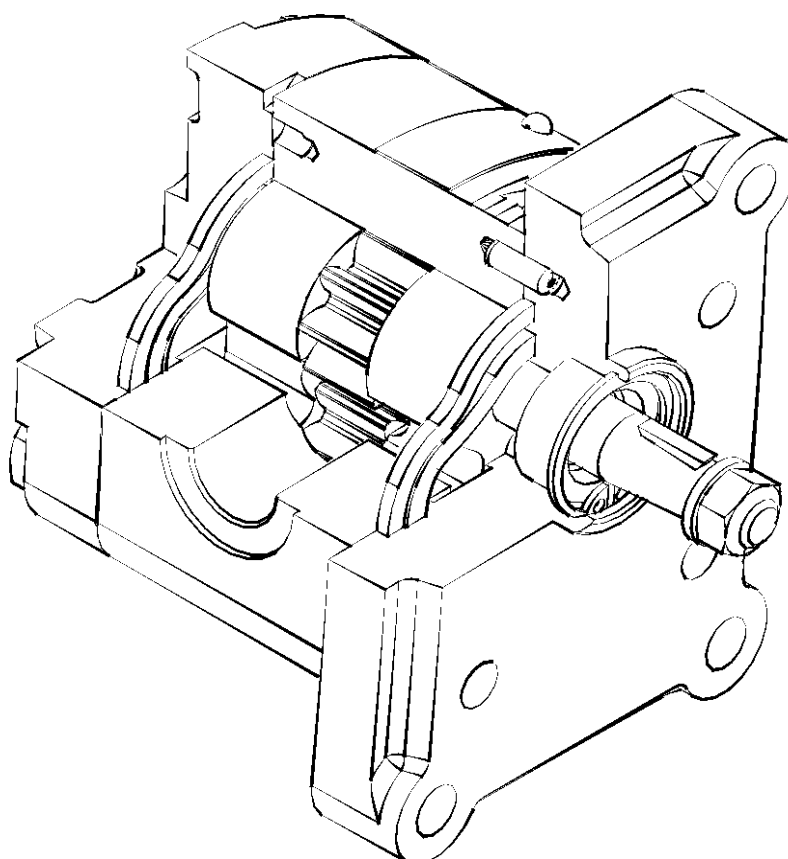


TABLE OF CONTENTS

DESCRIPTION	2
BASIC PARTS	2
PARAMETER TABLE	3
FORMULAS USED FOR CALCULATION	4
PUMP EFFICIENCIES	4
WORKING LIQUID	5
PRESSURE LOAD	5
DIRECTION OF ROTATION	6
REVERSIBLE DESIGN	6
1Se FLOW RATE AND POWER CURVES	7
ORDER KEY – SINGLE VERSION	11
ORDER KEY – MULTIPLE VERSION	12
COMBINATION OF FLANGES AND SHAFTS	13
FLANGE DESIGN	14
DRIVE SHAFTS	15
COMBINATION OF LIQUID INLETS AND OUTLETS	17
CATALOGUE SHEETS OF 1Se SERIES BASIC DESIGN	18
NOTES:	34



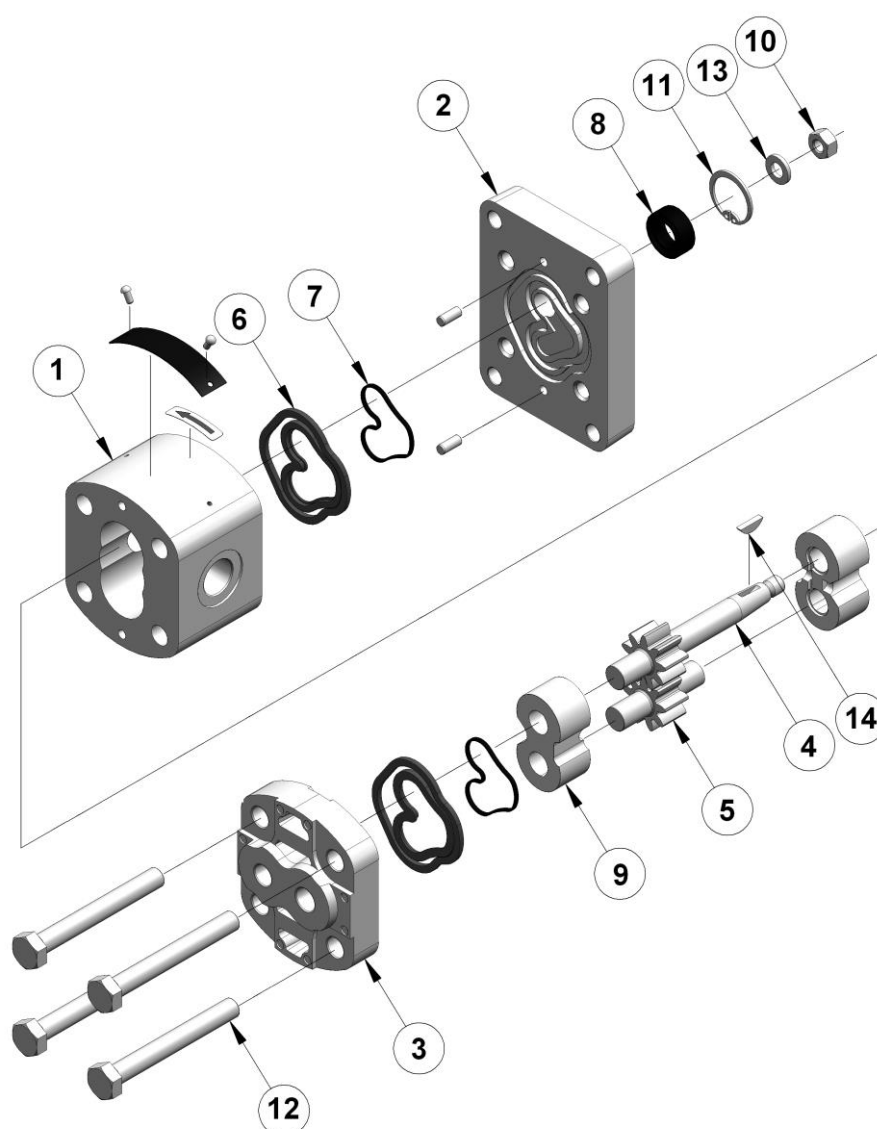
DESCRIPTION

S1 line pumps are designed for advanced hydraulic systems with lower capacity (approximately up to 10 kW) with high operational reliability and long service life. They have been produced in both one-way and reversible version with internal or external drainage. A wide variety of designs with diverse drives, connecting flanges, fluid inlets and outlets enable the pumps to be used in hydraulic systems of both fixed and mobile machines and equipment. They are available in a special version modified for small hydraulic aggregates, too. Types of connections and flanges as well as the other connecting dimensions correspond to all worldwide standards.

S1 line pumps are also available as multiple versions (2 sections, 3 sections, etc.) with separate inlets of working fluid into individual sections or with one common inlet. Individual sections can be sealed from each other.

The pumps are made of high-quality aluminum alloys with steel gear-wheels and they are equipped with hydraulic axial play compensation of new generation. Compared with the previous versions 1 and 12, the pressure and noise parameters as well as the efficiency in the entire range of speed have been improved. As for their dimensions, S1 pumps are fully interchangeable with 1 and 12 pumps.

BASIC PARTS



- | | |
|-----------------------------|----------------------|
| 1. Body | 8. Shaft seal |
| 2. Flange | 9. Bearing sleeves |
| 3. Cover | 10. Nut |
| 4. Driving gear | 11. Safety ring |
| 5. Driven gear | 12. Connection bolts |
| 6. Balancing sealing | 13. Spring washer |
| 7. Sealing protective plate | 14. Woodruff key |

PARAMETER TABLE

Nominal Size Parameters		Sym.	Unit	0.8	1.2	1.6	2.1	2.5	3.3	3.6
Actual displacement		V _g	[cm ³ /rev]	0.855	1.257	1.686	2.086	2.514	3.316	3.611
Rotation speed	nominal	n _n	[min ⁻¹]	1500						
	minimum	n _{min}	[min ⁻¹]	800		600		500		
	maximum	n _{max}	[min ⁻¹]	5000		4500		4000		
Pressure at inlet *	minimum	p _{1min}	[bar]	-0.3						
	maximum	p _{1max}	[bar]	0.5						
Pressure at outlet **	max. continuous	p _{2n}	[bar]	280						260
	maximum	p _{2max}	[bar]	300						280
	peak	p ₃	[bar]	310						290
Nominal flow rate (min.) at n _n and p _{2n}		Q _n	[dm ³ .min ⁻¹]	1.07	1.6	2.13	2.71	3.35	4.54	4.98
Maximum flow rate at n _{max} and p _{2max}		Q _{max}	[dm ³ .min ⁻¹]	3.92	5.88	7.06	9.26	9.80	12.94	14.11
Nominal input power (max.) at n _n and p _{2n}		P _n	[kW]	0.7	1.04	1.39	1.72	2.07	2.97	3.35
Maximum input power at n _{max} and p _{2max}		P _{max}	[kW]	2.51	3.7	4.96	5.52	6.65	7.8	7.93
Weight		m	[kg]	0.82	0.84	0.85	0.87	0.89	0.92	0.93

Nominal Size Parameters		Sym.	Unit	4.4	4.8	5.8	6.2	7.9	11.8
Actual displacement		V _g	[cm ³ /rev]	4.386	4.787	5.804	6.205	7.890	11.795
Rotation speed	nominal	n _n	[min ⁻¹]	1500					
	minimum	n _{min}	[min ⁻¹]	500					
	maximum	n _{max}	[min ⁻¹]	4000	3800		3500	3000	1800
Pressure at inlet *	minimum	p _{1min}	[bar]	-0.30					
	maximum	p _{1max}	[bar]	0.50					
Pressure at outlet **	max. continuous	p _{2n}	[bar]	250	230	200	180	160	100
	maximum	p _{2max}	[bar]	270	250	220	200	180	150
	peak	p ₃	[bar]	280	260	230	210	190	160
Nominal flow rate (min.) at n _n and p _{2n}		Q _n	[dm ³ .min ⁻¹]	6.06	6.61	8.00	8.56	10.90	16.30
Maximum flow rate at n _{max} and p _{2max}		Q _{max}	[dm ³ .min ⁻¹]	17.25	17.88	21.60	21.27	23.23	20.82
Nominal input power (max.) at n _n and p _{2n}		P _n	[kW]	3.23	3.24	3.41	3.29	3.71	3.47
Maximum input power at n _{max} and p _{2max}		P _{max}	[kW]	9.29	8.29	9.51	8.52	8.35	2.64
Weight		m	[kg]	0.96	0.98	1.02	1.04	1.10	1.25

Nominal Size Parameters		Sym.	Unit	1.0	2.3	2.65	6.4	7.0	10.0
Actual displacement		V _g	[cm ³ /rev]	1.016	2.301	2.674	6.419	7.007	10.003
Rotation speed	nominal	n _n	[min ⁻¹]	1500					
	minimum	n _{min}	[min ⁻¹]	800	500				
	maximum	n _{max}	[min ⁻¹]	5000	4500		3500	3000	1800
Pressure at inlet *	minimum	p _{1min}	[bar]	-0.30					
	maximum	p _{1max}	[bar]	0.50					
Pressure at outlet **	max. continuous	p _{2n}	[bar]	280			180	170	100
	maximum	p _{2max}	[bar]	300			200	190	150
	peak	p ₃	[bar]	310			210	200	160
Nominal flow rate (min.) at n _n and p _{2n}		Q _n	[dm ³ .min ⁻¹]	1.28	3.12	3.62	8.85	9.65	13.90
Maximum flow rate at n _{max} and p _{2max}		Q _{max}	[dm ³ .min ⁻¹]	4.90	10.14	11.69	21.95	20.58	17.64
Nominal input power (max.) at n _n and p _{2n}		P _n	[kW]	0.84	1.89	2.20	3.40	3.50	2.94
Maximum input power at n _{max} and p _{2max}		P _{max}	[kW]	2.99	6.09	7.08	8.81	7.83	5.30
Weight		m	[kg]	0.83	0.88	0.90	1.05	1.08	1.20

* Inlet pressure in the reversible design can be up to $p_1 = p_{2n} - 70$ 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

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

V_g	$[\text{cm}^3]$	pump displacement
n	$[\text{min}^{-1}]$	rotation speed
η_v	$[-]$	volumetric efficiency

Displacement

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

Torque

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

p	$[\text{bar}]$	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:

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

$Q_{act.}$	$[\text{dm}^3 \text{ min}^{-1}]$	actual flow rate
$Q_{theor.}$	$[\text{dm}^3 \text{ min}^{-1}]$	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:

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

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

Total efficiency η_t

It is defined as product of η_v and η_m and determines difference between theoretical and actual required input power:

