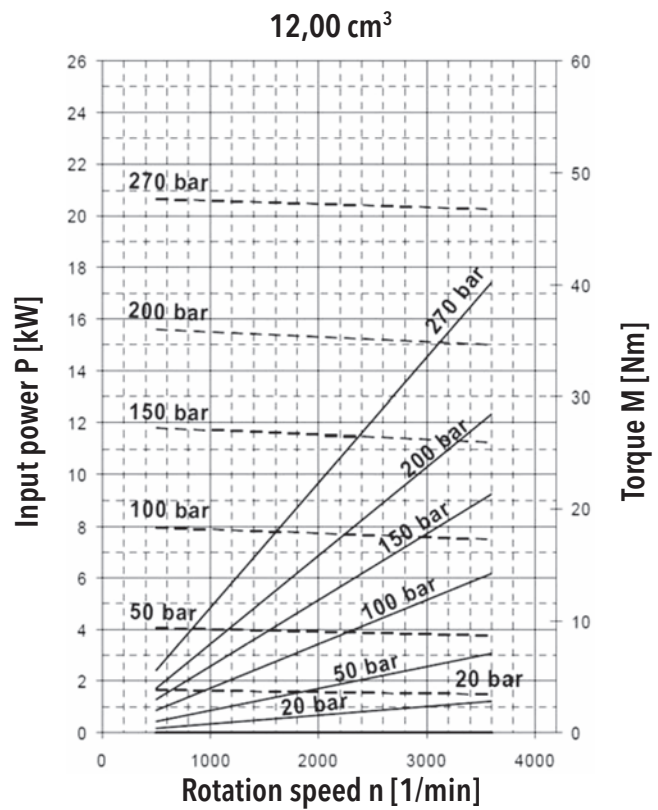
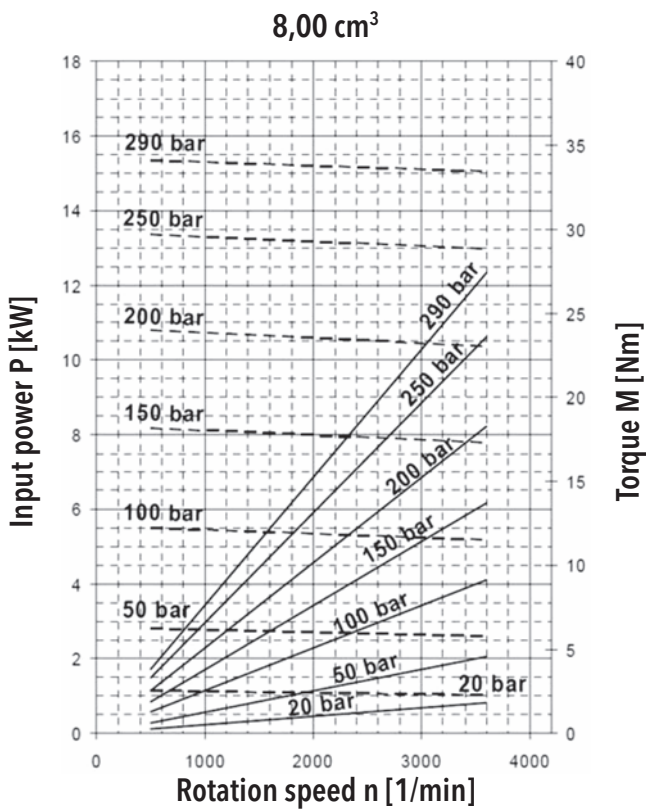
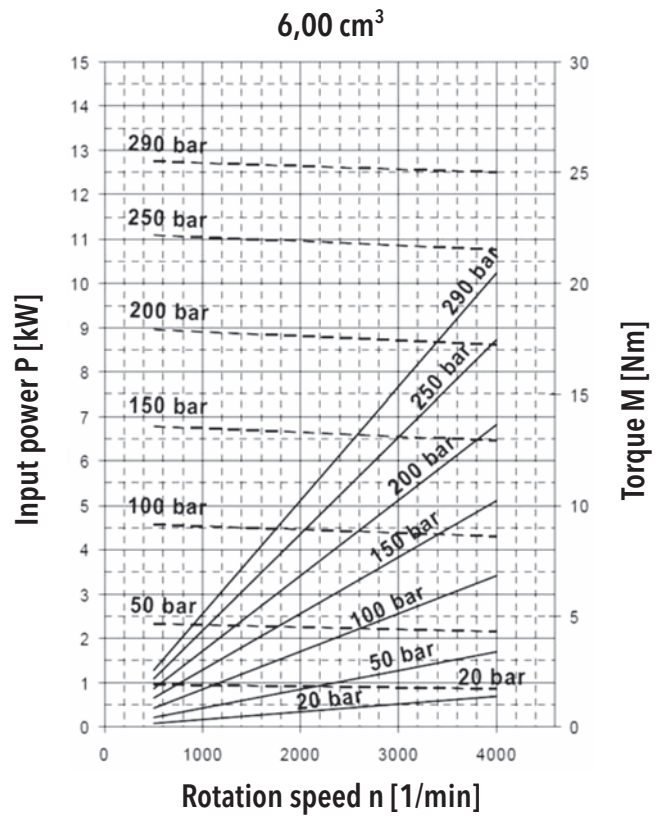
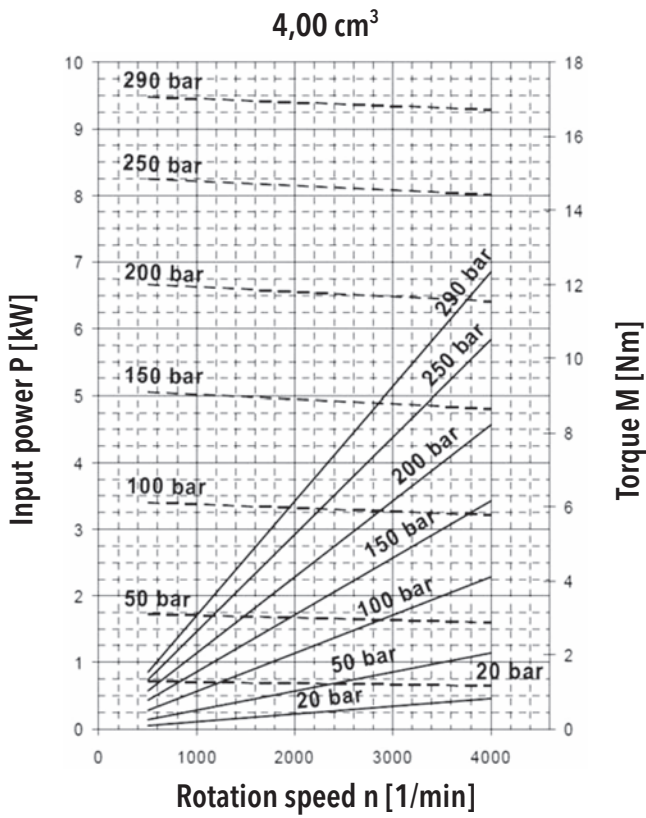
A driven device must not generate an axial or a radial load of the motor shaft, unless this is exclusively permitted for the motor with a front-end bearing.

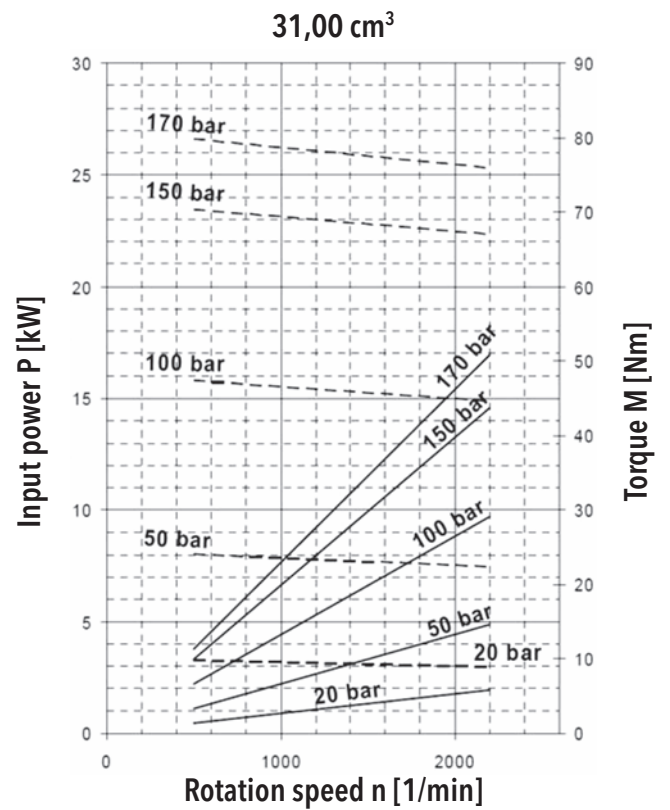
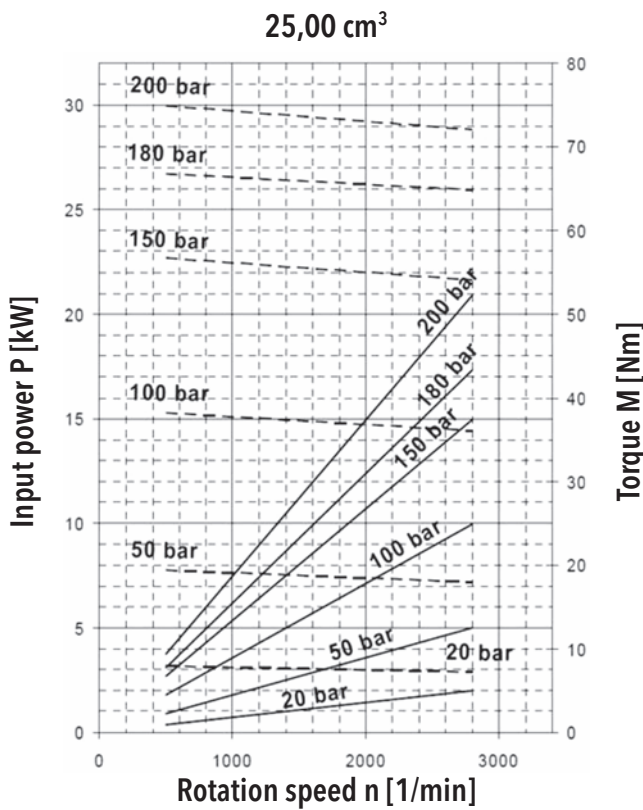
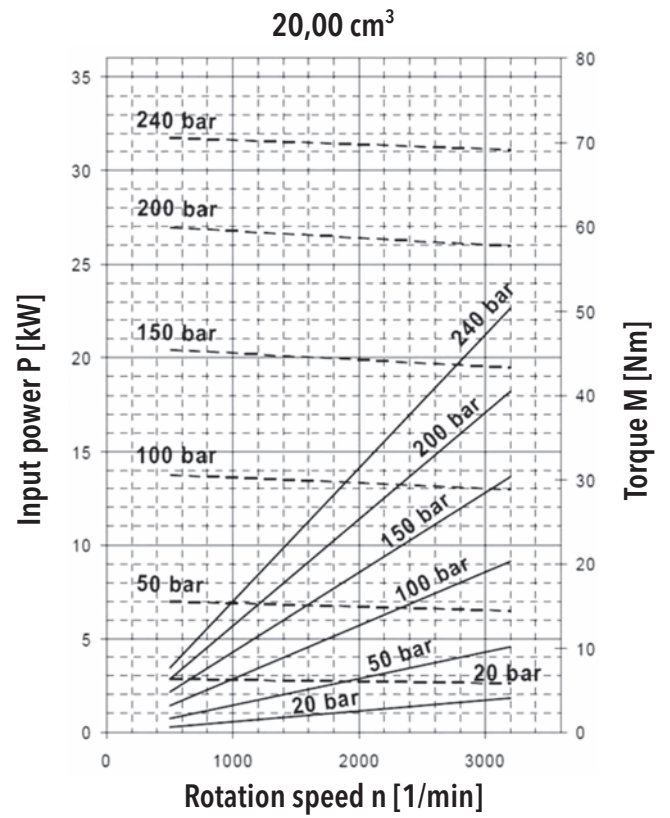
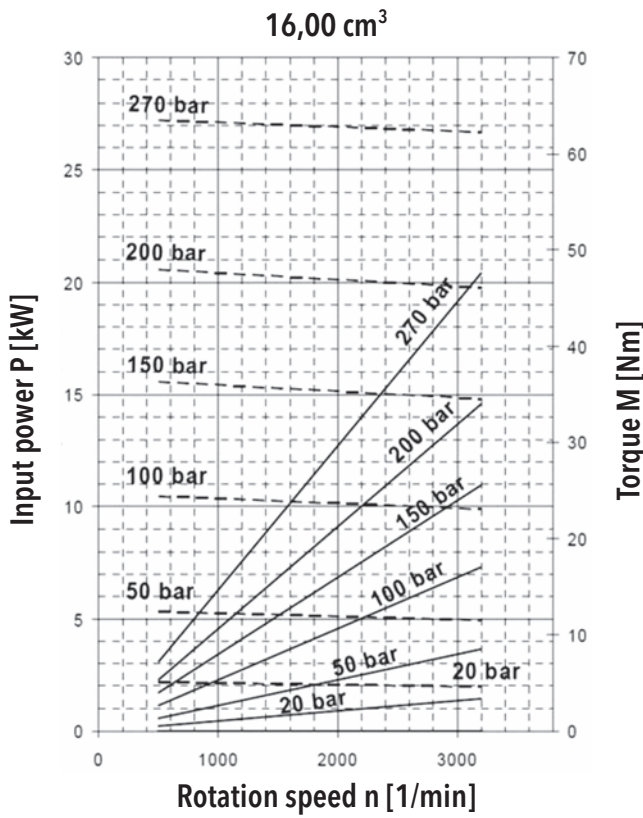
## TM3 FLOW RATE AND POWER CURVES



