


2010

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 130 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.



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| | 10 ... 120 bar | | |
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Electrical Features

CE Motors acc. to EN 60034

| | | |
|---------------------|-------------------------------|--|
| Grade of protection | IP55 | |
| Type of insulation | F | |
| Number of poles | 2 | |
| Efficiencies | according to EN 60034-30, IE2 | |

| 50 Hz | 220 V – 240 V Δ 380 V – 420 V Υ | 380 V – 420 V Δ |
|-------------------|----------------------------------------------------|------------------------|
| up to 5.5 kW | Standard | ● |
| 7.5 kW and higher | ● | Standard |

| 60 Hz | 460 V Υ | 460 V Δ |
|-------------------|------------------|----------------|
| up to 5.5 kW | Standard | ● |
| 7.5 kW and higher | ● | Standard |

The voltage tolerance is +5% in keeping with DIN EN 60034-1.

- Upon request

Motors larger than 10 kW are automatically equipped with thermal protectors. Special voltages are available upon request and can be supplied according to efficiency class IE1.

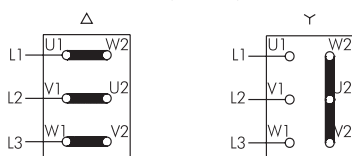
Due to the changeover in motor efficiency classes dimensional changes of the motors are possible.

Circuits

Voltage changing Δ / Υ

e. g. 220–240 / 380–420 V, 50 Hz

Δ (Delta Connection) Υ (Star Connection)



Control/Regulation

Brinkmann screw pumps with integrated frequency converter

Pumps with integrated frequency converter offer the perfect supplement to the existing product line for your application.

Please contact us for additional information.

Installation

Brinkmann Screw Pump with Harting 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 a HAN 10-pin connector.

Motors of 7.5 kW

Motor design available for Υ / Δ -starting.

Screw pumps must be started without back pressure when utilizing a Υ / Δ -start-up mode.

Switching-on frequency

Motors less than 3 kW:

maximum 200 times per hour.

Motors from 3 kW to 5.5 kW:

maximum 40 times per hour.

Motors from 7.5 kW to 10 kW:

maximum 20 times per hour.

Motors greater than 10 kW:

maximum 15 times per hour.

Alternative starting frequency is possible upon request.

Non-European Regulations

Motors up to 10 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 name plate bears the identification:



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

Motors larger than 10 kW are available upon request with approval testing.

Name Plates

Standard motors according to the IE2 standard are supplied with a second name plate with 60 Hz ratings.

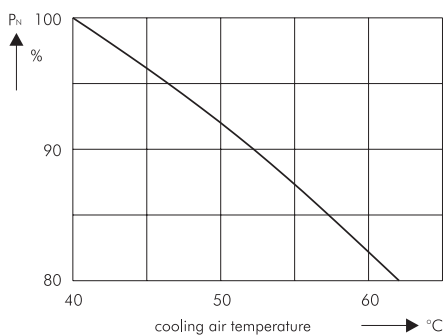
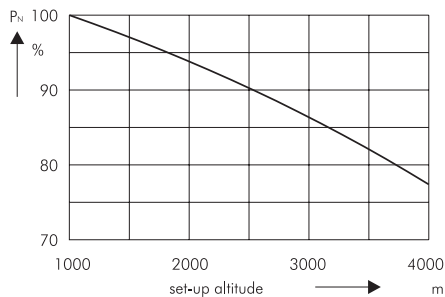
Technical Information

Electrical / Hydraulic Features

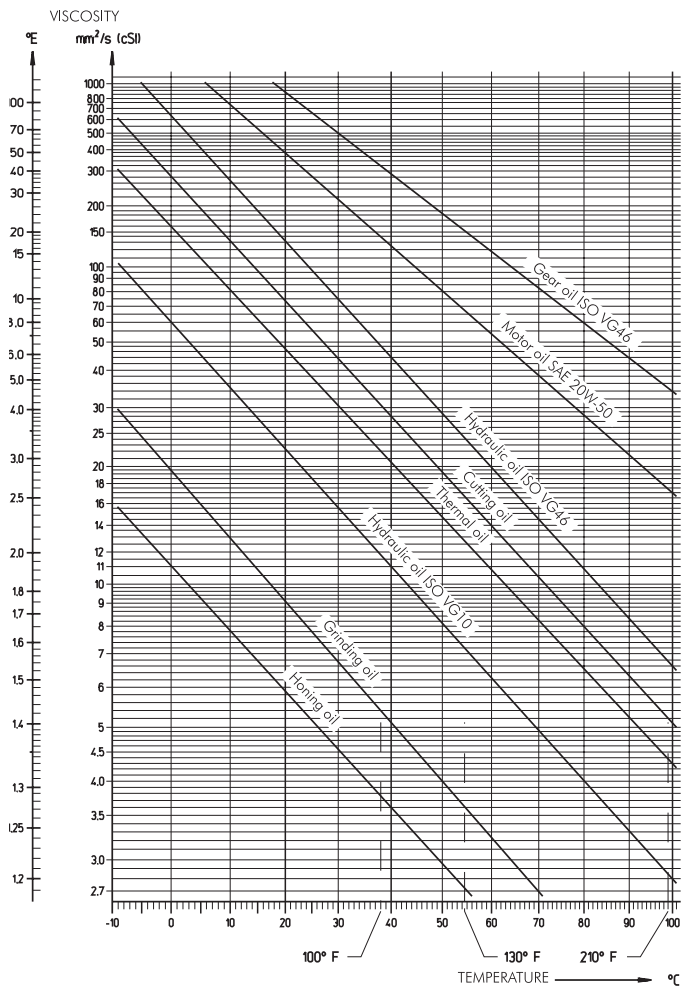
Set-up altitude and coolant temperature

The specified power ratings (P_N) and operating values for the motors apply to operating mode S1 according to EN 60034-1 (continuous operation) at a frequency of 60 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 |



Viscogram



Technical Information

Electrical Features



Technical motor data

Three-phase induction motor 2 pole, thermal protection class F, grade of protection IP 55, IE2

Brinkmann motors IE2

| Power 50 Hz / 60 Hz kW | Rated current 2 pole 50 Hz Y 380-420 V Δ 380-420 V | | Noise level max. dBA / 50 Hz | Rated current 2 pole 60 Hz Y 440-480 V Δ 440-480 V | | Noise level max. dBA / 60 Hz |
|----------------------------------|------------------------------------------------------------|------|----------------------------------------|------------------------------------------------------------|------|----------------------------------------|
| | A | | | A | | |
| B 1.3 / 1.5 | 3.0 | – | 63 | 3.0 | – | 67 |
| 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 | – | 71 | 12.5 | – | 75 |
| B 7.5 / 8.6 | – | 17.0 | 74 | – | 17.0 | 78 |
| B 10.0 / 11.5 | – | 23.0 | 74 | – | 23.0 | 78 |

Standard motors IE2

| Power 50 Hz / 60 Hz kW | Rated current 2 pole 50 Hz Y 400 V | Noise level | Rated current 2 pole 60 Hz Y 460 V | Noise level | Rated current 4 pole 50 Hz Y 400 V | Noise level | Rated current 4 pole 60 Hz Y 460 V | Noise level |
|----------------------------------|------------------------------------------|-------------|------------------------------------------|-------------|------------------------------------------|-------------|------------------------------------------|-------------|
| | A | dBA / 50 Hz | A | dBA / 60 Hz | A | dBA / 50 Hz | A | dBA / 60 Hz |
| 0.75 / 0.86 | 1.71 | 60 | 1.65 | 64 | 1.81 | 52 | 1.74 | 56 |
| 1.1 / 1.3 | 2.25 | 60 | 2.15 | 64 | 2.55 | 56 | 2.53 | 60 |
| 1.5 / 1.75 | 3.05 | 66 | 2.95 | 70 | 3.4 | 56 | 3.35 | 60 |
| 2.2 / 2.55 | 4.4 | 66 | 4.25 | 70 | 4.6 | 56 | 4.55 | 60 |
| 3.0 / 3.45 | 5.8 | 67 | 5.7 | 71 | 6.3 | 56 | 6.1 | 60 |
| 4.0 / 4.6 | 7.6 | 67 | 7.3 | 71 | 8.2 | 59 | 8.1 | 63 |
| 5.5 / 6.3 | 10.1 | 72 | 9.8 | 76 | 10.8 | 62 | 10.5 | 66 |
| | Rated current 2 pole 50 Hz Δ 400 V | | Rated current 2 pole 60 Hz Δ 460 V | | Rated current 4 pole 50 Hz Δ 400 V | | Rated current 4 pole 60 Hz Δ 460 V | |
| | A | | A | | A | | A | |
| 7.5 / 8.6 | 13.4 | 72 | 13.0 | 76 | 14.5 | 62 | 14.2 | 66 |
| 11.0 / 12.6 | 19.7 | 75 | 19.3 | >78 | 21.0 | 66 | 20.5 | 70 |
| 15.0 / 17.3 | 26.5 | 75 | 26.3 | >78 | 28.0 | 66 | 27.5 | 70 |
| 18.5 / 21.3 | 32.0 | 75 | 31.5 | >78 | 35.0 | 66 | 34.5 | 70 |
| 22.0 / 24.5 | 39.0 | 75 | 37.0 | >78 | 41.5 | 66 | 40.5 | 70 |
| 30.0 / 33.5 | 53.0 | >78 | 51.0 | >78 | 54.0 | 67 | 53.0 | 71 |
| 37.0 / 41.5 | 65.0 | >78 | 62.0 | >78 | 68.0 | 68 | 66.0 | 72 |
| 45.0 / 51.0 | 79.0 | >78 | 77.0 | >78 | 82.0 | 68 | 80.0 | 72 |
| 55.0 / 62.0 | 95.0 | >78 | 94.0 | >78 | | | | |
| 75.0 / 84.0 | 130 | >78 | 125 | >78 | | | | |
| 90.0 / 101 | 153 | >78 | 148 | >78 | | | | |
| 110 / 123 | 185 | >78 | 180 | >78 | | | | |

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.

Electrical Features

Technical motor data

Three-phase induction motor 2 pole, thermal protection class F, grade of protection IP 55, IE1




Standard IE1 class motors are available upon request until June of 2011

| Power 50 Hz / 60 Hz kW | Rated current 2 pole 50 Hz Y 380-420 V A | Noise level dBA / 50 Hz | Rated current 2 pole 60 Hz Y 440-480 V A | Noise level dBA / 60 Hz | Rated current 4 pole 50 Hz Y 380-420 V A | Noise level dBA / 50 Hz | Rated current 4 pole 60 Hz Y 440-480 V A | Noise level dBA / 60 Hz |
|----------------------------------|-------------------------------------------------------|--------------------------------|-------------------------------------------------------|--------------------------------|-------------------------------------------------------|--------------------------------|-------------------------------------------------------|--------------------------------|
| 0.75 / 0.86 | 1.73 | 60 | 1.7 | 64 | 1.86 | 52 | 1.8 | 56 |
| 1.1 / 1.3 | 2.4 | 60 | 2.4 | 64 | 2.55 | 56 | 2.5 | 60 |
| 1.5 / 1.75 | 3.25 | 66 | 3.2 | 70 | 3.4 | 56 | 3.3 | 60 |
| 2.2 / 2.55 | 4.55 | 66 | 4.5 | 70 | 4.75 | 56 | 4.6 | 60 |
| 3.0 / 3.45 | 6.1 | 67 | 5.9 | 71 | 6.4 | 56 | 6.2 | 60 |
| 4.0 / 4.6 | 7.8 | 67 | 7.6 | 71 | 8.2 | 59 | 7.9 | 63 |
| 5.5 / 6.3 | 10.3 | 72 | 10.1 | 76 | 11.4 | 62 | 10.9 | 66 |
| | Rated current 2 pole 50 Hz Δ 380-420 V A | | Rated current 2 pole 60 Hz Δ 440-480 V A | | Rated current 4 pole 50 Hz Δ 380-420 V A | | Rated current 4 pole 60 Hz Δ 440-480 V A | |
| 7.5 / 8.6 | 13.8 | 72 | 13.5 | 76 | 15.2 | 62 | 14.7 | 66 |
| 11.0 / 12.6 | 20.0 | 75 | 19.8 | >78 | 21.5 | 66 | 21.0 | 70 |
| 15.0 / 17.3 | 26.5 | 75 | 26.5 | >78 | 28.5 | 66 | 28.0 | 70 |
| 18.5 / 21.3 | 32.5 | 75 | 32.0 | >78 | 35.0 | 66 | 35.0 | 70 |
| 22.0 / 24.5 | 39.0 | 75 | 39.0 | >78 | 41.0 | 66 | 41.0 | 70 |
| 30.0 / 33.5 | 53.0 | 75 | 53.0 | >78 | 55.0 | 67 | 55.0 | 71 |
| 37.0 / 41.5 | 65.0 | 75 | 65.0 | >78 | 68.0 | 68 | 67.0 | 72 |
| 45.0 / 51.0 | 78.0 | 76 | 77.0 | >78 | 81.0 | 68 | 80.0 | 72 |
| 55.0 / 62.0 | 96.0 | >78 | 94.0 | >78 | | | | |
| 75.0 / 84.0 | 128 | >78 | 130 | >78 | | | | |
| 90.0 / 101 | 154 | >78 | 148 | >78 | | | | |
| 110 / 123 | 190 | >78 | 184 | >78 | | | | |

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.

Comparison of motor efficiency classes worldwide

| Efficiency Class | New | Europe | North America, Australia, New Zealand |
|---------------------------|------------|-------------------------------------------------------------------------------------|---------------------------------------------|
| Super premium efficiency | IE4 | – | – |
| Premium efficiency | IE3 | – | NEMA Premium |
| High efficiency | IE2 |  | EPAc |
| Standard efficiency | IE1 |  | – |
| Below standard efficiency | – |  | – |

IE = International Efficiency

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

Applications

Types of fluid
oils
cooling/ cutting oils
coolants

Kinematic viscosity
1 . . . 90 mm²/s (90 cSt)
over 90 mm²/s on request

Pumping temperature
max. 80° C

Recommended filtration levels
General Machining (Turning, milling, drilling) 50 µm
Grinding and machining of aluminum (CBN etc.) 20 µm
Please see page 10 for further information.

Materials of construction

Pressure and Suction Housing Cast iron

Spindle Housing Silicon Carbide. 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, see page 35) | -G4 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Viscosity > 90 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...5 / Pressure-G
e.g. TFS376/40-G

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

FFS1...5 / Pressure
e.g. FFS260/40

Pumps for operating pressures of 120 bar and higher are always supplied as -KBT5NA models.

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 water-soluble coolants.

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

Applications

Types of fluid
oils
cooling/ cutting oils
coolants

Kinematic viscosity
1. . . 90 mm²/s (90 cSt)
over 90 mm²/s on request

Pumping temperature
max. 80° C

Recommended filtration levels
General Machining (Turning, milling, drilling) 50 μm
Grinding and machining of aluminum (CBN etc.) 20 μm
Machining of materials of limited hardness (not for grinding applications). For additional information please refer to page 10.

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 |

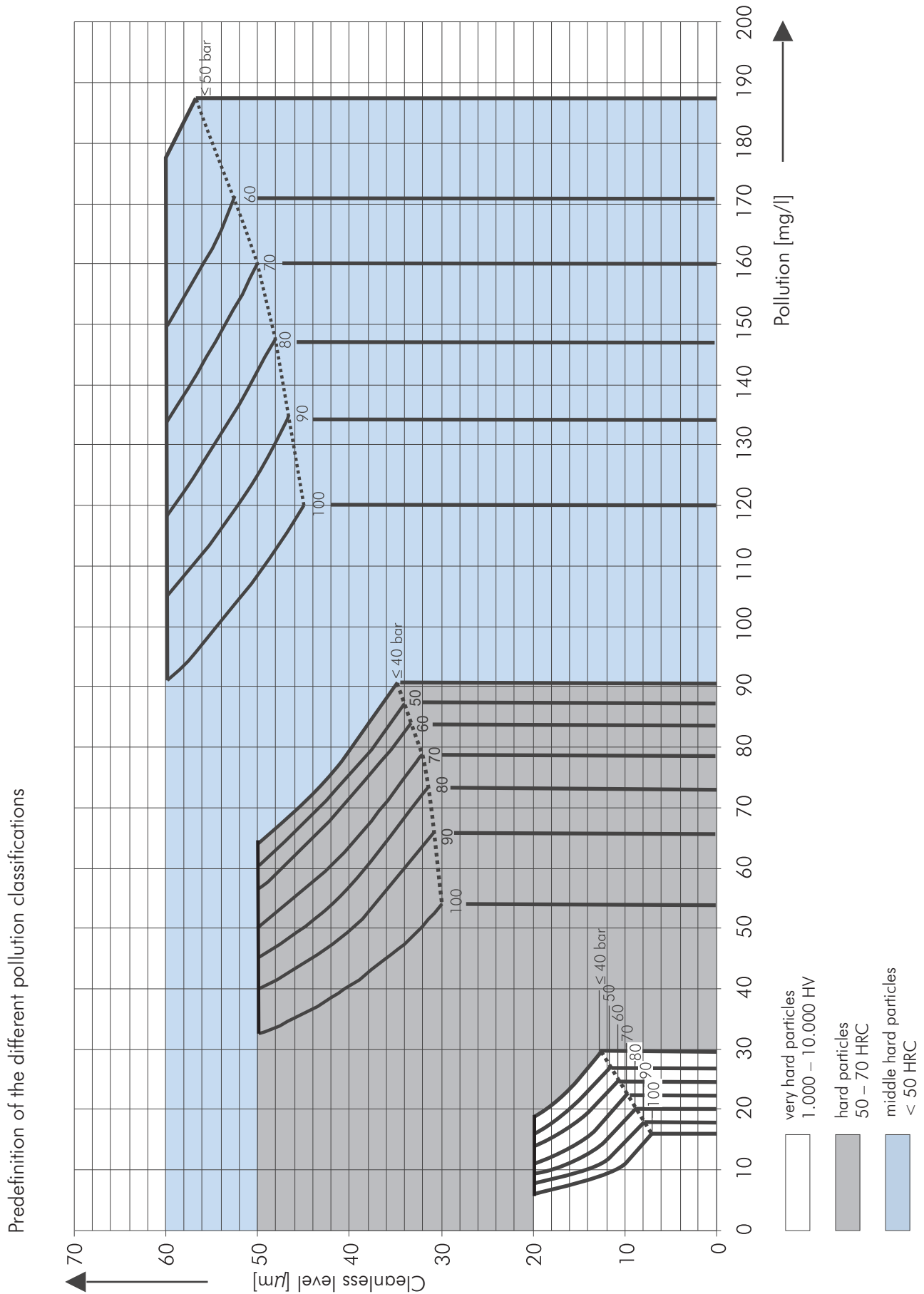
| Version | Model Index | Immersion Style | | | Inline Style for inline installation – horizontal or vertical with mechanical seal; positive suction pressure of up to 7 bar | | |
|-------------------------------------------------------------------------------------------------------------------------|-------------|-----------------|------|------|---------------------------------------------------------------------------------------------------------------------------------------------|------|------|
| | | BFG2 | TFG3 | TFG4 | FFG2 | FFG3 | FFG4 |
| Inline installation – vertical Mechanical seal and internal leakage return; positive suction pressure of up to 7 bar | -G | ○ | ○ | ○ | ● | ● | ● |
| Viscosity > 90 mm ² /s | | ○ | ○ | ○ | ○ | ○ | ○ |
| 4-pole motor | -4 | ○ | ○ | ○ | ○ | ○ | ○ |

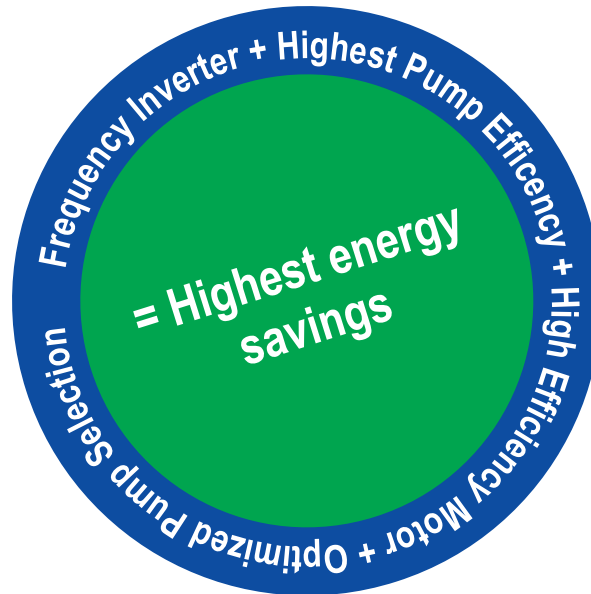
- Available upon request
- Standard

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 **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.