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

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

WORKING LIQUID

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

Liquid temperature

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

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 to $20 \cdot 10^{-6}$ should be consulted with manufacturer): $\nu = 10 \cdot 10^{-6} [\text{m}^2 \cdot \text{s}^{-1}]$

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

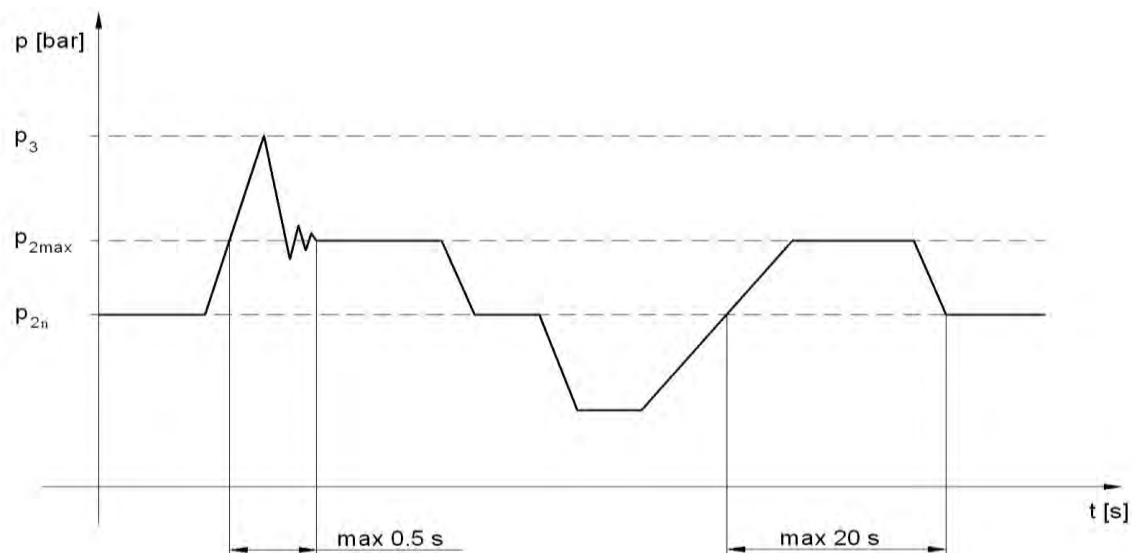
21/18/15 (for pressure $p_2 < 200$ bar)

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.

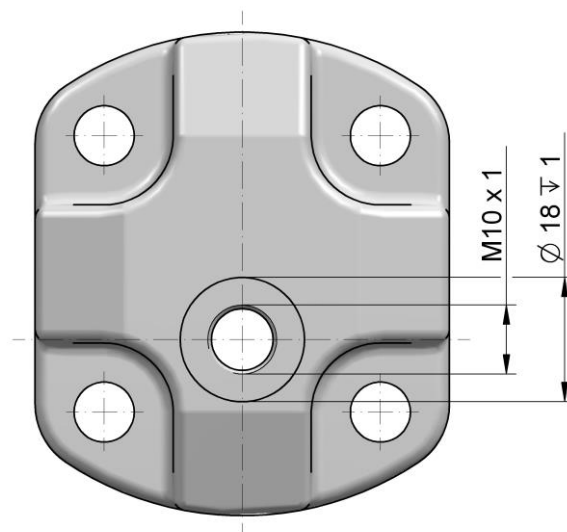
DIRECTION OF ROTATION

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

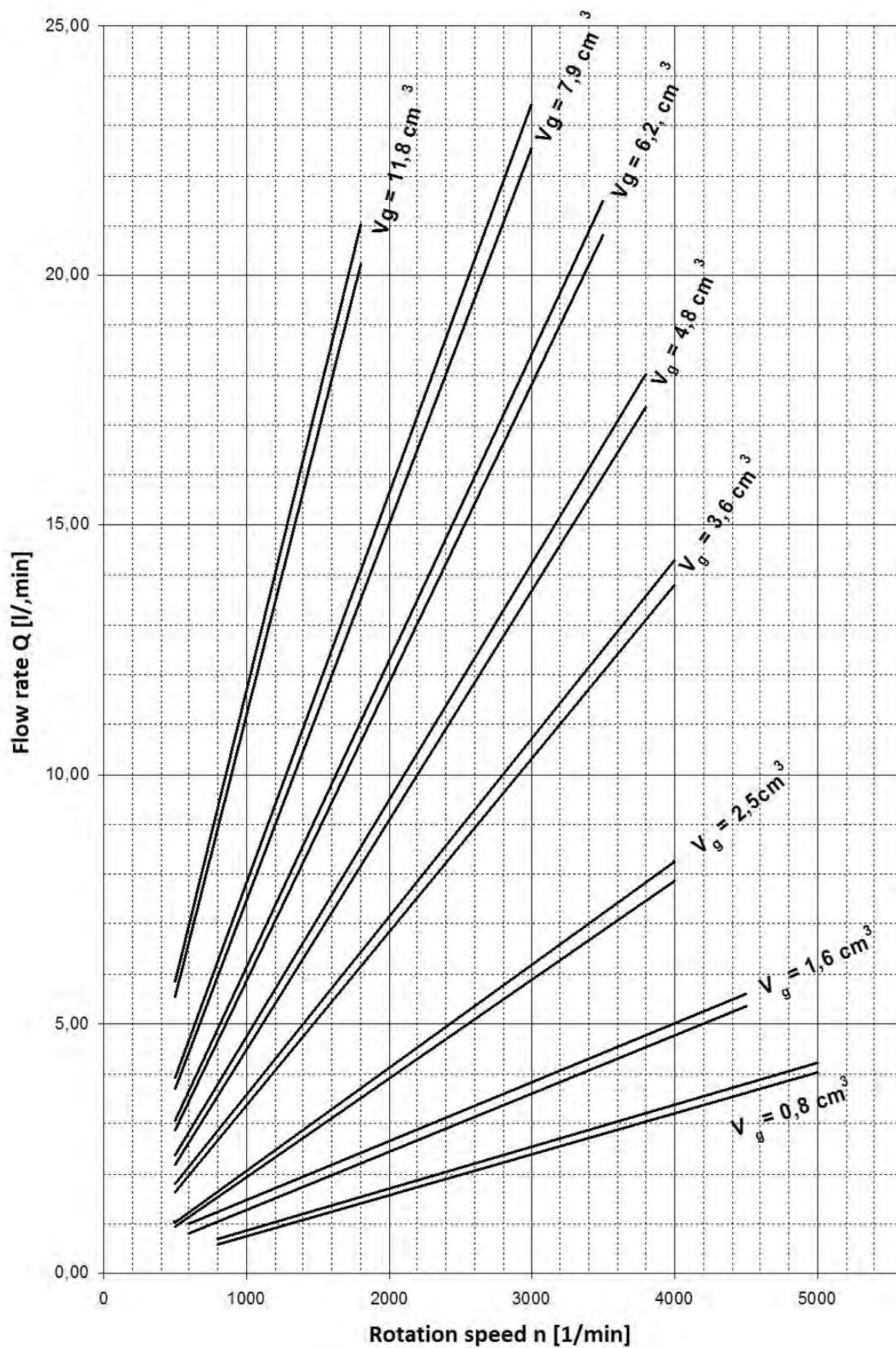


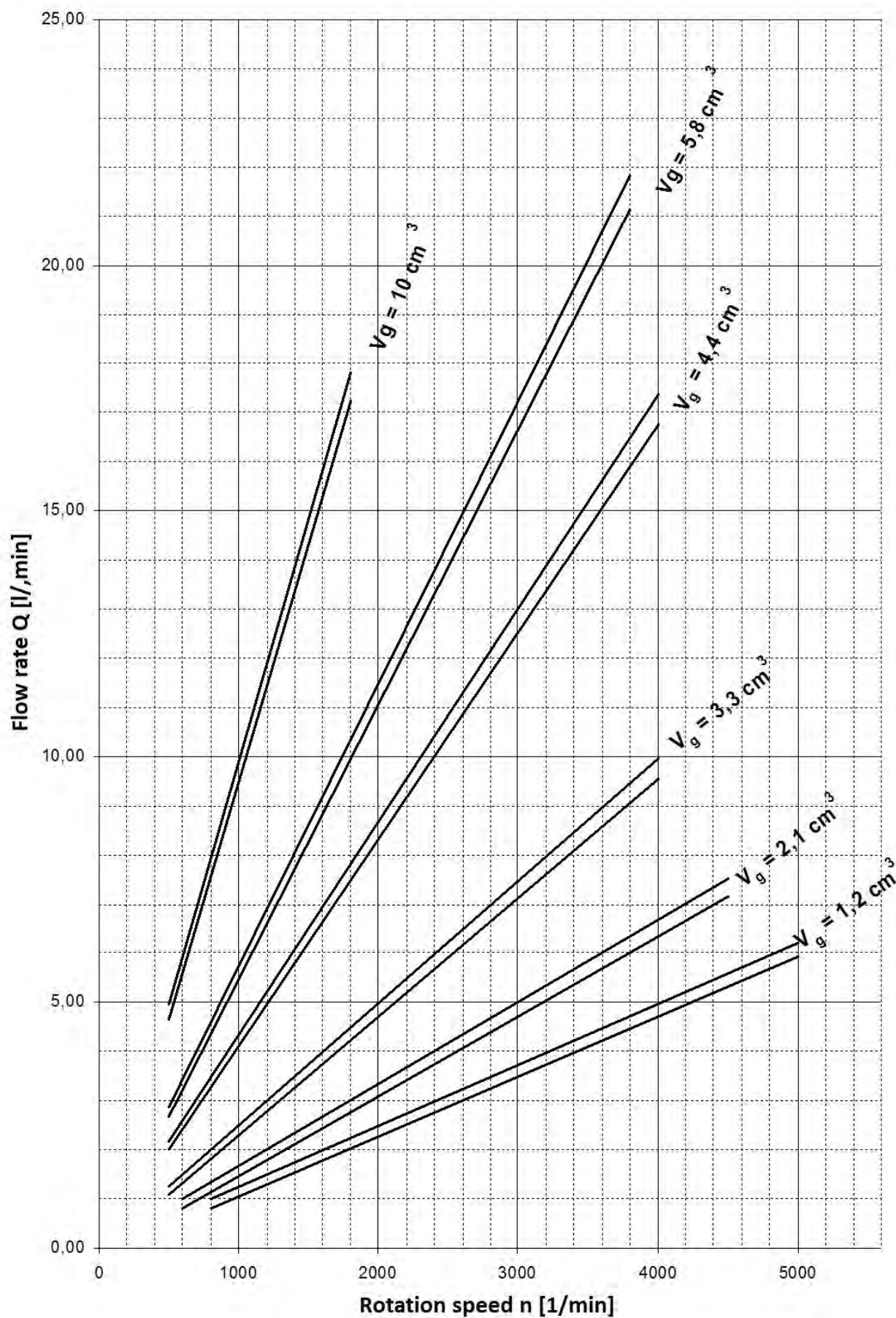
REVERSIBLE DESIGN

The 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. picture below).