Above curves apply to ISO Vg 46 oil at temperature  $t = 45^\circ\text{C}$ .







## ORDER KEY

TM3 - 16 R - S02 D04 - S G04 G03 - V . 001




Code	Displacement [cm <sup>3</sup> ]
4	4,03
6	6,02
8	8,05
12	12,08
16	16,10
20	20,12
25	25,16
31	31,21
XX	Other displacements on request










Code	Direction of Rotation
R	Clockwise
L	Anti-clockwise
B	Bi-directional

Code	Type
TM3	TM3 Series Gear Motor




Code	Location of inlets and outlets
S	 Side (in the body)
R	 Rear (in the cover)
C	 Combination
Z	Special design











  

Code	Drive shaft design
C07	Taper 1:8 Key width 3
C08	 Taper 1:8 Key width 3,2
C09	Taper 1:8 Key width 4
C10	 Taper 1:5 Key width 3
D04	Spline SAE 9T 16/32 DP
D06	 Spline SAE 11T l = 32, 16/32 DP
D07	Spline SAE 11T l = 38, 16/32 DP
D08	 Spline CSN 17x1,25
D09	 Spline DIN 5482 B17x14
D10	 Spline GOST 6033-80
D11	 Spline 16x13x3,5
K07	 Cross coupling
V09	Cylindric Ø5/8", Key 4x4
V11	 Cylindric Ø15, Key 4x4
V12	Cylindric Ø3/4", Key 4,8x4,8
V13	Cylindric Ø20, Key 6x6
Z	Special design










Code	Special arrangements
-	No special arrangements
001	With front-end bearing type 1
002	With front-end bearing type 2
003	Sealed section for multiple version
004	Without shaft seal
005	Inlet in body, outlet in cover
006	Inlet in cover, outlet in body
007	Inlet in body, outlet in flange
008	Inlet in flange, outlet in body
009	Drain M12 x 1,5 in cover
010	With front-end bearing type 3
011	Drain G¼ in cover
012	Internal drain
013	Variseal
014	Shaft seal – double lip

















  

Code	Seal material
N	 NBR
V	 FKM
H	 HNBR

Code	Flange design
F02	 Square flange Centre ring Ø 80
R05	 Rectangular flange, centre ring Ø 36,5
R06	 Rectangular flange, centre ring Ø 80
R07	 Rectangular flange, centre ring Ø 60
S02	 SAE A
S03	 SAE B
A07	 Flange with trough-bolts, centre ring Ø 50
A08	 Flange with trough-bolts, centre ring Ø 50
A09	 Flange with trough-bolts, centre ring Ø 52 with O-ring
A10	 Flange with trough-bolts, centre ring Ø 52 with O-ring
Z	Special design

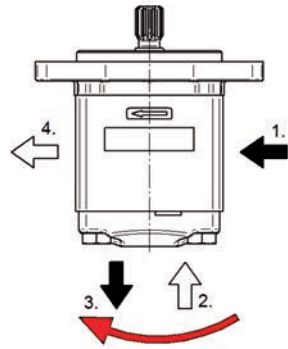
  

Code	Drive shaft design
C07	Taper 1:8 Key width 3
C08	 Taper 1:8 Key width 3,2
C09	Taper 1:8 Key width 4
C10	 Taper 1:5 Key width 3
D04	Spline SAE 9T 16/32 DP
D06	 Spline SAE 11T l = 32, 16/32 DP
D07	Spline SAE 11T l = 38, 16/32 DP
D08	 Spline CSN 17x1,25
D09	 Spline DIN 5482 B17x14
D10	 Spline GOST 6033-80
D11	 Spline 16x13x3,5
K07	 Cross coupling
V09	Cylindric Ø5/8", Key 4x4
V11	 Cylindric Ø15, Key 4x4
V12	Cylindric Ø3/4", Key 4,8x4,8
V13	Cylindric Ø20, Key 6x6
Z	Special design

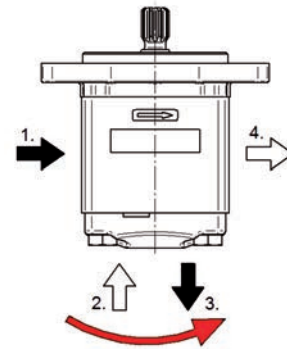
Code	Liquid inlet and outlet connection shape
M05	 Thread M18x1,5
M09	 Thread M27x2
G03	 Thread BSP G1/2
G04	 Thread BSP G3/4
G05	 Thread BSP G1"
U04	 Thread 7/8–14 UNF-2B
U05	 Thread 1–1/16–12 UN-2B
H05	 Flanged fitting Ø15 Square 4xM6 Ø35
H06	 Flanged fitting Ø20 Square 4xM6 Ø40
H10	 Flanged fitting Ø26 Square 4xM8 Ø55
H07	 Flanged fitting Ø13,5 Square 4xM6 Ø30
H08	 Flanged fitting Ø20 Square 4xM8 Ø40
K01	 Flanged fitting Ø13,5 Cross 4xM6 Ø30
K02	 Flanged fitting Ø20 Cross 4xM8 Ø40
K07	 Flanged fitting Ø14 Cross 4xM8 Ø38
K08	 Flanged fitting Ø19 Cross 4xM8 Ø38
Z	Special design

An example of designation for the TM3 clockwise motor with displacement of 16 cm<sup>3</sup>, SAE A flange; Spline SAE 9T; BSP side inlets in the body and FKM sealing, with front-end bearing: **TM3-16R-S02D04-SG04G03-V.001**

Note: In case of combination inlets, with the code „C” is respected following sequence of inlets and outlets:



For clockwise and reverse gear motor,  
in direction clockwise



For anti-clockwise gear motor,  
in direction anti-clockwise

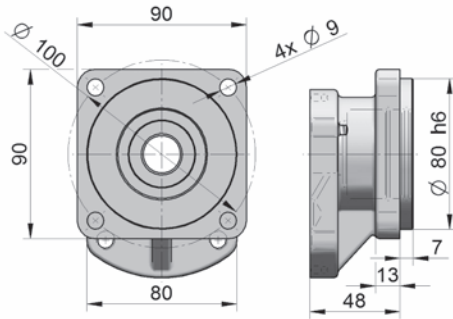
For. ex....: TM3-12R-S02D04-CG03 G03 G04 G04 -N  
1. 2. 3. 4.

## COMBINATIONS OF FLANGES AND SHAFTS

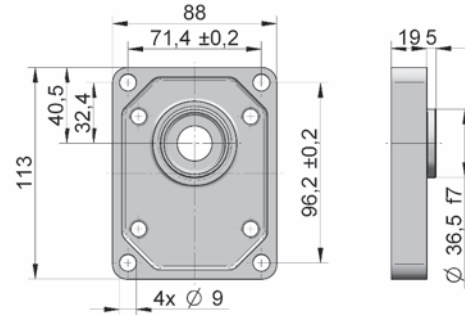
		FLANGE DESIGN												
		F02	R05	R06	R07	S02	S03	A07	A08	A09	A10			
DRIVE SHAFT	C07		●											
	C08		●											
	C09		●											
	C10			●				●	●					
	D04						●	●						
	D06						●	●						
	D07						●	●						
	D08			●										
	D09				●				●	●				
	D10		●											
	D11					●								
	K05										●	●		
	V09						●	●						
	V11			●										
	V12						●	●						
V13		●												

## FLANGES DESIGN

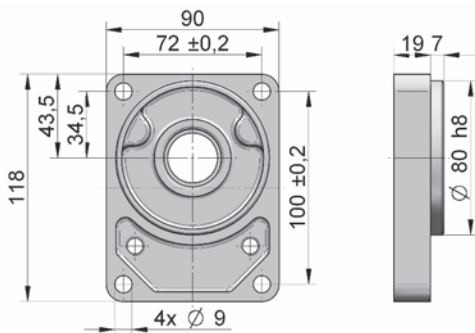
**F02:**



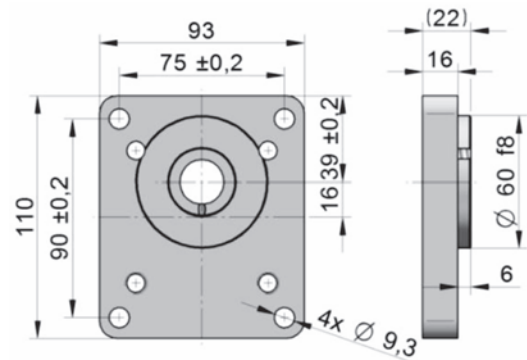
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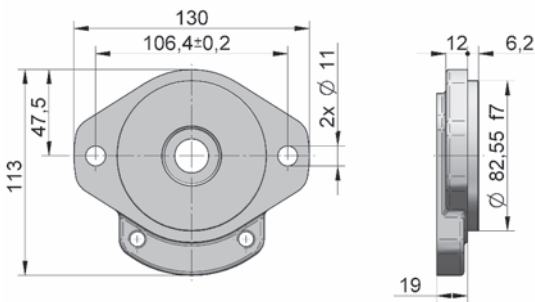
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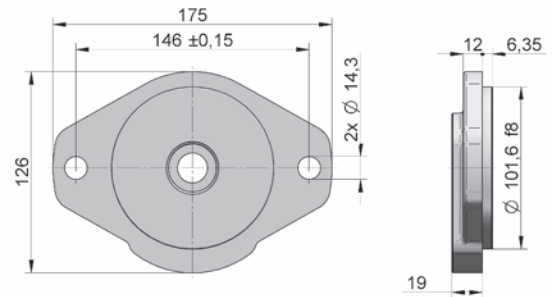
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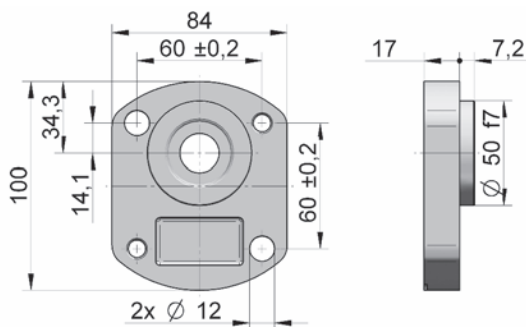
**S02:**



