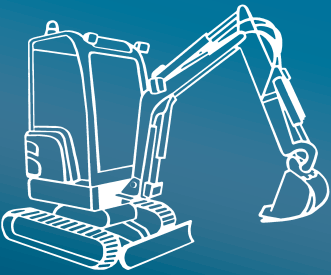


juhstroj

AERO TECHNOLOGY & HYDRAULICS



Displacement from 9 to 31 ccm
Pressure up to 280 bar
Speed from 500 to 3000 RPM

GEAR PUMPS T3S

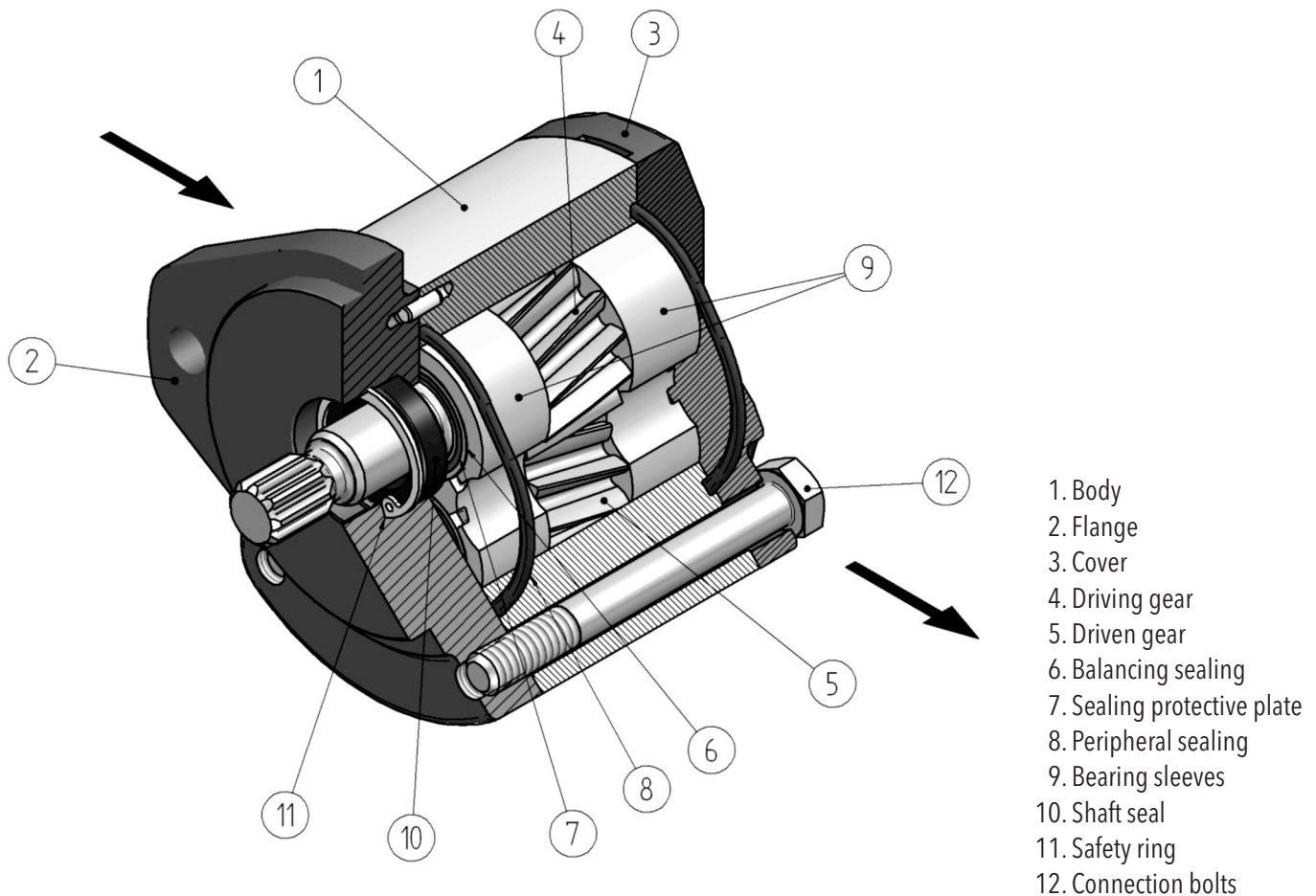
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DESCRIPTION

- Pumps of T3S series with external helical gearing are applicable for its simple design, compact dimension and a wide range of types, in modern hydraulic systems, handling technologies and mobile hydraulics.
- Basic execution is composed from a few parts. The body of pump are produced from heavy duty aluminium alloy. Cover and Flange are from iron grey or aluminium alloy. All flange as well as liquid inlets and outlets (location on side - in body or axial - in cover) comply with all world-recognised standards. Gear wheels with helical gearing are a special designed to achieve a low noise level, are made of ultrahigh-strength steel. Wheel pins with high quality surface are stored in bearings, which are constantly lubricated and cooled with flow working liquid.
- Upon requirement on low weight and small size is appropriate a special shortened version (for use by lower continuous pressure) - designation T3SK
- Available is also multiple-version pumps with inlets for each section or one common inlet.

BASIC PARTS OF PUMP



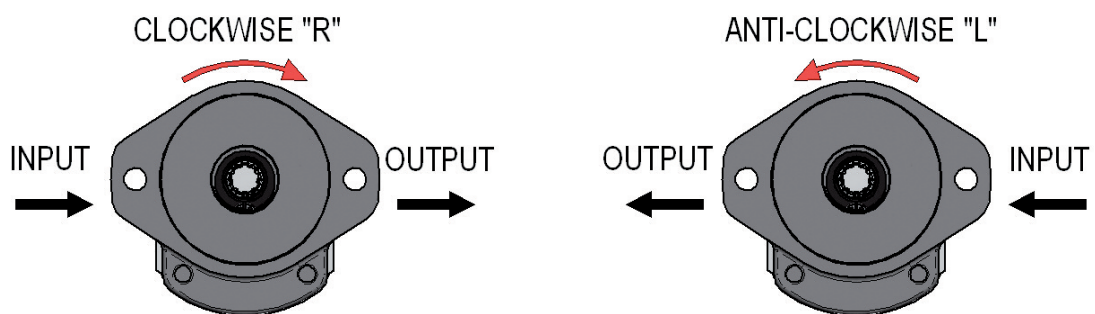
1. Body
2. Flange
3. Cover
4. Driving gear
5. Driven gear
6. Balancing sealing
7. Sealing protective plate
8. Peripheral sealing
9. Bearing sleeves
10. Shaft seal
11. Safety ring
12. Connection bolts

PARAMETER TABLE

Nominal Size Parameters		Sym.	Unit.	T3S 9	T3S 12	T3S 14	T3S 16	T3S 20	T3S 25	T3S 28	T3S 31
Actual displacement		V_g	[cm ³]	9.06	12.08	14.12	16.10	20.12	25.16	28.19	31.21
Rotation speed	nominal	n_n	[min ⁻¹]	1500	1500	1500	1500	1500	1500	1500	1500
	minimum	n_{min}	[min ⁻¹]	500	500	500	500	500	500	500	500
	maximum	n_{max}	[min ⁻¹]	3000	3000	2800	2600	2600	2200	1700	1600
Pressure at inlet	minimum	p_{1min}	[bar]	-0.30	-0.30	-0.30	-0.30	-0.30	-0.30	-0.30	-0.30
	maximum	p_{1max}	[bar]	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Pressure at outlet	max. continuous	p_{2n}	[bar]	280	260	260	260	240	200	180	150
	maximum	p_{2max}	[bar]	290	280	280	280	250	220	200	170
	peak	p_3	[bar]	310	300	300	300	270	240	220	190
Nominal flow rate (min.) at n_n and p_{2n}		Q_n	[dm ³ .min ⁻¹]	12.15	16.20	19.32	22.08	28.20	35.25	39.48	43.71
Maximum flow rate at n_{max} a p_{2max}		Q_{max}	[dm ³ .min ⁻¹]	26.46	35.28	38.42	40.77	50.96	53.90	46.65	48.61
Nominal input power (max.) at n_n and p_{2n}		P_n	[kW]	7.78	9.63	10.99	12.56	14.18	14.78	14.89	13.74
Maximum input power at n_{max} a p_{2max}		P_{max}	[kW]	14.80	19.05	20.74	22.01	24.57	22.86	17.99	15.93
Weight		m	[kg]	2.65	2.95	3.00	3.10	3.35	3.50	3.66	3.80

DIRECTION OF ROTATION

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



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 [cm³] pump displacement
 n [min⁻¹] rotation speed
 η_v [-] volumetric efficiency

Displacement
 V_g

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

Torque
 M_k

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

p [bar] required pressure at outlet
 η_m [-] mechanical efficiency

Input power
 P

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

η_t [-] total efficiency

PUMP EFFICIENCIES

Volumetric efficiency

η_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:

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

$Q_{act.}$ [dm³ · min⁻¹] actual flow rate
 Q_{theor} [dm³ · min⁻¹] theoretical flow rate

Mechanical efficiency

η_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

η_t

It is defined as product of η_n and η_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): $\nu = 20 \div 80 \cdot 10^{-6}$ [m² · s⁻¹]
- Maximum (cold starting, at viscosity >1000, operating pressure <10 bar is permissible, speed <1500·min⁻¹): $\nu = 1200 \cdot 10^{-6}$ [m² · s⁻¹]
- Minimum (operating mode at $10 \cdot 10^{-6}$ up $20 \cdot 10^{-6}$ should be consulted with manufacturer): $\nu = 10 \cdot 10^{-6}$ [m² · s⁻¹]

Filtration coefficient β_{α}

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

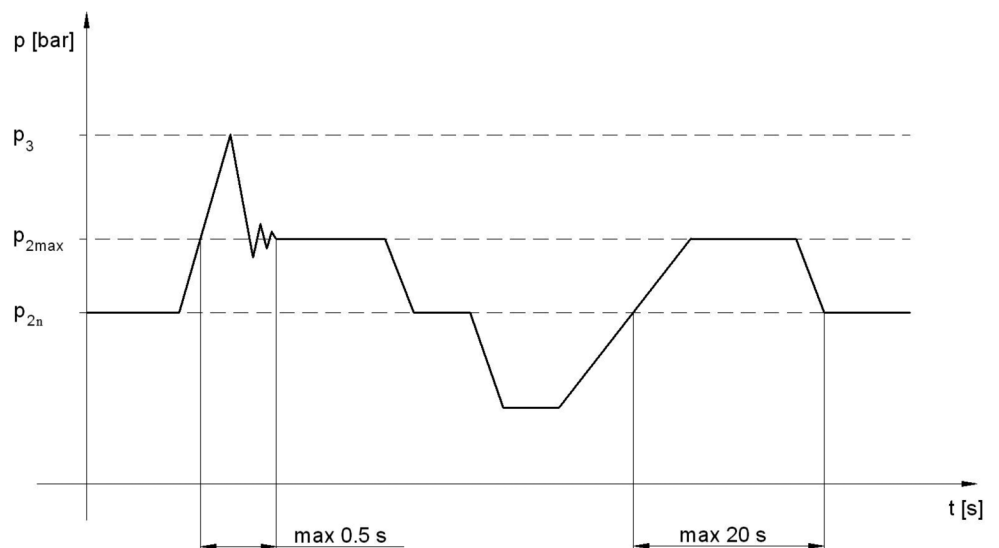
Liquid contamination class according to ISO 4406

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

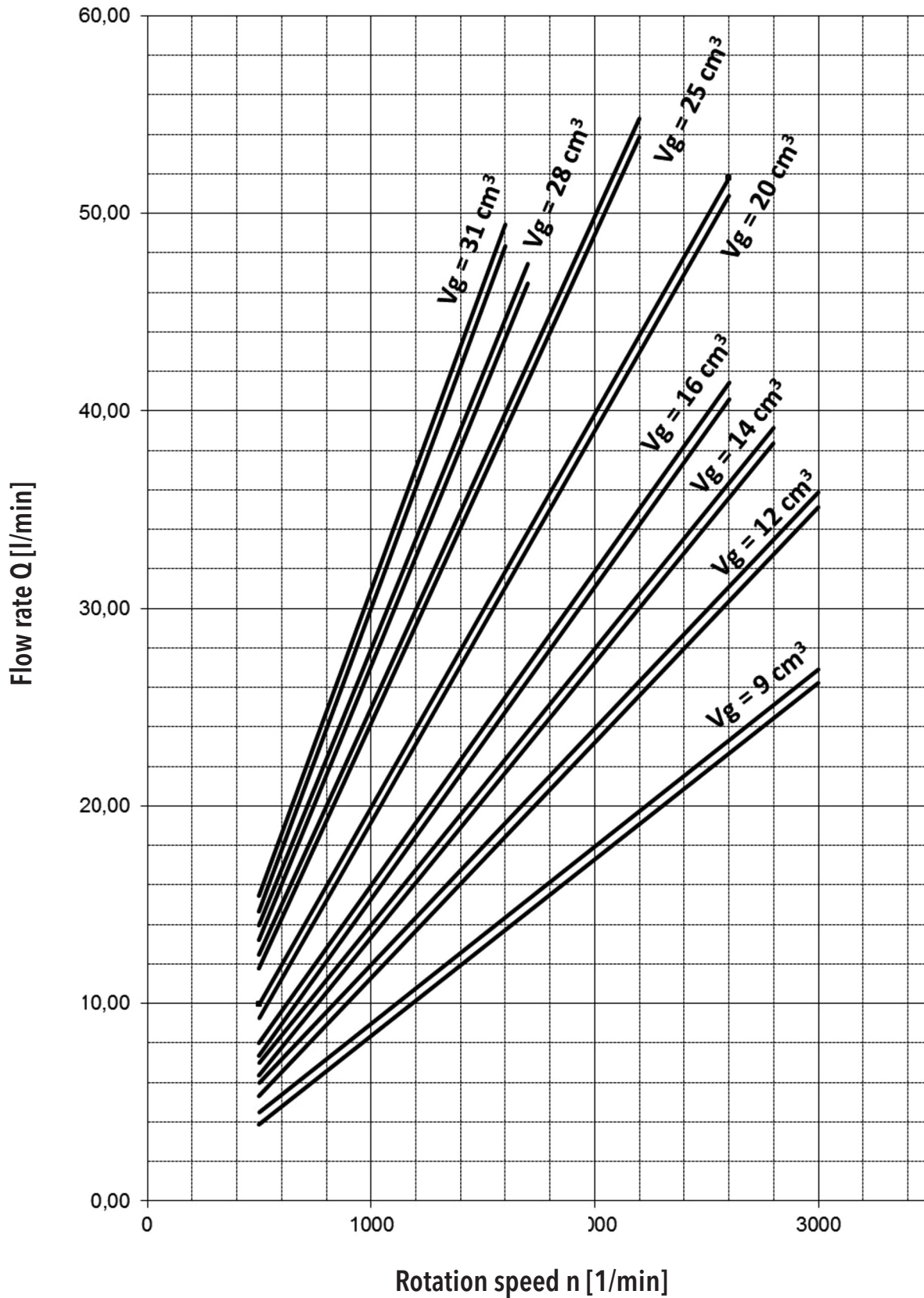
10 (for pressure $p_2 < 200$ bar)
8 (for pressure $p_2 > 200$ bar)

