

Displacement from 5,00 to 39,00 ccm
Pressure up to 310 bar
Speed from 400 to 3200 RPM

GEAR PUMPS

UD

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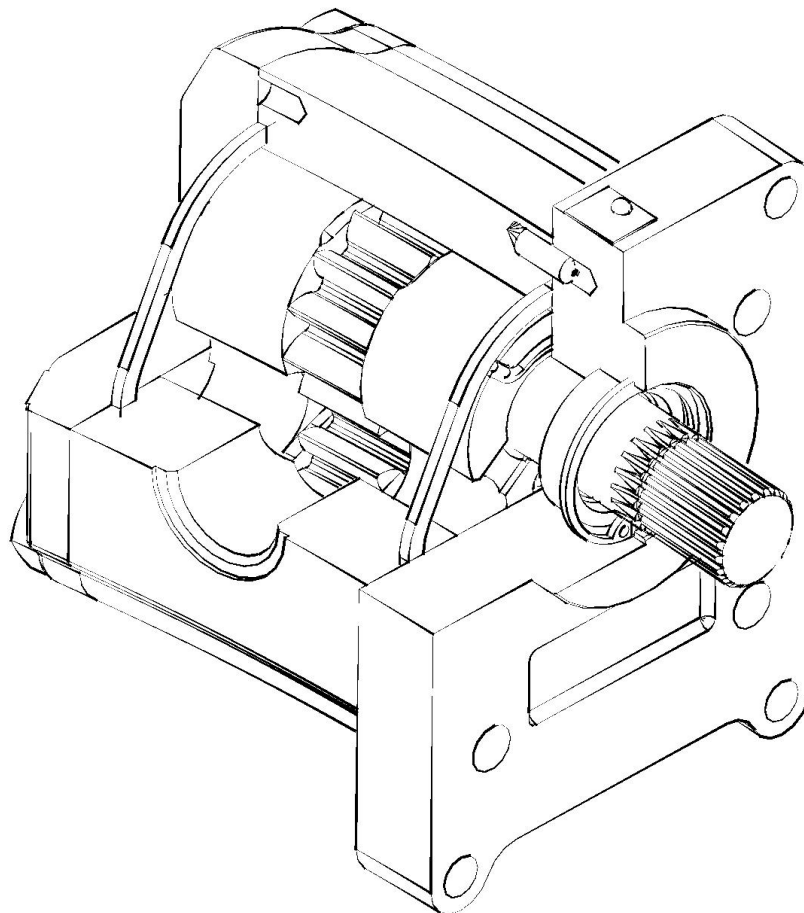
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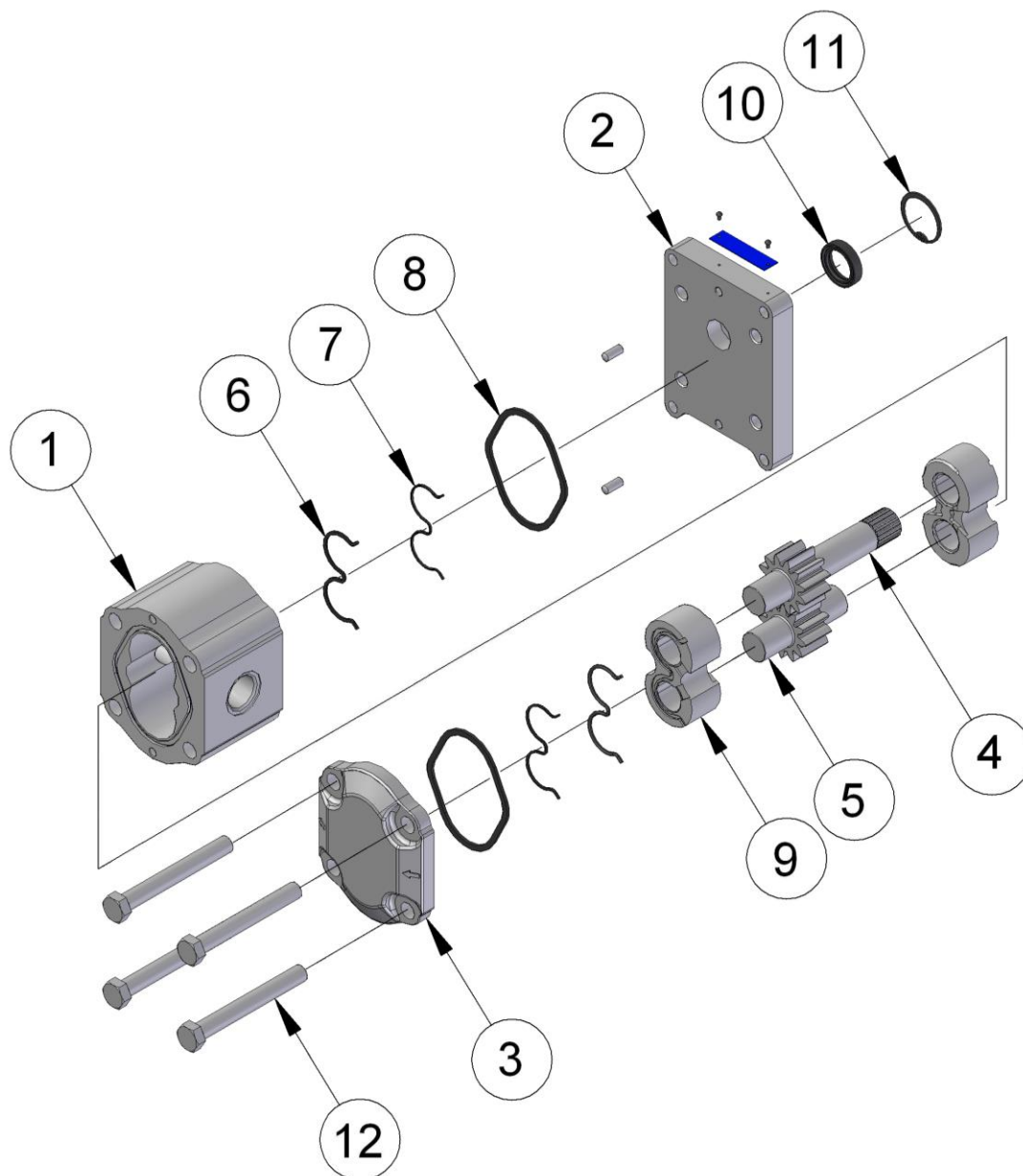


DESCRIPTION

UD series pumps based construct and the displacement range of UD series pumps is based on the proven UC (UN) series. The cover and flange are manufactured from grey iron. The body is designed from aluminium alloy shaped profile bars. Pumps are connected with four through-bolts made of M12 high strength steel. They are equipped with a hydraulic pressure compensation axial-clearance which is executed by means of a balancing sealing directly in the bearing sleeves. Compared to the previous design of UC (UN), the UD series pumps have better noise, maximum pressure and flow efficiency within the entire speed range, whereas the favorable price has been maintained. UD series offers a possibility large range displacement $V_g = 5$ to $39 \text{ cm}^3/\text{rev}$ at achieve nominal pressure up to 30 MPa. They are produced in unidirectional and in multiple versions.

Pumps of UD series can be equipped with flow regulation and a relief valve (see. page 9 - 12), both in the unidirectional and multiple version (see. page 24).

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. Connecting bolts

A reinforced version (UDD), or a shortened version (UDK) can be used for special purposes

UDD pumps are a reinforced version that is about 10 mm longer. The Pump has increased the pressure from displacement $>16 \text{ cm}^3/\text{rev}$. The position of the inlets and outlets is shifted by about 5 mm on body and about 10 mm on the cover compared with the standard version.

UDK pumps are about 11.4 mm shorter. The position of the inlets and outlets is shifted by about 5.7 mm on body and 11.4 mm on the cover compared with the standard version.

PARAMETER TABLE

Basic design

Nominal Size Parameters		Sym.	Unit	UD 8	UD 10	UD 12.5	UD 16	UD 20	UD 25	UD 28	UD 31
Actual displacement		V_g	$[\text{cm}^3]$	7.93	10.02	12.10	16.28	20.45	25.46	28.38	32.14
Rotation speed	Nominal	n_n	$[\text{min}^{-1}]$	1500							
	Minimum	n_{\min}	$[\text{min}^{-1}]$	600	450	450	450	450	450	450	450
	Maximum	n_{\max}	$[\text{min}^{-1}]$	3200	3200	3200	3200	3200	3200	3000	2800
Pressure at inlet *	Minimum	$p_{1\min}$	[bar]	0.50							
	Maximum	$p_{1\max}$	[bar]	-0.30							
Pressure at outlet **	max. continuous	p_{2n}	[bar]	250	250	250	250	230	200	200	160
	Maximum	$p_{2\max}$	[bar]	300	300	300	290	270	250	230	200
	Peak	p_3	[bar]	310	310	310	300	280	260	240	210
Nominal flow rate (min.) at n_n and p_{2n}		Q_n	$[\text{dm}^3 \cdot \text{min}^{-1}]$	10.70	13.60	16.40	22.00	28.00	35.10	39.10	44.40
Maximum flow rate at n_{\max} and $p_{2\max}$		Q_{\max}	$[\text{dm}^3 \cdot \text{min}^{-1}]$	25.12	31.74	38.33	51.58	64.79	80.66	84.29	89.09
Nominal input power (max.) at n_n and p_{2n}		P_n	[kW]	5.83	7.37	8.90	11.97	13.83	14.98	16.69	15.12
Maximum input power at n_{\max} and $p_{2\max}$		P_{\max}	[kW]	15.42	19.49	23.54	30.64	35.93	41.53	40.07	37.06
Weight		M	[kg]	5.15	5.30	5.40	5.55	5.70	5.85	6.00	6.20

Additional design

Nominal Size Parameters		Sym.	Unit	UD 5	UD 39	UDD 17	UDD 22	UDD 25	UDD 28	UDD 34	UDD 39
Actual displacement		V_g	$[\text{cm}^3]$	5.01	40.07	17.12	22.54	25.46	28.38	34.23	40.07
Rotation speed	nominal	n_n	$[\text{min}^{-1}]$	1500	1200	1500					1200
	minimum	n_{\min}	$[\text{min}^{-1}]$	600	400	450	450	450	450	450	400
	maximum	n_{\max}	$[\text{min}^{-1}]$	3200	1800	3200	3200	3200	3000	2500	1800
Pressure at inlet *	minimum	$p_{1\min}$	[bar]	0.50							
	maximum	$p_{1\max}$	[bar]	-0.30							
Pressure at outlet **	max. continuous	p_{2n}	[bar]	250	120	250	250	250	240	190	160
	maximum	$p_{2\max}$	[bar]	300	160	280	270	260	260	200	170
	peak	p_3	[bar]	310	170	290	280	270	270	210	180
Nominal flow rate (min.) at n_n and p_{2n}		Q_n	$[\text{dm}^3 \cdot \text{min}^{-1}]$	6.60	44.20	23.1	32.4	35.1	39.1	46.5	43.50
Maximum flow rate at n_{\max} and $p_{2\max}$		Q_{\max}	$[\text{dm}^3 \cdot \text{min}^{-1}]$	15.84	71.40	52.29	69.24	78.21	81.73	82.15	69.24
Nominal input power (max.) at n_n and p_{2n}		P_n	[kW]	3.68	14.14	12.59	16.57	18.72	20.03	19.13	18.86
Maximum input power at n_{\max} and $p_{2\max}$		P_{\max}	[kW]	9.73	24.04	30.08	38.19	41.53	43.40	33.56	24.04
Weight		m	[kg]	5.00	6.55	5.70	6.00	6.1	6.25	6.50	6.9

* Inlet pressure in the reversible design can be up to $p_1 = p_{2n} - 70 \text{ bar max}$. External drainage must be used in case of the reversible design.

** Outlet pressure in the reversible design is **10% lower** than shown in the table (depending on operating conditions - it is necessary to consult with the manufacturer).

FORMULAS USED FOR CALCULATION

Flow rate

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

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

Displacement

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

Torque

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

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

Input power

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

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:

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

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

Total efficiency η_t

It is defined as product of η_v and η_m and determines the 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 vegetable oils suitable for hydraulic drives

Liquid temperature

$$t = -20 \div +80 \text{ [}^\circ\text{C]} \quad \text{when used with FKM (Viton) seal up to } 120 \text{ [}^\circ\text{C]}$$

Cinematic viscosity

Recommended (during continuous operation): $v = 20 \div 80 \cdot 10^{-6} \text{ [m}^2 \cdot \text{s}^{-1}\text{]}$

Maximum (cold starting, at viscosity >1000 , operating pressure <10 bar is permissible, speed $<1500 \cdot \text{min}^{-1}$): $v = 1200 \cdot 10^{-6} \text{ [m}^2 \cdot \text{s}^{-1}\text{]}$

Minimum (operating mode at $10 \cdot 10^{-6}$ up to $20 \cdot 10^{-6}$ should be consulted with manufacturer): $v = 10 \cdot 10^{-6} \text{ [m}^2 \cdot \text{s}^{-1}\text{]}$

Filtration coefficient β_α

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

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

Liquid contamination class according to ISO 4406

$$21/18/15 \quad \text{(for pressure } p_2 < 200 \text{ bar)}$$

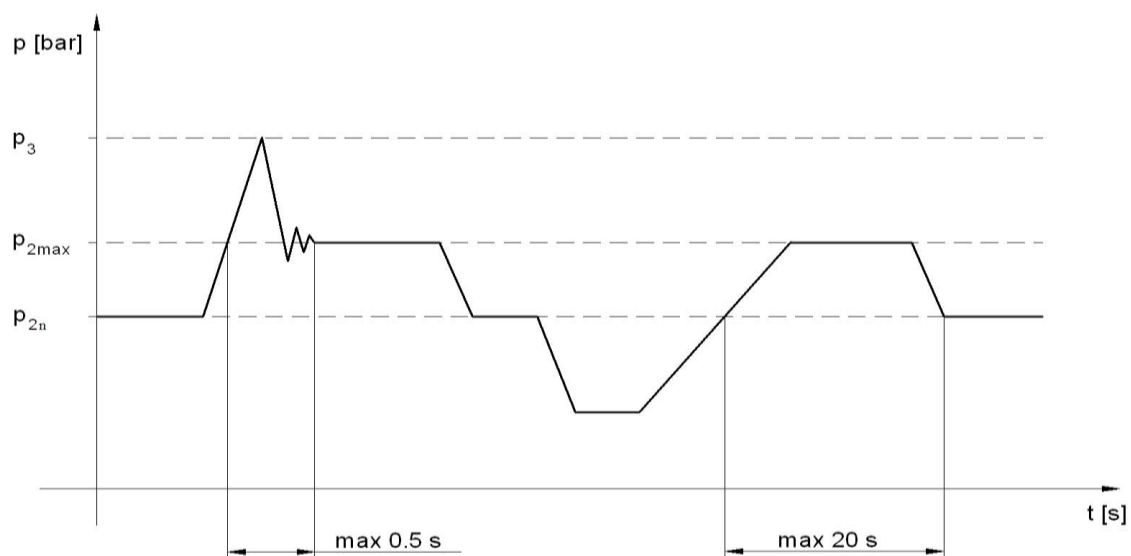
$$20/17/14 \quad \text{(for pressure } p_2 > 200 \text{ bar)}$$