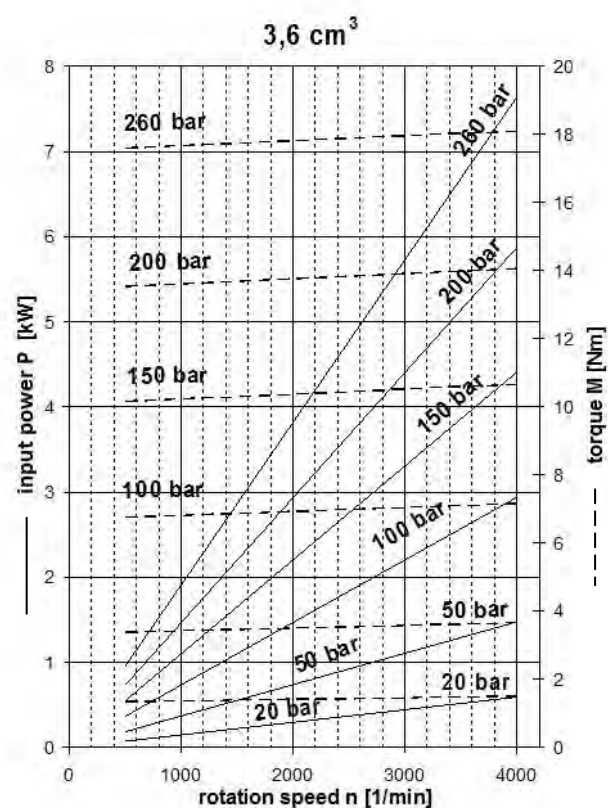
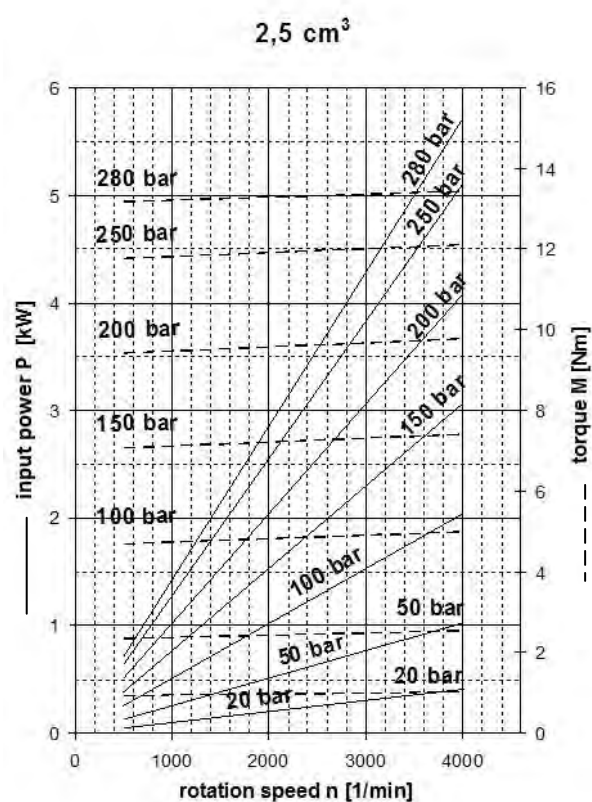
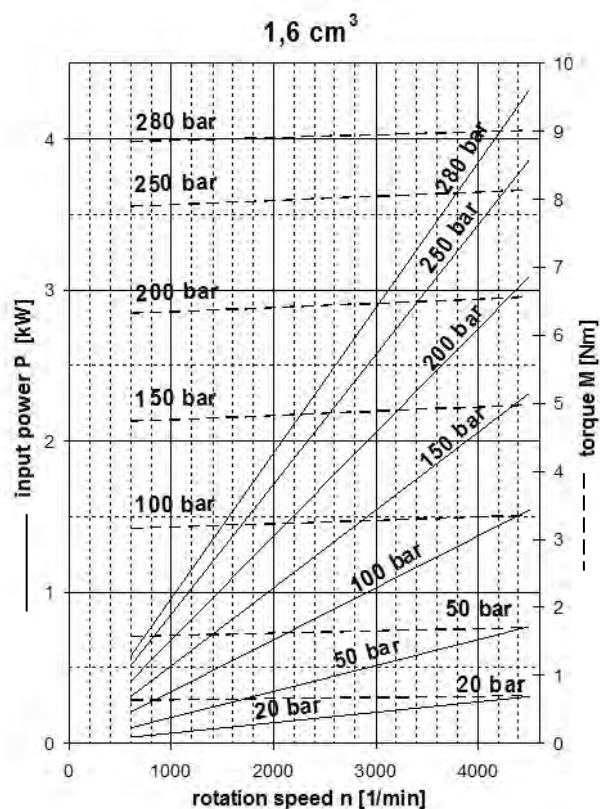
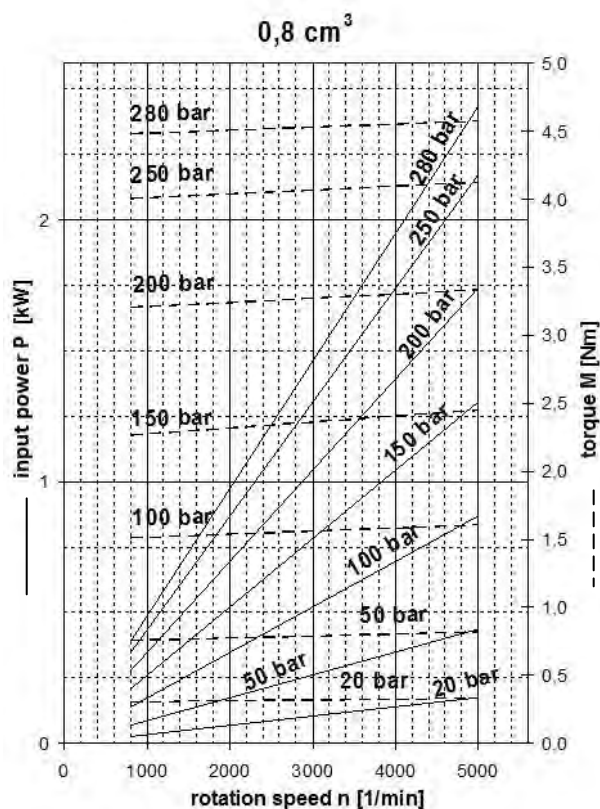


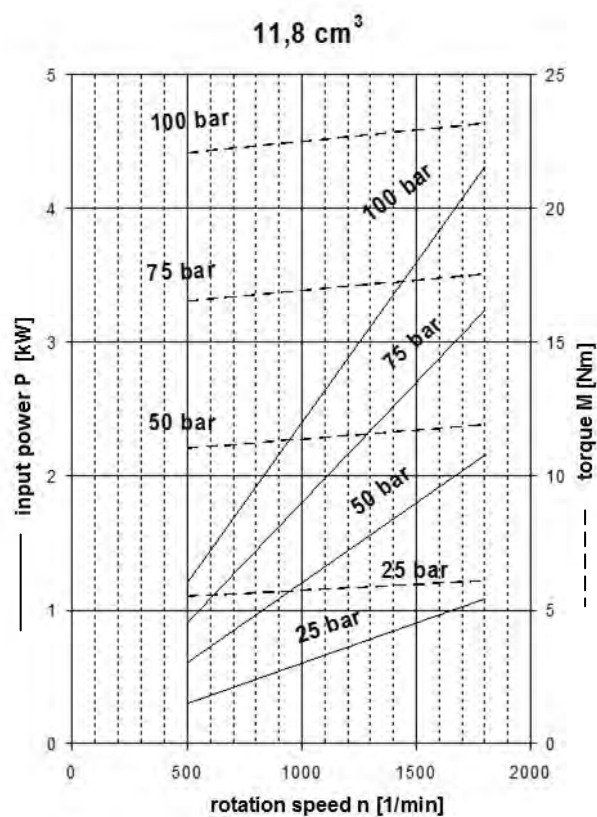
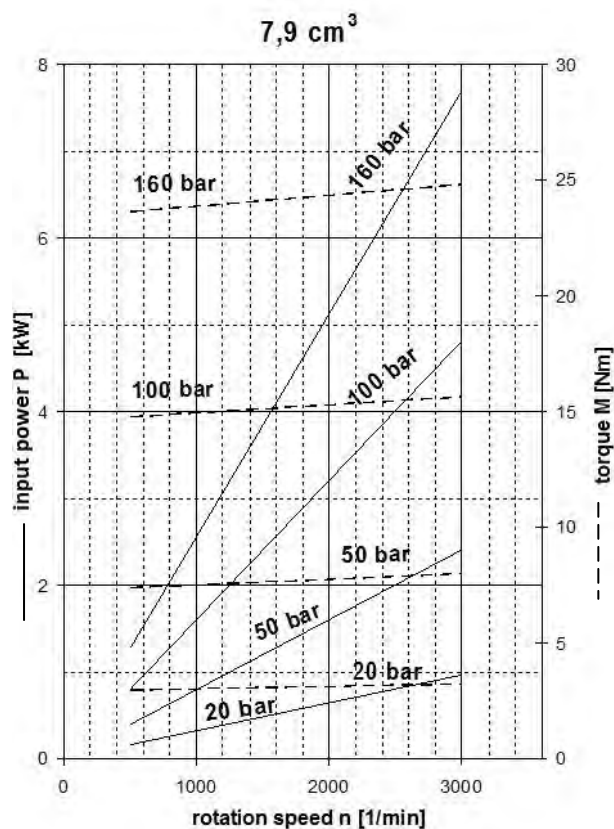
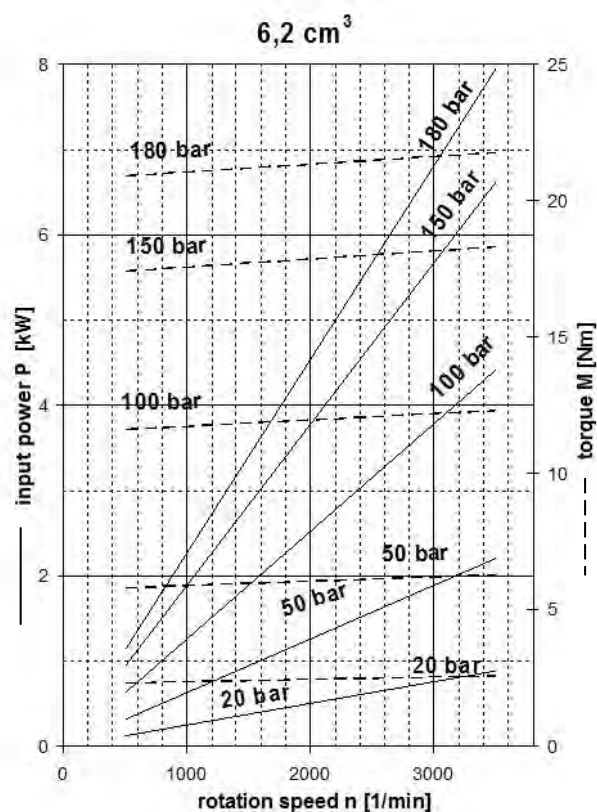
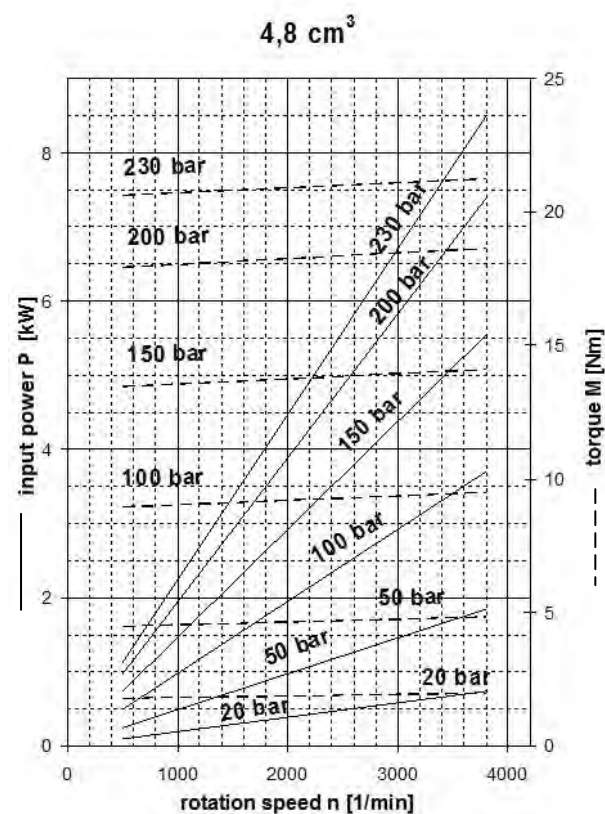
S1 FLOW RATE AND POWER CURVES





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





ORDER KEY – SINGLE VERSION

1 - 3,3 R - S01 D01 - S G02 G01 - V . 004

Code	Displacement [cm ³]
0,8	0,855
1,0	1,016
1,2	1,257
1,6	1,686
2,1	2,086
2,3	2,301
2,5	2,514
2,65	2,674
3,3	3,316
3,6	3,611
4,4	4,386
4,8	4,787
5,8	5,804
6,2	6,205
6,4	6,419
7,0	7,007
7,9	7,890
10,0	10,003
11,8	11,795
XX	Other displacement on request

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

Code	Type
1	1 series pump

Code	Flange design
R1	Rectangular flange, centre ring Ø 25,4 Spacing screw 52,4x71,9
S1	SAE A - A
A1	Flange with through bolts centre ring Ø 32 with O-ring (deep center ring 7)
A2	Flange with through bolts centre ring Ø 32 s O-ring (deep center ring 8)
A3	Flange with through bolts centre ring Ø 32 s O-ring (narrow desing)
A4	Flange with through bolts centre ring Ø 32 (narrow desing)
Z	Special design

Code	Location of inlets and outlets
S	Side (in body)
R	Axial (in cover)
F	Axial (in flange)
A	Axial (inlet in cover, outlet in flange)
C	Combination (inlet in body outlet in flange)
D	Combination (inlet in cover outlet in body)

Code	Drive shaft design
C1	Traper 1:8 Key 2,5x3,7
C2	Traper 1:8 Key 2,4x5 Ø13
C3	Traper 1:5 Key 2x2,6-D7
K1	Cross coupling
K2	Cross coupling
V1	Cylindric Key 3h9x3x22
V2	Cylindric Key 3,2x3,2x19,4
V3	Cylindric Key 3m6x14
V4	Cylindric Key 3h9x3x10
D1	Involute spline
Z	Special design