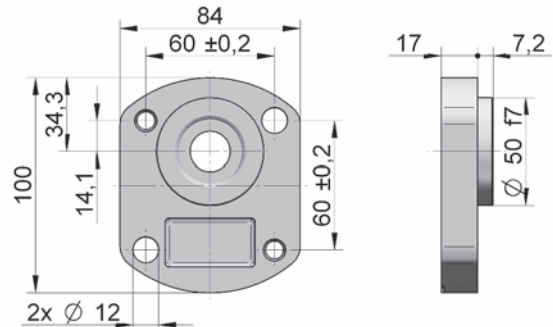
**S03:**



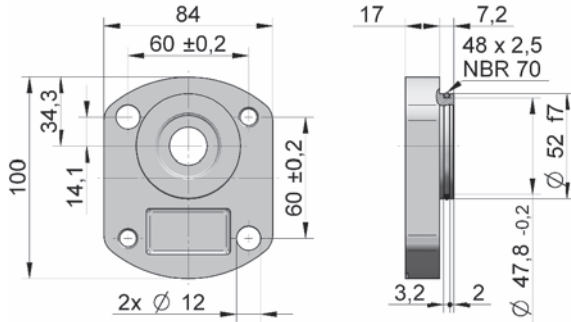
**A07:**



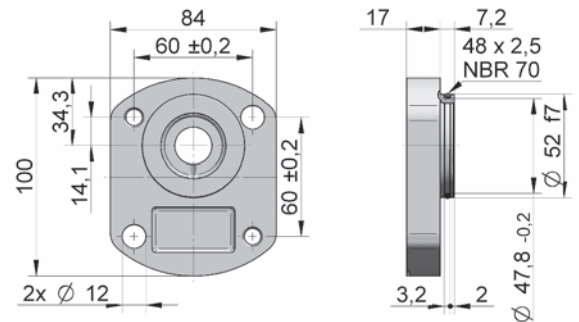
**A08:**



**A09:**



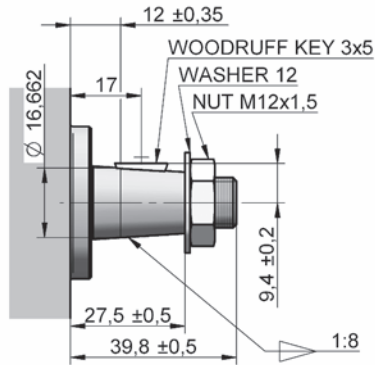
**A10:**



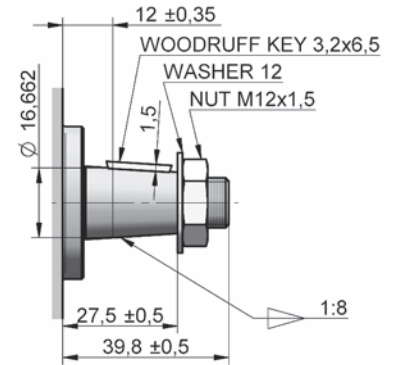
## DRIVE SHAFT

Note: maximum allowed torque on a drive shaft is 100 Nm.

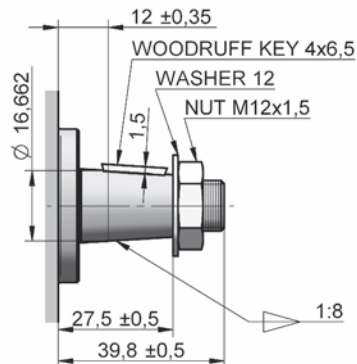
**C07:**



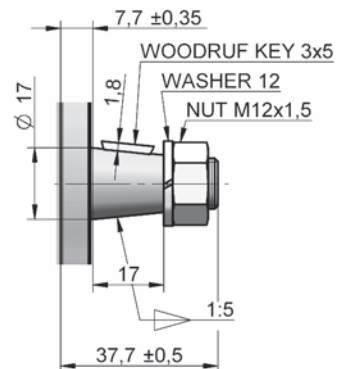
**C08:**



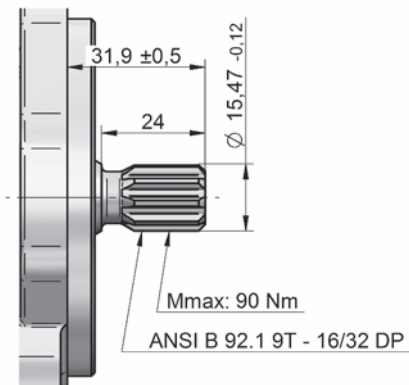
**C09:**



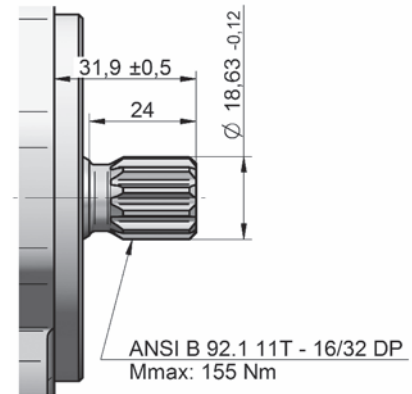
**C10:**



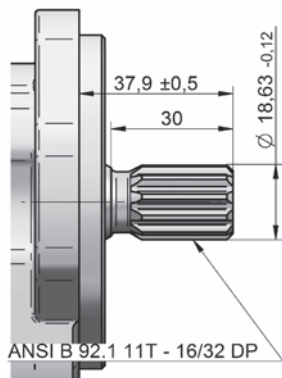
**D04:**



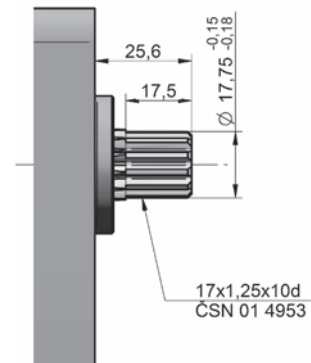
**D06:**



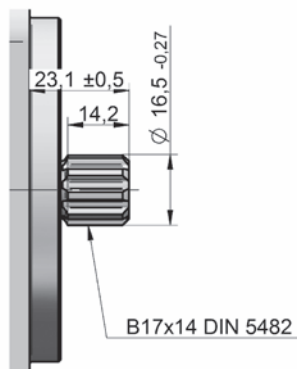
**D07:**



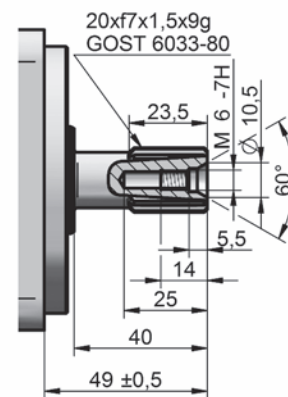
**D08:**



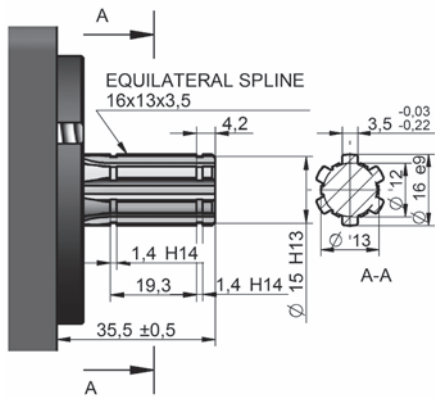
**D09:**



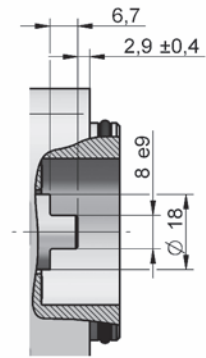
**D10:**



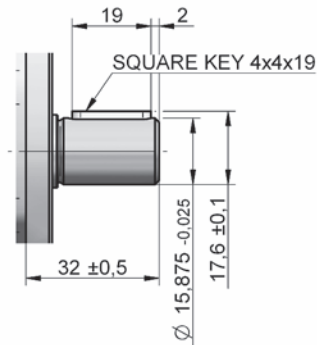
**D11:**



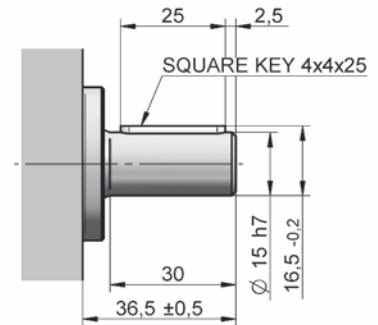
**K07:**



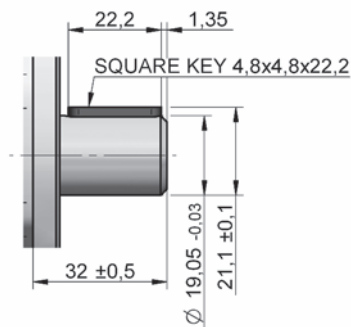
**V09:**



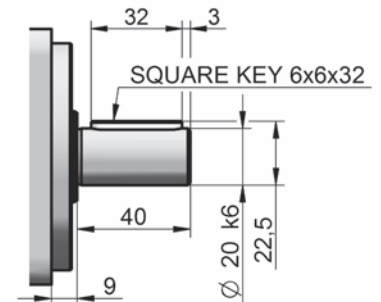
**V11:**



**V12:**



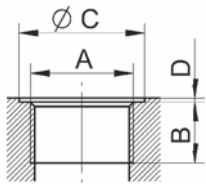
**V13:**





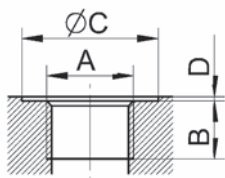
## LIQUID INLET AND OUTLET CONNECTION

### Metric thread according to ISO 6149



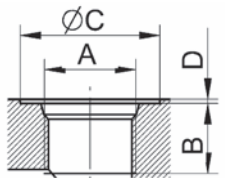
Displacement [cm <sup>3</sup> ]	kód	Inlet				kód	Outlet			
		A	B	C	D		A	B	C	D
all	M09	M 27x2	16	33	1	M05	M 18x1,5	14	24	1