Liquid contamination class according to NAS 1638

$$10 \quad \text{(for pressure } p_2 < 200 \text{ bar)}$$

$$8 \quad \text{(for pressure } p_2 > 200 \text{ bar)}$$

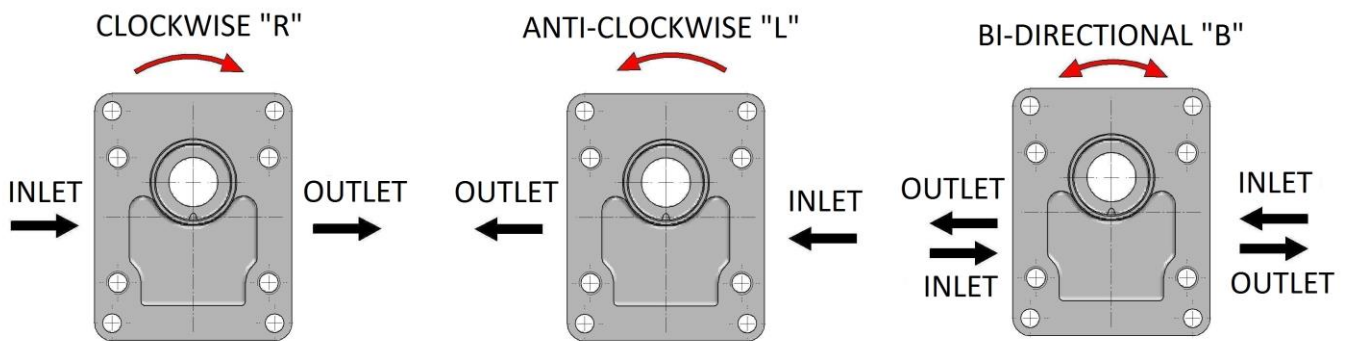
PRESSURE LOAD



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

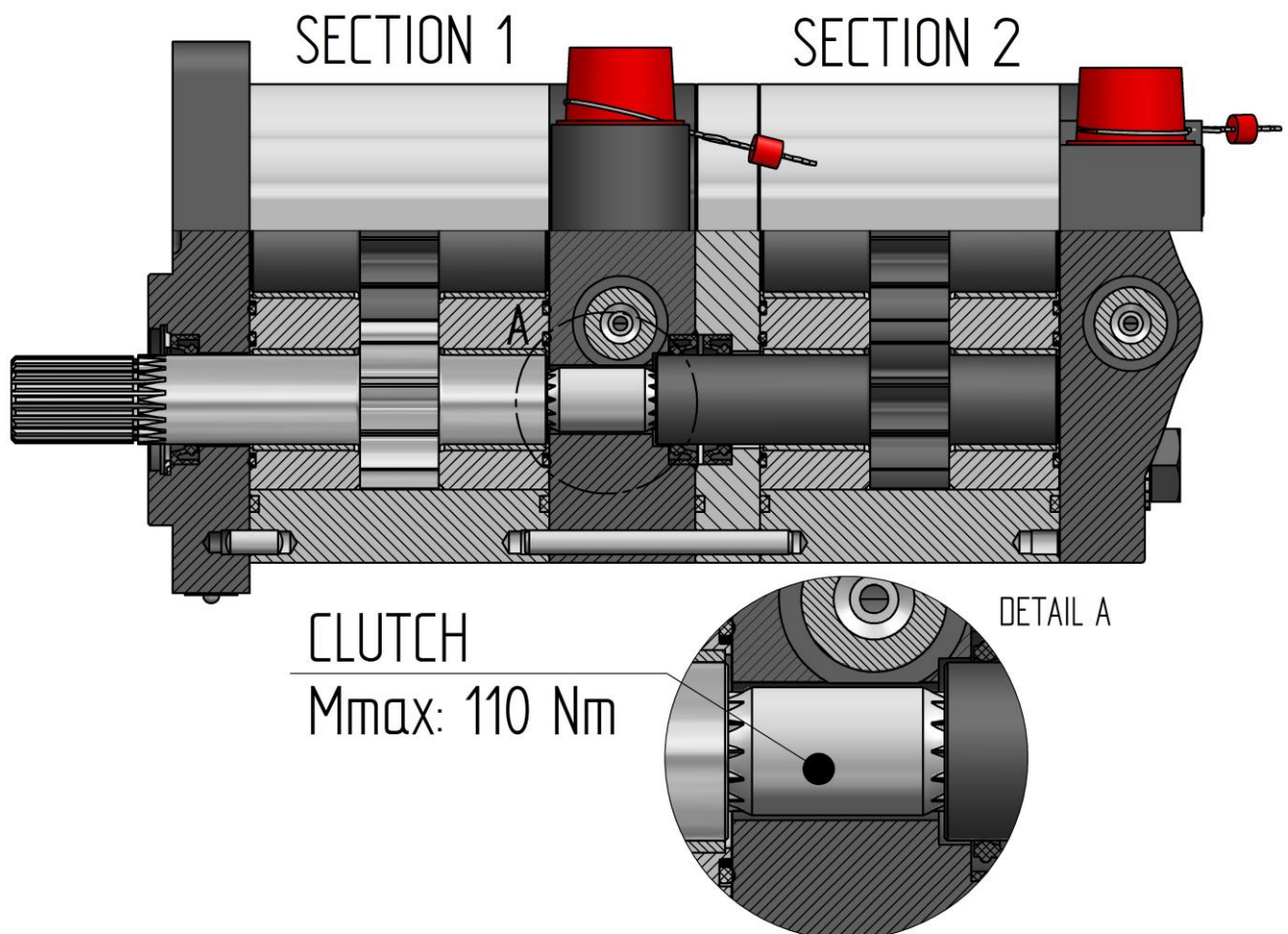
Determine direction of rotation by looking at the drive shaft. The pump can only be used in the specified direction of rotation.



OTHER REQUIREMENTS

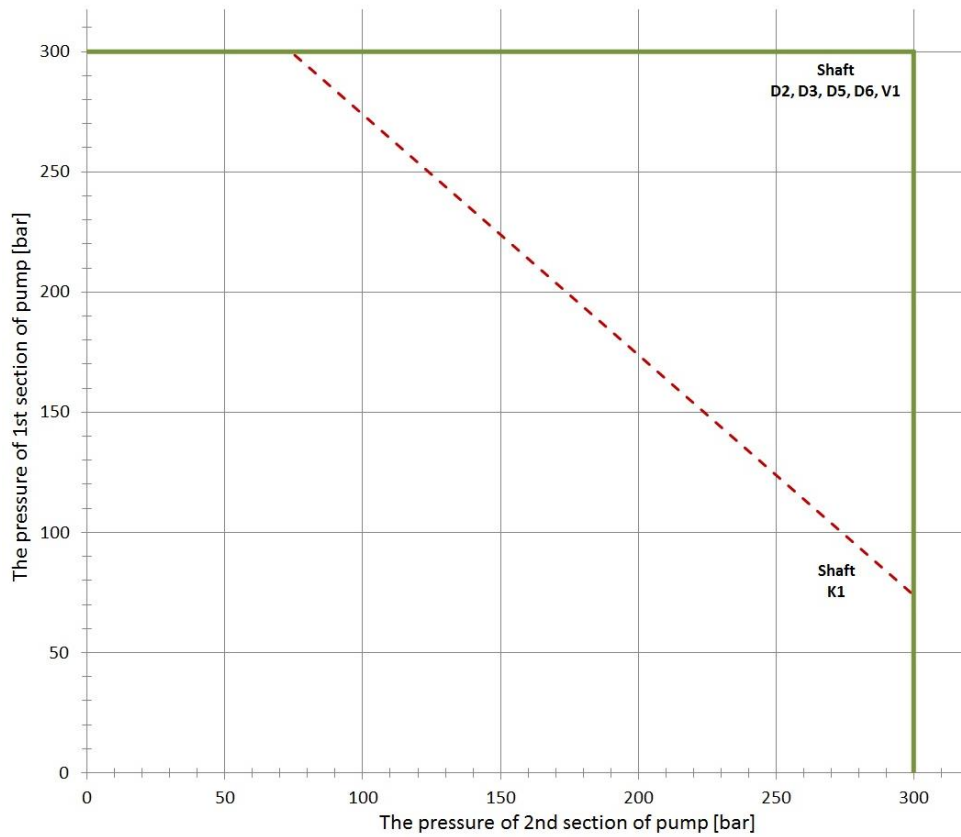
Technical requirements for multiple pumps are the same as for single version pumps.

- In case of multiple pumps the maximum torque, which transfer clutch between each sections, is 110 Nm. Therefore, caution should be used while burdening more sections at once (see allowable torques on the output shaft and the clutch).
- Section 1 should be burdened by the product of pressure and flow more than section 2

