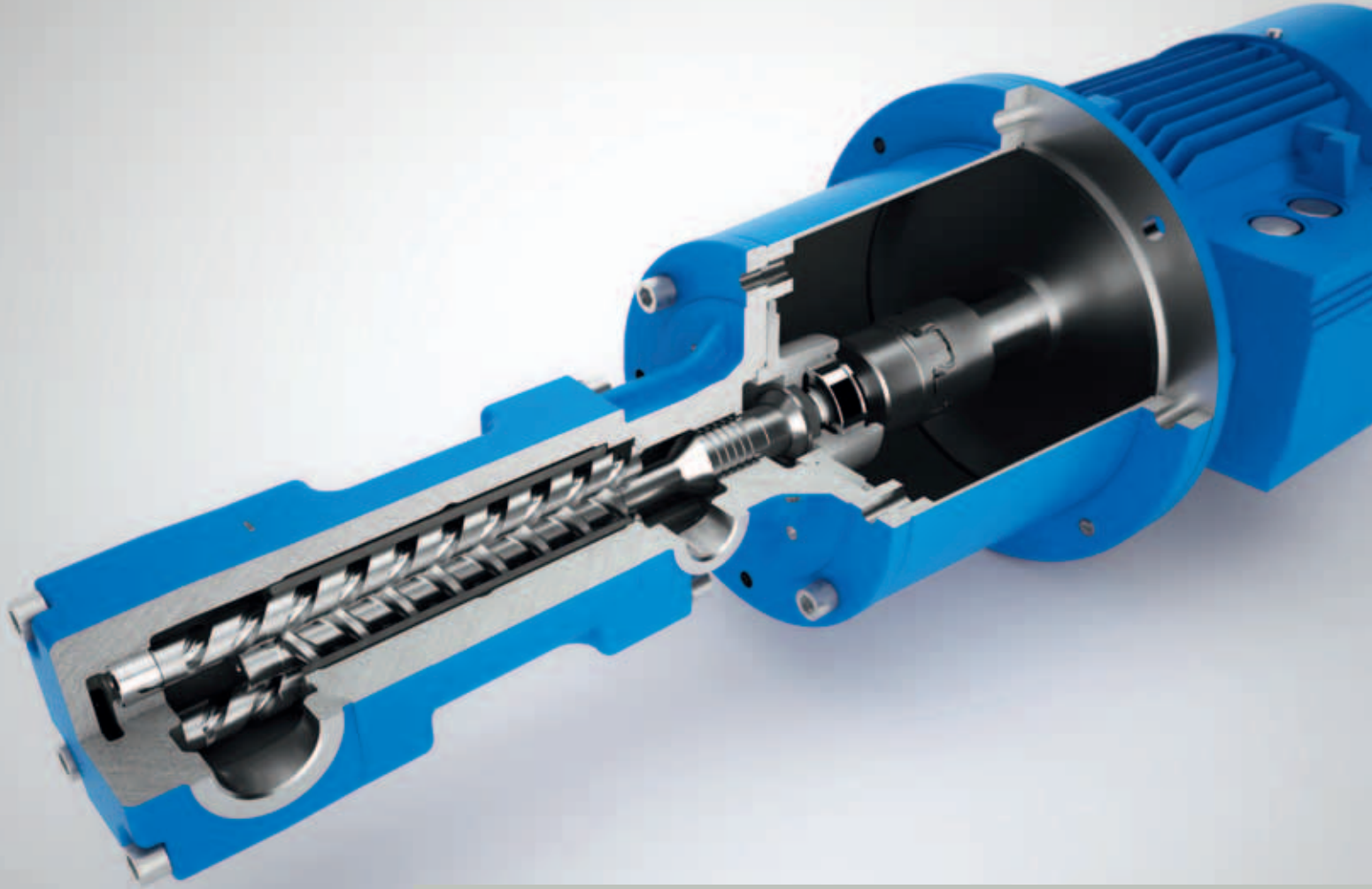


motralec

4 rue Lavoisier . ZA Lavoisier . 95223 HERBLAY CEDEX
Tel. : 01.39.97.65.10 / Fax. : 01.39.97.68.48
Demande de prix / e-mail : service-commercial@motralec.com
www.motralec.com

**BRINKMANN
PUMPS**



2015

SCREW SPINDLE PUMPS

COOLING, LUBRICATING,
RINSING, MAINTAINING TEMPERATURES ...



Story



BRINKMANN PUMPS represents over 60 years of the highest quality and reliability made in Germany. More than 200 employees worldwide in engineering, research and development and production worldwide work on customer specific solutions with the same goal: exceeding our customers' expectations with every pump.

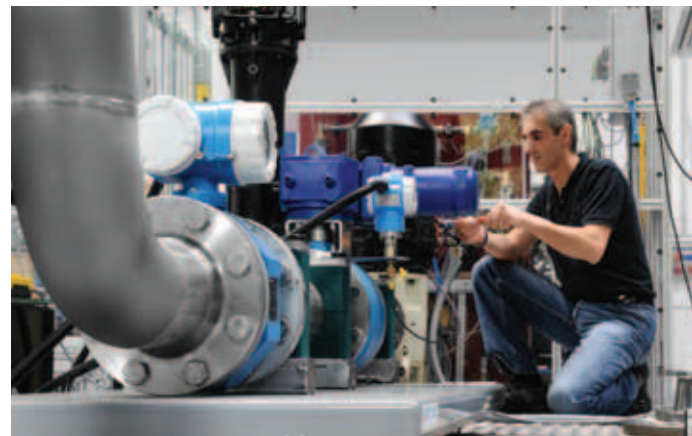
From a small centrifugal coolant pump for external cooling to the rugged lifting and cutter pumps to the high pressure screw spindle pumps, BRINKMANN PUMPS is the only supplier to cover all your coolant pump needs. Performance and reliability of our pumps over many decades has machine tool designers and manufacturers worldwide convinced of our unsurpassed quality and service.

Engineering

Each BRINKMANN Pump is embedded with often many years of research, including internal and external product development and in-house and field testing.

Being directly in contact with our global customer base, we can continuously deliver innovations and market driven pump solutions. For example, our patented quick suctioning immersion pumps, which are uniquely capable of handling coolants with a high percentage of air-entrainment.

In order to provide custom solutions in a cost effective way, we have developed a highly sophisticated modular design system. This system allows us to quickly and economically develop and customize application specific products for each customer.





Technical Information	
Electrical Features	4 – 6
Control / Regulation	7 – 10
Models and Applications for High Pressure Screw Pumps	11 – 13
Accessories	
Pressure relief valves	46 – 48
Pressure gauge, suction protection	49
G4 version	49
SAE flange	49
Pump system, fully assembled	50 – 52
Questionnaire	53



High Pressure Pumps	Screw spindles	50 Hz	
High Pressure Pumps BFS1 FFS1, 50 Hz	Screw spindles High pressure 2.6 ... 20.1 l/min 10 ... 150 bar		14 – 15
High Pressure Pumps BFS2 FFS2, 50 Hz	Screw spindles High pressure 7 ... 47.4 l/min 10 ... 150 bar		16 – 19
High Pressure Pumps TFS3 FFS3, 50 Hz	Screw spindles High pressure 16.2 ... 98.5 l/min 10 ... 150 bar		20 – 21
High Pressure Pumps TFS4 FFS4, 50 Hz	Screw spindles High pressure 32 ... 194 l/min 10 ... 120 bar		22 – 23
High Pressure Pumps TFS5 FFS5, 50 Hz	Screw spindles High pressure 80 ... 412 l/min 10 ... 120 bar		24 – 27
High Pressure Pumps TFS6 FFS6, 50 Hz	Screw spindles High pressure 165 ... 725 l/min 10 ... 80 bar		28 – 29



High Pressure Pumps	Screw spindles	60 Hz	
High Pressure Pumps BFS1 FFS1, 60 Hz	Screw spindles High pressure 3.2 ... 24.4 l/min 10 ... 150 bar		30 – 31
High Pressure Pumps BFS2 FFS2, 60 Hz	Screw spindles High pressure 10.2 ... 57.6 l/min 10 ... 150 bar		32 – 35
High Pressure Pumps TFS3 FFS3, 60 Hz	Screw spindles High pressure 22.8 ... 119.5 l/min 10 ... 150 bar		36 – 37
High Pressure Pumps TFS4 FFS4, 60 Hz	Screw spindles High pressure 45 ... 235 l/min 10 ... 120 bar		38 – 39
High Pressure Pumps TFS5 FFS5, 60 Hz	Screw spindles High pressure 105 ... 500 l/min 10 ... 120 bar		40 – 43
High Pressure Pumps TFS6 FFS6, 60 Hz	Screw spindles High pressure 213 ... 878 l/min 10 ... 80 bar		44 – 45



Electrical Features

Motors acc. to EN 60034

Protective system	IP55
Insulation class	F
Number of poles	2
Efficiencies	EN 60034-30, IE2 0.75 < 7.5 kW; IE3 ≥ 7.5 kW

	50 Hz		60 Hz	
	220 V – 240 V Δ 380 V – 420 V Υ	380 V – 420 V Δ	265 V Δ 460 V Υ	460 V Δ
up to 5.5 kW	Standard	●	●	●
7.5 kW – 10 kW	●	Standard	●	●
as of 11 kW	–	Standard	–	●

The voltage tolerance is $\pm 5\%$ in keeping with DIN EN 60034-1.

Special voltages are available upon request:

	200 V	380 V	400 V	415 V	440 V	480 V	500 V	575 V	230 V $\Upsilon\Upsilon$ 460 V Υ
50 Hz	●	●	●	●	–	–	●	–	–
60 Hz	●	●	●	–	●	●	–	●	●

- available
- not available

Other voltages upon request.

For specialized demands, versions for use with a standardized voltage 50 and 60 Hz (Transformer usage) are possible after consultation with the company, e. g. 3 x 400 V, $\pm 5\%$, 50 – 60 Hz.

Comparison of motor efficiency classes worldwide

Efficiency Class	Europe	North America, Australia, New Zealand	China
Super premium efficiency	IE4	–	Grade 1
Premium efficiency	IE3	NEMA Premium	Grade 2
High efficiency	IE2	EPAct	Grade 3
Standard efficiency	IE1	–	–
Below standard efficiency	–	–	–

IE = International Efficiency

Motors of 7.5 kW

Motor design permits Υ/Δ -starting.

Screw-spindle pumps for Υ/Δ -starting must be started without pressure.

Switching-on frequency

Motors less than 3 kW ► maximum 200 times per hour.

Motors from 3 kW to 4 kW ► maximum 40 times per hour.

Motors from 5 kW to 11 kW ► maximum 20 times per hour.

Motors 13 kW and higher ► maximum 15 times per hour.

Alternative starting frequency is possible upon request.

Non-European Regulations

Brinkmann Motors up to 13 kW and up to max. 600 V are available as special designs with cUL-certification.

Approval testing is carried out by the Underwriters Laboratories Inc. according to the UL 1004 Electric Motors Standard. The motor's rating plate bears the identification:



„Recognized Component Mark for Canada and the United States“.

Motors larger than 13 kW are available upon request with approval testing.

Brinkmann motors ranging from 2.3 kW to 5.5 kW are available with the China Energy Label, GB18613-2012, Grade 3 and motors ranging from 7.5 kW to 13 kW are available with Grade 2 on request.

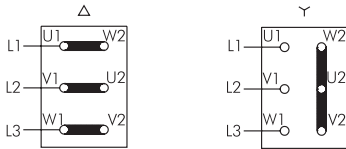
Additional country-specific approvals upon request.

Electrical Features

Circuits

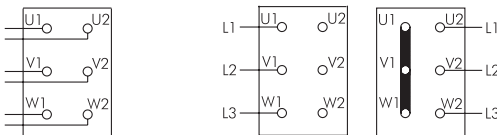
Standard voltage changing Υ / Δ
e. g. 220 – 240 V / 380 – 420 V, 50 Hz

Δ (Delta Connection) Υ (Star Connection)



Optional

Pole-changing motor 4/2 poles $\Upsilon / \Upsilon\Upsilon$
for 50 % reduced revolutions to choice



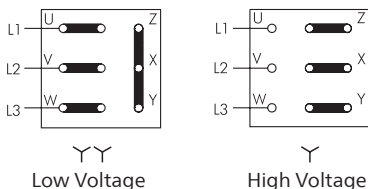
Dahlander circ.

(1500 RPM) (3000 RPM)

$\Upsilon / \Upsilon\Upsilon$
with pole-switch

4-poles Υ 2-poles $\Upsilon\Upsilon$
without pole-switch

Voltage changing 1 : 2 $\Upsilon\Upsilon / \Upsilon$
e. g. 230 V / 460 V, 60 Hz



Low Voltage

High Voltage

Installation

Brinkmann Screw Pump with connector

DESINA includes a complete concept for standardization and decentralization of the electronic and fluid technical installation of machine tool OEMs, the automotive industry and its suppliers.

The specifications for the required components were defined in cooperation between the machine construction, automotive and supplier industry.

DESINA considers proven solutions such as open bus systems, industrial standards for connectors, etc.

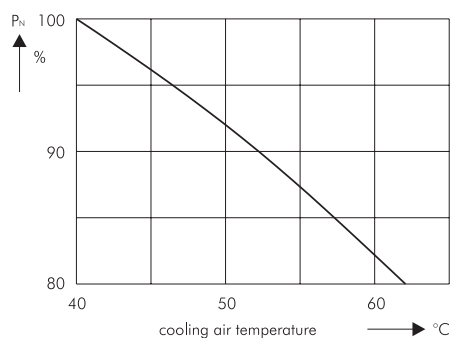
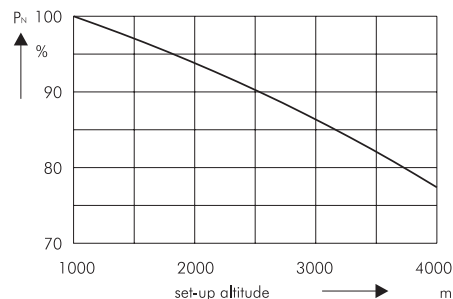
By standardizing components, interfaces and connection elements it is possible to realize highly varying field bus systems on a common physical basis.

Motors up to 5.5 kW are available with HAN 10-pin connector; motors 7.5 kW to 13 kW are available with HAN modular plug connector.

Set-up altitude and coolant temperature

The specified power ratings (P_N) and operating values for the motors apply for operating mode S 1 according to EN 60034-1 (continuous operation) at a frequency of 50 Hz, rated voltage, a cooling air temperature (KT) of max. 40 °C and a set-up altitude of up to 1000 m above sea level. The motors can also be used at a cooling air temperature above 40 °C up to max. 60 °C or set-up altitude above 1000 m above sea level. In such cases the power rating must be reduced according to the diagrams, or an appropriately larger motor version or higher heat class has to be selected. However, a deviation from the specified data is necessary when the cooling air temperature is reduced according to table simultaneously at set-up altitudes higher than 1000 m above sea level.

Set-up altitude / m	Maximum cooling air temperature for heat class F / °C
0 up to 1000	40
1000 up to 2000	30
2000 up to 3000	19
3000 up to 4000	9



Current / Rated current

The current stated in the data sheets is used for the dimensioning of electrical components. The effective rated current at rated voltage may be lower.

Electrical Features



Technical motor data

Three-phase induction motor 2 pole, thermal protection class F, grade of protection IP 55

Brinkmann motors

	Power 50 Hz / 60 Hz kW	Current 2 pole 50 Hz A		Noise level max. dBA / 50 Hz	Current 2 pole 60 Hz A		Noise level max. dBA / 60 Hz
		Y 380 V – 420 V	Δ 380 V – 420 V		Y 460 V	Δ 460 V	
		IE2	B 1.3 / 1.5		3.0	–	
B 1.5 / 1.75	3.8		–	63	3.8	–	67
B 1.7 / 1.95	4.1		–	63	4.1	–	67
B 1.9 / 2.2	4.9		–	63	4.9	–	67
B 2.2 / 2.55	5.3		–	63	5.3	–	67
B 2.6 / 3.0	6.3		–	63	6.3	–	67
B 3.3 / 3.8	8.0		–	71	8.0	–	75
B 4.0 / 4.6	9.5		–	71	9.5	–	75
B 5.0 / 5.75	12.0		–	71	12.0	–	75
B 5.5 / 6.3	12.5		–	74	12.5	–	>75
IE3	B 7.5 / 8.6	–	14.2	74	–	14.2	>75
	B 9.0 / 10.3	–	16.9	74	–	16.9	>75
	B 11.0 / 12.6	–	21.5	>75	–	21.5	>75
	B 13.0 / 15.0	–	24.8	>75	–	24.8	>75

Standard motors

	Power 50 Hz / 60 Hz kW	Current 2 pole 50 Hz A	Noise level dBA / 50 Hz	Current 2 pole 60 Hz A	Noise level dBA / 60 Hz	Current 4 pole 50 Hz A	Noise level dBA / 50 Hz	Current 4 pole 60 Hz A	Noise level dBA / 60 Hz
		Y 400 V		Y 460 V		Y 400 V		Y 460 V	
		IE2	0.75 / 0.86	1.71	60	1.65	64	1.8	52
1.1 / 1.3*	2.25		60	2.15	64	2.5	56	2.4	60
1.5 / 1.75	3.2		66	3.1	70	3.3	56	3.3	60
2.2 / 2.55	4.5		66	4.4	70	4.6	56	4.5	60
3.0 / 3.45	6.1		67	5.8	71	6.2	56	6.0	60
4.0 / 4.6*	7.8		67	7.5	71	8.2	59	8.0	63
5.5 / 6.3	10.5		72	10.2	76	11.3	62	10.9	66
IE3		Δ 400 V		Δ 460 V		Δ 400 V		Δ 460 V	
	7.5 / 8.6	13.1	72	13.1	75	14.3	65	14.2	68
	11.0 / 12.6	20.0	75	19.5	>75	20.5	66	20.0	70
	15.0 / 17.3	27.0	75	27.0	>75	28.5	66	28.0	70
	18.5 / 21.3	32.0	75	32.0	>75	35.0	66	34.5	70
	22.0 / 25.3	38.5	75	38.9	>75	41.0	68	41.0	70
	30.0 / 33.5*	53.0	>75	52.0	>75	55.0	68	55.0	71
	37.0 / 41.5*	65.0	>75	63.0	>75	66.0	68	66.0	72
	45.0 / 51.0*	78.0	>75	77.0	>75	80.0	68	81.0	72
	55.0 / 62.0*	95.0	>75	92.0	>75	96.0	68	97.0	72
	75.0 / 86.0	128.0	>75	128.0	>75				
	90.0 / 101.0	152.0	>75	148.0	>75				
	110.0 / 123.0	183.0	>75	179.0	>75				

Noise level with +3 dBA tolerance for standard motors.

Special voltages and cycles are available upon request. Depending on actual motor rating and sizing deviations in pump and motor configurations are possible. Motors from various suppliers will be used, depending on availability.

* Different horsepower rating at 60 Hz, see data sheet for 4 pole operation.

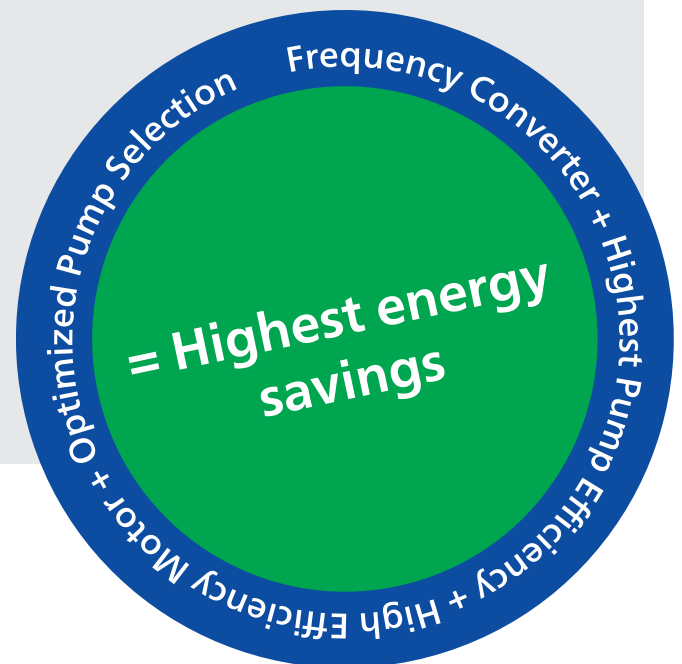
Control / Regulation

The energy consumption of a screw spindle pump is primarily influenced by the efficiency of the pump, the efficiency of the motor and the sizing of the pump with respect to the working point of the system.

Within the scope of our seminars we offer our support for:

- pump selections
- supply you with detailed information on the use of variable frequency drives
- show potential energy savings through pump controls
- support you locally in retrofitting existing applications and systems

For detailed information please do not hesitate to contact us.



Regulation

Regulation is an operation with which a physical value such as pressure is continuously sensed and compared with a set value. In the event of deviation the regulation device (here a PI controller) provides for the desired adaptation.

With regulation a check is made whether a desired state is achieved or not. This allows for a process to reach a predetermined operating pressure while adjusting the flow of the pump to the required flow of the consumer.

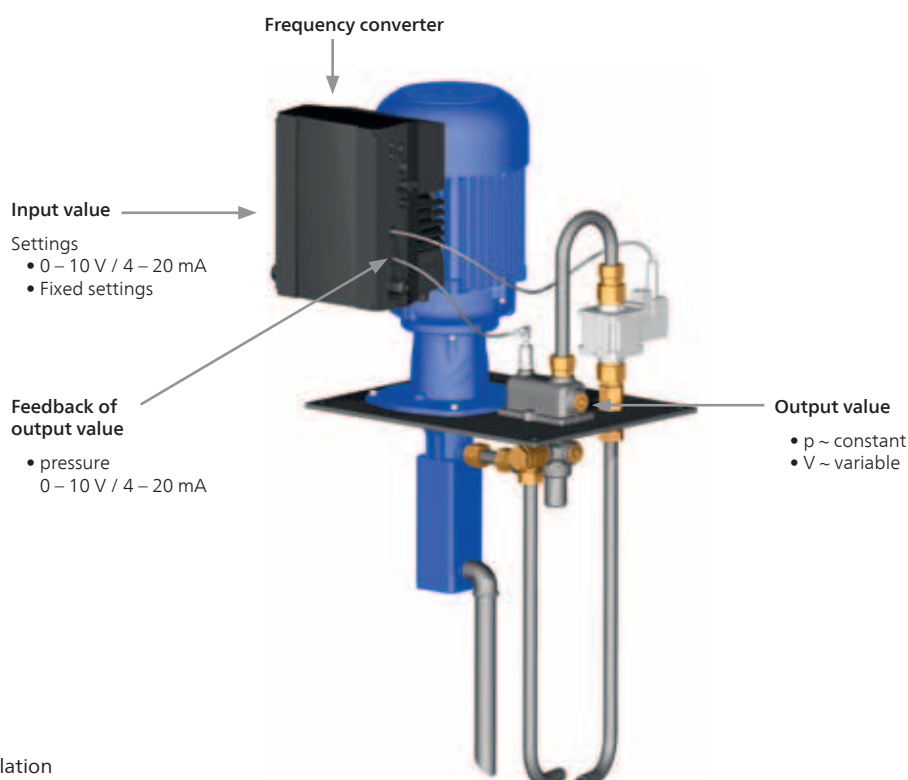


Fig. 1: Scheme of regulation

Variable Speed Control of High Pressure Pumps

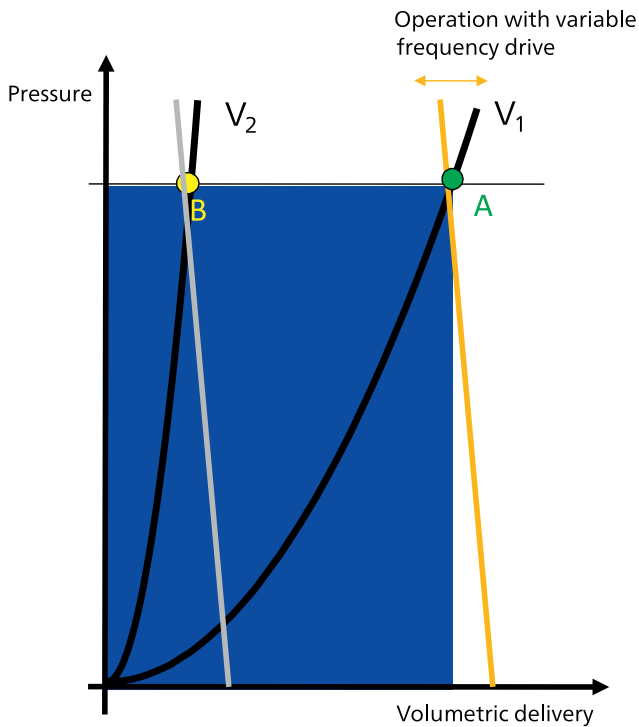


Fig. 2: Potential energy savings of a screw pump with variable frequency drive and two consumers.