Models and Applications for High Pressure Screw Pumps





Energy consumption is influenced by:

| |
|--------------------------------------|
| Pump efficiency |
| Motor efficiency |
| Frequency inverter |
| Right pump selection / working point |
| Application / Fluids |

Energy saving by:

| |
|-------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> – highest screw spindle pump efficiency – semi and closed impeller pumps |
| <ul style="list-style-type: none"> – high efficiency motors (IE2) |
| <ul style="list-style-type: none"> – adjusting of the working point based on various applications |
| <ul style="list-style-type: none"> – customer training – BPtubes – calculation program |
| <ul style="list-style-type: none"> – highest pump and curve variety |

High Pressure Pumps

BFS1, FFS1 / BFS2, FFS2

Screw spindles

50 Hz

| Pressure max. | Flow at viscosity | | 2-pole motor rotation speed 2900 RPM | | | 4-pole motor rotation speed 1450 RPM | | | Motor | Weight | | | |
|-----------------|-----------------------------------------|--------------------------|-----------------------------------------|--------------------------|------------------------------------|-----------------------------------------|--------|-----------------------------------------|-------|--------|--------------------------------|-------------------------|--------------------------|
| | 1 mm ² /s | 20 mm ² /s | Power consumption at viscosity | | Motor immer- sion version | Motor foot mounted version | Weight | Flow at viscosity | | | Power consumption at viscosity | | |
| | | | 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 | kW | kg | l/min | l/min | kW | kW | kW | kg |
| BFS 130/ | Q_{Th}¹⁾ 15.6 | – | – | – | – | – | – | Q_{Th}¹⁾ 7.8 | – | – | – | – | – |
| 10 | 14.0 | 15.0 | 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 | 1.1 | 39 | 4.3 | 6.4 | 0.5 | 0.5 | 0.75 | 29 |
| 40 | 11.2 | 13.9 | 1.3 | 1.3 | B 1.3 | 1.5 | 39 | 3.4 | 6.1 | 0.6 | 0.7 | 0.75 | 29 |
| 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 | 2.2 | 43 | – | 5.0 | – | 1.1 | 1.1 | 31 |
| 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 | 3.0 | 54 | – | 4.0 | – | 1.5 | 1.5 | 34 |
| 110 | – | 11.5 | – | 3.2 | B 3.3 | 4.0 | 54 | – | – | – | – | – | – |
| 120 | – | 11.2 | – | 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 | 4.0 | 57 | – | – | – | – | – | – |
| 150 | – | 10.3 | – | 4.3 | B 5.0 | 5.5 | 73 | – | – | – | – | – | – |
| BFS 140/ | Q_{Th}¹⁾ 20.9 | – | – | – | – | – | – | Q_{Th}¹⁾ 10.5 | – | – | – | – | – |
| 10 | 18.8 | 20.1 | 0.6 | 0.7 | B 1.3 | 0.75 | 39 | 8.4 | 9.6 | 0.3 | 0.3 | 0.75 | 29 |
| 20 | 17.5 | 19.5 | 0.9 | 1.0 | B 1.3 | 1.1 | 39 | 7.1 | 9.1 | 0.4 | 0.5 | 0.75 | 29 |
| 30 | 16.3 | 19.0 | 1.3 | 1.4 | B 1.5 | 1.5 | 39 | 5.8 | 8.6 | 0.6 | 0.9 | 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 | 14.0 | 18.0 | 2.0 | 2.1 | B 2.2 | 2.2 | 43 | 3.6 | 7.6 | 1.0 | 1.1 | 1.1 | 31 |
| 60 | 13.0 | 17.6 | 2.3 | 2.5 | B 2.6 | 3.0 | 44 | 2.6 | 7.1 | 1.1 | 1.3 | 1.5 | 34 |
| 70 | 12.0 | 17.1 | 2.7 | 2.8 | B 3.3 | 3.0 | 54 | – | 6.6 | – | 1.4 | 1.5 | 34 |
| 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 | 4.0 | 57 | – | 5.3 | – | 2.0 | 2.2 | 41 |
| 110 | – | 15.3 | – | 4.3 | B 5.0 | 5.5 | 73 | – | – | – | – | – | – |
| 120 | – | 14.8 | – | 4.6 | B 5.0 | 5.5 | 73 | – | – | – | – | – | – |
| 130 | – | 14.4 | – | 5.0 | B 5.0 | 5.5 | 73 | – | – | – | – | – | – |
| 140 | – | 14.0 | – | 5.3 | B 5.5 | 5.5 | 73 | – | – | – | – | – | – |
| 150 | – | 13.6 | – | 5.7 | B 7.5 | 7.5 | 81 | – | – | – | – | – | – |
| BFS 232/ | 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 1.3 | 1.5 | 40 | 10.6 | 12.1 | 0.6 | 0.7 | 0.75 | 29 |
| 30 | 23.0 | 24.9 | 1.5 | 1.7 | B 1.9 | 2.2 | 44 | 10.0 | 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 | 1.5 | 34 |
| 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 | 20.0 | 23.6 | 3.7 | 4.0 | B 4.0 | 4.0 | 57 | 7.0 | 10.6 | 1.9 | 2.1 | 2.2 | 41 |
| 90 | 19.5 | 23.3 | 4.1 | 4.5 | B 5.0 | 5.5 | 74 | – | 10.3 | – | 2.3 | 3.0 | 46 |
| 100 | 18.9 | 23.1 | 4.6 | 4.9 | B 5.0 | 5.5 | 74 | – | 10.0 | – | 2.5 | 3.0 | 46 |
| 110 | 18.4 | 22.9 | 5.0 | 5.4 | B 5.5 | 5.5 | 74 | – | – | – | – | – | – |
| 120 | 17.8 | 22.6 | 5.5 | 5.8 | B 7.5 | 7.5 | 82 | – | – | – | – | – | – |
| 130 | 17.3 | 22.4 | 5.9 | 6.3 | B 7.5 | 7.5 | 82 | – | – | – | – | – | – |
| 140 | 16.7 | 22.1 | 6.3 | 6.7 | B 7.5 | 7.5 | 82 | – | – | – | – | – | – |
| 150 | 16.2 | 21.9 | 6.8 | 7.2 | B 7.5 | 7.5 | 82 | – | – | – | – | – | – |

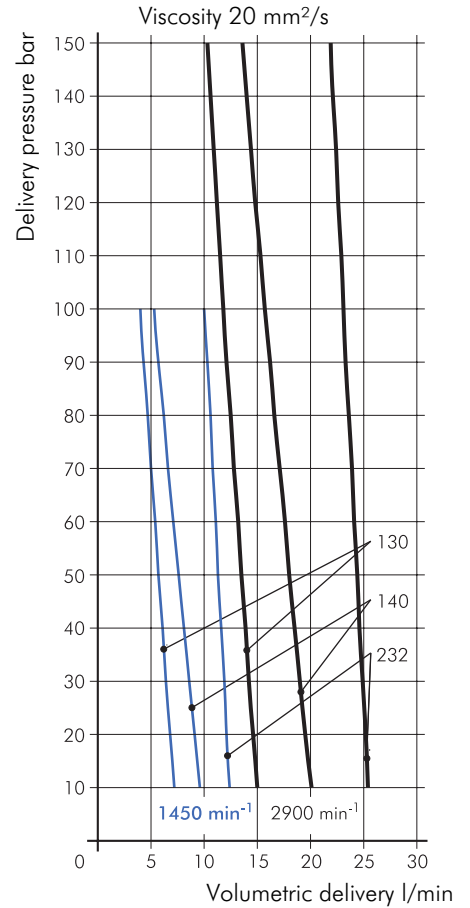
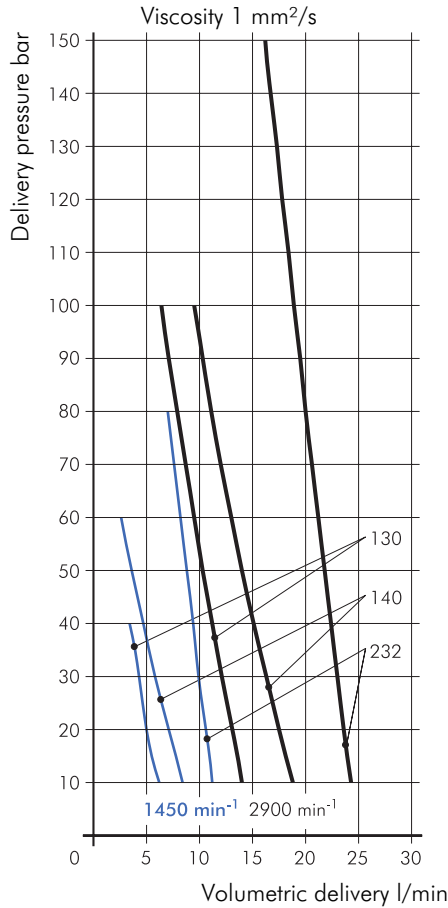
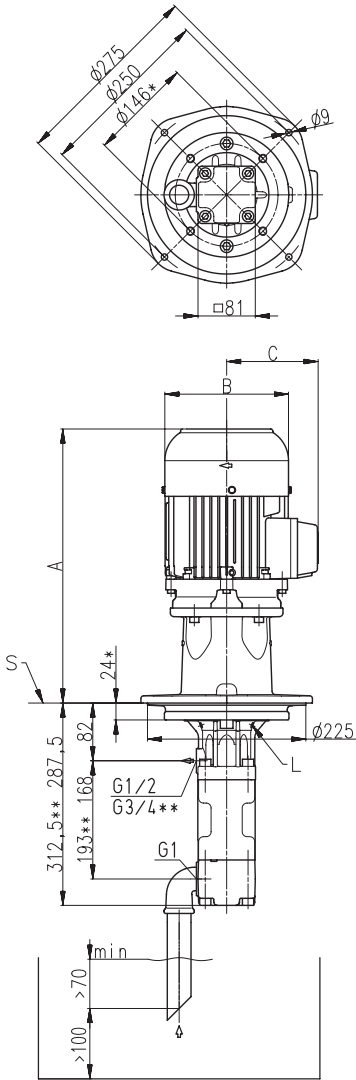
¹⁾ Q_{Th}: Theoretical flow rate

Higher pressures (up to 200 bar) upon request

Characteristics and dimensions

BFS1, FFS1 / BFS2, FFS2

50 Hz

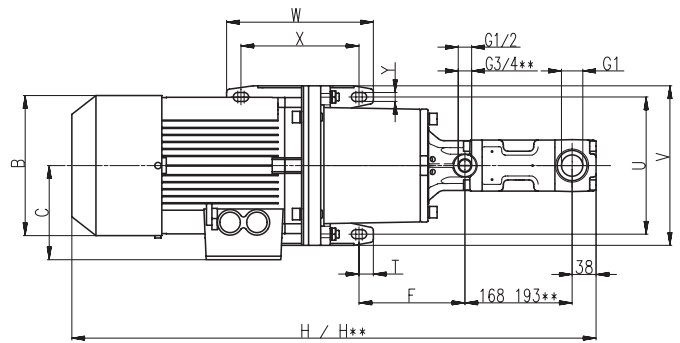
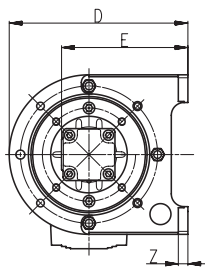


L = Leakage hole
S = Mounting plate, please find the cut-out of mounting hole on page 43.

*) Dimensions for 4-pole standard motor upon request

**) Dimensions for BFS2

| Motor 2 pole kW | A mm | B mm | C mm |
|-----------------------|---------|---------|---------|
| B 1.3 / 1.7 | 389 | 176 | 130 |
| B 1.9 / 2.2 | 414 | 176 | 130 |
| B 2.6 | 424 | 218 | 150 |
| B 3.3 / 4.0 | 478 | 218 | 150 |
| B 5.0 / 5.5 | 514 | 258 | 190 |
| B 7.5 | 552 | 258 | 190 |



| Motor 2 pole kW | Motor 4 pole 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 | – | 163 | 120 | 212 | 155 | 138 | 657 | 15.0 | 180 | 210 | 90 | 60 | 11 | 12 |
| 1.1 | 0.75 | 163 | 120 | 212 | 155 | 138 | 692 | 15.0 | 180 | 210 | 90 | 60 | 11 | 12 |
| 1.5 | 1.1 | 180 | 128 | 212 | 155 | 138 | 705 | 15.0 | 180 | 210 | 90 | 60 | 11 | 12 |
| 2.2 | 1.5 | 183 | 128 | 212 | 155 | 138 | 732 | 15.0 | 180 | 210 | 90 | 60 | 11 | 12 |
| 3.0 | 2.2 | 203 | 135 | 280 | 198 | 167 | 797 | 22.5 | 215 | 250 | 230 | 185 | 14 | 15 |
| – | 3.0 | 203 | 135 | 280 | 198 | 167 | 832 | 22.5 | 215 | 250 | 230 | 185 | 14 | 15 |
| 4.0 | 4.0 | 227 | 148 | 280 | 198 | 167 | 823 | 22.5 | 215 | 250 | 230 | 185 | 14 | 15 |
| 5.5 | 5.5 | 267 | 167 | 335 | 228 | 171 | 844 | 22.5 | 265 | 300 | 270 | 225 | 14 | 18 |
| 7.5 | – | 267 | 167 | 335 | 228 | 171 | 882 | 22.5 | 265 | 300 | 270 | 225 | 14 | 18 |

Dimensions H** = H+25
or see page 15

High Pressure Pumps



BFS2, FFS2

Screw spindles

50 Hz

| Pressure max. | Flow at viscosity | | 2-pole motor rotation speed 2900 RPM | | | 4-pole motor rotation speed 1450 RPM | | | Motor | Weight | | | |
|-----------------|-----------------------------------------|--------------------------|-----------------------------------------|--------------------------|------------------------------------|-----------------------------------------|--------|-----------------------------------------|-------|--------|--------------------------------|-------------------------|--------------------------|
| | 1 mm ² /s | 20 mm ² /s | Power consumption at viscosity | | Motor immer- sion version | Motor foot mounted version | Weight | Flow at viscosity | | | Power consumption at viscosity | | |
| | | | 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 | kW | kg | l/min | l/min | kW | kW | kW | kg |
| BFS 238/ | Q_{Th}¹⁾ 31.0 | – | – | – | – | – | – | Q_{Th}¹⁾ 15.5 | – | – | – | – | – |
| 10 | 28.8 | 30.1 | 0.7 | 0.7 | B 1.3 | 0.75 | 40 | 13.3 | 14.6 | 0.4 | 0.4 | 0.75 | 29 |
| 20 | 28.1 | 29.8 | 1.3 | 1.3 | B 1.3 | 1.5 | 40 | 12.6 | 14.3 | 0.6 | 0.6 | 0.75 | 29 |
| 30 | 27.4 | 29.5 | 1.8 | 1.8 | B 1.9 | 2.2 | 44 | 11.9 | 14.0 | 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 | 26.0 | 28.9 | 2.8 | 2.9 | B 3.3 | 3.0 | 55 | 10.5 | 13.4 | 1.4 | 1.5 | 1.5 | 34 |
| 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 | 4.0 | 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 | – | 12.3 | – | 2.6 | 3.0 | 46 |
| 100 | 22.5 | 27.6 | 5.4 | 5.6 | B 7.5 | 7.5 | 82 | – | 12.1 | – | 2.9 | 3.0 | 46 |
| 110 | 21.9 | 27.3 | 5.9 | 6.2 | B 7.5 | 7.5 | 82 | – | – | – | – | – | – |
| 120 | 21.2 | 27.0 | 6.4 | 6.8 | B 7.5 | 7.5 | 82 | – | – | – | – | – | – |
| 130 | 20.6 | 26.7 | 6.9 | 7.3 | B 7.5 | 11.0 | 82 | – | – | – | – | – | – |
| 140 | 19.9 | 26.5 | 7.5 | 7.9 | B 10.0 | 11.0 | 97 | – | – | – | – | – | – |
| 150 | 19.3 | 26.2 | 8.0 | 8.4 | B 10.0 | 11.0 | 97 | – | – | – | – | – | – |
| BFS 250/ | 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 | 37.0 | 39.2 | 1.6 | 1.6 | B 1.7 | 2.2 | 40 | 16.6 | 18.8 | 0.8 | 0.8 | 1.1 | 32 |
| 30 | 36.0 | 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 | 17.0 | 2.5 | 2.6 | 3.0 | 46 |
| 80 | 31.9 | 37.0 | 5.7 | 5.9 | B 7.5 | 7.5 | 82 | 11.5 | 16.6 | 2.9 | 3.0 | 3.0 | 46 |
| 90 | 31.2 | 36.6 | 6.4 | 6.6 | B 7.5 | 7.5 | 82 | – | 16.2 | – | 3.3 | 4.0 | 53 |
| 100 | 30.5 | 36.2 | 7.0 | 7.4 | B 7.5 | 7.5 | 82 | – | 15.8 | – | 3.7 | 4.0 | 53 |
| 110 | – | 35.9 | 7.7 | 8.1 | B 10.0 | 11.0 | 97 | – | – | – | – | – | – |
| 120 | – | 35.5 | 8.4 | 8.8 | B 10.0 | 11.0 | 97 | – | – | – | – | – | – |
| 130 | – | 35.1 | 9.1 | 9.5 | B 10.0 | 11.0 | 97 | – | – | – | – | – | – |
| 140 | – | 34.7 | 9.8 | 10.2 | – | 11.0 | 97 | – | – | – | – | – | – |
| 150 | – | 34.3 | 10.4 | 11.0 | – | 15.0 | 101 | – | – | – | – | – | – |
| BFS 260/ | 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 | 21.0 | 23.0 | 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 | 1.1 | 32 |
| 30 | 43.2 | 46.3 | 2.7 | 2.9 | B 3.3 | 3.0 | 44 | 18.7 | 21.8 | 1.4 | 1.4 | 1.5 | 34 |
| 40 | 42.0 | 45.7 | 3.5 | 3.8 | B 4.0 | 4.0 | 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 | 82 | 15.3 | 20.0 | 2.6 | 2.8 | 3.0 | 46 |
| 70 | 38.5 | 43.9 | 5.9 | 6.4 | B 7.5 | 7.5 | 82 | 14.1 | 19.4 | 3.0 | 3.2 | 4.0 | 53 |
| 80 | 37.4 | 43.3 | 6.8 | 7.3 | B 7.5 | 11.0 | 82 | 12.9 | 18.8 | 3.4 | 3.7 | 4.0 | 53 |
| 90 | 36.2 | 42.6 | 7.6 | 8.1 | B 10.0 | 11.0 | 97 | – | 18.2 | – | 4.1 | 5.5 | 63 |
| 100 | 35.0 | 42.0 | 8.5 | 9.0 | B 10.0 | 11.0 | 97 | – | 17.6 | – | 4.5 | 5.5 | 63 |
| 110 | – | 41.4 | 9.3 | 9.9 | B 10.0 | 11.0 | 97 | – | – | – | – | – | – |
| 120 | – | 40.7 | 10.0 | 10.8 | – | 11.0 | 97 | – | – | – | – | – | – |

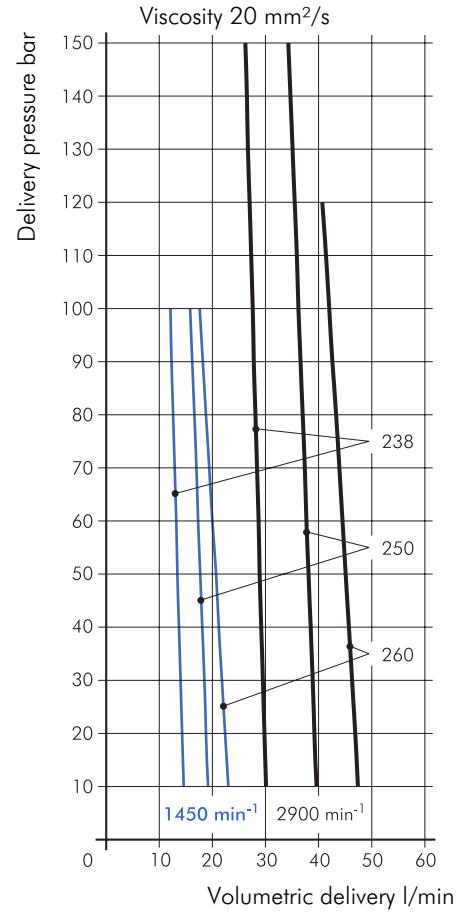
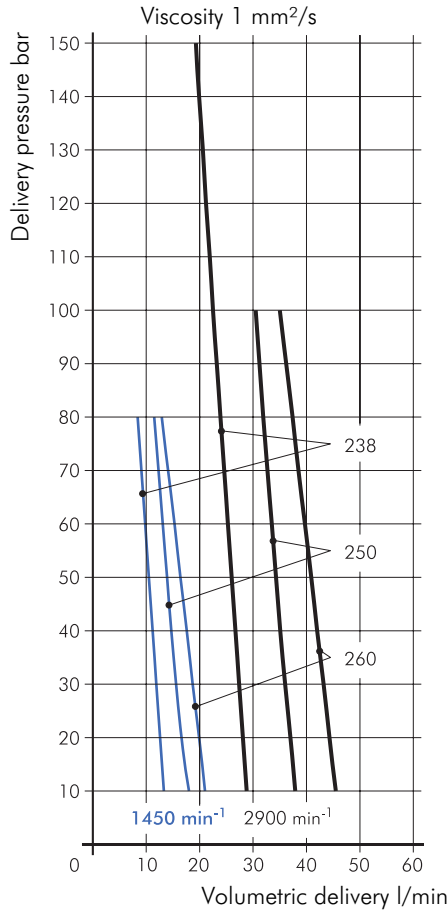
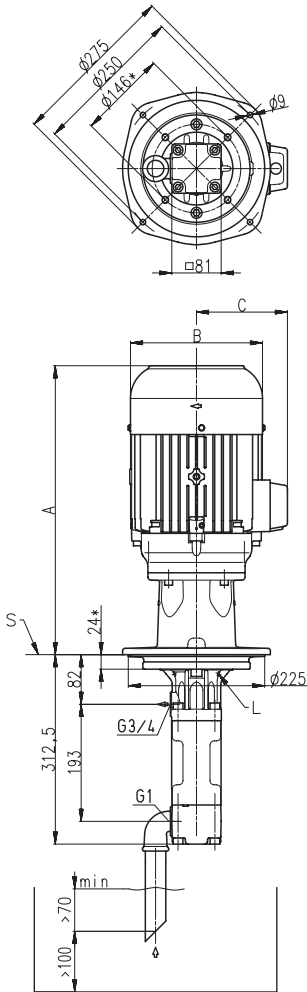
¹⁾ Q_{Th}: Theoretical flow rate

Higher pressures (up to 200 bar) upon request

Characteristics and dimensions

BFS2, FFS2

50 Hz

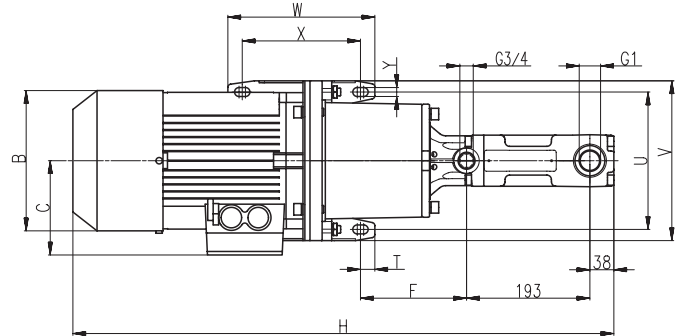
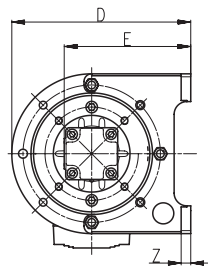


L = Leakage hole

S = Mounting plate, please find the cut-out of mounting hole on page 43.