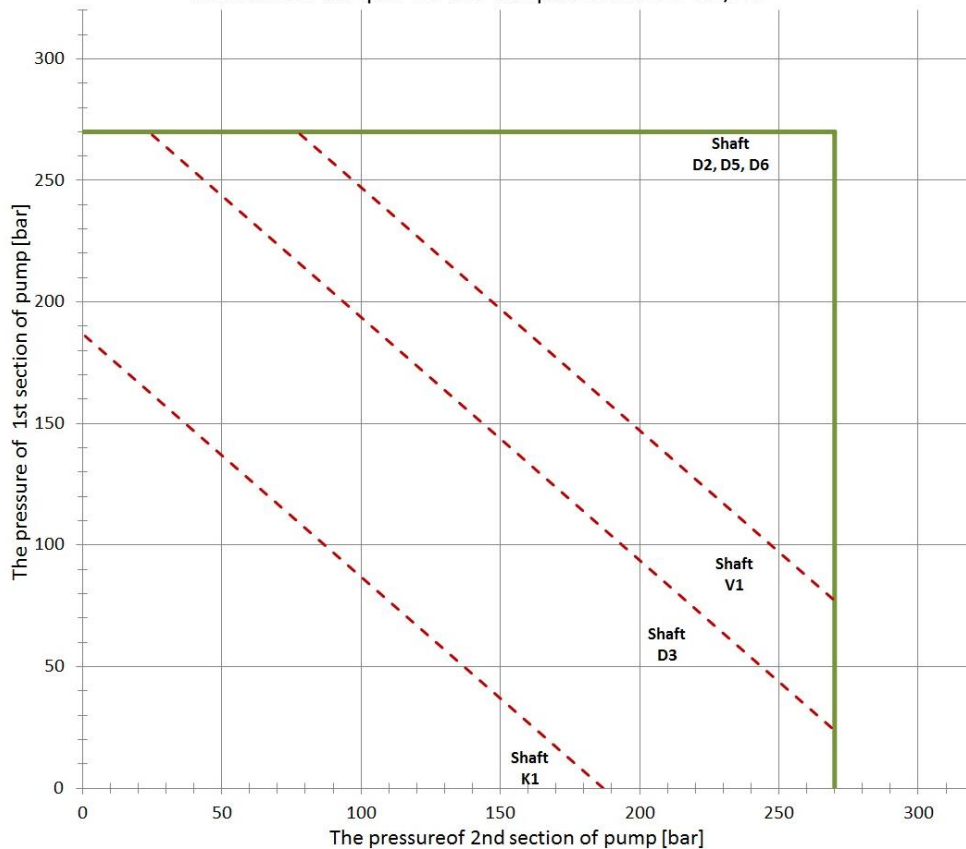


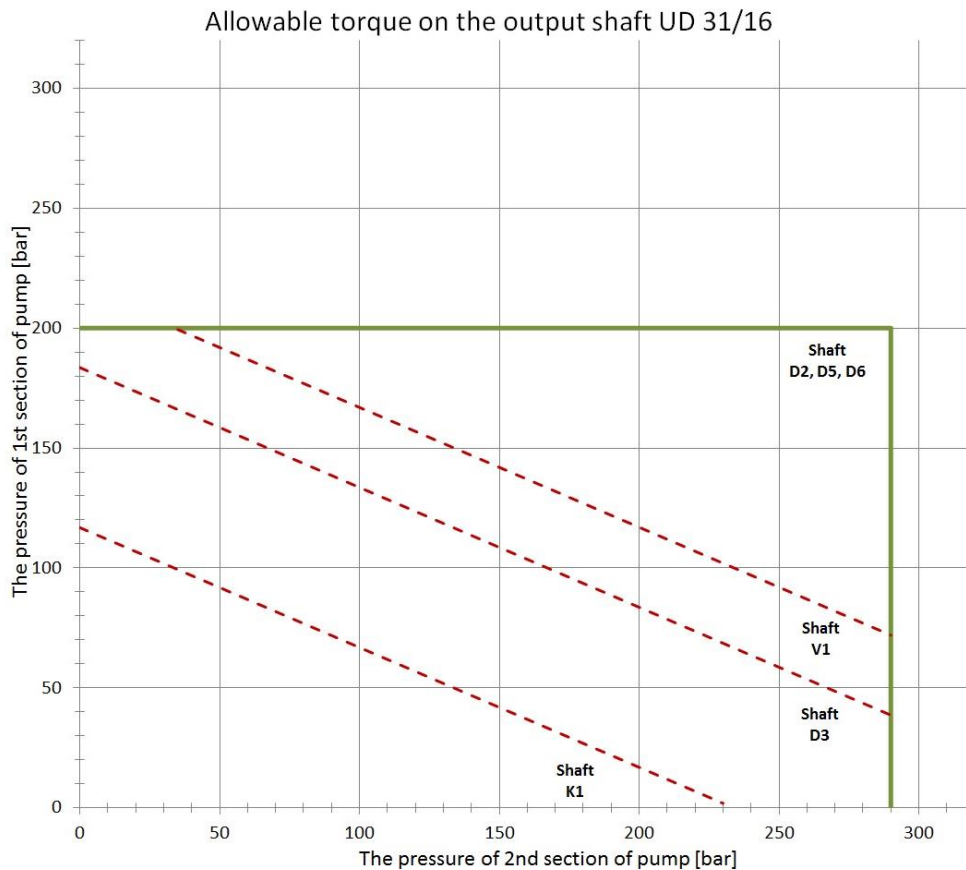
ALLOWABLE TORQUE ON THE OUTPUT SHAFT DEPENDENT ON PRESSURE

Allowable torque on the output shaft UD 10/10



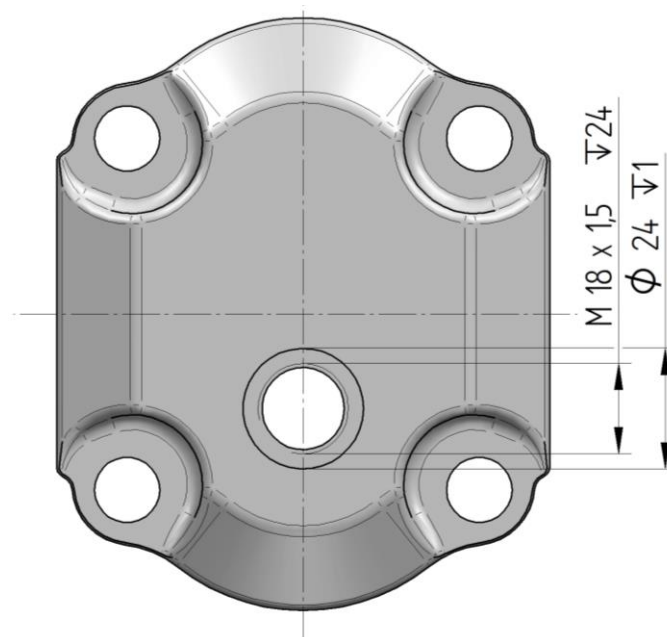
Allowable torque on the output shaft UD 20/20



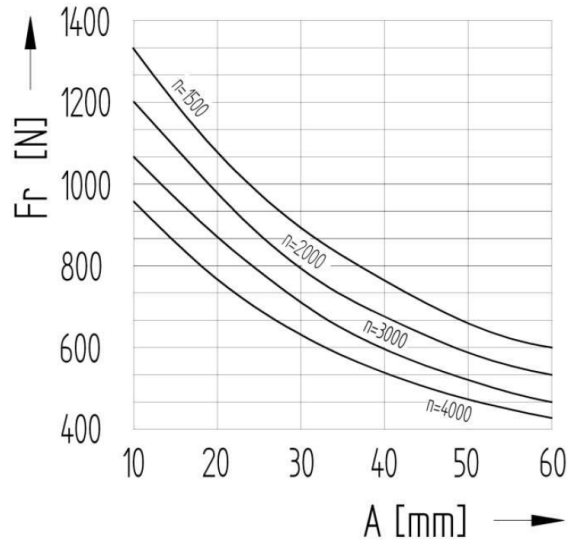
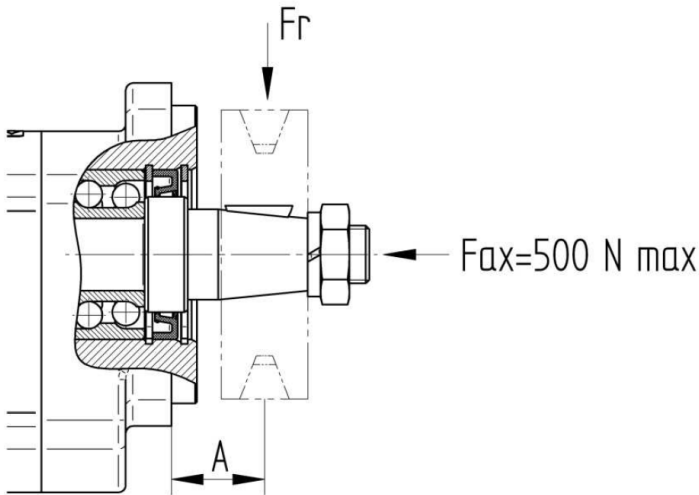


REVERSIBLE DESIGN

Pumps with the possibility of bidirectional rotation have a different internal arrangement requiring drainage. Two types of drain 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. (see fig.). Maximum pressure in the drainage of the serial version (standard seal shaft) is 0.5 bar.



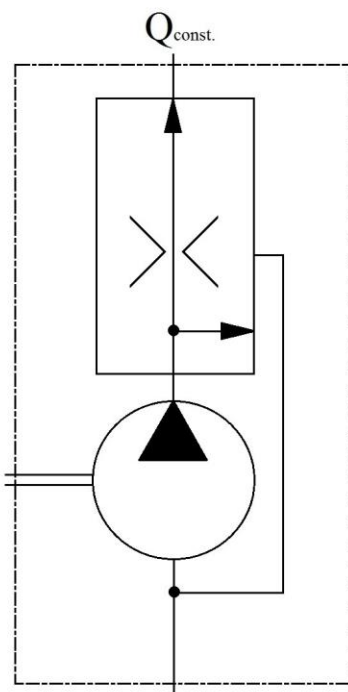
PUMP WITH FRONT-END BEARING



Without front-end bearing the driven unit must not impart axial or radial load of the driven shaft once the engine has been connected to it!

FLOW REGULATOR FOR UNIDIRECTIONAL PUMP

The pump may be equipped with liquid flow regulator, which is designed to maintain constant flow rate regardless of the pump RPM. This principle can be used everywhere, where there is a requirement for motion control at constant speed regardless of RPM. The value of flow rate is determined by type of aperture (see the following figures).

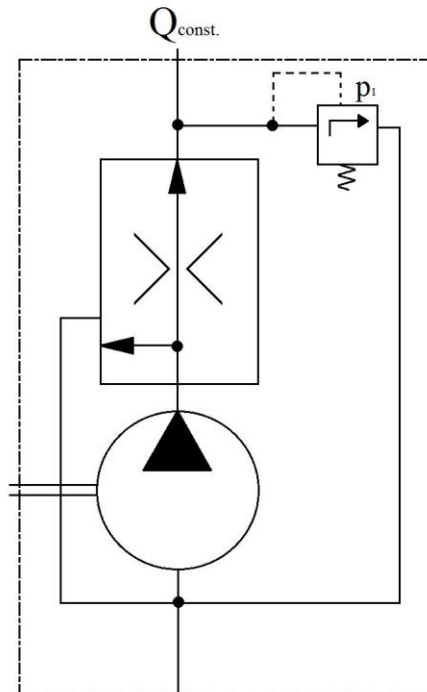


T_x

T_x - 3way flow control valve

Excess flow returned to suction line

p₁ = 2 - 30 l/min

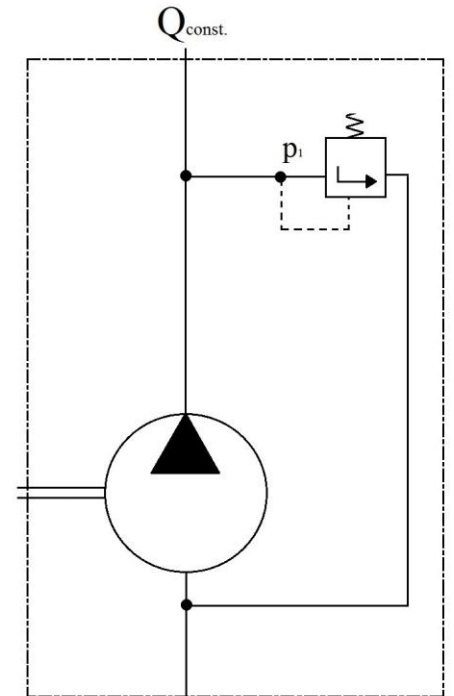


T_xV_x

T_xV_x - 3way flow control valve with pressure - relief valve.