Working point	Pressure relief valve	Variable frequency drive	Note
A	closed	no	Design point
B	open	no	Energy loss through the pressure relief valve
B	closed	yes	Energy savings up to 80 % (e.g. pressure regulation)

Pump curve array of a screw pump that is controlled with a VFD

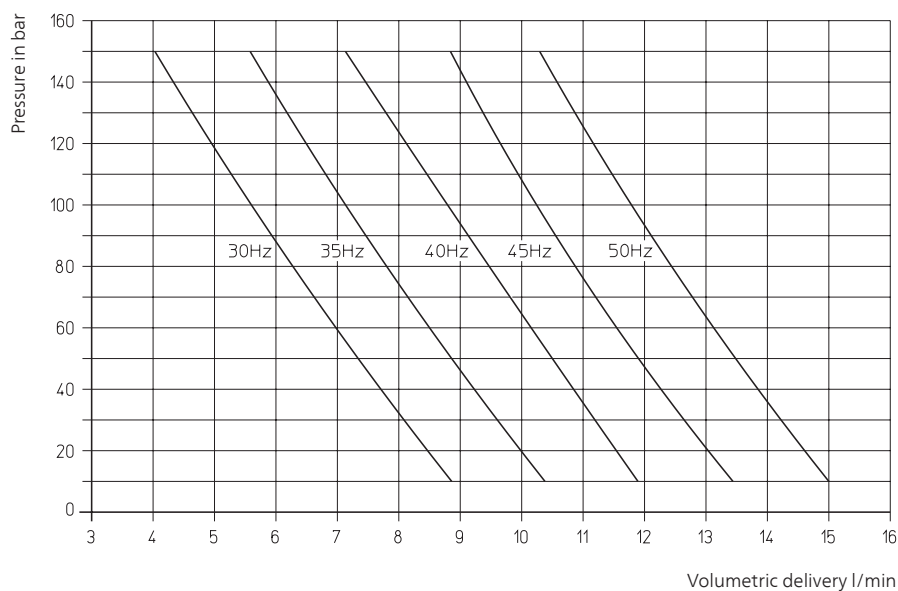
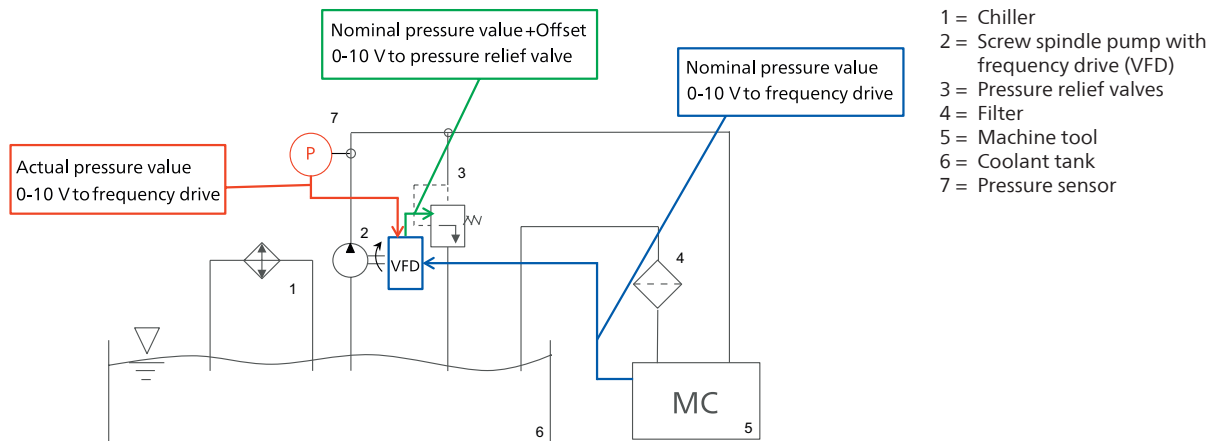


Fig. 3: Example of a BFS130/150 in oil 20 mm²/s

Brinkmann Pumps Offset Regulation for High Pressure Pumps

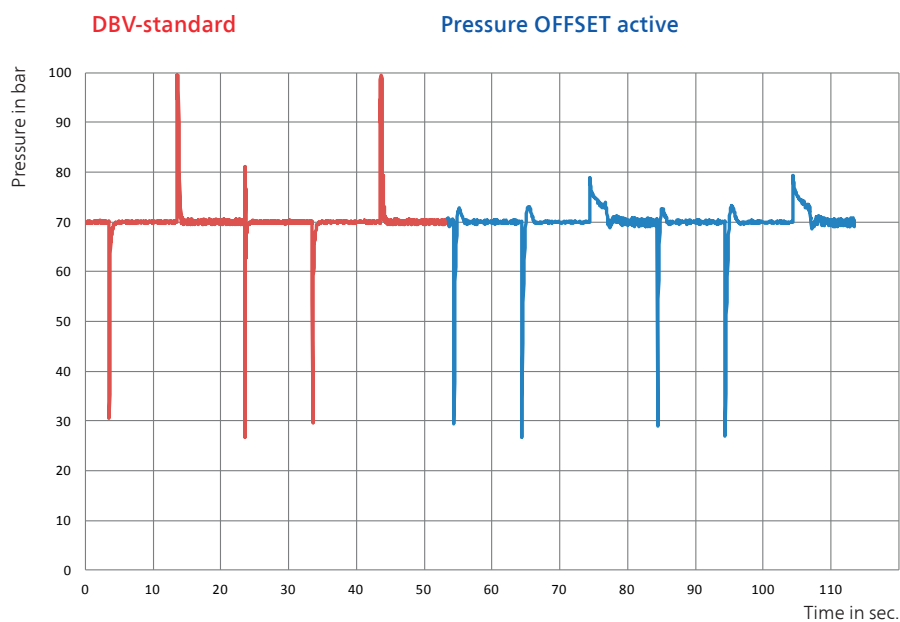
The target pressure is calculated by the VFD based on the working point and is not supplied by the machine tool. The intelligent control of the valves allows for minimizing potential pressure spikes.

Registered German utility model!



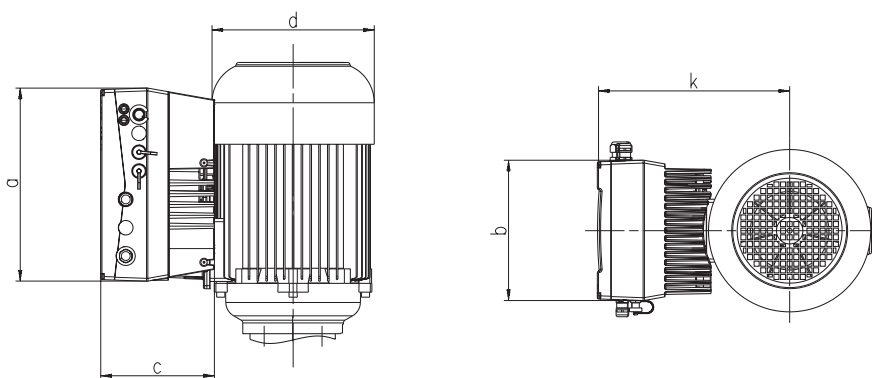
- 1 = Chiller
- 2 = Screw spindle pump with frequency drive (VFD)
- 3 = Pressure relief valves
- 4 = Filter
- 5 = Machine tool
- 6 = Coolant tank
- 7 = Pressure sensor

Minimizing of pressure peaks during tool change



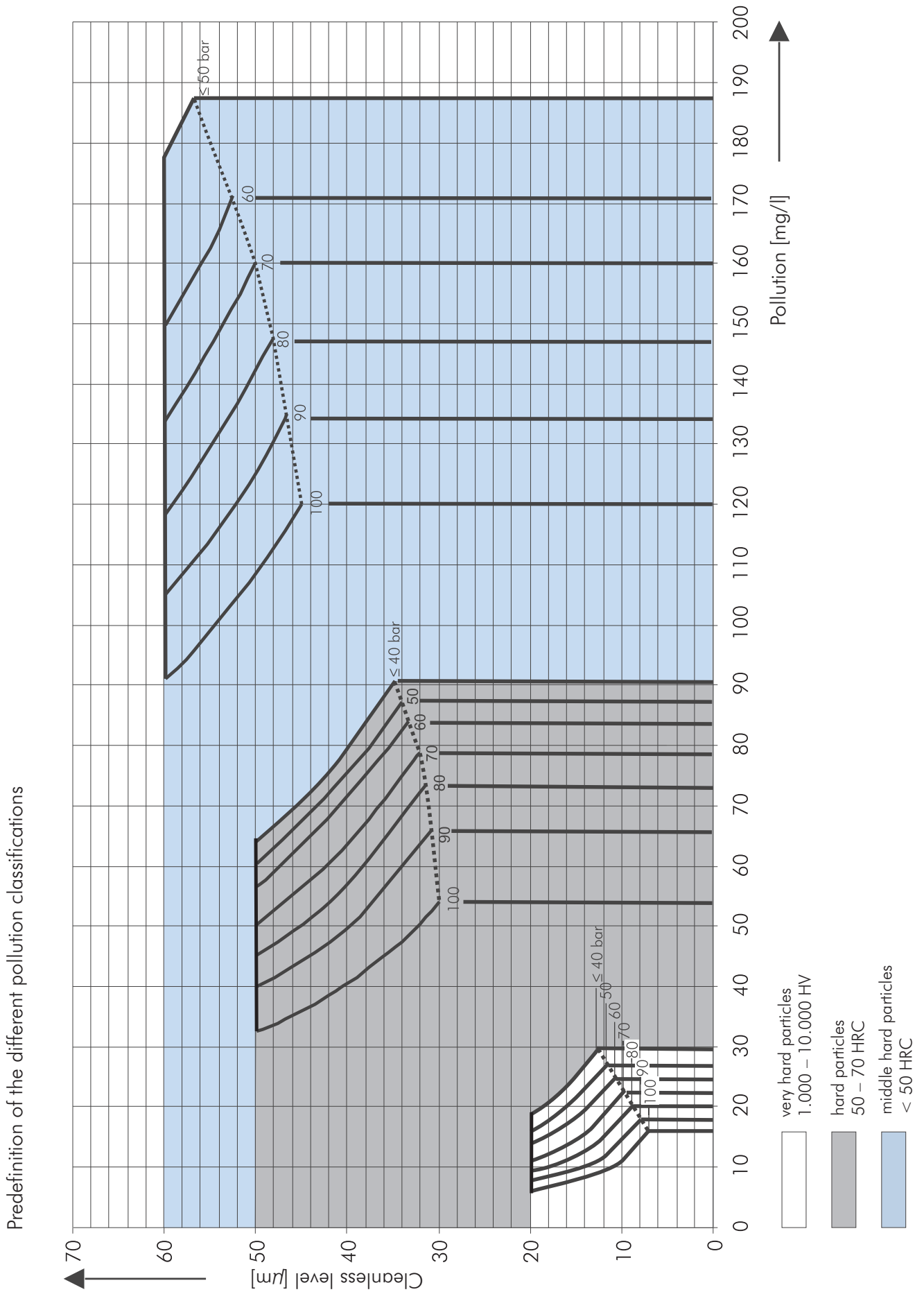
TECHNICAL DATA Frequency converter FKO (1.5 – 22 kW)				
Function	Specification			
Rated voltage	3 AC 400 V -10 % ... 480 V +10 %			
Rated frequency	50/60 Hz			
Output ranges	... 1.5 kW	2.2 – 4 kW	5.5 – 7.5 kW	11 – 22 kW
Housing size	A	B	C	D
Protective system	IP 65			IP 55
EMV approvals acc. to EN61800-3US	C2			
Temperature range	-10 °C ... +50 °C			
Overload capability	1.5 times rated output current			
Protective functions	undervoltage, overvoltage, I ² t-restriction, short circuit, motor temperature, converter temperature, anti-tilt protection			
Output frequency range	according to layout at factory			
Digital inputs	4			
Fixed frequencies	7			
Digital outputs	2			
Analog inputs	2 analog inputs (0/2 – 10 V, 0/4 – 20 mA)			
Analog outputs	0 – 10 V (-I _{max} = 10 mA) or 0 – 20 mA (burden R = 500 Ω)			
Process control	PID			
Relay outputs	2 x NO contacts 250 V AC 2 A			
USB interface	USB on plug M12 (RS485/RS232)			
Manual control unit (optional)	MMI with cable			
Bus modules (optional)	Profibus DP, CANopen, EtherCAT			
UL approval	yes			

Dimensions



Motor power kW	housing size	a mm	b mm	c mm	d mm	k mm
1.1 – 1.7	A	233	153	120	176	221
1.9 – 4.0	B	270	189	133	218	241
5.0 – 9.0	C	307	233	181	258	306
11.0 – 22.0	D	414	294	233	314	400

Models and Applications for High Pressure Screw Pumps



Models and Applications for High Pressure Screw Pumps with silicon carbide spindle housings

Screw spindle pumps with their silicon carbide spindle housing and highly wear resistant spindles are capable of achieving extremely high pressures. Brinkmann high pressure screw pumps are designed for pumping filtered and lubricating fluids such as coolant oils and watersoluble coolants. High pressure screw pumps are NOT designed for dry-running.

Applications

Types of fluid
oils
cooling/ cutting oils
coolants

Kinematic viscosity
1...45 mm²/s (45 cSt)
over 45 mm²/s on request

Pumping temperature
max. 60 °C *
* over 60 °C on request

Recommended filtration levels
General Machining (Turning, milling, drilling) < 50 µm
Grinding and machining of aluminum (CBN etc.) < 20 µm

For additional information please refer to page 11.

Materials of construction

Pressure and Suction Housing Cast iron
Spindle Housing Silicon Carbide one-piece, highly wear resistant and precision machined.

Screw spindles Hardened tool steel, specially treated alloy; highly wear resistant and precision ground.

Seal Viton

Version	Model Index	Immersion Style						Inline Style for inline installation – horizontal or vertical with mechanical seal; positive suction pressure of up to 7 bar					
		BFS1	BFS2	TFS3	TFS4	TFS5	TFS6	FFS1	FFS2	FFS3	FFS4	FFS5	FFS6
Highly wear resistant SIC-bushing around labyrinth seal and coated driving male spindle	-KBT5	○	○	○	●	●	●	○	○	○	●	●	●
Specially coated outer female spindles	-N	○	○	○	○	○	●	○	○	○	○	○	●
Axial thrust compensation through radial slide bushing inside the suction cover	-A	○	○	●	●	●	●	○	○	●	●	●	●
Inline installation – vertical Mechanical seal and internal leakage return; positive suction pressure of up to 7 bar	-G	○	○	○	○	○	●	●	●	●	●	●	●
Positive suction pressure of 7 – 20 bar (With leakage port, please see page 49)	-G4	○	○	○	○			○	○	○	○		
Viscosity > 45 mm ² /s		○	○	○	○	○	○	○	○	○	○	○	○
4-pole motor	-4	○	○	○	○	○	○	○	○	○	○	○	○

- Available upon request
- Standard

Order code for:

Inline style for vertical installation (without footmount bracket):

BFS1...2 / Pressure-G
TFS3...6 / Pressure-G
e.g. TFS376/40-G

Order code for:

Inline style for horizontal or vertical installation (with footmount bracket):

FFS1...6 / Pressure
e.g. FFS260/40

With an operating pressures of 120 bar and higher the pumps are supplied in special -KBT5NA execution.

The power consumption of the pumps increases with higher discharge pressures. Depending on the actual installation conditions it is possible that pressures can occur which exceed the target design pressure. The motor must be sized in a way that the maximum pressure occurring in the application can be satisfied without overloading the motor. The listed pump / motor combination are for standard systems (pump + pressure relief valve).

In individual cases custom pump / motor combinations are feasible upon request.

Models and Applications for High Pressure Screw Pumps with cast iron spindle housing

Screw spindle pumps with cast iron spindle housings and highly wear resistant spindles can generate pressures of up to 60 bar.

Brinkmann high pressure screw pumps are designed for pumping filtered and lubricating fluids such as coolant oils and watersoluble coolants.

High pressure screw pumps are NOT designed for dry-running.

Applications

Types of fluid
oils
cooling/ cutting oils
coolants

Kinematic viscosity
1...45 mm²/s (45 cSt)
over 45 mm²/s on request

Pumping temperature
max. 60 °C *
* over 60 °C on request

Recommended filtration levels
General Machining (Turning, milling, drilling) < 50 µm

Machining of materials of limited hardness (not for grinding applications).
For additional information please refer to page 11.

Materials of construction

Pressure and Suction Housing	Cast iron
Spindle Housing	Cast iron
Screw spindles	Hardened tool steel, specially treated alloy; highly wear resistant and precision ground.
Seal	Viton

	Model Index	Immersion Style	Inline Style for inline installation – horizontal or vertical with mechanical seal; positive suction pressure of up to 7 bar
Version		BFG2	FFG2
Inline installation – vertical Mechanical seal and internal leakage return; positive suction pressure of up to 7 bar	-G	○	●
Viscosity > 45 mm ² /s		○	○
4-pole motor	-4	○	○

- Available upon request
- Standard

Dimensional data for screw spindle pumps with cast iron spindle housings are identical to those with silicon carbide housings. The flow rates of screw spindle pumps equipped with cast iron housings are up to 10% below those flow rates of the screw spindle with silicon carbide housings which are shown on the following pages.

The maximum operating pressure is 60 bar.

BFS1, FFS1

50 Hz

Screw spindles

Pressure max.	2-pole motor rotation speed 2900 RPM							4-pole motor rotation speed 1450 RPM					
	Flow at viscosity		Power consumption at viscosity		Motor		Weight	Flow at viscosity		Power consumption at viscosity		Motor	Weight
	1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s	immersion version	foot mounted version		1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s		
Type / bar	l/min	l/min	kW	kW	kW	kW	kg	l/min	l/min	kW	kW	kW	kg
BFS130/	Q_{Th}¹⁾ 15.6		-	-	-	-	-	Q_{Th}¹⁾ 7.8		-	-	-	-
10	14	15	0.5	0.5	B 1.3	0.75	39	6.2	7.2	0.2	0.2	0.75	29
20	13.1	14.6	0.8	0.8	B 1.3	1.1	39	5.3	6.8	0.4	0.4	0.75	29
30	12.1	14.2	1.0	1.0	B 1.3	1.5	39	4.3	6.4	0.5	0.5	0.75	29
40	11.2	13.9	1.3	1.3	B 1.5	1.5	39	3.4	6.1	0.6	0.7	1.1	31
50	10.3	13.5	1.5	1.6	B 1.7	2.2	39	-	5.7	-	0.8	1.1	31
60	9.5	13.2	1.8	1.9	B 1.9	2.2	43	-	5.4	-	0.9	1.1	31
70	8.7	12.8	2.1	2.1	B 2.2	3.0	43	-	5	-	1.1	1.5	34
80	7.9	12.5	2.3	2.4	B 2.6	3.0	44	-	4.7	-	1.2	1.5	34
90	7.1	12.1	2.6	2.7	B 3.3	3.0	54	-	4.3	-	1.3	1.5	34
100	6.4	11.8	2.8	2.9	B 3.3	4.0	54	-	4	-	1.5	2.2	41
110	5.7	11.5	3.1	3.2	B 3.3	4.0	54	-	-	-	-	-	-
120	5	11.2	3.4	3.5	B 4.0	4.0	57	-	-	-	-	-	-
130	-	10.9	-	3.8	B 4.0	4.0	57	-	-	-	-	-	-
140	-	10.6	-	4.0	B 4.0	5.5	57	-	-	-	-	-	-
150	-	10.3	-	4.3	B 5.0	5.5	73	-	-	-	-	-	-
BFS140/	Q_{Th}¹⁾ 20.9		-	-	-	-	-	Q_{Th}¹⁾ 10.5		-	-	-	-
10	18.8	20.1	0.6	0.7	B 1.3	1.1	39	8.4	9.6	0.3	0.3	0.75	29
20	17.5	19.5	0.9	1.0	B 1.3	1.5	39	7.1	9.1	0.4	0.5	0.75	29
30	16.3	19	1.3	1.4	B 1.5	1.5	39	5.8	8.6	0.6	0.7	1.1	31
40	15.1	18.5	1.6	1.7	B 1.9	2.2	43	4.7	8.1	0.8	0.9	1.1	31
50	14	18	2.0	2.1	B 2.2	3.0	43	3.6	7.6	1.0	1.1	1.5	34
60	13	17.6	2.3	2.5	B 2.6	3.0	44	2.6	7.1	1.1	1.3	1.5	34
70	12	17.1	2.7	2.8	B 3.3	3.0	54	-	6.6	-	1.4	2.2	41
80	11.1	16.6	3.0	3.2	B 3.3	4.0	54	-	6.2	-	1.6	2.2	41
90	10.3	16.2	3.4	3.5	B 4.0	4.0	57	-	5.7	-	1.8	2.2	41
100	9.5	15.7	3.7	3.9	B 4.0	5.5	57	-	5.3	-	2.0	2.2	41
110	8.3	15.3	4.1	4.3	B 5.0	5.5	73	-	-	-	-	-	-
120	7.3	14.8	4.4	4.6	B 5.0	5.5	73	-	-	-	-	-	-
130	6.3	14.4	4.8	5.0	B 5.0	5.5	73	-	-	-	-	-	-
140	-	14	-	5.3	B 5.5	5.5	73	-	-	-	-	-	-
150	-	13.6	-	5.7	B 7.5	7.5	94	-	-	-	-	-	-

¹⁾ Q_{Th}: Theoretical flow rate

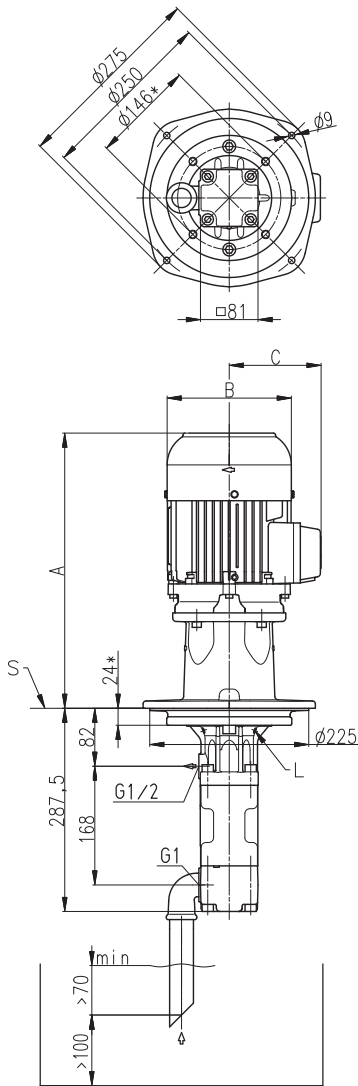
Higher pressures (up to 200 bar) upon request.

Viscosity > 20 mm²/s more power consumption.

Characteristics and dimensions

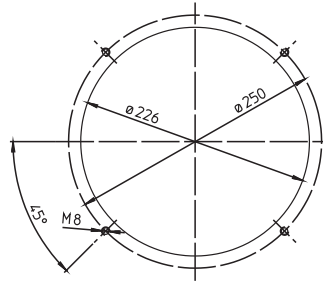
BFS1, FFS1

50 Hz

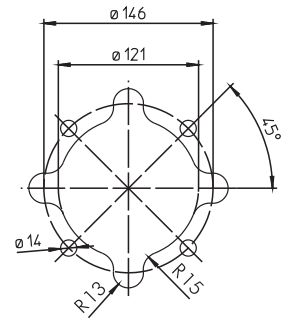


Mounting hole patterns

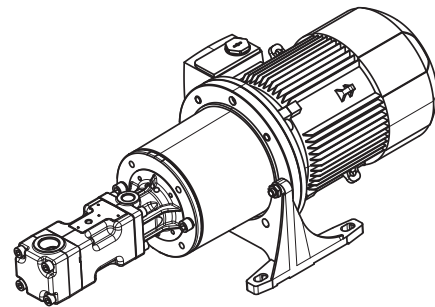
BFS1 / BFS2



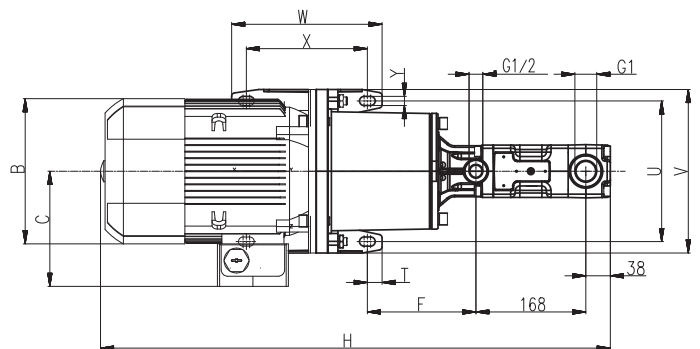
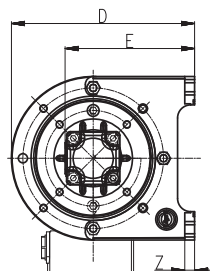
TFS1 / TFS2



All corners must be deburred!
According to ISO 2768-m



*) Dimensions for 4-pole standard motor upon request
L = Leakage hole
S = Mounting plate, please refer to the cut-out of mounting hole



Power 2-poles kW	A mm	B mm	C mm
B 1.3 / 1.5 / 1.7	389	176	130
B 1.9 / 2.2	414	176	130
B 2.6	424	176	130
B 3.3 / 4.0	478	218	150
B 5.0 / 5.5	514	258	190
B 7.5	622	258	193

Power 2-poles kW	Power 4-poles kW	B mm	C mm	D mm	E mm	F mm	H mm	T mm	U mm	V mm	W mm	X mm	Y mm	Z mm
0.75 / 1.1	0.75	159	121	212	155	138	676	15	180	210	90	60	11	12
1.5	1.1 / 1.5	178	126	212	155	138	721	15	180	210	90	60	11	12
2.2	-	180	126	212	155	138	721	15	180	210	90	60	11	12
-	2.2	198	166	280	198	166	786	22.5	215	250	260	185	14	15
3.0	-	198	166	280	198	166	786	22.5	215	250	230	185	14	15
4.0	-	222	177	280	198	166	780	22.5	215	250	230	185	14	15
5.5	-	262	202	335	228	171	857	22.5	265	300	270	225	14	18
7.5	-	262	202	335	228	171	915	22.5	265	300	270	225	14	18

High Pressure Pumps

BFS2, FFS2

50 Hz

Screw spindles

Pressure max.	2-pole motor rotation speed 2900 RPM							4-pole motor rotation speed 1450 RPM						
	Flow at viscosity		Power consumption at viscosity		Motor		Weight	Flow at viscosity		Power consumption at viscosity		Motor	Weight	
	1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s	immersion version	foot mounted version		1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s			
Type / bar	l/min	l/min	kW	kW	kW	kW	kg	l/min	l/min	kW	kW	kW	kg	
BFS232/	Q_{Th}¹⁾ 26.1		–	–	–	–	–	Q_{Th}¹⁾ 13.1	–	–	–	–	–	
10	24.3	25.4	0.7	0.8	B 1.3	1.1	40	11.2	12.4	0.3	0.5	0.75	29	
20	23.6	25.2	1.1	1.3	B 1.5	1.5	40	10.6	12.1	0.6	0.7	1.1	32	
30	23	24.9	1.5	1.7	B 1.9	2.2	44	10	11.9	0.8	0.9	1.1	32	
40	22.4	24.6	2.0	2.2	B 2.6	3.0	44	9.4	11.6	1.0	1.2	1.5	34	
50	21.8	24.4	2.4	2.7	B 3.3	3.0	55	8.8	11.3	1.2	1.4	2.2	41	
60	21.2	24.1	2.8	3.1	B 3.3	4.0	55	8.2	11.1	1.4	1.6	2.2	41	
70	20.6	23.9	3.3	3.6	B 4.0	4.0	57	7.6	10.8	1.7	1.9	2.2	41	
80	20	23.6	3.7	4.0	B 4.0	5.5	57	7	10.6	1.9	2.1	3.0	46	
90	19.5	23.3	4.1	4.5	B 5.0	5.5	74	6.4	10.3	2.1	2.3	3.0	46	
100	18.9	23.1	4.6	4.9	B 5.0	5.5	74	5.8	10	2.3	2.5	3.0	46	
110	18.4	22.9	5.0	5.4	B 5.5	7.5	74	–	–	–	–	–	–	
120	17.8	22.6	5.5	5.8	B 7.5	7.5	95	–	–	–	–	–	–	
130	17.3	22.4	5.9	6.3	B 7.5	7.5	95	–	–	–	–	–	–	
140	16.7	22.1	6.3	6.7	B 7.5	7.5	95	–	–	–	–	–	–	
150	16.2	21.9	6.8	7.2	B 7.5	7.5	95	–	–	–	–	–	–	
BFS238/	Q_{Th}¹⁾ 31		–	–	–	–	–	Q_{Th}¹⁾ 15.5	–	–	–	–	–	
10	28.8	30.1	0.7	0.7	B 1.3	1.1	40	13.3	14.6	0.4	0.4	0.75	29	
20	28.1	29.8	1.3	1.3	B 1.5	1.5	40	12.6	14.3	0.6	0.6	1.1	32	
30	27.4	29.5	1.8	1.8	B 1.9	2.2	44	11.9	14	0.9	0.9	1.1	32	
40	26.7	29.2	2.3	2.4	B 2.6	3.0	44	11.2	13.7	1.2	1.2	1.5	34	
50	26	28.9	2.8	2.9	B 3.3	4.0	55	10.5	13.4	1.4	1.5	2.2	41	
60	25.3	28.7	3.3	3.5	B 4.0	4.0	57	9.8	13.2	1.7	1.8	2.2	41	
70	24.6	28.4	3.8	4.0	B 4.0	5.5	57	9.1	12.9	1.9	2.0	2.2	41	
80	23.9	28.1	4.4	4.5	B 5.0	5.5	74	8.4	12.6	2.2	2.3	3.0	46	
90	23.2	27.8	4.9	5.1	B 5.5	5.5	74	7.7	12.3	2.5	2.6	3.0	46	
100	22.5	27.6	5.4	5.6	B 7.5	7.5	95	7	12.1	2.7	2.9	4.0	53	
110	21.9	27.3	5.9	6.2	B 7.5	7.5	95	–	–	–	–	–	–	
120	21.2	27	6.4	6.8	B 7.5	7.5	95	–	–	–	–	–	–	
130	20.6	26.7	6.9	7.3	B 9.0	11.0	101	–	–	–	–	–	–	
140	19.9	26.5	7.5	7.9	B 9.0	11.0	101	–	–	–	–	–	–	
150	19.3	26.2	8.0	8.4	B 9.0	11.0	101	–	–	–	–	–	–	

¹⁾ Q_{Th}: Theoretical flow rate

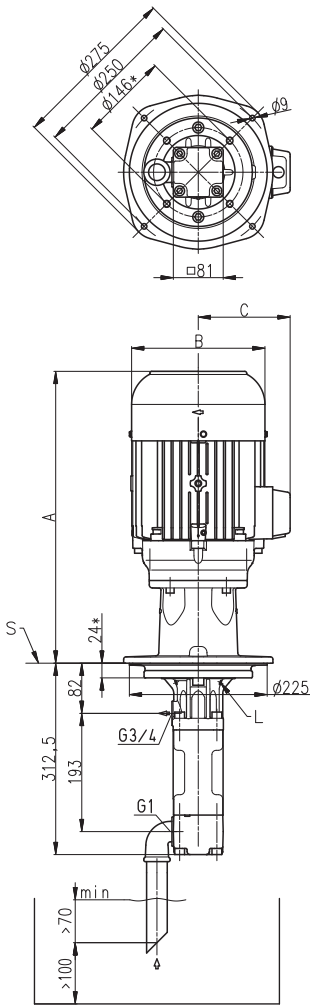
Higher pressures (up to 200 bar) upon request.