*) Dimensions for 4-pole standard motor upon request

| Motor 2 pole kW | A mm | B mm | C mm |
|-----------------|------|------|------|
| B 1.3 / 1.7 | 389 | 176 | 130 |
| B 1.9 / 2.2 | 414 | 176 | 130 |
| B 2.6 | 424 | 218 | 150 |
| B 3.3 / 4.0 | 478 | 218 | 150 |
| B 5.0 / B 5.5 | 514 | 258 | 190 |
| B 7.5 | 552 | 258 | 190 |
| B 10.0 | 602 | 258 | 190 |



| Motor 2 pole kW | Motor 4 pole 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 | – | 163 | 120 | 212 | 155 | 138 | 682 | 15.0 | 180 | 210 | 90 | 60 | 11 | 12 |
| 1.1 | 0.75 | 163 | 120 | 212 | 155 | 138 | 717 | 15.0 | 180 | 210 | 90 | 60 | 11 | 12 |
| 1.5 | 1.1 | 180 | 128 | 212 | 155 | 138 | 730 | 15.0 | 180 | 210 | 90 | 60 | 11 | 12 |
| 2.2 | 1.5 | 183 | 128 | 212 | 155 | 138 | 757 | 15.0 | 180 | 210 | 90 | 60 | 11 | 12 |
| 3.0 | 2.2 | 203 | 135 | 280 | 198 | 167 | 822 | 22.5 | 215 | 250 | 230 | 185 | 14 | 15 |
| – | 3.0 | 203 | 135 | 280 | 198 | 167 | 867 | 22.5 | 215 | 250 | 230 | 185 | 14 | 15 |
| 4.0 | 4.0 | 227 | 148 | 280 | 198 | 167 | 848 | 22.5 | 215 | 250 | 230 | 185 | 14 | 15 |
| 5.5 | 5.5 | 267 | 167 | 335 | 228 | 171 | 869 | 22.5 | 265 | 300 | 270 | 225 | 14 | 18 |
| 7.5 | 7.5 | 267 | 167 | 335 | 228 | 171 | 907 | 22.5 | 265 | 300 | 270 | 225 | 14 | 18 |
| 11.0 / 15.0 | 11.0 | 320 | 197 | 410 | 278 | 183 | 1006 | 20.0 | 300 | 350 | 305 | 265 | 18 | 18 |

High Pressure Pumps

TFS3, FFS3

Screw spindles

50 Hz

| 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 |
| TFS 348/ | Q_{Th}¹⁾ 64.1 | – | – | – | – | – | Q_{Th}¹⁾ 32.1 | – | – | – | – | – |
| 10 | 60.0 | 62.3 | 1.5 | 1.6 | 2.2 | 47 | 28.0 | 30.3 | 0.7 | 0.8 | 1.1 | 44 |
| 20 | 58.5 | 61.5 | 2.5 | 2.8 | 3.0 | 52 | 26.5 | 29.4 | 1.2 | 1.3 | 1.5 | 46 |
| 30 | 57.1 | 60.7 | 3.6 | 3.9 | 4.0 | 63 | 25.0 | 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 | 86 | 22.3 | 27.1 | 2.8 | 3.0 | 3.0 | 58 |
| 60 | 53.1 | 58.5 | 6.8 | 7.3 | 11.0 | 104 | 21.1 | 26.5 | 3.4 | 3.5 | 4.0 | 65 |
| 70 | 51.9 | 57.9 | 7.9 | 8.5 | 11.0 | 104 | 19.8 | 25.8 | 3.9 | 4.1 | 5.5 | 75 |
| 80 | 50.7 | 57.3 | 8.9 | 9.6 | 11.0 | 104 | 18.7 | 25.2 | 4.4 | 4.7 | 5.5 | 75 |
| 90 | 49.6 | 56.7 | 10.0 | 10.7 | 15.0 | 113 | – | 24.6 | – | 5.2 | 5.5 | 75 |
| 100 | 48.6 | 56.1 | 11.1 | 11.8 | 15.0 | 113 | – | 24.1 | – | 5.8 | 7.5 | 90 |
| 110 | – | 55.6 | – | 13.0 | 15.0 | 113 | – | – | – | – | – | – |
| 120 | – | 55.2 | – | 14.2 | 15.0 | 113 | – | – | – | – | – | – |
| 130 | – | 54.7 | – | 15.3 | 18.5 | 133 | – | – | – | – | – | – |
| 140 | – | 54.4 | – | 16.4 | 18.5 | 133 | – | – | – | – | – | – |
| 150 | – | 54.0 | – | 17.6 | 18.5 | 133 | – | – | – | – | – | – |
| TFS 364/ | Q_{Th}¹⁾ 85.5 | – | – | – | – | – | Q_{Th}¹⁾ 42.8 | – | – | – | – | – |
| 10 | 79.9 | 83.0 | 1.8 | 2.0 | 3.0 | 52 | 37.1 | 40.3 | 0.9 | 0.9 | 1.1 | 44 |
| 20 | 78.1 | 82.0 | 3.3 | 3.5 | 4.0 | 63 | 35.3 | 39.2 | 1.6 | 1.7 | 2.2 | 53 |
| 30 | 76.3 | 81.0 | 4.7 | 5.0 | 5.5 | 73 | 33.6 | 38.3 | 2.3 | 2.4 | 3.0 | 58 |
| 40 | 74.6 | 80.1 | 6.1 | 6.5 | 7.5 | 86 | 31.9 | 37.4 | 3.0 | 3.2 | 4.0 | 65 |
| 50 | 73.0 | 79.2 | 7.5 | 8.0 | 11.0 | 104 | 30.2 | 36.5 | 3.7 | 3.9 | 4.0 | 65 |
| 60 | 71.4 | 78.4 | 9.0 | 9.5 | 11.0 | 104 | 28.7 | 35.7 | 4.4 | 4.7 | 5.5 | 75 |
| 70 | 69.9 | 77.6 | 10.4 | 10.9 | 15.0 | 113 | 27.1 | 34.9 | 5.1 | 5.4 | 5.5 | 75 |
| 80 | 68.4 | 76.9 | 11.8 | 12.4 | 15.0 | 113 | 25.6 | 34.1 | 5.9 | 6.1 | 7.5 | 90 |
| 90 | 66.9 | 76.1 | 13.2 | 13.9 | 15.0 | 113 | – | 33.4 | – | 6.9 | 7.5 | 90 |
| 100 | 65.5 | 75.5 | 14.7 | 15.4 | 18.5 | 133 | – | 32.7 | – | 7.6 | 11.0 | 112 |
| 110 | – | 74.8 | – | 16.9 | 18.5 | 133 | – | – | – | – | – | – |
| 120 | – | 74.3 | – | 18.4 | 22.0 | 162 | – | – | – | – | – | – |
| TFS 376/ | 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 | 1.5 | 46 |
| 20 | 93.1 | 97.3 | 3.8 | 4.2 | 5.5 | 73 | 42.3 | 46.6 | 1.8 | 2.1 | 2.2 | 53 |
| 30 | 91.0 | 96.2 | 5.5 | 6.0 | 7.5 | 86 | 40.3 | 45.4 | 2.7 | 3.0 | 3.0 | 58 |
| 40 | 89.0 | 95.1 | 7.2 | 7.9 | 11.0 | 104 | 38.2 | 44.4 | 3.5 | 3.9 | 4.0 | 65 |
| 50 | 87.0 | 94.1 | 8.9 | 9.7 | 11.0 | 104 | 36.2 | 43.3 | 4.4 | 4.8 | 5.5 | 75 |
| 60 | 85.0 | 93.1 | 10.6 | 11.5 | 15.0 | 113 | 34.3 | 42.4 | 5.2 | 5.7 | 7.5 | 90 |
| 70 | 83.1 | 92.2 | 12.2 | 13.3 | 15.0 | 113 | 32.3 | 41.4 | 6.1 | 6.6 | 7.5 | 90 |
| 80 | 81.2 | 91.3 | 13.9 | 15.1 | 18.5 | 133 | 30.4 | 40.5 | 6.9 | 7.4 | 7.5 | 90 |
| 90 | 79.3 | 90.4 | 15.6 | 16.9 | 18.5 | 133 | – | 39.7 | – | 8.4 | 11.0 | 112 |
| 100 | 77.5 | 89.6 | 17.3 | 18.8 | 22.0 | 162 | – | 38.9 | – | 9.2 | 11.0 | 112 |
| 110 | – | 88.9 | – | 20.6 | 22.0 | 162 | – | – | – | – | – | – |
| 120 | – | 88.2 | – | 22.4 | 30.0 | 219 | – | – | – | – | – | – |

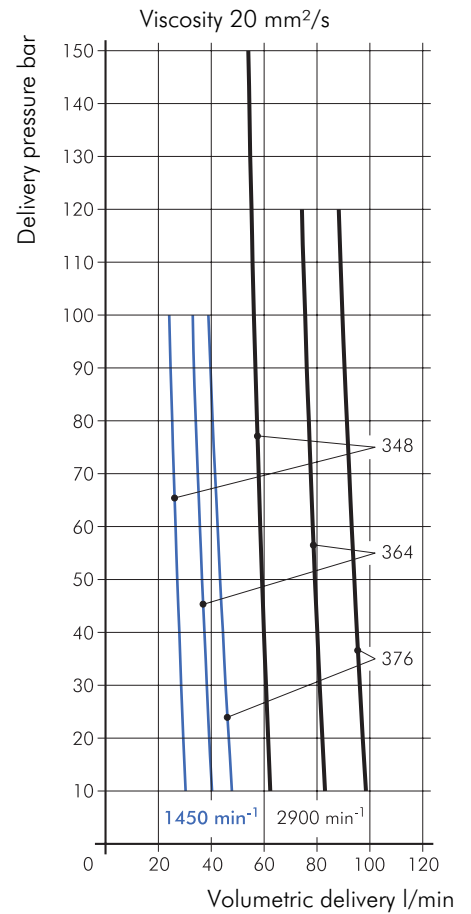
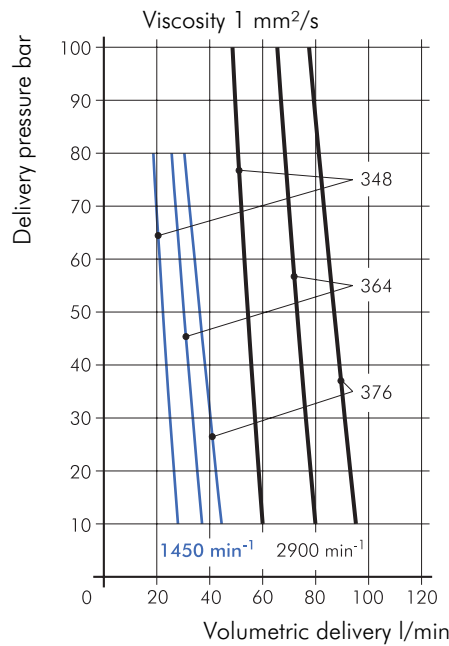
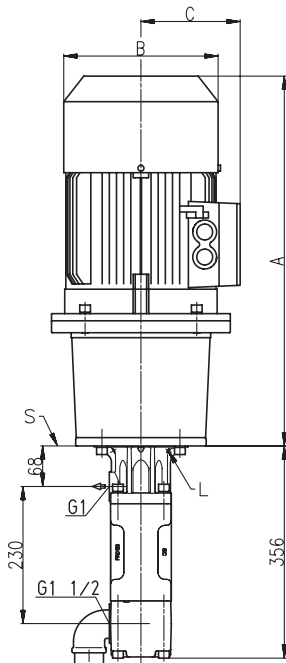
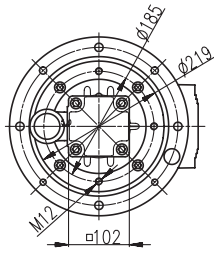
¹⁾ Q_{Th}: Theoretical flow rate

Higher pressures (up to 200 bar) upon request

Characteristics and dimensions

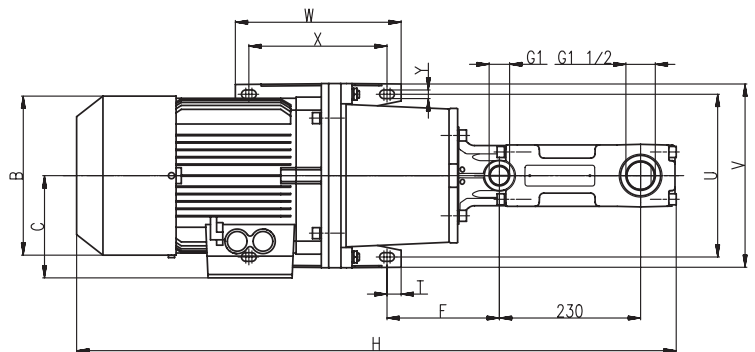
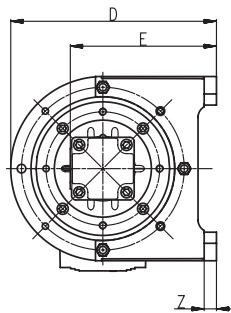
TFS3, FFS3

50 Hz



L = Leakage hole

S = Mounting plate, please find the cut-out of mounting hole on page 43.



| Motor 2 pole kW | Motor 4 pole 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 | 444 | 180 | 128 | 212 | 165 | 138 | 800 | 15.0 | 180 | 210 | 90 | 60 | 11 | 12 |
| 2.2 | 1.5 | 471 | 183 | 128 | 212 | 165 | 138 | 827 | 15.0 | 180 | 210 | 90 | 60 | 11 | 12 |
| 3.0 | 2.2 | 536 | 203 | 135 | 280 | 208 | 179 | 892 | 22.5 | 215 | 250 | 230 | 185 | 14 | 15 |
| - | 3.0 | 571 | 203 | 135 | 280 | 208 | 179 | 927 | 22.5 | 215 | 250 | 230 | 185 | 14 | 15 |
| 4.0 | 4.0 | 562 | 227 | 148 | 280 | 208 | 179 | 918 | 22.5 | 215 | 250 | 230 | 185 | 14 | 15 |
| 5.5 | 5.5 | 583 | 267 | 167 | 335 | 238 | 183 | 939 | 22.5 | 265 | 300 | 270 | 225 | 14 | 18 |
| 7.5 | 7.5 | 659 | 267 | 167 | 335 | 238 | 183 | 1015 | 22.5 | 265 | 300 | 270 | 225 | 14 | 18 |
| 11.0 / 15.0 | 11.0 | 748 | 320 | 197 | 410 | 288 | 223 | 1104 | 20.0 | 300 | 350 | 305 | 265 | 18 | 18 |
| 18.5 | 15.0 | 828 | 320 | 197 | 410 | 288 | 223 | 1184 | 20.0 | 300 | 350 | 305 | 265 | 18 | 18 |
| 22.0 | 18.5 / 22.0 | 873 | 363 | 258 | 410 | 288 | 223 | 1228 | 20.0 | 300 | 350 | 305 | 265 | 18 | 18 |
| 30.0 | 30.0 | 930 | 402 | 305 | 400 | 253 | 473 | 1287 | 25.0 | 318 | 398 | 355 | 305 | 25 | 34 |