Excess flow returned to suction line

Q_{const.} = 2 - 30 l/min
p₁ = 100 - 180 bar



T0V_x

T0V_x - pressure - relief valve

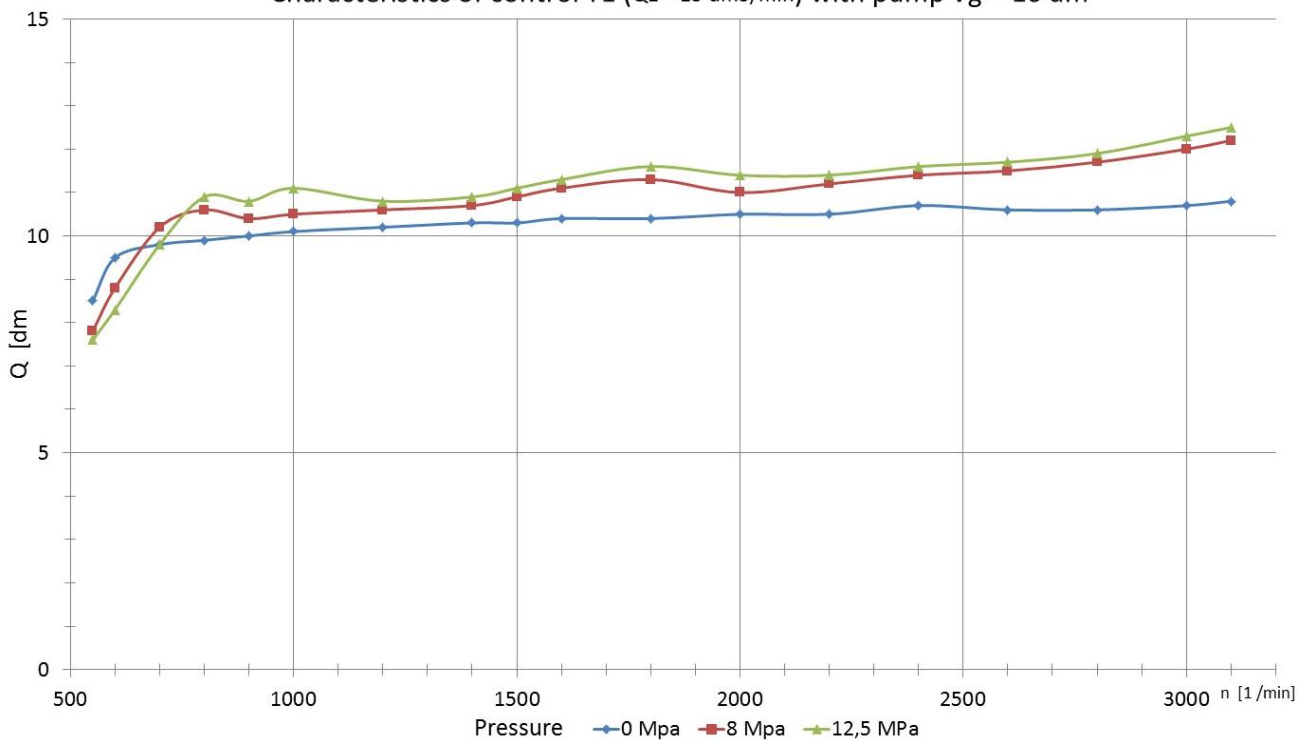
Discharge returned to suction line

p₁ = 5 - 250 bar

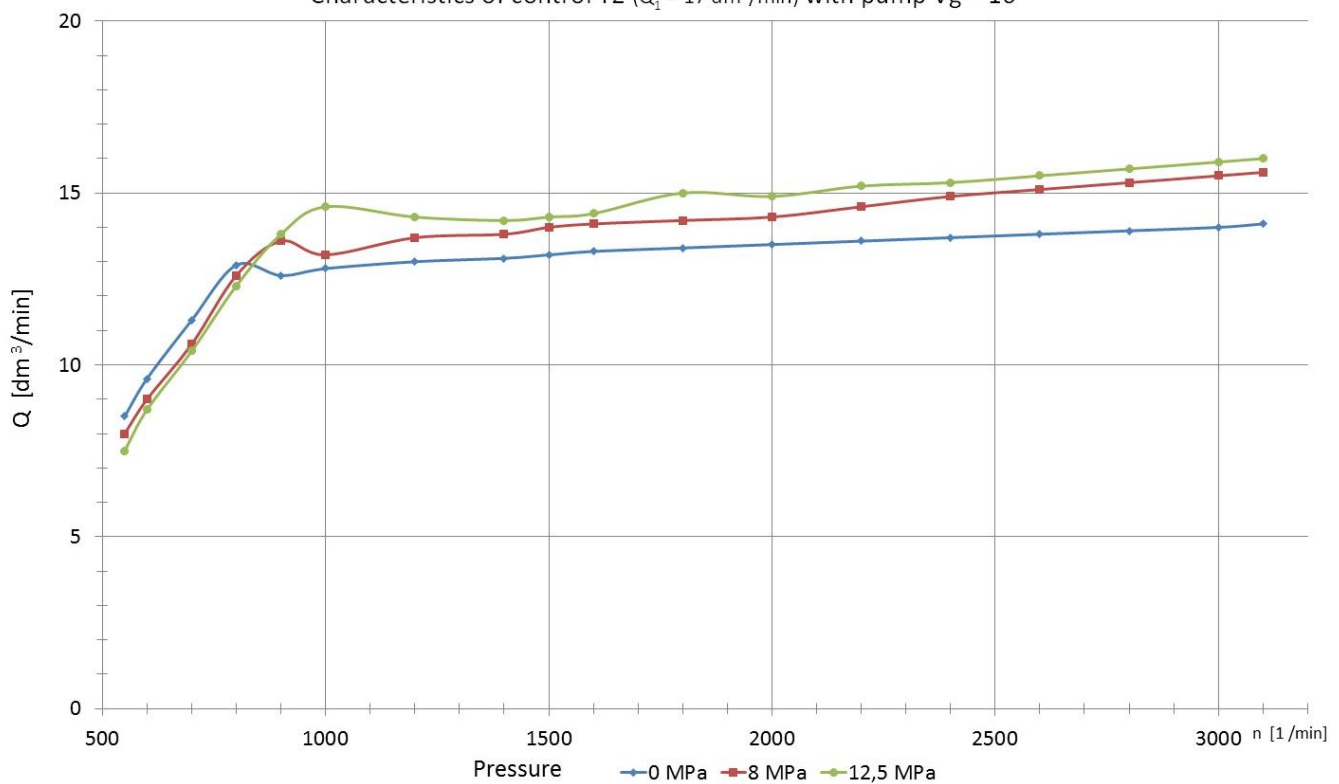
BASIC SETTING OF FLOW REGULATOR

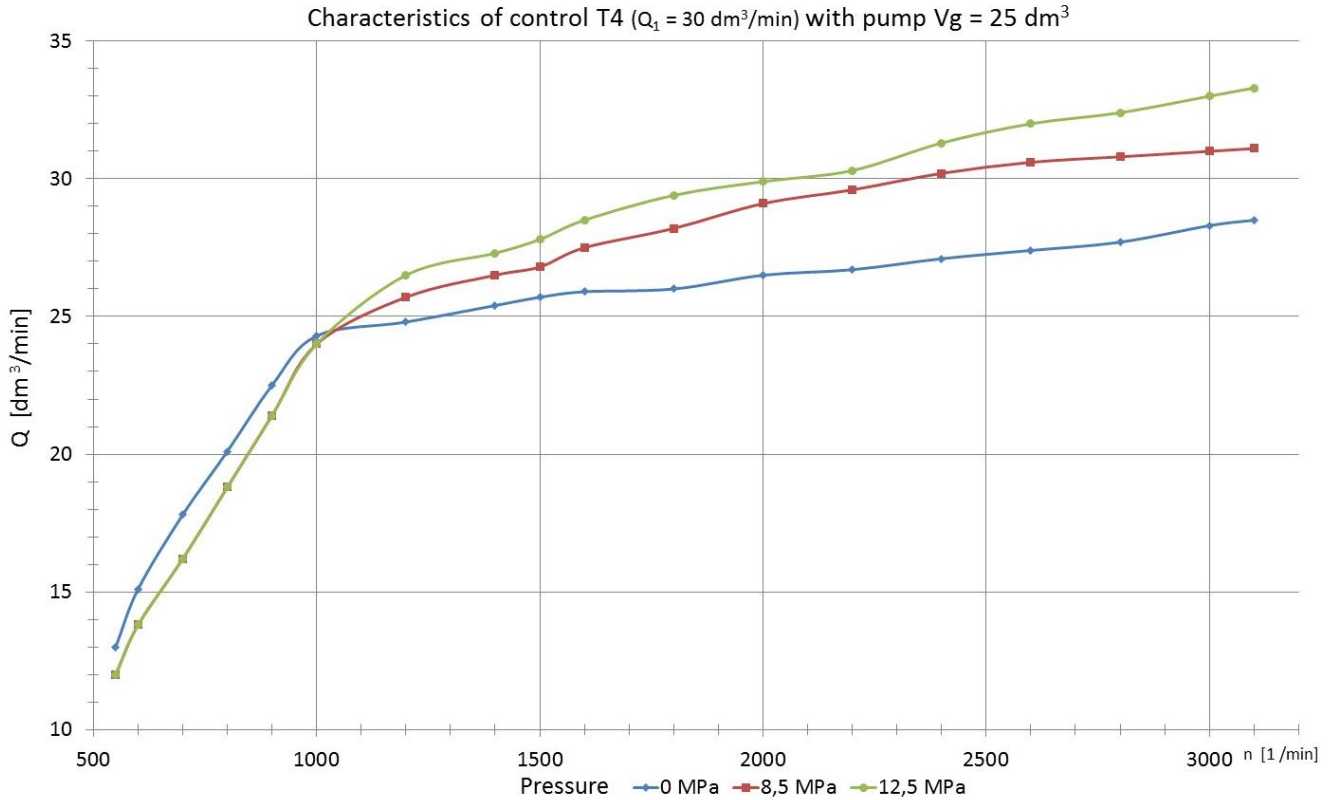
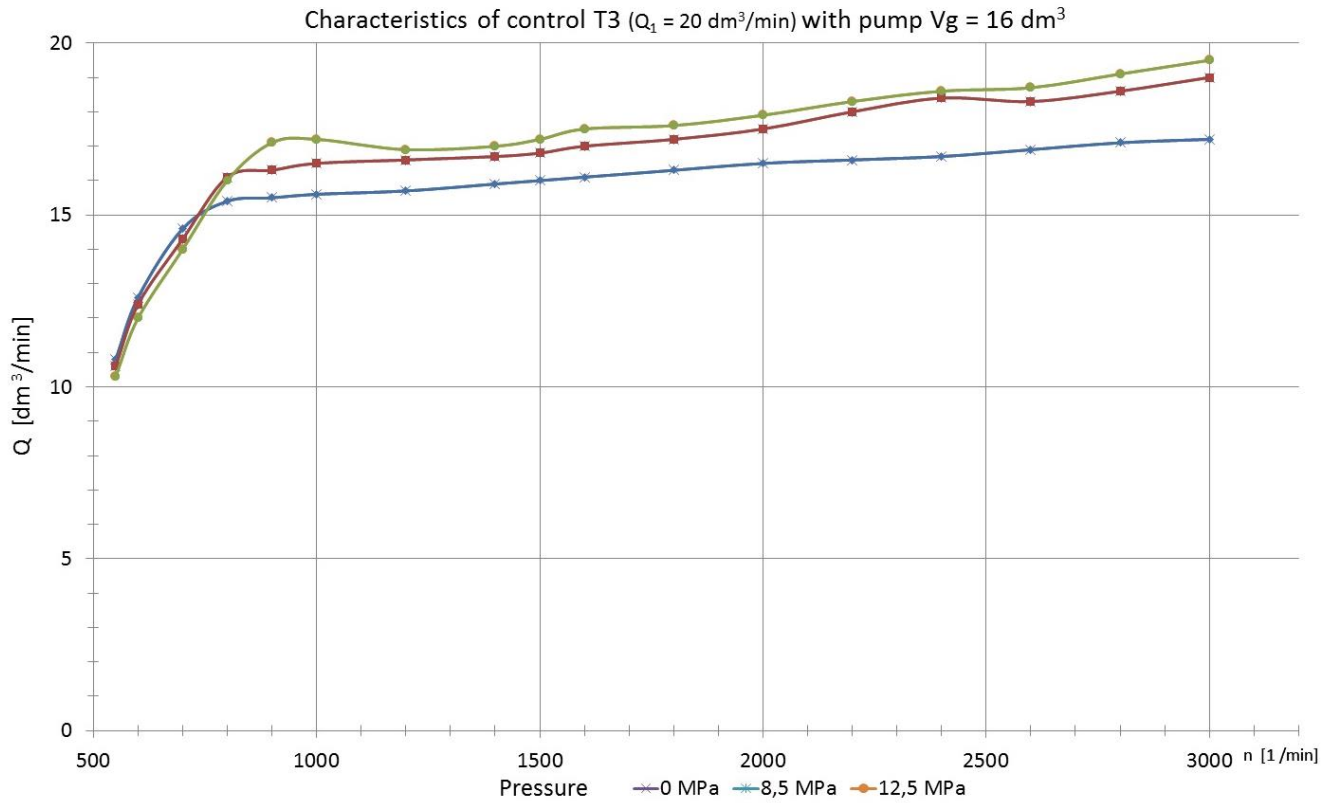
The values in the following graphs are only of an informative nature and present a typical area of values. The max. deviation of the actual values is determined by technical specifications

Characteristics of control T1 ($Q_1 = 13 \text{ dm}^3/\text{min}$) with pump $V_g = 16 \text{ dm}^3$



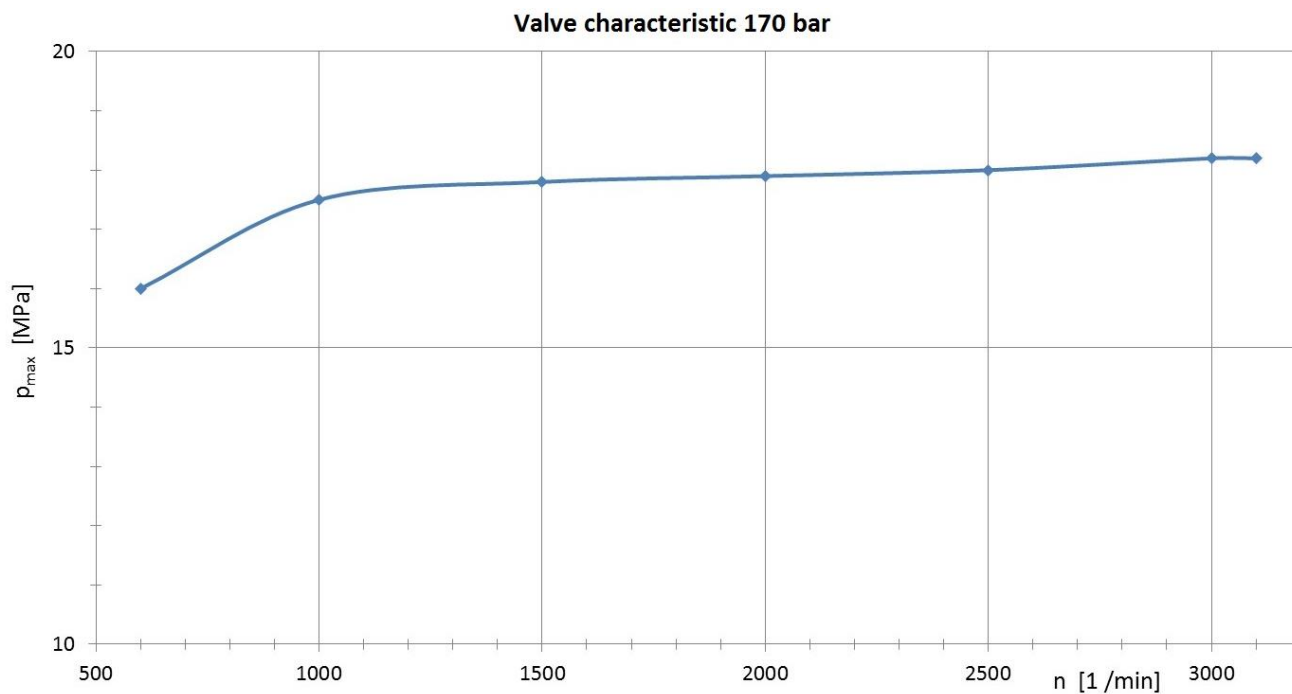
Characteristics of control T2 ($Q_1 = 17 \text{ dm}^3/\text{min}$) with pump $V_g = 16$



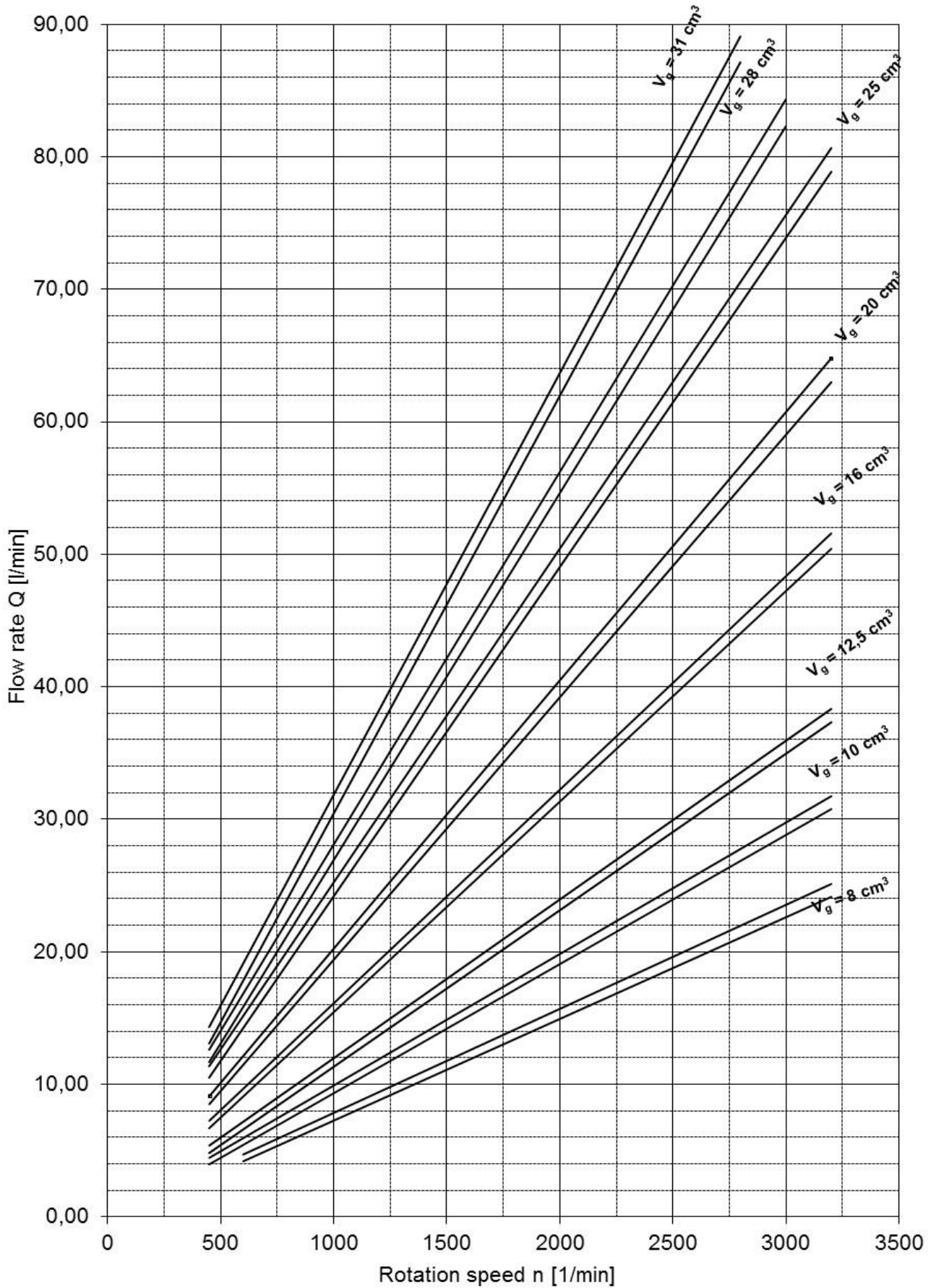


RELIEF VALVE

The pump with a built in relief valve, which protects it, has a reverse internal inlet for pressure fluid back to the pump's suction. Relief valve can be adjustable in wide range of pressures. Valve characteristic is on following graph.