Viscosity > 20 mm²/s more power consumption.

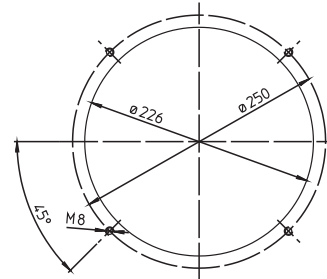
Characteristics and dimensions

BFS2, FFS2

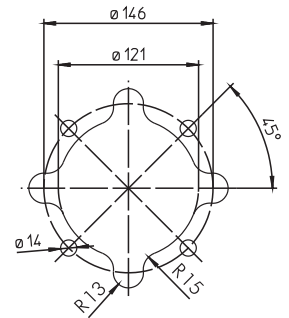
50 Hz



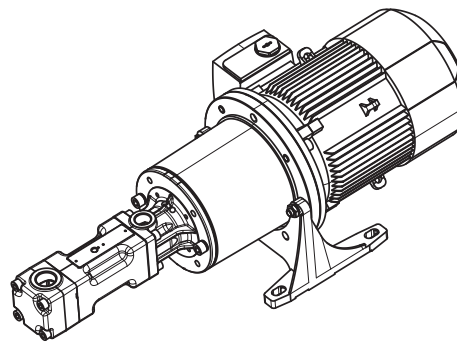
Mouting hole patterns
BFS1 / BFS2



TFS1 / TFS2

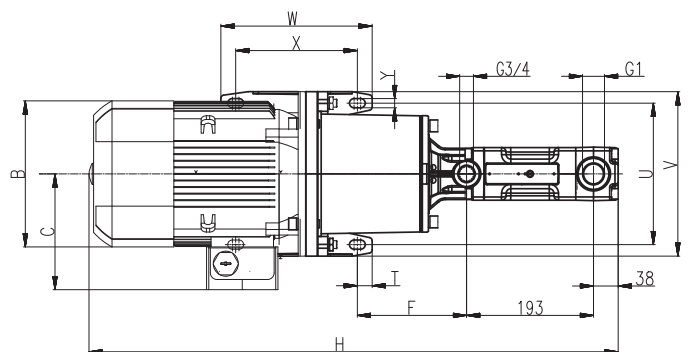
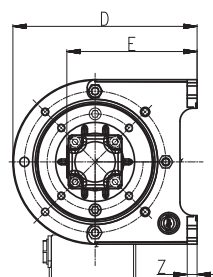


All corners must be deburred!
According to ISO 2768-m



*) Dimensions for 4-pole standard motor upon request
L = Leakage hole
S = Mounting plate, please refer to the cut-out of mounting hole

Power 2-poles kW	A mm	B mm	C mm
B 1.3 / 1.5	389	176	130
B 1.9	414	176	130
B 2.6	424	176	130
B 3.3 / 4.0	478	218	150
B 5.0 / 5.5	514	258	190
B 7.5 / 9.0	622	258	193



Power 2-poles kW	Power 4-poles kW	B mm	C mm	D mm	E mm	F mm	H mm	T mm	U mm	V mm	W mm	X mm	Y mm	Z mm
1.1	0.75	159	121	212	155	138	701	15	180	210	90	60	11	12
1.5	1.1 / 1.5	178	126	212	155	138	746	15	180	210	90	60	11	12
2.2	-	180	126	212	155	138	746	15	180	210	90	60	11	12
-	2.2 / 3.0	198	166	280	198	166	811	22.5	215	250	260	185	14	15
3.0	-	198	166	280	198	166	811	22.5	215	250	230	185	14	15
4.0	-	222	177	280	198	166	805	22.5	215	250	230	185	14	15
-	4.0	222	177	280	198	166	805	22.5	215	250	260	185	14	15
5.5	-	262	202	335	228	171	882	22.5	265	300	270	225	14	18
7.5	-	262	202	335	228	171	940	22.5	265	300	270	225	14	18
11.0	-	314	237	410	278	210	1061	20	300	350	305	265	18	18

High Pressure Pumps

BFS2, FFS2

50 Hz

Screw spindles

2-pole motor rotation speed 2900 RPM								4-pole motor rotation speed 1450 RPM					
Pressure max.	Flow at viscosity		Power consumption at viscosity		Motor		Weight	Flow at viscosity		Power consumption at viscosity		Motor	Weight
	1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s	immersion version	foot mounted version		1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s		
Type / bar	l/min	l/min	kW	kW	kW	kW	kg	l/min	l/min	kW	kW	kW	kg
BFS250/	Q_{Th}¹⁾ 40.8		–	–	–	–	–	Q_{Th}¹⁾ 20.4		–	–	–	–
10	37.9	39.6	0.9	0.9	B 1.3	1.1	40	17.5	19.2	0.5	0.5	0.75	29
20	37	39.2	1.6	1.6	B 1.7	2.2	40	16.6	18.8	0.8	0.8	1.1	32
30	36	38.9	2.3	2.3	B 2.6	3.0	44	15.6	18.5	1.2	1.2	1.5	34
40	35.1	38.5	3.0	3.1	B 3.3	4.0	44	14.7	18.1	1.5	1.6	2.2	41
50	34.3	38.1	3.6	3.8	B 4.0	4.0	57	13.9	17.7	1.8	1.9	2.2	41
60	33.5	37.7	4.3	4.5	B 5.0	5.5	74	13.1	17.3	2.2	2.3	3.0	46
70	32.7	37.4	5.0	5.2	B 5.5	5.5	74	12.3	17	2.5	2.6	3.0	46
80	31.9	37	5.7	5.9	B 7.5	7.5	95	11.5	16.6	2.9	3.0	4.0	53
90	31.2	36.6	6.4	6.6	B 7.5	7.5	95	10.7	16.2	3.2	3.3	4.0	53
100	30.5	36.2	7.0	7.4	B 9.0	11.0	101	9.9	15.8	3.5	3.7	4.0	53
110	29.2	35.9	7.7	8.1	B 9.0	11.0	101	–	–	–	–	–	–
120	27.9	35.5	8.4	8.8	B 11.0	11.0	120	–	–	–	–	–	–
130	26.6	35.1	9.1	9.5	B 11.0	11.0	120	–	–	–	–	–	–
140	25.4	34.7	9.8	10.2	B 11.0	11.0	120	–	–	–	–	–	–
150	24.1	34.3	10.4	11.0	B 13.0	15.0	120	–	–	–	–	–	–
BFS260/	Q_{Th}¹⁾ 48.9		–	–	–	–	–	Q_{Th}¹⁾ 24.5		–	–	–	–
10	45.5	47.4	1.0	1.1	B 1.5	1.5	40	21	23	0.5	0.6	0.75	29
20	44.3	46.9	1.9	2.0	B 2.2	3.0	44	19.9	22.4	0.9	1.0	1.5	34
30	43.2	46.3	2.7	2.9	B 3.3	4.0	44	18.7	21.8	1.4	1.4	2.2	41
40	42	45.7	3.5	3.8	B 4.0	5.5	57	17.6	21.2	1.8	1.9	2.2	41
50	40.9	45.1	4.3	4.6	B 5.0	5.5	74	16.4	20.7	2.2	2.3	3.0	46
60	39.7	44.5	5.1	5.5	B 7.5	7.5	95	15.3	20	2.6	2.8	3.0	46
70	38.5	43.9	5.9	6.4	B 7.5	7.5	95	14.1	19.4	3.0	3.2	4.0	53
80	37.4	43.3	6.8	7.3	B 9.0	11.0	101	12.9	18.8	3.4	3.7	4.0	53
90	36.2	42.6	7.6	8.1	B 9.0	11.0	101	11.8	18.2	3.8	4.1	5.5	63
100	35	42	8.5	9.0	B 11.0	11.0	120	10.6	17.6	4.3	4.5	5.5	63
110	33.4	41.4	9.3	9.9	B 11.0	11.0	120	–	–	–	–	–	–
120	31.8	40.7	10.0	10.8	B 11.0	11.0	120	–	–	–	–	–	–
130	30.1	39.5	10.9	11.7	B 13.0	15.0	120	–	–	–	–	–	–
140	28.5	38.2	11.7	12.5	B 13.0	15.0	120	–	–	–	–	–	–
150	26.9	37	12.5	13.4	–	15.0	110	–	–	–	–	–	–

¹⁾ Q_{Th}: Theoretical flow rate

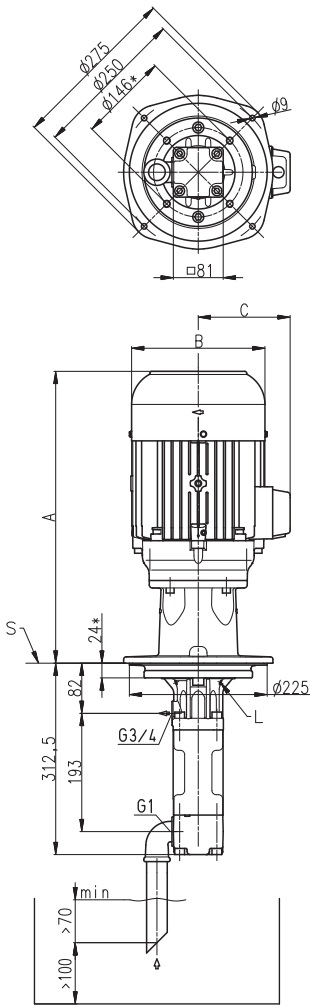
Higher pressures (up to 200 bar) upon request.

Viscosity > 20 mm²/s more power consumption.

Characteristics and dimensions

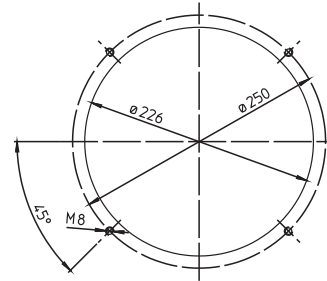
BFS2, FFS2

50 Hz

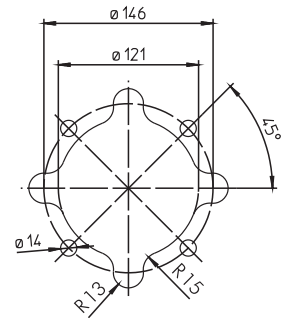


Mouting hole patterns

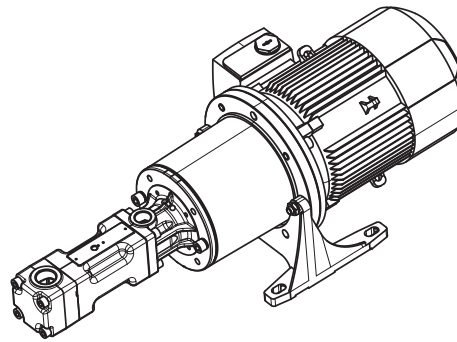
BFS1 / BFS2



TFS1 / TFS2

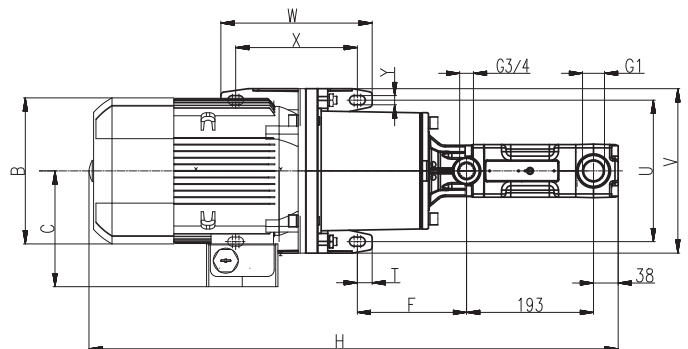
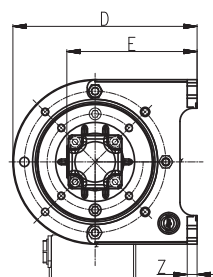


All corners must be deburred!
According to ISO 2768-m



*) Dimensions for 4-pole standard motor upon request
L = Leakage hole
S = Mounting plate, please refer to the cut-out of mounting hole

Power 2-poles kW	A mm	B mm	C mm
B 1.3 / 1.5 / 1.7	389	176	130
B 2.2	414	176	130
B 2.6	424	176	130
B 3.3 / 4.0	478	218	150
B 5.0 / 5.5	514	258	190
B 7.5 / 9.0	622	258	193
B 11.0 / 13.0	630	310	240



Power 2-poles kW	Power 4-poles kW	B mm	C mm	D mm	E mm	F mm	H mm	T mm	U mm	V mm	W mm	X mm	Y mm	Z mm
1.1	0.75	159	121	212	155	138	701	15	180	210	90	60	11	12
1.5	1.1 / 1.5	178	126	212	155	138	746	15	180	210	90	60	11	12
2.2	-	180	126	212	155	138	746	15	180	210	90	60	11	12
-	2.2 / 3.0	198	166	280	198	166	811	22.5	215	250	260	185	14	15
3.0	-	198	166	280	198	166	811	22.5	215	250	230	185	14	15
4.0	-	222	177	280	198	166	805	22.5	215	250	230	185	14	15
-	4.0	222	177	280	198	166	805	22.5	215	250	260	185	14	15
5.5	5.5	262	202	335	228	171	882	22.5	265	300	270	225	14	18
7.5	-	262	202	335	228	171	940	22.5	265	300	270	225	14	18
11.0 / 15.0	-	314	237	410	278	210	1061	20	300	350	305	265	18	18

High Pressure Pumps

TFS3, FFS3

50 Hz

Screw spindles

2-pole motor rotation speed 2900 RPM							4-pole motor rotation speed 1450 RPM					
Pressure max.	Flow at viscosity		Power consumption at viscosity		Motor	Weight	Flow at viscosity		Power consumption at viscosity		Motor	Weight
	1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s			1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s		
Type / bar	l/min	l/min	kW	kW	kW	kg	l/min	l/min	kW	kW	kW	kg
TFS348/	Q_{Th}¹⁾ 64.1		-	-	-	-	Q_{Th}¹⁾ 32.1		-	-	-	-
10	60	62.3	1.5	1.6	2.2	47	28	30.3	0.7	0.8	1.1	44
20	58.5	61.5	2.5	2.8	4.0	63	26.5	29.4	1.2	1.3	1.5	46
30	57.1	60.7	3.6	3.9	5.5	73	25	28.6	1.8	1.9	2.2	53
40	55.7	59.9	4.7	5.1	5.5	73	23.6	27.9	2.3	2.4	3.0	58
50	54.4	59.2	5.7	6.2	7.5	100	22.3	27.1	2.8	3.0	4.0	65
60	53.1	58.5	6.8	7.3	11.0	112	21.1	26.5	3.4	3.5	4.0	65
70	51.9	57.9	7.9	8.5	11.0	112	19.8	25.8	3.9	4.1	5.5	75
80	50.7	57.3	8.9	9.6	11.0	112	18.7	25.2	4.4	4.7	5.5	75
90	49.6	56.7	10.0	10.7	15.0	122	17.4	24.6	5.0	5.2	5.5	75
100	48.6	56.1	11.1	11.8	15.0	122	16.2	24.1	5.5	5.8	7.5	105
110	46.7	55.6	12.1	13.0	15.0	122	-	-	-	-	-	-
120	45	55.2	13.2	14.2	15.0	122	-	-	-	-	-	-
130	43.3	54.7	14.3	15.3	18.5	143	-	-	-	-	-	-
140	41.6	54.4	15.3	16.4	18.5	143	-	-	-	-	-	-
150	40	54	16.4	17.6	18.5	143	-	-	-	-	-	-
TFS364/	Q_{Th}¹⁾ 85.5		-	-	-	-	Q_{Th}¹⁾ 42.8		-	-	-	-
10	79.9	83	1.8	2.0	3.0	52	37.1	40.3	0.9	0.9	1.5	46
20	78.1	82	3.3	3.5	5.5	73	35.3	39.2	1.6	1.7	2.2	53
30	76.3	81	4.7	5.0	7.5	100	33.6	38.3	2.3	2.4	3.0	58
40	74.6	80.1	6.1	6.5	7.5	100	31.9	37.4	3.0	3.2	4.0	65
50	73	79.2	7.5	8.0	11.0	112	30.2	36.5	3.7	3.9	5.5	75
60	71.4	78.4	9.0	9.5	11.0	112	28.7	35.7	4.4	4.7	5.5	75
70	69.9	77.6	10.4	10.9	15.0	122	27.1	34.9	5.1	5.4	7.5	105
80	68.4	76.9	11.8	12.4	15.0	122	25.6	34.1	5.9	6.1	7.5	105
90	66.9	76.1	13.2	13.9	15.0	122	24	33.4	6.6	6.9	7.5	105
100	65.5	75.5	14.7	15.4	18.5	143	22.4	32.7	7.3	7.6	11.0	124
110	63.2	74.8	16.1	16.9	18.5	143	-	-	-	-	-	-
120	61	74.3	17.5	18.4	22.0	170	-	-	-	-	-	-
130	58.8	72.7	18.9	19.9	22.0	170	-	-	-	-	-	-
140	56.6	71.3	20.4	21.4	22.0	170	-	-	-	-	-	-
150	54.5	69.8	21.8	22.8	30.0	244	-	-	-	-	-	-
TFS376/	Q_{Th}¹⁾ 101.5		-	-	-	-	Q_{Th}¹⁾ 50.8		-	-	-	-
10	95.2	98.5	2.1	2.4	4.0	63	44.5	47.8	1.0	1.2	2.2	53
20	93.1	97.3	3.8	4.2	5.5	73	42.3	46.6	1.8	2.1	3.0	58
30	91	96.2	5.5	6.0	7.5	100	40.3	45.4	2.7	3.0	4.0	65
40	89	95.1	7.2	7.9	11.0	112	38.2	44.4	3.5	3.9	5.5	75
50	87	94.1	8.9	9.7	11.0	112	36.2	43.3	4.4	4.8	5.5	75
60	85	93.1	10.6	11.5	15.0	122	34.3	42.4	5.2	5.7	7.5	105
70	83.1	92.2	12.2	13.3	15.0	122	32.3	41.4	6.1	6.6	7.5	105
80	81.2	91.3	13.9	15.1	18.5	143	30.4	40.5	6.9	7.4	11.0	124
90	79.3	90.4	15.6	16.9	18.5	143	28.4	39.7	7.8	8.4	11.0	124
100	77.5	89.6	17.3	18.8	22.0	170	26.5	38.9	8.6	9.2	11.0	124
110	74.5	88.9	19.0	20.6	22.0	170	-	-	-	-	-	-
120	71.6	88.2	20.7	22.4	30.0	244	-	-	-	-	-	-
130	68.8	86.4	22.4	24.2	30.0	244	-	-	-	-	-	-
140	66	84.7	24.0	26.0	30.0	244	-	-	-	-	-	-
150	63.2	83	25.7	27.9	30.0	244	-	-	-	-	-	-

¹⁾ Q_{Th}: Theoretical flow rate

Higher pressures (up to 200 bar) upon request.

Viscosity > 20 mm²/s more power consumption.

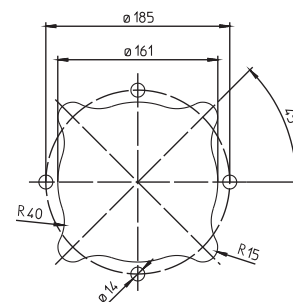
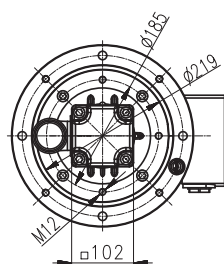
Characteristics and dimensions

TFS3, FFS3

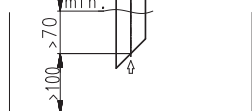
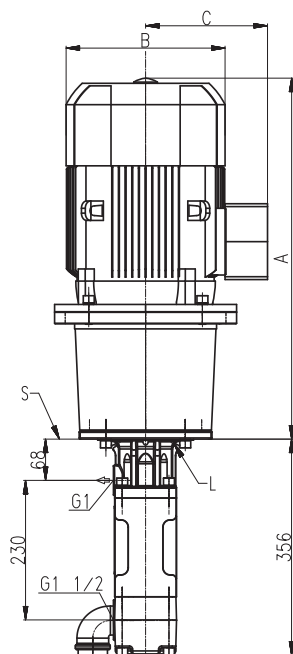
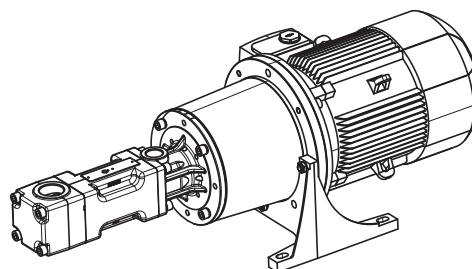
50 Hz

Mouting hole patterns

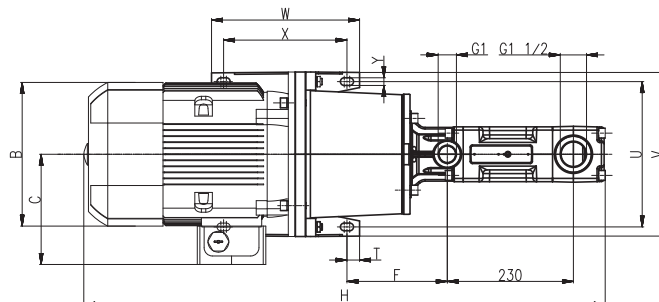
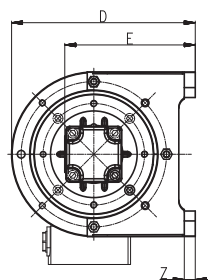
TFS3 / TFS4



All corners must be deburred!
According to ISO 2768-m



L = Leakage hole
S = Mounting plate, please refer to the cut-out of mounting hole



Power 2-poles kW	Power 4-poles kW	A mm	B mm	C mm	D mm	E mm	F mm	H mm	T mm	U mm	V mm	W mm	X mm	Y mm	Z mm
-	1.1	476	178	126	212	165	152	832	15	180	210	90	60	11	12
-	1.5	533	178	126	212	165	152	832	15	180	210	90	60	11	12
2.2	-	476	180	126	212	165	152	832	15	180	210	90	60	11	12
-	2.2	526	198	166	280	208	186	889	22.5	215	250	260	185	14	15
3.0	-	533	198	166	280	208	186	889	22.5	215	250	230	185	14	15
-	3.0	595	198	166	280	208	186	889	22.5	215	250	260	185	14	15
4.0	-	526	222	177	280	208	186	882	22.5	215	250	230	185	14	15
-	4.0	595	222	177	280	208	186	882	22.5	215	250	260	185	14	15
5.5	-	595	262	202	335	238	183	951	22.5	265	300	270	225	14	18
-	5.5	764	262	202	335	238	183	951	22.5	265	300	270	225	14	18
7.5	-	654	262	202	335	238	183	1010	22.5	265	300	270	225	14	18
-	7.5	774	262	202	335	238	183	1010	22.5	265	300	270	225	14	18
11.0 / 15.0	-	774	314	237	410	288	222	1130	20	300	350	305	265	18	18
-	11.0	824	314	237	410	288	222	1130	20	300	350	305	265	18	18
18.5	-	824	314	237	410	288	222	1180	20	300	350	305	265	18	18
22.0	-	824	356	286	410	288	222	1180	20	300	350	305	265	18	18
30.0	-	881	396	315	460	313	212	1237	25	350	400	350	300	18	20

Pressure max.	2-pole motor rotation speed 2900 RPM						4-pole motor rotation speed 1450 RPM					
	Flow at viscosity		Power consumption at viscosity		Motor	Weight	Flow at viscosity		Power consumption at viscosity		Motor	Weight
	1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s			1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s		
Type / bar	l/min	l/min	kW	kW	kW	kg	l/min	l/min	kW	kW	kW	kg
TFS460/	Q_{Th}¹⁾ 125.3		–	–	–	–	Q_{Th}¹⁾ 62.7		–	–	–	–
10	118	122	2.7	3.0	4.0	74	55	59	1.2	1.3	2.2	64
20	115	120	4.8	5.2	7.5	110	52	57	2.3	2.4	3.0	64
30	112	118	6.9	7.4	11.0	123	50	56	3.3	3.5	4.0	76
40	110	117	9.0	9.6	11.0	123	47	54	4.4	4.7	5.5	85
50	107	116	11.0	11.8	15.0	133	44	53	5.4	5.8	7.5	115
60	105	114	13.1	14.0	15.0	133	42	52	6.5	6.9	7.5	115
70	102	113	15.2	16.1	18.5	154	40	50	7.5	8.0	11.0	135
80	100	112	17.3	18.3	22.0	181	37	49	8.6	9.1	11.0	135
90	98	111	19.4	20.5	22.0	181	35	48	9.6	10.3	11.0	135
100	96	110	21.5	22.7	30.0	255	32	47	10.7	11.3	15.0	166
110	94	109	23.6	24.9	30.0	255	–	–	–	–	–	–
120	91	108	25.6	27.1	30.0	255	–	–	–	–	–	–
TFS480/	Q_{Th}¹⁾ 167.1		–	–	–	–	Q_{Th}¹⁾ 83.6		–	–	–	–
10	157	162	3.4	3.7	5.5	83	74	79	1.6	1.8	2.2	64
20	153	160	6.2	6.6	7.5	110	70	76	3.0	3.2	4.0	76
30	150	158	9.0	9.5	11.0	123	66	74	4.4	4.7	5.5	85
40	146	156	11.7	12.4	15.0	133	63	72	5.8	6.1	7.5	115
50	143	154	14.5	15.2	18.5	154	60	70	7.2	7.6	11.0	135
60	140	152	17.3	18.1	22.0	181	56	68	8.6	9.2	11.0	135
70	137	150	20.1	21.0	22.0	181	53	67	9.9	10.6	11.0	135
80	134	149	22.9	23.9	30.0	255	51	65	11.3	12.1	15.0	166
90	132	147	25.7	26.7	30.0	255	47	64	12.7	13.6	15.0	166
100	129	146	28.5	29.6	30.0	255	44	63	14.1	15.0	18.5	173
110	126	145	31.3	32.5	37.0	284	–	–	–	–	–	–
120	124	144	34.0	35.4	37.0	284	–	–	–	–	–	–
TFS496/	Q_{Th}¹⁾ 200.5		–	–	–	–	Q_{Th}¹⁾ 100.3		–	–	–	–
10	189	194	3.9	4.4	5.5	83	89	94	1.9	2.1	3.0	64
20	185	192	7.3	8.0	11.0	123	85	92	3.5	3.9	5.5	85
30	181	190	10.6	11.5	15.0	133	80	90	5.2	5.7	7.5	115
40	177	188	14.0	15.1	18.5	154	76	88	6.9	7.5	11.0	135
50	173	186	17.3	18.6	22.0	181	72	86	8.6	9.3	11.0	135
60	169	184	20.7	22.2	30.0	255	69	84	10.2	11.1	15.0	166
70	166	182	24.0	25.7	30.0	255	65	82	11.9	12.9	15.0	166
80	162	180	27.3	29.3	37.0	284	62	80	13.6	14.8	18.5	173
90	159	179	30.7	32.8	37.0	284	58	78	15.3	16.6	18.5	173
100	156	177	34.0	36.4	45.0	394	55	77	16.9	18.4	22.0	188
110	153	176	37.4	39.9	45.0	394	–	–	–	–	–	–
120	149	174	40.7	43.5	45.0	394	–	–	–	–	–	–

¹⁾ Q_{Th}: Theoretical flow rate

Viscosity > 20 mm²/s more power consumption.