High Pressure Pumps

TFS4, FFS4

Screw spindles



50 Hz

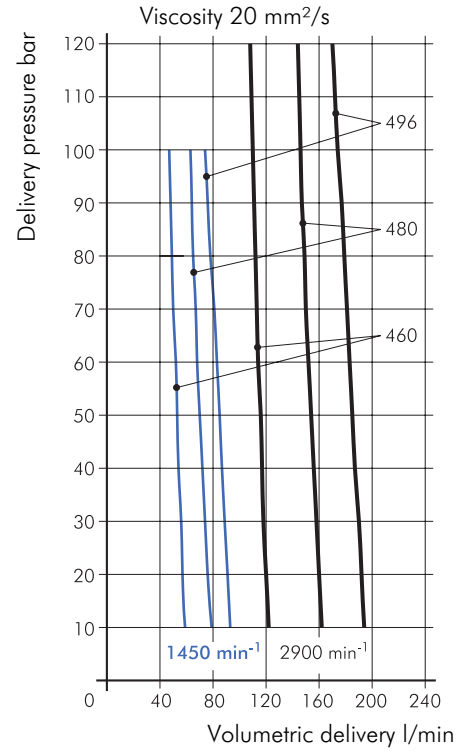
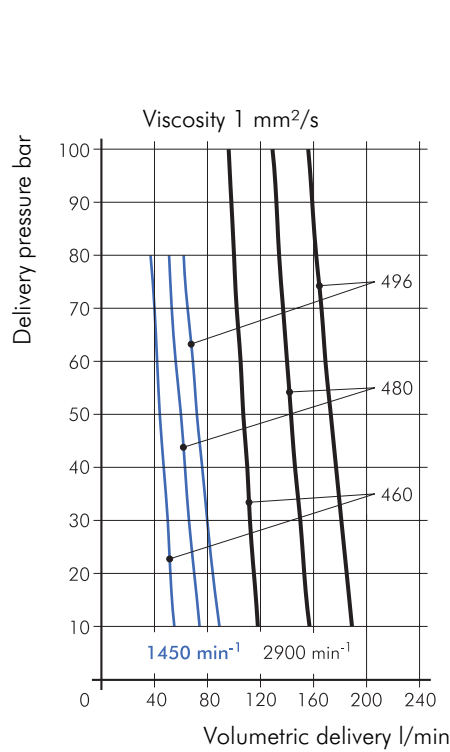
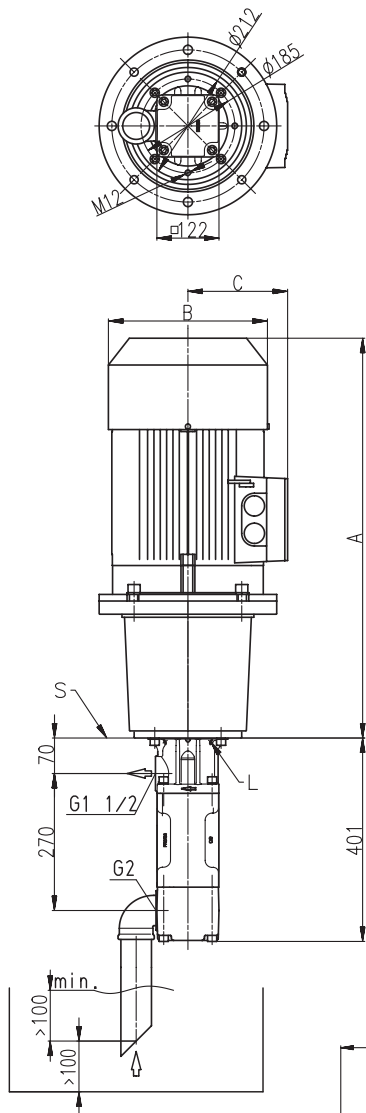
| | | 2-pole motor rotation speed 2900 RPM | | | | | 4-pole motor rotation speed 1450 RPM | | | | | |
|-----------------|------------------------------------------|-----------------------------------------|--------------------------------|-----------------------|-------|--------|------------------------------------------|-----------------------|--------------------------------|-----------------------|-------|--------|
| 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 |
| TFS 460/ | Q_{Th}¹⁾ 125.3 | – | – | – | – | – | Q_{Th}¹⁾ 62.7 | – | – | – | – | – |
| 10 | 118 | 122 | 2.7 | 3.0 | 3.0 | 63 | 55 | 59 | 1.2 | 1.3 | 1.5 | 57 |
| 20 | 115 | 120 | 4.8 | 5.2 | 5.5 | 83 | 52 | 57 | 2.3 | 2.4 | 3.0 | 64 |
| 30 | 112 | 118 | 6.9 | 7.4 | 7.5 | 96 | 50 | 56 | 3.3 | 3.5 | 4.0 | 76 |
| 40 | 110 | 117 | 9.0 | 9.6 | 11.0 | 115 | 47 | 54 | 4.4 | 4.7 | 5.5 | 85 |
| 50 | 107 | 116 | 11.0 | 11.8 | 15.0 | 124 | 44 | 53 | 5.4 | 5.8 | 7.5 | 100 |
| 60 | 105 | 114 | 13.1 | 14.0 | 15.0 | 124 | 42 | 52 | 6.5 | 6.9 | 7.5 | 100 |
| 70 | 102 | 113 | 15.2 | 16.1 | 18.5 | 144 | 40 | 50 | 7.5 | 8.0 | 11.0 | 123 |
| 80 | 100 | 112 | 17.3 | 18.3 | 18.5 | 144 | 37 | 49 | 8.6 | 9.1 | 11.0 | 123 |
| 90 | 98 | 111 | 19.4 | 20.5 | 22.0 | 173 | – | 48 | – | 10.3 | 11.0 | 123 |
| 100 | 96 | 110 | 21.5 | 22.7 | 30.0 | 230 | – | 47 | – | 11.3 | 15.0 | 149 |
| 110 | – | 109 | – | 24.9 | 30.0 | 230 | – | – | – | – | – | – |
| 120 | – | 108 | – | 27.1 | 30.0 | 230 | – | – | – | – | – | – |
| TFS 480/ | Q_{Th}¹⁾ 167.1 | – | – | – | – | – | Q_{Th}¹⁾ 83.6 | – | – | – | – | – |
| 10 | 157 | 162 | 3.4 | 3.7 | 4.0 | 74 | 74 | 79 | 1.6 | 1.8 | 2.2 | 64 |
| 20 | 153 | 160 | 6.2 | 6.6 | 7.5 | 96 | 70 | 76 | 3.0 | 3.2 | 4.0 | 76 |
| 30 | 150 | 158 | 9.0 | 9.5 | 11.0 | 115 | 66 | 74 | 4.4 | 4.7 | 5.5 | 85 |
| 40 | 146 | 156 | 11.7 | 12.4 | 15.0 | 124 | 63 | 72 | 5.8 | 6.1 | 7.5 | 100 |
| 50 | 143 | 154 | 14.5 | 15.2 | 18.5 | 144 | 60 | 70 | 7.2 | 7.6 | 11.0 | 123 |
| 60 | 140 | 152 | 17.3 | 18.1 | 18.5 | 144 | 56 | 68 | 8.6 | 9.2 | 11.0 | 123 |
| 70 | 137 | 150 | 20.1 | 21.0 | 22.0 | 173 | 53 | 67 | 9.9 | 10.6 | 11.0 | 123 |
| 80 | 134 | 149 | 22.9 | 23.9 | 30.0 | 230 | 51 | 65 | 11.3 | 12.1 | 15.0 | 149 |
| 90 | 132 | 147 | 25.7 | 26.7 | 30.0 | 230 | – | 64 | – | 13.6 | 15.0 | 149 |
| 100 | 129 | 146 | 28.5 | 29.6 | 30.0 | 230 | – | 63 | – | 15.0 | 15.0 | 149 |
| 110 | – | 145 | – | 32.5 | 37.0 | 259 | – | – | – | – | – | – |
| 120 | – | 144 | – | 35.4 | 37.0 | 259 | – | – | – | – | – | – |
| TFS 496/ | 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 | 115 | 85 | 92 | 3.5 | 3.9 | 5.5 | 85 |
| 30 | 181 | 190 | 10.6 | 11.5 | 15.0 | 124 | 80 | 90 | 5.2 | 5.7 | 7.5 | 100 |
| 40 | 177 | 187 | 14.0 | 15.1 | 18.5 | 144 | 76 | 87 | 6.9 | 7.5 | 7.5 | 100 |
| 50 | 173 | 185 | 17.3 | 18.6 | 22.0 | 173 | 72 | 85 | 8.6 | 9.3 | 11.0 | 123 |
| 60 | 169 | 183 | 20.7 | 22.2 | 30.0 | 230 | 69 | 83 | 10.2 | 11.1 | 15.0 | 149 |
| 70 | 166 | 181 | 24.0 | 25.7 | 30.0 | 230 | 65 | 81 | 11.9 | 12.9 | 15.0 | 149 |
| 80 | 162 | 179 | 27.3 | 29.3 | 30.0 | 230 | 62 | 78 | 13.6 | 14.8 | 15.0 | 149 |
| 90 | 159 | 177 | 30.7 | 32.8 | 37.0 | 259 | – | 76 | – | 16.6 | 18.5 | 168 |
| 100 | 156 | 174 | 34.0 | 36.4 | 37.0 | 259 | – | 74 | – | 18.4 | 18.5 | 168 |
| 110 | – | 172 | – | 39.9 | 45.0 | 374 | – | – | – | – | – | – |
| 120 | – | 170 | – | 43.5 | 45.0 | 374 | – | – | – | – | – | – |

¹⁾ Q_{Th}: Theoretical flow rate

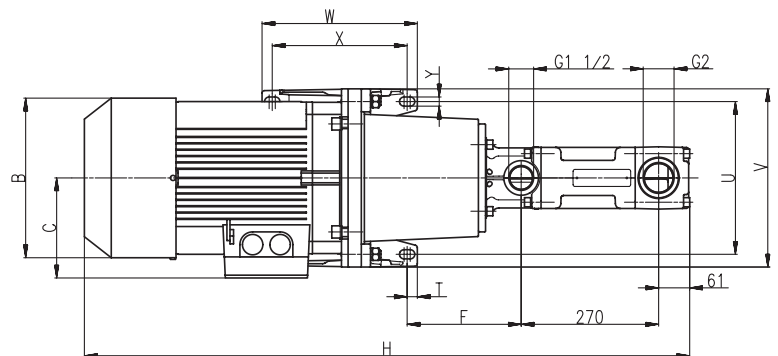
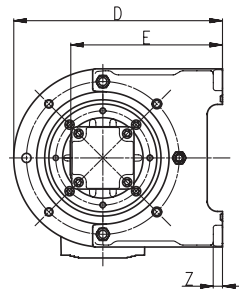
Characteristics and dimensions

TFS4, FFS4

50 Hz



L = Leakage hole
S = Mounting plate, please find the cut-out of mounting hole on page 43.



For mounting patterns of foot-mounted motors larger than 45 kW please refer to page 21.

| Motor 2 pole kW | Motor 4 pole kW | A | B | C | D | E | F | H | T | U | V | W | X | Y | Z |
|-----------------------|-----------------------|------|-----|-----|-----|-----|-----|------|------|-----|-----|-----|-----|----|----|
| | | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| - | 1.5 | 471 | 183 | 128 | 212 | 175 | 138 | 872 | 15.0 | 180 | 210 | 90 | 60 | 11 | 12 |
| 3.0 | 2.2 | 536 | 203 | 135 | 280 | 218 | 179 | 937 | 22.5 | 215 | 250 | 230 | 185 | 14 | 15 |
| - | 3.0 | 571 | 203 | 135 | 280 | 218 | 179 | 972 | 22.5 | 215 | 250 | 230 | 185 | 14 | 15 |
| 4.0 | 4.0 | 562 | 227 | 148 | 280 | 218 | 179 | 963 | 22.5 | 215 | 250 | 230 | 185 | 14 | 15 |
| 5.5 | 5.5 | 583 | 267 | 167 | 335 | 248 | 185 | 984 | 22.5 | 265 | 300 | 270 | 225 | 14 | 18 |
| 7.5 | 7.5 | 659 | 267 | 167 | 335 | 248 | 185 | 1060 | 22.5 | 265 | 300 | 270 | 225 | 14 | 18 |
| 11.0 / 15.0 | 11.0 | 748 | 320 | 197 | 410 | 298 | 225 | 1149 | 20.0 | 300 | 350 | 305 | 265 | 18 | 18 |
| 18.5 | 15.0 | 828 | 320 | 197 | 410 | 298 | 225 | 1229 | 20.0 | 300 | 350 | 305 | 265 | 18 | 18 |
| 22.0 | 18.5 / 22.0 | 873 | 363 | 258 | 410 | 298 | 225 | 1273 | 20.0 | 300 | 350 | 305 | 265 | 18 | 18 |
| 30.0 / 37.0 | 30.0 | 930 | 402 | 305 | 400 | 263 | 473 | 1332 | 25.0 | 318 | 398 | 355 | 305 | 25 | 34 |
| 45.0 | - | 1037 | 402 | 328 | 450 | 288 | 531 | 1518 | 37.0 | 356 | 436 | 361 | 286 | 25 | 34 |

High Pressure Pumps

TFS5, FFS5

Screw spindles



50 Hz

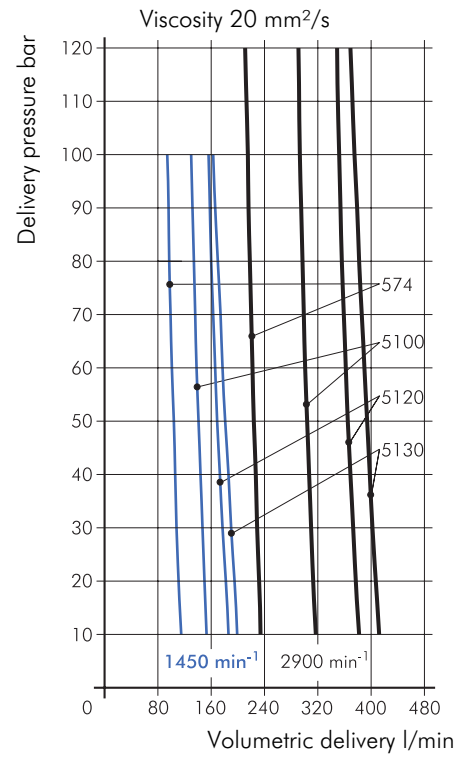
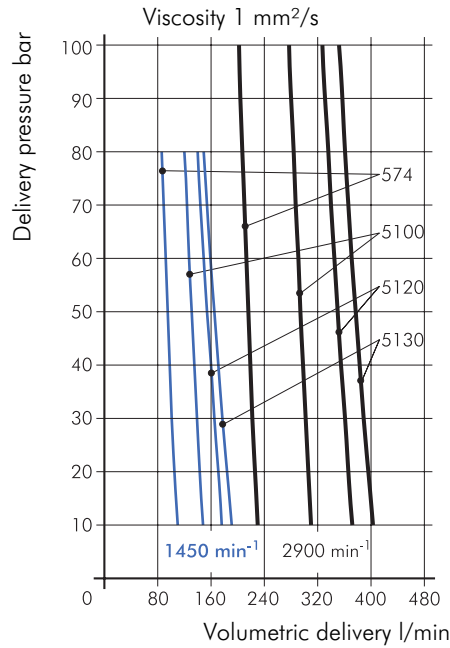
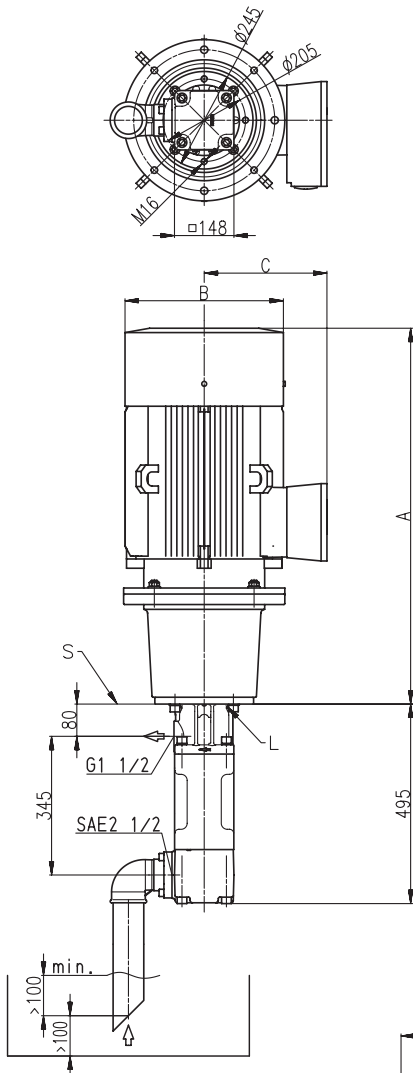
| 2-pole motor rotation speed 2900 RPM | | | | | | | 4-pole motor rotation speed 1450 RPM | | | | | |
|-----------------------------------------|------------------------------------------|-----------------------|--------------------------------|-----------------------|-------|--------|------------------------------------------|-----------------------|--------------------------------|-----------------------|-------|--------|
| 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 |
| TFS 574/ | Q_{Th}¹⁾ 241.6 | – | – | – | – | – | Q_{Th}¹⁾ 120.8 | – | – | – | – | – |
| 10 | 230 | 234 | 5.0 | 5.7 | 7.5 | 125 | 109 | 114 | 2.3 | 2.7 | 4.0 | 105 |
| 20 | 226 | 232 | 9.1 | 9.9 | 11.0 | 144 | 105 | 111 | 4.3 | 4.8 | 5.5 | 114 |
| 30 | 222 | 229 | 13.1 | 14.2 | 15.0 | 153 | 101 | 108 | 6.3 | 7.0 | 7.5 | 129 |
| 40 | 219 | 227 | 17.1 | 18.4 | 22.0 | 202 | 98 | 106 | 8.4 | 9.1 | 11.0 | 152 |
| 50 | 216 | 224 | 21.1 | 22.6 | 30.0 | 259 | 95 | 104 | 10.4 | 11.3 | 15.0 | 178 |
| 60 | 213 | 222 | 25.2 | 26.9 | 30.0 | 259 | 92 | 101 | 12.4 | 13.4 | 15.0 | 178 |
| 70 | 210 | 220 | 29.2 | 31.1 | 37.0 | 288 | 89 | 99 | 14.4 | 15.5 | 18.5 | 197 |
| 80 | 207 | 218 | 33.2 | 35.4 | 37.0 | 288 | 86 | 97 | 16.4 | 17.7 | 18.5 | 197 |
| 90 | 204 | 216 | 37.2 | 39.6 | 45.0 | 403 | – | 96 | – | 19.8 | 22.0 | 217 |
| 100 | 202 | 215 | 41.3 | 43.8 | 45.0 | 403 | – | 94 | – | 21.9 | 22.0 | 217 |
| 110 | – | 213 | – | 48.1 | 55.0 | 498 | – | – | – | – | – | – |
| 120 | – | 211 | – | 52.3 | 55.0 | 498 | – | – | – | – | – | – |
| TFS 5100/ | Q_{Th}¹⁾ 326.5 | – | – | – | – | – | Q_{Th}¹⁾ 163.3 | – | – | – | – | – |
| 10 | 310 | 317 | 6.4 | 7.1 | 11.0 | 144 | 147 | 153 | 3.0 | 3.5 | 5.5 | 114 |
| 20 | 306 | 313 | 11.9 | 12.9 | 15.0 | 153 | 143 | 150 | 5.7 | 6.4 | 7.5 | 129 |
| 30 | 302 | 310 | 17.3 | 18.6 | 22.0 | 202 | 139 | 147 | 8.5 | 9.3 | 11.0 | 152 |
| 40 | 298 | 307 | 22.8 | 24.4 | 30.0 | 259 | 135 | 144 | 11.2 | 12.2 | 15.0 | 178 |
| 50 | 294 | 304 | 28.2 | 30.2 | 37.0 | 288 | 131 | 141 | 13.9 | 15.1 | 18.5 | 197 |
| 60 | 291 | 301 | 33.7 | 36.0 | 37.0 | 288 | 127 | 138 | 16.6 | 18.0 | 18.5 | 197 |
| 70 | 287 | 299 | 39.1 | 41.7 | 45.0 | 403 | 124 | 136 | 19.3 | 20.9 | 22.0 | 217 |
| 80 | 284 | 297 | 44.5 | 47.5 | 55.0 | 498 | 120 | 134 | 22.1 | 23.9 | 30.0 | 273 |
| 90 | 280 | 295 | 50.0 | 53.3 | 55.0 | 498 | – | 132 | – | 26.8 | 30.0 | 273 |
| 100 | 277 | 293 | 55.4 | 59.1 | 75.0 | 608 | – | 130 | – | 29.7 | 30.0 | 273 |
| 110 | – | 292 | – | 64.8 | 75.0 | 608 | – | – | – | – | – | – |
| 120 | – | 291 | – | 70.6 | 75.0 | 608 | – | – | – | – | – | – |

¹⁾ Q_{Th}: Theoretical flow rate

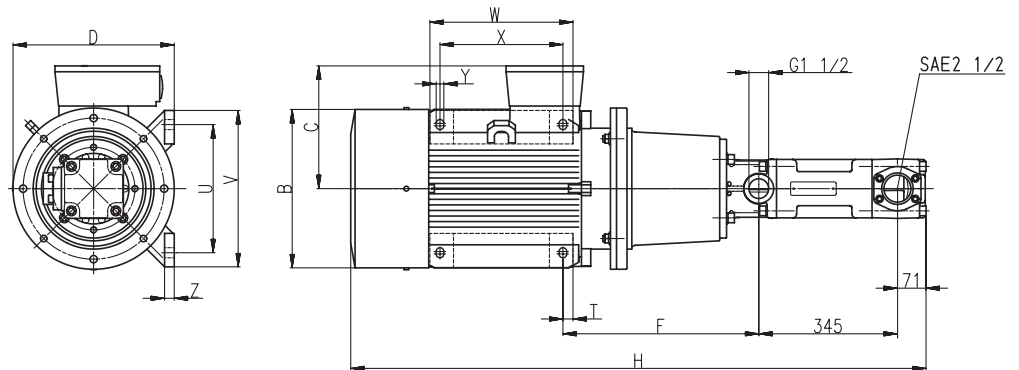
Characteristics and dimensions

TFS5, FFS5

50 Hz



L = Leakage hole
S = Mounting plate, please find the cut-out of mounting hole on page 43.



For mounting patterns of foot-mounted motors smaller than 45 kW please refer to page 19.

| Motor 2 pole kW | Motor 4 pole kW | A | B | C | D | E | F | H | T | U | V | W | X | Y | Z |
|-----------------------|-----------------------|------|-----|-----|-----|-----|-----|------|------|-----|-----|-----|-----|----|----|
| | | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| – | 4.0 | 562 | 227 | 148 | 280 | 218 | 179 | 990 | 22.5 | 215 | 250 | 230 | 185 | 14 | 15 |
| – | 5.5 | 583 | 267 | 167 | 335 | 248 | 185 | 1076 | 22.5 | 265 | 300 | 270 | 225 | 14 | 18 |
| 7.5 | 7.5 | 659 | 267 | 197 | 335 | 248 | 185 | 1152 | 22.5 | 265 | 300 | 270 | 225 | 14 | 18 |
| 11.0 / 15.0 | 11.0 | 748 | 320 | 197 | 410 | 298 | 225 | 1244 | 20.0 | 300 | 350 | 305 | 265 | 18 | 18 |
| 18.5 | 15.0 | 828 | 320 | 197 | 410 | 298 | 225 | 1324 | 20.0 | 300 | 350 | 305 | 265 | 18 | 18 |
| 22.0 | 18.5 / 22.0 | 872 | 363 | 258 | 410 | 298 | 225 | 1368 | 20.0 | 300 | 350 | 305 | 265 | 18 | 18 |
| 30.0 / 37.0 | 30.0 | 931 | 402 | 305 | 400 | 263 | 473 | 1427 | 25.0 | 318 | 398 | 355 | 305 | 25 | 34 |
| 45.0 | – | 973 | 442 | 328 | 450 | 288 | 531 | 1479 | 37.0 | 356 | 436 | 361 | 286 | 25 | 34 |
| 55 | – | 1093 | 505 | 392 | 525 | 313 | 560 | 1589 | 30.0 | 406 | 506 | 409 | 349 | 30 | 42 |
| 75 | – | 1251 | 555 | 432 | 555 | 280 | 607 | 1749 | 30.0 | 457 | 557 | 479 | 419 | 30 | 42 |
| 90 | – | 1361 | 555 | 432 | 555 | 280 | 607 | 1859 | 30.0 | 457 | 557 | 479 | 419 | 30 | 42 |