### BSPB pipe thread according to ISO 228 - 1



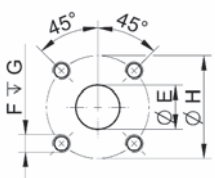
Displacement [cm <sup>3</sup> ]	Code	Inlet				Code	Outlet			
		A	B	C	D		A	B	C	D
to 10	G03	G 1/2"	14	33	1	G03	G 1/2"	14	33	1
10 - 25	G04	G 3/4"	16	39	1	G03	G 1/2"	14	33	1
above 25	G05	G 1"	18	45	1	G04	G 3/4"	16	39	1

### UNF thread according to SAE



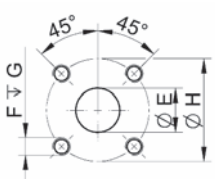
Displacement [cm <sup>3</sup> ]	Code	Inlet				Code	Outlet			
		A	B	C	D		A	B	C	D
to 10	U04	7/8-14 UNF-2B	17	34	1	U04	7/8-14 UNF-2B	17	34	1
11 - 31	U05	1-1/16-12 UNF-2B	19	41	1	U04	7/8-14 UNF-2B	17	34	1

### Flanged fittings according to DIN 8901/8902



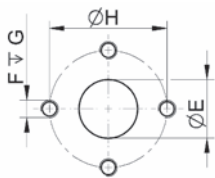
Displacement [cm <sup>3</sup> ]	Code	Inlet				Code	Outlet			
		E	F	G	H		E	F	G	H
all	H06	20	M6	13	40	H05	15	M6	13	35
all	H10	25	M8	13	55	H05	15	M6	13	35

### Flanged fittings - „square”



Displacement [cm <sup>3</sup> ]	Code	Inlet				Code	Outlet			
		E	F	G	H		E	F	G	H
all	H08	20	M8	13	40	H07	13.5	M6	13	30

### Flanged fittings - „cross”

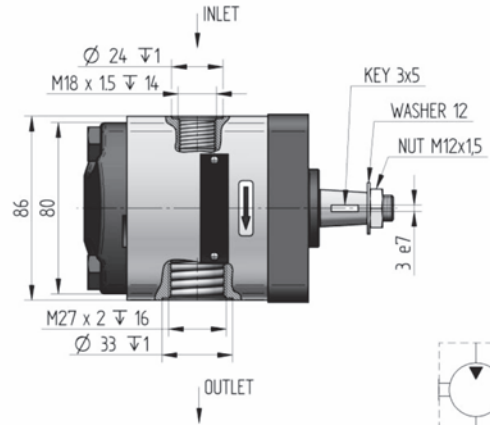
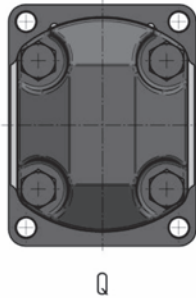
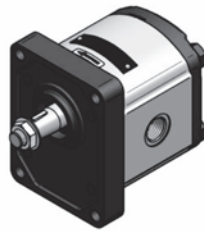
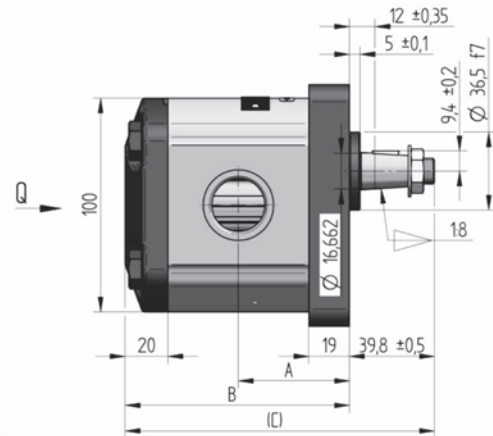
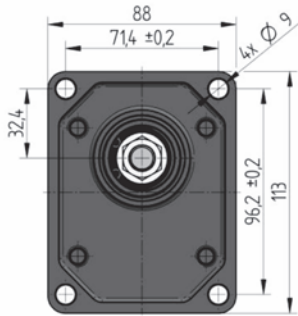


Displacement [cm <sup>3</sup> ]	Code	Inlet				Code	Outlet			
		E	F	G	H		E	F	G	H
all	K02	20	M8	13	40	K01	13.5	M6	13	30
to 10	K07	14	M8	13	38	K07	14.0	M8	13	38
above 10	K08	19	M8	13	38	K07	14.0	M8	13	38

### Drain

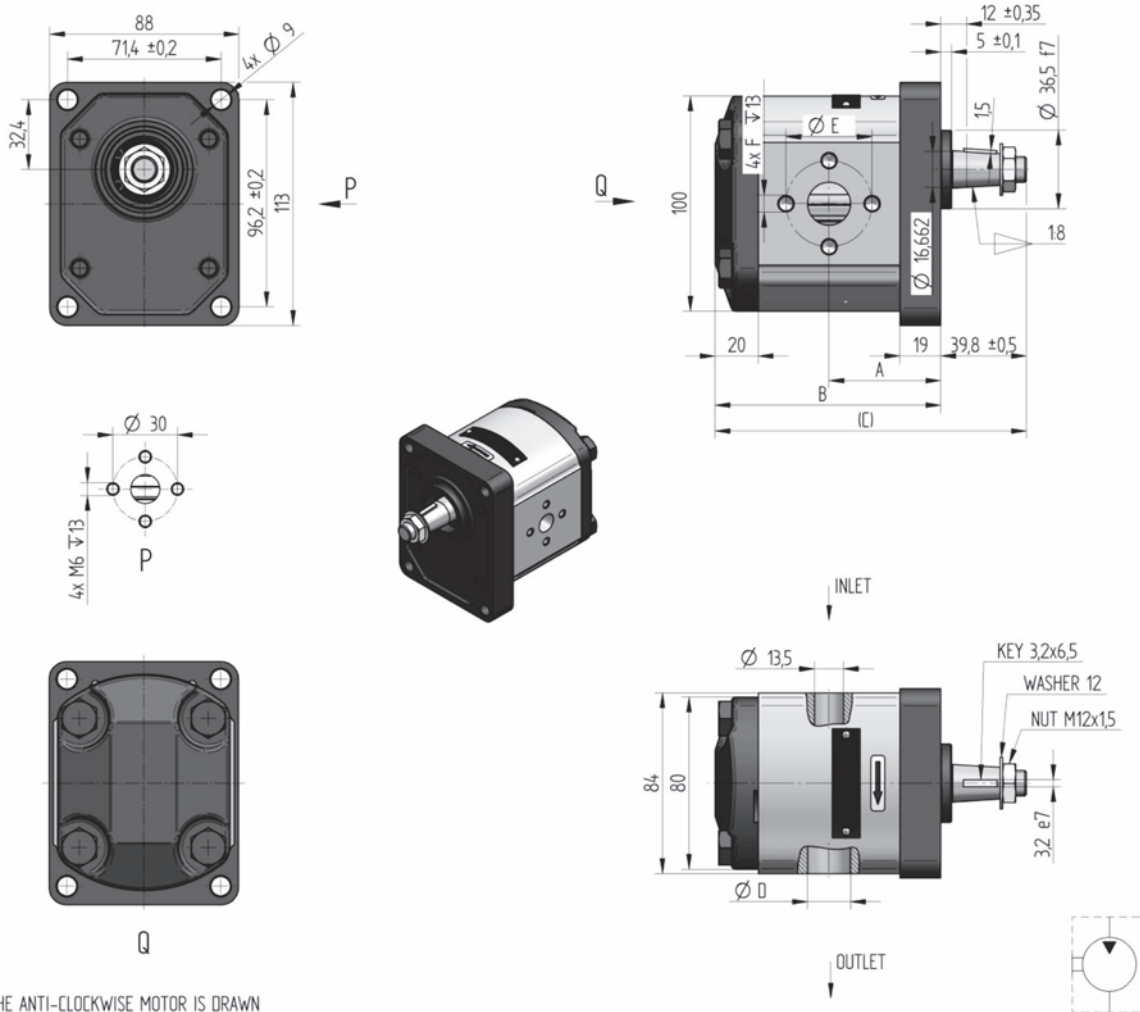
Displacement [cm <sup>3</sup> ]	Code	Outlet			
		A	B	C	D
all	M02	M 12x1,5	12	20	1
	G01	G 1/4	12	45	1
	U01	7/16-20 UNF-2B	13	21	1
	U02	9/16-18 UNF-2B	14	25	1