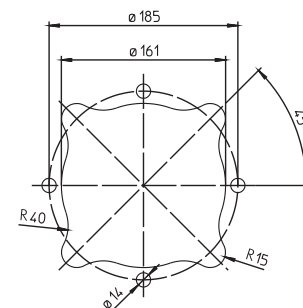
Characteristics and dimensions

TFS4, FFS4

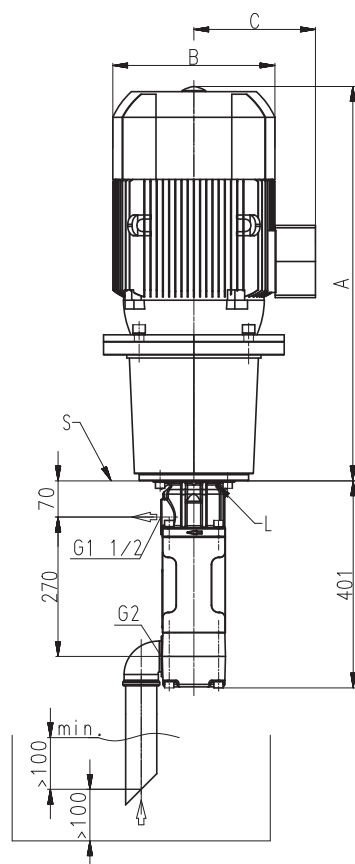
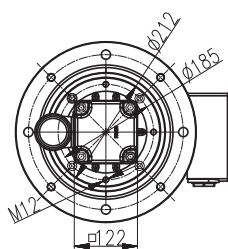
50 Hz

Mounting hole patterns

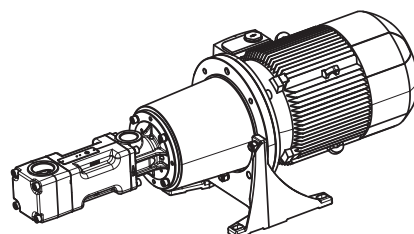
TFS3 / TFS4



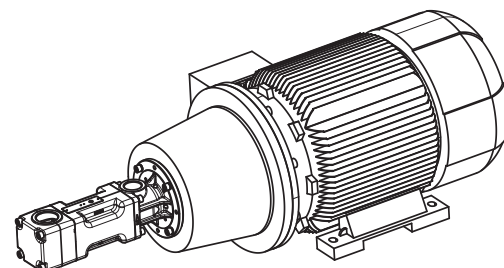
All corners must be deburred!
According to ISO 2768-m



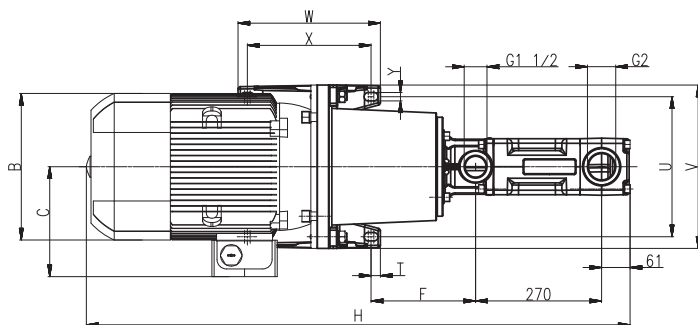
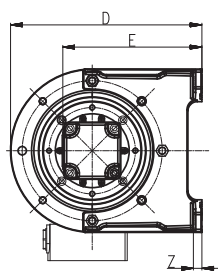
L = Leakage hole
S = Mounting plate, please refer to the cut-out of mounting hole



< 45kW



≥ 45kW



Power 2-poles kW	Power 4-poles kW	A mm	B mm	C mm	D mm	E mm	F mm	H mm	T mm	U mm	V mm	W mm	X mm	Y mm	Z mm
-	2.2 / 3.0	533	198	166	280	218	188	934	22.5	215	250	230	185	14	15
4.0	4.0	526	222	177	280	218	188	927	22.5	215	250	230	185	14	15
5.5	5.5	609	262	202	335	248	199	1010	22.5	265	300	270	225	14	18
7.5	7.5	668	262	202	335	248	199	1069	22.5	265	300	270	225	14	18
11.0 / 15.0	11.0	774	314	237	410	298	224	1175	20	300	350	305	265	18	18
-	15.0	834	314	237	410	298	224	1235	20	300	350	305	265	18	18
18.5	-	824	314	237	410	298	224	1225	20	300	350	305	265	18	18
-	18.5	828	356	286	410	298	224	1229	20	300	350	305	265	18	18
22.0	-	824	356	286	410	298	224	1225	20	300	350	305	265	18	18
-	22.0	858	356	286	410	298	224	1259	20	300	350	305	265	18	18
30.0	-	881	396	315	460	323	214	1282	25	350	400	350	300	18	20
37.0	-	906	396	315	460	323	214	1307	25	350	400	350	300	18	20
45.0	-	984	449	338	450	288	495	1385	25	356	436	361	311	19	34

2-pole motor rotation speed 2900 RPM							4-pole motor rotation speed 1450 RPM					
Pressure max.	Flow at viscosity		Power consumption at viscosity		Motor	Weight	Flow at viscosity		Power consumption at viscosity		Motor	Weight
	1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s			1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s		
Type / bar	l/min	l/min	kW	kW	kW	kg	l/min	l/min	kW	kW	kW	kg
TFS574/	Q_{Th}¹⁾ 241.6		–	–	–	–	Q_{Th}¹⁾ 120.8		–	–	–	–
10	230	235	5.0	5.7	7.5	139	109	114	2.3	2.7	4.0	105
20	226	233	9.1	9.9	15.0	162	105	112	4.3	4.8	5.5	114
30	222	231	13.1	14.2	18.5	183	101	110	6.3	7.0	7.5	144
40	219	229	17.1	18.4	22.0	210	98	109	8.4	9.1	11.0	164
50	216	228	21.1	22.6	30.0	284	95	107	10.4	11.3	15.0	195
60	213	226	25.2	26.9	30.0	284	92	105	12.4	13.4	15.0	195
70	210	224	29.2	31.1	37.0	313	89	104	14.4	15.5	18.5	202
80	207	223	33.2	35.4	37.0	313	86	102	16.4	17.7	18.5	202
90	204	221	37.2	39.6	45.0	423	83	101	18.4	19.8	22.0	217
100	202	220	41.3	43.8	45.0	423	80	99	20.5	21.9	30.0	283
110	199	219	45.3	48.1	55.0	523	–	–	–	–	–	–
120	196	217	49.3	52.3	55.0	523	–	–	–	–	–	–
TFS5100/	Q_{Th}¹⁾ 326.5		–	–	–	–	Q_{Th}¹⁾ 163.3		–	–	–	–
10	310	318	6.4	7.1	11.0	152	147	155	3.0	3.5	5.5	114
20	306	316	11.9	12.9	15.0	162	143	152	5.7	6.4	7.5	144
30	302	313	17.3	18.6	22.0	210	139	150	8.5	9.3	11.0	164
40	298	311	22.8	24.4	30.0	284	135	148	11.2	12.2	15.0	195
50	294	309	28.2	30.2	37.0	313	131	146	13.9	15.1	18.5	202
60	291	307	33.7	36.0	45.0	423	127	144	16.6	18.0	18.5	202
70	287	305	39.1	41.7	45.0	423	124	142	19.3	20.9	22.0	217
80	284	303	44.5	47.5	55.0	523	120	140	22.1	23.9	30.0	283
90	280	302	50.0	53.3	55.0	523	116	138	24.8	26.8	30.0	283
100	277	300	55.4	59.1	75.0	628	113	137	27.5	29.7	37.0	368
110	273	299	60.9	64.8	75.0	628	–	–	–	–	–	–
120	270	297	66.3	70.6	75.0	628	–	–	–	–	–	–

¹⁾ Q_{Th}: Theoretical flow rate

Viscosity > 20 mm²/s more power consumption.

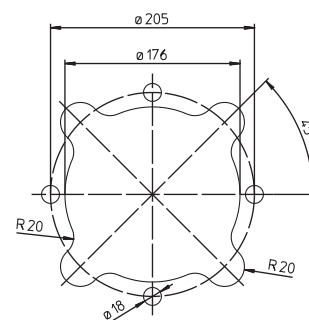
Characteristics and dimensions

TFS5, FFS5

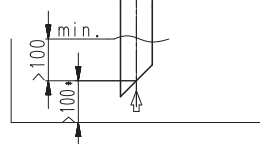
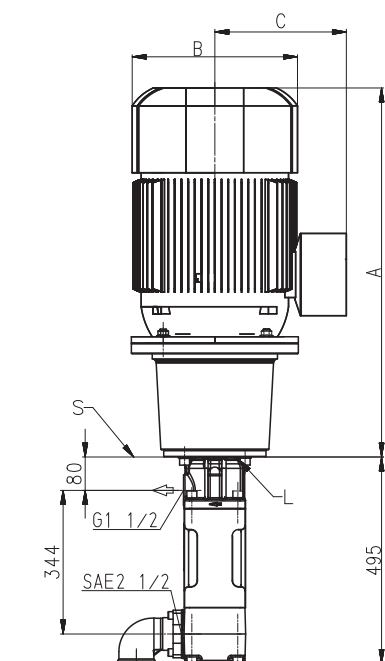
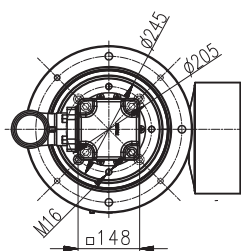
50 Hz

Mounting hole patterns

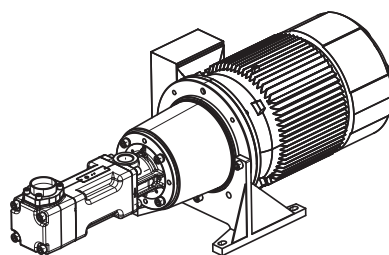
TFS5



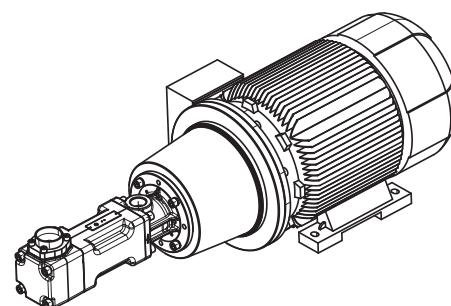
All corners must be deburred
According to ISO 2768-m



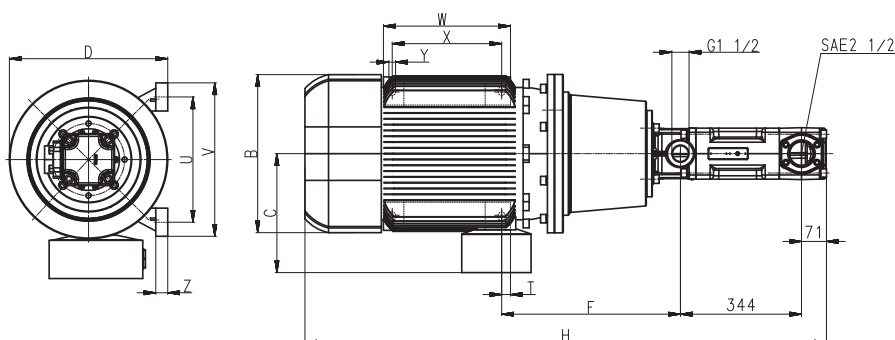
L = Leakage hole
S = Mounting plate, please refer to the cut-out of mounting hole



< 45kW



≥ 45kW



Power 2-poles kW	Power 4-poles kW	A mm	B mm	C mm	D mm	F mm	H mm	T mm	U mm	V mm	W mm	X mm	Y mm	Z mm
-	4.0	556	222	177	280	228	1051	22.5	215	250	230	185	14	15
-	5.5	622	262	202	335	222	1117	22.5	265	300	270	225	14	18
7.5	7.5	681	262	202	335	222	1176	22.5	265	300	270	225	14	18
11.0 / 15.0	11.0	777	314	237	410	237	1272	20	300	350	305	265	18	18
-	15.0	837	314	237	410	237	1332	20	300	350	305	265	18	18
18.5	-	827	314	237	410	237	1322	20	300	350	305	265	18	18
-	18.5	831	356	286	410	237	1326	20	300	350	305	265	18	18
22.0	-	827	356	286	410	237	1322	20	300	350	305	265	18	18
-	22.0	861	356	286	410	237	1356	20	300	350	305	265	18	18
30.0	-	884	396	315	460	227	1379	25	350	400	350	300	18	20
37.0	30.0	909	396	315	460	227	1404	25	350	400	350	300	18	20
-	37.0	929	449	338	520	223	1424	25	400	450	385	335	18	20
45.0	-	987	449	338	450	508	1482	25	356	436	361	311	19	34
55.0	-	1059	497	410	525	560	1554	30	406	490	409	349	24	40
75.0	-	1132	551	433	555	582	1627	55.5	457	540	479	368	24	40

TFS5, FFS5

50 Hz

Screw spindles

2-pole motor rotation speed 2900 RPM							4-pole motor rotation speed 1450 RPM					
Pressure max.	Flow at viscosity		Power consumption at viscosity		Motor	Weight	Flow at viscosity		Power consumption at viscosity		Motor	Weight
	1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s			1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s		
Type / bar	l/min	l/min	kW	kW	kW	kg	l/min	l/min	kW	kW	kW	kg
TFS5120/	Q_{Th}¹⁾ 391.8		–	–	–	–	Q_{Th}¹⁾ 195.9		–	–	–	–
10	372	382	7.5	8.7	11.0	152	176	186	3.6	4.1	5.5	114
20	366	379	14.1	15.6	18.5	183	171	183	6.8	7.6	11.0	164
30	361	376	20.6	22.5	30.0	284	165	180	10.1	11.1	15.0	195
40	355	373	27.1	29.5	37.0	313	160	177	13.4	14.6	18.5	202
50	350	370	33.7	36.4	45.0	423	154	175	16.6	18.1	22.0	217
60	345	368	40.2	43.3	45.0	423	149	172	19.9	21.6	22.0	217
70	340	366	46.7	50.2	55.0	523	144	170	23.2	25.1	30.0	283
80	336	364	53.2	57.1	75.0	628	140	168	26.4	28.6	30.0	283
90	331	362	59.8	64.0	75.0	628	134	166	29.7	32.1	37.0	368
100	327	360	66.3	71.0	75.0	628	129	164	33.0	35.6	37.0	368
110	322	358	72.8	77.9	90.0	753	–	–	–	–	–	–
120	318	357	79.4	84.8	90.0	753	–	–	–	–	–	–
TFS5130/	Q_{Th}¹⁾ 424.5		–	–	–	–	Q_{Th}¹⁾ 212.2		–	–	–	–
10	403	412	8.1	9.2	15.0	162	191	199	3.8	4.3	5.5	114
20	396	407	15.1	16.5	18.5	183	184	195	7.4	8.0	11.0	164
30	389	402	22.2	23.7	30.0	284	177	190	10.9	11.7	15.0	195
40	383	398	29.3	31.0	37.0	313	171	186	14.4	15.3	18.5	202
50	377	394	36.4	38.3	45.0	423	165	181	18.0	19.0	22.0	217
60	371	390	43.4	45.6	55.0	523	159	177	21.5	22.7	30.0	283
70	366	386	50.5	52.8	55.0	523	154	174	25.1	26.4	30.0	283
80	361	382	57.6	60.1	75.0	628	149	170	28.6	30.0	37.0	368
90	357	379	64.7	67.4	75.0	628	143	166	32.1	33.7	37.0	368
100	352	375	71.7	74.7	90.0	753	138	163	35.7	37.4	45.0	418
110	347	372	78.8	81.9	90.0	753	–	–	–	–	–	–
120	343	369	85.9	89.2	110.0	898	–	–	–	–	–	–

¹⁾ Q_{Th}: Theoretical flow rate

Viscosity > 20 mm²/s more power consumption.

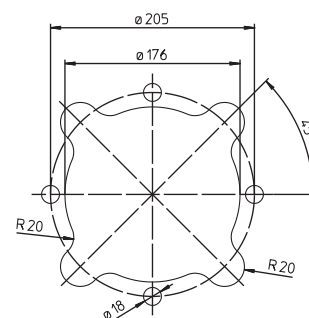
Characteristics and dimensions

TFS5, FFS5

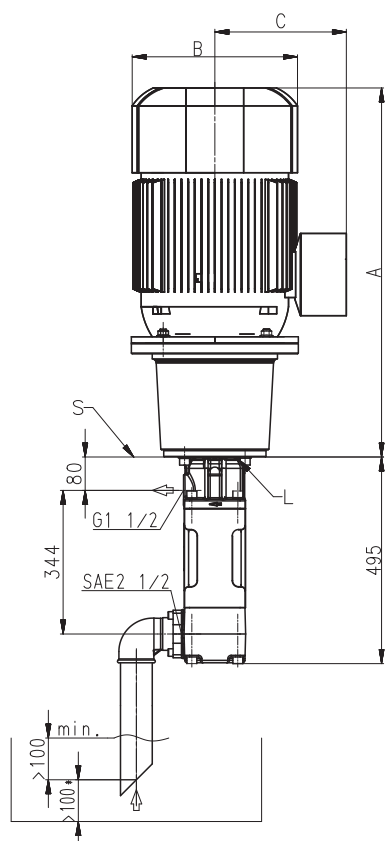
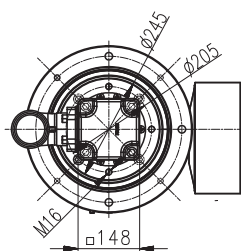
50 Hz

Mounting hole patterns

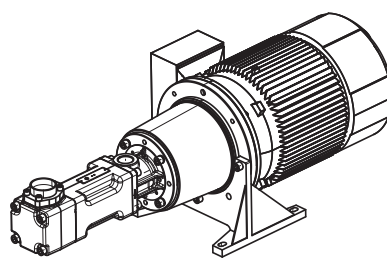
TFS5



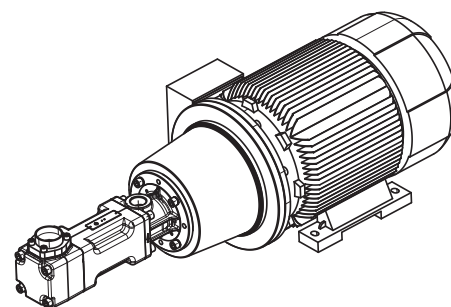
All corners must be deburred
According to ISO 2768-m



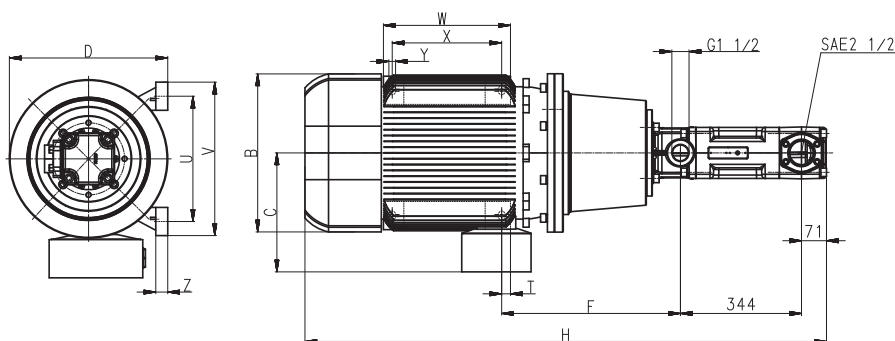
L = Leakage hole
S = Mounting plate, please refer to the cut-out of mounting hole



< 45kW



≥ 45kW



Power 2-poles kW	Power 4-poles kW	A mm	B mm	C mm	D mm	F mm	H mm	T mm	U mm	V mm	W mm	X mm	Y mm	Z mm
-	5.5	622	262	202	335	222	1117	22.5	265	300	270	225	14	18
11.0 / 15.0	11.0	777	314	237	410	237	1272	20	300	350	305	265	18	18
-	15.0	837	314	237	410	237	1332	20	300	350	305	265	18	18
18.5	-	827	314	237	410	237	1322	20	300	350	305	265	18	18
-	18.5	831	356	286	410	237	1326	20	300	350	305	265	18	18
-	22.0	861	356	286	410	237	1356	20	300	350	305	265	18	18
30.0	-	884	396	315	460	227	1379	25	350	400	350	300	18	20
37.0	30.0	909	396	315	460	227	1404	25	350	400	350	300	18	20
-	37.0	929	449	338	520	223	1424	25	400	450	385	335	18	20
45.0	45.0	987	449	338	450	508	1482	25	356	436	361	311	19	34
55.0	-	1059	497	410	525	560	1554	30	406	490	409	349	24	40
75.0	-	1132	551	433	555	582	1627	55.5	457	540	479	368	24	40
90.0	-	1243	551	433	555	582	1738	30	457	540	479	419	24	40
110.0	-	1239	616	515	645	623	1734	35	508	628	527	457	35	52

TFS6, FFS6

50 Hz

Screw spindles

Pressure max.	2-pole motor rotation speed 2900 RPM						4-pole motor rotation speed 1450 RPM					
	Flow at viscosity		Power consumption at viscosity		Motor	Weight	Flow at viscosity		Power consumption at viscosity		Motor	Weight
	1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s			1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s		
Type / bar	l/min	l/min	kW	kW	kW	kg	l/min	l/min	kW	kW	kW	kg
TFS690/	Q_{Th}¹⁾ 459		-	-	-	-	Q_{Th}¹⁾ 230		-	-	-	-
10	445	450	9.5	11.2	15.0	222	216	220	4.4	5.1	7.5	205
20	437	445	17.1	18.8	22.0	270	207	216	8.3	9.0	11.0	224
30	429	440	24.8	26.5	30.0	344	199	211	12.1	12.8	15.0	255
40	421	436	32.4	34.1	37.0	373	191	206	15.9	16.6	18.5	262
50	414	432	40.1	41.8	45.0	484	184	202	19.7	20.4	22.0	277
60	407	428	47.7	49.4	55.0	584	177	198	23.6	24.3	30.0	343
70	401	424	55.4	57.1	75.0	689	171	194	27.4	28.1	30.0	343
80	395	420	63.0	64.7	75.0	689	165	190	31.2	31.9	37.0	429
TFS6120/	Q_{Th}¹⁾ 612		-	-	-	-	Q_{Th}¹⁾ 306		-	-	-	-
10	594	600	12.0	13.7	18.5	243	288	294	5.7	6.4	7.5	205
20	584	594	22.2	23.9	30.0	344	278	288	10.8	11.5	15.0	255
30	574	588	32.4	34.1	37.0	373	268	282	15.9	16.6	18.5	262
40	565	583	42.6	44.3	55.0	584	259	277	21.0	21.7	30.0	343
50	557	578	52.8	54.5	75.0	689	251	272	26.1	26.8	30.0	343
60	549	573	63.0	64.7	75.0	689	243	267	31.2	31.9	37.0	429
70	542	568	73.2	74.9	90.0	814	236	262	36.3	37.0	45.0	479
80	533	563	83.4	85.1	90.0	814	227	257	41.4	42.1	45.0	479
TFS6145/	Q_{Th}¹⁾ 740		-	-	-	-	Q_{Th}¹⁾ 370		-	-	-	-
10	717	725	14.1	15.8	22.0	270	348	355	6.8	7.5	11.0	224
20	704	715	26.5	28.2	37.0	373	334	345	12.9	13.6	15.0	255
30	692	706	38.8	40.5	45.0	484	322	337	19.1	19.8	22.0	277
40	680	698	51.1	52.8	55.0	584	310	328	25.3	26.0	30.0	343
50	669	691	63.4	65.1	75.0	689	299	321	31.4	32.1	37.0	429
60	658	684	75.8	77.5	90.0	814	288	314	37.6	38.3	45.0	479
70	646	676	88.1	89.8	110.0	959	276	306	43.8	44.5	55.0	564
80	635	668	100.4	102.1	110.0	959	265	298	49.9	50.6	55.0	564

¹⁾ Q_{Th}: Theoretical flow rate

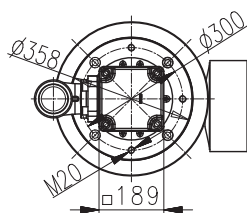
Viscosity > 20 mm²/s more power consumption.

All 6 series screw pumps with an operating flow rate of 800 l/min or above must be operated with a feed pump which supplies fluid with at least 1bar of pressure to the pump inlet.