High Pressure Pumps

TFS5, FFS5

Screw spindles

50 Hz

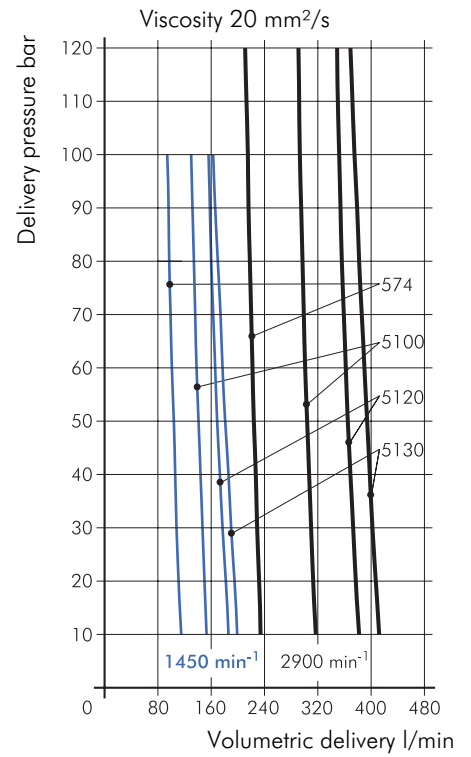
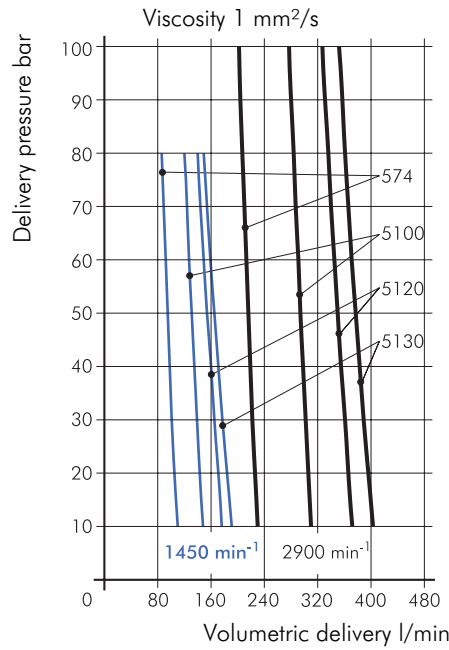
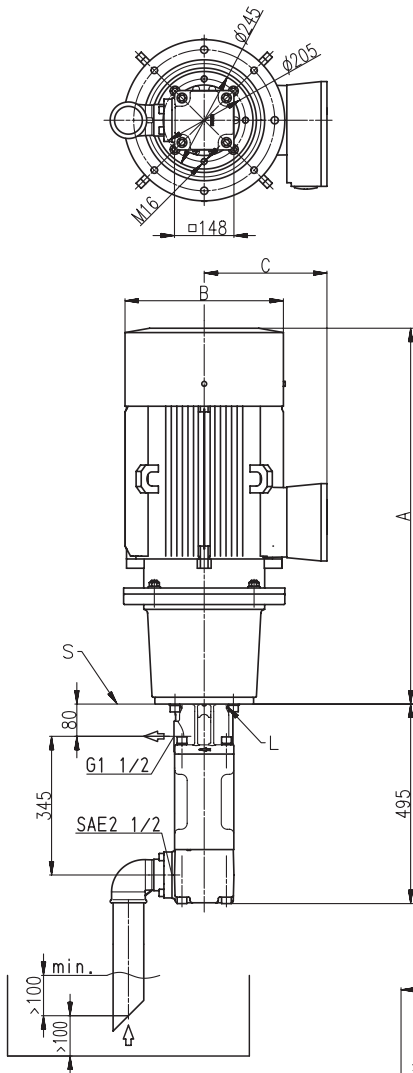
| 2-pole motor rotation speed 2900 RPM | | | | | | | 4-pole motor rotation speed 1450 RPM | | | | | |
|-----------------------------------------|------------------------------------------|-----------------------|--------------------------------|-----------------------|-------|--------|------------------------------------------|-----------------------|--------------------------------|-----------------------|-------|--------|
| 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 |
| TFS 5120/ | Q_{Th}¹⁾ 391.8 | – | – | – | – | – | Q_{Th}¹⁾ 195.9 | – | – | – | – | – |
| 10 | 372 | 382 | 7.5 | 8.7 | 11.0 | 144 | 176 | 186 | 3.6 | 4.1 | 5.5 | 114 |
| 20 | 366 | 377 | 14.1 | 15.6 | 18.5 | 173 | 171 | 181 | 6.8 | 7.6 | 11.0 | 152 |
| 30 | 361 | 373 | 20.6 | 22.5 | 30.0 | 259 | 165 | 177 | 10.1 | 11.1 | 15.0 | 178 |
| 40 | 355 | 369 | 27.1 | 29.5 | 37.0 | 288 | 160 | 173 | 13.4 | 14.6 | 18.5 | 197 |
| 50 | 350 | 365 | 33.7 | 36.4 | 45.0 | 403 | 154 | 169 | 16.6 | 18.1 | 22.0 | 217 |
| 60 | 345 | 362 | 40.2 | 43.3 | 45.0 | 403 | 149 | 166 | 19.9 | 21.6 | 22.0 | 217 |
| 70 | 340 | 359 | 46.7 | 50.2 | 55.0 | 498 | 144 | 163 | 23.2 | 25.1 | 30.0 | 273 |
| 80 | 336 | 356 | 53.2 | 57.1 | 75.0 | 608 | 140 | 160 | 26.4 | 28.6 | 30.0 | 273 |
| 90 | 331 | 354 | 59.8 | 64.0 | 75.0 | 608 | – | 158 | – | 32.1 | 37.0 | 363 |
| 100 | 327 | 352 | 66.3 | 71.0 | 75.0 | 608 | – | 156 | – | 35.6 | 37.0 | 363 |
| 110 | – | 350 | – | 77.9 | 90.0 | 693 | – | – | – | – | – | – |
| 120 | – | 349 | – | 84.8 | 90.0 | 693 | – | – | – | – | – | – |
| TFS 5130/ | Q_{Th}¹⁾ 424.5 | – | – | – | – | – | Q_{Th}¹⁾ 212.2 | – | – | – | – | – |
| 10 | 403 | 412 | 8.1 | 9.2 | 11.0 | 144 | 191 | 199 | 3.8 | 4.3 | 5.5 | 114 |
| 20 | 396 | 407 | 15.1 | 16.5 | 18.5 | 173 | 184 | 195 | 7.4 | 8.0 | 11.0 | 152 |
| 30 | 389 | 402 | 22.2 | 23.7 | 30.0 | 259 | 177 | 190 | 10.9 | 11.7 | 15.0 | 178 |
| 40 | 383 | 398 | 29.3 | 31.0 | 37.0 | 288 | 171 | 186 | 14.4 | 15.3 | 18.5 | 197 |
| 50 | 377 | 394 | 36.4 | 38.3 | 45.0 | 403 | 165 | 181 | 18.0 | 19.0 | 22.0 | 217 |
| 60 | 371 | 390 | 43.4 | 45.6 | 55.0 | 498 | 159 | 177 | 21.5 | 22.7 | 30.0 | 273 |
| 70 | 366 | 386 | 50.5 | 52.8 | 55.0 | 498 | 154 | 174 | 25.1 | 26.4 | 30.0 | 273 |
| 80 | 361 | 382 | 57.6 | 60.1 | 75.0 | 608 | 149 | 170 | 28.6 | 30.0 | 37.0 | 363 |
| 90 | 357 | 379 | 64.7 | 67.4 | 75.0 | 608 | – | 166 | – | 33.7 | 37.0 | 363 |
| 100 | 352 | 375 | 71.7 | 74.7 | 90.0 | 693 | – | 163 | – | 37.4 | 45.0 | 403 |
| 110 | – | 372 | – | 81.9 | 90.0 | 693 | – | – | – | – | – | – |
| 120 | – | 369 | – | 89.2 | 90.0 | 693 | – | – | – | – | – | – |

¹⁾ Q_{Th}: Theoretical flow rate

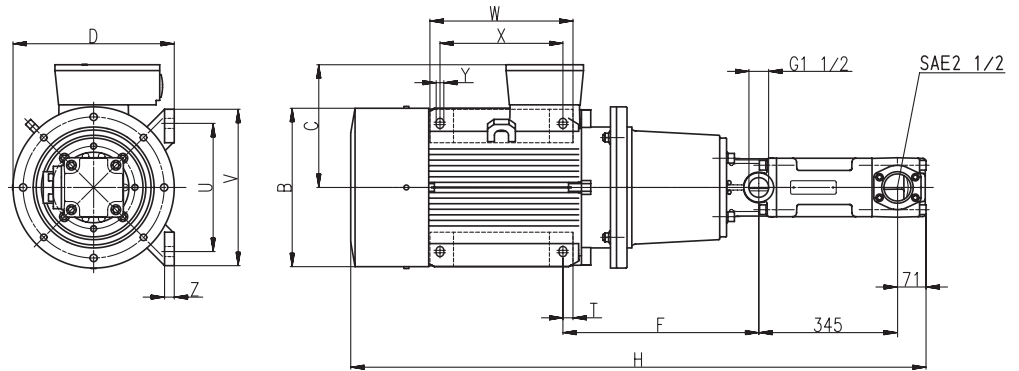
Characteristics and dimensions

TFS5, FFS5

50 Hz



L = Leakage hole
S = Mounting plate, please find the cut-out of mounting hole on page 43.



For mounting patterns of foot-mounted motors smaller than 45 kW please refer to page 19.

| Motor 2 pole kW | Motor 4 pole kW | A | B | C | D | E | F | H | T | U | V | W | X | Y | Z |
|-----------------------|-----------------------|------|-----|-----|-----|-----|-----|------|------|-----|-----|-----|-----|----|----|
| | | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| - | 5.5 | 583 | 267 | 167 | 335 | 248 | 185 | 1076 | 22.5 | 265 | 300 | 270 | 225 | 14 | 18 |
| 7.5 | 7.5 | 659 | 267 | 197 | 335 | 248 | 185 | 1152 | 22.5 | 265 | 300 | 270 | 225 | 14 | 18 |
| 11.0 / 15.0 | 11.0 | 748 | 320 | 197 | 410 | 298 | 225 | 1244 | 20.0 | 300 | 350 | 305 | 265 | 18 | 18 |
| 18.5 | 15.0 | 828 | 320 | 197 | 410 | 298 | 225 | 1324 | 20.0 | 300 | 350 | 305 | 265 | 18 | 18 |
| 22.0 | 18.5 / 22.0 | 872 | 363 | 258 | 410 | 298 | 225 | 1368 | 20.0 | 300 | 350 | 305 | 265 | 18 | 18 |
| 30.0 / 37.0 | 30.0 | 931 | 402 | 305 | 400 | 263 | 473 | 1427 | 25.0 | 318 | 398 | 355 | 305 | 25 | 34 |
| - | 37.0 | 967 | 442 | 328 | 450 | 288 | 531 | 1473 | 37.0 | 356 | 436 | 361 | 286 | 25 | 34 |
| 45.0 | - | 1027 | 442 | 328 | 450 | 288 | 531 | 1533 | 37.0 | 356 | 436 | 361 | 286 | 25 | 34 |
| - | 45.0 | 1027 | 442 | 328 | 450 | 288 | 531 | 1533 | 37.0 | 356 | 436 | 361 | 286 | 25 | 34 |
| 55 | - | 1093 | 505 | 392 | 525 | 313 | 560 | 1589 | 30.0 | 406 | 506 | 409 | 349 | 30 | 42 |
| 75 | - | 1251 | 555 | 432 | 555 | 280 | 607 | 1749 | 30.0 | 457 | 557 | 479 | 419 | 30 | 42 |
| 90 | - | 1361 | 555 | 432 | 555 | 280 | 607 | 1859 | 30.0 | 457 | 557 | 479 | 419 | 30 | 42 |

High Pressure Pumps

TFS6, FFS6

Screw spindles

50 Hz

| 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 |
| TFS 690/ | Q_{Th}¹⁾ 459 | – | – | – | – | – | Q_{Th}¹⁾ 230 | – | – | – | – | – |
| 10 | 445 | 450 | 9.5 | 11.2 | 15.0 | 213 | 216 | 220 | 4.4 | 5.1 | 5.5 | 175 |
| 20 | 437 | 445 | 17.1 | 18.8 | 22.0 | 262 | 207 | 216 | 8.3 | 9.0 | 11.0 | 212 |
| 30 | 429 | 440 | 24.8 | 26.5 | 30.0 | 319 | 199 | 211 | 12.1 | 12.8 | 15.0 | 238 |
| 40 | 421 | 436 | 32.4 | 34.1 | 37.0 | 348 | 191 | 206 | 15.9 | 16.6 | 18.5 | 257 |
| 50 | 414 | 432 | 40.1 | 41.8 | 45.0 | 464 | 184 | 202 | 19.7 | 20.4 | 22.0 | 277 |
| 60 | 407 | 428 | 47.7 | 49.4 | 55.0 | 559 | 177 | 198 | 23.6 | 24.3 | 30.0 | 333 |
| 70 | 401 | 424 | 55.4 | 57.1 | 75.0 | 669 | 171 | 194 | 27.4 | 28.1 | 30.0 | 333 |
| 80 | 395 | 420 | 63.0 | 64.7 | 75.0 | 669 | 165 | 190 | 31.2 | 31.9 | 37.0 | 424 |
| TFS 6120/ | Q_{Th}¹⁾ 612 | – | – | – | – | – | Q_{Th}¹⁾ 306 | – | – | – | – | – |
| 10 | 594 | 600 | 12.0 | 13.7 | 15.0 | 213 | 288 | 294 | 5.7 | 6.4 | 7.5 | 190 |
| 20 | 584 | 594 | 22.2 | 23.9 | 30.0 | 319 | 278 | 288 | 10.8 | 11.5 | 15.0 | 238 |
| 30 | 574 | 588 | 32.4 | 34.1 | 37.0 | 348 | 268 | 282 | 15.9 | 16.6 | 18.5 | 257 |
| 40 | 565 | 583 | 42.6 | 44.3 | 55.0 | 559 | 259 | 277 | 21.0 | 21.7 | 30.0 | 333 |
| 50 | 557 | 578 | 52.8 | 54.5 | 75.0 | 669 | 251 | 272 | 26.1 | 26.8 | 30.0 | 333 |
| 60 | 549 | 573 | 63.0 | 64.7 | 75.0 | 669 | 243 | 267 | 31.2 | 31.9 | 37.0 | 424 |
| 70 | 542 | 568 | 73.2 | 74.9 | 90.0 | 754 | 236 | 262 | 36.3 | 37.0 | 45.0 | 464 |
| TFS 6145/ | Q_{Th}¹⁾ 740 | – | – | – | – | – | Q_{Th}¹⁾ 370 | – | – | – | – | – |
| 10 | 717 | 725 | 14.1 | 15.8 | 18.5 | 233 | 348 | 355 | 6.8 | 7.5 | 11.0 | 212 |
| 20 | 704 | 715 | 26.5 | 28.2 | 30.0 | 319 | 334 | 345 | 12.9 | 13.6 | 15.0 | 238 |
| 30 | 692 | 706 | 38.8 | 40.5 | 45.0 | 464 | 322 | 337 | 19.1 | 19.8 | 22.0 | 277 |
| 40 | 680 | 698 | 51.1 | 52.8 | 55.0 | 559 | 310 | 328 | 25.3 | 26.0 | 30.0 | 333 |
| 50 | 669 | 691 | 63.4 | 65.1 | 75.0 | 669 | 299 | 321 | 31.4 | 32.1 | 37.0 | 424 |
| 60 | 658 | 684 | 75.8 | 77.5 | 90.0 | 754 | 288 | 314 | 37.6 | 38.3 | 45.0 | 464 |

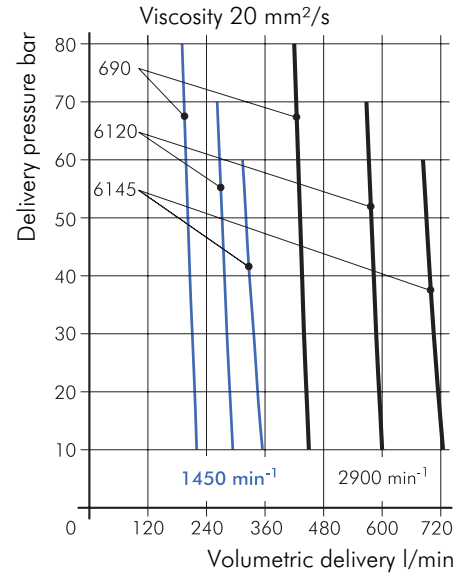
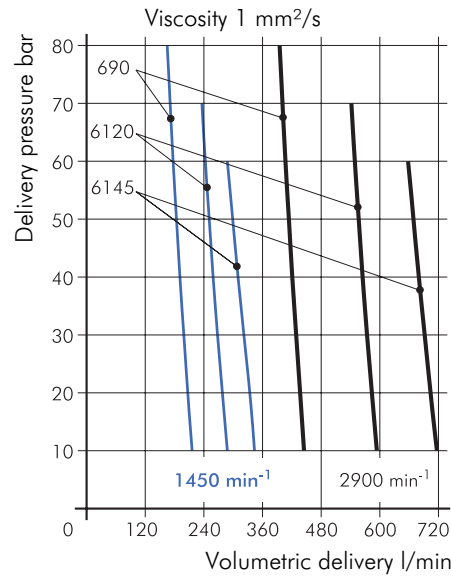
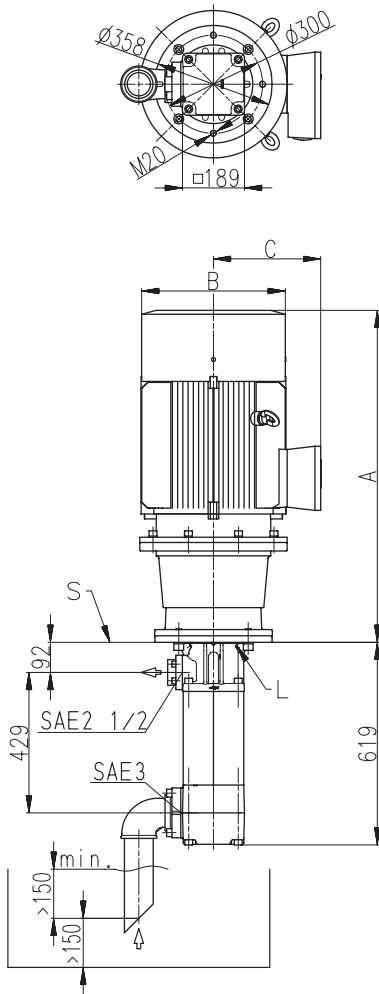
¹⁾ Q_{Th}: Theoretical flow rate

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 1 bar of pressure to the pump inlet.

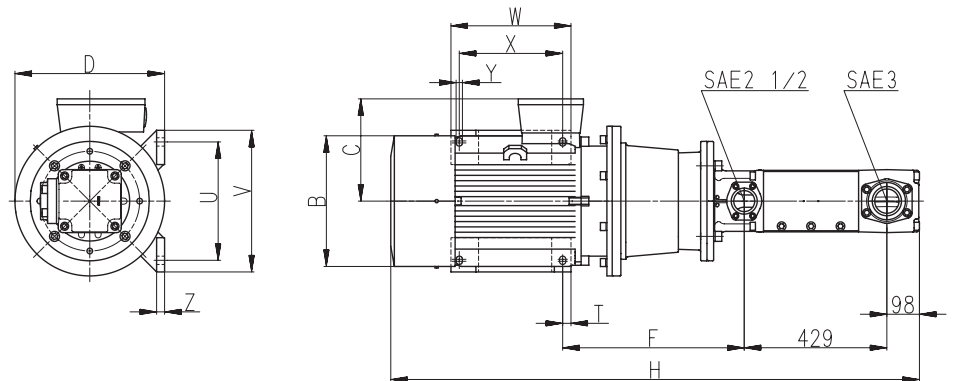
Characteristics and dimensions

TFS6, FFS6

50 Hz



L = Leakage hole
S = Mounting plate, please find the cut-out of mounting hole on page 43.