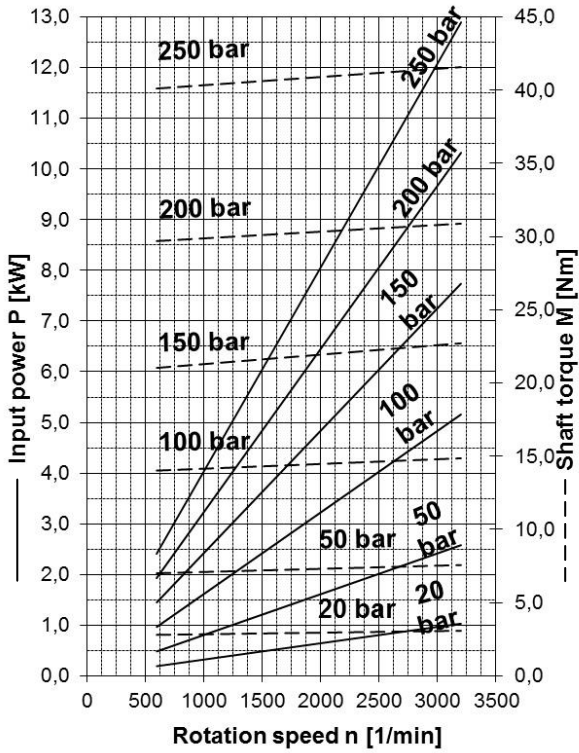


UD FLOW RATE AND POWER CURVES

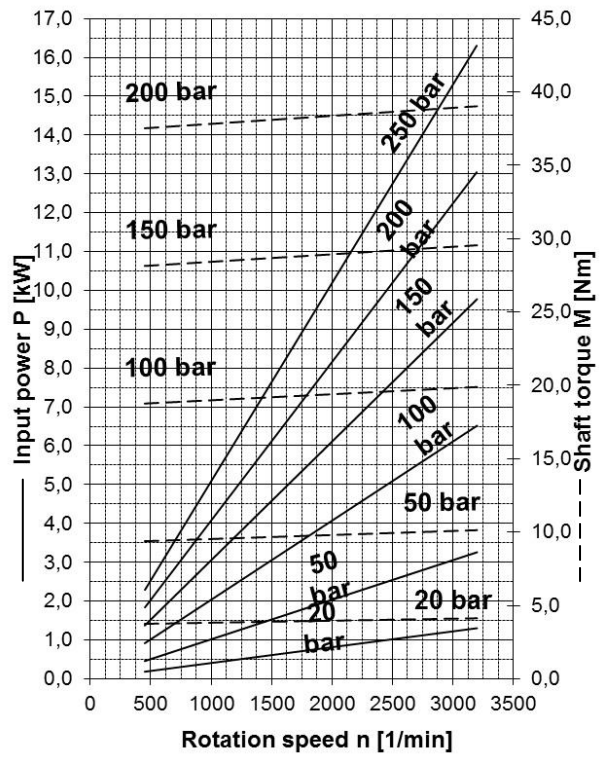


The above characteristics apply for oil ISO Vg 46 at a temperature $t=45 \text{ }^\circ\text{C}$.

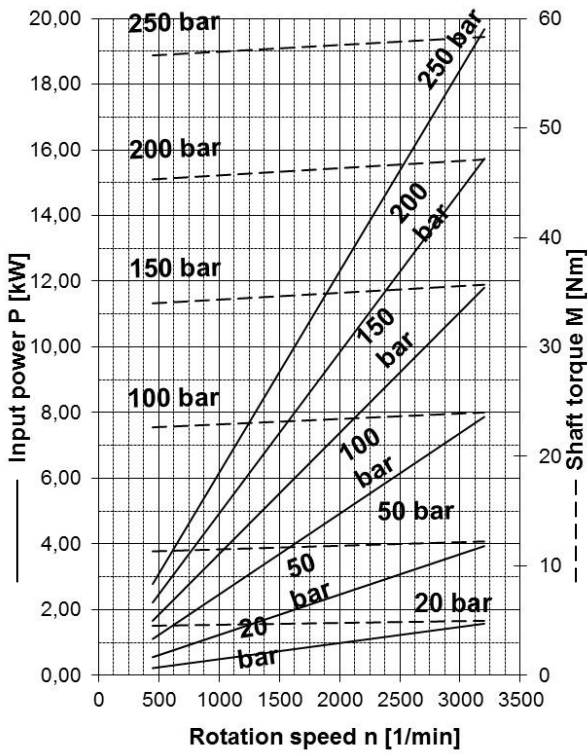
8 cm³



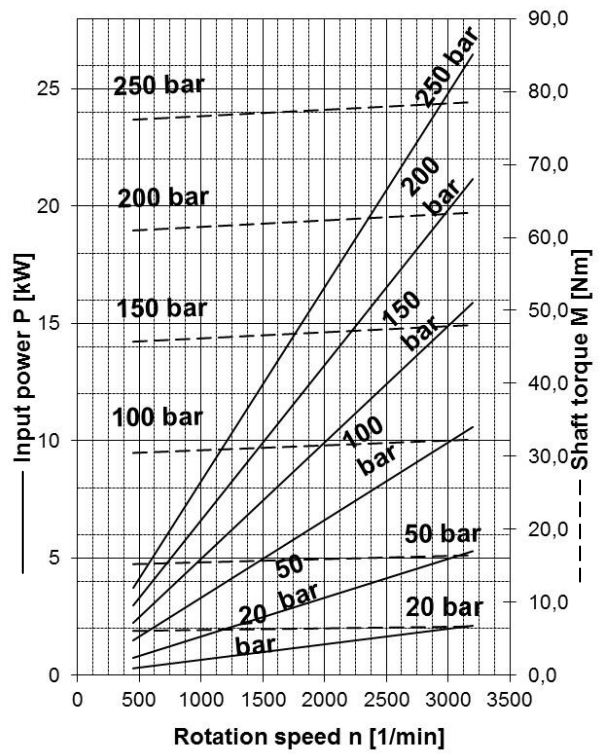
10 cm³



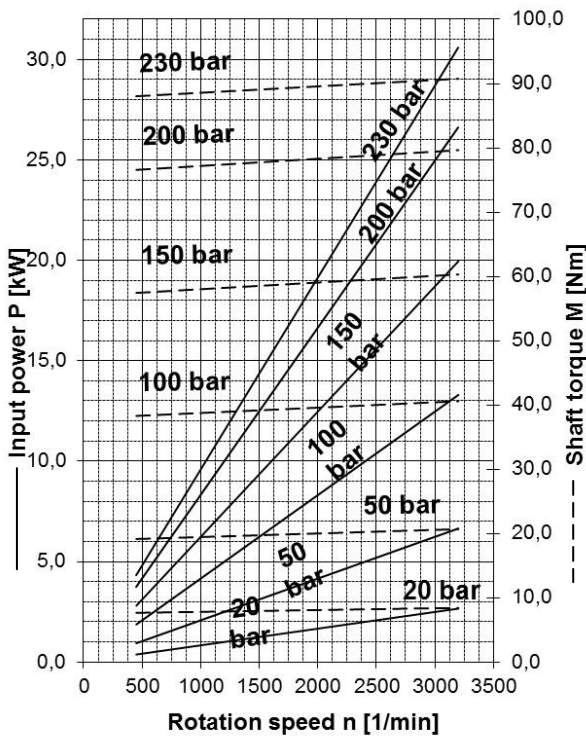
12,5 cm³



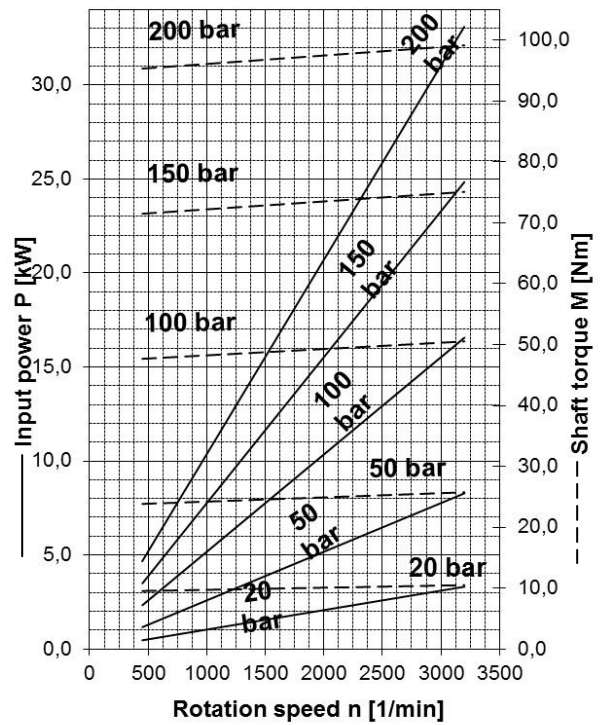
16 cm³



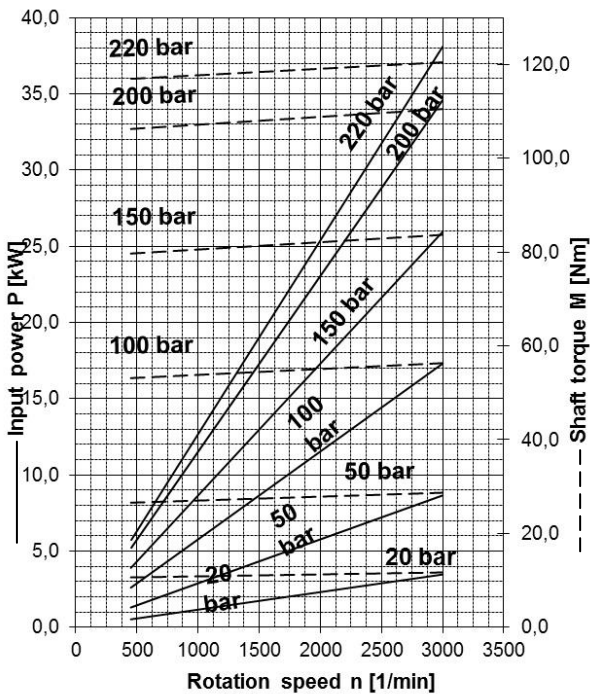
20 cm³



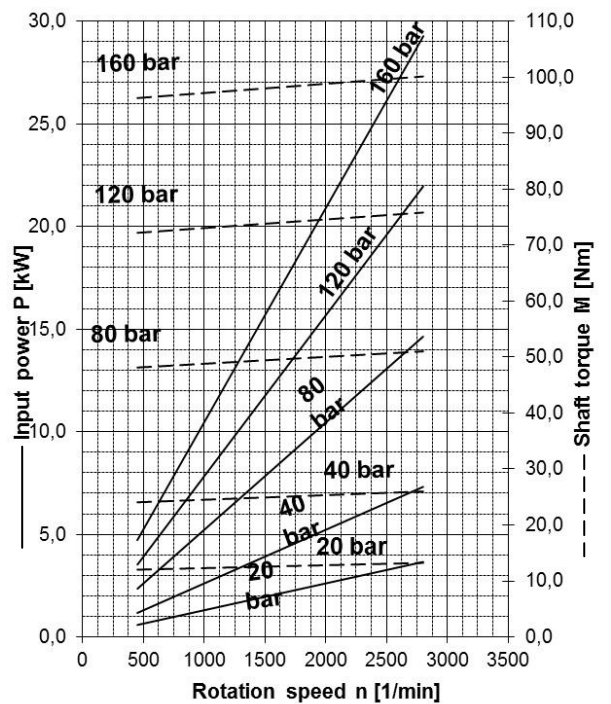
25 cm³



28 cm³



31 cm³









ORDER KEY – SIMPLE VERSION




UD - 16 R - R1 D1 - S M09 M07 - V . 0000







Code	Displacement [cm ³]
5,0	5,01
8,0	7,93
10,0	10,02
12,5	12,10
16,0	16,28
20,0	20,45
25,0	25,46
28,0	28,38
31,0	32,14
39,0	40,07
XX	Other displacements on request

Code	Direction of rotation
R	Clockwise rotation
L	Anti-clockwise rotation
B	Reversible rotation

Code	Type
UD	UD Series Gear Pump
UDK	UD Series Gear Pump, shortened version
UDD	UD Series Gear Pump, reinforced version






Code	Flange design
R1	 Rectangular flange, centre ring Ø62, spacing 86x120, with O-ring
R2	 Rectangular flange, centre ring Ø62, spacing 86x120
R3	 Rectangular flange, centre ring Ø63, spacing 76x96
S1	 SAE A, centre ring Ø82,55, 2 aperture, spacing 106,4
S2	 SAE B, centre ring Ø101,6, 2 aperture, spacing 146
K1	 Centre ring Ø62, 2 bolts, spacing 115
Z	Special design

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

Code	Drive shaft design
D2	 Spline 22x1
D3	 Spline 5/8"
D5	 Spline SAE 7/8"
D6	 Spline 6x18x22
K1	 Cross coupling
V1	 Cylindric
Z	Special design

Code	Special arrangements
-	Without special arrangements
0001	Rectangular flange, 2 holes
0200	With front-end bearing
T000	Regulation of type T
R000	Regulation of type R
S000	Regulation of type S

Code	Sealing material
V	FPN (VITON)
N	NBR

Code	Liquid inlet and outlet connection shape
M03	Thread M 14x1,5
M05	Thread M 18x1,5
M06	 Thread M 20x1,5
M07	Thread M 22x1,5
M09	Thread M 27x2
M12	Thread M 33x2
G03	Thread BSP G1/2
G04	 Thread BSP G3/4
G05	Thread BSP G1
G06	Thread BSP G1 1/4
H05	Flange fitting 4xM6/Ø35; Ø15
H06	 Flange fitting 4xM6/Ø40; Ø20
H08	Flange fitting 4xM6/Ø30; Ø13,5
H11	Flange fitting 4xM10/Ø51; Ø26
K03	 Flange fitting 4xM8/Ø40; Ø18
E02	Flange fitting 3/4
E03	 Flange fitting 1
E04	Flange fitting 1 1/4
Z	Special design

An example of designation for the UD anti-clockwise pump with displacement 16 cm³, rectangular flange with center ring Ø62 without O-ring, spline 22x1, input and output in body with metric thread and standard seal NBR without special arrangements: **UD-16L-R2D2-SM09M07-N**







ORDER KEY – MULTIPLE VERSION



UD - 16 / 16 R - R1 D1 - S M09 M07 / M09 M07 - V . 0000







Code	Displacement [cm ³]
5,0	5,01
8,0	7,93
10,0	10,02
12,5	12,10
16,0	16,28
20,0	20,45
25,0	25,46
28,0	28,38
31,0	32,14
39,0	40,07
XX	Other displacements on request.