PRESSURE LOAD

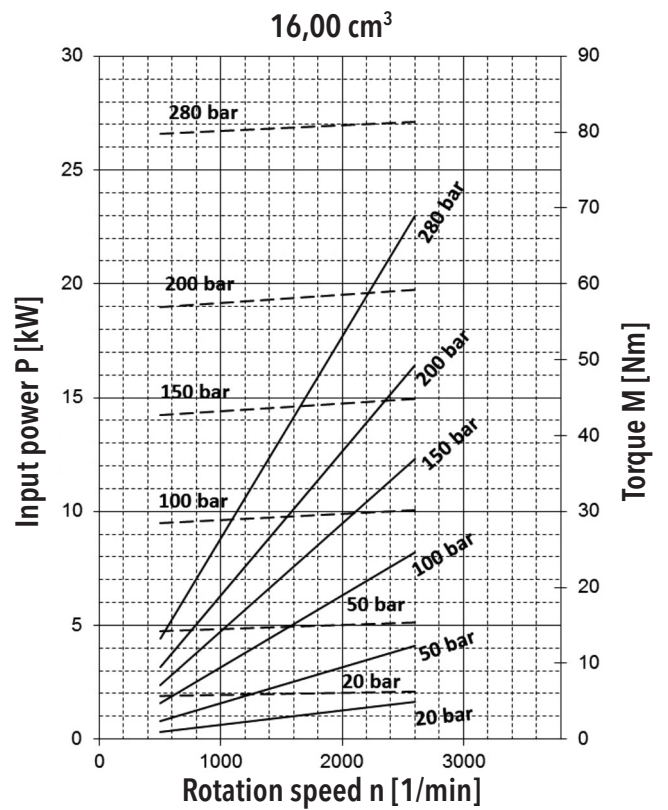
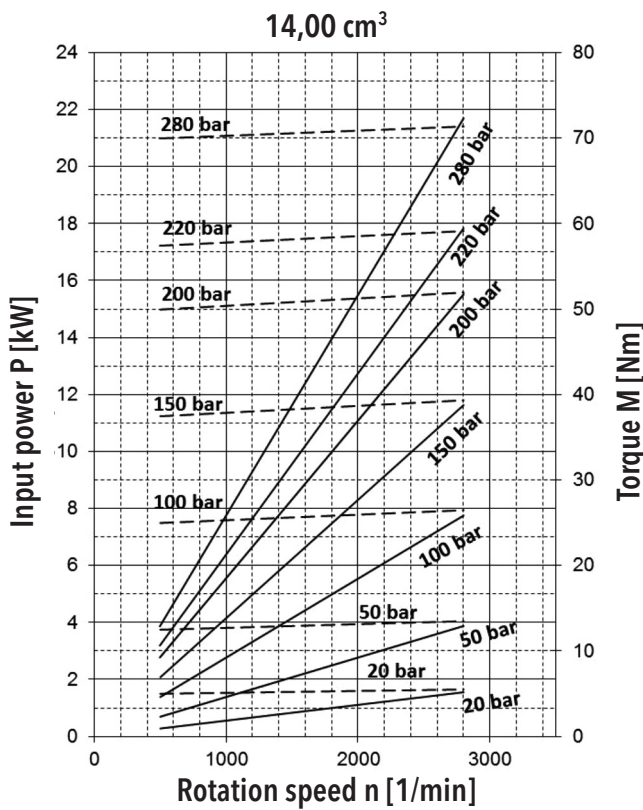
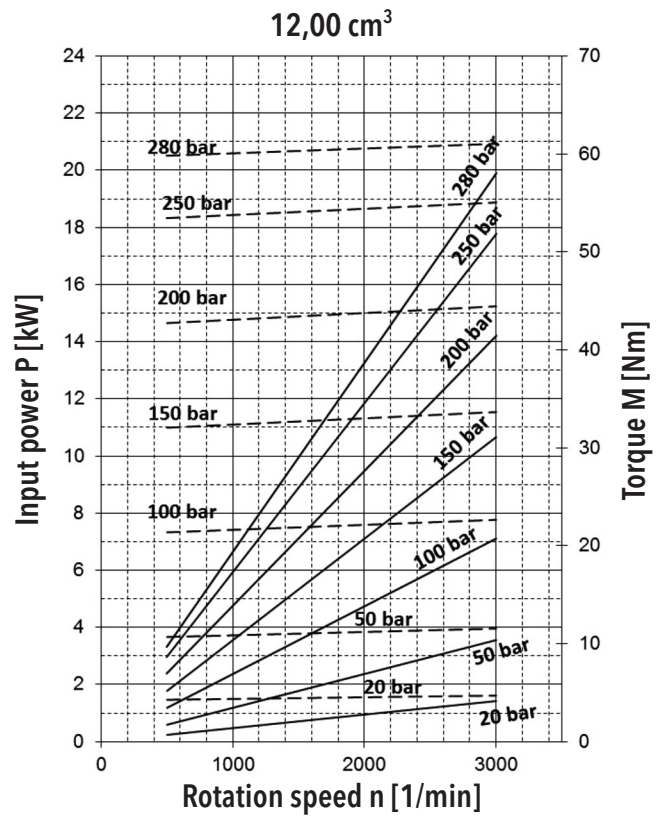
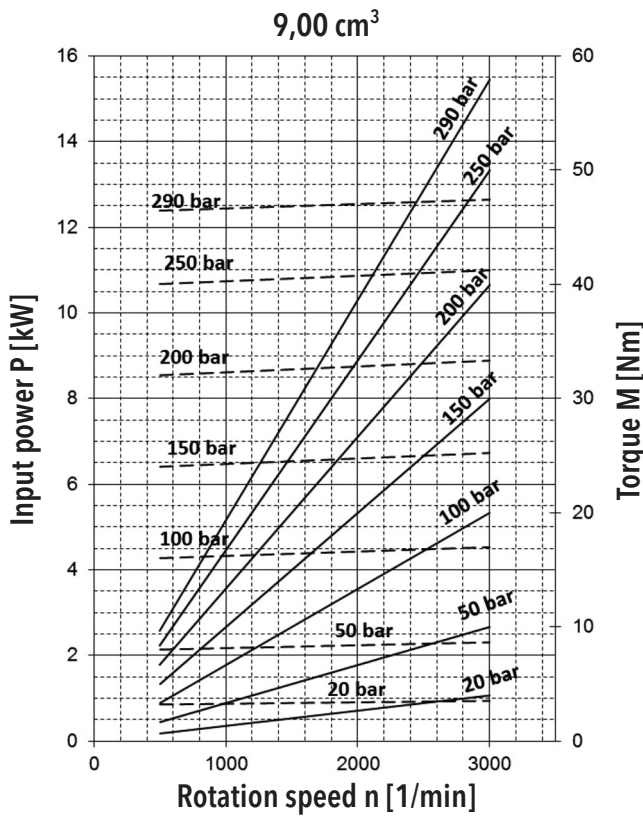


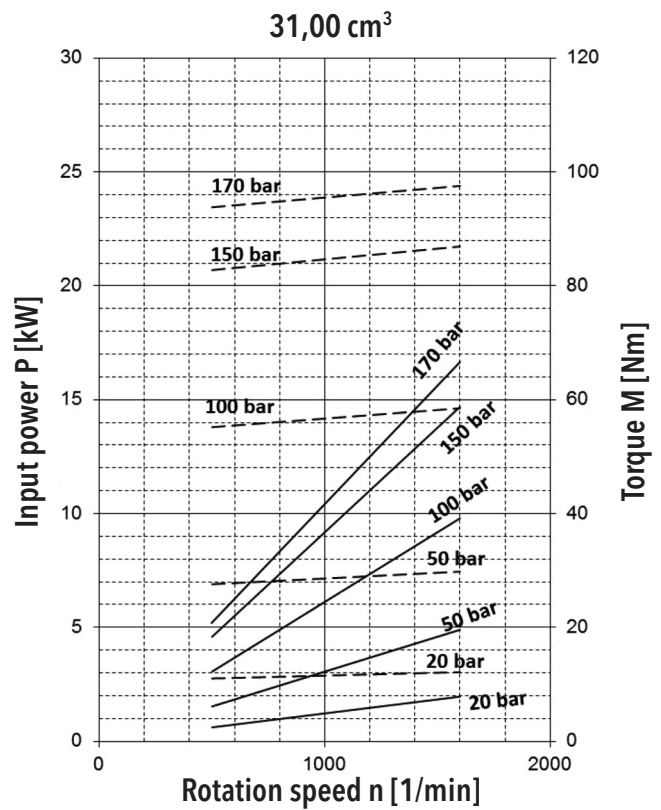
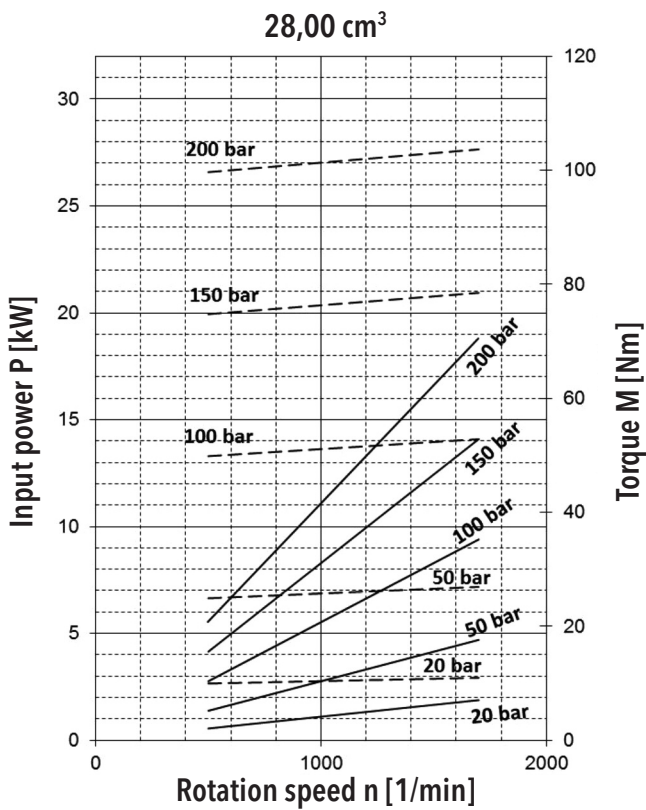
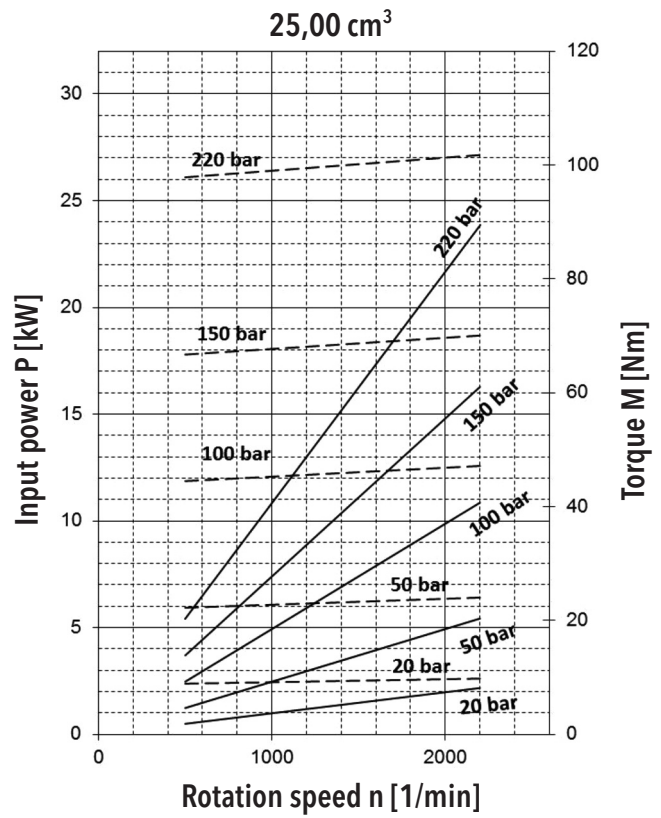
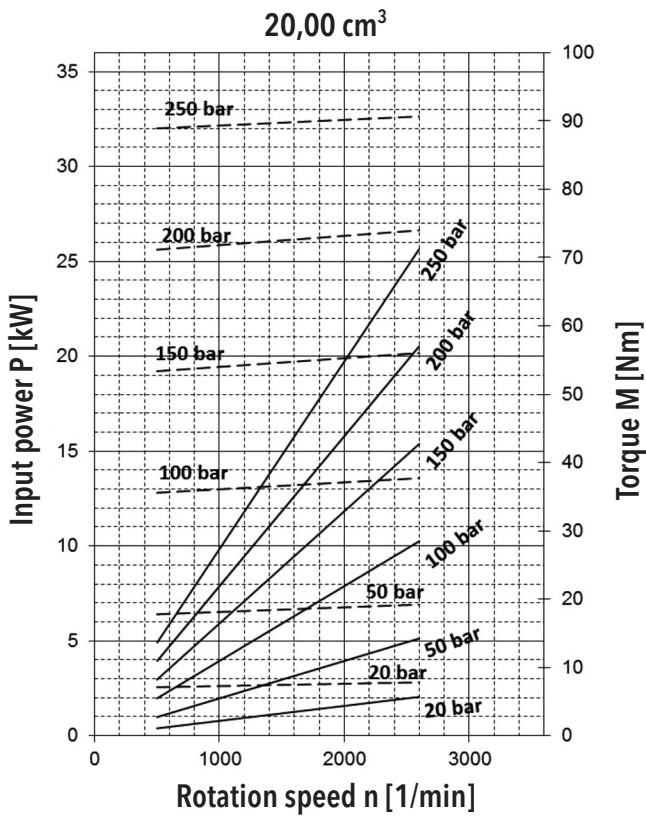
- p_{2n} **max. contin. pressure** Max. working pressure, at which the pump can be operated without time limitation.
- p_{2max} **max. pressure** Maximum pressure permissible for a short time, max. 20s.
- p_3 **peak pressure** Short-time pressure (fractions of a second) arising in case of a sudden change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