For mounting patterns of foot-mounted motors smaller than 45 kW please refer to page 19.

| Motor 2 pole kW | Motor 4 pole kW | A | B | C | D | F | H | T | U | V | W | X | Y | Z |
|-----------------------|-----------------------|------|-----|-----|-----|-----|------|----|-----|-----|-----|-----|----|----|
| | | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| – | 5.5 | 660 | 267 | 167 | 394 | 285 | 1279 | 25 | 350 | 400 | 350 | 300 | 18 | 20 |
| – | 7.5 | 698 | 267 | 167 | 394 | 285 | 1317 | 25 | 350 | 400 | 350 | 300 | 18 | 20 |
| 15.0 | 11.0 | 779 | 320 | 197 | 420 | 293 | 1397 | 25 | 350 | 400 | 350 | 300 | 18 | 20 |
| 18.5 | 15.0 | 819 | 320 | 197 | 420 | 293 | 1437 | 25 | 350 | 400 | 350 | 300 | 18 | 20 |
| 22.0 | 18.5 / 22.0 | 903 | 363 | 258 | 442 | 293 | 1529 | 25 | 350 | 400 | 350 | 300 | 18 | 20 |
| 30.0 / 37.0 | 30.0 | 958 | 402 | 305 | 461 | 291 | 1577 | 25 | 350 | 400 | 350 | 300 | 18 | 20 |
| – | 37.0 | 974 | 442 | 328 | 516 | 307 | 1593 | 25 | 400 | 450 | 385 | 335 | 18 | 22 |
| 45.0 | – | 1014 | 442 | 328 | 446 | 546 | 1634 | 25 | 356 | 436 | 361 | 311 | 19 | 34 |
| – | 45.0 | 1034 | 442 | 328 | 446 | 566 | 1653 | 25 | 356 | 436 | 361 | 311 | 19 | 34 |
| 55 | – | 1066 | 505 | 392 | 502 | 581 | 1685 | 30 | 406 | 490 | 409 | 349 | 24 | 40 |
| 75 | – | 1160 | 555 | 432 | 558 | 622 | 1779 | 56 | 457 | 540 | 479 | 368 | 24 | 40 |
| 90 | – | 1250 | 555 | 432 | 558 | 622 | 1869 | 30 | 457 | 540 | 479 | 419 | 24 | 40 |

High Pressure Pumps

BFS1, FFS1 / BFS2, FFS2



Screw spindles

| Pressure max. | Flow at viscosity | | 2-pole motor rotation speed 3500 RPM | | | 4-pole motor rotation speed 1750 RPM | | | Flow at viscosity | | Power consumption at viscosity | | Motor kW | Weight kg |
|---------------|------------------------------------|--------------------------|-----------------------------------------|--------------------------|-------------------------------|-----------------------------------------|--------------|-----------------------------------|------------------------------------|-------------------------|--------------------------------|-------|-------------|--------------|
| | 1 mm ² /s | 20 mm ² /s | 1 mm ² /s | 20 mm ² /s | Motor immersion version | Motor foot mounted version | Weight kg | 1 mm ² /s | 20 mm ² /s | 1 mm ² /s | 20 mm ² /s | | | |
| | | | | | | | | | | | | l/min | | |
| Type / bar | Q _{Th} ¹⁾ 18.8 | – | – | – | – | – | – | Q _{Th} ¹⁾ 9.4 | – | – | – | – | – | |
| BFS 130/ | 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 | 1.3 | 39 | 5.9 | 8.0 | 0.6 | 0.6 | 0.86 | 29 |
| | 40 | 14.5 | 17.1 | 1.5 | 1.5 | B 1.75 | 1.75 | 39 | 5.0 | 7.7 | 0.7 | 0.8 | 0.86 | 29 |
| | 50 | 13.6 | 16.7 | 1.8 | 1.9 | B 1.95 | 2.55 | 39 | – | 7.3 | – | 1.0 | 1.3 | 31 |
| | 60 | 12.7 | 16.4 | 2.1 | 2.2 | B 2.2 | 2.55 | 43 | – | 7.0 | – | 1.1 | 1.3 | 31 |
| | 70 | 11.9 | 16.0 | 2.4 | 2.5 | B 2.55 | 2.55 | 43 | – | 6.6 | – | 1.3 | 1.3 | 31 |
| | 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 | – | 6.0 | – | 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 | – | 14.7 | – | 3.9 | B 4.6 | 4.6 | 57 | – | 5.3 | – | 2.0 | 2.55 | 41 |
| | 120 | – | 14.4 | – | 4.2 | B 4.6 | 4.6 | 57 | – | 5.0 | – | 2.1 | 2.55 | 41 |
| | 130 | – | 14.1 | – | 4.5 | B 4.6 | 4.6 | 57 | – | 4.7 | – | 2.3 | 2.55 | 41 |
| | 140 | – | 13.8 | – | 4.9 | B 5.75 | 6.3 | 73 | – | 4.4 | – | 2.5 | 3.45 | 46 |
| | 150 | – | 13.5 | – | 5.2 | B 5.75 | 6.3 | 73 | – | 4.1 | – | 2.7 | 3.45 | 46 |
| BFS 140/ | Q _{Th} ¹⁾ 25.2 | – | – | – | – | – | – | – | Q _{Th} ¹⁾ 12.6 | – | – | – | – | |
| | 10 | 23.1 | 24.4 | 0.7 | 0.7 | B 1.5 | 0.86 | 39 | 10.5 | 11.8 | 0.3 | 0.4 | 0.86 | 29 |
| | 20 | 21.8 | 23.9 | 1.1 | 1.2 | B 1.5 | 1.3 | 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 | 8.0 | 10.7 | 0.7 | 0.8 | 0.86 | 29 |
| | 40 | 19.5 | 22.9 | 1.9 | 2.0 | B 2.2 | 2.55 | 43 | 6.8 | 10.2 | 0.9 | 1.0 | 1.3 | 31 |
| | 50 | 18.4 | 22.4 | 2.4 | 2.5 | B 2.55 | 2.55 | 43 | – | 9.8 | – | 1.2 | 1.3 | 31 |
| | 60 | 17.3 | 21.9 | 2.8 | 2.9 | B 3.0 | 3.45 | 44 | – | 9.3 | – | 1.5 | 1.75 | 34 |
| | 70 | 16.4 | 21.4 | 3.2 | 3.3 | B 3.8 | 3.45 | 54 | – | 8.8 | – | 1.7 | 1.75 | 34 |
| | 80 | 15.4 | 20.9 | 3.6 | 3.8 | B 3.8 | 4.6 | 54 | – | 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 | 20.0 | 4.5 | 4.7 | B 5.75 | 6.3 | 73 | – | 7.4 | – | 2.3 | 2.55 | 41 |
| | 110 | – | 19.6 | – | 5.1 | B 5.75 | 6.3 | 73 | – | 7.0 | – | 2.5 | 3.45 | 46 |
| | 120 | – | 19.2 | – | 5.5 | B 5.75 | 6.3 | 73 | – | 6.5 | – | 2.7 | 3.45 | 46 |
| | 130 | – | 18.7 | – | 6.0 | B 6.3 | 6.3 | 73 | – | 6.1 | – | 2.9 | 3.45 | 46 |
| | 140 | – | 18.3 | – | 6.4 | B 8.6 | 8.6 | 81 | – | 5.7 | – | 3.1 | 3.45 | 46 |
| | 150 | – | 17.9 | – | 6.9 | B 8.6 | 8.6 | 81 | – | 5.3 | – | 3.4 | 4.6 | 53 |
| BFS 232/ | 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 | 29.0 | 30.6 | 1.4 | 1.4 | B 1.5 | 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 | 1.3 | 32 |
| | 40 | 27.8 | 30.0 | 2.4 | 2.5 | B 2.55 | 3.45 | 44 | 12.1 | 14.3 | 1.2 | 1.3 | 1.3 | 32 |
| | 50 | 27.2 | 29.8 | 2.9 | 3.1 | B 3.8 | 3.45 | 55 | 11.5 | 14.0 | 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 | 26.0 | 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 | 29.0 | 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 | – | 13.0 | – | 2.6 | 3.45 | 46 |
| | 100 | 24.3 | 28.5 | 5.6 | 5.8 | B 6.3 | 6.3 | 74 | – | 12.7 | – | 2.9 | 3.45 | 46 |
| | 110 | 23.8 | 28.3 | 6.1 | 6.4 | B 8.6 | 8.6 | 82 | – | 12.5 | – | 3.2 | 3.45 | 46 |
| | 120 | 23.2 | 28.0 | 6.6 | 6.9 | B 8.6 | 8.6 | 82 | – | 12.3 | – | 3.4 | 4.6 | 53 |
| | 130 | 22.7 | 27.8 | 7.1 | 7.5 | B 8.6 | 8.6 | 82 | – | 12.0 | – | 3.7 | 4.6 | 53 |
| | 140 | 22.1 | 27.5 | 7.7 | 8.0 | B 8.6 | 8.6 | 82 | – | 11.8 | – | 4.0 | 4.6 | 53 |
| | 150 | 21.6 | 27.3 | 8.2 | 8.6 | B 8.6 | 12.6 | 82 | – | 11.6 | – | 4.2 | 4.6 | 53 |

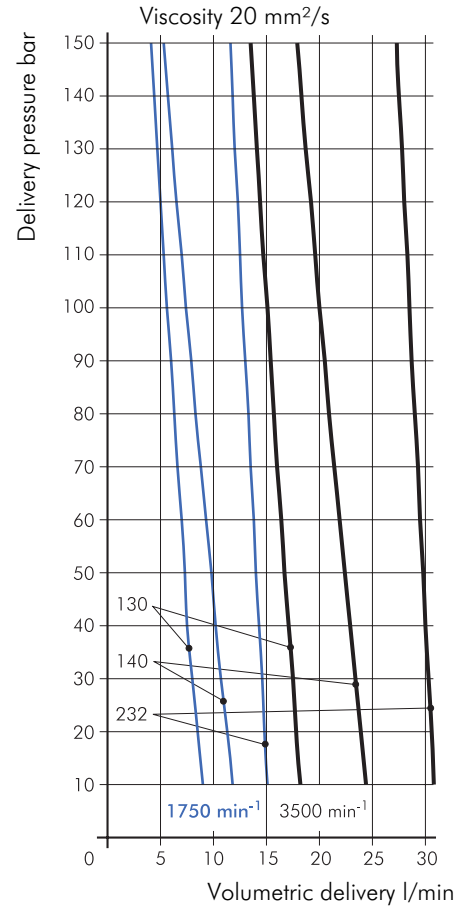
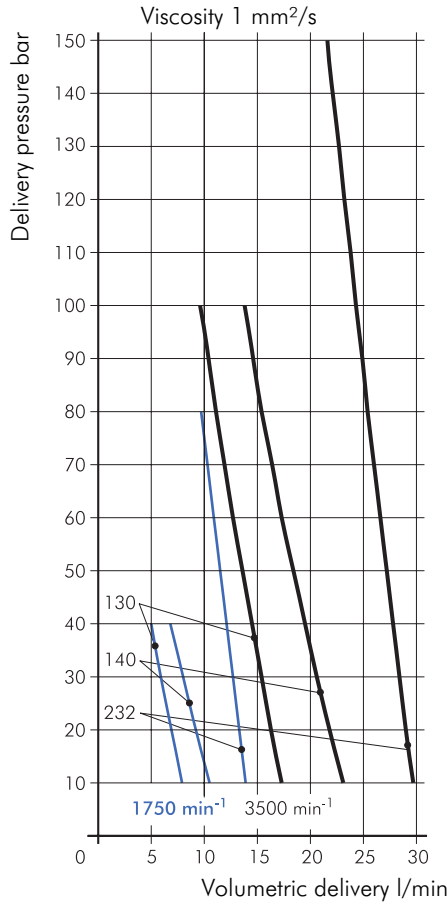
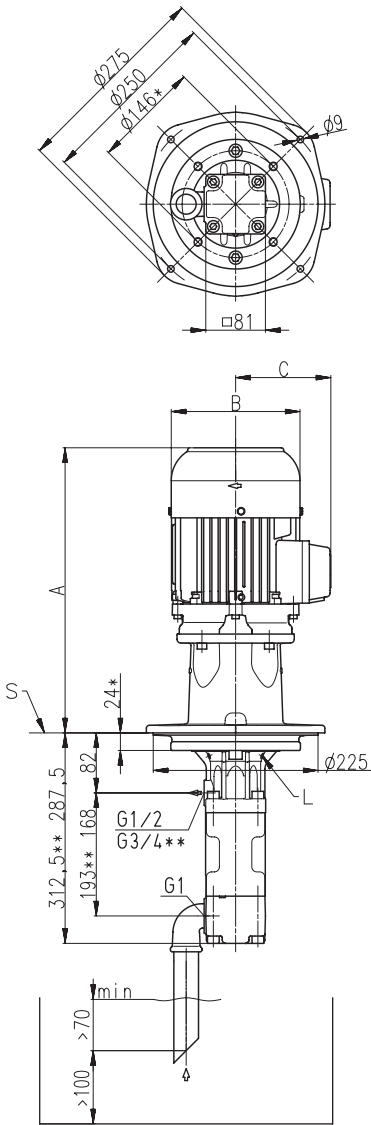
¹⁾ Q_{Th}: Theoretical flow rate

Higher pressures (up to 200 bar) upon request

Characteristics and dimensions

BFS1, FFS1 / BFS2, FFS2

60 Hz

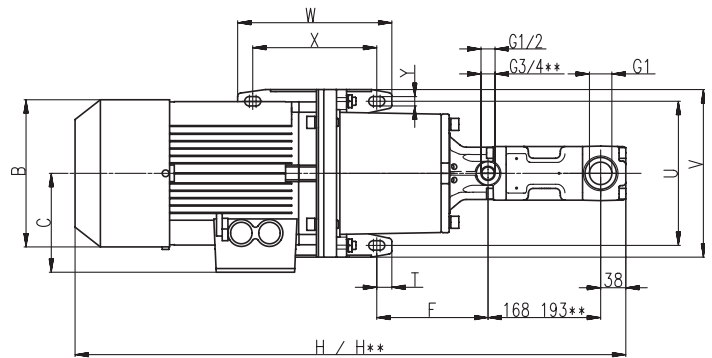
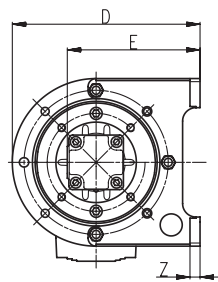


L = Leakage hole
S = Mounting plate, please find the cut-out of mounting hole on page 43.

*) Dimensions for 4-pole standard motor upon request

***) Dimensions for BFS2

| Motor 2 pole kW | A mm | B mm | C mm |
|-----------------------|---------|---------|---------|
| B 1.75 | 389 | 176 | 130 |
| B 1.5 / 1.95 | 389 | 176 | 130 |
| B 2.2 / 2.55 | 414 | 176 | 130 |
| B 3.0 | 424 | 218 | 150 |
| B 3.8 / 4.6 | 478 | 218 | 150 |
| B 5.75 / 6.3 | 514 | 258 | 190 |
| B 8.6 | 552 | 258 | 190 |



Dimensions
H** = H+25
or see page 29

| Motor 2 pole kW | Motor 4 pole 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 | - | 163 | 120 | 212 | 155 | 138 | 657 | 15.0 | 180 | 210 | 90 | 60 | 11 | 12 |
| 1.3 | 0.86 | 163 | 120 | 212 | 155 | 138 | 692 | 15.0 | 180 | 210 | 90 | 60 | 11 | 12 |
| 1.75 | 1.3 | 180 | 128 | 212 | 155 | 138 | 705 | 15.0 | 180 | 210 | 90 | 60 | 11 | 12 |
| 2.55 | 1.75 | 183 | 128 | 212 | 155 | 138 | 732 | 15.0 | 180 | 210 | 90 | 60 | 11 | 12 |
| 3.45 | 2.55 | 203 | 135 | 280 | 198 | 167 | 797 | 22.5 | 215 | 250 | 230 | 185 | 14 | 15 |
| - | 3.45 | 203 | 135 | 280 | 198 | 167 | 832 | 22.5 | 215 | 250 | 230 | 185 | 14 | 15 |
| 4.6 | 4.6 | 227 | 148 | 280 | 198 | 167 | 823 | 22.5 | 215 | 250 | 230 | 185 | 14 | 15 |
| 6.3 | 6.3 | 267 | 167 | 335 | 228 | 171 | 844 | 22.5 | 265 | 300 | 270 | 225 | 14 | 18 |
| 8.6 | - | 267 | 167 | 335 | 228 | 171 | 882 | 22.5 | 265 | 300 | 270 | 225 | 14 | 18 |

High Pressure Pumps

BFS2, FFS2

Screw spindles



| Pressure max. | Flow at viscosity | | 2-pole motor rotation speed 3500 RPM | | | | | 4-pole motor rotation speed 1750 RPM | | | | | |
|-----------------------------------------|-----------------------------------------|-----------------------|-----------------------------------------|-----------------------|-------------------------|----------------------------|--------|-----------------------------------------|-----------------------|--------------------------------|-----------------------|-------|--------|
| | | | Power consumption at viscosity | | Motor immersion version | Motor foot mounted version | 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 | kW | kg | l/min | l/min | kW | kW | kW | kg |
| BFS 238/ | 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 | 1.75 | 40 | 15.8 | 17.5 | 0.8 | 0.8 | 0.86 | 29 |
| 30 | 33.8 | 35.9 | 2.2 | 2.2 | B 2.55 | 2.55 | 44 | 15.1 | 17.2 | 1.1 | 1.1 | 1.3 | 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 | 13.0 | 16.4 | 2.0 | 2.1 | 2.55 | 41 |
| 70 | 31.0 | 34.8 | 4.7 | 4.8 | B 5.75 | 6.3 | 74 | 12.3 | 16.1 | 2.3 | 2.4 | 2.55 | 41 |
| 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 | – | 15.5 | – | 3.1 | 3.45 | 46 |
| 100 | 29.0 | 34.0 | 6.6 | 6.8 | B 8.6 | 8.6 | 82 | – | 15.3 | – | 3.4 | 3.45 | 46 |
| 110 | 28.3 | 33.7 | 7.2 | 7.4 | B 8.6 | 8.6 | 82 | – | 15.0 | – | 3.7 | 4.6 | 53 |
| 120 | 27.6 | 33.4 | 7.8 | 8.1 | B 8.6 | 8.6 | 82 | – | 14.7 | – | 4.1 | 4.6 | 53 |
| 130 | 27.0 | 33.1 | 8.4 | 8.8 | B 11.5 | 12.6 | 97 | – | 14.4 | – | 4.4 | 6.3 | 63 |
| 140 | 26.3 | 32.9 | 9.0 | 9.4 | B 11.5 | 12.6 | 97 | – | 14.2 | – | 4.7 | 6.3 | 63 |
| 150 | 25.7 | 32.6 | 9.7 | 10.1 | B 11.5 | 12.6 | 97 | – | 13.9 | – | 5.0 | 6.3 | 63 |
| BFS 250/ | | | | | | | | | | | | | |
| Q_{Th}¹⁾ 49.2 | – | – | – | – | – | – | – | Q_{Th}¹⁾ 24.6 | – | – | – | – | – |
| 10 | 46.4 | 48.0 | 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 2.2 | 2.55 | 44 | 20.8 | 23.0 | 1.0 | 1.0 | 1.3 | 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 | 19.0 | 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 | 82 | 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 | 82 | 15.7 | 20.8 | 3.4 | 3.6 | 4.6 | 53 |
| 90 | 39.6 | 45.1 | 7.7 | 8.1 | B 8.6 | 8.6 | 82 | – | 20.4 | – | 4.0 | 4.6 | 53 |
| 100 | 38.9 | 44.7 | 8.5 | 8.9 | B 11.5 | 12.6 | 97 | – | 20.1 | – | 4.5 | 4.6 | 53 |
| 110 | – | 44.3 | – | 9.8 | B 11.5 | 12.6 | 97 | – | 19.7 | – | 4.9 | 6.3 | 63 |
| 120 | – | 43.9 | – | 10.5 | B 11.5 | 12.6 | 97 | – | 19.3 | – | 5.3 | 6.3 | 63 |
| 130 | – | 43.5 | – | 11.5 | B 11.5 | 12.6 | 97 | – | 18.9 | – | 5.8 | 6.3 | 63 |
| 140 | – | 43.1 | – | 12.3 | – | 17.3 | 101 | – | 18.5 | – | 6.2 | 8.6 | 78 |
| 150 | – | 42.7 | – | 13.2 | – | 17.3 | 101 | – | 18.1 | – | 6.6 | 8.6 | 78 |
| BFS 260/ | | | | | | | | | | | | | |
| Q_{Th}¹⁾ 59.0 | – | – | – | – | – | – | – | Q_{Th}¹⁾ 29.5 | – | – | – | – | – |
| 10 | 55.6 | 57.6 | 1.3 | 1.5 | B 2.2 | 2.55 | 44 | 26.1 | 28.0 | 0.6 | 0.7 | 0.86 | 29 |
| 20 | 54.4 | 57.0 | 2.3 | 2.5 | B 3.0 | 3.45 | 44 | 24.9 | 27.5 | 1.1 | 1.3 | 1.3 | 32 |
| 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 | 51.0 | 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 | 82 | 20.3 | 25.1 | 3.1 | 3.4 | 3.45 | 46 |
| 70 | 48.6 | 54.0 | 7.2 | 7.8 | B 8.6 | 8.6 | 82 | 19.1 | 24.5 | 3.6 | 3.9 | 4.6 | 53 |
| 80 | 47.5 | 53.4 | 8.2 | 8.8 | B 11.5 | 12.6 | 97 | 18.0 | 23.9 | 4.1 | 4.4 | 4.6 | 53 |
| 90 | 46.3 | 52.8 | 9.2 | 9.9 | B 11.5 | 12.6 | 97 | – | 23.2 | – | 5.0 | 6.3 | 63 |
| 100 | 45.1 | 52.1 | 10.2 | 11.0 | B 11.5 | 12.6 | 97 | – | 22.6 | – | 5.5 | 6.3 | 63 |
| 110 | – | 51.5 | – | 12.1 | – | 12.6 | 97 | – | 22.0 | – | 6.0 | 8.6 | 78 |
| 120 | – | 50.8 | – | 13.1 | – | 17.3 | 101 | – | 21.3 | – | 6.6 | 8.6 | 78 |