Characteristics and dimensions

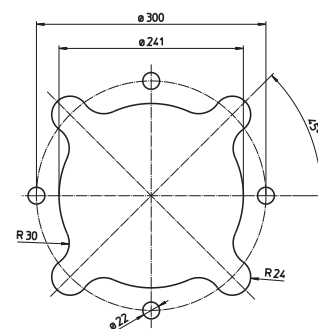
TFS6, FFS6

50 Hz

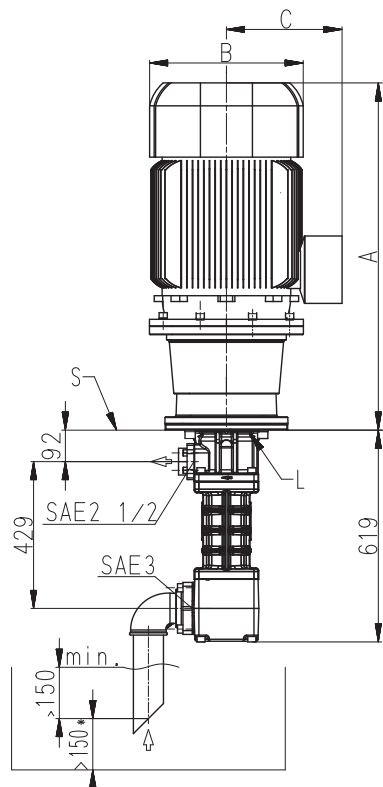


Mounting hole patterns

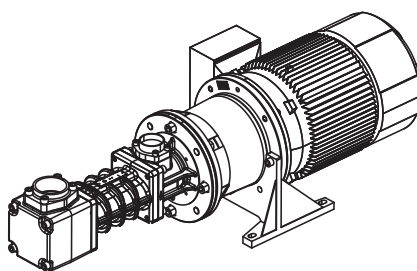
TFS6



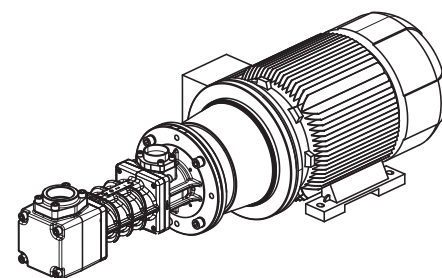
All corners must be deburred!
According to ISO 2768-m



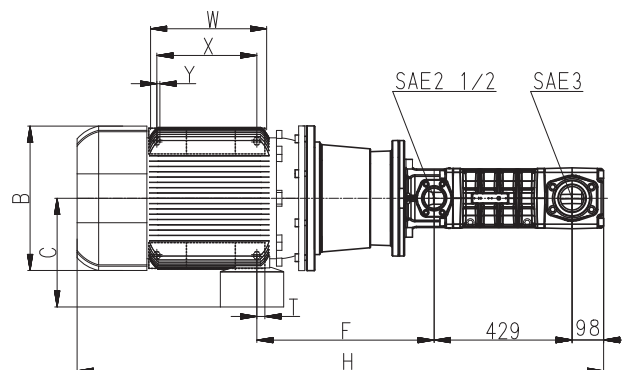
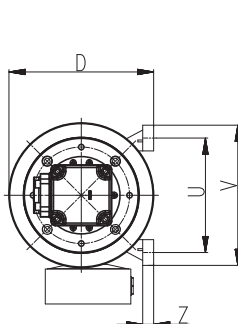
L = Leakage hole
S = Mounting plate, please refer to the cut-out of mounting hole



< 45kW



≥ 45kW



Power 2-poles kW	Power 4-poles kW	A mm	B mm	C mm	D mm	F mm	H mm	T mm	U mm	V mm	W mm	X mm	Y mm	Z mm
-	7.5	723	262	202	335	252	1351	22.5	265	300	270	225	14	18
15.0	11.0	805	314	237	410	252	1424	20	300	350	305	265	18	18
-	15.0	865	314	237	410	265	1484	20	300	350	305	265	18	18
18.5	-	855	314	237	410	252	1474	20	300	350	305	265	18	18
-	18.5	859	356	286	410	265	1478	20	300	350	305	265	18	18
22.0	-	855	356	286	410	252	1474	20	300	350	305	265	18	18
-	22.0	889	356	286	410	397	1508	20	300	350	305	265	18	18
30.0	-	910	396	315	460	265	1529	25	350	400	350	300	18	20
-	30.0	935	396	315	460	417	1554	25	350	400	350	300	18	20
37.0	-	935	396	315	460	265	1554	25	350	400	350	300	18	20
-	37.0	975	449	338	520	432	1594	25	400	450	385	335	18	20
45.0	45.0	1013	449	338	450	546	1632	25	356	436	361	311	19	34
55.0	-	1072	497	410	525	585	1691	30	406	490	409	349	24	40
75.0	-	1160	551	433	555	622	1779	55.5	457	540	479	368	24	40
90.0	-	1271	551	433	555	622	1890	30	457	540	479	419	24	40

High Pressure Pumps

BFS1, FFS1

Screw spindles

60 Hz

Pressure max.	2-pole motor rotation speed 3500 RPM							4-pole motor rotation speed 1750 RPM						
	Flow at viscosity		Power consumption at viscosity		Motor		Weight	Flow at viscosity		Power consumption at viscosity		Motor	Weight	
	1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s	immersion version	foot mounted version		1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s			
Type / bar	l/min	l/min	kW	kW	kW	kW	kg	l/min	l/min	kW	kW	kW	kg	
BFS130/	Q_{Th}¹⁾ 18.8		-	-	-	-	-	Q_{Th}¹⁾ 9.4		-	-	-	-	
10	17.3	18.2	0.6	0.6	B 1.5	0.86	39	7.9	8.8	0.3	0.3	0.86	29	
20	16.3	17.8	0.9	0.9	B 1.5	1.3	39	6.9	8.4	0.4	0.4	0.86	29	
30	15.4	17.5	1.2	1.2	B 1.5	1.75	39	5.9	8	0.6	0.6	0.86	29	
40	14.5	17.1	1.5	1.5	B 1.75	1.75	39	5	7.7	0.7	0.8	1.27	31	
50	13.6	16.7	1.8	1.9	B 1.95	2.55	39	4	7.3	0.9	1.0	1.27	31	
60	12.7	16.4	2.1	2.2	B 2.2	2.55	43	3.2	7	1.0	1.1	1.27	31	
70	11.9	16	2.4	2.5	B 2.55	3.45	43	-	6.6	-	1.3	1.75	34	
80	11.1	15.7	2.8	2.9	B 3.0	3.45	44	-	6.3	-	1.5	1.75	34	
90	10.4	15.4	3.1	3.2	B 3.8	3.45	54	-	6	-	1.6	1.75	34	
100	9.6	15.1	3.4	3.5	B 3.8	4.6	54	-	5.6	-	1.8	2.55	41	
110	8.7	14.7	3.7	3.9	B 4.6	4.6	57	-	5.3	-	2.0	2.55	41	
120	7.8	14.4	4.0	4.2	B 4.6	4.6	57	-	5	-	2.1	2.55	41	
130	-	14.1	-	4.5	B 4.6	6.3	57	-	-	-	-	-	-	
140	-	13.8	-	4.9	B 5.75	6.3	73	-	-	-	-	-	-	
150	-	13.5	-	5.2	B 5.75	6.3	73	-	-	-	-	-	-	
BFS140/	Q_{Th}¹⁾ 25.2		-	-	-	-	-	Q_{Th}¹⁾ 12.6		-	-	-	-	
10	23.1	24.4	0.7	0.7	B 1.5	1.3	39	10.5	11.8	0.3	0.4	0.86	29	
20	21.8	23.9	1.1	1.2	B 1.5	1.75	39	9.2	11.3	0.5	0.6	0.86	29	
30	20.6	23.4	1.5	1.6	B 1.75	1.75	39	8	10.7	0.7	0.8	1.27	31	
40	19.5	22.9	1.9	2.0	B 2.2	2.55	43	6.9	10.2	0.9	1.0	1.27	31	
50	18.4	22.4	2.4	2.5	B 2.55	3.45	43	5.8	9.8	1.1	1.2	1.75	34	
60	17.3	21.9	2.8	2.9	B 3.0	3.45	44	4.7	9.3	1.3	1.5	1.75	34	
70	16.4	21.4	3.2	3.3	B 3.8	4.6	54	3.8	8.8	1.5	1.7	2.55	41	
80	15.4	20.9	3.6	3.8	B 4.6	4.6	57	-	8.3	-	1.9	2.55	41	
90	14.6	20.5	4.0	4.2	B 4.6	4.6	57	-	7.9	-	2.1	2.55	41	
100	13.8	20	4.5	4.7	B 5.75	6.3	73	-	7.4	-	2.3	2.55	41	
110	12.6	19.6	4.9	5.1	B 5.75	6.3	73	-	7	-	2.5	3.45	46	
120	11.6	19.2	5.3	5.5	B 5.75	6.3	73	-	6.5	-	2.7	3.45	46	
130	10.6	18.7	5.7	6.0	B 6.3	6.3	73	-	-	-	-	-	-	
140	9.7	18.3	6.1	6.4	B 8.6	8.6	94	-	-	-	-	-	-	
150	8.8	17.9	6.6	6.9	B 8.6	8.6	94	-	-	-	-	-	-	

¹⁾ Q_{Th}: Theoretical flow rate

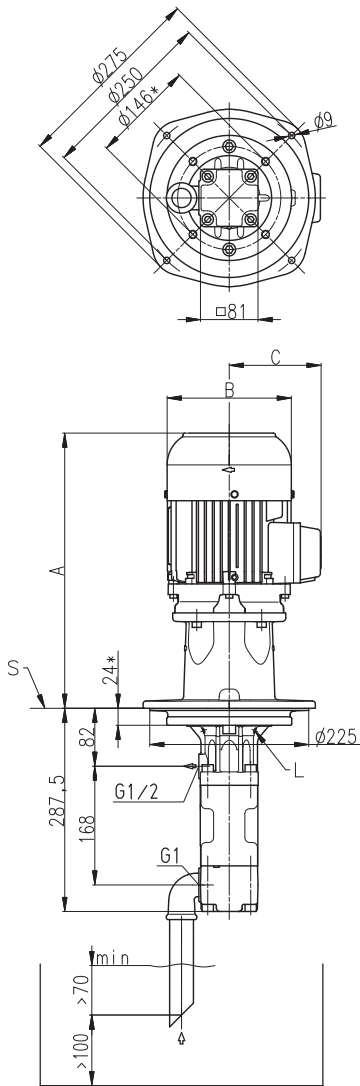
Higher pressures (up to 200 bar) upon request.

Viscosity > 20 mm²/s more power consumption.

Characteristics and dimensions

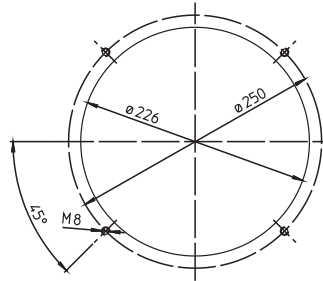
BFS1, FFS1

60 Hz

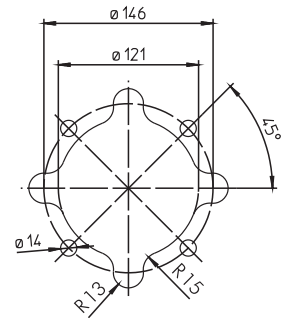


Mounting hole patterns

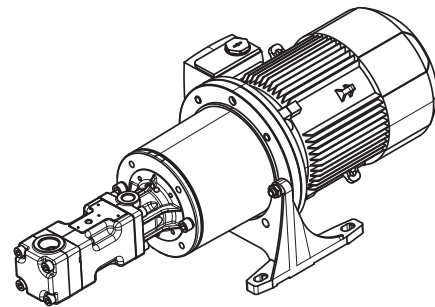
BFS1 / BFS2



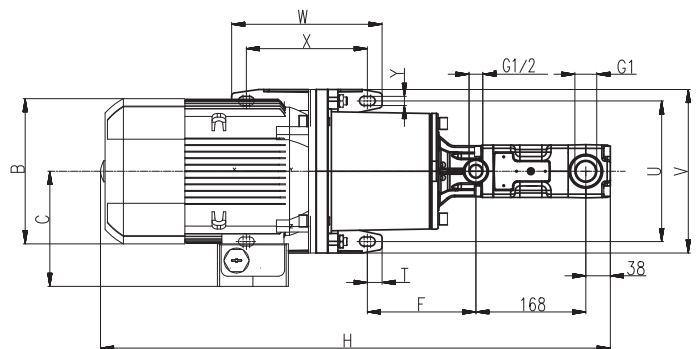
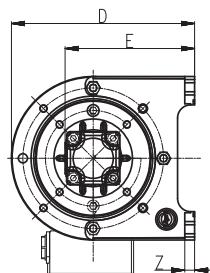
TFS1 / TFS2



All corners must be deburred!
According to ISO 2768-m



*) Dimensions for 4-pole standard motor upon request
L = Leakage hole
S = Mounting plate, please refer to the cut-out of mounting hole



Power 2-poles kW	A mm	B mm	C mm
B 1.5 / 1.75 / 1.95	389	176	130
B 2.2 / 2.55	414	176	130
B 3.0	424	176	130
B 3.8 / 4.6	478	218	150
B 5.75 / 6.3	514	258	190
B 8.6	622	258	193

Power 2-poles kW	Power 4-poles kW	B mm	C mm	D mm	E mm	F mm	H mm	T mm	U mm	V mm	W mm	X mm	Y mm	Z mm
0.86 / 1.3	0.86	159	121	212	155	138	676	15	180	210	90	60	11	12
1.75	1.27 / 1.75	178	126	212	155	138	721	15	180	210	90	60	11	12
2.55	-	180	126	212	155	138	721	15	180	210	90	60	11	12
-	2.55 / 3.45	198	166	280	198	166	786	22.5	215	250	260	185	14	15
3.45	-	198	166	280	198	166	786	22.5	215	250	230	185	14	15
4.6	-	222	177	280	198	166	780	22.5	215	250	230	185	14	15
6.3	-	262	202	335	228	171	857	22.5	265	300	270	225	14	18
8.6	-	262	202	335	228	171	915	22.5	265	300	270	225	14	18

High Pressure Pumps

BFS2, FFS2

Screw spindles



		2-pole motor rotation speed 3500 RPM						4-pole motor rotation speed 1750 RPM					
Pressure max.	Flow at viscosity		Power consumption at viscosity		Motor		Weight	Flow at viscosity		Power consumption at viscosity		Motor	Weight
	1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s	immersion version	foot mounted version		1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s		
Type / bar	l/min	l/min	kW	kW	kW	kW	kg	l/min	l/min	kW	kW	kW	kg
BFS232/	Q_{Th}¹⁾ 31.5		-	-	-	-	-	Q_{Th}¹⁾ 15.8		-	-	-	-
10	29.7	30.8	0.8	0.9	B 1.5	1.3	40	13.9	15.1	0.4	0.5	0.86	29
20	29	30.6	1.4	1.4	B 1.75	1.75	40	13.3	14.8	0.7	0.7	0.86	29
30	28.4	30.3	1.9	2.0	B 2.2	2.55	44	12.7	14.6	0.9	1.0	1.27	32
40	27.8	30	2.4	2.5	B 2.55	3.45	44	12.1	14.3	1.2	1.3	1.75	34
50	27.2	29.8	2.9	3.1	B 3.8	3.45	55	11.5	14	1.4	1.5	1.75	34
60	26.6	29.5	3.5	3.6	B 3.8	4.6	55	10.9	13.8	1.7	1.8	2.55	41
70	26	29.3	4.0	4.2	B 4.6	4.6	57	10.3	13.5	2.0	2.1	2.55	41
80	25.4	29	4.5	4.7	B 5.75	6.3	74	9.7	13.3	2.2	2.3	2.55	41
90	24.9	28.7	5.0	5.3	B 5.75	6.3	74	9.1	13	2.5	2.6	3.45	46
100	24.3	28.5	5.6	5.8	B 6.3	6.3	74	8.5	12.7	2.7	2.9	3.45	46
110	23.8	28.3	6.1	6.4	B 8.6	8.6	95	-	12.5	-	3.2	3.45	46
120	23.2	28	6.6	6.9	B 8.6	8.6	95	-	12.3	-	3.4	4.55	53
130	22.7	27.8	7.1	7.5	B 8.6	8.6	95	-	12	-	3.7	4.55	53
140	22.1	27.5	7.7	8.0	B 8.6	8.6	95	-	11.8	-	4.0	4.55	53
150	21.6	27.3	8.2	8.6	B 10.3	12.6	101	-	11.6	-	4.2	4.55	53
BFS238/	Q_{Th}¹⁾ 37.4		-	-	-	-	-	Q_{Th}¹⁾ 18.7		-	-	-	-
10	35.2	36.5	0.9	0.9	B 1.5	1.3	40	16.5	17.8	0.4	0.4	0.86	29
20	34.5	36.2	1.6	1.6	B 1.75	2.55	40	15.8	17.5	0.8	0.8	1.27	32
30	33.8	35.9	2.2	2.2	B 2.55	2.55	44	15.1	17.2	1.1	1.1	1.27	32
40	33.1	35.6	2.8	2.9	B 3.0	3.45	44	14.4	16.9	1.4	1.4	1.75	34
50	32.4	35.3	3.4	3.5	B 3.8	4.6	55	13.7	16.6	1.7	1.8	2.55	41
60	31.7	35.1	4.1	4.2	B 4.6	4.6	57	13	16.4	2.0	2.1	2.55	41
70	31	34.8	4.7	4.8	B 5.75	6.3	74	12.3	16.1	2.3	2.4	3.45	46
80	30.3	34.5	5.3	5.5	B 5.75	6.3	74	11.6	15.8	2.6	2.7	3.45	46
90	29.6	34.2	5.9	6.1	B 6.3	6.3	74	10.9	15.5	2.9	3.1	3.45	46
100	29	34	6.6	6.8	B 8.6	8.6	95	10.2	15.3	3.2	3.4	4.55	53
110	28.3	33.7	7.2	7.4	B 8.6	8.6	95	-	15	-	3.7	4.55	53
120	27.6	33.4	7.8	8.1	B 8.6	8.6	95	-	14.7	-	4.1	4.55	53
130	27	33.1	8.4	8.8	B 10.3	12.6	101	-	14.4	-	4.4	6.3	63
140	26.3	32.9	9.0	9.4	B 10.3	12.6	101	-	14.2	-	4.7	6.3	63
150	25.7	32.6	9.7	10.1	B 12.6	12.6	120	-	13.9	-	5.0	6.3	63

¹⁾ Q_{Th}: Theoretical flow rate

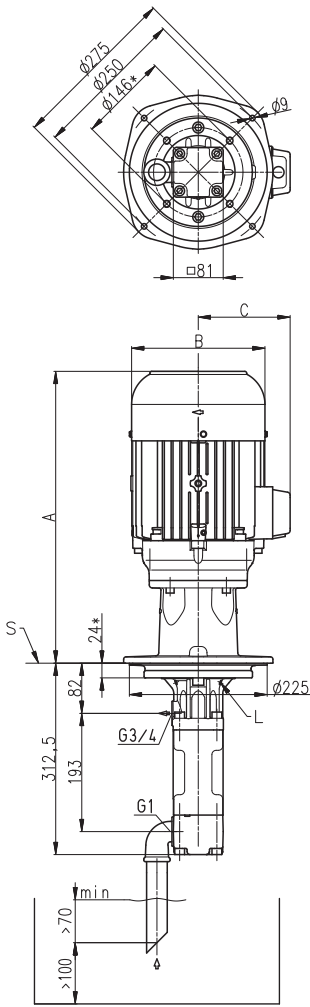
Higher pressures (up to 200 bar) upon request.

Viscosity > 20 mm²/s more power consumption.

Characteristics and dimensions

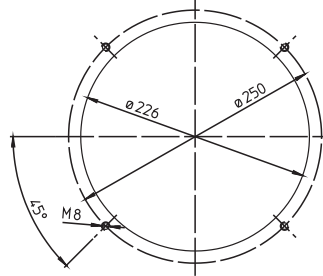
BFS2, FFS2

60 Hz

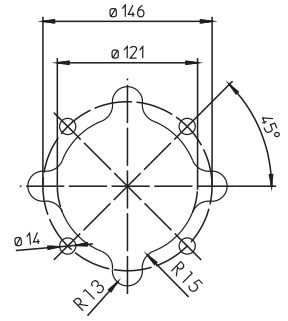


Mounting hole patterns

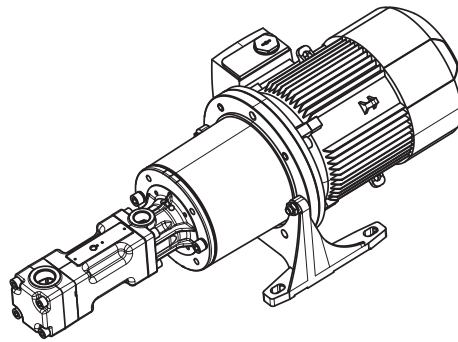
BFS1 / BFS2



TFS1 / TFS2

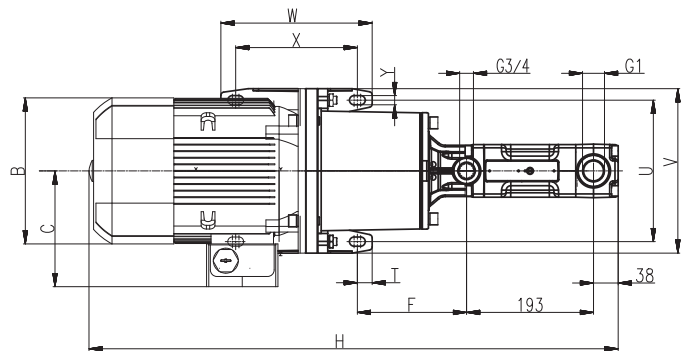
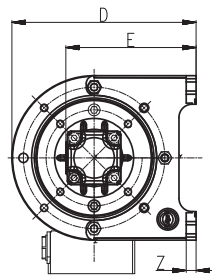


All corners must be deburred! According to ISO 2768-m



*) Dimensions for 4-pole standard motor upon request
 L = Leakage hole
 S = Mounting plate, please refer to the cut-out of mounting hole

Power 2-poles kW	A mm	B mm	C mm
B 1.5 / 1.75	389	176	130
B 2.2 / 2.55	414	176	130
B 3.0	424	176	130
B 3.8 / 4.6	478	218	150
B 5.75 / 6.3	514	258	190
B 8.6 / 10.3	622	258	193
B 12.6	630	310	240



Power 2-poles kW	Power 4-poles kW	B mm	C mm	D mm	E mm	F mm	H mm	T mm	U mm	V mm	W mm	X mm	Y mm	Z mm
1.3	0.86	159	121	212	155	138	701	15	180	210	90	60	11	12
1.75	1.27 / 1.75	178	126	212	155	138	746	15	180	210	90	60	11	12
2.55	-	180	126	212	155	138	746	15	180	210	90	60	11	12
-	2.55 / 3.45	198	166	280	198	166	811	22.5	215	250	260	185	14	15
3.45	-	198	166	280	198	166	811	22.5	215	250	230	185	14	15
-	4.55	222	177	280	198	166	805	22.5	215	250	260	185	14	15
4.6	-	222	177	280	198	166	805	22.5	215	250	230	185	14	15
6.3	6.3	262	202	335	228	171	882	22.5	265	300	270	225	14	18
8.6	-	262	202	335	228	171	940	22.5	265	300	270	225	14	18
12.6	-	314	237	410	278	210	1061	20	300	350	305	265	18	18

High Pressure Pumps

BFS2, FFS2

Screw spindles



Pressure max.	2-pole motor rotation speed 3500 RPM							4-pole motor rotation speed 1750 RPM						
	Flow at viscosity		Power consumption at viscosity		Motor		Weight	Flow at viscosity		Power consumption at viscosity		Motor	Weight	
	1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s	immersion version	foot mounted version		1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s			
Type / bar	l/min	l/min	kW	kW	kW	kW	kg	l/min	l/min	kW	kW	kW	kg	
BFS250/	Q_{Th}¹⁾ 49.2		-	-	-	-	-	Q_{Th}¹⁾ 24.6		-	-	-	-	
10	46.4	48	1.1	1.2	B 1.75	1.75	40	21.8	23.4	0.5	0.6	0.86	29	
20	45.4	47.7	2.0	2.0	B 2.55	2.55	44	20.8	23	1.0	1.0	1.27	32	
30	44.5	47.3	2.8	2.9	B 3.0	3.45	44	19.9	22.7	1.4	1.4	1.75	34	
40	43.6	46.9	3.6	3.8	B 3.8	4.6	55	19	22.3	1.8	1.9	2.55	41	
50	42.7	46.6	4.4	4.6	B 5.75	6.3	74	18.1	21.9	2.2	2.3	2.55	41	
60	41.9	46.2	5.2	5.5	B 5.75	6.3	74	17.3	21.6	2.6	2.7	3.45	46	
70	41.1	45.8	6.1	6.3	B 8.6	8.6	95	16.5	21.2	3.0	3.2	3.45	46	
80	40.3	45.4	6.9	7.2	B 8.6	8.6	95	15.7	20.8	3.4	3.6	4.55	53	
90	39.6	45.1	7.7	8.1	B 8.6	8.6	95	14.9	20.4	3.8	4.0	4.55	53	
100	38.9	44.7	8.5	8.9	B 10.3	12.6	101	14	20.1	4.2	4.5	6.3	63	
110	37.6	44.3	9.3	9.8	B 12.6	12.6	120	-	19.7	-	4.9	6.3	63	
120	36.3	43.9	10.2	10.5	B 12.6	12.6	120	-	19.3	-	5.3	6.3	63	
130	35.1	43.5	11.0	11.5	B 12.6	12.6	120	-	18.9	-	5.8	6.3	63	
140	33.8	43.1	11.8	12.3	B 15.0	17.3	120	-	18.5	-	6.2	8.6	93	
150	32.6	42.7	12.6	13.2	B 15.0	17.3	120	-	18.1	-	6.6	8.6	93	
BFS260/	Q_{Th}¹⁾ 59		-	-	-	-	-	Q_{Th}¹⁾ 29.5		-	-	-	-	
10	55.6	57.6	1.3	1.5	B 2.2	2.55	44	26.1	28	0.6	0.7	0.86	29	
20	54.4	57	2.3	2.5	B 3.0	3.45	44	24.9	27.5	1.1	1.3	2.55	41	
30	53.3	56.4	3.3	3.6	B 3.8	4.6	55	23.8	26.9	1.6	1.8	2.55	41	
40	52.1	55.8	4.3	4.6	B 4.6	6.3	57	22.6	26.3	2.1	2.3	2.55	41	
50	51	55.2	5.2	5.7	B 5.75	6.3	74	21.5	25.7	2.6	2.9	3.45	46	
60	49.8	54.6	6.2	6.7	B 8.6	8.6	95	20.3	25.1	3.1	3.4	4.55	53	
70	48.6	54	7.2	7.8	B 8.6	8.6	95	19.1	24.5	3.6	3.9	4.55	53	
80	47.5	53.4	8.2	8.8	B 12.6	12.6	120	18	23.9	4.1	4.4	6.3	63	
90	46.3	52.8	9.2	9.9	B 12.6	12.6	120	16.8	23.2	4.6	5.0	6.3	63	
100	45.1	52.1	10.2	11.0	B 12.6	12.6	120	15.7	22.6	5.1	5.5	6.3	63	
110	43.5	51.5	11.2	12.1	B 12.6	12.6	120	-	22	-	6.0	8.6	93	
120	41.9	50.8	12.1	13.1	B 15.0	17.3	120	-	21.3	-	6.6	8.6	93	
130	40.2	49.6	13.1	14.2	B 15.0	17.3	120	-	-	-	-	-	-	
140	38.6	48.3	14.1	15.2	-	17.3	110	-	-	-	-	-	-	
150	37	47.1	15.1	16.3	-	17.3	110	-	-	-	-	-	-	

¹⁾ Q_{Th}: Theoretical flow rate

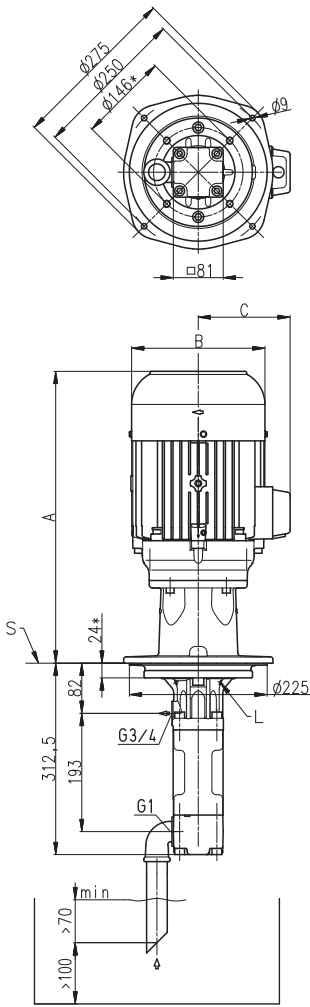
Higher pressures (up to 200 bar) upon request.

Viscosity > 20 mm²/s more power consumption.