T3S FLOW RATE AND POWER CURVES



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





ORDER KEY - SINGLE VERSION

T3S - 16 R - S02 D04 - S G04 G03 - V . 001

Code	Type
T3S	T3S Series Gear Pump
T3SK	T3S Series Gear Pump-short version

Code	Displacement [cm ³]
9	9,06
12	12,08
14	14,12
16	16,10
20	20,12
25	25,16
28	28,16
31	31,21
XX	Other displacements on request

Code	Direction of rotation
R	Clockwise
L	Anti-clockwise

Code	Location of inlets and outlets
S	Side (in the body)
R	Axial (in the cover)
C	Combination
S	Special desing

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 M12x1,5 in cover
010	With from-end bearing type 3
011	Drain G 1/4 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 Ø80
R05	Rectangular flange, centre ring Ø36,5
R06	Rectangular flange, centre ring Ø80
R07	Rectangular flange, centre ring Ø60
S02	SAE A
S03	SAE B
A07	Flange with trough-bolts, centre ring Ø50
A08	Flange with trough-bolts, centre ring Ø50
A09	Flange with trough-bolts, centre ring Ø52, with O-ring
A10	Flange with trough-bolts, centre ring Ø52, with O-ring
Z	Special desing

Code	Drive shaft desing
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 ČSN 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 desing

Code	Seal material
N	NBR
V	FKM
H	HNBR

Code	Liquid inlet and outlet connection shape
M05	Thread M 18x1,5
M09	Thread M 27x2
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
H07	Flanged fitting Ø13,5; Square 4xM6 Ø30
H08	Flanged fitting Ø20; Square 4xM8 Ø40
H10	Flanged fitting Ø26; Square 4xM8 Ø55
K01	Flanged fitting Ø13,5; Cross 4xM6 Ø30
K02	Flanged fitting Ø20; Cross 4xM8 Ø40
K07	přírubové hrdlo Ø14; čtverec 4xM8 Ø38
K08	Flanged fitting Ø19; Cross 4xM8 Ø38
Z	Special desing

An example of designation for the T3S anti-clockwise pump with displacement of 8 cm³, SAE A flange, SAE 9T spline, BSP inlets in cover and standard NBR seal without special arrangements: **T3S-8L-S02D04-RG03G03-N**

ORDER KEY - MULTIPLE VERSION

T3S - 16 / 8 / 8 R - S02 D04 - S G04 G03 / G03 G03 / G03 G03 - V . 001

Code	Type
T3S	T3S Series Gear Pump
T3SK	T3S Series Gear Pump-short version

Code	Displacement [cm ³]
9	9,06
12	12,08
14	14,12
16	16,10
20	20,12
25	25,16
28	28,16
31	31,21
XX	Other displacements on request

Code	Direction of rotation
R	Clockwise
L	Anti-clockwise

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

Code	Location of inlets and outlets	
S		Side (in the body)
C		Combination

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 M12x1,5 in cover
010	With from-end bearing type 3
011	Drain G 1/4 in cover
012	Internal drain
013	Variseal
014	Shaft seal - double lip

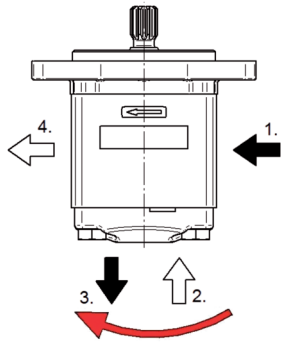
Code	Drive shaft desing	
C07		Taper 1:8 Key width 3
C08		Taper 1:8 Key width 3,2
C09		Taper 1:8 Key width 4
C10		Taper 1:5 Key width 3
D04		Spline SAE 9T 16/32 DP
D06		Spline SAE 11T l=32, 16/32 DP
D07		Spline SAE 11T l=38, 16/32 DP
D08		Spline CSN 17x1,25
D09		Spline DIN 5482 B17x14
D10		Spline GOST 6033-80
D11		Spline 16x13x3,5
K07		Cross coupling
V09		Cylindric $\varnothing 5/8$ " Key 4x4
V11		Cylindric $\varnothing 15$ Key 4x4
V12		Cylindric $\varnothing 3/4$ " Key 4,8x4,8
V13		Cylindric $\varnothing 20$ Key 6x6
Z		Special desing

Code	Seal material	
N		NBR
V		FKM
H		HNBR

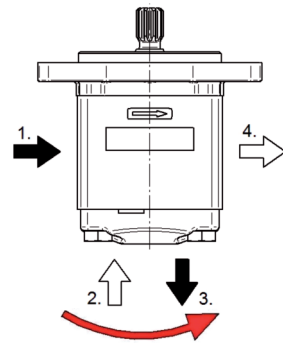
Code	Liquid inlet and outlet connection shape	
M05		Thread M 18x1,5
M09		Thread M 27x2
G03		Thread BSP G1/2
G04		Thread BSP G3/4
G05		Thread BSP G1"
U04		Thread 7/8-14 UNF-2B
U05		Thread 1-1/16-12 UN-2B
H05		Flanged fitting $\varnothing 15$; Square 4xM6 $\varnothing 35$
H06		Flanged fitting $\varnothing 20$; Square 4xM6 $\varnothing 40$
H07		Flanged fitting $\varnothing 13,5$; Square 4xM6 $\varnothing 30$
H08		Flanged fitting $\varnothing 20$; Square 4xM8 $\varnothing 40$
H10		Flanged fitting $\varnothing 26$; Square 4xM8 $\varnothing 55$
K01		Flanged fitting $\varnothing 13,5$; Cross 4xM6 $\varnothing 30$
K02		Flanged fitting $\varnothing 20$; Cross 4xM8 $\varnothing 40$
K07		Flanged fitting $\varnothing 14$; Cross 4xM8 $\varnothing 38$
K08		Flanged fitting $\varnothing 19$; Cross 4xM8 $\varnothing 38$
Z		Special desing

An example of designation for the T3S three-section clockwise pump with displacements 12, 8, 6 cm³, Rectangular flange, centre ring $\varnothing 36.5$, cone 1:8, metric one common inlet and three outlets and FKM sealing without special arrangements: **T3S-12/8/6R-R05C07-SNM05/M09M05/NM05-V**

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



For clockwise and reverse gear pump,
in direction clockwise



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

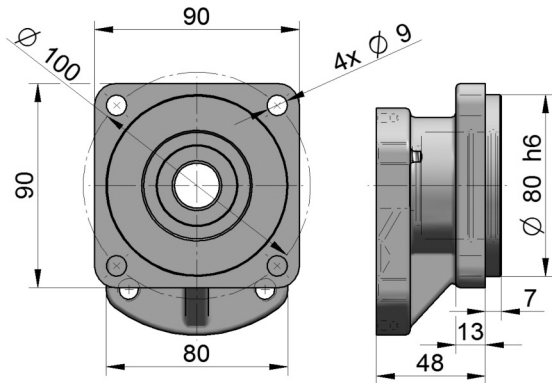
For. ex....: T3-12R-S02D04-CG04 G04 G03 G03 -N
1. 2. 3. 4.

COMBINATIONS OF FLANGES AND SHAFTS

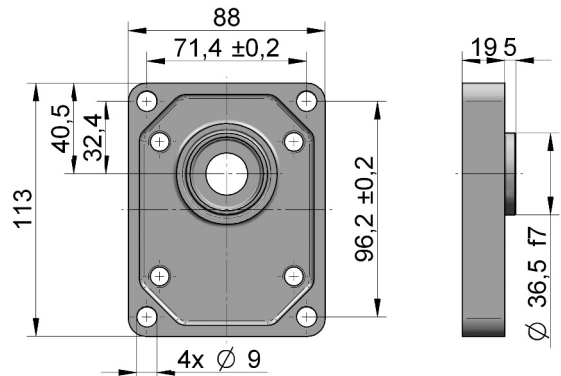
		FLANGE DESIGN													
		F02	R05	R06	R07	S02	S03	A07	A08	A09	A10				
DRIVE SHAFT	C07		●												
	C08		●												
	C09		●												
	C10				●			●	●						
	D04						●	●							
	D06						●	●							
	D07						●	●							
	D08			●											
	D09				●				●	●					
	D10		●												
	D11					●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

FLANGES DESIGN

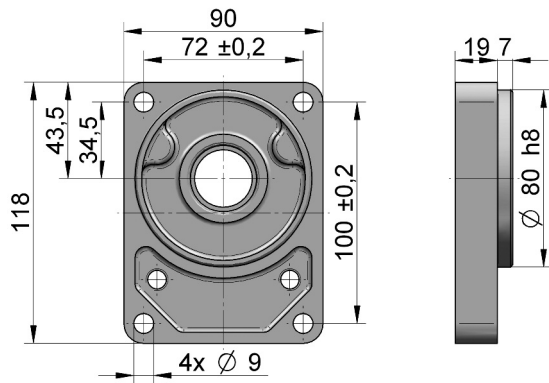
F02:



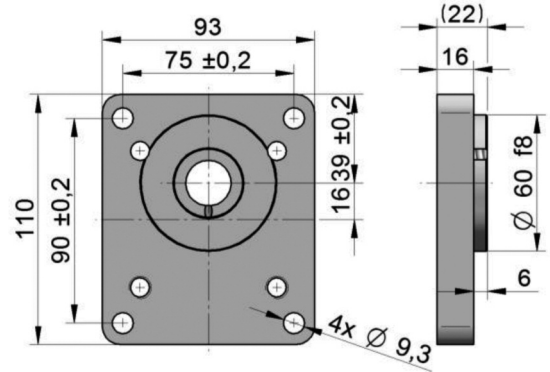
R05:



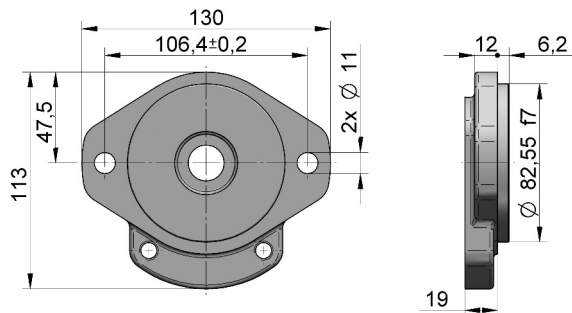
R06:



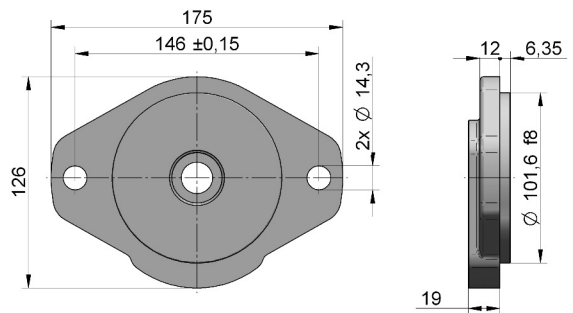
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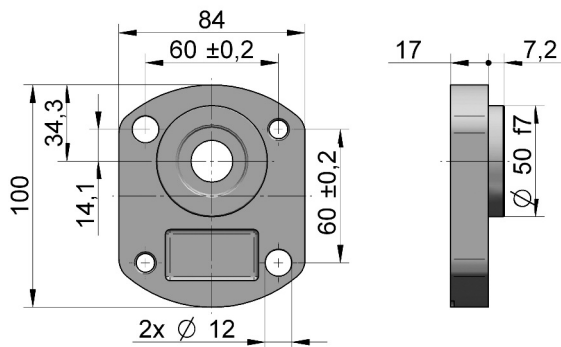
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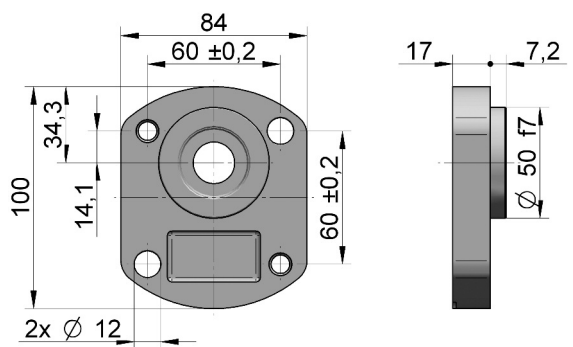
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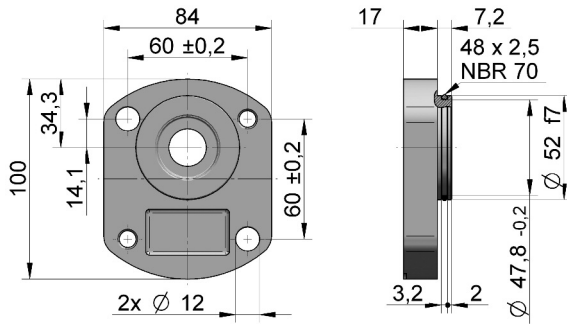
A07:



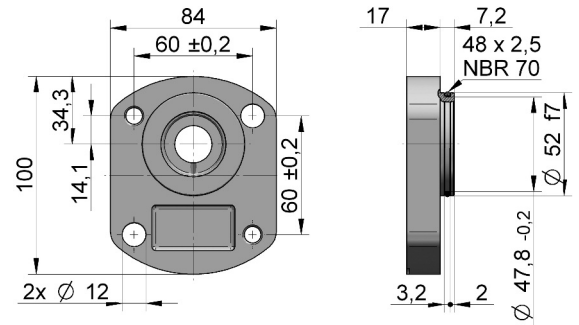
A08:



A09:



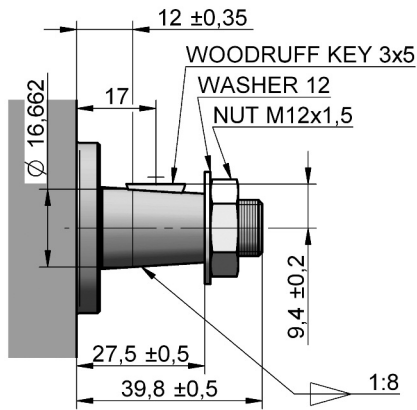
A10:



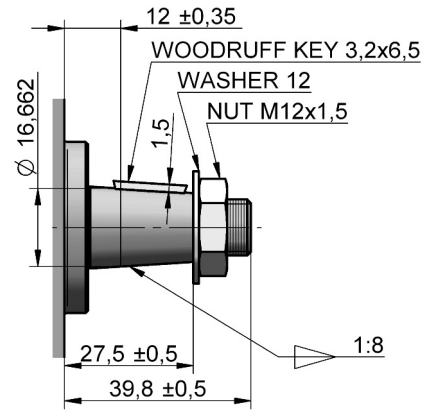
DRIVE SHAFT

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

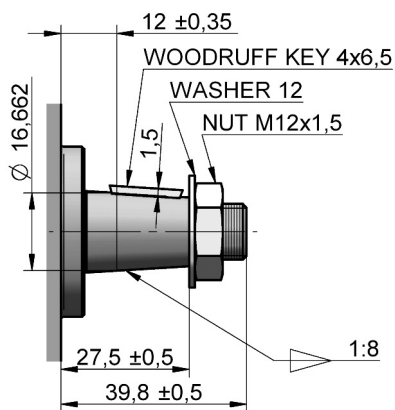
C07:



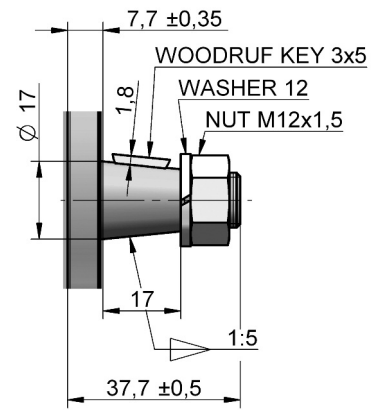
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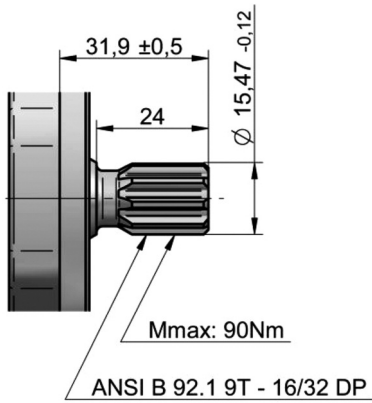
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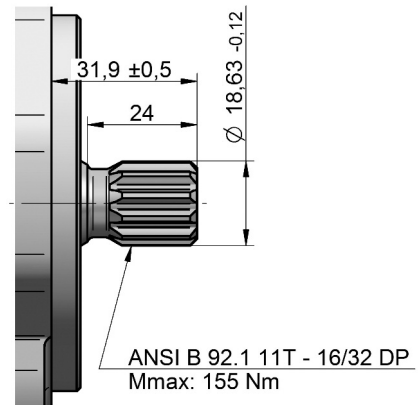
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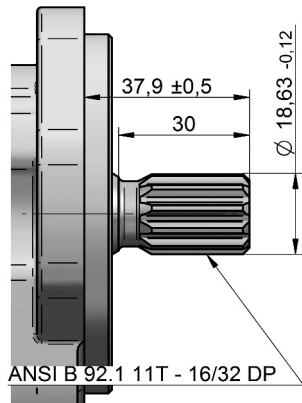
D04:



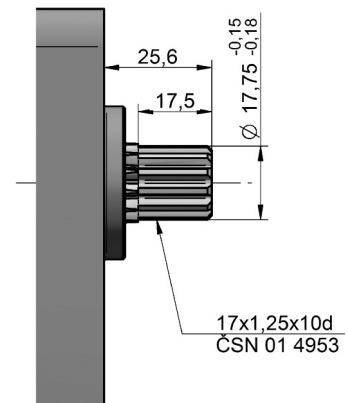
D06:



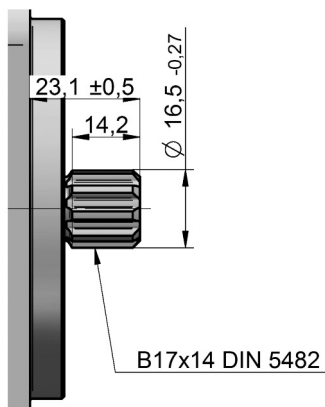
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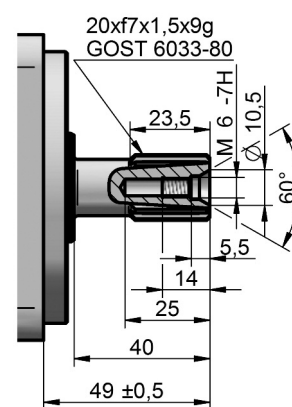
D08:



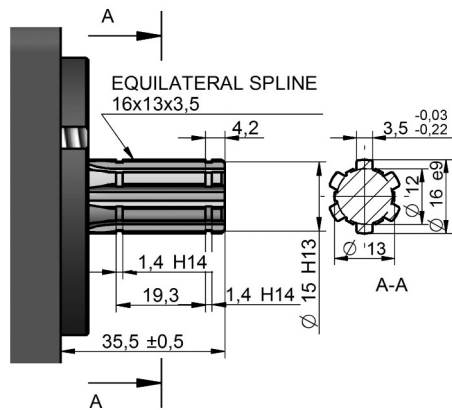
D09:



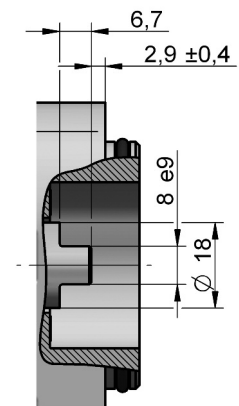
D10:



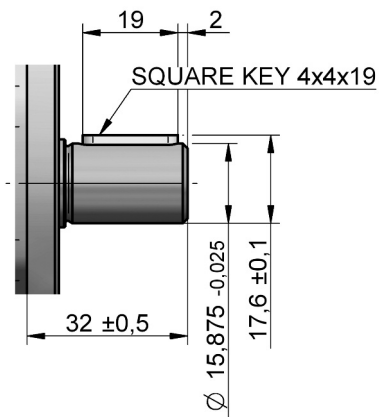
D11:



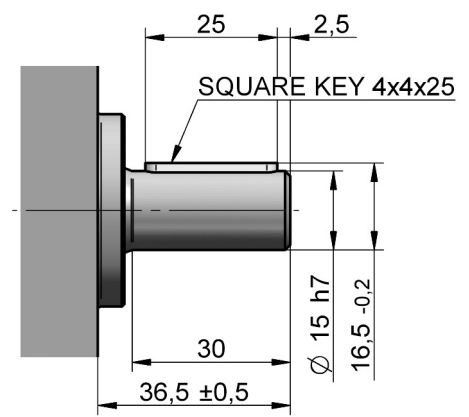
K07:



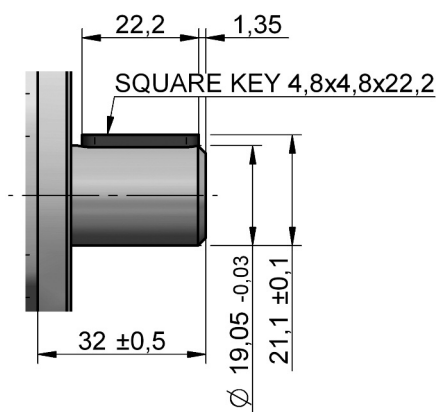
V09:



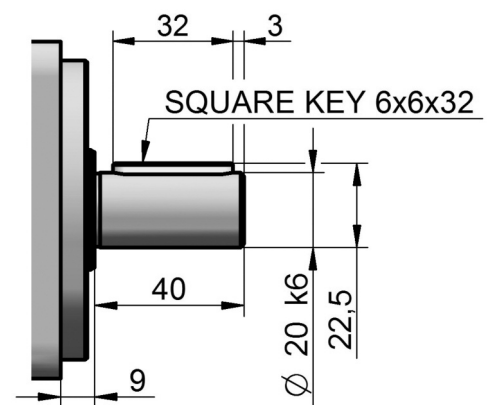
V11:



V12:

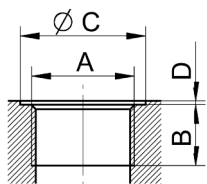


V13:



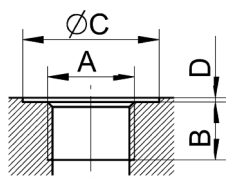
LIQUID INLET AND OUTLET CONNECTION

Metric thread according to ISO 6149



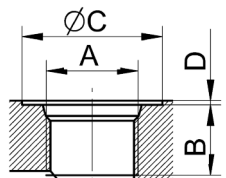
Displacement [cm ³]	kód	Inlet				kód	Outlet			
		A	B	C	D		A	B	C	D
all	M09	M 27x2	16	33	1	M05	M 18x1,5	14	24	1

BSPP pipe thread according to ISO 228 - 1



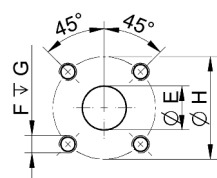
Displacement [cm ³]	Code	Inlet				Code	Outlet			
		A	B	C	D		A	B	C	D
to 10	G03	G 1/2"	14	33	1	G03	G 1/2"	14	33	1
10 - 25	G04	G 3/4"	16	39	1	G03	G 1/2"	14	33	1
above 25	G05	G 1"	18	45	1	G04	G 3/4"	16	39	1

UNF thread according to SAE



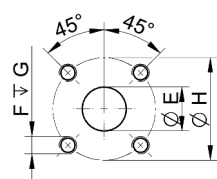
Displacement [cm ³]	Code	Inlet				Code	Outlet			
		A	B	C	D		A	B	C	D
to 10	U04	7/8-14 UNF-2B	17	34	1	U04	7/8-14 UNF-2B	17	34	1
11 - 31	U05	1-1/16-12 UNF-2B	19	41	1	U04	7/8-14 UNF-2B	17	34	1

Flanged fittings according to DIN 8901/8902



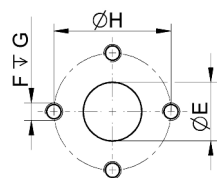
Displacement [cm ³]	Code	Inlet				Code	Outlet			
		E	F	G	H		E	F	G	H
all	H06	20	M6	13	40	H05	15	M6	13	35
all	H10	25	M8	13	55	H05	15	M6	13	35

Flanged fittings - „square”



Displacement [cm ³]	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”