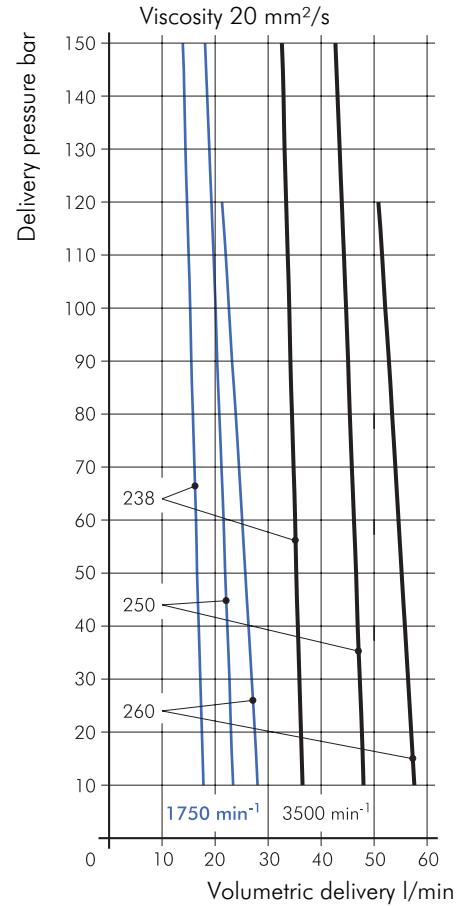
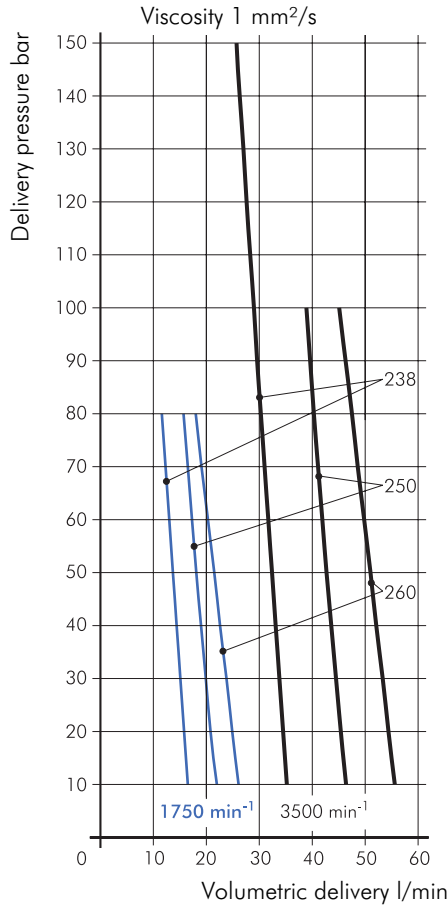
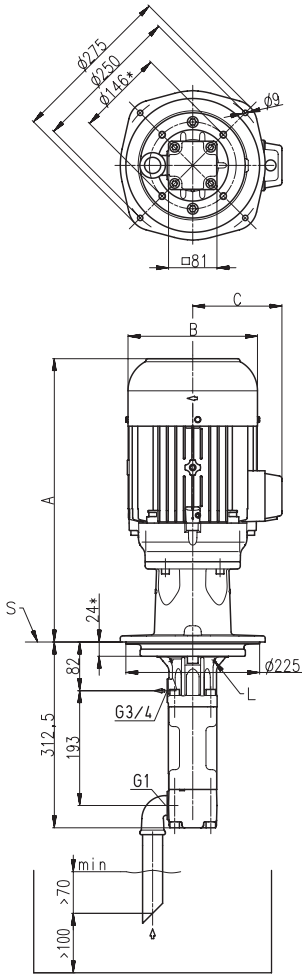
¹⁾ Q_{Th}: Theoretical flow rate

Higher pressures (up to 200 bar) upon request

Characteristics and dimensions

BFS2, FFS2

60 Hz

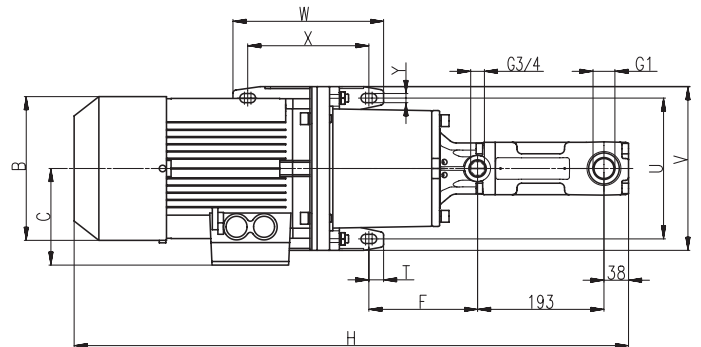
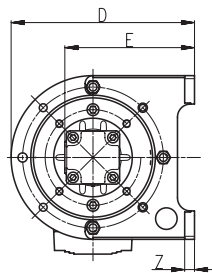


L = Leakage hole

S = Mounting plate, please find the cut-out of mounting hole on page 43.

*) Dimensions for 4-pole standard motor upon request

| Motor 2 pole kW | A mm | B mm | C mm |
|-----------------|------|------|------|
| B 1.5 / 1.95 | 389 | 176 | 130 |
| B 2.2 / 2.55 | 414 | 176 | 130 |
| B 3.0 | 424 | 218 | 150 |
| B 3.8 / 4.6 | 478 | 218 | 150 |
| B 5.75 / 6.3 | 514 | 258 | 190 |
| B 8.6 | 552 | 258 | 190 |
| B 11.5 | 602 | 258 | 190 |



| Motor 2 pole kW | Motor 4 pole 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 | – | 163 | 120 | 212 | 155 | 138 | 682 | 15.0 | 180 | 210 | 90 | 60 | 11 | 12 |
| 1.3 | 0.86 | 163 | 120 | 212 | 155 | 138 | 717 | 15.0 | 180 | 210 | 90 | 60 | 11 | 12 |
| 1.75 | 1.3 | 180 | 128 | 212 | 155 | 138 | 730 | 15.0 | 180 | 210 | 90 | 60 | 11 | 12 |
| 2.55 | 1.75 | 183 | 128 | 212 | 155 | 138 | 757 | 15.0 | 180 | 210 | 90 | 60 | 11 | 12 |
| 3.45 | 2.55 | 203 | 135 | 280 | 198 | 167 | 822 | 22.5 | 215 | 250 | 230 | 185 | 14 | 15 |
| – | 3.45 | 203 | 135 | 280 | 198 | 167 | 867 | 22.5 | 215 | 250 | 230 | 185 | 14 | 15 |
| 4.6 | 4.6 | 227 | 148 | 280 | 198 | 167 | 848 | 22.5 | 215 | 250 | 230 | 185 | 14 | 15 |
| 6.3 | 6.3 | 267 | 167 | 335 | 228 | 171 | 869 | 22.5 | 265 | 300 | 270 | 225 | 14 | 18 |
| 8.6 | 8.6 | 267 | 167 | 335 | 228 | 171 | 907 | 22.5 | 265 | 300 | 270 | 225 | 14 | 18 |
| 12.6 / 17.3 | 12.6 | 320 | 197 | 410 | 278 | 183 | 1006 | 20.0 | 300 | 350 | 305 | 265 | 18 | 18 |

High Pressure Pumps

TFS3, FFS3

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 |
| TFS 348/ | 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 | 0.86 | 39 |
| 20 | 71.8 | 74.7 | 3.1 | 3.3 | 3.45 | 52 | 33.1 | 36.0 | 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 | 69.0 | 73.2 | 5.7 | 6.0 | 8.6 | 86 | 30.3 | 34.5 | 2.8 | 2.9 | 3.45 | 58 |
| 50 | 67.6 | 72.5 | 6.9 | 7.3 | 8.6 | 86 | 28.9 | 33.8 | 3.4 | 3.6 | 4.6 | 65 |
| 60 | 66.4 | 71.8 | 8.2 | 8.6 | 12.6 | 104 | 27.7 | 33.1 | 4.1 | 4.3 | 4.6 | 65 |
| 70 | 65.2 | 71.1 | 9.5 | 10.0 | 12.6 | 104 | 26.5 | 32.4 | 4.7 | 5.0 | 6.3 | 75 |
| 80 | 64.0 | 70.5 | 10.8 | 11.3 | 12.6 | 104 | 25.3 | 31.8 | 5.4 | 5.7 | 6.3 | 75 |
| 90 | 62.9 | 69.9 | 12.1 | 12.7 | 17.3 | 113 | - | 31.3 | - | 6.4 | 8.6 | 90 |
| 100 | 61.9 | 69.4 | 13.4 | 14.0 | 17.3 | 113 | - | 30.7 | - | 7.1 | 8.6 | 90 |
| 110 | - | 68.9 | - | 15.3 | 17.3 | 113 | - | 30.2 | - | 7.8 | 8.6 | 90 |
| 120 | - | 68.4 | - | 16.7 | 17.3 | 113 | - | 29.8 | - | 8.5 | 12.6 | 112 |
| 130 | - | 68.0 | - | 18.0 | 21.3 | 133 | - | 29.3 | - | 9.2 | 12.6 | 112 |
| 140 | - | 67.6 | - | 19.3 | 21.3 | 133 | - | 28.9 | - | 9.9 | 12.6 | 112 |
| 150 | - | 67.3 | - | 20.7 | 24.5 | 162 | - | 28.6 | - | 10.6 | 12.6 | 112 |
| TFS 364/ | 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 | 1.3 | 44 |
| 20 | 95.8 | 99.7 | 3.9 | 4.2 | 6.3 | 73 | 44.2 | 48.1 | 1.9 | 2.0 | 2.55 | 53 |
| 30 | 94.0 | 98.7 | 5.7 | 6.0 | 8.6 | 86 | 42.4 | 47.1 | 2.8 | 2.9 | 3.45 | 58 |
| 40 | 92.3 | 97.8 | 7.4 | 7.7 | 12.6 | 104 | 40.7 | 46.2 | 3.6 | 3.8 | 4.6 | 65 |
| 50 | 90.7 | 96.9 | 9.1 | 9.5 | 12.6 | 104 | 39.1 | 45.3 | 4.5 | 4.7 | 6.3 | 75 |
| 60 | 89.1 | 96.1 | 10.8 | 11.3 | 12.6 | 104 | 37.5 | 44.5 | 5.4 | 5.6 | 6.3 | 75 |
| 70 | 87.5 | 95.3 | 12.5 | 13.1 | 17.3 | 113 | 35.9 | 43.7 | 6.2 | 6.5 | 8.6 | 90 |
| 80 | 86.0 | 94.5 | 14.3 | 14.9 | 17.3 | 113 | 34.4 | 42.9 | 7.1 | 7.4 | 8.6 | 90 |
| 90 | 84.6 | 93.8 | 16.0 | 16.7 | 17.3 | 113 | - | 42.2 | - | 8.3 | 8.6 | 90 |
| 100 | 83.2 | 93.2 | 17.7 | 18.4 | 21.3 | 133 | - | 41.6 | - | 9.2 | 12.6 | 112 |
| 110 | - | 92.5 | - | 20.2 | 21.3 | 133 | - | 40.9 | - | 10.1 | 12.6 | 112 |
| 120 | - | 91.9 | - | 22.0 | 24.5 | 162 | - | 40.3 | - | 11.0 | 12.6 | 112 |
| TFS 376/ | Q_{Th}¹⁾ 122.5 | | - | | - | - | Q_{Th}¹⁾ 61.3 | | - | | - | - |
| 10 | 116.2 | 119.5 | 2.5 | 2.8 | 6.3 | 73 | 55.0 | 58.3 | 1.2 | 1.3 | 1.3 | 44 |
| 20 | 114.1 | 118.3 | 4.6 | 4.9 | 6.3 | 73 | 52.8 | 57.1 | 2.2 | 2.4 | 2.55 | 53 |
| 30 | 112.0 | 117.2 | 6.6 | 7.1 | 8.6 | 86 | 50.8 | 55.9 | 3.3 | 3.5 | 4.6 | 65 |
| 40 | 110.0 | 116.1 | 8.7 | 9.2 | 12.6 | 104 | 48.7 | 54.9 | 4.3 | 4.6 | 4.6 | 65 |
| 50 | 108.0 | 115.1 | 10.7 | 11.3 | 12.6 | 104 | 46.7 | 53.8 | 5.3 | 5.7 | 6.3 | 75 |
| 60 | 106.0 | 114.1 | 12.8 | 13.5 | 17.3 | 113 | 44.8 | 52.9 | 6.3 | 6.7 | 8.6 | 90 |
| 70 | 104.1 | 113.2 | 14.8 | 15.6 | 17.3 | 113 | 42.8 | 51.9 | 7.3 | 7.8 | 8.6 | 90 |
| 80 | 102.2 | 112.3 | 16.8 | 17.8 | 21.3 | 133 | 40.9 | 51.0 | 8.4 | 8.9 | 12.6 | 112 |
| 90 | 100.3 | 111.4 | 18.9 | 19.9 | 21.3 | 133 | - | 50.2 | - | 10.0 | 12.6 | 112 |
| 100 | 98.5 | 110.6 | 20.9 | 22.0 | 24.5 | 162 | - | 49.4 | - | 11.1 | 12.6 | 112 |
| 110 | - | 109.9 | - | 24.2 | 24.5 | 162 | - | 48.6 | - | 12.2 | 17.3 | 138 |
| 120 | - | 109.2 | - | 26.3 | 33.5 | 219 | - | 48.0 | - | 13.3 | 17.3 | 138 |

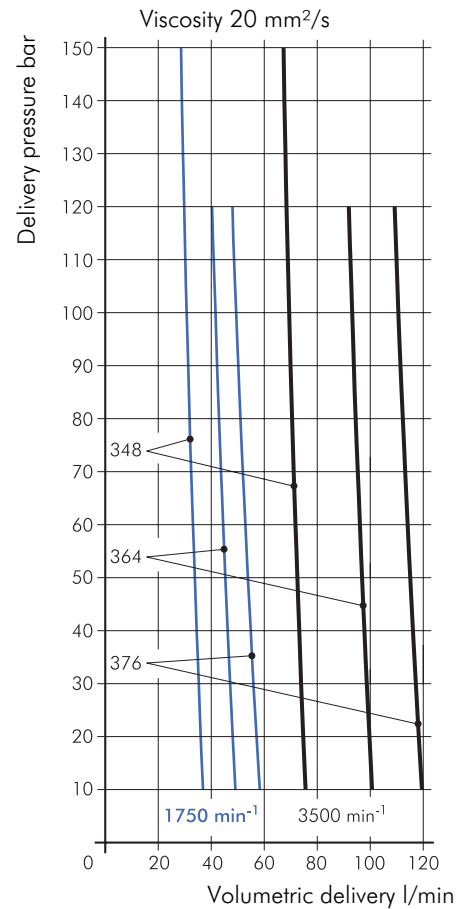
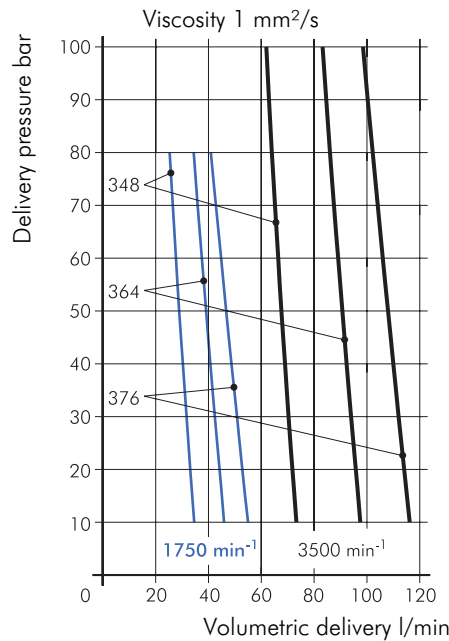
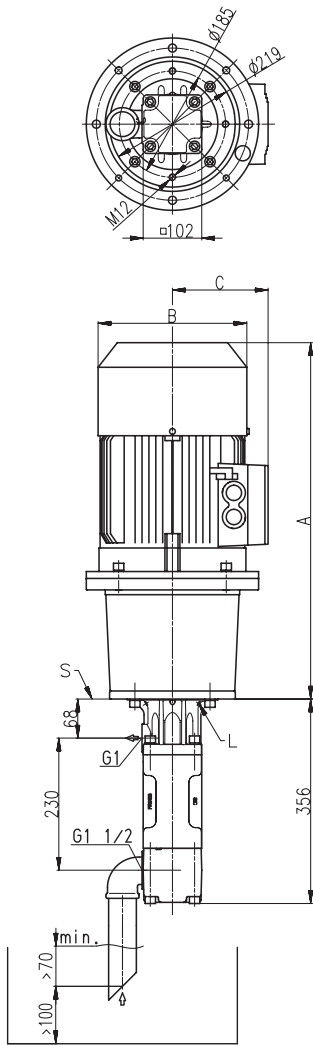
¹⁾ Q_{Th}: Theoretical flow rate

Higher pressures (up to 200 bar) upon request

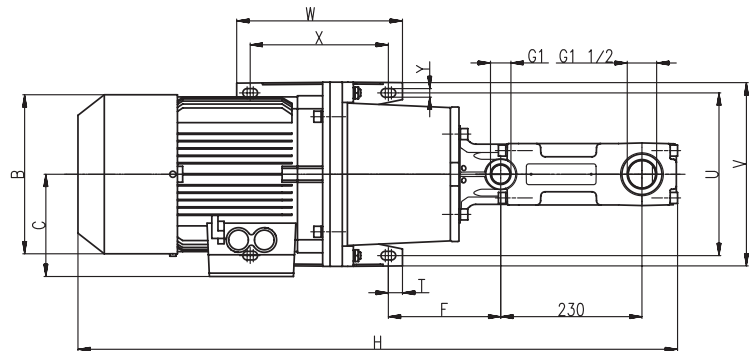
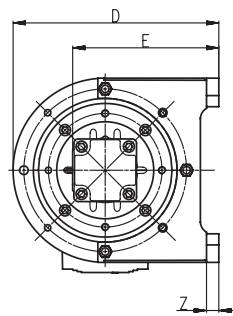
Characteristics and dimensions

TFS3, FFS3

60 Hz



L = Leakage hole
S = Mounting plate, please find the cut-out of mounting hole on page 43.



| Motor 2 pole kW | Motor 4 pole kW | A | B | C | D | E | F | H | T | U | V | W | X | Y | Z |
|-----------------------|-----------------------|-----|-----|-----|-----|-----|-----|------|------|-----|-----|-----|-----|----|----|
| | | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| - | 0.86 | 427 | 163 | 120 | 212 | 165 | 138 | 783 | 15.0 | 180 | 210 | 90 | 60 | 11 | 12 |
| - | 1.3 | 444 | 180 | 128 | 212 | 165 | 138 | 800 | 15.0 | 180 | 210 | 90 | 60 | 11 | 12 |
| 2.55 | 1.75 | 471 | 183 | 128 | 212 | 165 | 138 | 827 | 15.0 | 180 | 210 | 90 | 60 | 11 | 12 |
| 3.45 | 2.55 | 536 | 203 | 135 | 280 | 208 | 179 | 892 | 22.5 | 215 | 250 | 230 | 185 | 14 | 15 |
| - | 3.45 | 571 | 203 | 135 | 280 | 208 | 179 | 927 | 22.5 | 215 | 250 | 230 | 185 | 14 | 15 |
| 4.6 | 4.6 | 562 | 227 | 148 | 280 | 208 | 179 | 918 | 22.5 | 215 | 250 | 230 | 185 | 14 | 15 |
| 6.3 | 6.3 | 583 | 267 | 167 | 335 | 238 | 183 | 939 | 22.5 | 265 | 300 | 270 | 225 | 14 | 18 |
| 8.6 | 8.6 | 659 | 267 | 167 | 335 | 238 | 183 | 1015 | 22.5 | 265 | 300 | 270 | 225 | 14 | 18 |
| 12.6 / 17.3 | 12.6 | 748 | 320 | 197 | 410 | 288 | 223 | 1104 | 20.0 | 300 | 350 | 305 | 265 | 18 | 18 |
| 21.3 | 17.3 | 828 | 320 | 197 | 410 | 288 | 223 | 1184 | 20.0 | 300 | 350 | 305 | 265 | 18 | 18 |
| 24.5 | 21.3 / 24.5 | 873 | 363 | 258 | 410 | 288 | 223 | 1228 | 20.0 | 300 | 350 | 305 | 265 | 18 | 18 |
| 33.5 | 33.5 | 930 | 402 | 305 | 400 | 253 | 473 | 1287 | 25.0 | 318 | 398 | 355 | 305 | 25 | 34 |