## CATALOGUE SHETS OF TM3 SERIES BASIC DESIGNS

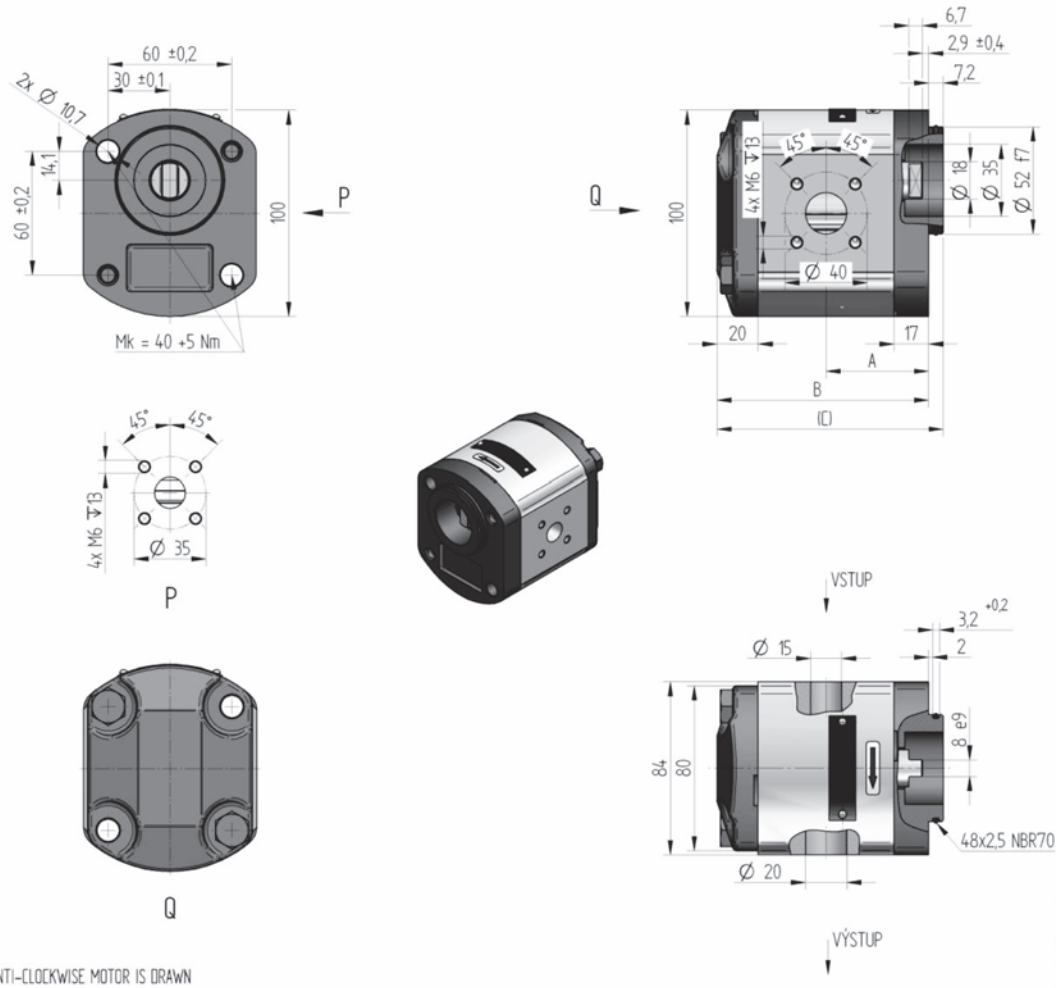


THE ANTI-CLOCKWISE MOTOR IS DRAWN

Order key	purch. code	direct. of rot.	displacement [cm <sup>3</sup> /1]	nom. press. [bar]	speed MIN. [min <sup>-1</sup> ]	speed MAX. [min <sup>-1</sup> ]	A [mm]	dimension B [mm]	C [mm]
TM3-31L- R05C07-SM09M05-N		L	31	150	500	2 200	63.7	128.5	168.3
TM3-31R- R05C07-SM09M05-N		R							
TM3-25L- R05C07-SM09M05-N		L	25	200	500	2 800	59.0	119.1	158.9
TM3-25R- R05C07-SM09M05-N		R							
TM3-20L- R05C07-SM09M05-N		L	20	240	500	3 200	55.0	111.2	151.0
TM3-20R- R05C07-SM09M05-N		R							
TM3-16L- R05C07-SM09M05-N		L	16	260	500	3 200	51.9	104.9	144.7
TM3-16R- R05C07-SM09M05-N		R							
TM3-12L- R05C07-SM09M05-N		L	12	260	500	3 600	48.8	98.6	138.4
TM3-12R- R05C07-SM09M05-N		R							
TM3-8L- R05C07-SM09M05-N		L	8	280	500	3 600	45.6	92.3	132.1
TM3-8R- R05C07-SM09M05-N		R							
TM3-6L- R05C07-SM09M05-N		L	6	280	500	4 000	44.0	89.2	129.0
TM3-6R- R05C07-SM09M05-N		R							
TM3-4L- R05C07-SM09M05-N		L	4	280	500	4 000	42.5	86.0	125.8
TM3-4R- R05C07-SM09M05-N		R							

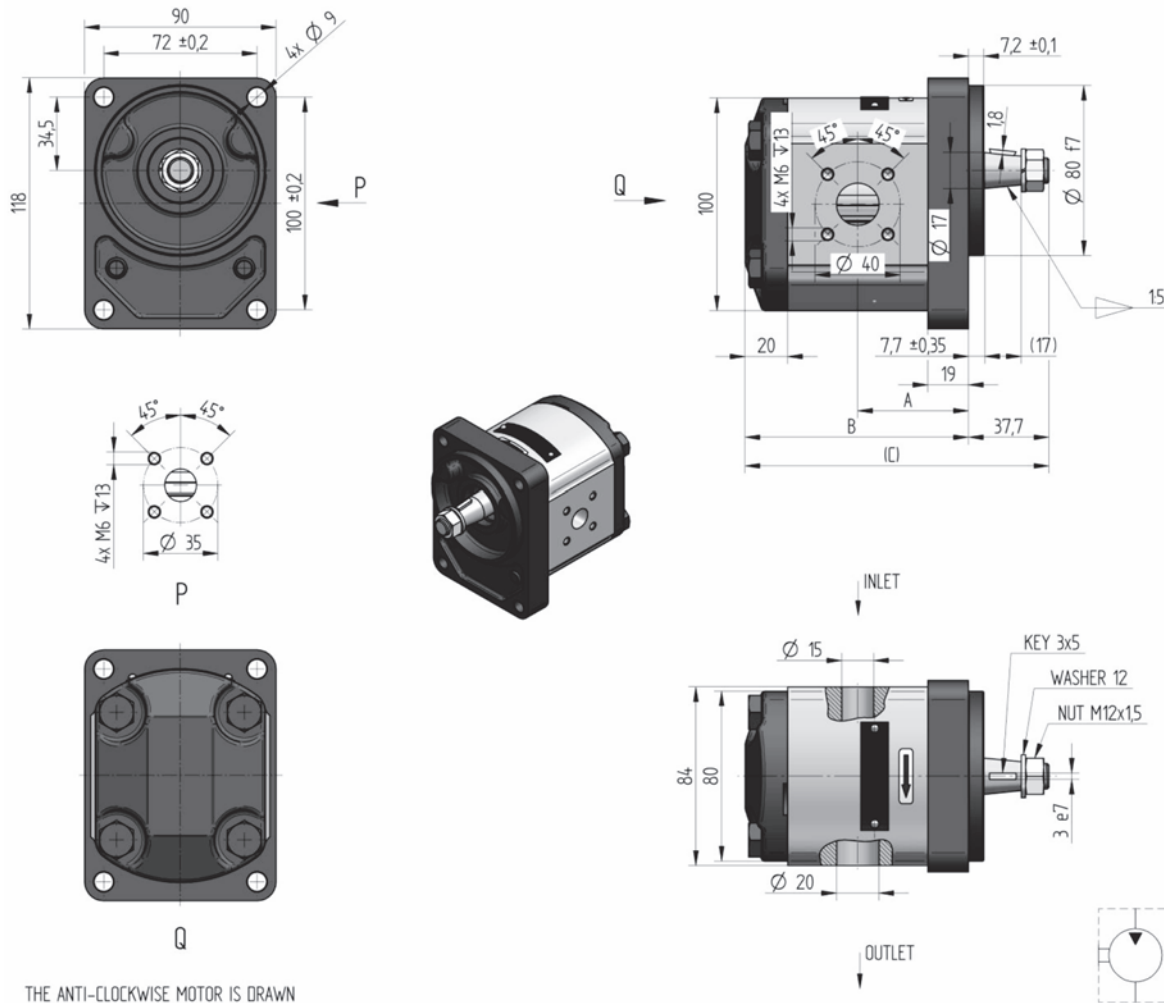


Order key	purch. code	direct. of rot.	displacement [cm <sup>3</sup> /1]	nom. press. [bar]	speed MIN. [min <sup>-1</sup> ]	speed MAX. [min <sup>-1</sup> ]	dimension					
							A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]
TM3-31L- R05C08-SK02K01-N		L	31	150	500	2 200	63.7	128.5	168.3	Ø 20	Ø 40	M8
TM3-31R- R05C08-SK02K01-N		R										
TM3-25L- R05C08-SK02K01-N		L	25	200	500	2 800	59.0	119.1	158.9	Ø 20	Ø 40	M8
TM3-25R- R05C08-SK02K01-N		R										
TM3-20L- R05C08-SK02K01-N		L	20	240	500	3 200	55.0	111.2	151.0	Ø 20	Ø 40	M8
TM3-20R- R05C08-SK02K01-N		R										
TM3-16L- R05C08-SK02K01-N		L	16	260	500	3 200	51.9	104.9	144.7	Ø 20	Ø 40	M8
TM3-16R- R05C08-SK02K01-N		R										
TM3-12L- R05C08-SK02K01-N		L	12	260	500	3 600	48.8	98.6	138.4	Ø 20	Ø 40	M8
TM3-12R- R05C08-SK02K01-N		R										
TM3-8L- R05C08-SK01K01-N		L	8	280	500	3 600	45.6	92.3	132.1	Ø 13.5	Ø 30	M6
TM3-8R- R05C08-SK01K01-N		R										
TM3-6L- R05C08-SK01K01-N		L	6	280	500	4 000	44.0	89.2	129.0	Ø 13.5	Ø 30	M6
TM3-6R- R05C08-SK01K01-N		R										
TM3-4L- R05C08-SK01K01-N		L	4	280	500	4 000	42.5	86.0	125.8	Ø 13.5	Ø 30	M6
TM3-4R- R05C08-SK01K01-N		R										



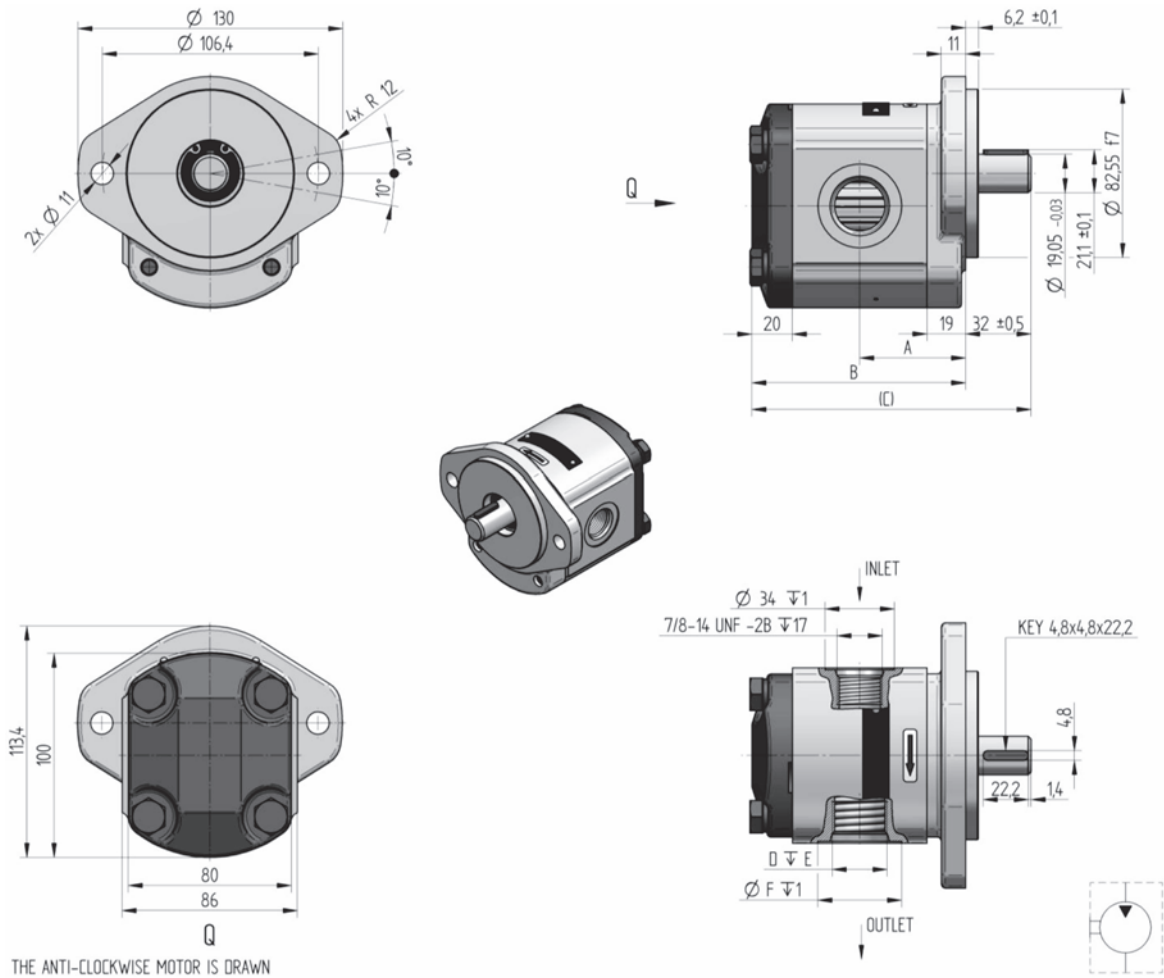
THE ANTI-CLOCKWISE MOTOR IS DRAWN

Order key	purch. code	direct. of rot.	displacement [cm <sup>3</sup> /1]	nom. press. [bar]	speed MIN. [min <sup>-1</sup> ]	speed MAX. [min <sup>-1</sup> ]	dimension		
							A [mm]	B [mm]	C [mm]
TM3-31L-A09K07-SH06H05-N.004		L	31	150	500	2 200	61.7	126.5	133.7
TM3-31R-A09K07-SH06H05-N.004		R							
TM3-25L-A09K07-SH06H05-N.004		L	25	200	500	2 800	57.0	117.1	124.3
TM3-25R-A09K07-SH06H05-N.004		R							
TM3-20L-A09K07-SH06H05-N.004		L	20	240	500	3 200	53.0	109.2	116.4
TM3-20R-A09K07-SH06H05-N.004		R							
TM3-16L-A09K07-SH06H05-N.004		L	16	260	500	3 200	49.9	102.9	110.1
TM3-16R-A09K07-SH06H05-N.004		R							
TM3-12L-A09K07-SH06H05-N.004		L	12	260	500	3 600	46.8	96.6	103.8
TM3-12R-A09K07-SH06H05-N.004		R							
TM3-8L-A09K07-SH06H05-N.004		L	8	280	500	3 600	43.6	90.3	97.5
TM3-8R-A09K07-SH06H05-N.004		R							
TM3-6L-A09K07-SH06H05-N.004		L	6	280	500	4 000	42.0	87.2	94.4
TM3-6R-A09K07-SH06H05-N.004		R							
TM3-4L-A09K07-SH06H05-N.004		L	4	280	500	4 000	40.5	84.0	91.2
TM3-4R-A09K07-SH06H05-N.004		R							