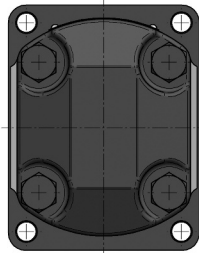
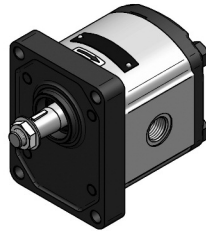
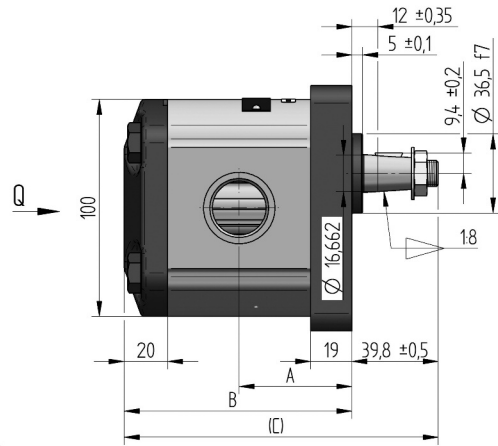
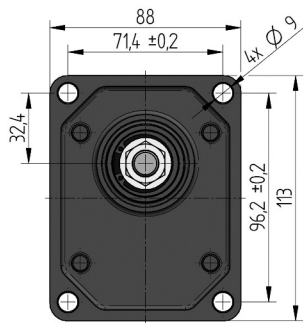


Displacement [cm ³]	Code	Inlet				Code	Outlet			
		E	F	G	H		E	F	G	H
all	K02	20	M8	13	40	K01	13.5	M6	13	30
to 10	K07	14	M8	13	38	K07	14.0	M8	13	38
above 10	K08	19	M8	13	38	K07	14.0	M8	13	38

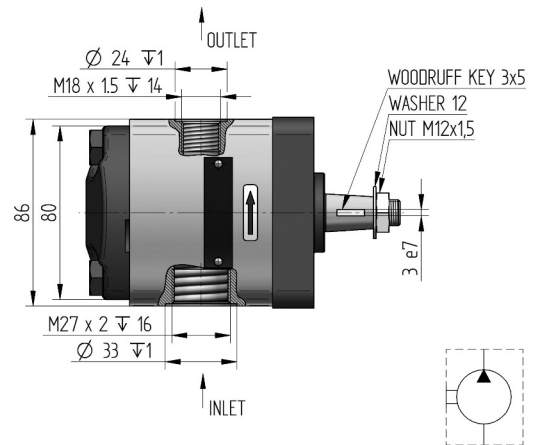
Drain

Displacement [cm ³]	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 T3S SERIES BASIC DESIGNS

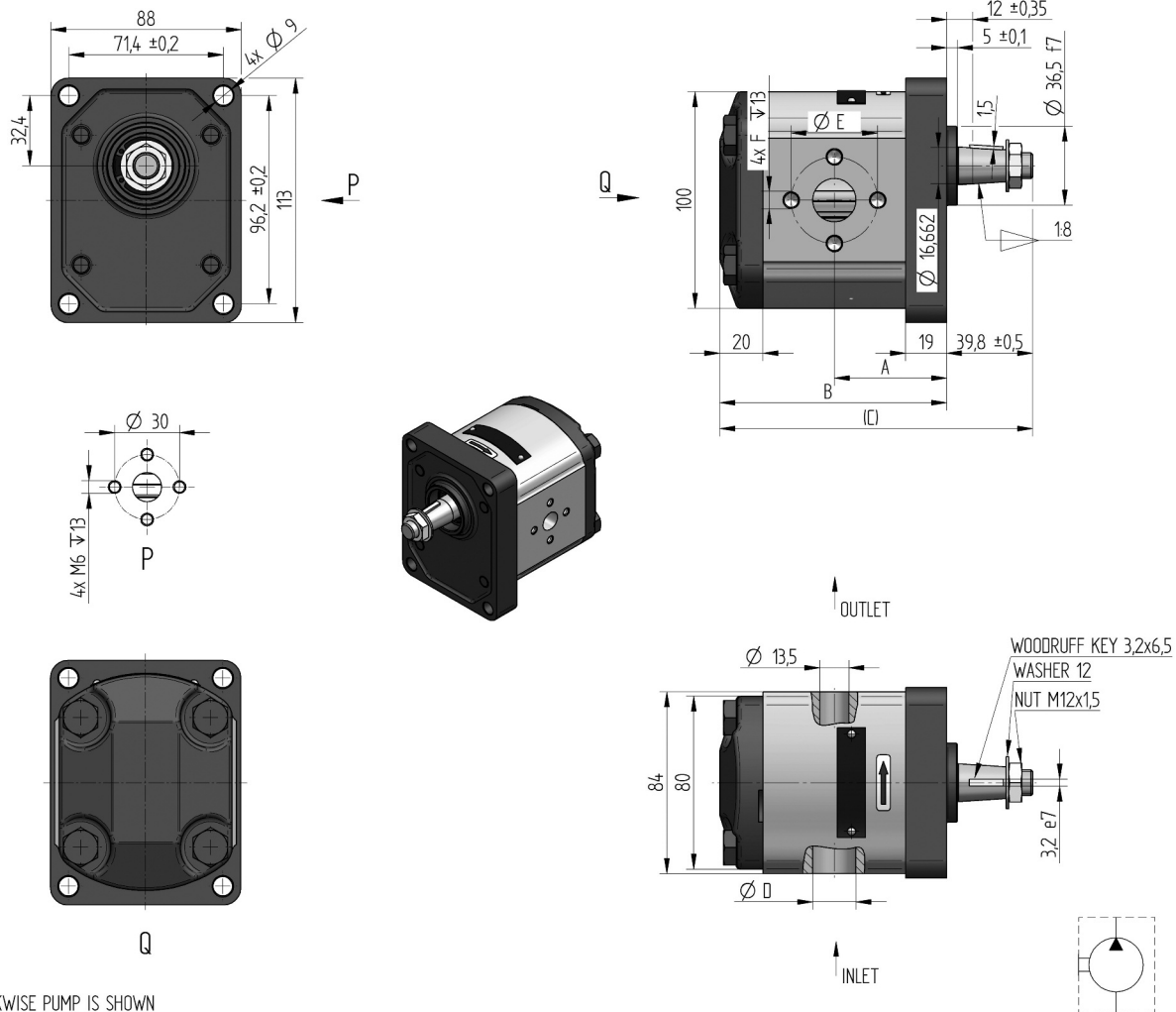


Q



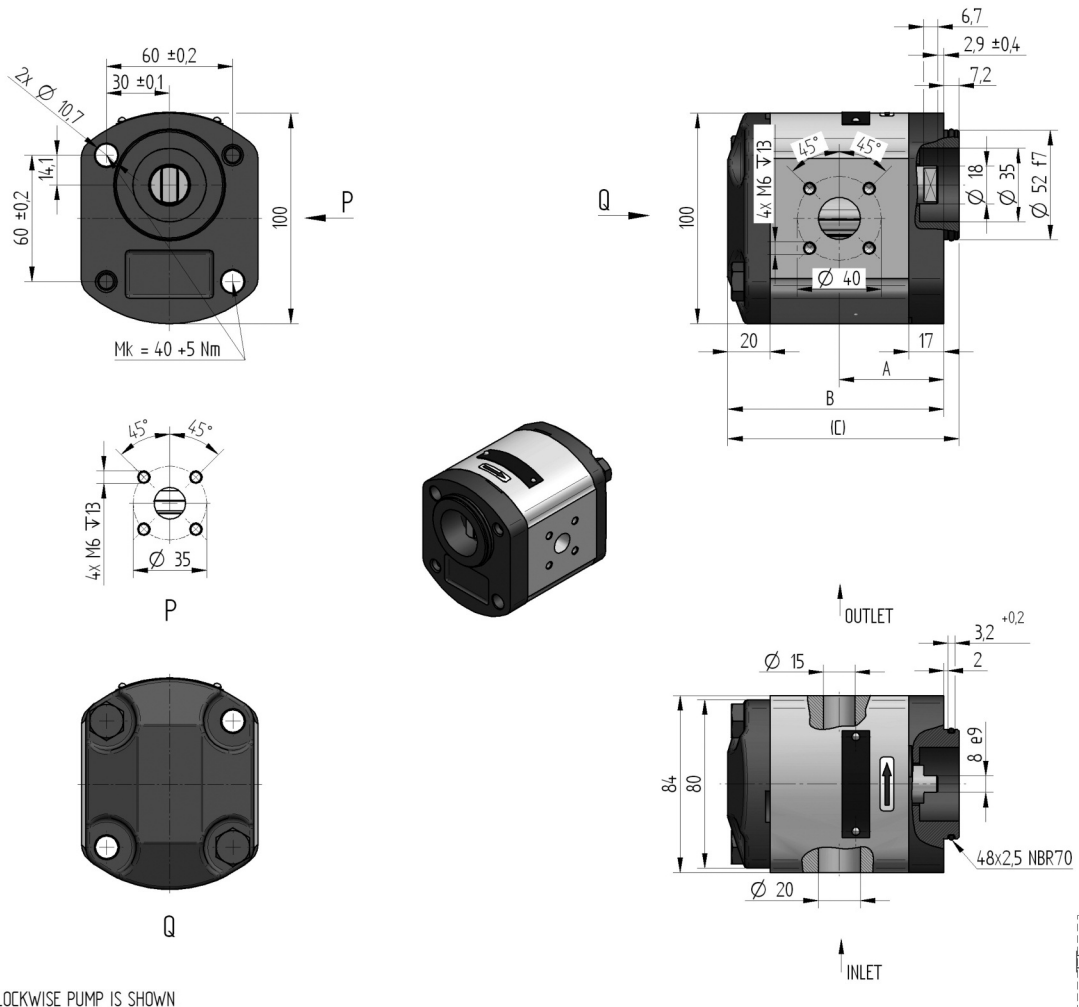
THE CLOCKWISE PUMP IS SHOWN

Order key	purch. code	direct. of rot.	displacement [cm ³ /1]	nom. press. [bar]	speed MIN. [min ⁻¹]	speed ORDER [min ⁻¹]	dimension		
							A [mm]	B [mm]	C [mm]
T3S-25R- R05C07-SM09M05-N		R	25	200	500	2 600	59.9	120.8	160.6
T3S-25L- R05C07-SM09M05-N		L							
T3S-20R- R05C07-SM09M05-N		R	20	240	500	3 000	55.8	112.7	152.5
T3S-20L- R05C07-SM09M05-N		L							
T3S-16R- R05C07-SM09M05-N		R	16	260	500	3 200	52.7	106.5	146.3
T3S-16L- R05C07-SM09M05-N		L							
T3S-12R- R05C07-SM09M05-N		R	12	260	500	3 400	49.6	100.2	140.0
T3S-12L- R05C07-SM09M05-N		L							
T3S-8R- R05C07-SM09M05-N		R	8	280	500	3 500	46.4	93.9	133.7
T3S-8L- R05C07-SM09M05-N		L							
T3S-6R- R05C07-SM09M05-N		R	6	280	500	3 600	44.9	90.7	130.5
T3S-6L- R05C07-SM09M05-N		L							