Code	Special arrangements
-	No special arrangements
001	With front end bearing
002	With relief valve
004	Without shaft seal

Code	Sealing material
N	NBR
V	FKM (VITON)
C	CR (CHLOROPREN)

Code	Liquid inlet and outlet connection shape
M02	Thread M12x1,5
M03	Thread M14x1,5
M05	Thread M18x1,5
M06	Thread M20x1,5
M07	Thread M22x1,5
G01	Thread BSP G1/4
G02	Thread BSP G3/8
G03	Thread BSP G1/2
U02	Thread 9/16-18 UNF-2B
U03	Thread 3/4-16 UNF-2B
U04	Thread 7/8-14 UNF-2B
H01	Flanged fitting Ø 8 Square 4xM5 Ø26
H02	Flanged fitting Ø 10 Square 4xM5 Ø26
H03	Flanged fitting Ø 8 Square 4xM6 Ø30
H04	Flanged fitting Ø12 Square 4xM6 Ø30
P01	Inlet / outlet in flange
Z	Special design

An example of designation for the S 1 anti-clockwise pump with displacement of 4.4 cm³/rev, SAE A-A flange, trapper 1:8 with key 2.5x3.7, BSP side inlets and standard NBR seal without special arrangements:

1-4.4L-S01C02-SG03G03-N

ORDER KEY – MULTIPLE VERSION

1 - 3,3 / 3,3 R - S01 D01 - S G02 G01 / G02 G01 - V.004

Code	Displacement [cm ³]
0,8	0,855
1,0	1,016
1,2	1,257
1,6	1,686
2,1	2,086
2,3	2,301
2,5	2,514
2,65	2,674
3,3	3,316
3,6	3,611
4,4	4,386
4,8	4,787
5,8	5,804
6,2	6,205
6,4	6,419
7,0	7,007
7,9	7,890
10,0	10,003
11,8	11,795
XX	Other displacement on request

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

Code	Type
1	1 series pump

Code	Flange design
R1	Rectangular flange, centre ring Ø 25,4 Spacing screw 52,4x71,9
S1	SAE A - A
A1	Flange with through bolts centre ring Ø 32 with O-ring (deep center ring 7)
A2	Flange with through bolts centre ring Ø 32 s O-ring (deep center ring 8)
A3	Flange with through bolts centre ring Ø 32 s O-ring (narrow desing)
A4	Flange with through bolts centre ring Ø 32 (narrow desing)
Z	Special design

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

Code	Drive shaft design
C1	Traper 1:8 Key 2,5x3,7
C2	Traper 1:8 Key 2,4x5 Ø13
C3	Traper 1:5 Key 2x2,6-D7
K1	Cross coupling
K2	Cross coupling
V1	Cylindric Key 3h9x3x22
V2	Cylindric Key 3,2x3,2x19,4
V3	Cylindric Key 3m6x14
V4	Cylindric Key 3h9x3x10
D1	Involute spline
Z	Special design

Code	Special arrangements
-	No special arrangements
001	With front end bearing
002	With relief valve
004	Without shaft seal

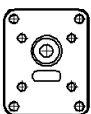
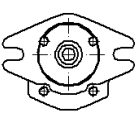
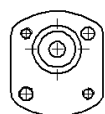
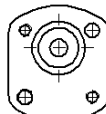
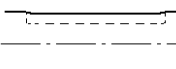
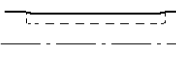
Code	Sealing material
N	NBR
V	FKM (VITON)
C	CR (CHLOROPREN)

Code	Liquid inlet and outlet connection shape
M02	Thread M12x1,5
M03	Thread M14x1,5
M05	Thread M18x1,5
M06	Thread M20x1,5
M07	Thread M22x1,5
G01	Thread BSP G1/4
G02	Thread BSP G3/8
G03	Thread BSP G1/2
U02	Thread 9/16-18 UNF-2B
U03	Thread 3/4-16 UNF-2B
U04	Thread 7/8-14 UNF-2B
H01	Flanged fitting Ø 8 Square 4xM5 Ø26
H02	Flanged fitting Ø 10 Square 4xM5 Ø26
H03	Flanged fitting Ø 8 Square 4xM6 Ø30
H04	Flanged fitting Ø12 Square 4xM6 Ø30
P01	Inlet / outlet in flange
Z	Special design

An example of designation for the S 1 two-section clockwise pump with displacements of 4.4 and 3.3 cm³, rectangular flange, centre ring Ø25.4, Trapper 1:8 with key 2.4x5 Ø13, one common input and to outputs with metric threads, FKM sealing without special arrangements:

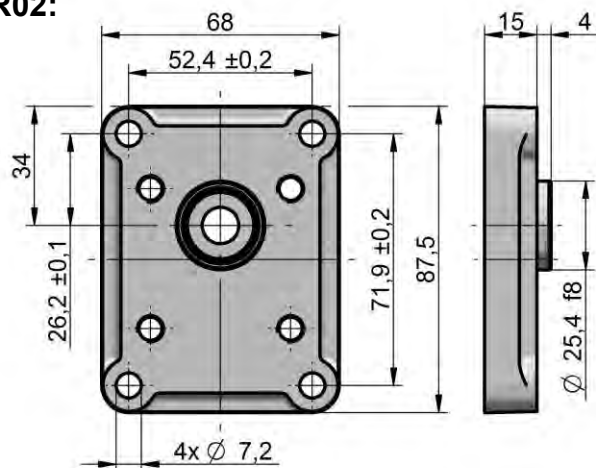
1-4.4/3.3R-R02C03-SM05M05/NM05-V

COMBINATION OF FLANGES AND SHAFTS

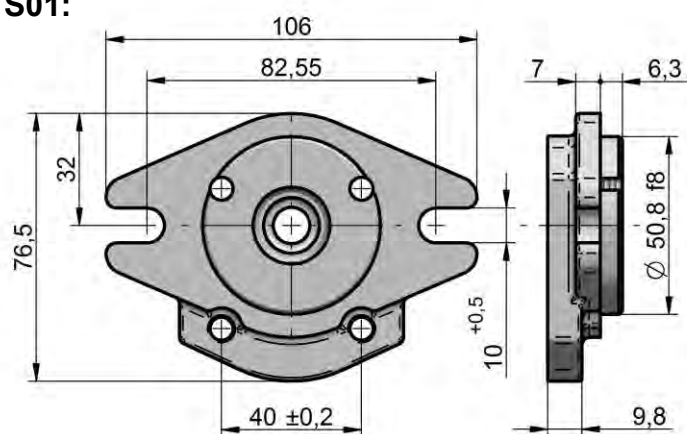
DRIVE SHAFTS		FLANGES DESIGN					
		R02	S01	A03	A04	A05	A06
							
C02		●		●			
C03		●		●	●		
C04		●		●			
K03				●		●	●
K04		○			●	●	●
V02		○	●				
V03			●				
V04				●			
V05		●					
D01				●			
● - SUGGESTED ○ - POSSIBLE							

FLANGES DESIGN

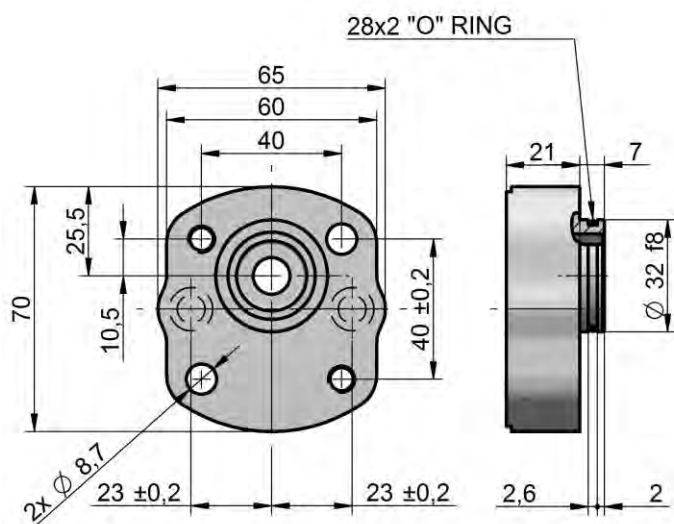
R02:



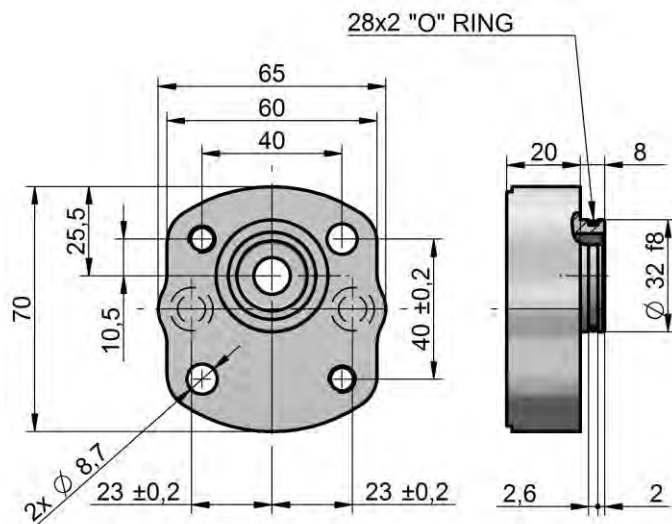
S01:



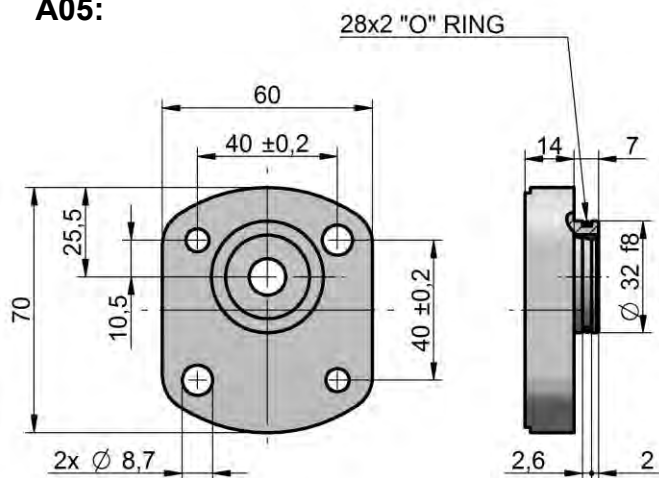
A03:



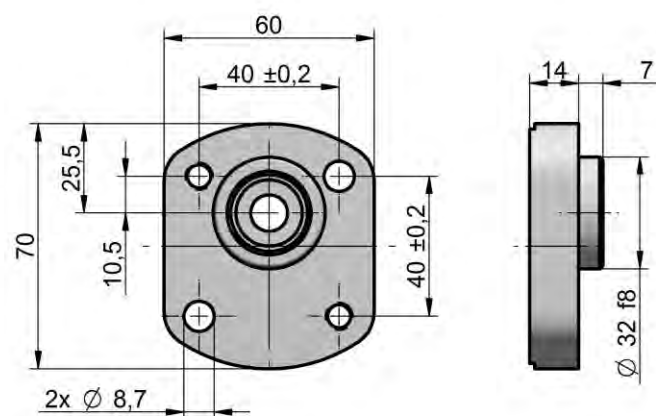
A04:

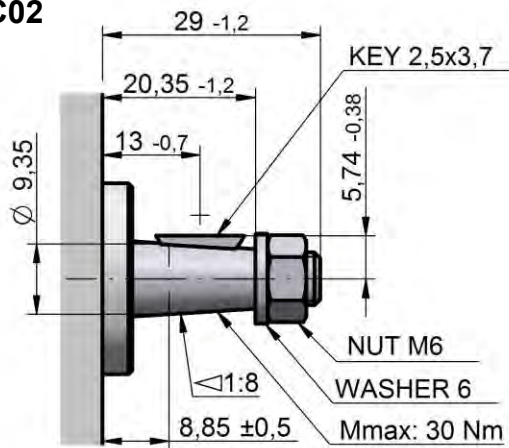
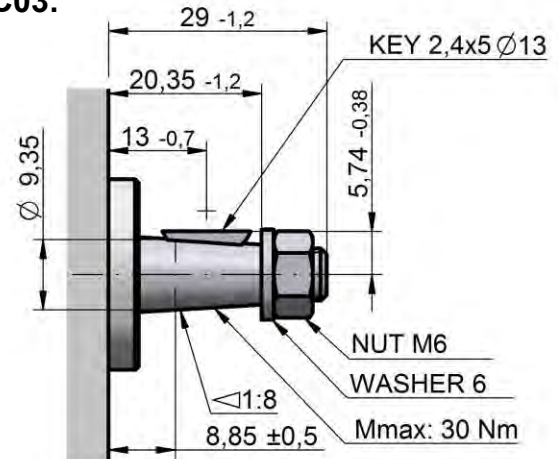
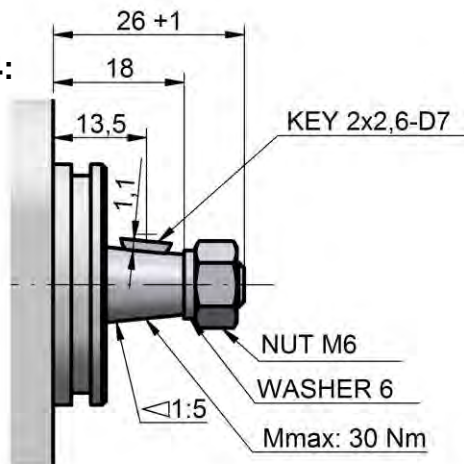
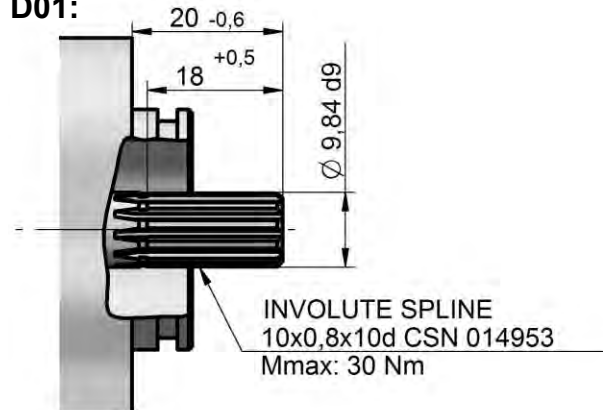
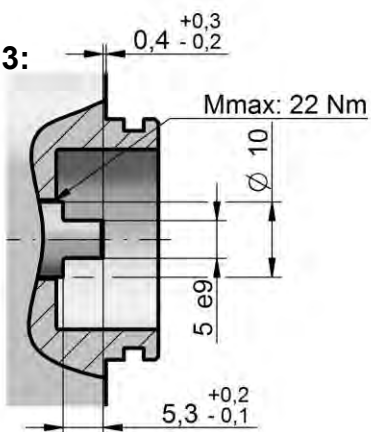
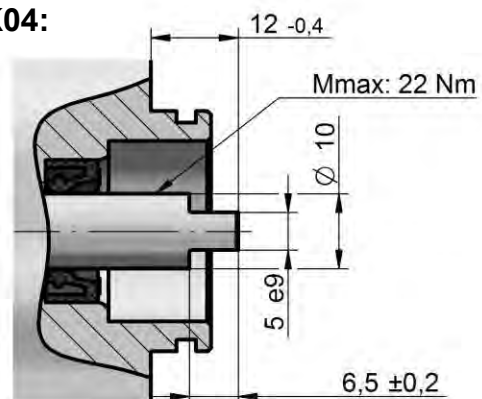


A05:

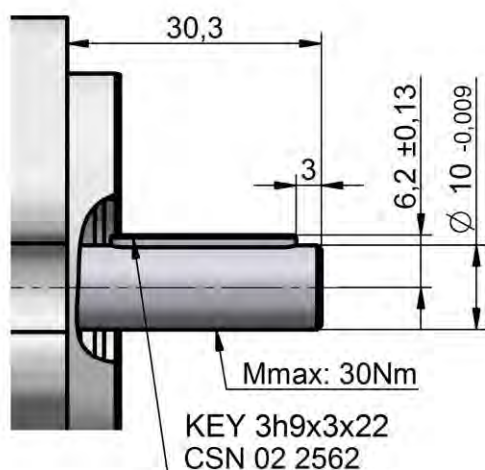


A06:

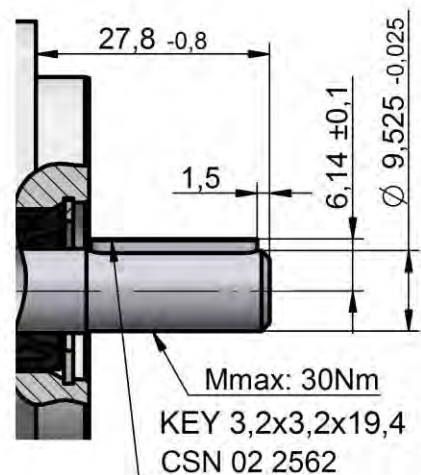


DRIVE SHAFTS**C02****C03:****C04:****D01:****K03:****K04:**

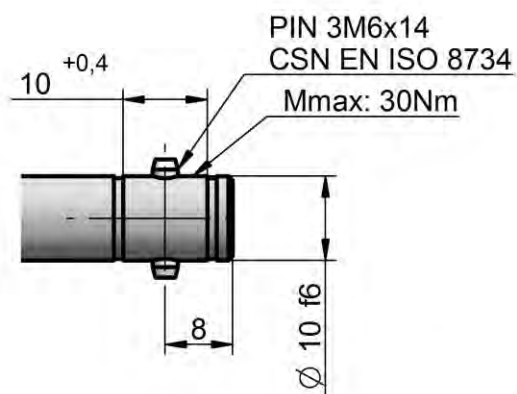
V02:



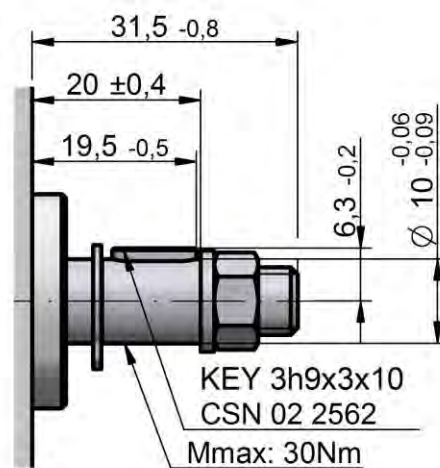
V03:



V04:

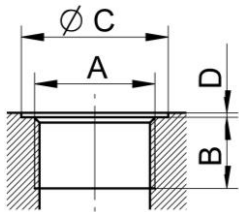


V05:



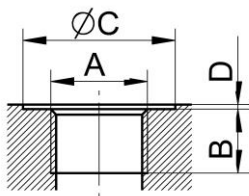
COMBINATION OF LIQUID INLETS AND OUTLETS

Metric thread according to ISO 6149



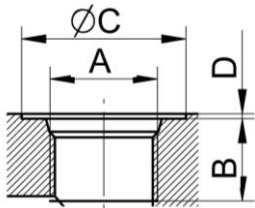
Displacement [cm ³]	Code	Inlet				Code	Outlet				
		A	B	C	D		A	B	C	D	
all	M03	M 14x1.5	13	26	1	M02	M 12x1.5	12	20	1	
0.8 - 3.3						M03	M 14x1.5	13	26		
all	M04	M 16x1.5	14	22		M04	M 16x1.5	14	22		
all	M05	M 18x1.5	13	30		M05	M 18x1.5	13	30		
all	M06	M 20x1.5	14	26		M02 – M05					
3.3 - 11.8	M07	M 22x1.5	13	35							

BSPP pipe thread according to 228-1

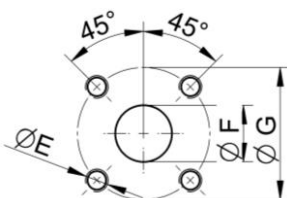


Displacement [cm ³]	Code	Inlet				Code	Outlet					
		A	B	C	D		A	B	C	D		
all	G02	G 3/8	13	24	1	G01	G 1/4	13	26	1		
	G03	G 1/2		34		G02	G 3/8		24			
						G03	G 1/2		34			

UNF thread according SAE



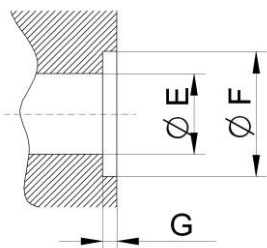
Displacement [cm ³]	Code	Inlet				Code	Outlet			
		A	B	C	D		A	B	C	D
all	U03	3/4-16 UNF	13	24.6	1	U02	9/16 - 18 UNF	13	24.6	1
	U04	7/8-14 UNF	16	34		U03	3/4-16 UNF		30	

Flanged fittings according to
DIN 8901/8902

Displacement [cm ³]	Code	Inlet			Code	Outlet		
		E	F	G		E	F	G
all	H01	M5, depth 12	8	26	H01	M5, depth 12	8	26
	H02		10		H02		10	
	H03	M6, depth 12	8	30	H03	M6, depth 12	8	30
	H04		12		H04		12	