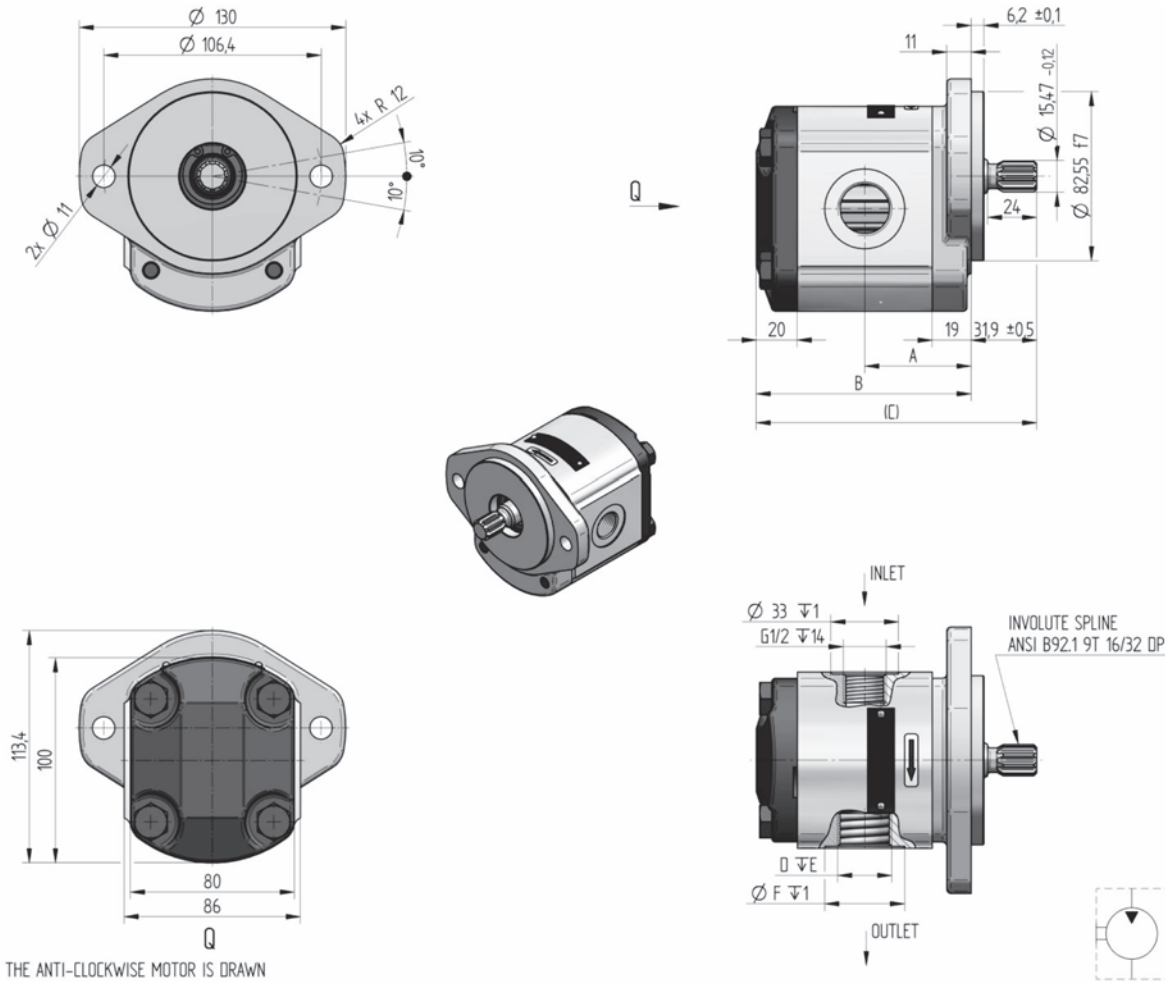


THE ANTI-CLOCKWISE MOTOR IS DRAWN

Order key	purch. code	direct. of rot.	displacement [cm <sup>3</sup> /1]	nom. press. [bar]	speed MIN. [min <sup>-1</sup> ]	speed MAX. [min <sup>-1</sup> ]	A [mm]	dimension B [mm]	C [mm]
TM3-31L-R06C10-SH06H05-N		L	31	150	500	2 200	63.7	128.5	168.3
TM3-31R-R06C10-SH06H05-N		R							
TM3-25L-R06C10-SH06H05-N		L	25	200	500	2 800	59.0	119.1	158.9
TM3-25R-R06C10-SH06H05-N		R							
TM3-20L-R06C10-SH06H05-N		L	20	240	500	3 200	55.0	111.2	151.0
TM3-20R-R06C10-SH06H05-N		R							
TM3-16L-R06C10-SH06H05-N		L	16	260	500	3 200	51.9	104.9	144.7
TM3-16R-R06C10-SH06H05-N		R							
TM3-12L-R06C10-SH06H05-N		L	12	260	500	3 600	48.8	98.6	138.4
TM3-12R-R06C10-SH06H05-N		R							
TM3-8L-R06C10-SH06H05-N		L	8	280	500	3 600	45.6	92.3	132.1
TM3-8R-R06C10-SH06H05-N		R							
TM3-6L-R06C10-SH06H05-N		L	6	280	500	4 000	44.0	89.2	129.0
TM3-6R-R06C10-SH06H05-N		R							
TM3-4L-R06C10-SH06H05-N		L	4	280	500	4 000	42.5	86.0	125.8
TM3-4R-R06C10-SH06H05-N		R							

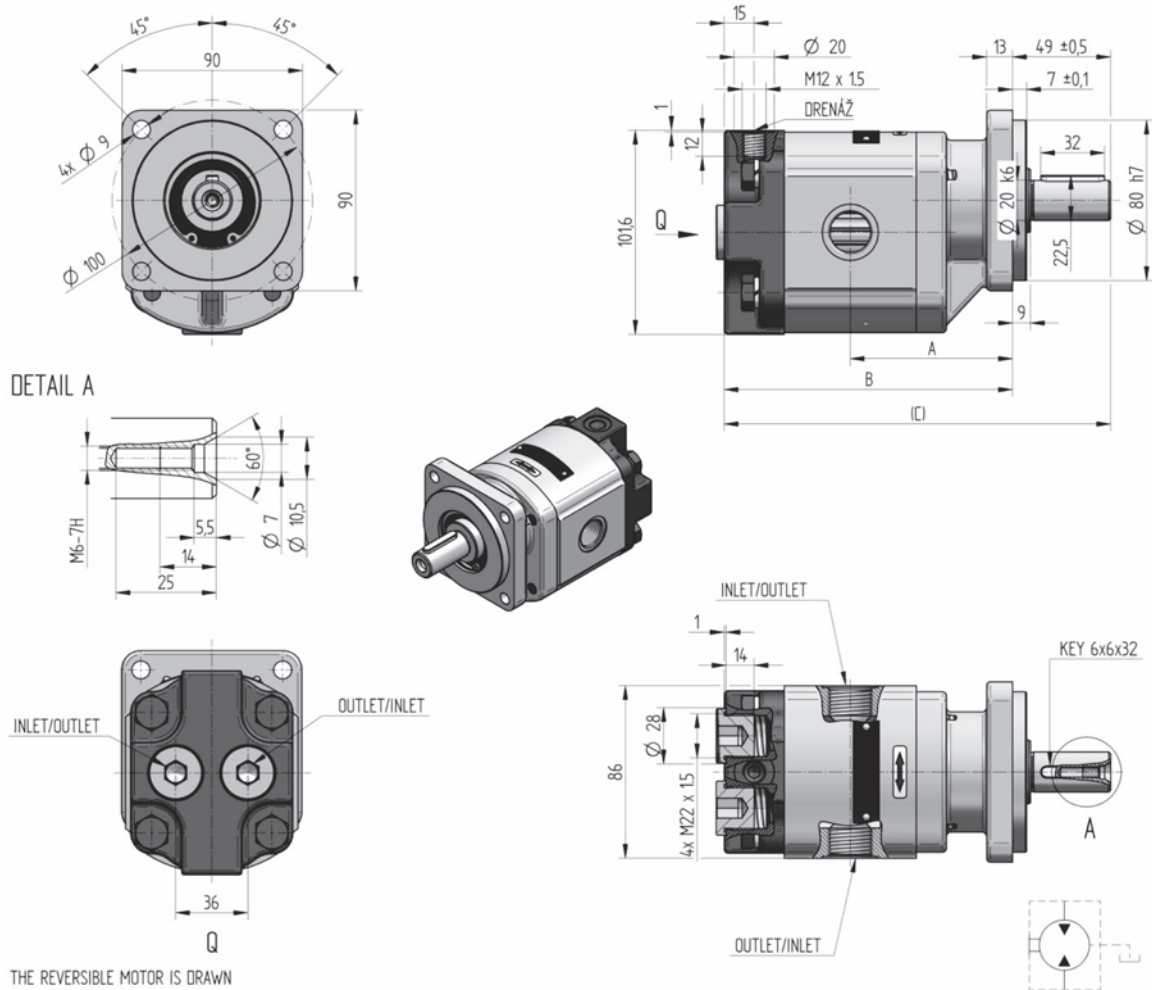


Order key	purch. code	direct. of rot.	displacement [cm <sup>3</sup> /1]	nom. press. [bar]	speed MIN. [min <sup>-1</sup> ]	speed MAX. [min <sup>-1</sup> ]	dimension					
							A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]
TM3-31L- S02V12-SU05U04-N		L	31	150	500	2 200	63.7	128.5	160.5	1-1/16-12 UN-2B	19	41
TM3-31R- S02V12-SU05U04-N		R										
TM3-25L- S02V12-SU05U04-N		L	25	200	500	2 800	59.0	119.1	151.1	1-1/16-12 UN-2B	19	41
TM3-25R- S02V12-SU05U04-N		R										
TM3-20L- S02V12-SU05U04-N		L	20	240	500	3 200	55.0	111.2	143.2	1-1/16-12 UN-2B	19	41
TM3-20R- S02V12-SU05U04-N		R										
TM3-16L- S02V12-SU05U04-N		L	16	260	500	3 200	51.9	104.9	136.9	1-1/16-12 UN-2B	19	41
TM3-16R- S02V12-SU05U04-N		R										
TM3-12L- S02V12-SU05U04-N		L	12	260	500	3 600	48.8	98.6	130.6	1-1/16-12 UN-2B	19	41
TM3-12R- S02V12-SU05U04-N		R										
TM3-8L- S02V12-SU04U04-N		L	8	280	500	3 600	45.6	92.3	124.3	7/8-14 UNF-2B	17	34
TM3-8R- S02V12-SU04U04-N		R										
TM3-6L- S02V12-SU04U04-N		L	6	280	500	4 000	44.0	89.2	121.2	7/8-14 UNF-2B	17	34
TM3-6R- S02V12-SU04U04-N		R										
TM3-4L- S02V12-SU04U04-N		L	4	280	500	4 000	42.5	86.0	118.0	7/8-14 UNF-2B	17	34
TM3-4R- S02V12-SU04U04-N		R										