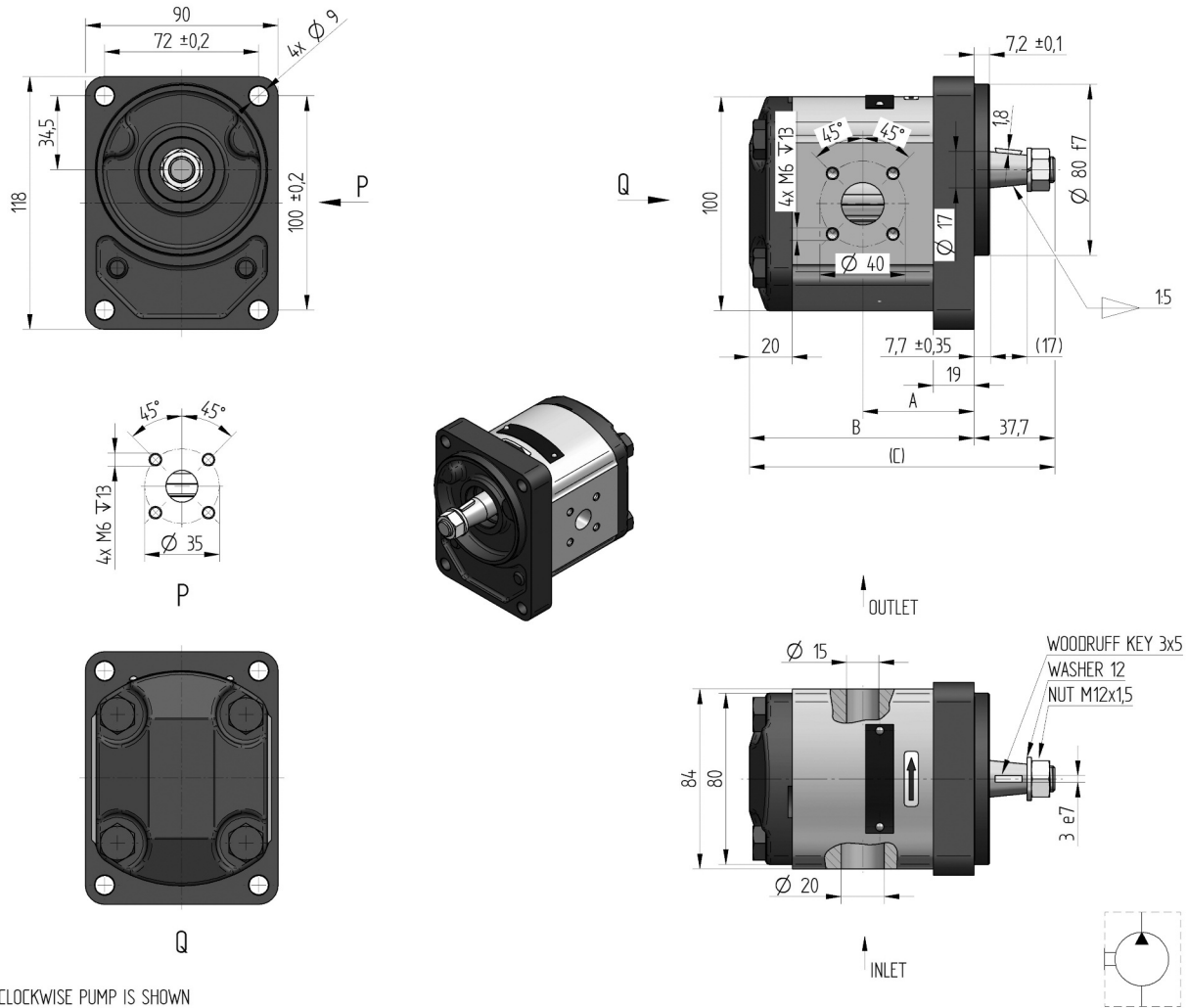
THE CLOCKWISE PUMP IS SHOWN

Order key	purch. code	direct. of rot.	displacement [cm ³ /1]	nom. press. [bar]	speed MIN. [min ⁻¹]	speed ORDER [min ⁻¹]	dimension					
							A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]
T3S-25R- R05C2-SK02K01-N		R	25	200	500	2 600	59.9	120.8	160.6	∅ 20	∅ 40	M8
T3S-25L- R05C2-SK02K01-N		L										
T3S-20R- R05C2-SK02K01-N		R	20	240	500	3 000	55.8	112.7	152.5	∅ 20	∅ 40	M8
T3S-20L- R05C2-SK02K01-N		L										
T3S-16R- R05C2-SK02K01-N		R	16	260	500	3 200	52.7	106.5	146.3	∅ 20	∅ 40	M8
T3S-16L- R05C2-SK02K01-N		L										
T3S-12R- R05C2-SK02K01-N		R	12	260	500	3 400	49.6	100.2	140.0	∅ 20	∅ 40	M8
T3S-12L- R05C2-SK02K01-N		L										
T3S-8R- R05C2-SK01K01-N		R	8	280	500	3 500	46.4	93.9	133.7	∅ 13.5	∅ 30	M6
T3S-8L- R05C2-SK01K01-N		L										
T3S-6R- R05C2-SK01K01-N		R	6	280	500	3 600	44.9	90.7	130.5	∅ 13.5	∅ 30	M6
T3S-6L- R05C2-SK01K01-N		L										



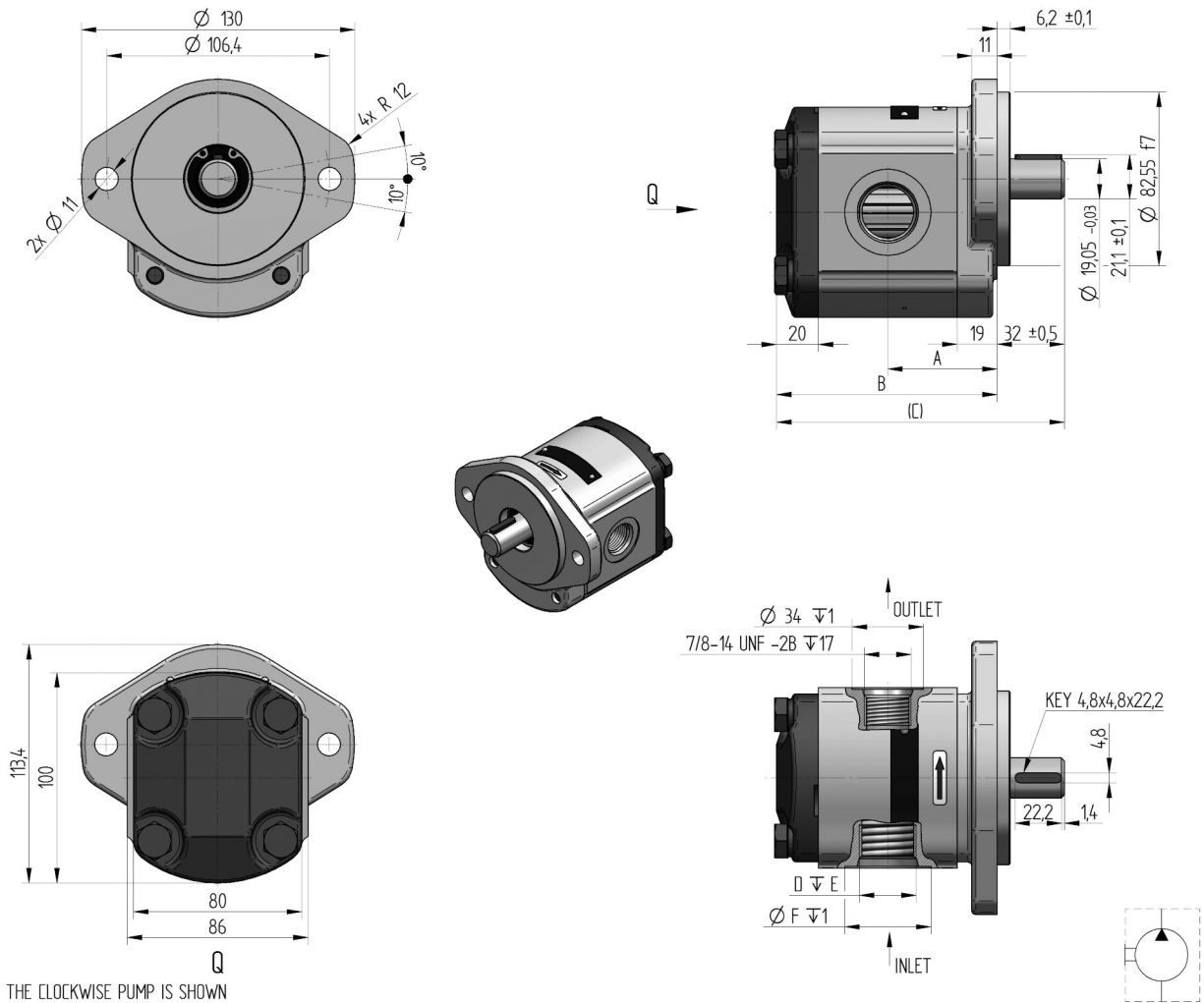
THE CLOCKWISE PUMP IS SHOWN

Order key	purch. code	direct. of rot.	displacement [cm ³ /1]	nom. press. [bar]	speed MIN. [min ⁻¹]	speed ORDER [min ⁻¹]	dimension		
							A [mm]	B [mm]	C [mm]
T3S-25R-A09K07-SH06H05-N.004		R	25	200	500	2 600	57.9	118.8	126.0
T3S-25L-A09K07-SH06H05-N.004		L							
T3S-20R-A09K07-SH06H05-N.004		R	20	240	500	3 000	53.8	110.7	117.9
T3S-20L-A09K07-SH06H05-N.004		L							
T3S-16R-A09K07-SH06H05-N.004		R	16	260	500	3 200	50.7	104.5	111.7
T3S-16L-A09K07-SH06H05-N.004		L							
T3S-12R-A09K07-SH06H05-N.004		R	12	260	500	3 400	47.6	98.2	105.4
T3S-12L-A09K07-SH06H05-N.004		L							
T3S-8R-A09K07-SH06H05-N.004		R	8	280	500	3 500	44.4	91.9	99.1
T3S-8L-A09K07-SH06H05-N.004		L							
T3S-6R-A09K07-SH06H05-N.004		R	6	280	500	3 600	42.9	88.7	95.9
T3S-6L-A09K07-SH06H05-N.004		L							

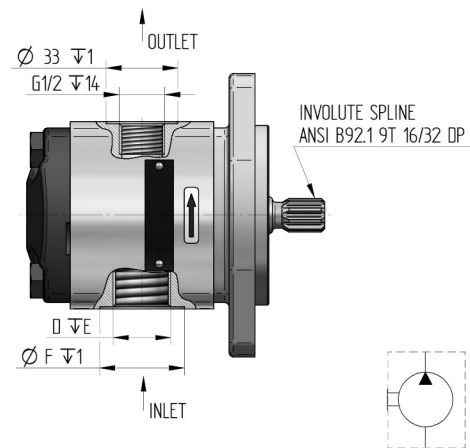
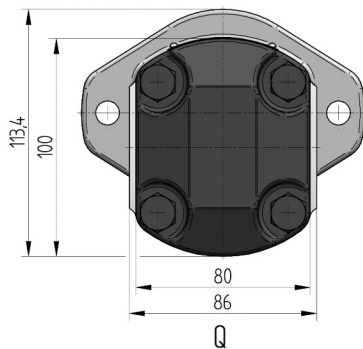
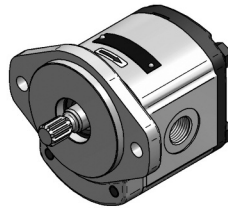
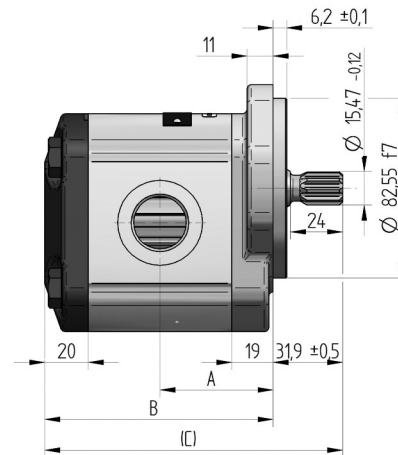
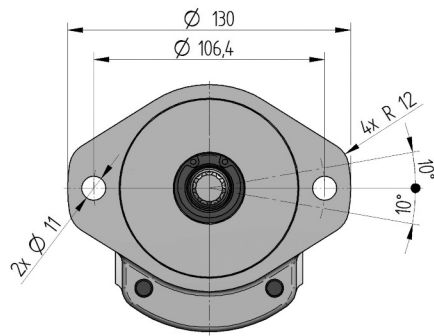


THE CLOCKWISE PUMP IS SHOWN

Order key	purch. code	direct. of rot.	displacement [cm ³ /1]	nom. press. [bar]	speed MIN. [min ⁻¹]	speed MAX. [min ⁻¹]	dimension		
							A [mm]	B [mm]	C [mm]
T3S-25R-R06C10-SH06H05-N		R	25	200	500	2 600	59.9	120.8	158.5
T3S-25L-R06C10-SH06H05-N		L							
T3S-20R-R06C10-SH06H05-N		R	20	240	500	3 000	55.8	112.7	150.4
T3S-20L-R06C10-SH06H05-N		L							
T3S-16R-R06C10-SH06H05-N		R	16	260	500	3 200	52.7	106.5	144.2
T3S-16L-R06C10-SH06H05-N		L							
T3S-12R-R06C10-SH06H05-N		R	12	260	500	3 400	49.9	100.2	137.9
T3S-12L-R06C10-SH06H05-N		L							
T3S-8R-R06C10-SH06H05-N		R	8	280	500	3 500	46.4	93.9	131.6
T3S-8L-R06C10-SH06H05-N		L							
T3S-6R-R06C10-SH06H05-N		R	6	280	500	3 600	44.9	90.7	128.4
T3S-6L-R06C10-SH06H05-N		L							