Characteristics and dimensions

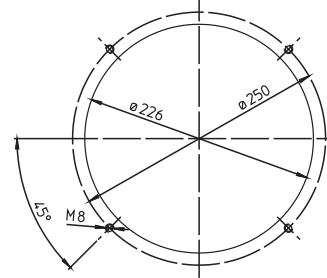
BFS2, FFS2

60 Hz

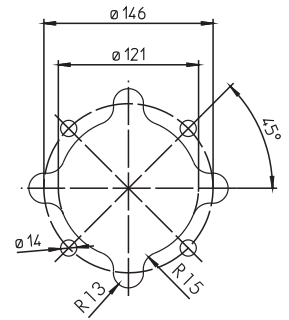


Mounting hole patterns

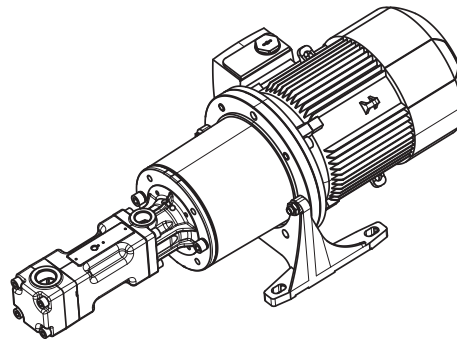
BFS1 / BFS2



TFS1 / TFS2

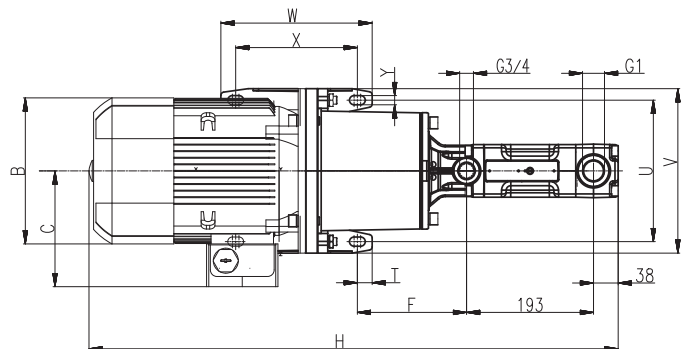
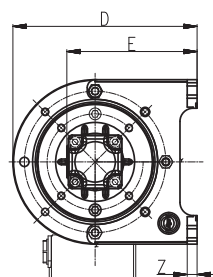


All corners must be deburred!
According to ISO 2768-m



*) Dimensions for 4-pole standard motor upon request
L = Leakage hole
S = Mounting plate, please refer to the cut-out of mounting hole

Power 2-poles kW	A mm	B mm	C mm
B 1.75	389	176	130
B 2.2 / 2.55	414	176	130
B 3.0	424	176	130
B 3.8 / 4.6	478	218	150
B 5.75	514	258	190
B 8.6 / 10.3	622	258	193
B 12.6 / 15.0	630	310	240



Power 2-poles kW	Power 4-poles kW	B mm	C mm	D mm	E mm	F mm	H mm	T mm	U mm	V mm	W mm	X mm	Y mm	Z mm
-	0.86	159	121	212	155	138	701	15	180	210	90	60	11	12
1.75	1.27 / 1.75	178	126	212	155	138	746	15	180	210	90	60	11	12
2.55	-	180	126	212	155	138	746	15	180	210	90	60	11	12
-	2.55 / 3.45	198	166	280	198	166	811	22.5	215	250	260	185	14	15
3.45	-	198	166	280	198	166	811	22.5	215	250	230	185	14	15
-	4.55	222	177	280	198	166	805	22.5	215	250	260	185	14	15
4.6	-	222	177	280	198	166	805	22.5	215	250	230	185	14	15
6.3	6.3	262	202	335	228	171	882	22.5	265	300	270	225	14	18
8.6	8.6	262	202	335	228	171	940	22.5	265	300	270	225	14	18
12.6 / 17.3	-	314	237	410	278	210	1061	20	300	350	305	265	18	18

High Pressure Pumps

TFS3, FFS3

Screw spindles



2-pole motor rotation speed 3500 RPM							4-pole motor rotation speed 1750 RPM					
Pressure max.	Flow at viscosity		Power consumption at viscosity		Motor	Weight	Flow at viscosity		Power consumption at viscosity		Motor	Weight
	1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s			1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s		
Type / bar	l/min	l/min	kW	kW	kW	kg	l/min	l/min	kW	kW	kW	kg
TFS348/	Q_{Th}¹⁾ 77.4		-	-	-	-	Q_{Th}¹⁾ 38.7		-	-	-	-
10	73.3	75.6	1.8	1.9	2.55	47	34.6	36.9	0.8	0.8	1.27	44
20	71.8	74.7	3.1	3.3	4.6	63	33.1	36	1.5	1.5	1.75	46
30	70.3	73.9	4.4	4.6	6.3	73	31.7	35.3	2.1	2.2	2.55	53
40	69	73.2	5.7	6.0	8.6	100	30.3	34.5	2.8	2.9	3.45	58
50	67.6	72.5	6.9	7.3	8.6	100	28.9	33.8	3.4	3.6	4.55	65
60	66.4	71.8	8.2	8.6	12.6	112	27.7	33.1	4.1	4.3	6.3	75
70	65.2	71.1	9.5	10.0	12.6	112	26.5	32.4	4.7	5.0	6.3	75
80	64	70.5	10.8	11.3	12.6	112	25.3	31.8	5.4	5.7	6.3	75
90	62.9	69.9	12.1	12.7	17.3	122	24	31.3	6.0	6.4	8.6	105
100	61.9	69.4	13.4	14.0	17.3	122	22.8	30.7	6.7	7.1	8.6	105
110	60	68.9	14.7	15.3	17.3	122	-	30.2	-	7.8	8.6	105
120	58.2	68.4	15.9	16.7	17.3	122	-	29.8	-	8.5	12.6	124
130	56.6	68	17.2	18.0	21.3	143	-	29.3	-	9.2	12.6	124
140	54.9	67.6	18.5	19.3	21.3	143	-	28.9	-	9.9	12.6	124
150	53.3	67.3	19.8	20.7	25.3	170	-	28.6	-	10.6	12.6	124
TFS364/	Q_{Th}¹⁾ 103.2		-	-	-	-	Q_{Th}¹⁾ 51.6		-	-	-	-
10	97.5	100.7	2.2	2.4	4.6	63	45.9	49.1	1.1	1.1	1.75	46
20	95.8	99.7	3.9	4.2	6.3	73	44.2	48.1	1.9	2.0	2.55	53
30	94	98.7	5.7	6.0	8.6	100	42.4	47.1	2.8	2.9	3.45	58
40	92.3	97.8	7.4	7.7	12.6	112	40.7	46.2	3.6	3.8	4.55	65
50	90.7	96.9	9.1	9.5	12.6	112	39.1	45.3	4.5	4.7	6.3	75
60	89.1	96.1	10.8	11.3	12.6	112	37.5	44.5	5.4	5.6	6.3	75
70	87.5	95.3	12.5	13.1	17.3	122	35.9	43.7	6.2	6.5	8.6	105
80	86	94.5	14.3	14.9	17.3	122	34.4	42.9	7.1	7.4	8.6	105
90	84.6	93.8	16.0	16.7	17.3	122	32.8	42.2	7.9	8.3	8.6	105
100	83.2	93.2	17.7	18.4	21.3	143	31.2	41.6	8.8	9.2	12.6	124
110	80.9	92.5	19.4	20.2	21.3	143	-	40.9	-	10.1	12.6	124
120	78.6	91.9	21.2	22.0	25.3	170	-	40.3	-	11.0	12.6	124
130	76.4	90.4	22.9	23.8	33.5	244	-	-	-	-	-	-
140	74.3	89	24.6	25.6	33.5	244	-	-	-	-	-	-
150	72.2	87.5	26.3	27.3	33.5	244	-	-	-	-	-	-
TFS376/	Q_{Th}¹⁾ 122.5		-	-	-	-	Q_{Th}¹⁾ 61.3		-	-	-	-
10	116.2	119.5	2.5	2.8	6.3	73	55	58.3	1.2	1.3	1.75	46
20	114.1	118.3	4.6	4.9	8.6	100	52.8	57.1	2.2	2.4	3.45	58
30	112	117.2	6.6	7.1	8.6	100	50.8	55.9	3.3	3.5	4.55	65
40	110	116.1	8.7	9.2	12.6	112	48.7	54.9	4.3	4.6	6.3	75
50	108	115.1	10.7	11.3	12.6	112	46.7	53.8	5.3	5.7	6.3	75
60	106	114.1	12.8	13.5	17.3	122	44.8	52.9	6.3	6.7	8.6	105
70	104.1	113.2	14.8	15.6	17.3	122	42.8	51.9	7.3	7.8	8.6	105
80	102.2	112.3	16.8	17.8	21.3	143	40.9	51	8.4	8.9	12.6	124
90	100.3	111.4	18.9	19.9	21.3	143	38.9	50.2	9.4	10.0	12.6	124
100	98.5	110.6	20.9	22.0	25.3	170	37	49.4	10.4	11.1	12.6	124
110	95.5	109.9	23.0	24.2	33.5	244	-	48.6	-	12.2	17.3	155
120	92.6	109.2	25.0	26.3	33.5	244	-	48	-	13.3	17.3	155
130	89.8	107.4	27.1	28.5	33.5	244	-	-	-	-	-	-
140	87	105.7	29.1	30.6	33.5	244	-	-	-	-	-	-
150	84.2	104	31.1	32.7	41.5	273	-	-	-	-	-	-

¹⁾ Q_{Th}: Theoretical flow rate

Higher pressures (up to 200 bar) upon request.

Viscosity > 20 mm²/s more power consumption.

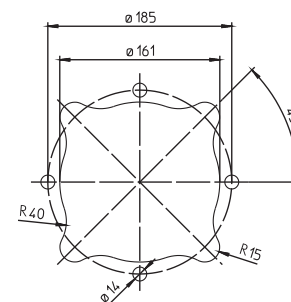
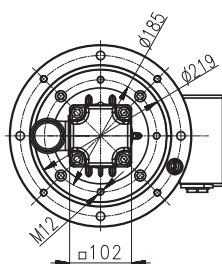
Characteristics and dimensions

TFS3, FFS3

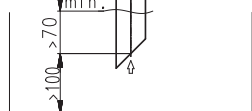
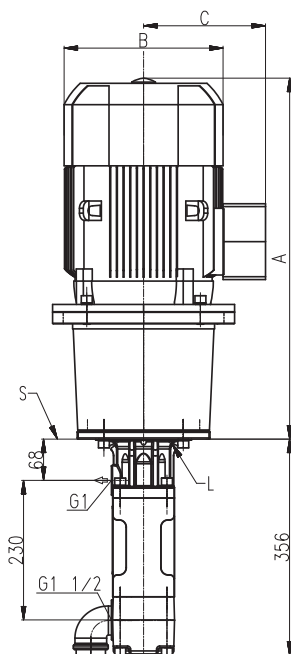
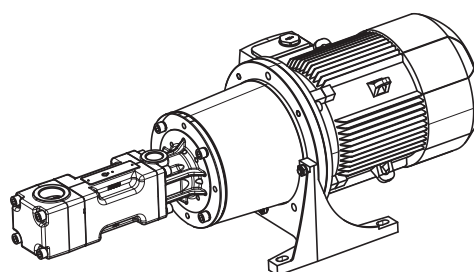
60 Hz

Mouting hole patterns

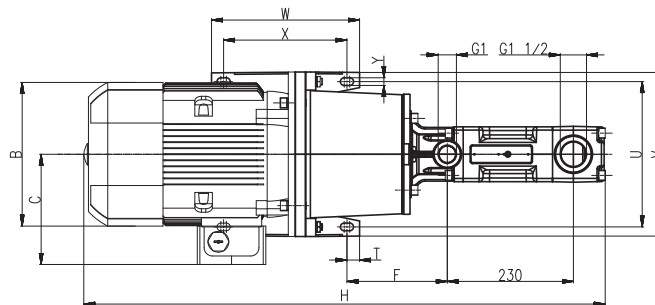
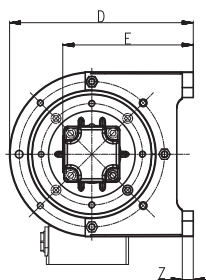
TFS3 / TFS4



All corners must be deburred!
According to ISO 2768-m



L = Leakage hole
S = Mounting plate, please refer to the cut-out of mounting hole



Power 2-poles kW	Power 4-poles kW	A mm	B mm	C mm	D mm	E mm	F mm	H mm	T mm	U mm	V mm	W mm	X mm	Y mm	Z mm
-	1.27	476	178	126	212	165	152	832	15	180	210	90	60	11	12
-	1.75	533	178	126	212	165	152	832	15	180	210	90	60	11	12
2.55	-	476	180	126	212	165	152	832	15	180	210	90	60	11	12
-	2.55	526	198	166	280	208	186	889	22.5	215	250	260	185	14	15
-	3.45	595	198	166	280	208	186	889	22.5	215	250	260	185	14	15
-	4.55	595	222	177	280	208	186	882	22.5	215	250	260	185	14	15
4.6	-	526	222	177	280	208	186	882	22.5	215	250	230	185	14	15
6.3	-	595	262	202	335	238	183	951	22.5	265	300	270	225	14	18
-	6.3	764	262	202	335	238	183	951	22.5	265	300	270	225	14	18
8.6	-	654	262	202	335	238	183	1010	22.5	265	300	270	225	14	18
-	8.6	774	262	202	335	238	183	1010	22.5	265	300	270	225	14	18
12.6 / 17.3	-	774	314	237	410	288	222	1130	20	300	350	305	265	18	18
-	12.6	824	314	237	410	288	222	1130	20	300	350	305	265	18	18
-	17.3	824	314	237	410	288	222	1190	20	300	350	305	265	18	18
21.3	-	824	314	237	410	288	222	1180	20	300	350	305	265	18	18
25.3	-	824	356	286	410	288	222	1180	20	300	350	305	265	18	18
33.5 / 41.5	-	881	396	315	460	313	212	1237	25	350	400	350	300	18	20

High Pressure Pumps

TFS4, FFS4

Screw spindles

60 Hz

Pressure max.	2-pole motor rotation speed 3500 RPM						4-pole motor rotation speed 1750 RPM					
	Flow at viscosity		Power consumption at viscosity		Motor	Weight	Flow at viscosity		Power consumption at viscosity		Motor	Weight
	1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s			1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s		
Type / bar	l/min	l/min	kW	kW	kW	kg	l/min	l/min	kW	kW	kW	kg
TFS460/	Q_{Th}¹⁾ 151.2		-	-	-	-	Q_{Th}¹⁾ 75.6		-	-	-	-
10	144	147	3.3	3.7	4.6	74	68	72	1.6	1.6	2.55	64
20	141	146	5.8	6.4	8.6	110	65	70	2.8	2.9	3.45	64
30	138	144	8.4	9.0	12.6	123	63	69	4.1	4.3	4.55	76
40	136	143	10.9	11.7	12.6	123	60	67	5.3	5.6	6.3	85
50	133	142	13.4	14.4	17.3	133	57	66	6.6	7.0	8.6	115
60	131	140	15.9	17.0	21.3	154	55	65	7.9	8.4	8.6	115
70	128	139	18.4	19.7	21.3	154	53	63	9.1	9.7	12.6	135
80	126	138	21.0	22.3	25.3	181	50	62	10.4	11.1	12.6	135
90	124	137	23.5	25.0	33.5	255	48	61	11.6	12.4	17.3	166
100	122	136	26.0	27.7	33.5	255	45	60	12.9	13.8	17.3	166
110	120	135	28.5	30.3	33.5	255	-	59	-	15.2	17.3	166
120	117	134	31.1	33.0	41.5	284	-	58	-	16.5	17.3	166
TFS480/	Q_{Th}¹⁾ 201.7		-	-	-	-	Q_{Th}¹⁾ 100.8		-	-	-	-
10	192	197	4.2	4.9	6.3	83	91	96	2.0	2.1	2.55	64
20	188	194	7.5	8.5	12.6	123	87	94	3.7	3.9	4.55	76
30	184	192	10.9	12.1	17.3	133	84	91	5.3	5.7	6.3	85
40	181	190	14.2	15.6	17.3	133	80	89	7.0	7.5	8.6	115
50	178	188	17.6	19.2	21.3	154	77	88	8.7	9.3	12.6	135
60	175	187	21.0	22.8	25.3	181	74	86	10.4	11.1	12.6	135
70	172	185	24.3	26.4	33.5	255	71	84	12.1	12.9	17.3	166
80	169	183	27.7	30.0	33.5	255	68	83	13.7	14.7	17.3	166
90	166	182	31.1	33.6	41.5	284	65	81	15.4	16.5	17.3	166
100	164	181	34.4	37.1	41.5	284	62	80	17.1	18.3	21.3	173
110	161	180	37.8	40.7	41.5	284	-	79	-	20.1	21.3	173
120	158	179	41.1	44.3	51.0	394	-	78	-	21.9	25.3	188
TFS496/	Q_{Th}¹⁾ 242		-	-	-	-	Q_{Th}¹⁾ 121		-	-	-	-
10	231	235	4.8	5.6	8.6	110	110	114	2.3	2.7	3.45	64
20	226	233	8.9	9.9	12.6	123	105	112	4.3	4.8	6.3	85
30	222	231	12.9	14.2	17.3	133	101	110	6.3	7.0	8.6	115
40	218	229	16.9	18.5	21.3	154	97	108	8.4	9.1	12.6	135
50	214	227	21.0	22.8	25.3	181	93	106	10.4	11.3	12.6	135
60	211	225	25.0	27.1	33.5	255	90	104	12.4	13.5	17.3	166
70	207	224	29.0	31.4	33.5	255	86	103	14.4	15.6	17.3	166
80	204	222	33.1	35.7	41.5	284	83	101	16.4	17.8	21.3	173
90	201	220	37.1	40.0	41.5	284	79	99	18.4	19.9	21.3	173
100	198	219	41.1	44.3	51.0	394	76	98	20.5	22.1	25.3	188
110	195	217	45.2	48.6	51.0	394	-	96	-	24.3	34.5	254
120	191	215	49.2	52.9	62.0	494	-	94	-	26.4	34.5	254

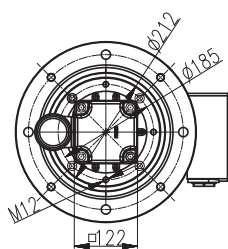
¹⁾ Q_{Th}: Theoretical flow rate

Viscosity > 20 mm²/s more power consumption.

Characteristics and dimensions

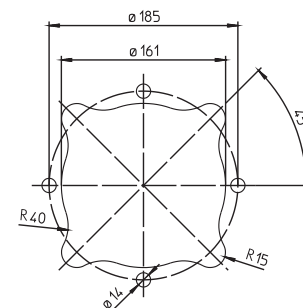
TFS4, FFS4

60 Hz

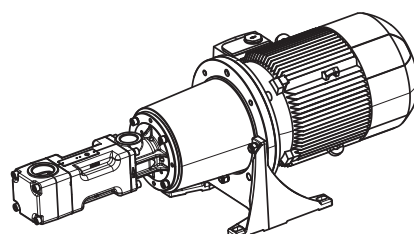
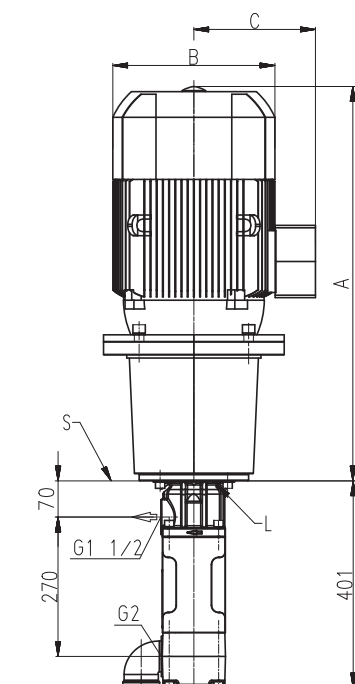


Mounting hole patterns

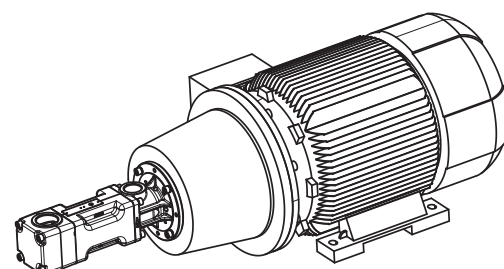
TFS3 / TFS4



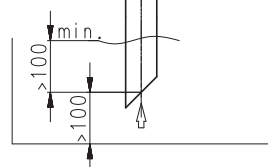
All corners must be deburred!
According to ISO 2768-m



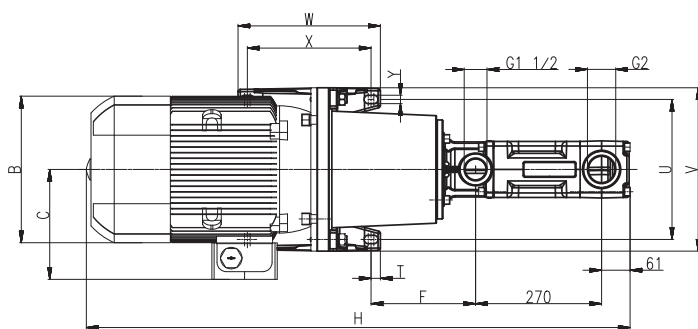
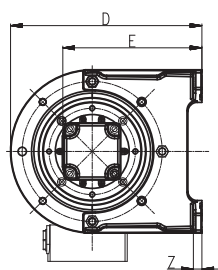
<math>< 45kW</math>



$\ge 45kW$



L = Leakage hole
S = Mounting plate, please refer to the cut-out of mounting hole



Power 2-poles kW	Power 4-poles kW	A mm	B mm	C mm	D mm	E mm	F mm	H mm	T mm	U mm	V mm	W mm	X mm	Y mm	Z mm
-	2.55 / 3.45	533	198	166	280	218	188	934	22.5	215	250	230	185	14	15
4.6	4.55	526	222	177	280	218	188	927	22.5	215	250	230	185	14	15
6.3	6.3	609	262	202	335	248	199	1010	22.5	265	300	270	225	14	18
8.6	8.6	668	262	202	335	248	199	1069	22.5	265	300	270	225	14	18
12.6 / 17.3	12.6	774	314	237	410	298	224	1175	20	300	350	305	265	18	18
-	17.3	834	314	237	410	298	224	1235	20	300	350	305	265	18	18
21.3	-	824	314	237	410	298	224	1225	20	300	350	305	265	18	18
-	21.3	828	356	286	410	298	224	1229	20	300	350	305	265	18	18
25.3	-	824	356	286	410	298	224	1225	20	300	350	305	265	18	18
-	25.3	858	356	286	410	298	224	1259	20	300	350	305	265	18	18
33.5	-	881	396	315	460	323	214	1282	25	350	400	350	300	18	20
41.5	34.5	906	396	315	460	323	214	1307	25	350	400	350	300	18	20
51.0	-	984	449	338	450	288	495	1385	25	356	436	361	311	19	34
62.0	-	1056	497	410	525	313	547	1457	30	406	490	409	349	24	40

High Pressure Pumps

TFS5, FFS5

Screw spindles



Pressure max.	2-pole motor rotation speed 3500 RPM						4-pole motor rotation speed 1750 RPM					
	Flow at viscosity		Power consumption at viscosity		Motor	Weight	Flow at viscosity		Power consumption at viscosity		Motor	Weight
	1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s			1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s		
Type / bar	l/min	l/min	kW	kW	kW	kg	l/min	l/min	kW	kW	kW	kg
TFS574/	Q_{Th}¹⁾ 291.6		-	-	-	-	Q_{Th}¹⁾ 145.8		-	-	-	-
10	280	285	6.2	7.0	8.6	139	134	139	2.9	3.4	4.55	105
20	276	283	11.0	12.1	17.3	162	130	137	5.4	6.0	8.6	144
30	272	281	15.9	17.2	21.3	183	126	135	7.8	8.5	12.6	164
40	269	279	20.7	22.2	25.3	210	123	134	10.2	11.1	12.6	164
50	266	278	25.6	27.3	33.5	284	120	132	12.6	13.7	17.3	195
60	262	276	30.5	32.4	33.5	284	117	130	15.1	16.2	17.3	195
70	260	274	35.3	37.5	41.5	313	114	129	17.5	18.8	21.3	202
80	257	273	40.2	42.6	51.0	423	111	127	19.9	21.4	25.3	217
90	254	271	45.0	47.7	51.0	423	108	126	22.3	23.9	25.3	217
100	252	270	49.9	52.7	62.0	523	105	124	24.8	26.5	34.5	283
110	249	269	54.7	57.8	62.0	523	-	123	-	29.1	34.5	283
120	247	267	59.6	62.9	86.0	708	-	122	-	31.6	34.5	283
TFS5100/	Q_{Th}¹⁾ 394.1		-	-	-	-	Q_{Th}¹⁾ 197		-	-	-	-
10	378	386	7.9	8.7	12.6	152	181	189	3.8	4.3	6.3	114
20	374	383	14.4	15.6	21.3	183	177	186	7.1	7.8	8.6	144
30	370	381	21.0	22.6	25.3	210	173	184	10.4	11.3	12.6	164
40	366	379	27.6	29.5	33.5	284	169	182	13.6	14.8	17.3	195
50	362	377	34.1	36.4	41.5	313	165	180	16.9	18.3	21.3	202
60	358	375	40.7	43.4	51.0	423	161	178	20.2	21.8	25.3	217
70	355	373	47.3	50.3	62.0	523	158	176	23.5	25.3	34.5	283
80	351	371	53.8	57.3	62.0	523	154	174	26.8	28.8	34.5	283
90	348	369	60.4	64.2	86.0	708	150	172	30.1	32.3	34.5	283
100	345	368	67.0	71.1	86.0	708	147	171	33.3	35.8	42.5	368
110	342	366	73.5	78.1	86.0	708	-	169	-	39.3	42.5	368
120	338	365	80.1	85.0	101.0	753	-	168	-	42.8	52.0	418

¹⁾ Q_{Th}: Theoretical flow rate

Viscosity > 20 mm²/s more power consumption.