THE ANTI-CLOCKWISE MOTOR IS DRAWN

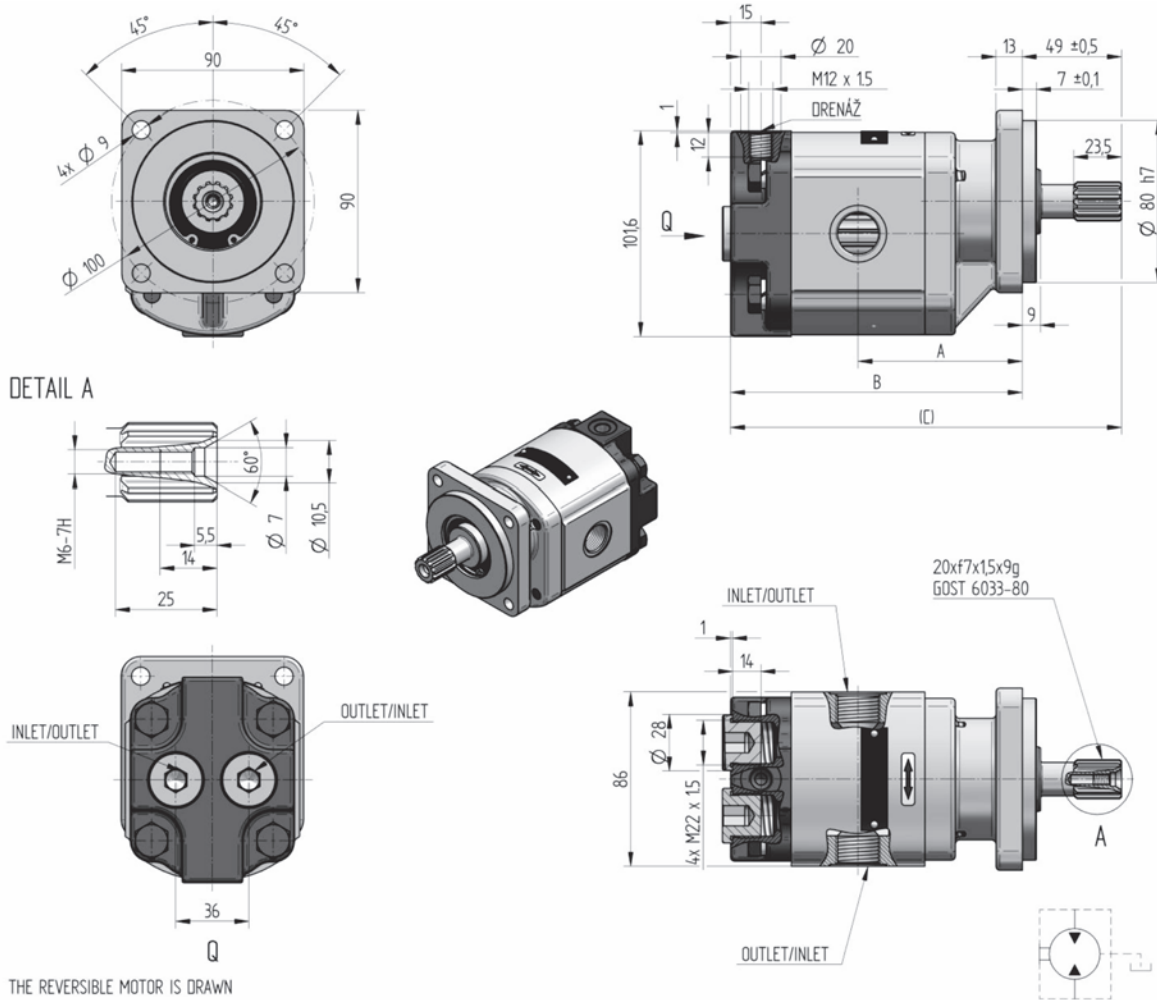
Order key	purch. code	direct. of rot.	displacement [cm <sup>3</sup> /1]	nom. press. [bar]	speed MIN. [min <sup>-1</sup> ]	speed MAX. [min <sup>-1</sup> ]	dimension					
							A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]
TM3-31L-S02D04-SG04G03-N		L	31	150	500	2 200	63.7	128.5	160.6	G 3/4	16	39
TM3-31R-S02D04-SG04G03-N		R										
TM3-25L-S02D04-SG04G03-N		L	25	200	500	2 800	59.0	119.1	151.2	G 3/4	16	39
TM3-25R-S02D04-SG04G03-N		R										
TM3-20L-S02D04-SG04G03-N		L	20	240	500	3 200	55.0	111.2	143.3	G 3/4	16	39
TM3-20R-S02D04-SG04G03-N		R										
TM3-16L-S02D04-SG04G03-N		L	16	260	500	3 200	51.9	104.9	137.0	G 3/4	16	39
TM3-16R-S02D04-SG04G03-N		R										
TM3-12L-S02D04-SG04G03-N		L	12	260	500	3 600	48.8	98.6	130.7	G 3/4	16	39
TM3-12R-S02D04-SG04G03-N		R										
TM3-8L-S02D04-SG03G03-N		L	8	280	500	3 600	45.6	92.3	124.4	G 1/2	14	33
TM3-8R-S02D04-SG03G03-N		R										
TM3-6L-S02D04-SG03G03-N		L	6	280	500	4 000	44.0	89.2	121.3	G 1/2	14	33
TM3-6R-S02D04-SG03G03-N		R										
TM3-4L-S02D04-SG03G03-N		L	4	280	500	4 000	42.5	86.0	118.1	G 1/2	14	33
TM3-4R-S02D04-SG03G03-N		R										



THE REVERSIBLE MOTOR IS DRAWN

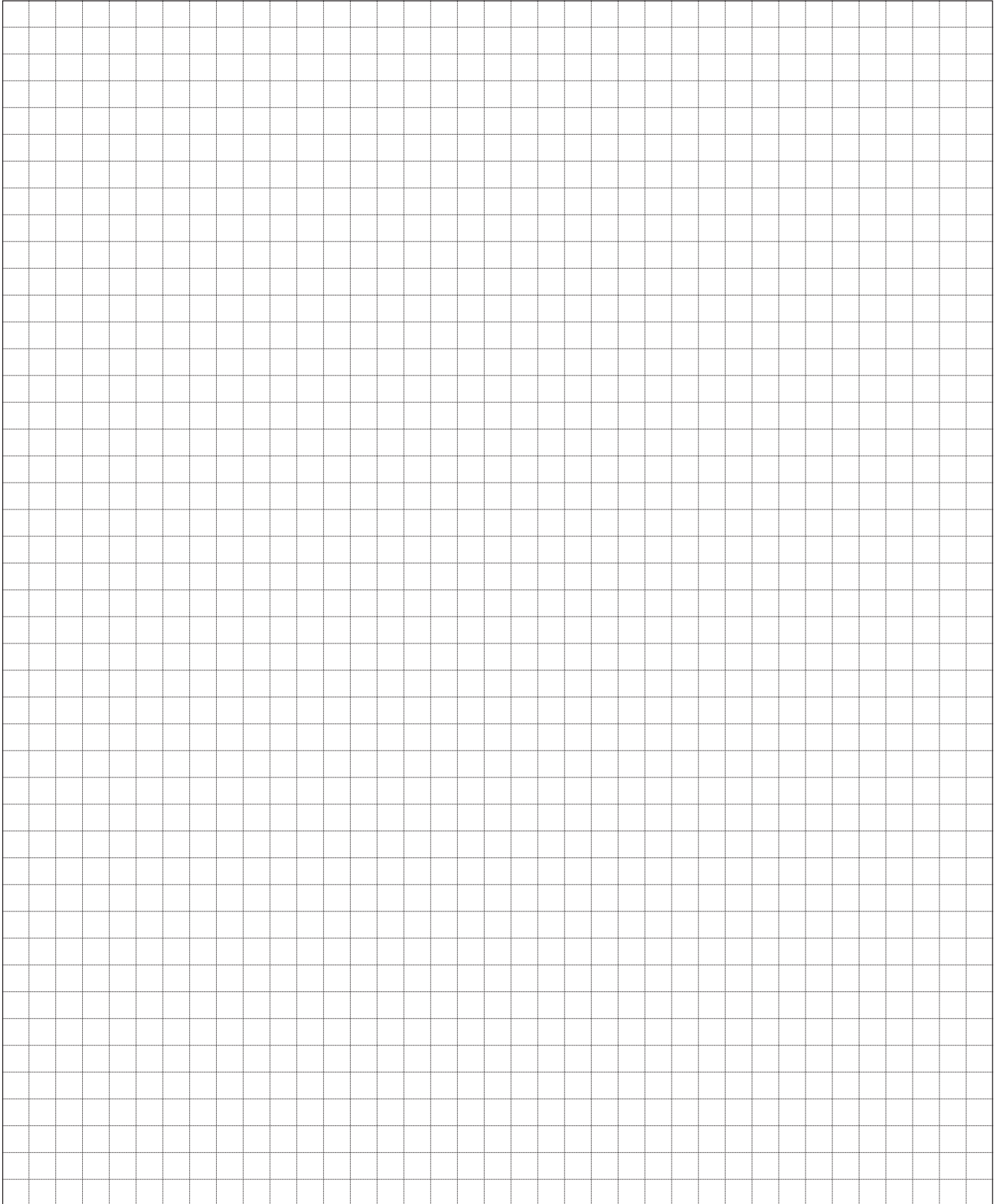
Order key	purch. code	direct. of rot.	displacement [cm <sup>3</sup> /1]	nom. press. [bar]	speed MIN. [min <sup>-1</sup> ]	speed MAX. [min <sup>-1</sup> ]	dimension		
							A [mm]	B [mm]	C [mm]
TM3-13B-F02D10-CM07M07-N.027	184 9217	B	13	260	300	3500	78.6	139.1	188.1