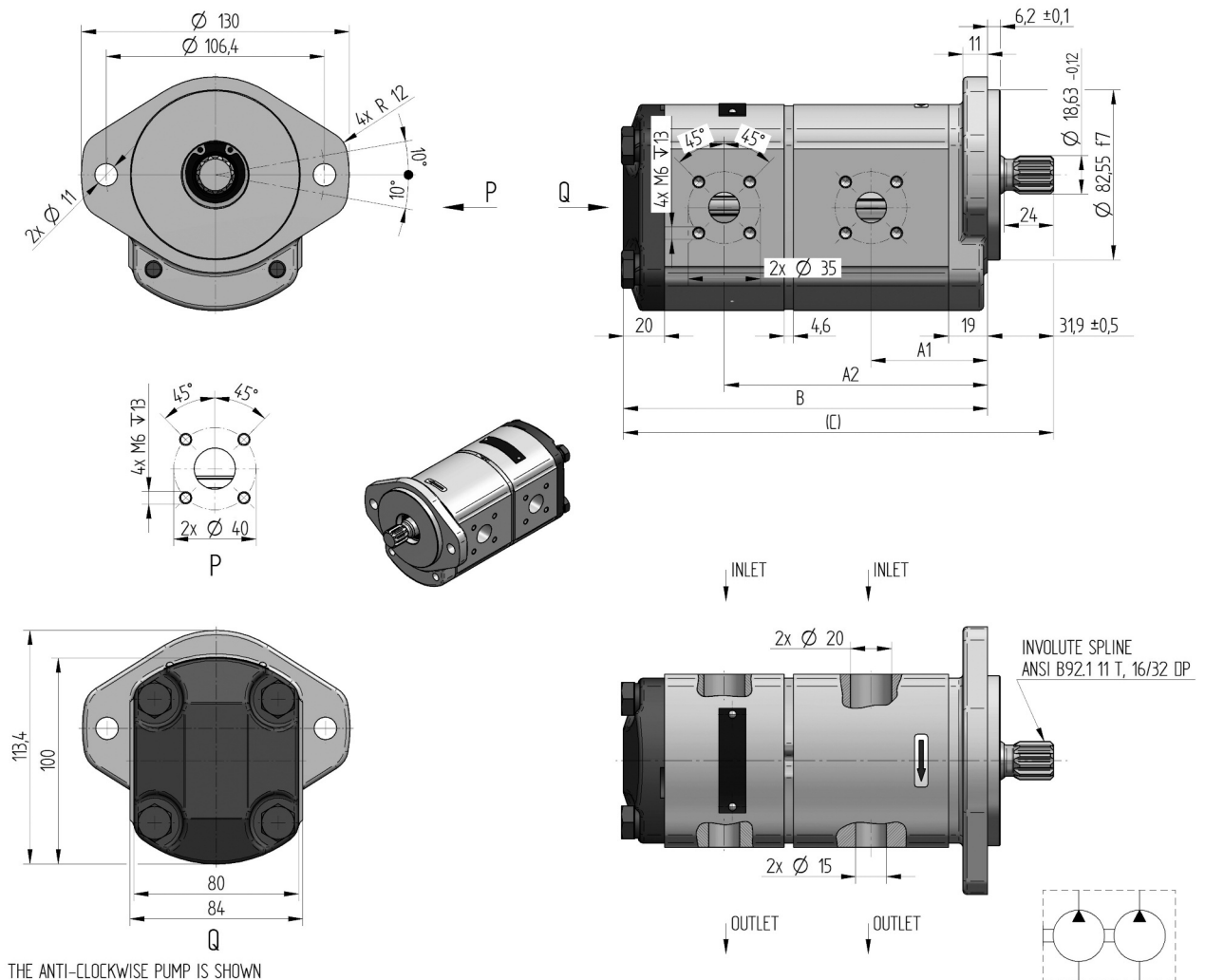


Order key	purch. code	direct. of rot.	displacement [cm ³ /1]	nom. press. [bar]	speed MIN. [min ⁻¹]	speed MAX. [min ⁻¹]	dimension					
							A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]
T3S-25R- S02V12-SU05U04-N		R	25	200	500	2 600	59.9	120.8	152.8	1-1/16-12 UN-2B	19	41
T3S-25L- S02V12-SU05U04-N		L										
T3S-20R- S02V12-SU05U04-N		R	20	240	500	3 000	55.8	112.7	144.7	1-1/16-12 UN-2B	19	41
T3S-20L- S02V12-SU05U04-N		L										
T3S-16R- S02V12-SU05U04-N		R	16	260	500	3 200	52.7	106.5	138.5	1-1/16-12 UN-2B	19	41
T3S-16L- S02V12-SU05U04-N		L										
T3S-12R- S02V12-SU05U04-N		R	12	260	500	3 400	49.6	100.2	132.2	1-1/16-12 UN-2B	19	41
T3S-12L- S02V12-SU05U04-N		L										
T3S-8R- S02V12-SU04U04-N		R	8	280	500	3 500	46.4	93.9	125.9	7/8-14 UNF-2B	17	34
T3S-8L- S02V12-SU04U04-N		L										
T3S-6R- S02V12-SU04U04-N		R	6	280	500	3 600	44.9	90.7	122.7	7/8-14 UNF-2B	17	34
T3S-6L- S02V12-SU04U04-N		L										



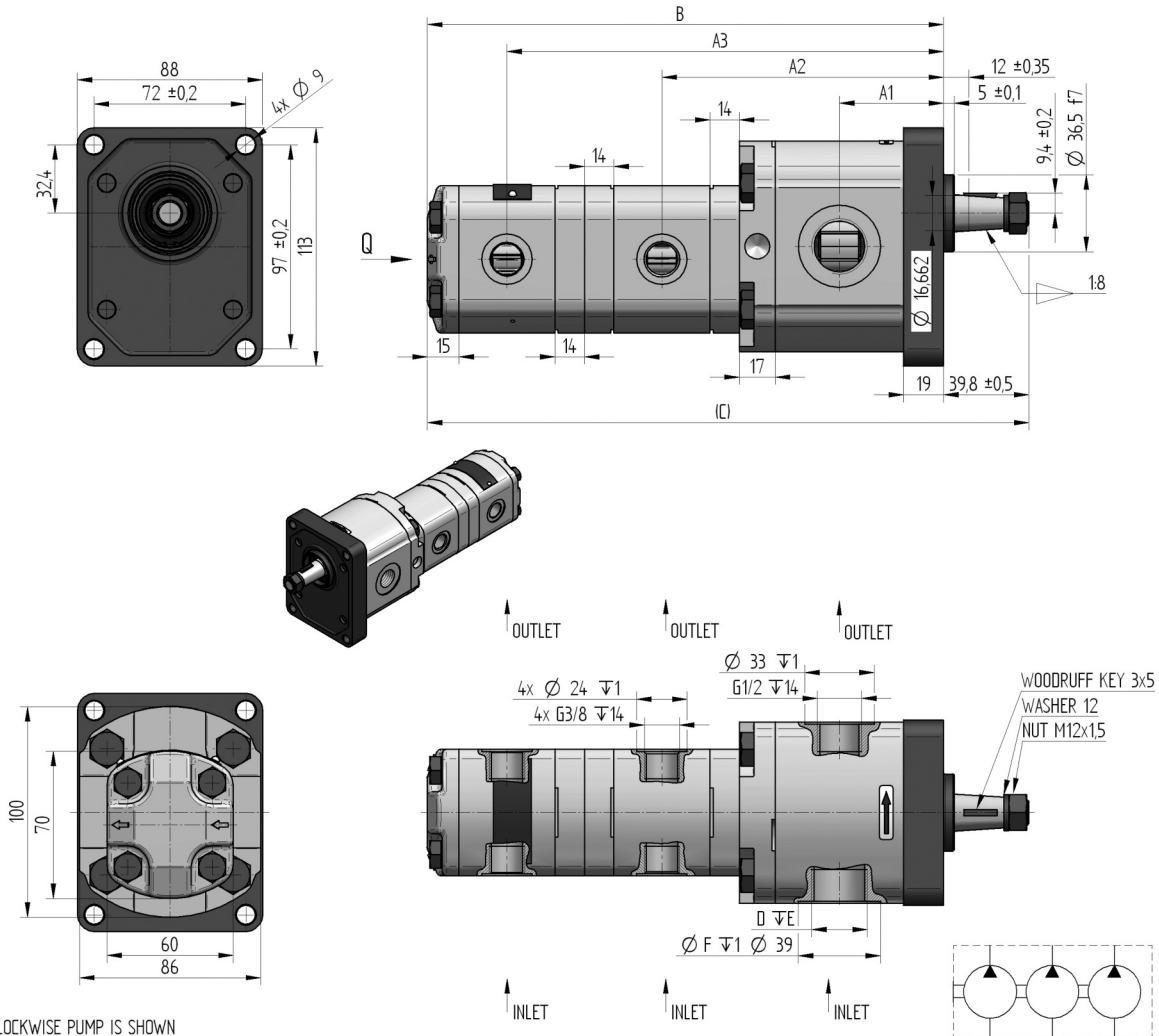
THE CLOCKWISE PUMP IS SHOWN

Order key	purch. code	direct. of rot.	displacement [cm ³ /1]	nom. press. [bar]	speed MIN. [min ⁻¹]	speed MAX. [min ⁻¹]	dimension					
							A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]
T3S-25R-S02D04-SG04G03-N		R	25	200	500	2 600	59.9	120.8	152.7	G 3/4	16	39
T3S-25L-S02D04-SG04G03-N		L										
T3S-20R-S02D04-SG04G03-N		R	20	240	500	3 000	55.8	112.7	144.6	G 3/4	16	39
T3S-20L-S02D04-SG04G03-N		L										
T3S-16R-S02D04-SG04G03-N		R	16	260	500	3 200	52.7	106.5	138.4	G 3/4	16	39
T3S-16L-S02D04-SG04G03-N		L										
T3S-12R-S02D04-SG04G03-N		R	12	260	500	3 400	49.6	100.2	132.1	G 3/4	16	39
T3S-12L-S02D04-SG04G03-N		L										
T3S-8R-S02D04-SG03G03-N		R	8	280	500	3 500	46.4	93.9	125.8	G 1/2	14	33
T3S-8L-S02D04-SG03G03-N		L										
T3S-6R-S02D04-SG03G03-N		R	6	280	500	3 600	44.9	90.7	122.6	G 1/2	14	33
T3S-6L-S02D04-SG03G03-N		L										



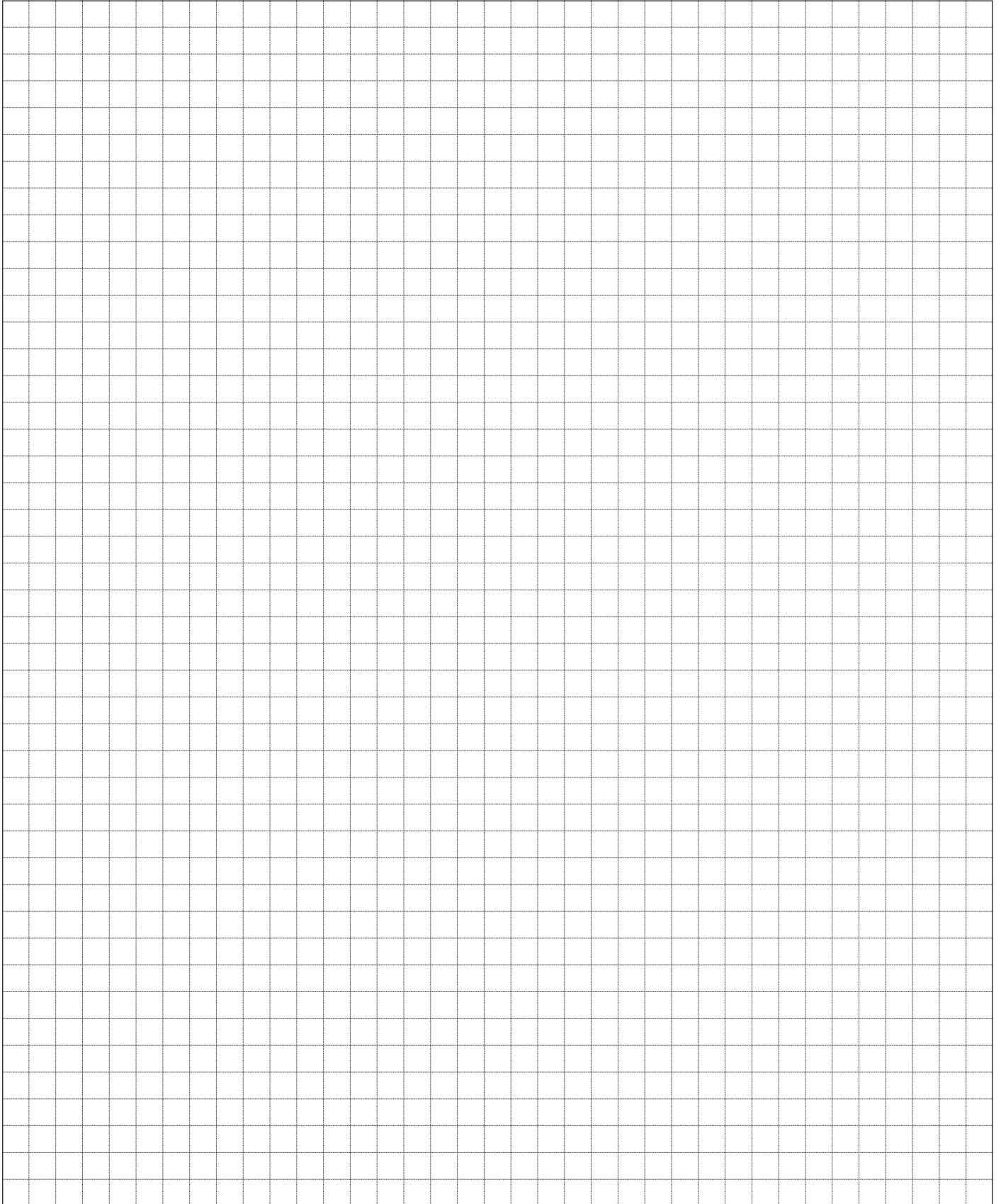
Other combinations are available after consultation.