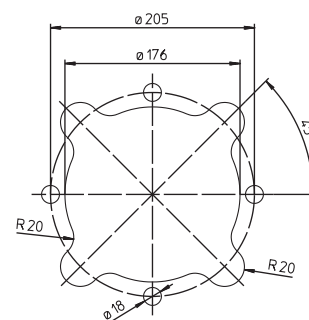
Characteristics and dimensions

TFS5, FFS5

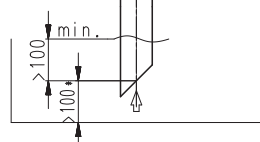
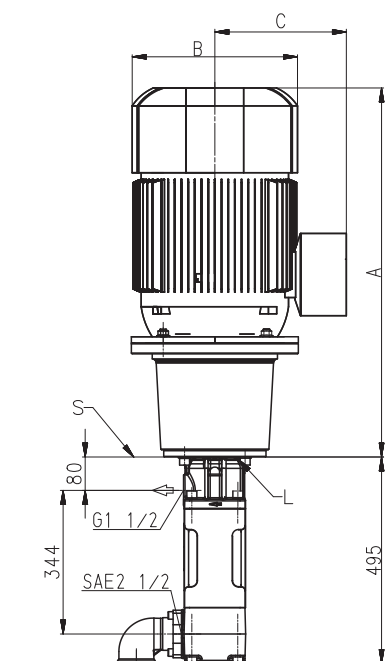
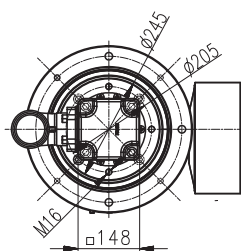
60 Hz

Mounting hole patterns

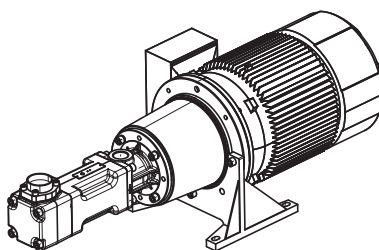
TFS5



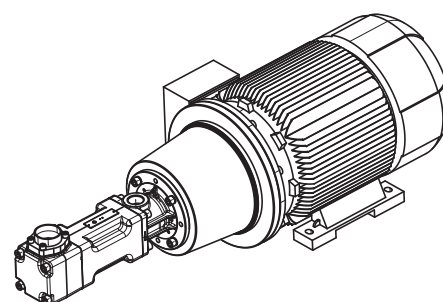
All corners must be deburred!
According to ISO 2768-m



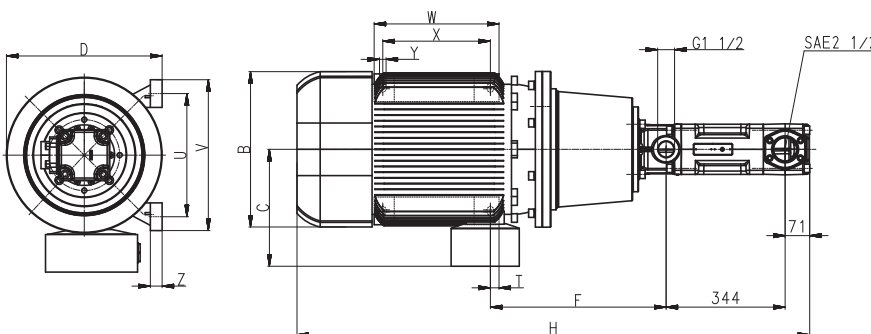
L = Leakage hole
S = Mounting plate, please refer to the cut-out of mounting hole



< 45kW



≥ 45kW



Power 2-poles kW	Power 4-poles kW	A mm	B mm	C mm	D mm	F mm	H mm	T mm	U mm	V mm	W mm	X mm	Y mm	Z mm
-	4.55	556	222	177	280	228	1051	22.5	215	250	230	185	14	15
-	6.3	622	262	202	335	222	1117	22.5	265	300	270	225	14	18
8.6	8.6	681	262	202	335	222	1176	22.5	265	300	270	225	14	18
12.6 / 17.3	12.6	777	314	237	410	237	1272	20	300	350	305	265	18	18
-	17.3	837	314	237	410	237	1332	20	300	350	305	265	18	18
21.3	-	827	314	237	410	237	1322	20	300	350	305	265	18	18
-	21.3	831	356	286	410	237	1326	20	300	350	305	265	18	18
25.3	-	827	356	286	410	237	1322	20	300	350	305	265	18	18
-	25.3	861	356	286	410	237	1356	20	300	350	305	265	18	18
33.5	-	884	396	315	460	227	1379	25	350	400	350	300	18	20
41.5	34.5	909	396	315	460	227	1404	25	350	400	350	300	18	20
-	42.5	929	449	338	520	223	1424	25	400	450	385	335	18	20
51.0	52.0	987	449	338	450	508	1482	25	356	436	361	311	19	34
62.0	-	1059	497	410	525	560	1554	30	406	490	409	349	24	40
86.0 / 101.0	-	1243	551	433	555	582	1738	30	457	540	479	419	24	40

High Pressure Pumps

TFS5, FFS5

Screw spindles



2-pole motor rotation speed 3500 RPM							4-pole motor rotation speed 1750 RPM					
Pressure max.	Flow at viscosity		Power consumption at viscosity		Motor	Weight	Flow at viscosity		Power consumption at viscosity		Motor	Weight
	1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s			1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s		
Type / bar	l/min	l/min	kW	kW	kW	kg	l/min	l/min	kW	kW	kW	kg
TFS5120/	Q _{Th} ¹⁾ 472.9		-	-	-	-	Q _{Th} ¹⁾ 236.4		-	-	-	-
10	453	463	9.2	10.0	12.6	152	217	227	4.4	5.0	6.3	114
20	447	460	17.1	18.4	21.3	183	211	223	8.4	9.2	12.6	164
30	442	457	24.9	26.7	33.5	284	205	220	12.3	13.4	17.3	195
40	436	454	32.8	35.1	41.5	313	200	218	16.3	17.6	21.3	202
50	431	452	40.7	43.5	51.0	423	195	215	20.2	21.8	25.3	217
60	426	449	48.6	51.9	62.0	523	190	213	24.1	26.1	34.5	283
70	421	447	56.5	60.2	62.0	523	185	210	28.1	30.3	34.5	283
80	417	445	64.3	68.6	86.0	708	180	208	32.0	34.5	42.5	368
90	412	443	72.2	77.0	86.0	708	175	206	36.0	38.7	42.5	368
100	408	441	80.1	85.4	101.0	753	170	205	39.9	42.9	52.0	418
110	403	440	88.0	93.7	101.0	753	-	203	-	47.1	52.0	418
120	399	438	95.8	102.1	123.0	898	-	202	-	51.3	63.0	503
TFS5130/	Q _{Th} ¹⁾ 512.3		-	-	-	-	Q _{Th} ¹⁾ 256.1		-	-	-	-
10	491	500	9.8	11.7	17.3	162	235	243	4.8	5.4	6.3	114
20	484	495	18.4	20.3	25.3	210	228	239	9.0	9.8	12.6	164
30	477	490	26.9	29.0	33.5	284	221	234	13.3	14.2	17.3	195
40	471	486	35.5	37.6	41.5	313	215	230	17.6	18.6	25.3	217
50	465	482	44.0	46.2	51.0	423	209	225	21.8	23.0	25.3	217
60	459	477	52.5	54.8	62.0	523	203	221	26.1	27.3	34.5	283
70	454	474	61.1	63.5	86.0	708	198	217	30.4	31.7	34.5	283
80	449	470	69.6	72.1	86.0	708	193	214	34.7	36.1	42.5	363
90	444	466	78.1	80.7	86.0	708	187	210	38.9	40.5	52.0	418
100	440	463	86.7	89.3	101.0	753	182	207	43.2	44.9	52.0	418
110	-	460	-	98.0	123.0	898	-	204	-	49.3	63.0	503
120	-	457	-	106.6	123.0	898	-	201	-	53.7	63.0	503

¹⁾ Q_{Th}: Theoretical flow rate

Viscosity > 20 mm²/s more power consumption.

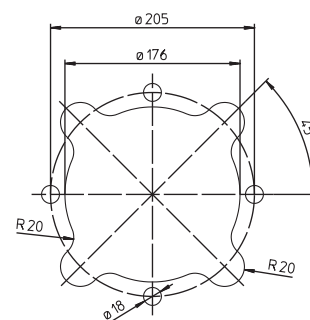
Characteristics and dimensions

TFS5, FFS5

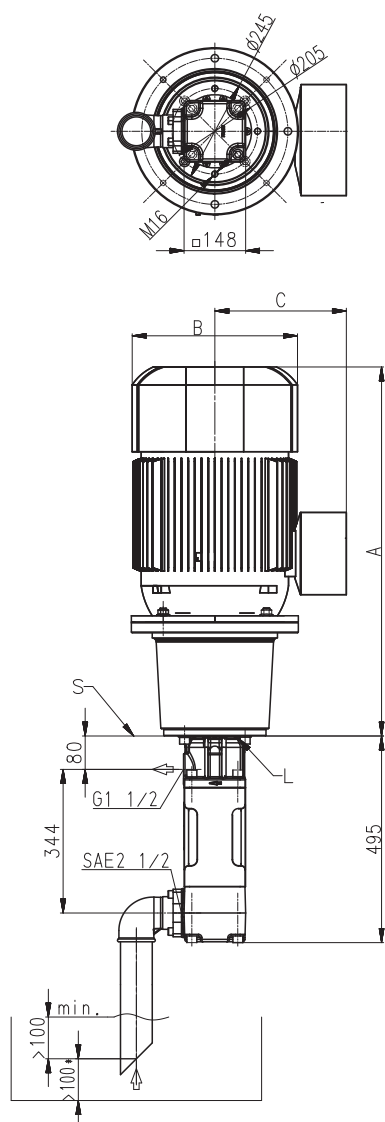
60 Hz

Mounting hole patterns

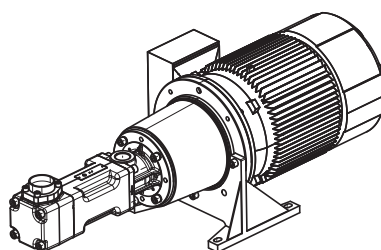
TFS5



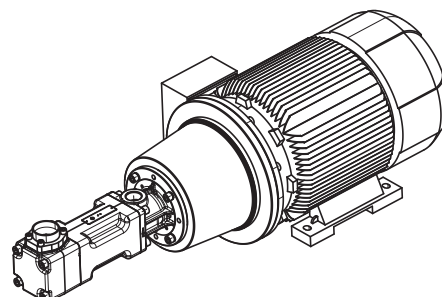
All corners must be deburred!
According to ISO 2768-m



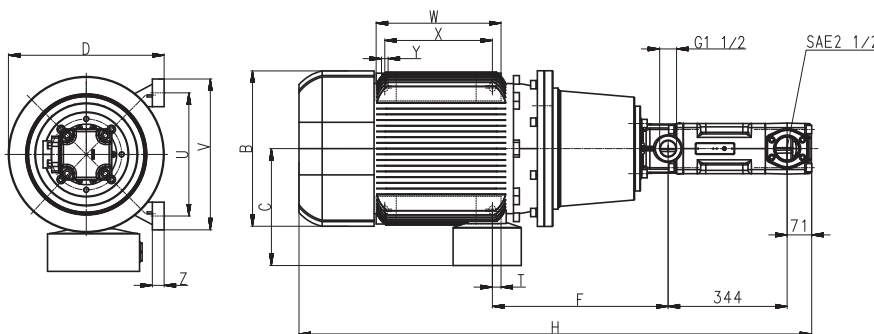
L = Leakage hole
S = Mounting plate, please refer to the cut-out of mounting hole



< 45kW



≥ 45kW



Power 2-poles kW	Power 4-poles kW	A mm	B mm	C mm	D mm	F mm	H mm	T mm	U mm	V mm	W mm	X mm	Y mm	Z mm
-	6.3	622	262	202	335	222	1117	22.5	265	300	270	225	14	18
12.6 / 17.3	12.6	777	314	237	410	237	1272	20	300	350	305	265	18	18
-	17.3	837	314	237	410	237	1332	20	300	350	305	265	18	18
21.3	-	827	314	237	410	237	1322	20	300	350	305	265	18	18
-	21.3	831	356	286	410	237	1326	20	300	350	305	265	18	18
25.3	-	827	356	286	410	237	1322	20	300	350	305	265	18	18
-	25.3	861	356	286	410	237	1356	20	300	350	305	265	18	18
33.5	-	884	396	315	460	227	1379	25	350	400	350	300	18	20
41.5	34.5	909	396	315	460	227	1404	25	350	400	350	300	18	20
-	42.5	929	449	338	520	223	1424	25	400	450	385	335	18	20
51.0	52.0	987	449	338	450	508	1482	25	356	436	361	311	19	34
62.0	63.0	1059	497	410	525	560	1554	30	406	490	409	349	24	40
86.0 / 101.0	-	1243	551	433	555	582	1738	30	457	540	479	419	24	40
123.0	-	1239	616	515	645	623	1734	35	508	610	527	406	28	50

High Pressure Pumps

TFS6, FFS6

Screw spindles



2-pole motor rotation speed 3500 RPM							4-pole motor rotation speed 1750 RPM					
Pressure max.	Flow at viscosity		Power consumption at viscosity		Motor	Weight	Flow at viscosity		Power consumption at viscosity		Motor	Weight
	1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s			1 mm ² /s	20 mm ² /s	1 mm ² /s	20 mm ² /s		
Type / bar	l/min	l/min	kW	kW	kW	kg	l/min	l/min	kW	kW	kW	kg
TFS690/	Q_{Th}¹⁾ 554		–	–	–	–	Q_{Th}¹⁾ 277		–	–	–	–
10	540	545	11.6	13.3	17.3	222	263	268	5.6	6.2	8.6	205
20	532	540	20.9	22.6	33.5	344	255	263	10.2	10.8	12.6	224
30	524	535	30.1	31.8	41.5	373	247	258	14.9	15.5	17.3	255
40	516	531	39.3	41.0	51.0	484	239	254	19.5	20.1	25.3	277
50	509	527	48.6	50.3	62.0	584	232	250	24.1	24.7	34.5	343
60	502	523	57.8	59.5	62.0	584	225	246	28.7	29.3	34.5	343
70	496	519	67.0	68.7	86.0	769	219	242	33.3	33.9	42.5	429
80	490	515	76.3	78.0	86.0	769	213	238	37.9	38.5	42.5	429
TFS6120/	Q_{Th}¹⁾ 739		–	–	–	–	Q_{Th}¹⁾ 369		–	–	–	–
10	720	726	14.7	16.4	21.3	243	351	357	7.2	7.8	12.6	224
20	710	721	27.0	28.7	33.5	344	341	351	13.3	13.9	17.3	255
30	701	715	39.3	41.0	51.0	484	331	346	19.5	20.1	21.3	262
40	692	710	51.6	53.3	62.0	584	322	340	25.6	26.2	34.5	343
50	683	704	64.0	65.7	86.0	769	314	335	31.8	32.4	34.5	343
60	676	699	76.3	78.0	86.0	769	306	330	37.9	38.5	42.5	429
70	668	695	88.6	90.3	101.0	814	299	325	44.1	44.7	52.0	479
80	659	689	101.0	103.0	123.0	959	290	320	50.2	50.8	63.0	564
TFS6145/	Q_{Th}¹⁾ 893		–	–	–	–	Q_{Th}¹⁾ 446		–	–	–	–
10	870	878	17.3	19.0	25.3	270	424	432	8.4	9.0	12.6	224
20	857	868	32.2	33.9	41.5	373	411	422	15.9	16.5	21.3	262
30	845	859	47.0	48.7	62.0	584	398	413	23.3	23.9	34.5	343
40	833	851	61.9	63.6	86.0	769	386	405	30.8	31.4	34.5	343
50	822	844	76.8	78.5	86.0	769	375	397	38.2	38.8	42.5	429
60	811	837	91.7	93.4	101.0	814	365	391	45.6	46.2	52.0	479
70	799	829	106.6	108.3	123.0	959	353	382	53.1	53.7	63.0	564

¹⁾ Q_{Th}: Theoretical flow rate

Viscosity > 20 mm²/s more power consumption.

All 6 series screw pumps with an operating flow rate of 800 l/min or above must be operated with a feed pump which supplies fluid with at least 1bar of pressure to the pump inlet.

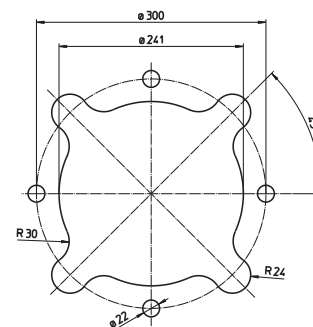
Characteristics and dimensions

TFS6, FFS6

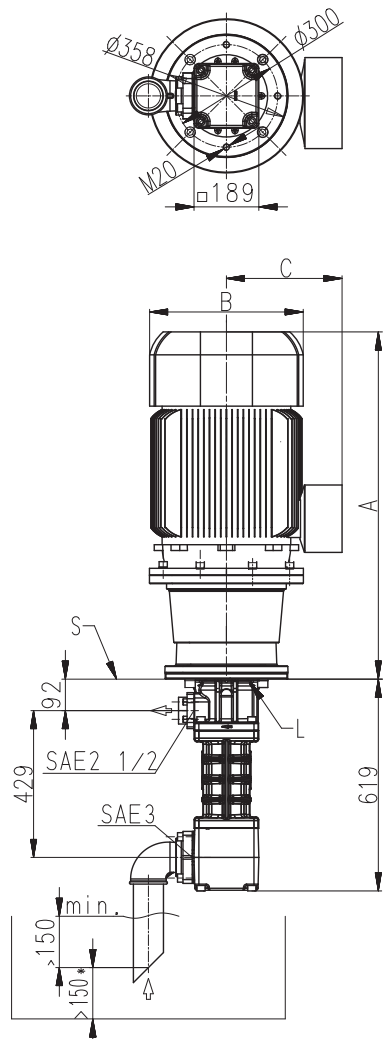
60 Hz

Mounting hole patterns

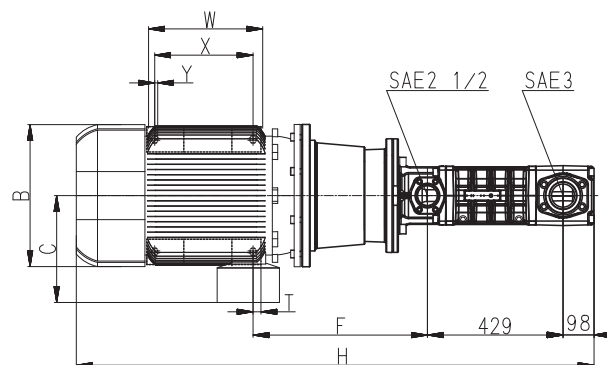
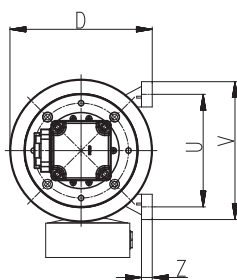
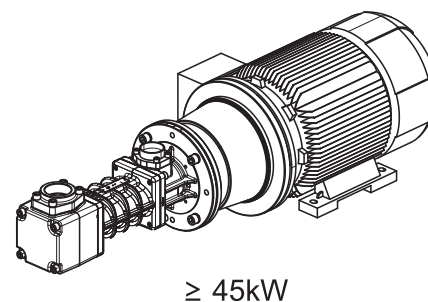
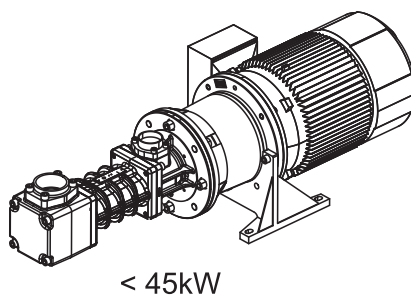
TFS6



All corners must be deburred!
According to ISO 2768-m



L = Leakage hole
S = Mounting plate, please refer to the cut-out of mounting hole



Power 2-poles kW	Power 4-poles kW	A mm	B mm	C mm	D mm	F mm	H mm	T mm	U mm	V mm	W mm	X mm	Y mm	Z mm
-	8.6	723	262	202	335	252	1351	22.5	265	300	270	225	14	18
17.3	12.6	805	314	237	410	252	1424	20	300	350	305	265	18	18
-	17.3	865	314	237	410	265	1484	20	300	350	305	265	18	18
21.3	-	855	314	237	410	252	1474	20	300	350	305	265	18	18
-	21.3	859	356	286	410	265	1478	20	300	350	305	265	18	18
-	25.3	889	356	286	410	397	1508	20	300	350	305	265	18	18
25.3	-	855	356	286	410	252	1474	20	300	350	305	265	18	18
33.5	-	910	396	315	460	265	1529	25	350	400	350	300	18	20
-	34.5	935	396	315	460	417	1554	25	350	400	350	300	18	20
41.5	-	935	396	315	460	265	1554	25	350	400	350	300	18	20
-	42.5	975	449	338	520	432	1594	25	400	450	385	335	18	20
51.0	52.0	1013	449	338	450	546	1632	25	356	436	361	311	19	34
62.0	-	1072	497	410	525	585	1691	30	406	490	409	349	24	40
-	63.0	1087	497	410	525	600	1706	30	406	490	409	349	24	40
86.0 / 101.0	-	1271	551	433	555	622	1890	30	457	540	479	419	24	40

Valves

Adjustable Pressure Relief Valves

Adjustable pressure relief valves allow for variable operating pressures anywhere between 5 – 120 bar. In order to prevent overloading of the motor, however, the maximum operating pressure may never exceed the highest allowable operating pressure for the specific pump and motor combination in use.

The system user must ensure that the operating pressure never exceeds the highest allowable operating pressure (i.e. by using a second non adjustable pressure relief valve which is set for the highest allowable pressure).

3-HPB Series

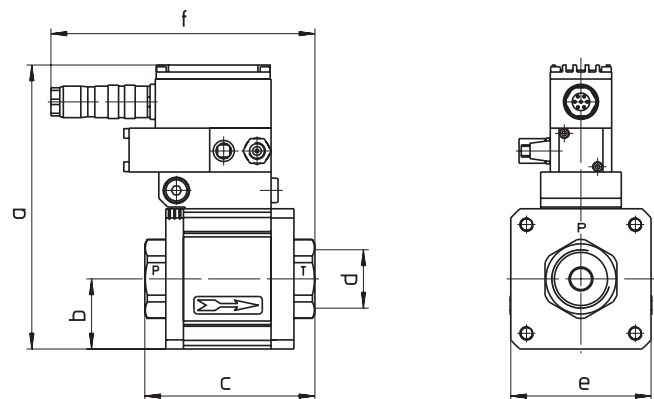
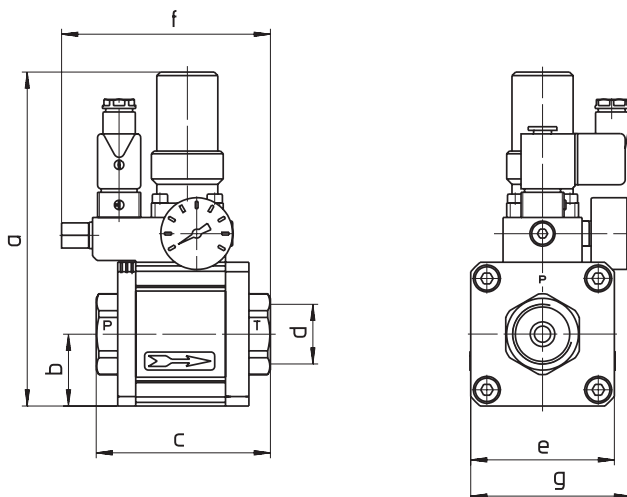
The 3-HPB series are manually adjustable pressure relief valves. The valves are pneumatically operated and control the operating pressure with the control pressure in a ratio of 1:10 and 1:18.5.

Without power and air supply the valve is fully open and in dump mode.

SPB Series

SPB Series pressure relief valves are electronically adjustable valves. The valve requires an analog signal of 0 – 10 V. The ratio between the control voltage and the operating pressure is 1:10 and 1:18.5.

Without power and air supply the valve is fully open and in dump mode.



Type	Pressure p (bar)	Flow Qmax (l/min)
3-HPB-08	10-200	18
3-HPB-S 15	5-64	100
3-HPB-H 15	5-120	100
3-HPB-S 32	5-64	400
3-HPB-H 32	5-120	240
3-HPB-S 50	5-64	800

Type	Pressure p (bar)	Flow Qmax (l/min)
SPB-08	10-200	18
SPB-S 15	5-64	100
SPB-H 15	5-120	100
SPB-S 32	5-64	400
SPB-H 32	5-120	240
SPB-S 50	5-64	800

Type 3-HPB	a mm	b mm	c mm	d mm	e mm	f mm	g mm
08	180	37	138	G ³ / ₈	Ø 74	-	-
S / H 15	186	40	97	G1	□ 80	116.3	89
S / H 32	231	60	160	G1 ¹ / ₂	□ 120	125	109
S 50	251	70	160	G1 ¹ / ₂	□ 140	-	-

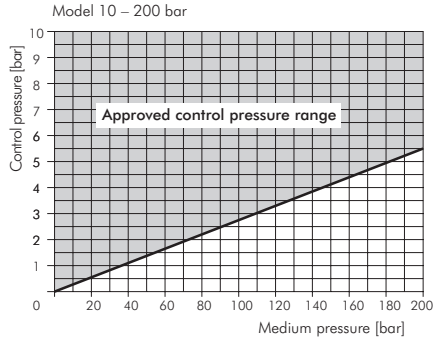
Type SPB	a mm	b mm	c mm	d mm	e mm	f mm
08	151	37	138	G ³ / ₈	Ø 74	-
S / H 15	162	40	97	G1	□ 80	150.5
S / H 32	192.5	60	160	G1 ¹ / ₂	□ 120	176.5
S 50	251	70	160	G1 ¹ / ₂	□ 140	-

Further valves on request.

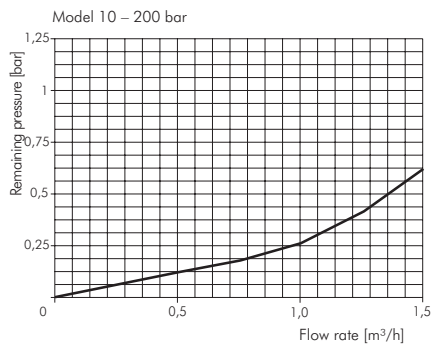
Valves

3-HPB – 08 | SPB – 08

Control pressure diagram

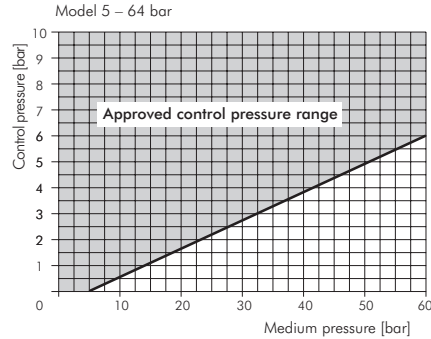


Depressurized recirculation mode

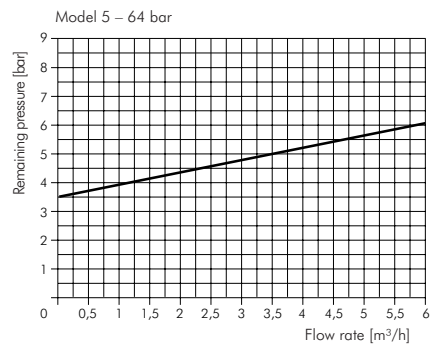


3 – HPB – S 15 | SPB – S 15

Control pressure diagram

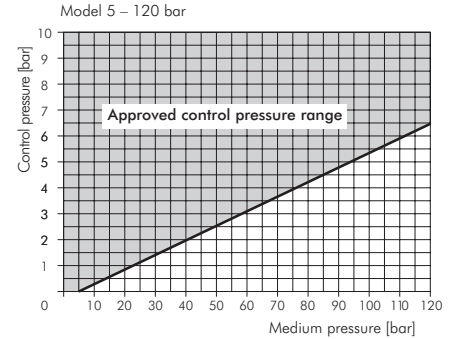


Depressurized recirculation mode

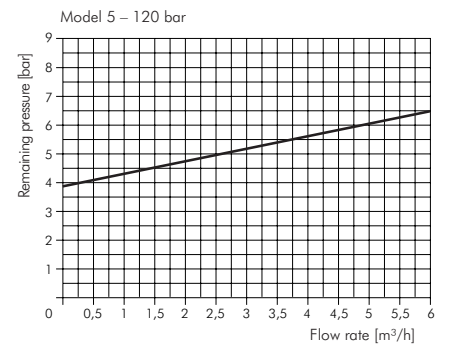


3 – HPB – H 15 | SPB – H 15

Control pressure diagram

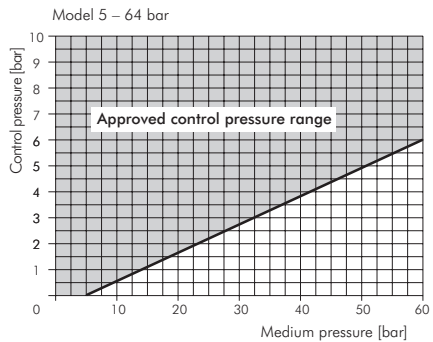


Depressurized recirculation mode

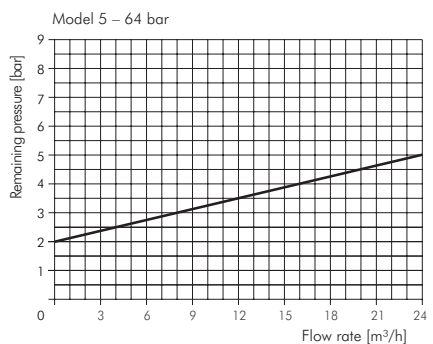


3 – HPB – S 32 | SPB – S 32

Control pressure diagram

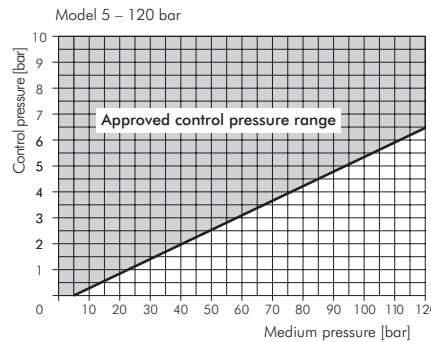


Depressurized recirculation mode

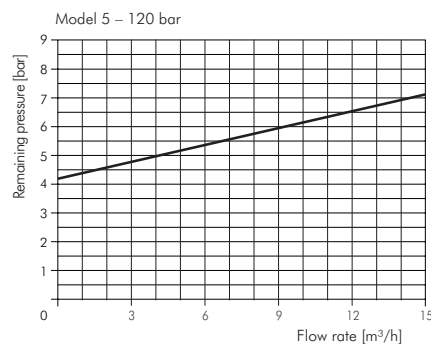


3 – HPB – H 32 | SPB – H 32

Control pressure diagram

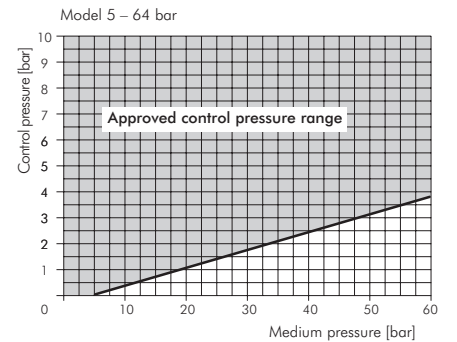


Depressurized recirculation mode

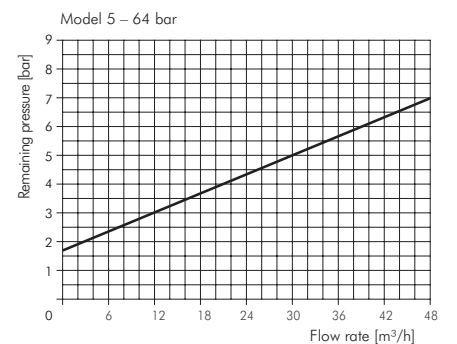


3 – HPB – S 50 | SPB – S 50

Control pressure diagram



Depressurized recirculation mode



Valves

Non-adjustable Pressure Relief Valves

Screw spindle pumps are positive displacement pumps which always require the installation of a pressure relief valve in order to prevent bursting. Pressure relief valves are set for a maximum operating pressure and protect the pump motor from overloading. Once the set maximum pressure is reached, the relief valve opens and the excess flow rate is passed through the valve back into the tank.