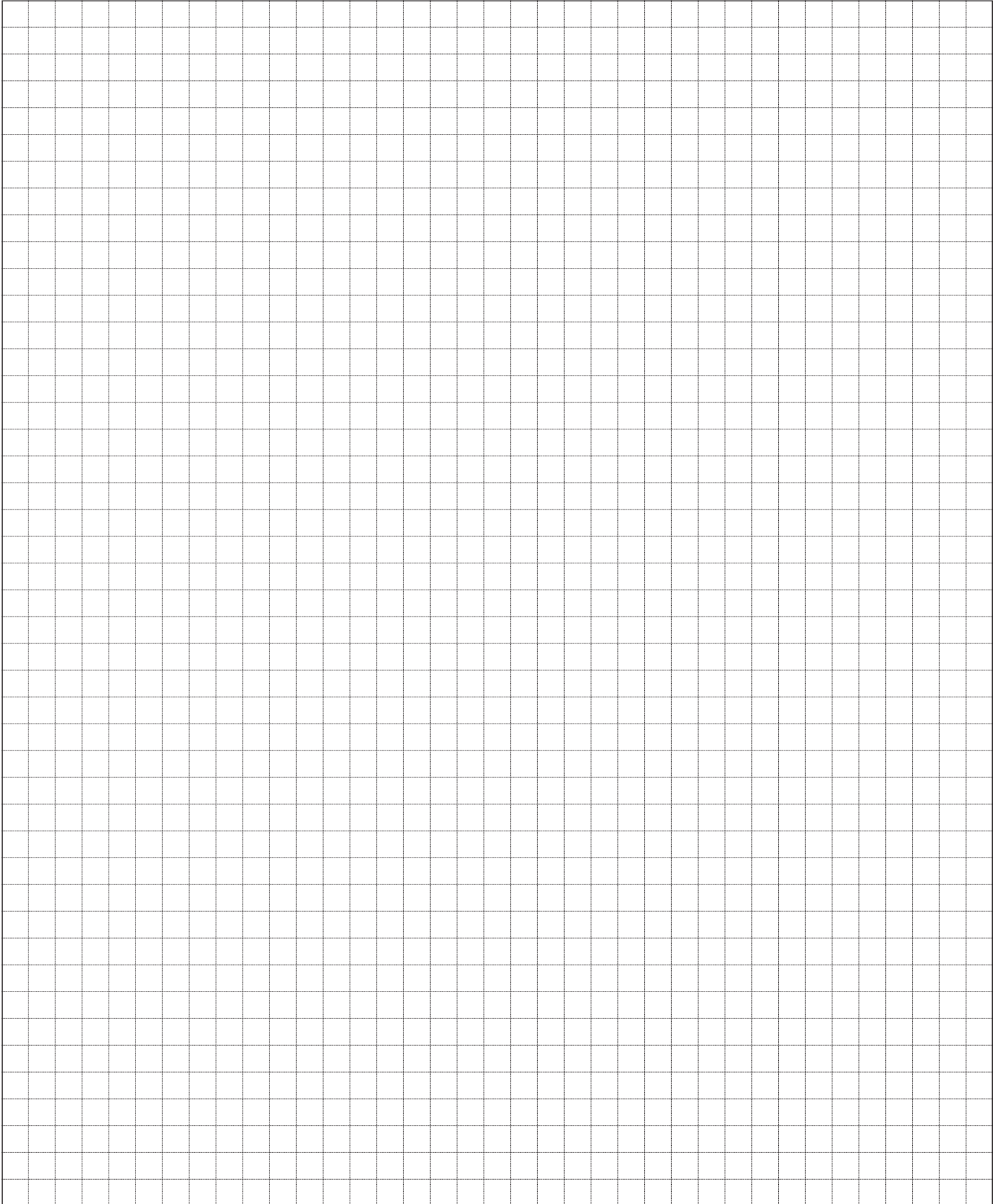


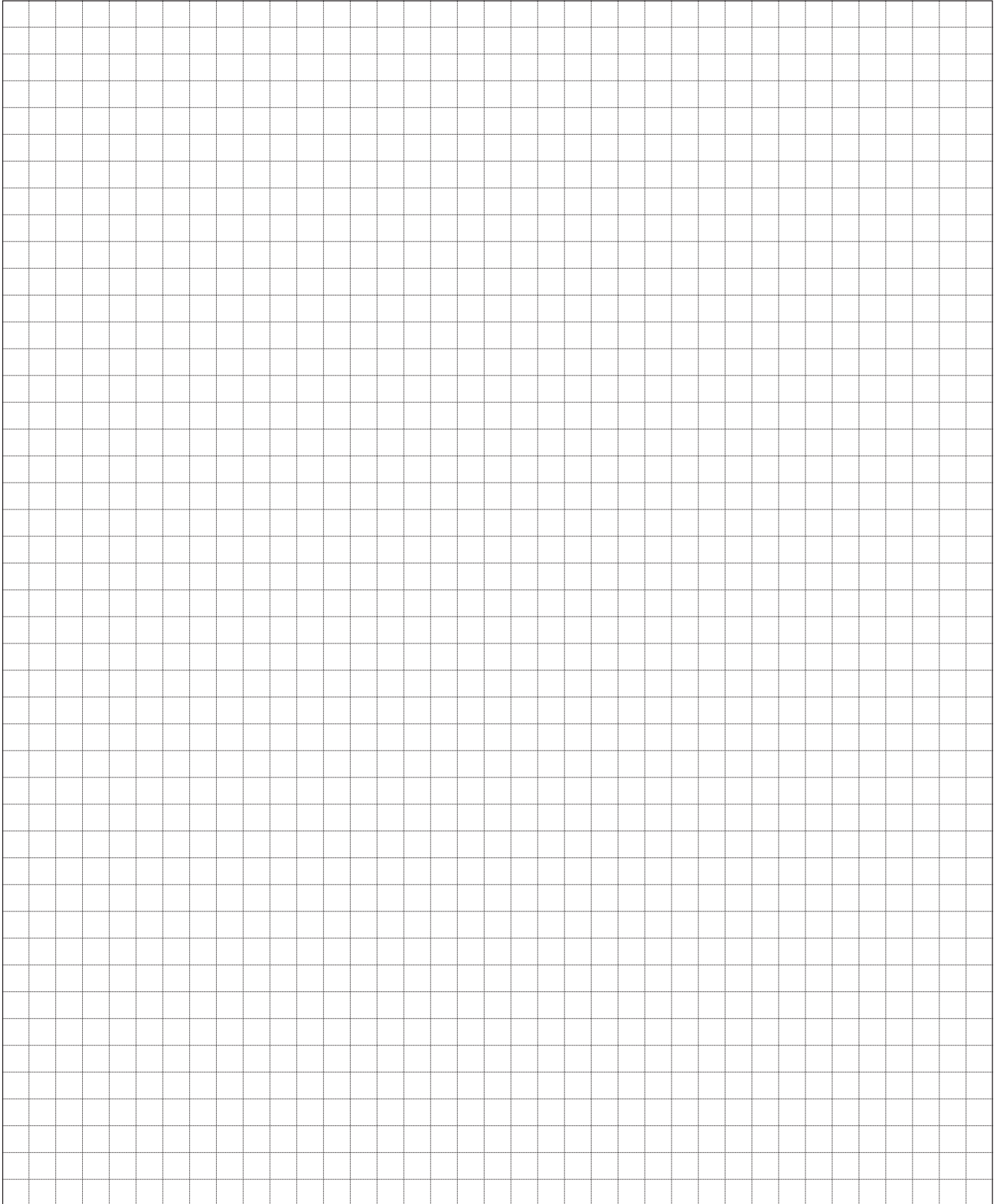


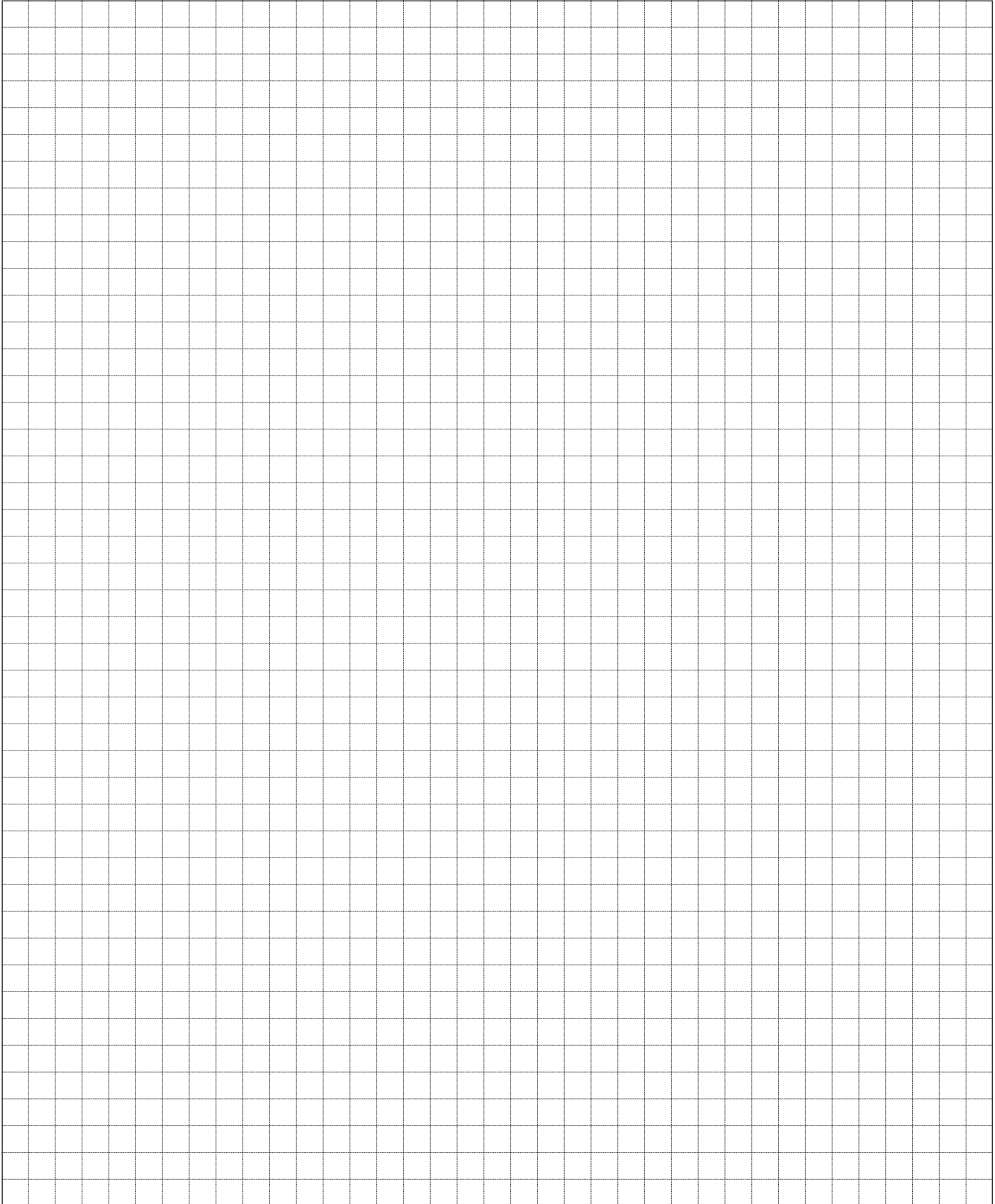
THE REVERSIBLE MOTOR IS DRAWN

Order key	purch. code	direct. of rot.	displacement [cm <sup>3</sup> /1]	nom. press. [bar]	speed MIN. [min <sup>-1</sup> ]	speed MAX. [min <sup>-1</sup> ]	dimension		
							A [mm]	B [mm]	C [mm]
TM3-13B-F02V13-CM07M07-N.027	184 9215	B	13	260	300	3500	78.6	139.1	188.1











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GPS 48°49'51.748" N 14°27'40.770" E