Code	Direction of rotation
R	Clockwise rotation
L	Anti-clockwise rotation
B	Reversible rotation

Code	Type
UD	UD Series Gear Pump
UDK	UD Series Gear Pump, shortened version
UDD	UD Series Gear Pump, reinforced version






Code	Flange design
R1	 Rectangular flange, centre ring Ø62, spacing 86x120, with O-ring
R2	 Rectangular flange, centre ring Ø62, spacing 86x120
R3	 Rectangular flange, centre ring Ø63, spacing 76x96
S1	 SAE A, centre ring Ø82,55, 2 aperture, spacing 106,4
S2	 SAE B, centre ring Ø101,6, 2 aperture, spacing 146
K1	 Centre ring Ø62, 2 bolts, spacing 115
Z	Special design

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

Code	Drive shaft design
D2	 Spline 22x1
D3	 Spline 5/8"
D5	 Spline SAE 7/8"
D6	 Spline 6x18x22
K1	 Cross coupling
V1	 Cylindric
Z	Special design

Code	Special arrangements
-	Without special arrangements
0001	Rectangular flange, 2 holes
0200	With front-end bearing
T000	Regulation of type T
R000	Regulation of type R
S000	Regulation of type S

Code	Sealing material
V	FPN (VITON)
N	NBR

Code	Liquid inlet and outlet connection shape
M03	Thread M 14x1,5
M05	Thread M 18x1,5
M06	 Thread M 20x1,5
M07	Thread M 22x1,5
M09	Thread M 27x2
M12	Thread M 33x2
G03	Thread BSP G1/2
G04	 Thread BSP G3/4
G05	Thread BSP G1
G06	Thread BSP G1 1/4
H05	Flange fitting 4xM6/Ø35; Ø15
H06	 Flange fitting 4xM6/Ø40; Ø20
H08	Flange fitting 4xM6/Ø30; Ø13,5
H11	Flange fitting 4xM10/Ø51; Ø26
K03	 Flange fitting 4xM8/Ø40; Ø18
E02	Flange fitting 3/4
E03	 Flange fitting 1
E04	Flange fitting 1 1/4
Z	Special design

An Example of designation for the UD two-section anti-clockwise pump with displacements 20 and 16 cm³, rectangular flange with center ring Ø62 without O-ring, spline 22x1, input and output in body with metric thread and standard seal NBR without special arrangements:

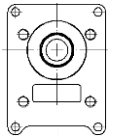
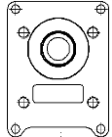
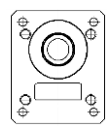
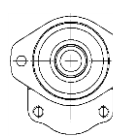
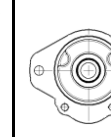
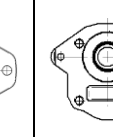
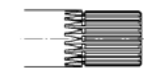
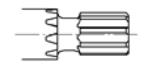


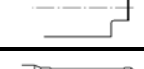

UD-20/16L-R2D2-SM09M07/M09M07-N

SPECIAL ARRANGEMENTS – SETTING OF REGULATION AND RELIEF VALVE

UD - 16 R - R1 D1 - S M09 M07 - V . 0000

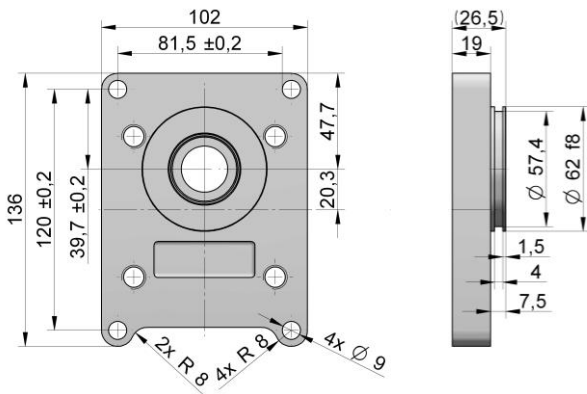
Code	Special arrangements
T1Vx	Regulation of type T, max. flow rate 13 dm ³ /min
T2Vx	Regulation of type T, max. flow rate 17 dm ³ /min
T3Vx	Regulation of type T, max. flow rate 20 dm ³ /min
T4Vx	Regulation of type T, max. flow rate 30 dm ³ /min
TxV0	Relief valve 5+1 MPa
TxV1	Relief valve 7+1 MPa
TxV2	Relief valve 8+1 MPa
TxV3	Relief valve 9+1 MPa
TxV4	Relief valve 10+1 MPa
TxV5	Relief valve 11+1 MPa
TxV6	Relief valve 12+1 MPa
TxV7	Relief valve 13+1 MPa
TxV8	Relief valve 14+1 MPa
TxV9	Relief valve 17+1 MPa
Examples of coding regulation	
T100	Regulation of type T, max. flow rate 13 dm ³ /min , Without relief valve
T0V0	Without flow rate regulation, Relief valve 5+1 MPa
T3V8	Regulation of type T, max. flow rate 20 dm ³ /min , Relief valve 14+1 MPa

COMBINATIONS OF FLANGES AND SHAFTS

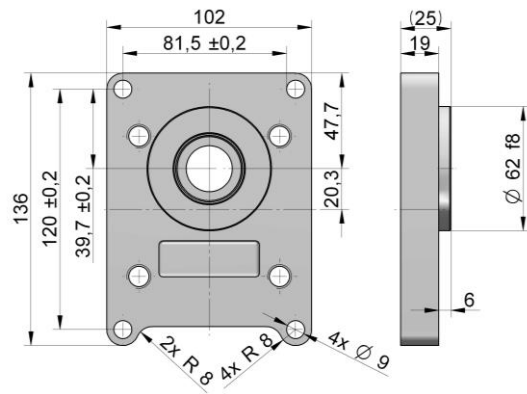
DRIVE SHAFTS		FLANGE DESIGN					
		R1	R2	R3	S1	S2	K1
							
D2		●	●				
D3					●		
D5						●	●
D6				●			
K1		●	●				
V1		●	●				

FLANGE DESIGN

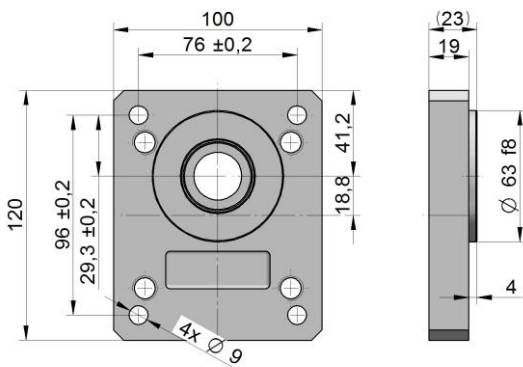
R1:



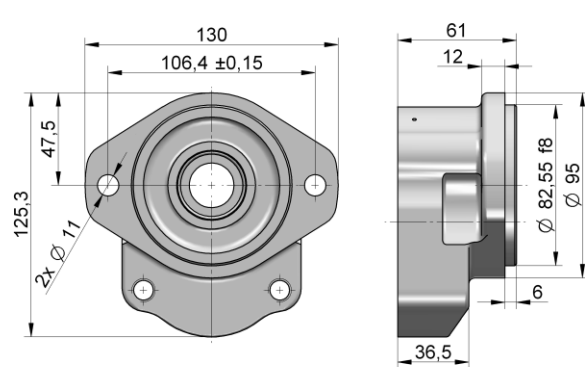
R2:



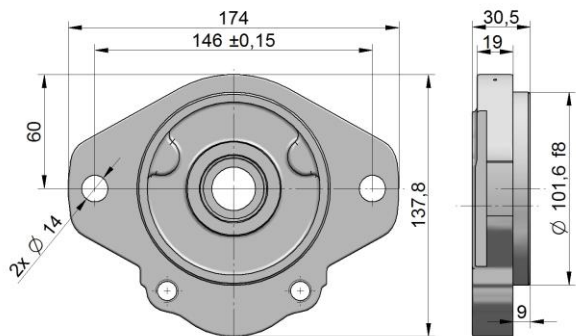
R3:



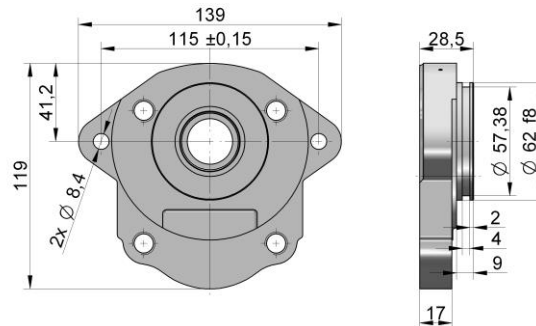
S1:



S2:

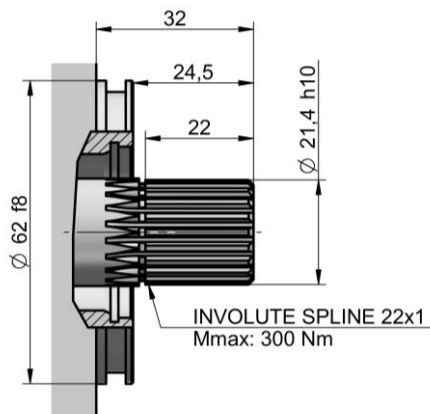


K1:

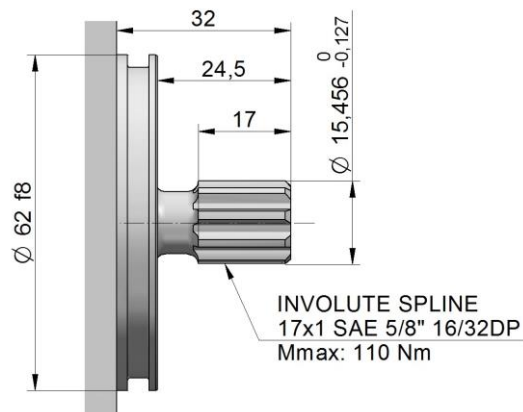


DRIVE SHAFTS

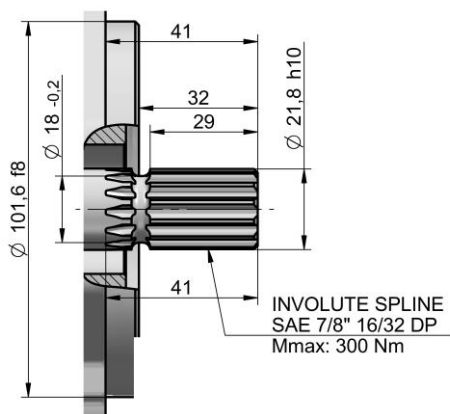
D2:



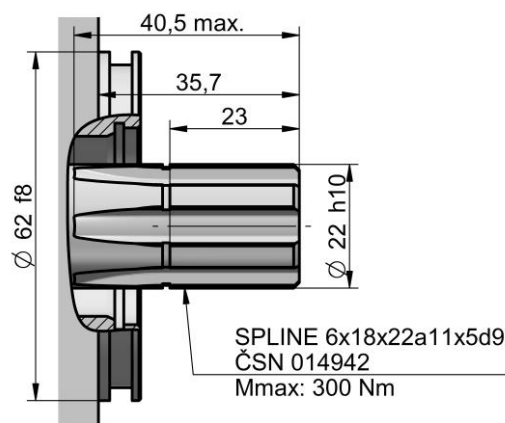
D3:



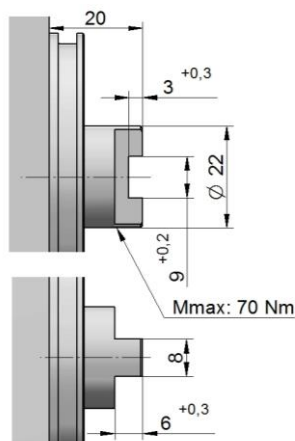
D5:



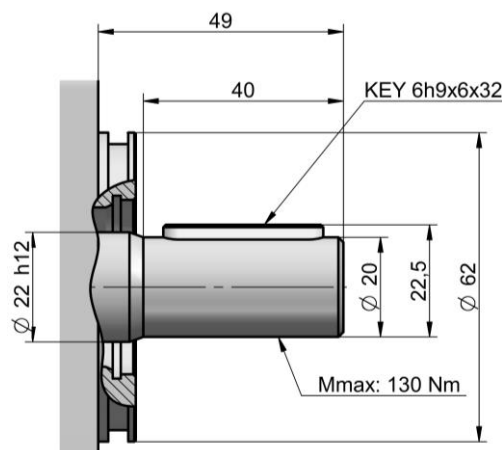
D6



K1:

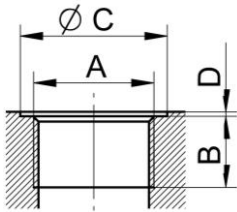


V1:



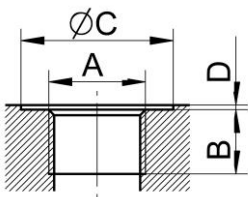
LIQUID INLET AND OUTLET CONNECTION

Metric thread according to ISO 6149:



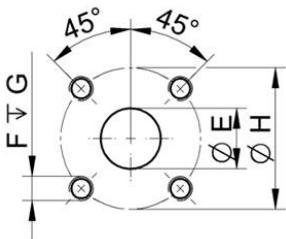
Code	A	B	C	D
M03	M 14x1.5	13	22	1
M05	M 18x1.5	14	24	
M06	M 20x1.5	14	26	
M07	M 22x1.5	14	28	
M09	M 27x2	16	33	
M12	M 33x2	18	40	

BSPP pipe thread according to ISO 228 - 1 :



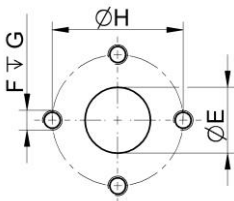
Code	A	B	C	D
G03	G 1/2	14	33	1
G04	G 3/4	16	39	
G05	G 1"	18	45	
G06	G 1 1/4"	18	57	

Flanged fittings according to DIN 8901/8902



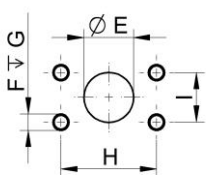
Code	E	F	G	H
H05	15	M6	13	35
H06	20	M6	13	40
H07	13.5	M6	13	30
H11	26	M10	16	51

Flanged fittings – “cross”



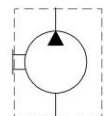
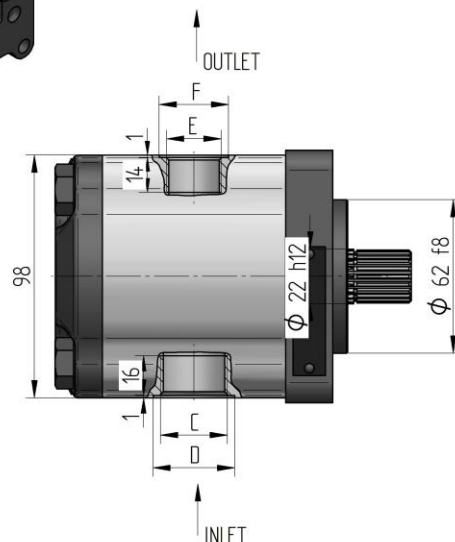
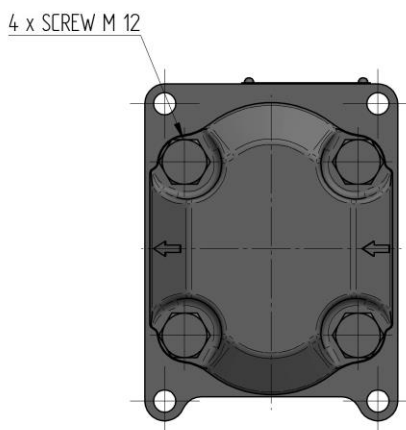
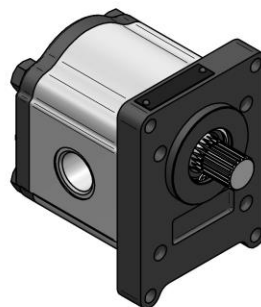
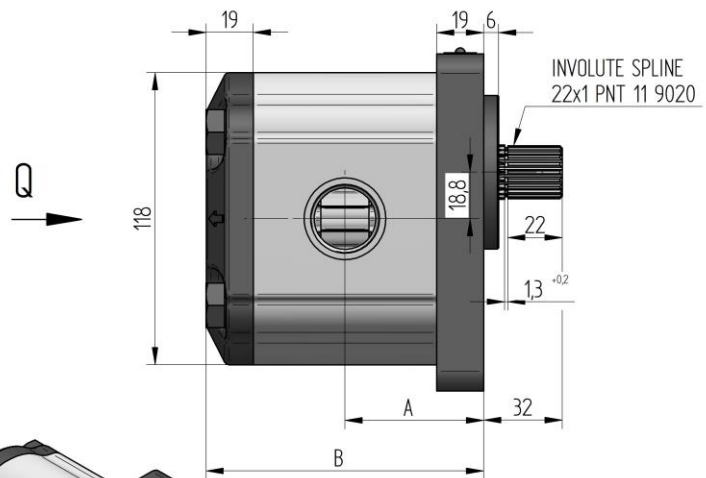
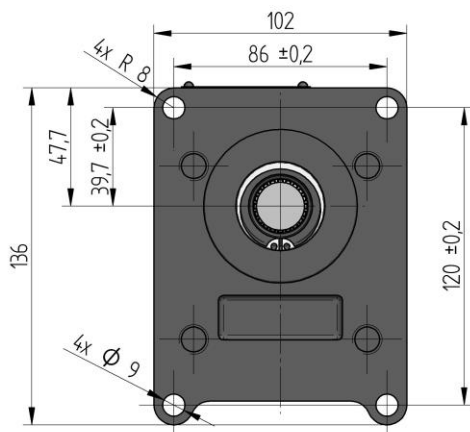
Code	E	F	G	H
K03	18	M8	16	40

Flanged fittings according to SAE. metric thread



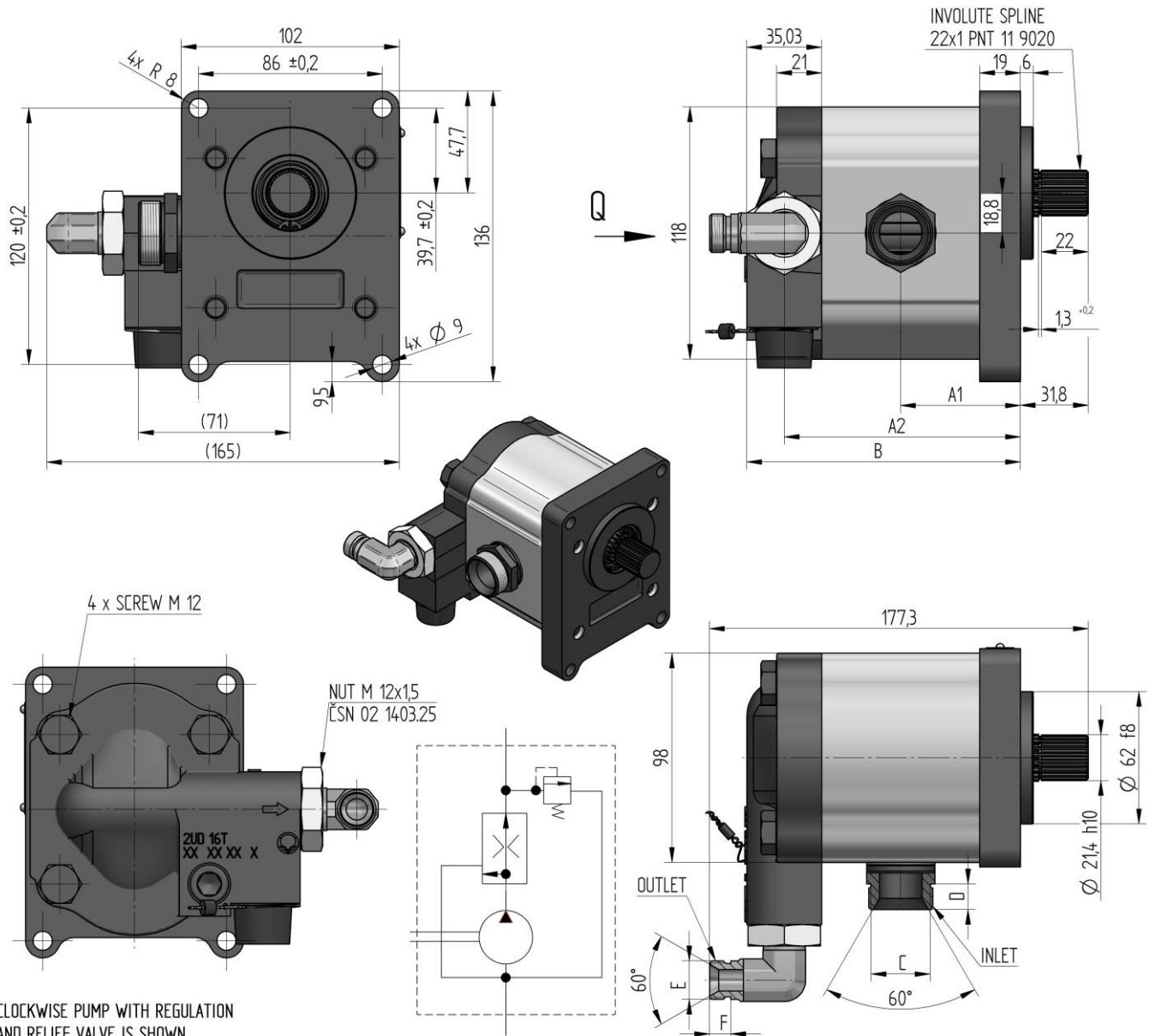
Code	E	F	G	H	I
E02	19	M10	18	47.6	22.2
E03	25.4	M10	18	52.4	26.2
E04	30.5	M10	18	58.7	30.2

CATALOGUE SHEETS OF UD SERIES BASIC DESIGNS



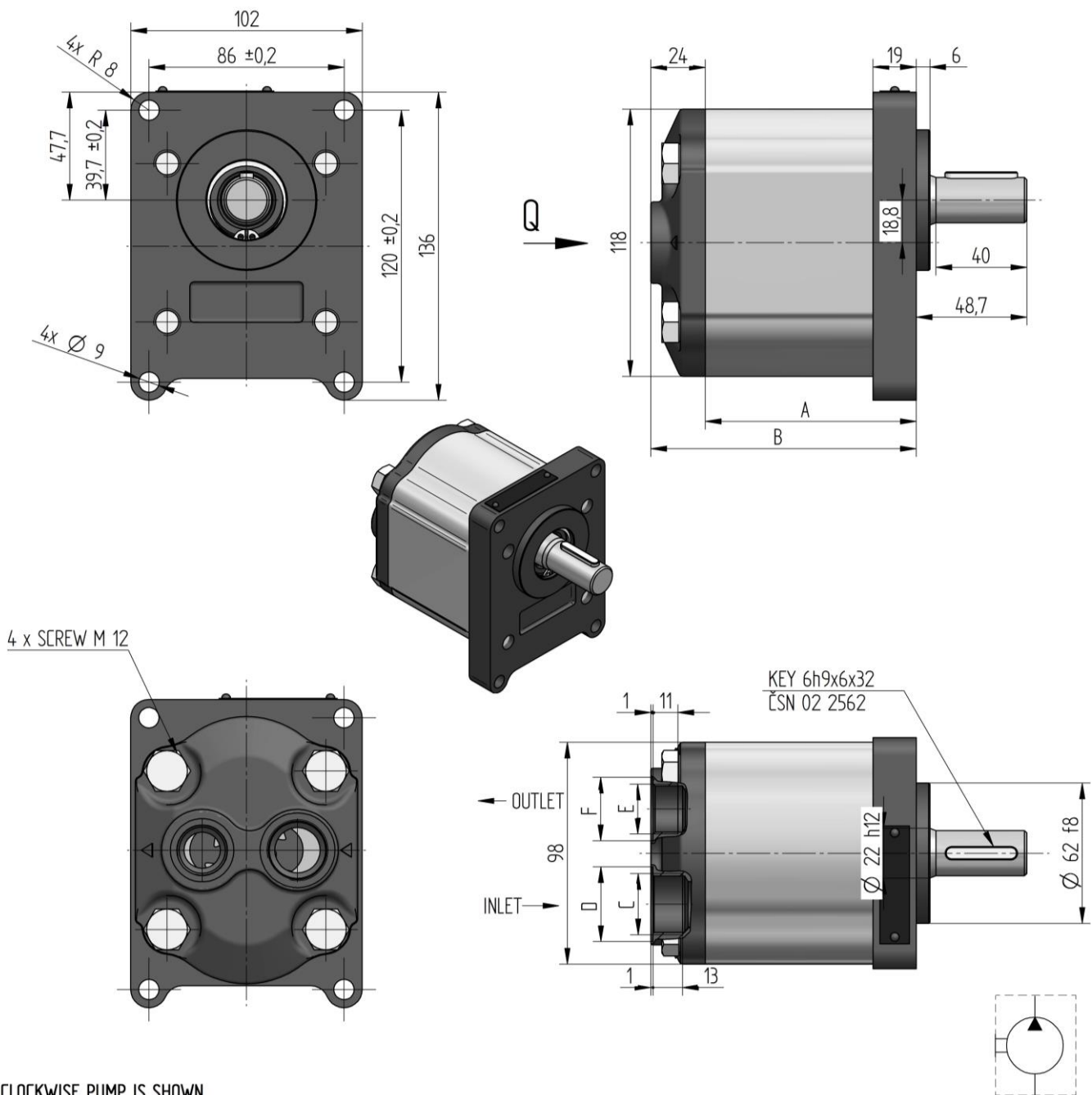
CLOCKWISE PUMP IS SHOWN

UD-31R-R1D2-SM09M07-N.0000	183 9476	R	31	200	450	2800	65.50	131.0	M27x2	Ø 33	M22x1.5	Ø 28	
UD-31L-R1D2-SM09M07-N.0000	183 9047	L											
UD-28R-R1D2-SM09M07-N.0000		R	28	230	450	3000	63.25	126.5	M27x2	Ø 33	M22x1.5	Ø 28	
UD-28L-R1D2-SM09M07-N.0000		L											
UD-25R-R1D2-SM09M07-N.0000	183 9475	R	25	250	450	3200	61.50	123.0	M27x2	Ø 33	M22x1.5	Ø 28	
UD-25L-R1D2-SM09M07-N.0000	183 9046	L											
UD-20R-R1D2-SM09M07-N.0000	183 9412	R	20	270	450	3200	58.50	117.0	M27x2	Ø 33	M22x1.5	Ø 28	
UD-20L-R1D2-SM09M07-N.0000	183 9413	L											
UD-16R-R1D2-SM09M07-N.0000	183 9406	R	16	290	450	3200	56.00	112.0	M27x2	Ø 33	M22x1.5	Ø 28	
UD-16L-R1D2-SM09M07-N.0000	183 9407	L											
UD-12,5R-R1D2-SM09M07-N.0000		R	12.5	300	450	3200	53.50	107.0	M27x2	Ø 33	M22x1.5	Ø 28	
UD-12,5L-R1D2-SM09M07-N.0000		L											
UD-10R-R1D2-SM09M07-N.0000	183 9400	R	10	300	450	3200	52.25	104.5	M27x2	Ø 33	M22x1.5	Ø 28	
UD-10L-R1D2-SM09M07-N.0000	183 9401	L											
UD-8R-R1D2-SM09M07-N.0000		R	8	300	600	3200	51.00	102.0	M27x2	Ø 33	M22x1.5	Ø 28	
UD-8L-R1D2-SM09M07-N.0000		L											
ORDER KEY	PURCH. CODE	DIRECT. OF ROT.	DISPLACEMENT [cm ³ /rev]	NOM. PRESS. [bar]	MIN. SPEED [min ⁻¹]	MAX. SPEED [min ⁻¹]	A	B	C	D	E	F	DIMENSION [mm]