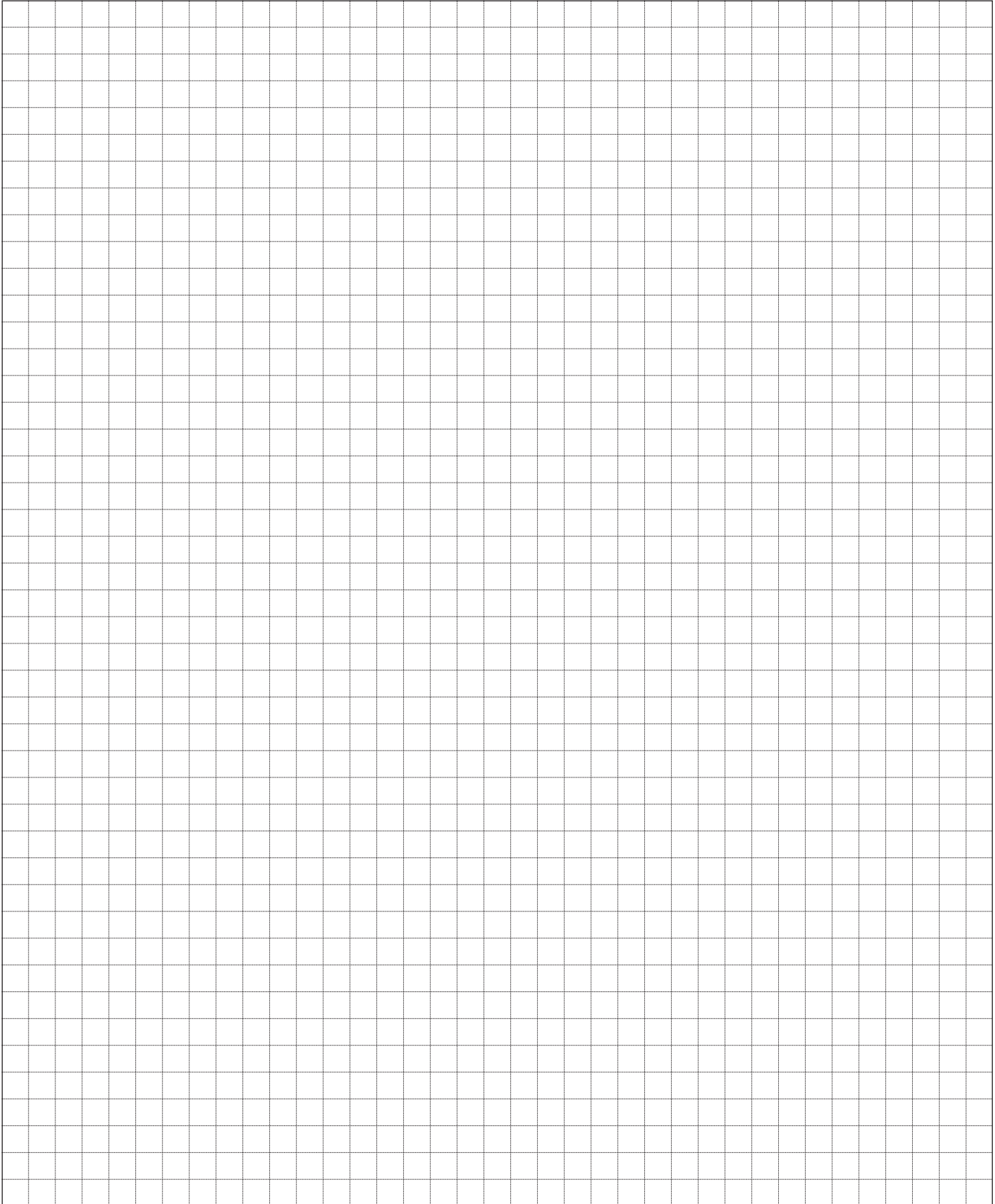
Order key	purch. code	direct. of rot.	displacement [cm ³ /1]	nom. press. [bar]	speed MIN. [min ⁻¹]	speed MAX. [min ⁻¹]	dimension			
							A1 [mm]	A2 [mm]	B [mm]	C [mm]
T3S-20/6R-S02D06-SH06H05/H06H05-N		R	20/6	240/280	500	3 000	55.8	123.1	169.0	200.9
T3S-20/6L-S02D06-SH06H05/H06H05-N		L								
T3S-12/6R-S02D06-SH06H05/H06H05-N		R	12/6	260/280	500	3 400	49.6	110.6	156.5	188.4
T3S-12/6L-S02D06-SH06H05/H06H05-N		L								
T3S-8/8R-S02D06-SH06H05/H06H05-N		R	8/8	280	500	3 500	46.4	105.9	153.4	185.3
T3S-8/8L-S02D06-SH06H05/H06H05-N		L								
T3S-6/6R-S02D06-SH06H05/H06H05-N		R	6/6	280	500	3 600	44.8	101.1	147.0	178.9
T3S-6/6L-S02D06-SH06H05/H06H05-N		L								

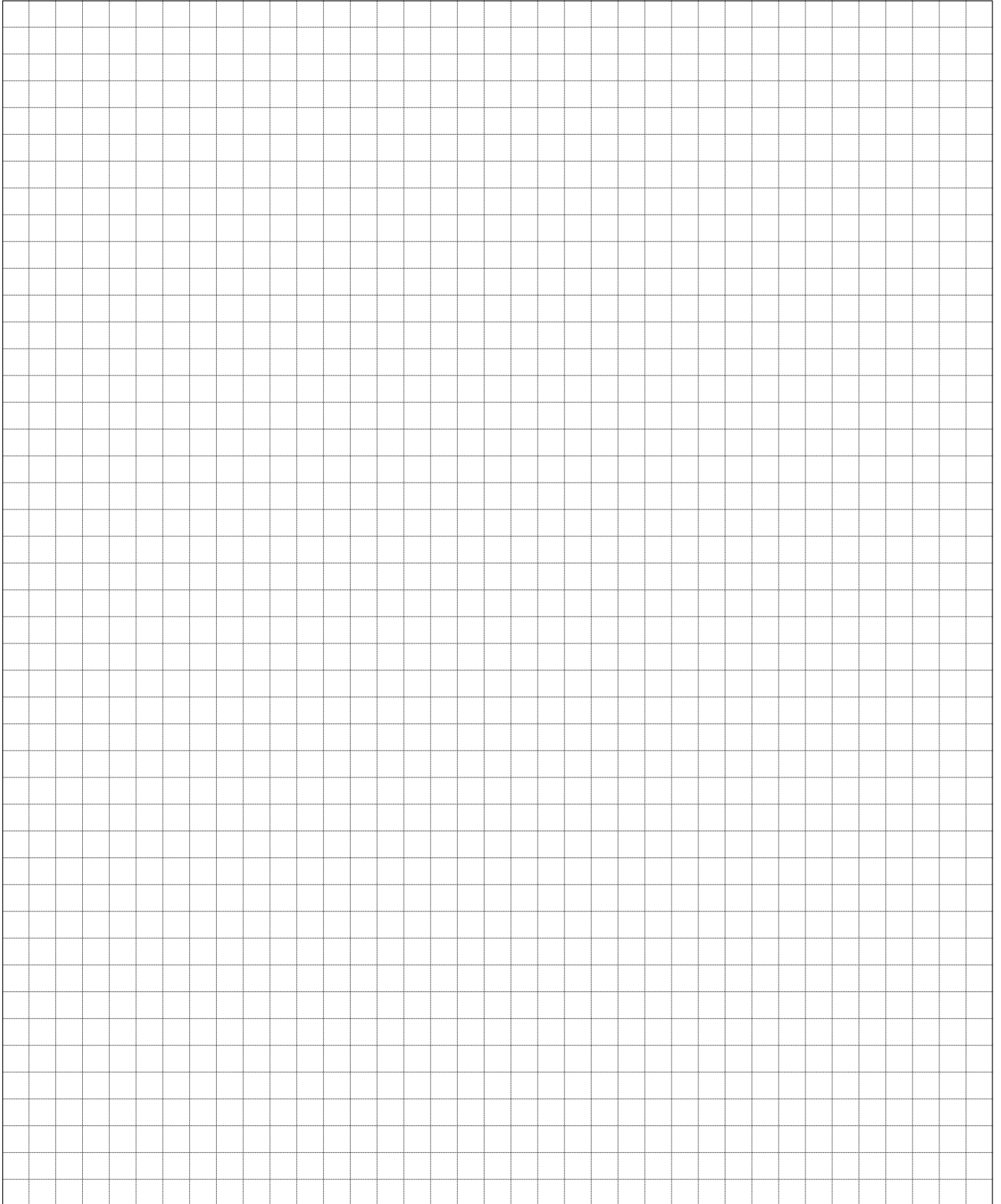


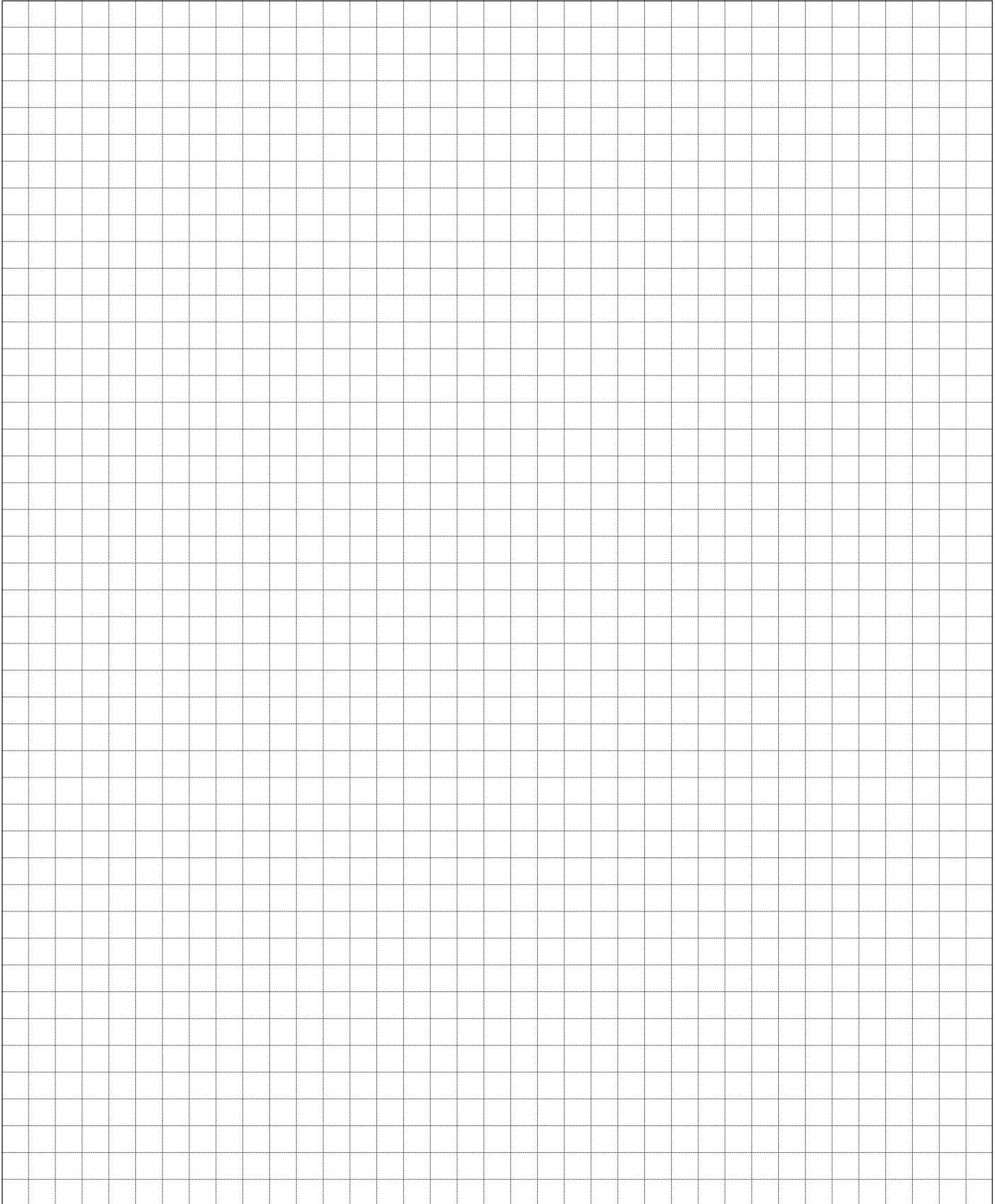
More information about pumps of P23 series in relevant catalogue.

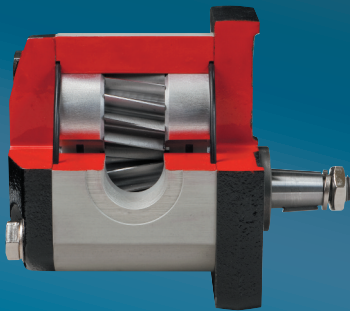
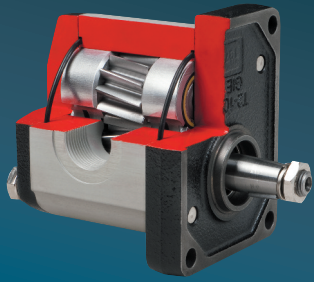
Order key	purch. code	direct. of rot.	displacement [cm ³ /1]	nom. press. [bar]	speed MIN. [min ⁻¹]	speed MAX. [min ⁻¹]	dimension							
							A1 [mm]	A2 [mm]	A3 [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]
T3S-16/P23-2.5/2.5R- R05C07-SG04G03/G02G02/G02G02-N		R	16/2.5/2.5	280	500	3 200	52.7	138.2	207.7	243.5	283.3	G 3/4	16	39
T3S-16/P23-2.5/2.5L- R05C07-SG04G03/G02G02/G02G02-N		L	16/2.5/2.5	280	500	3 200	52.7	138.2	207.7	243.5	283.3	G 3/4	16	39
T3S-12/P23-2.5/2.5R- R05C07-SG04G03/G02G02/G02G02-N		R	12/2.5/2.5	280	500	3 400	49.8	121.9	201.4	237.2	277.0	G 3/4	16	39
T3S-12/P23-2.5/2.5L- R05C07-SG04G03/G02G02/G02G02-N		L	12/2.5/2.5	280	500	3 400	49.8	121.9	201.4	237.2	277.0	G 3/4	16	39











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