NOTE: All inlets and outlets can be combination

Inlet / Outlet in flange

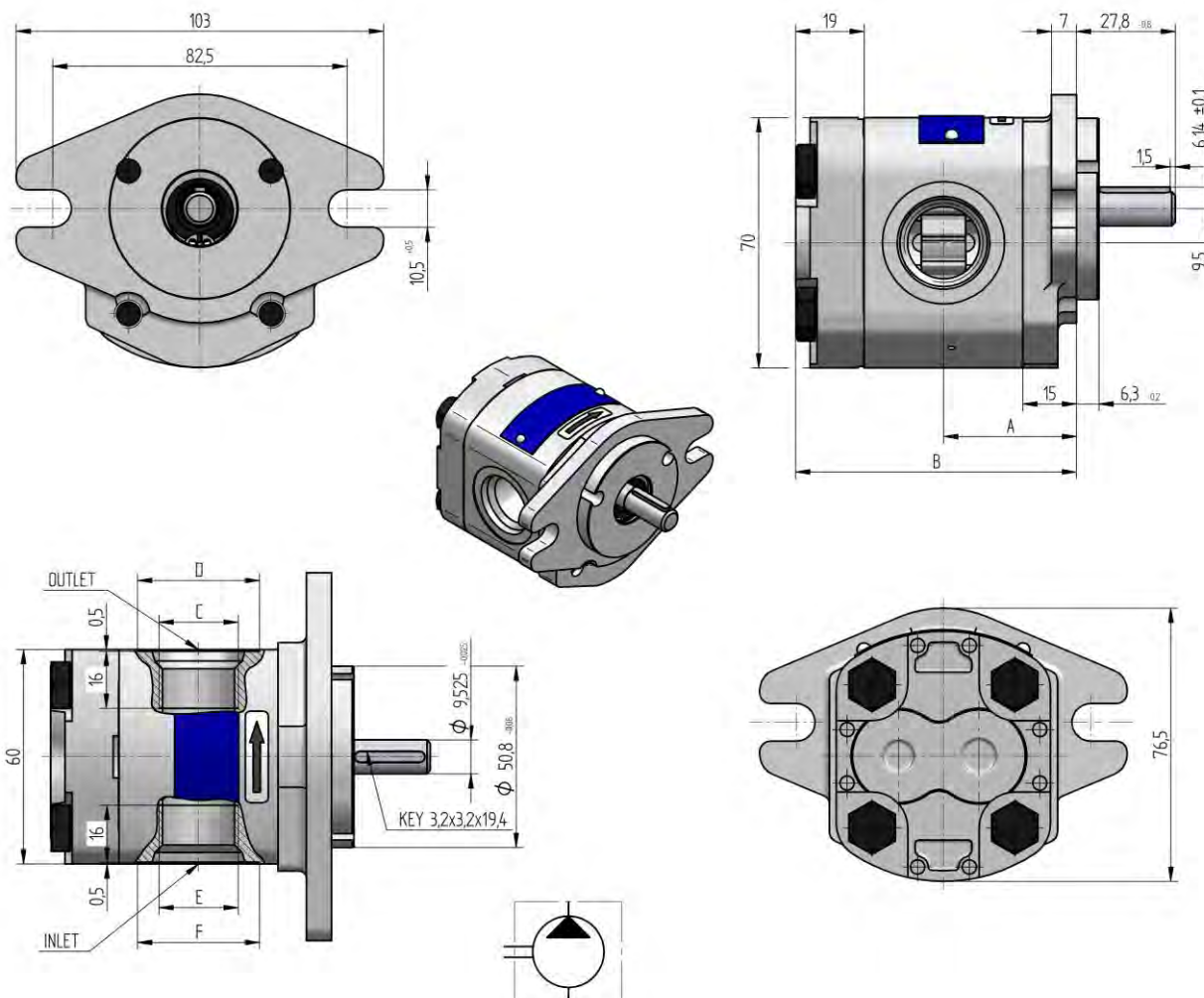


Code	E	F	G
P01	8	12.4	1.4

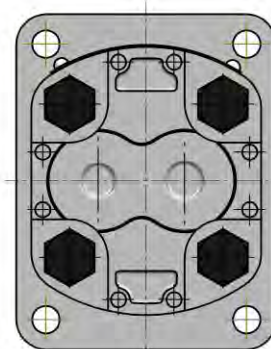
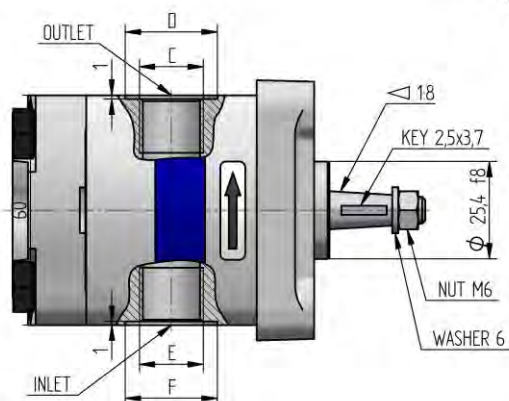
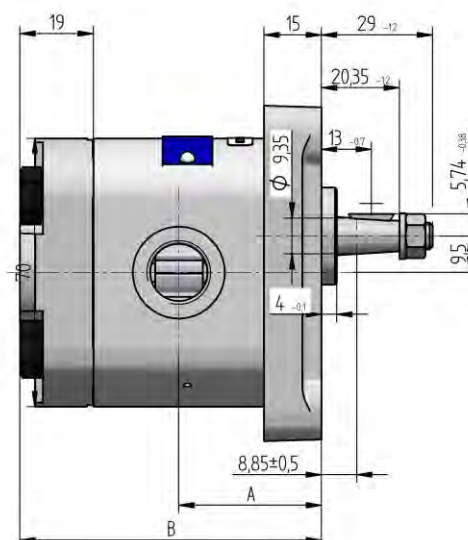
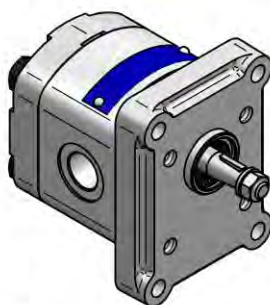
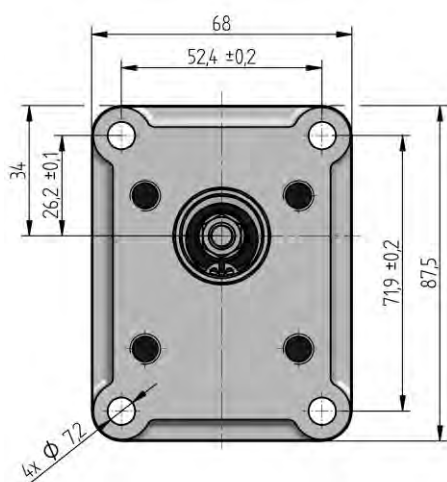
Drains:

Displacement [cm ³]	Code	Outlet			
		A	B	C	D
all	M01	M10x1	8	15	1

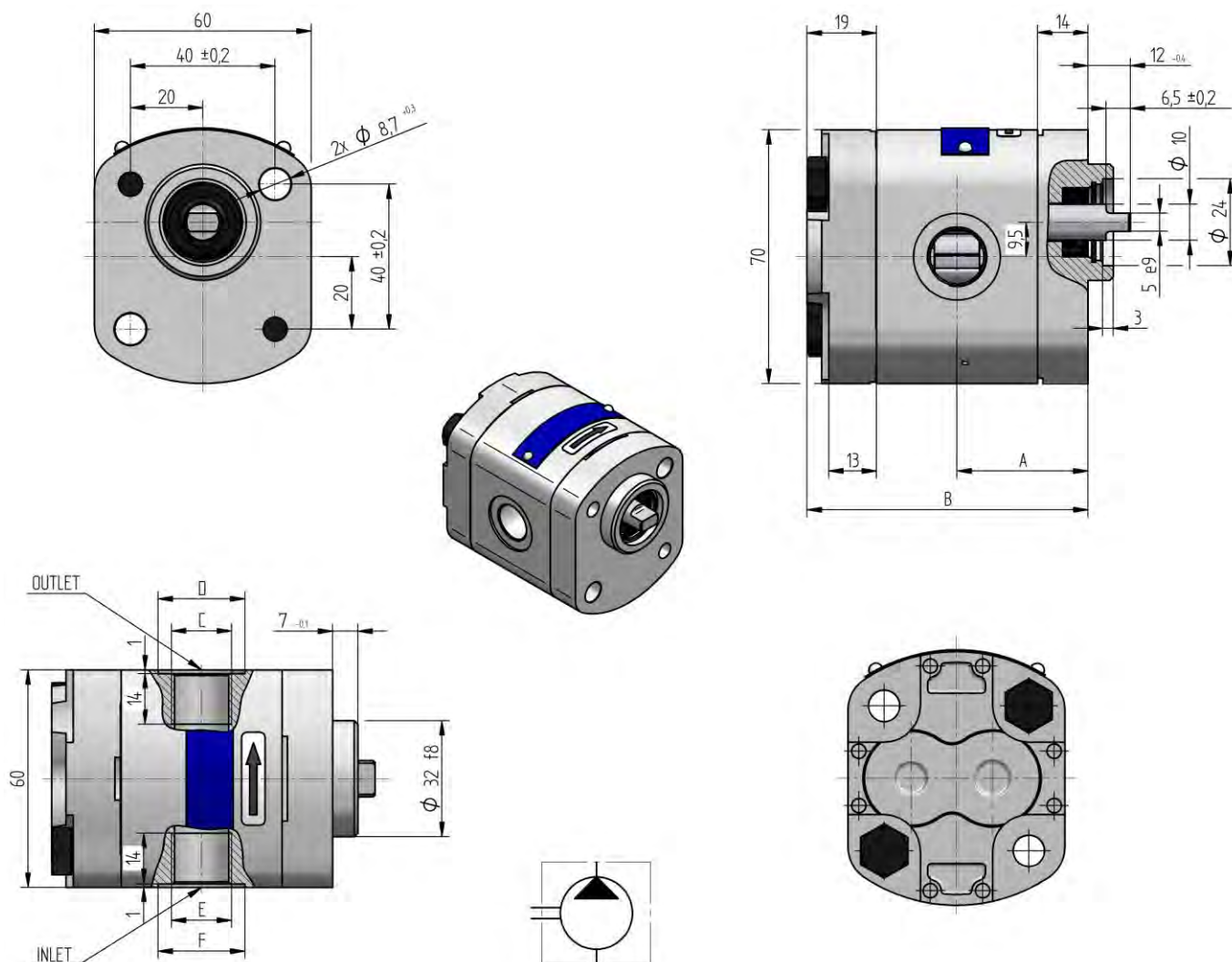
CATALOGUE SHEETS OF 1 SERIES BASIC DESIGN



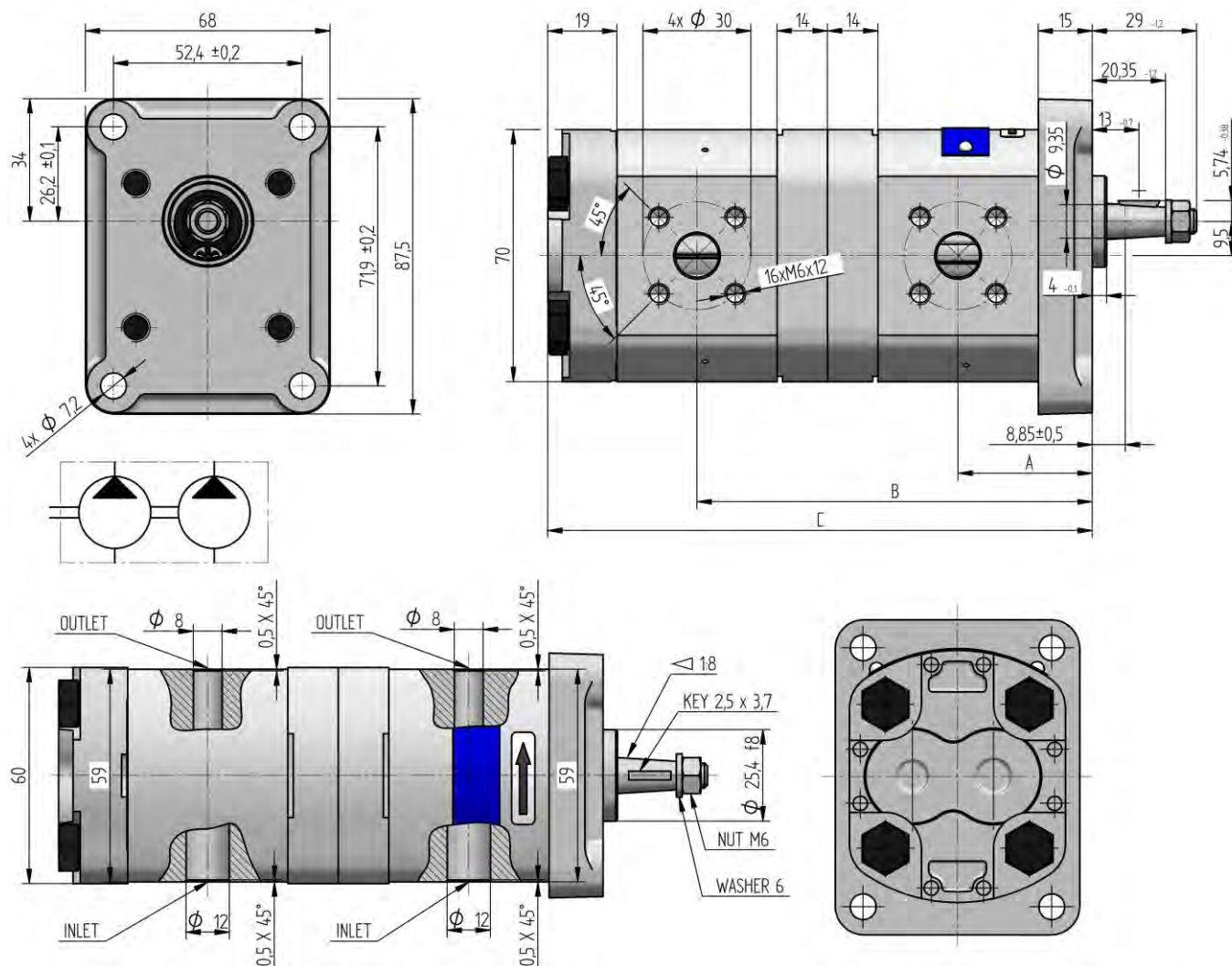
1-7,9R- S01V03-SU04U04-N	187 9005	R	7,9	160	500	3 000	45,8	95,6	7/8-14 UNF-2B	Ø 34,2	7/8-14 UNF-2B	Ø 34,2
1-7,9L- S01V03-SU04U04-N		L										
1-6,2R- S01V03-SU04U04-N	187 9974	R	6,2	180	500	3 500	42,6	89,3	7/8-14 UNF-2B	Ø 34,2	7/8-14 UNF-2B	Ø 34,2
1-6,2L- S01V03-SU04U04-N		L										
1-5,8R- S01V03-SU04U04-N		R	5,8	200	500	3 500	41,9	87,8	7/8-14 UNF-2B	Ø 34,2	7/8-14 UNF-2B	Ø 34,2
1-5,8L- S01V03-SU04U04-N		L										
1-4,8R- S01V03-SU04U04-N	187 9880	R	4,8	230	500	3 800	40,0	84,0	7/8-14 UNF-2B	Ø 34,2	7/8-14 UNF-2B	Ø 34,2
1-4,8L- S01V03-SU04U04-N		L										
1-4,4R- S01V03-SU04U04-N	187 9879	R	4,4	250	500	4 000	39,2	82,5	7/8-14 UNF-2B	Ø 34,2	7/8-14 UNF-2B	Ø 34,2
1-4,4L- S01V03-SU04U04-N		L										
1-3,6R- S01V03-SU04U04-N	187 9878	R	3,6	260	500	4 000	37,8	79,6	7/8-14 UNF-2B	Ø 34,2	7/8-14 UNF-2B	Ø 34,2
1-3,6L- S01V03-SU04U04-N		L										
1-3,3R- S01V03-SU04U04-N	187 9877	R	3,3	280	500	4 000	37,2	78,5	7/8-14 UNF-2B	Ø 34,2	7/8-14 UNF-2B	Ø 34,2
1-3,3L- S01V03-SU04U04-N		L										
1-2,5R- S01V03-SU03U03-N	187 9876	R	2,5	280	500	4 500	35,7	75,5	3/4-16 UNF-2B	Ø 30,2	3/4-16 UNF-2B	Ø 30,2
1-2,5L- S01V03-SU03U03-N		L										
1-2,1R- S01V03-SU03U03-N	187 9875	R	2,1	280	600	4 500	34,9	73,9	3/4-16 UNF-2B	Ø 30,2	3/4-16 UNF-2B	Ø 30,2
1-2,1L- S01V03-SU03U03-N		L										
1-1,6R- S01V03-SU03U03-N	187 9874	R	1,6	280	600	5 000	34,1	72,3	3/4-16 UNF-2B	Ø 30,2	3/4-16 UNF-2B	Ø 30,2
1-1,6L- S01V03-SU03U03-N		L										
1-1,2R- S01V03-SU03U03-N	187 9873	R	1,2	280	600	5 000	33,4	70,8	3/4-16 UNF-2B	Ø 30,2	3/4-16 UNF-2B	Ø 30,2
1-1,2L- S01V03-SU03U03-N		L										
1-0,8R- S01V03-SU03U03-N	187 9872	R	0,8	280	800	5 000	32,6	69,3	3/4-16 UNF-2B	Ø 30,2	3/4-16 UNF-2B	Ø 30,2
1-0,8L- S01V03-SU03U03-N		L										
ORDER KEY	PURCH CODE	DIR. OF ROT.	DISPLA- CEMENT [cm³/l]	NOM. PRES. [bar]	SPEED [min⁻¹]		A	B	DIMENSIONS [mm]		E	F