In order to avoid pressure spikes in the system a pressure relief valve which cushions against vibration is recommended. BBV 1 – 3 series are such relief valves. They are available in 10 bar increments and are preset by the factory for the highest allowable operating pressure for the specific pump and motor combination.

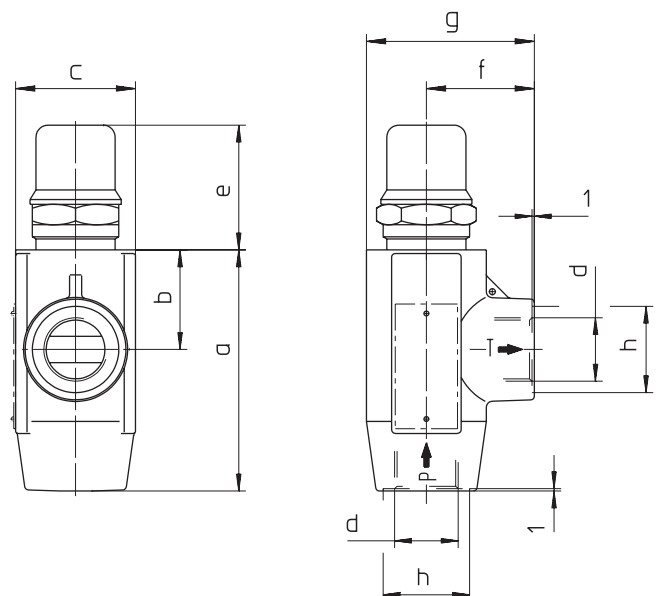
Non-adjustable Pressure Relief Valves BBV

Non-adjustable Pressure Relief valves of the series BBV are shock absorbent valves which open at a preset pressure. The relief valve opens at the factory set pressure which is available in 10 bar increments and the excess flow rate is diverted through a separate bypass line back into the tank.

Type of Pumps	Type of Valves	Pressure (bar)														
		10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
BFS1, FFS1 BFS232, FFS232	BBV 1	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
BFS2, FFS2	BBV 2	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
TFS2, FFS3	BBV 3	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Ordering description: e.g. BBV 3 / 50

	BBV 1 + 2 mm	BBV 3 mm
a	100.5	130
b	41.5	53
c	50	65
d	G ¾	G1
e	52	81
f	45	49
g	70	81.5
h	36	42

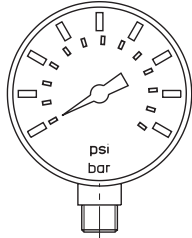


Additional relief valve characteristics upon request.
The actual opening pressure may deviate from the nominal pressure setting of the valve because of the tension of the loaded spring rate.

Above mentioned pressure relief valves are available upon request in a adjustable version. The system user must ensure that the operating pressure never exceeds the highest allowable operating pressure (i.e. by using a second non adjustable pressure relief valve which is set for the highest allowable pressure).

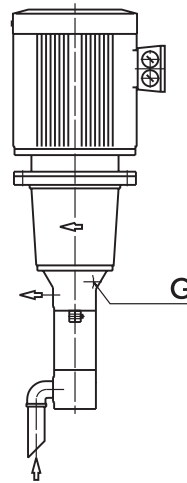
Pressure gauge / Suction protection G4 Version

Pressure gauge



Type	Pressure p (bar)
M 60	0 – 60
M 100	0 – 100
M 160	0 – 160

G4 Version

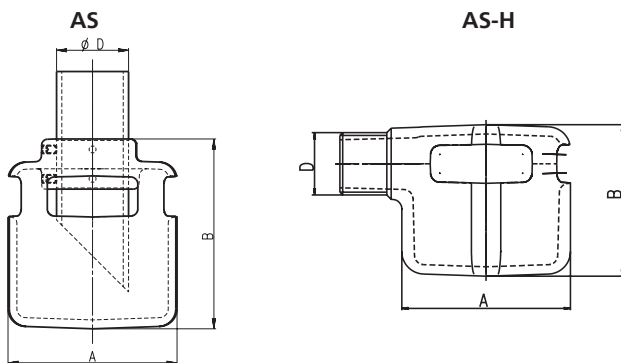


G1/8 BFS/FFS 1, 2
G1/4 TFS/FFS 3, 4, 5

Depressurized leakage return to tank

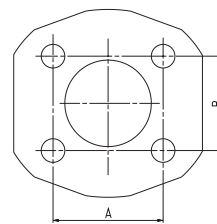
Suction protection

The patented suction protection prevents large particles (and foreign objects) from entering the screw pump's suction.



Type	Type of Pumps	A mm	B mm	Ø D
AS1-2	BFS1, BFS2	90	94	1"
AS3	TFS3	115	129	1½"
AS4	TFS4	150	175	2"
AS5	TFS5	195	190	2½"
AS1-2-H	BFS1, BFS2	90	80	1"
AS3H	TFS3	115	115	G1½
AS4H	TFS4	153	175	G2
AS5H	TFS5	194	190	G2½

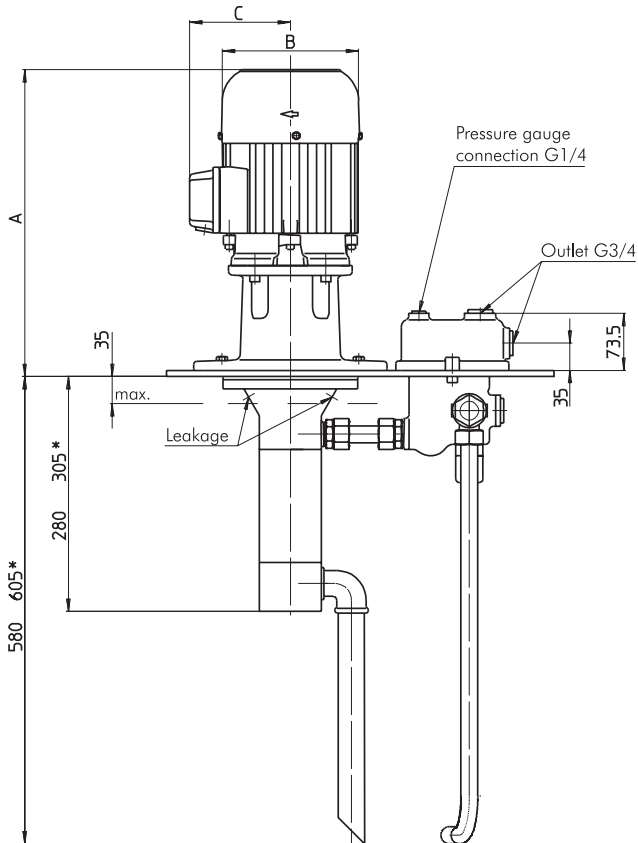
SAE flange



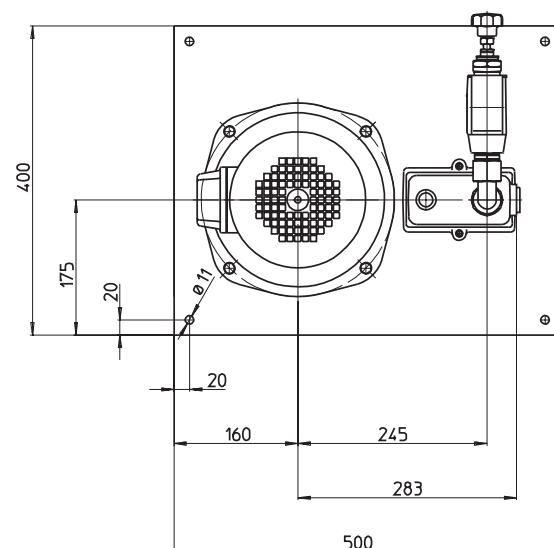
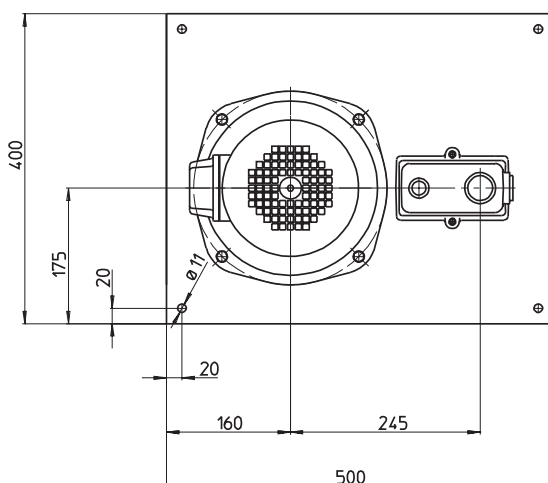
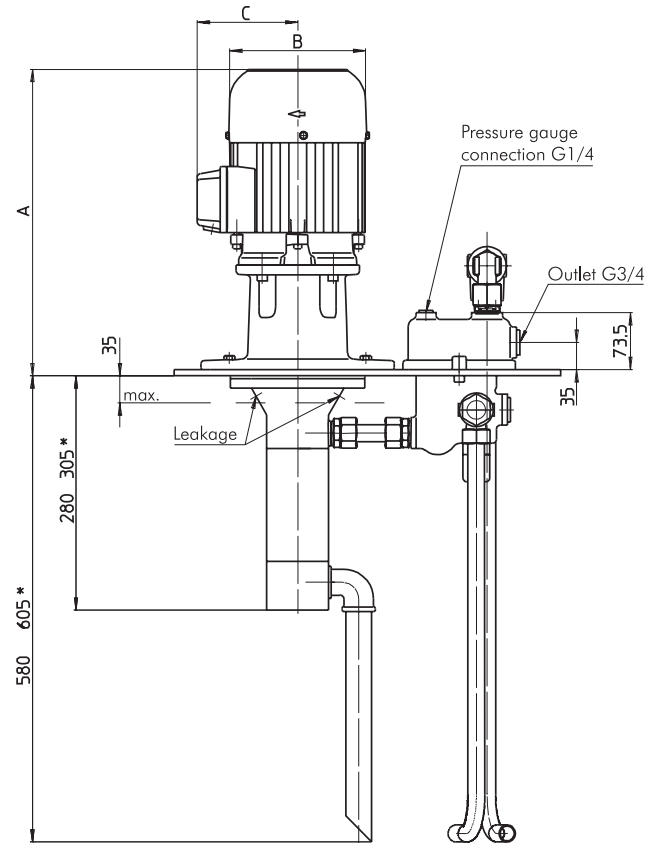
Type	Type of Pumps	A mm	B mm
SAE 2 ½	TFS5, FFS5	88.9	50.8
SAE 3	TFS6, FFS6	120.6	69.8

Pump system, fully assembled

- Series **BFS1** and **BFS2**, non-adjustable pressure relief valve:
Screw pump with mounting plate, integrated connection block and piping fully assembled.
The non-adjustable pressure relief valve is integrated into the connection block.



- Series **BFS1** and **BFS2**, adjustable pressure relief valve:
Screw pump with mounting plate, integrated connection block and piping fully assembled.
The non-adjustable pressure relief valve is integrated into the connection block.
The adjustable pressure relief valve is mounted above the plate.

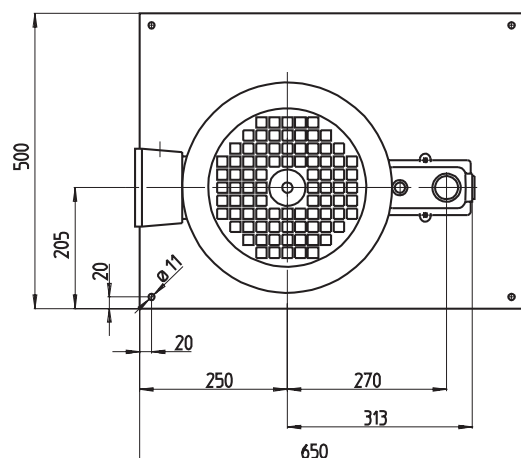
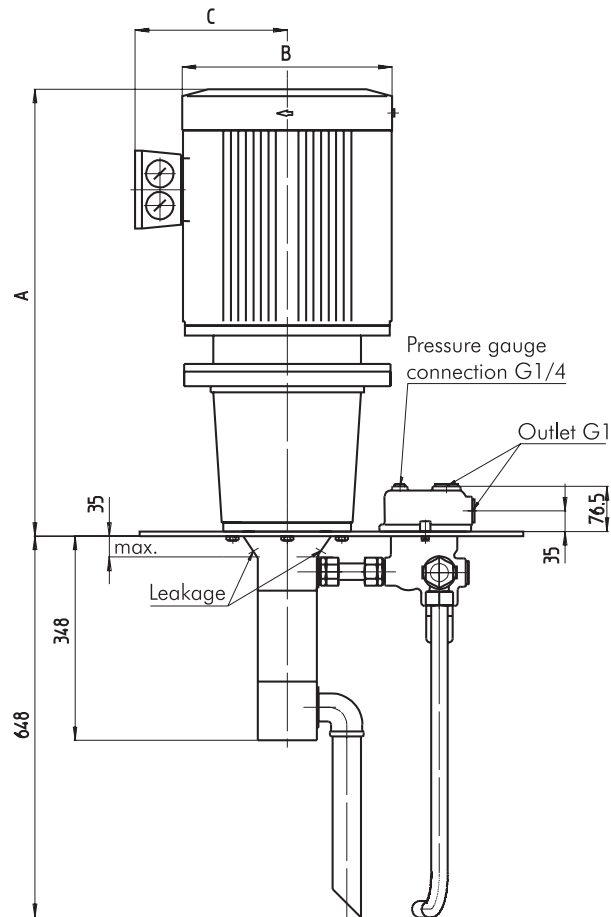


*) Dimensions for BFS2
Dimensions A + 8 mm mounting plate

*) Dimensions for BFS2
Dimensions A + 8 mm mounting plate

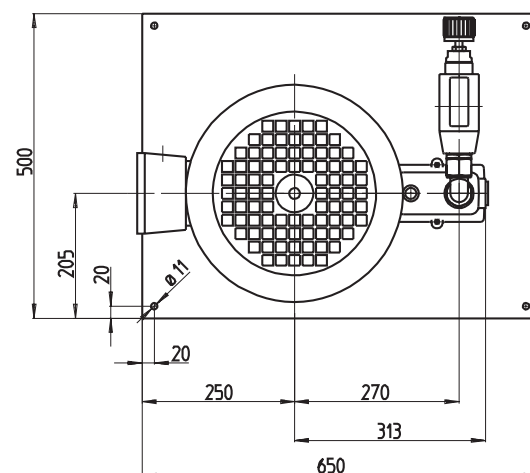
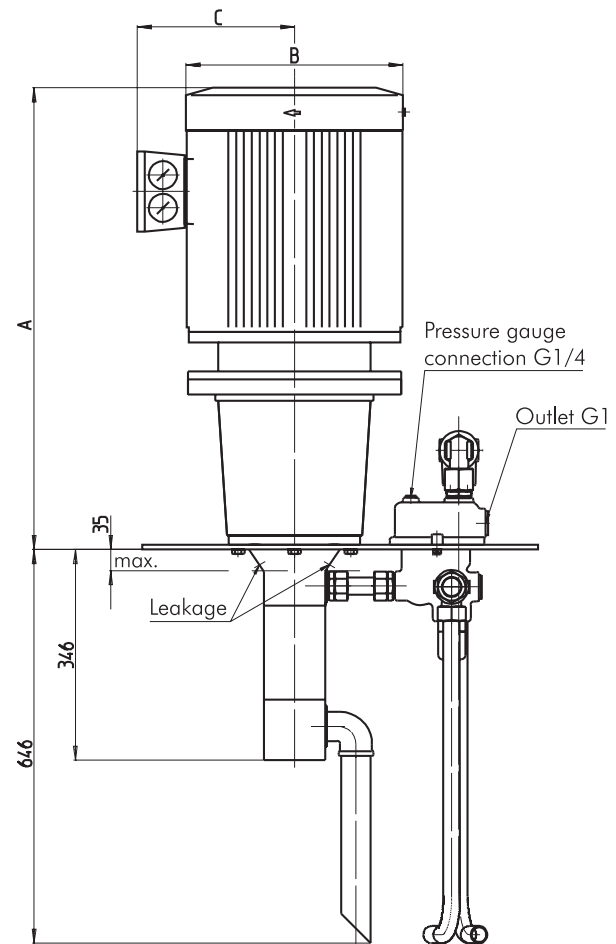
Pump system, fully assembled

3. Series TFS3, non adjustable pressure relief valve:
Screw pump with mounting plate, integrated connection block and piping fully assembled.
The non-adjustable pressure relief valve is integrated into the connection block.



Dimensions A + 8 mm mounting plate

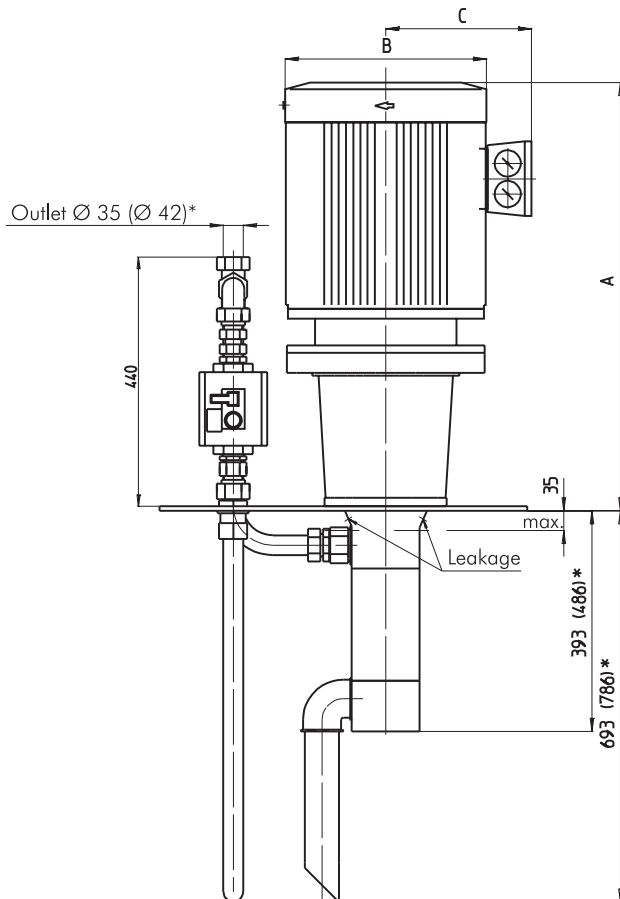
4. Series TFS3, adjustable pressure relief valve:
Screw pump with mounting plate, integrated connection block and piping fully assembled.
The non-adjustable pressure relief valve is integrated into the connection block.
The adjustable pressure relief valve is mounted above the plate.



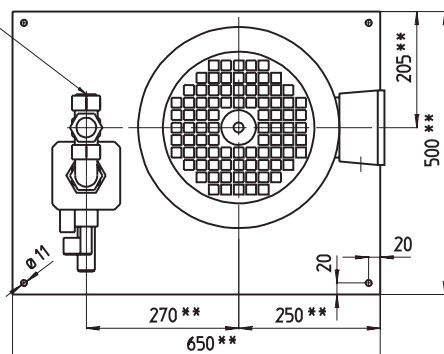
Dimensions A + 8 mm mounting plate

Pump system, fully assembled

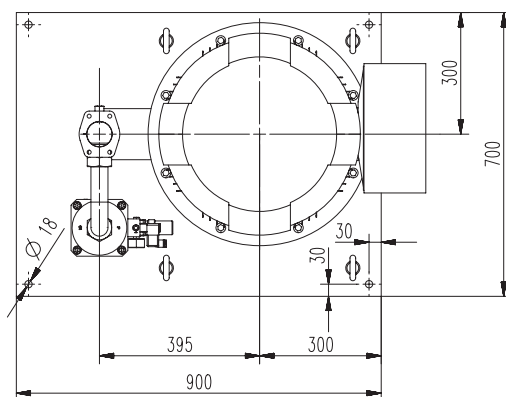
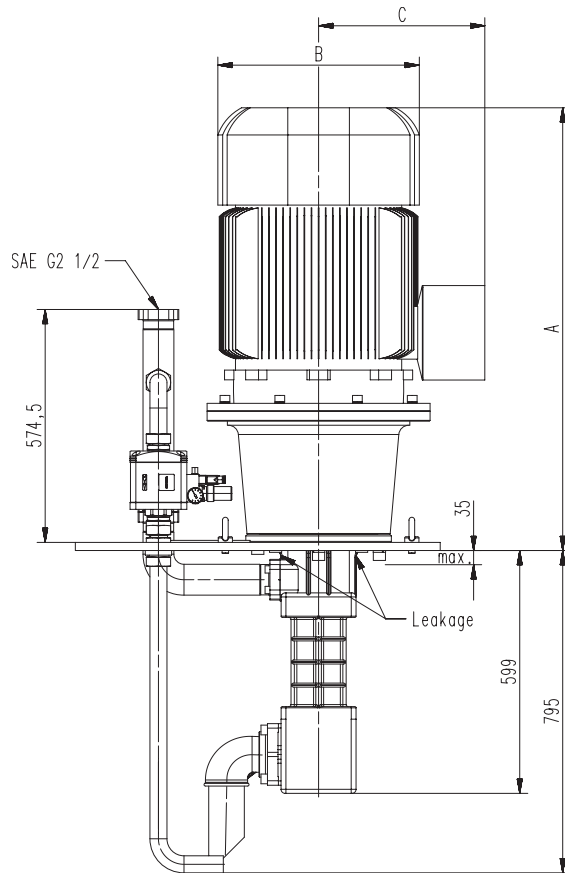
5. Series TFS4 and TFS5, adjustable pressure relief valve (pneumatically operated):
Screw pump with mounting plate, adjustable pressure relief valve (pneumatically operated) and piping fully assembled.
The adjustable pressure relief valve is mounted above the plate.



Pressure gauge connection possible



6. Series TFS6, adjustable pressure relief valve:
Screw pump with mounting plate, adjustable pressure relief valve (pneumatically operated) and piping fully assembled.
The adjustable pressure relief valve is mounted above the plate.



*) Dimensions for TFS5

**) Dimensions for motors larger than 37 kW upon request
Dimensions A + 12 mm mounting plate

Questionnaire

Fax	+49 2392 5006-180	Date	
E-Mail	sales@brinkmannpumps.de		

Contact details	
Company	
Address	
Contact partner	
Telephone	
E-Mail	

Pump	
Requirement per year (each)	

Field of application		
Type	Materials	Specific abrasion
<input type="checkbox"/> grinding Al oxid	<input type="checkbox"/> cast iron	<input type="checkbox"/> tinder
<input type="checkbox"/> grinding CBN	<input type="checkbox"/> brass	<input type="checkbox"/> diamond
<input type="checkbox"/> drilling	<input type="checkbox"/> Al	<input type="checkbox"/> silicon carbide
<input type="checkbox"/> turning	<input type="checkbox"/> steel	
<input type="checkbox"/> milling		
<input type="checkbox"/> other:	<input type="checkbox"/> other:	<input type="checkbox"/> other:

Pumping data	
Flow rate (l/min.)	
Pressure (bar)	

Dimensions	
Immersion depth	

Medium to be pumped	
Coolants	<input type="checkbox"/>
Oils	<input type="checkbox"/>
Temperature (°C)	
Viscosity at pumping temperature (mm ² /s, cSt)	
Density (kg/l)	
pH value	
Air in medium	<input type="checkbox"/> yes <input type="checkbox"/> no
Lubricity in medium	<input type="checkbox"/> yes <input type="checkbox"/> no

Filtration	
Filtration (µm)	
Filter type	
ppm levels acc. to ISO 4406	
Percentage of solids by weight (mg/l)	

Drive			
laid out for line power	<input type="checkbox"/> 3 x 400 V, 50 Hz	<input type="checkbox"/> 3 x 440 V, 60 Hz	<input type="checkbox"/> 3 x 208-230 V, 60 Hz
	<input type="checkbox"/> 3 x 415 V, 50 Hz	<input type="checkbox"/> 3 x 460 V, 60 Hz	<input type="checkbox"/> 3 x 200-220 V, 60 Hz
	<input type="checkbox"/> 3 x 380 V, 50 Hz	<input type="checkbox"/> 3 x 480 V, 60 Hz	<input type="checkbox"/> 1 x 115 V, 60 Hz
	<input type="checkbox"/> 3 x 200 V, 50 Hz	<input type="checkbox"/> 3 x 380 V, 60 Hz	<input type="checkbox"/> other:
	<input type="checkbox"/> 1 x 230 V, 50 Hz	<input type="checkbox"/> 3 x 400 V, 60 Hz	

Motor	
Protective system IP55	
Insulation class (F)	
Ambient temperature (°C)	
Frequency control (Hz)	from to
Switch-on operations (per min)	
Motor connection plug HAN	<input type="checkbox"/> yes
Motor efficiency class	<input type="checkbox"/> IE2 <input type="checkbox"/> IE3

Other	

The combination of state of the art production equipment, along with lean manufacturing processes and a highly skilled and motivated workforce allows for the highest flexibility and availability of parts at the manufacturing site in Werdohl, Germany. The US subsidiary located in Wixom, Michigan was founded in 1997 and the Japanese subsidiary in Kanagawa near Tokyo opened its doors in 2008.



Production



It has always been a core philosophy of BRINKMANN PUMPS to be able to provide the highest level of service worldwide. In order to achieve this goal, all BRINKMANN PUMPS employees globally go through rigorous training programs focusing on various areas, such as, pump applications, proper selection, consulting, service and repair.