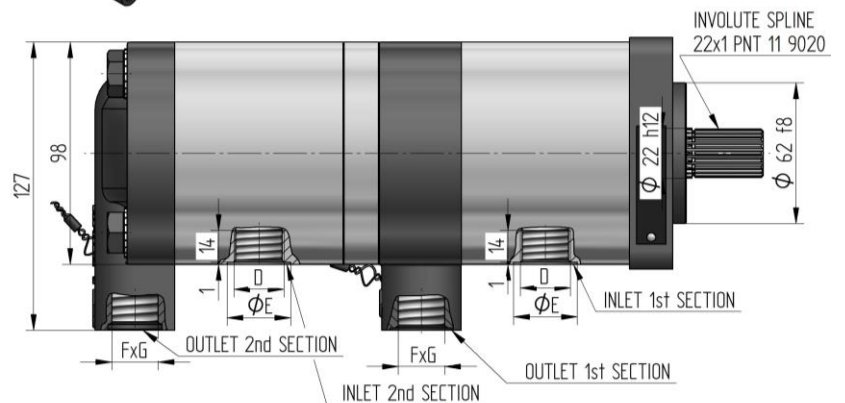
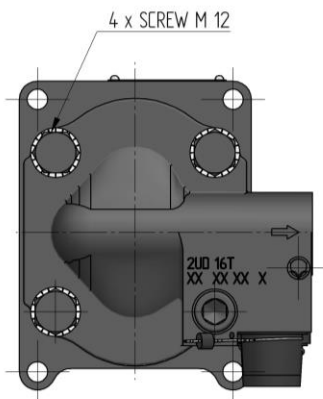
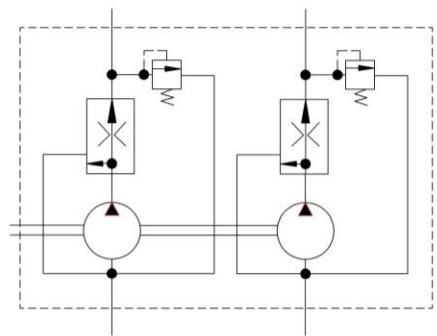
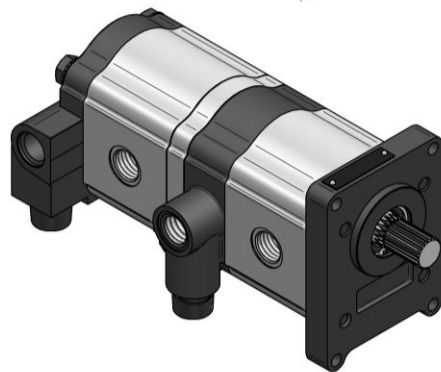
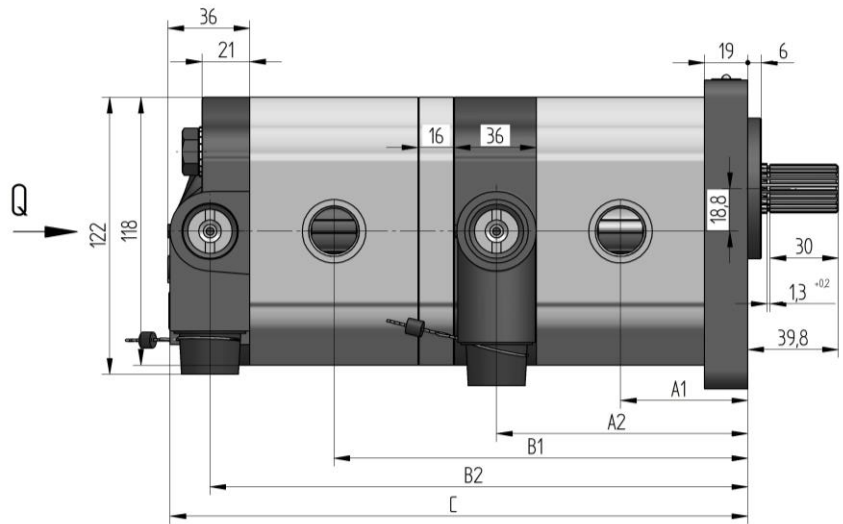
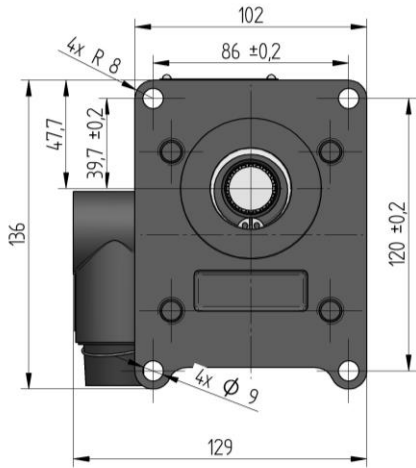
CLOCKWISE PUMP WITH REGULATION AND RELIEF VALVE IS SHOWN

UD-31R-R2D2-SZZ-V.T64V		R	31			450	2800	65.50	129.5	147.0	M30x2	14	M18x1.5	10
UD-31L-R2D2-SZZ-V.T64V		L	31			450	2800	65.50	129.5	147.0	M30x2	14	M18x1.5	10
UD-28R-R2D2-SZZ-V.T64V		R	28			450	3000	63.25	125.0	142.5	M30x2	14	M18x1.5	10
UD-28L-R2D2-SZZ-V.T64V		L	28			450	3000	63.25	125.0	142.5	M30x2	14	M18x1.5	10
UD-25R-R2D2-SZZ-V.T64V		R	25			450	3200	61.50	121.5	139.0	M30x2	14	M18x1.5	10
UD-25L-R2D2-SZZ-V.T64V		L	25			450	3200	61.50	121.5	139.0	M30x2	14	M18x1.5	10
UD-20R-R2D2-SZZ-V.T64V		R	20			450	3200	58.50	115.5	133.0	M30x2	14	M18x1.5	10
UD-20L-R2D2-SZZ-V.T64V		L	20			450	3200	58.50	115.5	133.0	M30x2	14	M18x1.5	10
UD-16R-R2D2-SZZ-V.T64V	183 9633	R	16	170...180	8.5...17/ 125	450	3200	56.00	110.5	128.0	M30x2	14	M18x1.5	10
UD-16L-R2D2-SZZ-V.T64V		L	16	170...180	8.5...17/ 125	450	3200	56.00	110.5	128.0	M30x2	14	M18x1.5	10
UD-12.5R-R2D2-SZZ-V.T64V		R	12.5			450	3200	53.50	105.5	123.0	M30x2	14	M18x1.5	10
UD-12.5L-R2D2-SZZ-V.T64V		L	12.5			450	3200	53.50	105.5	123.0	M30x2	14	M18x1.5	10
UD-10R-R2D2-SZZ-V.T64V		R	10			450	3200	52.25	103.0	120.5	M30x2	14	M18x1.5	10
UD-10L-R2D2-SZZ-V.T64V		L	10			450	3200	52.25	103.0	120.5	M30x2	14	M18x1.5	10
UD-8R-R2D2-SZZ-V.T64V		R	8			600	3200	51.00	100.5	118.0	M30x2	14	M18x1.5	10
UD-8L-R2D2-SZZ-V.T64V		L	8			600	3200	51.00	100.5	118.0	M30x2	14	M18x1.5	10
ORDER KEY	PURCH. CODE	DIRECT. OF ROT.	DISPLACEMENT [cm ³ /rev]	ADJUST. OF RELIEF VALVE [bar]	FLOW RATE [dm ³ /min]/[bar]	MIN. SPEED [min ⁻¹]	MAX. SPEED [min ⁻¹]	A1	A2	B	C	D	E	F
DIMENSION [mm]														



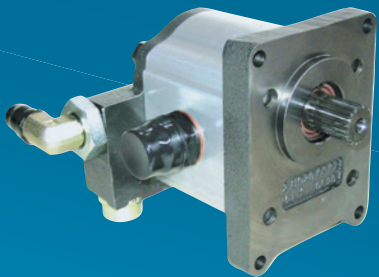
CLOCKWISE PUMP IS SHOWN

UD-31R-R2V1-RM09M07-N.A050		R	31	200	450	2800	112.0	136.0	M27x2	Ø 33	M22x1.5	Ø 28	
UD-31L-R2V1-R M09M07-N.AL05		L	31	200	450	2800	112.0	136.0	M27x2	Ø 33	M22x1.5	Ø 28	
UD-28R-R2V1-RM09M07-N.A050		R	28	230	450	3000	107.5	131.5	M27x2	Ø 33	M22x1.5	Ø 28	
UD-28L-R2V1-RM09M07-N.A050		L	28	230	450	3000	107.5	131.5	M27x2	Ø 33	M22x1.5	Ø 28	
UD-25R-R2V1-RM09M07-N.A050		R	25	250	450	3200	104.0	128.0	M27x2	Ø 33	M22x1.5	Ø 28	
UD-25L-R2V1-RM09M07-N.A050		L	25	250	450	3200	104.0	128.0	M27x2	Ø 33	M22x1.5	Ø 28	
UD-20R-R2V1-RM09M07-N.A050		R	20	270	450	3200	98.0	122.0	M27x2	Ø 33	M22x1.5	Ø 28	
UD-20L-R2V1-RM09M07-N.A050		L	20	270	450	3200	98.0	122.0	M27x2	Ø 33	M22x1.5	Ø 28	
UD-16R-R2V1-RM09M07-N.A050		R	16	290	450	3200	93.0	117.0	M27x2	Ø 33	M22x1.5	Ø 28	
UD-16L-R2V1-RM09M07-N.A050		L	16	290	450	3200	93.0	117.0	M27x2	Ø 33	M22x1.5	Ø 28	
UD-12.5R-R2V1-RM09M07-N.A050		R	12.5	300	450	3200	88.0	112.0	M27x2	Ø 33	M22x1.5	Ø 28	
UD-12.5L-R2V1-RM09M07-N.A050		L	12.5	300	450	3200	88.0	112.0	M27x2	Ø 33	M22x1.5	Ø 28	
UD-10R-R2V1-RM09M07-N.A050	183 9404	R	10	300	450	3200	85.5	109.5	M27x2	Ø 33	M22x1.5	Ø 28	
UD-10L-R2V1-RM09M07-N.A050		L	10	300	450	3200	85.5	109.5	M27x2	Ø 33	M22x1.5	Ø 28	
UD-8R-R2V1-RM09M07-N.A050		R	8	300	600	3200	83.0	107.0	M27x2	Ø 33	M22x1.5	Ø 28	
UD-8L-R2V1-RM09M07-N.A050		L	8	300	600	3200	83.0	107.0	M27x2	Ø 33	M22x1.5	Ø 28	
ORDER KEY	PURCH. CODE	DIRECT. OF ROT.	DISPLACEMENT [cm ³ /rev]	NOM. PRESS. [bar]	MIN. SPEED [min ⁻¹]	MAX. SPEED [min ⁻¹]	A	B	C	DIMENSION [mm]			



CLOCKWISE PUMP IS SHOWN

UD-31/31R-R2D2-SM07M07/ M07M07-N.T450		R		31				450	2800	65.50	129.5	210.50	274.5	293.0	M22x1.5	28	M22x1.5	28
UD-31/31L-R2D2-SM07M07/ M07M07-N.T450		L																
UD-28/28R-R2D2-SM07M07/ M07M07-N.T450		R		28				450	3000	63.25	125.0	203.75	265.5	284.0	M22x1.5	28	M22x1.5	28
UD-28/28L-R2D2-SM07M07/ M07M07-N.T450		L																
UD-25/25R-R2D2-SM07M07/ M07M07-N.T450		R		25				450	3200	61.50	121.5	198.50	258.5	277.0	M22x1.5	28	M22x1.5	28
UD-25/25L-R2D2-SM07M07/ M07M07-N.T450		L																
UD-20/20R-R2D2-SM07M07/ M07M07-N.T450		R		20				450	3200	58.50	115.5	189.50	246.5	265.0	M22x1.5	28	M22x1.5	28
UD-20/20L-R2D2-SM07M07/ M07M07-N.T450		L																
UD-16/16R-R2D2-SM07M07/ M07M07-N.T450	183 9645	R		16	130...140	8.5...17/7	8.5...17/7	450	3200	56.00	110.5	182.00	236.5	255.0	M22x1.5	28	M22x1.5	28
UD-16/16L-R2D2-SM07M07/ M07M07-N.T450		L																
UD-12.5/12.5R-R2D2-SM07M07/M07M07-N.T450		R		12.5				450	3200	53.50	105.5	174.50	226.5	245.0	M22x1.5	28	M22x1.5	28
UD-12.5/12.5L-R2D2-SM07M07/M07M07-N.T450		L																
UD-10/10R-R2D2-SM07M07/ M07M07-N.T450		R		10				450	3200	52.25	103.0	170.75	221.5	240.0	M22x1.5	28	M22x1.5	28
UD-10/10L-R2D2-SM07M07/ M07M07-N.T450		L																
UD-8/8R-R2D2-SM07M07/ M07M07-N.T450		R		8				600	3200	51.00	100.5	167.00	216.5	265.0	M22x1.5	28	M22x1.5	28
UD-8/8L-R2D2-SM07M07/ M07M07-N.T450		L																
ORDER KEY	PURCH. CODE	DIRECT. OF ROT.	DISPLA- CEMENT [cm ³ /rev]	1st SEC. ADJ. OF RELIEF VALVE [bar]	1st SEC. FLOW RATE [dm ³ /min]	2ND SEC. FLOW RATE [bar]	MIN. SPEED [min ⁻¹]	MAX. SPEED [min ⁻¹]	A1	A2	B1	B2	C	D	E	F	G	
DIMENSION [mm]																		



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