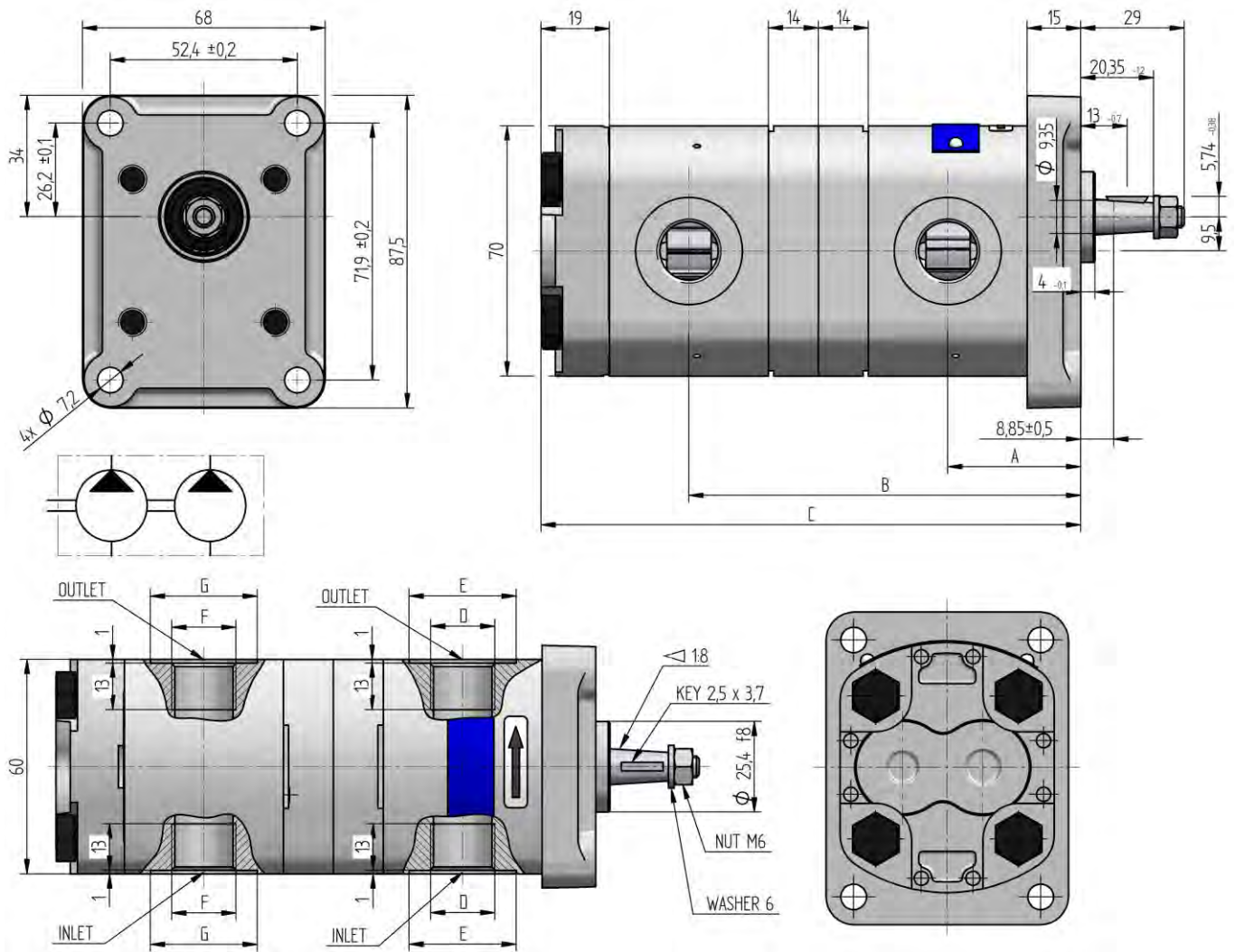
1-7,9R- R02C02-SG02G02-N	187 9987	R	7,9	160	500	3 000	45,8	95,6	G 3/8	Ø 24	G 3/8	Ø 24
1-7,9L- R02C02-SG02G02-N		L										
1-6,2R- R02C02-SG02G02-N	187 9804	R	6,2	180	500	3 500	42,6	89,3	G 3/8	Ø 24	G 3/8	Ø 24
1-6,2L- R02C02-SG02G02-N		L										
1-5,8R- R02C02-SG02G02-N	187 9986	R	5,8	200	500	3 500	41,9	87,8	G 3/8	Ø 24	G 3/8	Ø 24
1-5,8L- R02C02-SG02G02-N		L										
1-4,8R- R02C02-SG02G02-N	187 9985	R	4,8	230	500	3 800	40,0	84,0	G 3/8	Ø 24	G 3/8	Ø 24
1-4,8L- R02C02-SG02G02-N		L										
1-4,4R- R02C02-SG02G02-N	187 9954	R	4,4	250	500	4 000	39,2	82,5	G 3/8	Ø 24	G 3/8	Ø 24
1-4,4L- R02C02-SG02G02-N		L										
1-3,6R- R02C02-SG02G02-N	187 9951	R	3,6	260	500	4 000	37,8	79,6	G 3/8	Ø 24	G 3/8	Ø 24
1-3,6L- R02C02-SG02G02-N	187 9018	L										
1-3,3R- R02C02-SG02G02-N	187 9984	R	3,3	280	500	4 000	37,2	78,5	G 3/8	Ø 24	G 3/8	Ø 24
1-3,3L- R02C02-SG02G02-N		L										
1-2,5R- R02C02-SG02G02-N	187 9950	R	2,5	280	500	4 500	35,7	75,5	G 3/8	Ø 24	G 3/8	Ø 24
1-2,5L- R02C02-SG02G02-N		L										
1-2,1R- R02C02-SG02G02-N	187 9983	R	2,1	280	600	4 500	34,9	73,9	G 3/8	Ø 24	G 3/8	Ø 24
1-2,1L- R02C02-SG02G02-N		L										
1-1,6R- R02C02-SG02G02-N	187 9890	R	1,6	280	600	5 000	34,1	72,3	G 3/8	Ø 24	G 3/8	Ø 24
1-1,6L- R02C02-SG02G02-N		L										
1-1,2R- R02C02-SG02G02-N	187 9903	R	1,2	280	600	5 000	33,4	70,8	G 3/8	Ø 24	G 3/8	Ø 24
1-1,2L- R02C02-SG02G02-N		L										
1-0,8R- R02C02-SG02G02-N	187 9982	R	0,8	280	800	5 000	32,6	69,3	G 3/8	Ø 24	G 3/8	Ø 24
1-0,8L- R02C02-SG02G02-N		L										
ORDER KEY	PURCH CODE	DIR. OF ROT.	DISPLACEMENT [cm ³ /1]	NOM. PRES. [bar]	MIN.	MAX.	SPEED [min ⁻¹]					
							A	B	C	D	E	F
							DIMENSIONS [mm]					



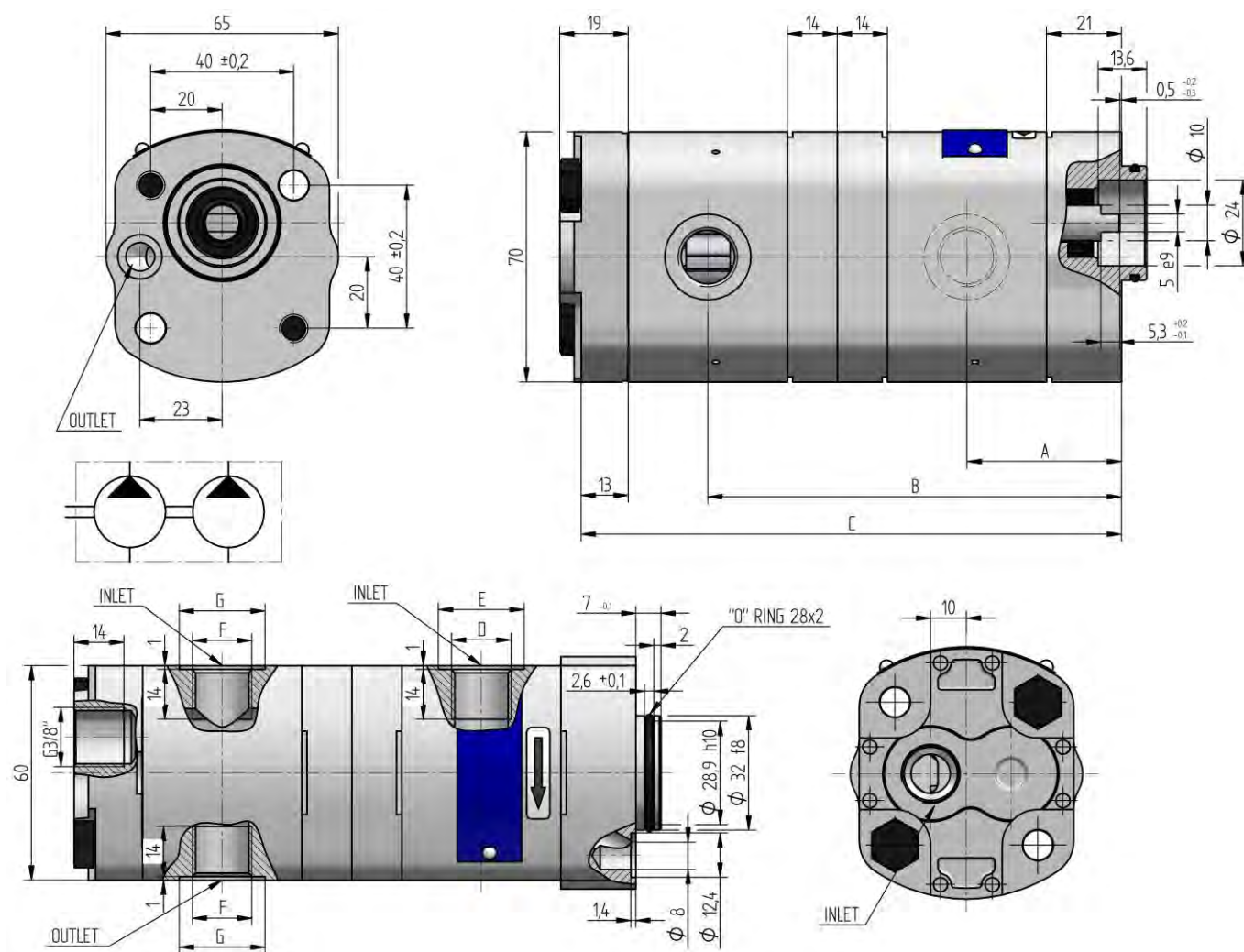
1-7,9R- A06K04-SG02G02-N		R	7,9	160	500	3 000	44,8	94,6	G 3/8	Ø 24	G 3/8	Ø 24
1-7,9L- A06K04-SG02G02-N		L										
1-6,2R- A06K04-SG02G02-N		R	6,2	180	500	3 500	41,6	88,3	G 3/8	Ø 24	G 3/8	Ø 24
1-6,2L- A06K04-SG02G02-N		L										
1-5,8R- A06K04-SG02G02-N		R	5,8	200	500	3 500	40,9	86,8	G 3/8	Ø 24	G 3/8	Ø 24
1-5,8L- A06K04-SG02G02-N		L										
1-4,8R- A06K04-SG02G02-N		R	4,8	230	500	3 800	39,0	83,0	G 3/8	Ø 24	G 3/8	Ø 24
1-4,8L- A06K04-SG02G02-N		L										
1-4,4R- A06K04-SG02G02-N	187 9944	R	4,4	250	500	4 000	38,2	81,5	G 3/8	Ø 24	G 3/8	Ø 24
1-4,4L- A06K04-SG02G02-N		L										
1-3,6R- A06K04-SG02G02-N		R	3,6	260	500	4 000	36,8	78,6	G 3/8	Ø 24	G 3/8	Ø 24
1-3,6L- A06K04-SG02G02-N		L										
1-3,3R- A06K04-SG02G02-N		R	3,3	280	500	4 000	36,2	77,5	G 3/8	Ø 24	G 3/8	Ø 24
1-3,3L- A06K04-SG02G02-N		L										
1-2,5R- A06K04-SG02G02-N	187 9943	R	2,5	280	500	4 500	34,7	74,5	G 3/8	Ø 24	G 3/8	Ø 24
1-2,5L- A06K04-SG02G02-N		L										
1-2,1R- A06K04-SG02G02-N	187 9942	R	2,1	280	600	4 500	33,9	72,9	G 3/8	Ø 24	G 3/8	Ø 24
1-2,1L- A06K04-SG02G02-N		L										
1-1,6R- A06K04-SG02G02-N		R	1,6	280	600	5 000	33,1	71,3	G 3/8	Ø 24	G 3/8	Ø 24
1-1,6L- A06K04-SG02G02-N		L										
1-1,2R- A06K04-SG02G02-N		R	1,2	280	600	5 000	32,4	69,8	G 3/8	Ø 24	G 3/8	Ø 24
1-1,2L- A06K04-SG02G02-N		L										
1-0,8R- A06K04-SG02G02-N		R	0,8	280	800	5 000	31,6	68,3	G 3/8	Ø 24	G 3/8	Ø 24
1-0,8L- A06K04-SG02G02-N		L										
ORDER KEY	PURCH CODE	DIR. OF ROT.	DISPLACEMENT [cm³ /1]	NOM. PRES. [bar]	SPEED [min⁻¹]		A	B	DIMENSIONS [mm]		E	F



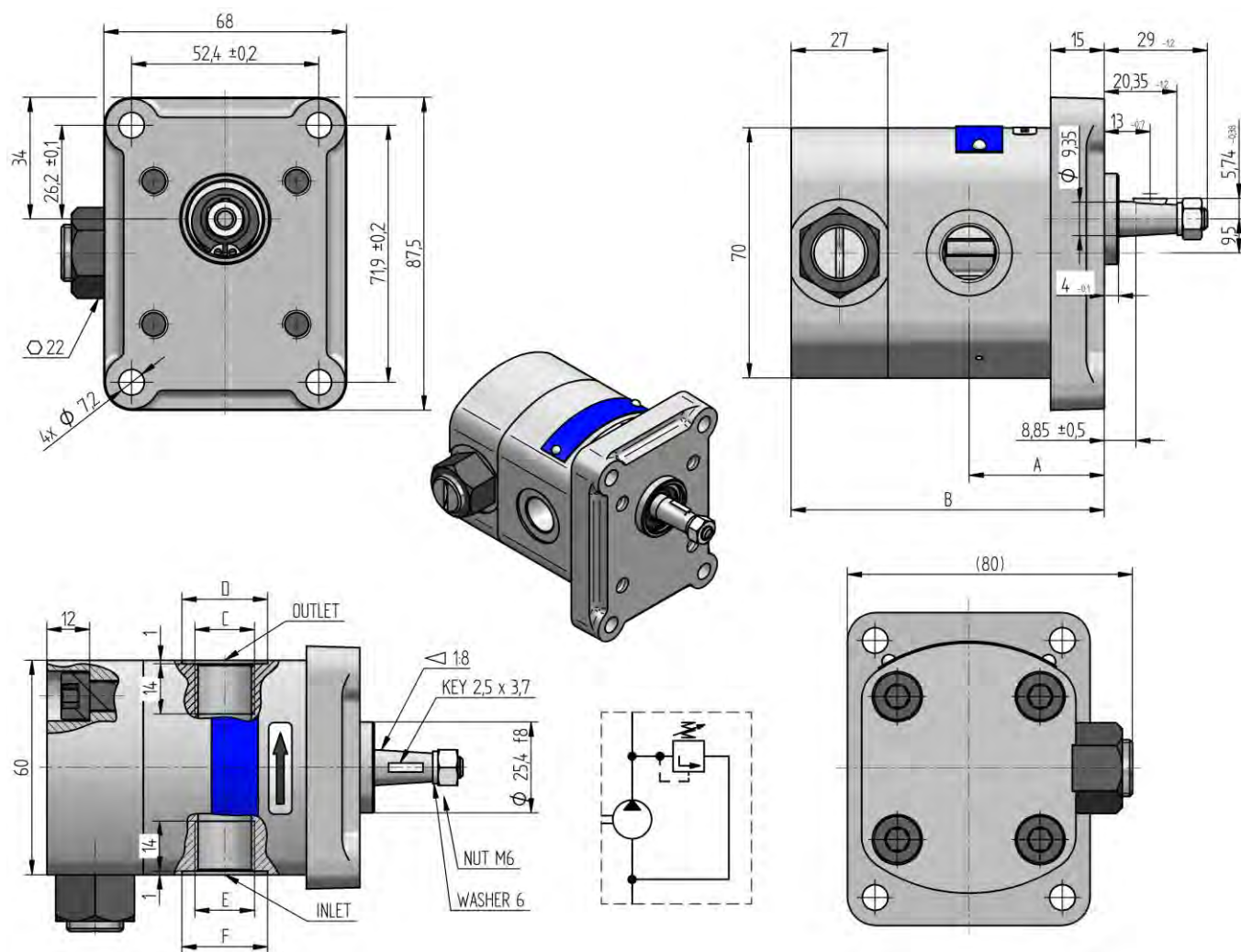
1-6,2/2,5R- R02C02-SH04H03/H04H03-N		R	6,2/2,5	180/280	500	3 500	42,6	119,0	158,8				
		L											
1-4,8/2,5R- R02C02-SH04H03/H04H03-N	187 9888	R	4,8/2,5	230/250	500	3 800	40,0	113,7	153,5				
		L											
1-3,6/3,6R- R02C02-SH04H03/H04H03-N	187 9866	R	3,6/3,6	200/260	500	4 000	37,8	111,4	153,2				
		L											
1-3,6/2,5R- R02C02-SH04H03/H04H03-N	187 9865	R	3,6/2,5	260/280	500	4 000	37,8	109,3	149,1				
		L											
1-2,5/2,5R- R02C02-SH04H03/H04H03-N		R	2,5/2,5	280/280	500	4 500	35,7	105,2	145,0				
		L											
1-1,2/0,8R- R02C02-SH04H03/H04H03-N		R	1,2/0,8	280/280	600	5 000	33,4	97,4	134,1				
		L											
ORDER KEY	PURCH CODE	DIR. OF ROT.	DISPLACEMENT [cm³ /1]	NOM. PRES. [bar]	MIN. SPEED [min⁻¹]	MAX. SPEED [min⁻¹]	A	B	C	D	E	F	



1-6,2/2,5R- R02C02-SM07M07/M05M05-N		R	6,2/2,5	180/280	500	3 500	42,6	119,0	158,8	M22x1,5	Ø 28	M18x1,5	Ø 24
		L											
1-4,8/2,5R- R02C02-SM05M05/M05M05-N		R	4,8/2,5	230/250	500	3 800	40,0	113,7	153,5	M18x1,5	Ø 24	M18x1,5	Ø 24
		L											
1-3,6/3,6R- R02C02-SM05M05/M05M05-N	187 9864	R	3,6/3,6	200/260	500	4 000	37,8	111,4	153,2	M18x1,5	Ø 24	M18x1,5	Ø 24
		L											
1-3,6/2,5R- R02C02-SM05M05/M05M05-N		R	3,6/2,5	260/280	500	4 000	37,8	109,3	149,1	M18x1,5	Ø 24	M18x1,5	Ø 24
		L											
1-2,5/2,5R- R02C02-SM05M05/M05M05-N		R	2,5/2,5	280/280	500	4 500	35,7	105,2	145,0	M18x1,5	Ø 24	M18x1,5	Ø 24
		L											
1-1,2/0,8R- R02C02-SM03M03/M03M03-N		R	1,2/0,8	280/280	600	5 000	33,4	97,4	134,1	M14x1,5	Ø 20	M14x1,5	Ø 20
		L											
ORDER KEY	PURCH. CODE	DIR. OF ROT.	DISPLACEMENT [cm³ /1]	NOM. PRES. [bar]	MIN.	MAX.	A	B	C	DIMENSIONS [mm]			



1-7,9/2,5L- A03K03-CG02P01/G02G02G02-N	187 9702	L	7,9/2,5	160/280	500	3 000	51,8	131,4	165,1	G 3/8	Ø 24	G 3/8	Ø 24
1-7,9/1,2L- A03K03-CG02P01/G02G02G02-N		R L	7,9/1,2	160/280	500	3 000	51,8	129,0	160,4	G 3/8	Ø 24	G 3/8	Ø 24
1-6,2/1,6L- A03K03-CG02P01/G02G02G02-N	187 9923	R L	6,2/1,6	180/280	500	3 500	48,6	123,4	155,6	G 3/8	Ø 24	G 3/8	Ø 24
1-3,3/4,4L- A03K03-CG02P01/G02G02G02-N		R L	3,3/4,4	280/250	500	4 000	43,2	117,7	155,0	G 3/8	Ø 24	G 3/8	Ø 24
1-2,5/4,8L- A03K03-CG02P01/G02G02G02-N		R L	2,5/4,8	280/230	500	3 800	41,7	115,5	153,5	G 3/8	Ø 24	G 3/8	Ø 24
1-2,5/4,4L- A03K03-CG02P01/G02G02G02-N		R L	2,5/4,4	280/250	500	4 000	41,7	114,7	152,0	G 3/8	Ø 24	G 3/8	Ø 24
1-1,6/6,2L- A03K03-CG02P01/G02G02G02-N		R L	1,6/6,2	280/180	500	3 500	40,1	115,0	155,6	G 3/8	Ø 24	G 3/8	Ø 24
1-1,6/5,8L- A03K03-CG02P01/G02G02G02-N		R L	1,6/5,8	280/200	500	3 500	40,1	114,2	154,1	G 3/8	Ø 24	G 3/8	Ø 24
1-1,6/4,8L- A03K03-CG02P01/G02G02G02-N	187 9922	R L	1,6/4,8	280/230	500	3 800	40,1	112,3	150,3	G 3/8	Ø 24	G 3/8	Ø 24
ORDER KEY	PURCH. CODE	DIR. OF ROT.	DISPLA- CEMENT [cm³ /1]	NOM. PRES. [bar]	MIN.	MAX.	A	B	C	D	E	F	G
						SPEED [min ⁻¹]				DIMENSIONS [mm]			



1-7,9R- R02C02-SG02G02-N.002		R	7,9		500	3 000	45,8	103,6	G 3/8	Ø 24	G 3/8	Ø 24
		L										
1-6,2R- R02C02-SG02G02-N.002		R	6,2		500	3 500	42,6	97,3	G 3/8	Ø 24	G 3/8	Ø 24
		L										
1-5,8R- R02C02-SG02G02-N.002		R	5,8		500	3 500	41,9	95,8	G 3/8	Ø 24	G 3/8	Ø 24
		L										
1-4,8R- R02C02-SG02G02-N.002		R	4,8		500	3 800	40,0	92,0	G 3/8	Ø 24	G 3/8	Ø 24
		L										
1-4,4R- R02C02-SG02G02-N.002		R	4,4		500	4 000	39,2	90,5	G 3/8	Ø 24	G 3/8	Ø 24
		L										
1-3,6R- R02C02-SG02G02-N.002	187 9002	R	3,6	60 ± 5	500	4 000	37,8	87,6	G 3/8	Ø 24	G 3/8	Ø 24
		L										
1-3,3R- R02C02-SG02G02-N.002		R	3,3		500	4 000	37,2	86,5	G 3/8	Ø 24	G 3/8	Ø 24
		L										
1-2,5R- R02C02-SG02G02-N.002		R	2,5		500	4 500	35,7	83,5	G 3/8	Ø 24	G 3/8	Ø 24
		L										
1-2,1R- R02C02-SG02G02-N.002		R	2,1		600	4 500	34,9	81,9	G 3/8	Ø 24	G 3/8	Ø 24
		L										
1-1,6R- R02C02-SG02G02-N.002		R	1,6		600	5 000	34,1	80,3	G 3/8	Ø 24	G 3/8	Ø 24
		L										
1-1,2R- R02C02-SG02G02-N.002		R	1,2		600	5 000	33,4	78,8	G 3/8	Ø 24	G 3/8	Ø 24
		L										
1-0,8R- R02C02-SG02G02-N.002		R	0,8		800	5 000	32,6	77,3	G 3/8	Ø 24	G 3/8	Ø 24
		L										
ORDER KEY	PURCH. CODE	DIR. OF ROT.	DISPLACEMENT [cm ³ /1]	NOM. PRES. [bar]	MIN. SPEED [min ⁻¹]	MAX. SPEED [min ⁻¹]	A	B	C	D	E	F
DIMENSIONS [mm]												