High Pressure Pumps

TFS4, FFS4

Screw spindles



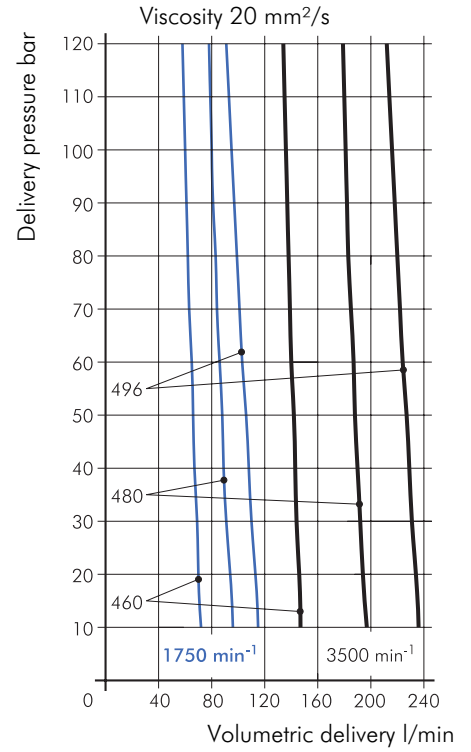
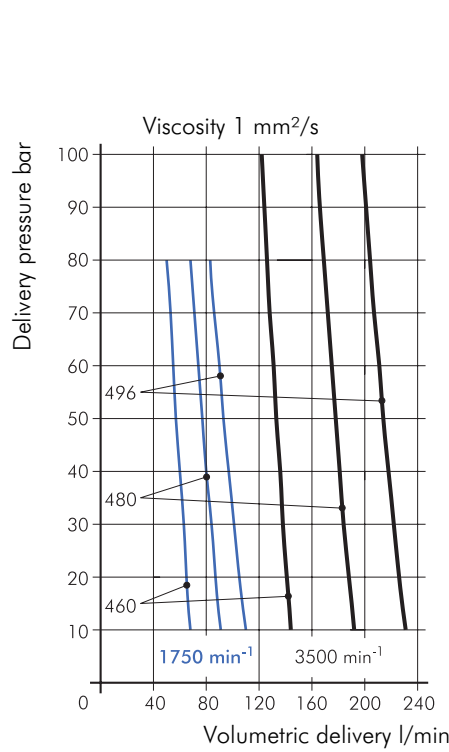
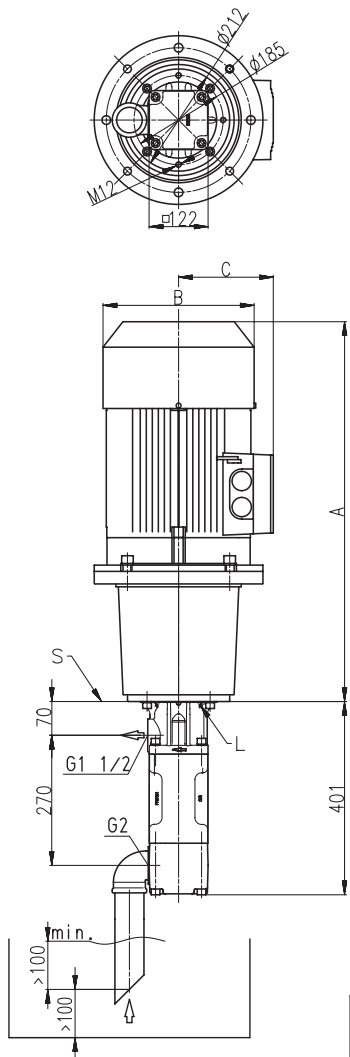
| Pressure max. | 2-pole motor rotation speed 3500 RPM | | | | | | 4-pole motor rotation speed 1750 RPM | | | | | |
|-----------------|--------------------------------------------|-----------------------|--------------------------------|-----------------------|-------|--------|--------------------------------------------|-----------------------|--------------------------------|-----------------------|-------|--------|
| | 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 |
| TFS 460/ | 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 | 1.75 | 57 |
| 20 | 141 | 146 | 5.8 | 6.4 | 8.6 | 96 | 65 | 70 | 2.8 | 2.9 | 3.45 | 64 |
| 30 | 138 | 144 | 8.4 | 9.0 | 12.6 | 115 | 63 | 69 | 4.1 | 4.3 | 4.6 | 76 |
| 40 | 136 | 143 | 10.9 | 11.7 | 12.6 | 115 | 60 | 67 | 5.3 | 5.6 | 6.3 | 85 |
| 50 | 133 | 142 | 13.4 | 14.4 | 17.3 | 124 | 57 | 66 | 6.6 | 7.0 | 8.6 | 100 |
| 60 | 131 | 140 | 15.9 | 17.0 | 17.3 | 124 | 55 | 65 | 7.9 | 8.4 | 8.6 | 100 |
| 70 | 128 | 139 | 18.4 | 19.7 | 21.3 | 144 | 53 | 63 | 9.1 | 9.7 | 12.6 | 123 |
| 80 | 126 | 138 | 21.0 | 22.3 | 24.5 | 173 | 50 | 62 | 10.4 | 11.1 | 12.6 | 123 |
| 90 | 124 | 137 | 23.5 | 25.0 | 33.5 | 230 | – | 61 | – | 12.4 | 12.6 | 123 |
| 100 | 122 | 136 | 26.0 | 27.7 | 33.5 | 230 | – | 60 | – | 13.8 | 17.3 | 149 |
| 110 | – | 135 | – | 30.3 | 33.5 | 230 | – | 59 | – | 15.2 | 17.3 | 149 |
| 120 | – | 134 | – | 33.0 | 41.5 | 259 | – | 58 | – | 16.5 | 17.3 | 149 |
| TFS 480/ | 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 | 115 | 87 | 94 | 3.7 | 3.9 | 4.6 | 76 |
| 30 | 184 | 192 | 10.9 | 12.1 | 12.6 | 115 | 84 | 91 | 5.3 | 5.7 | 6.3 | 85 |
| 40 | 181 | 190 | 14.2 | 15.6 | 17.3 | 124 | 80 | 89 | 7.0 | 7.5 | 8.6 | 100 |
| 50 | 178 | 188 | 17.6 | 19.2 | 21.3 | 144 | 77 | 88 | 8.7 | 9.3 | 12.6 | 123 |
| 60 | 175 | 187 | 21.0 | 22.8 | 24.5 | 173 | 74 | 86 | 10.4 | 11.1 | 12.6 | 123 |
| 70 | 172 | 185 | 24.3 | 26.4 | 33.5 | 230 | 71 | 84 | 12.1 | 12.9 | 17.3 | 149 |
| 80 | 169 | 183 | 27.7 | 30.0 | 33.5 | 230 | 68 | 83 | 13.7 | 14.7 | 17.3 | 149 |
| 90 | 166 | 182 | 31.1 | 33.6 | 41.5 | 259 | – | 81 | – | 16.5 | 17.3 | 149 |
| 100 | 164 | 181 | 34.4 | 37.1 | 41.5 | 259 | – | 80 | – | 18.3 | 21.3 | 168 |
| 110 | – | 180 | – | 40.7 | 41.5 | 259 | – | 79 | – | 20.1 | 21.3 | 168 |
| 120 | – | 179 | – | 44.3 | 51.0 | 374 | – | 78 | – | 21.9 | 24.5 | 188 |
| TFS 496/ | Q_{Th}¹⁾ 242.0 – | | – | – | – | – | Q_{Th}¹⁾ 121.0 – | | – | – | – | – |
| 10 | 231 | 236 | 4.8 | 5.6 | 8.6 | 96 | 110 | 115 | 2.3 | 2.7 | 3.45 | 64 |
| 20 | 226 | 234 | 8.9 | 9.9 | 12.6 | 115 | 105 | 113 | 4.3 | 4.8 | 6.3 | 85 |
| 30 | 222 | 231 | 12.9 | 14.2 | 17.3 | 124 | 101 | 110 | 6.3 | 7.0 | 8.6 | 100 |
| 40 | 218 | 229 | 16.9 | 18.5 | 21.3 | 144 | 97 | 108 | 8.4 | 9.1 | 12.6 | 123 |
| 50 | 214 | 227 | 21.0 | 22.8 | 24.5 | 173 | 93 | 106 | 10.4 | 11.3 | 12.6 | 123 |
| 60 | 211 | 224 | 25.0 | 27.1 | 33.5 | 230 | 90 | 103 | 12.4 | 13.5 | 17.3 | 149 |
| 70 | 207 | 222 | 29.0 | 31.4 | 33.5 | 230 | 86 | 101 | 14.4 | 15.6 | 17.3 | 149 |
| 80 | 204 | 220 | 33.1 | 35.7 | 41.5 | 259 | 83 | 99 | 16.4 | 17.8 | 21.3 | 168 |
| 90 | 201 | 218 | 37.1 | 40.0 | 41.5 | 259 | – | 97 | – | 19.9 | 21.3 | 168 |
| 100 | 198 | 216 | 41.1 | 44.3 | 51.0 | 374 | – | 95 | – | 22.1 | 24.5 | 188 |
| 110 | – | 214 | – | 48.6 | 51.0 | 374 | – | 93 | – | 24.3 | 33.5 | 244 |
| 120 | – | 212 | – | 52.9 | 62.0 | 469 | – | 91 | – | 26.4 | 33.5 | 244 |

¹⁾ Q_{Th}: Theoretical flow rate

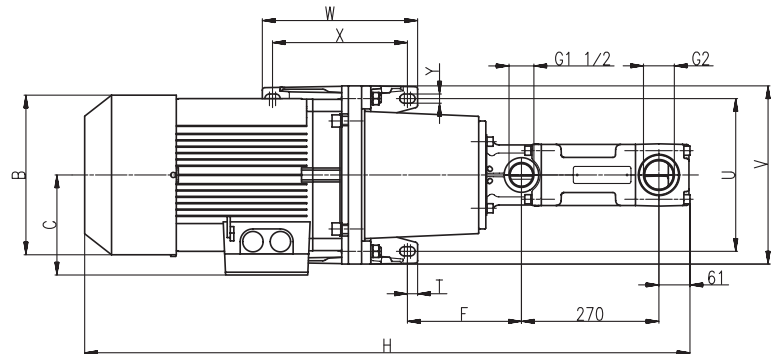
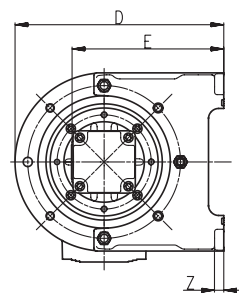
Characteristics and dimensions

TFS4, FFS4

60 Hz



L = Leakage hole
S = Mounting plate, please find the cut-out of mounting hole on page 43.



For mounting patterns of foot-mounted motors larger than 45 kW please refer to page 35.

| Motor 2 pole kW | Motor 4 pole kW | A | B | C | D | E | F | H | T | U | V | W | X | Y | Z |
|-----------------------|-----------------------|------|-----|-----|-----|-----|-----|------|------|-----|-----|-----|-----|----|----|
| | | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| 2.55 | 1.75 | 471 | 183 | 128 | 212 | 175 | 138 | 872 | 15.0 | 180 | 210 | 90 | 60 | 11 | 12 |
| 3.45 | 2.55 | 536 | 203 | 135 | 280 | 218 | 179 | 937 | 22.5 | 215 | 250 | 230 | 185 | 14 | 15 |
| – | 3.45 | 571 | 203 | 135 | 280 | 218 | 179 | 972 | 22.5 | 215 | 250 | 230 | 185 | 14 | 15 |
| 4.6 | 4.6 | 562 | 227 | 148 | 280 | 218 | 179 | 963 | 22.5 | 215 | 250 | 230 | 185 | 14 | 15 |
| 6.3 | 6.3 | 583 | 267 | 167 | 335 | 248 | 185 | 984 | 22.5 | 265 | 300 | 270 | 225 | 14 | 18 |
| 8.6 | 8.6 | 659 | 267 | 167 | 335 | 248 | 185 | 1060 | 22.5 | 265 | 300 | 270 | 225 | 14 | 18 |
| 12.6 / 17.3 | 12.6 | 748 | 320 | 197 | 410 | 298 | 225 | 1149 | 20.0 | 300 | 350 | 305 | 265 | 18 | 18 |
| 21.3 | 17.3 | 828 | 320 | 197 | 410 | 298 | 225 | 1229 | 20.0 | 300 | 350 | 305 | 265 | 18 | 18 |
| 24.5 | 21.3 / 24.5 | 873 | 363 | 258 | 410 | 298 | 225 | 1273 | 20.0 | 300 | 350 | 305 | 265 | 18 | 18 |
| 33.5 / 41.5 | 33.5 | 930 | 402 | 305 | 400 | 263 | 473 | 1332 | 25.0 | 318 | 398 | 355 | 305 | 25 | 34 |
| 51 | – | 1037 | 402 | 328 | 450 | 288 | 531 | 1518 | 37.0 | 356 | 436 | 361 | 286 | 25 | 34 |
| 62 | – | 1093 | 505 | 392 | 525 | 313 | 560 | 1586 | 30.0 | 406 | 506 | 409 | 349 | 30 | 42 |

High Pressure Pumps

TFS5, FFS5

Screw spindles



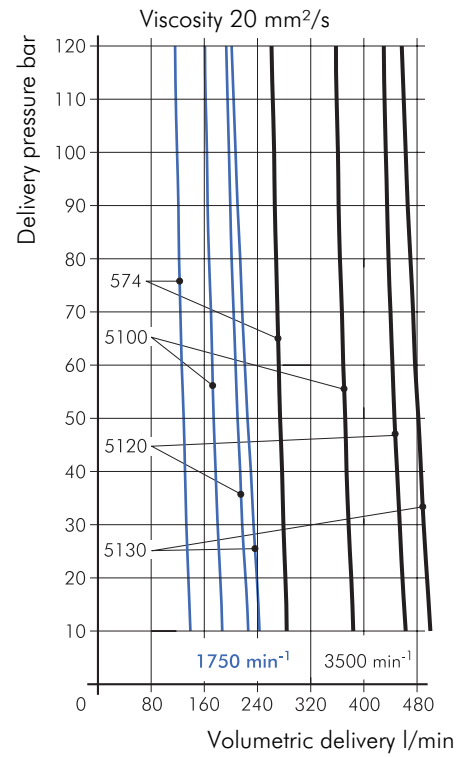
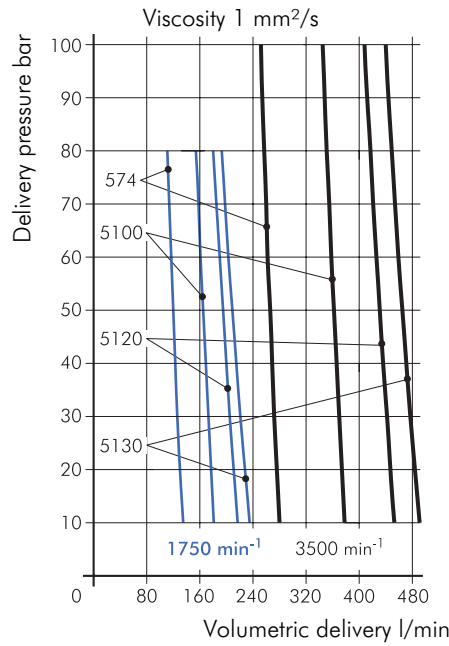
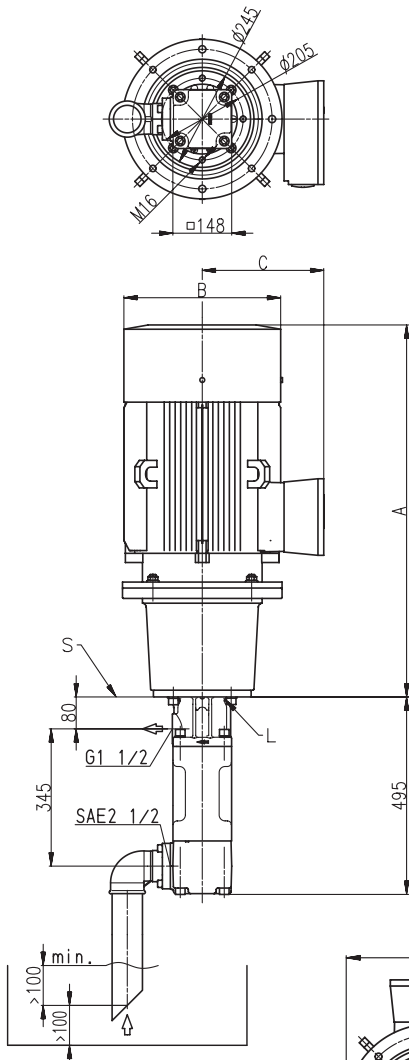
| Pressure max. | 2-pole motor rotation speed 3500 RPM | | | | | 4-pole motor rotation speed 1750 RPM | | | | | | |
|------------------|------------------------------------------|-----------------------|--------------------------------|-----------------------|----------|-----------------------------------------|------------------------------------------|-----------------------|--------------------------------|-----------------------|----------|----------|
| | 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 |
| TFS 574/ | Q_{Th}¹⁾ 291.6 | – | – | – | – | – | Q_{Th}¹⁾ 145.8 | – | – | – | – | – |
| 10 | 280 | 284 | 6.2 | 7.0 | 8.6 | 125 | 134 | 139 | 2.9 | 3.4 | 4.6 | 105 |
| 20 | 276 | 282 | 11.0 | 12.1 | 17.3 | 153 | 130 | 136 | 5.4 | 6.0 | 6.3 | 114 |
| 30 | 272 | 279 | 15.9 | 17.2 | 21.3 | 173 | 126 | 133 | 7.8 | 8.5 | 12.6 | 152 |
| 40 | 269 | 277 | 20.7 | 22.2 | 24.5 | 202 | 123 | 131 | 10.2 | 11.1 | 12.6 | 152 |
| 50 | 266 | 274 | 25.6 | 27.3 | 33.5 | 259 | 120 | 129 | 12.6 | 13.7 | 17.3 | 178 |
| 60 | 262 | 272 | 30.5 | 32.4 | 33.5 | 259 | 117 | 126 | 15.1 | 16.2 | 17.3 | 178 |
| 70 | 260 | 270 | 35.3 | 37.5 | 41.5 | 288 | 114 | 124 | 17.5 | 18.8 | 21.3 | 197 |
| 80 | 257 | 268 | 40.2 | 42.6 | 51.0 | 403 | 111 | 122 | 19.9 | 21.4 | 24.5 | 217 |
| 90 | 254 | 266 | 45.0 | 47.7 | 51.0 | 403 | – | 121 | – | 23.9 | 24.5 | 217 |
| 100 | 252 | 265 | 49.9 | 52.7 | 62.0 | 498 | – | 119 | – | 26.5 | 33.5 | 273 |
| 110 | – | 263 | – | 57.8 | 62.0 | 498 | – | 117 | – | 29.1 | 33.5 | 273 |
| 120 | – | 261 | – | 62.9 | 84.0 | 608 | – | 116 | – | 31.6 | 33.5 | 273 |
| TFS 5100/ | Q_{Th}¹⁾ 394.1 | – | – | – | – | – | Q_{Th}¹⁾ 197.0 | – | – | – | – | – |
| 10 | 378 | 384 | 7.9 | 8.7 | 12.6 | 144 | 181 | 187 | 3.8 | 4.3 | 6.3 | 114 |
| 20 | 374 | 381 | 14.4 | 15.6 | 21.3 | 173 | 177 | 184 | 7.1 | 7.8 | 8.6 | 129 |
| 30 | 370 | 377 | 21.0 | 22.6 | 24.5 | 202 | 173 | 180 | 10.4 | 11.3 | 12.6 | 152 |
| 40 | 366 | 374 | 27.6 | 29.5 | 33.5 | 259 | 169 | 177 | 13.6 | 14.8 | 17.3 | 178 |
| 50 | 362 | 372 | 34.1 | 36.4 | 41.5 | 288 | 165 | 174 | 16.9 | 18.3 | 21.3 | 197 |
| 60 | 358 | 369 | 40.7 | 43.4 | 51.0 | 403 | 161 | 172 | 20.2 | 21.8 | 24.5 | 217 |
| 70 | 355 | 367 | 47.3 | 50.3 | 62.0 | 498 | 158 | 170 | 23.5 | 25.3 | 33.5 | 273 |
| 80 | 351 | 364 | 53.8 | 57.3 | 62.0 | 498 | 154 | 167 | 26.8 | 28.8 | 33.5 | 273 |
| 90 | 348 | 362 | 60.4 | 64.2 | 84.0 | 608 | – | 165 | – | 32.3 | 33.5 | 273 |
| 100 | 345 | 361 | 67.0 | 71.1 | 84.0 | 608 | – | 164 | – | 35.8 | 41.5 | 363 |
| 110 | – | 359 | – | 78.1 | 84.0 | 608 | – | 162 | – | 39.3 | 41.5 | 363 |
| 120 | – | 358 | – | 85.0 | 101 | 693 | – | 161 | – | 42.8 | 51.0 | 403 |

¹⁾ Q_{Th}: Theoretical flow rate

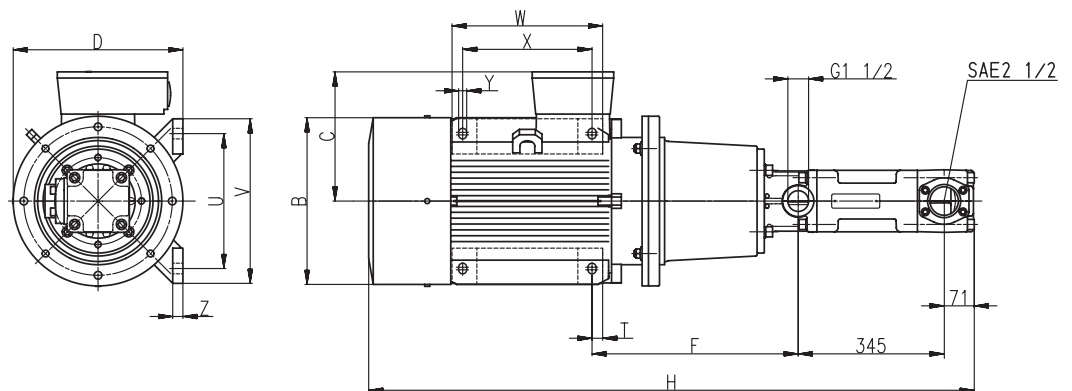
Characteristics and dimensions

TFS5, FFS5

60 Hz



L = Leakage hole
S = Mounting plate, please find the cut-out of mounting hole on page 43.



For mounting patterns of foot-mounted motors smaller than 45 kW please refer to page 33.

| Motor 2 pole kW | Motor 4 pole kW | A | B | C | D | E | F | H | T | U | V | W | X | Y | Z |
|-----------------------|-----------------------|------|-----|-----|-----|-----|-----|------|------|-----|-----|-----|-----|----|----|
| | | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| - | 4.6 | 562 | 227 | 148 | 280 | 218 | 179 | 990 | 22.5 | 215 | 250 | 230 | 185 | 14 | 15 |
| - | 6.3 | 583 | 267 | 167 | 335 | 248 | 185 | 1076 | 22.5 | 265 | 300 | 270 | 225 | 14 | 18 |
| 8.6 | 8.6 | 659 | 267 | 197 | 335 | 248 | 185 | 1152 | 22.5 | 265 | 300 | 270 | 225 | 14 | 18 |
| 12.6 / 17.3 | 12.6 | 748 | 320 | 197 | 410 | 298 | 225 | 1244 | 20.0 | 300 | 350 | 305 | 265 | 18 | 18 |
| 21.3 | 17.3 | 828 | 320 | 197 | 410 | 298 | 225 | 1324 | 20.0 | 300 | 350 | 305 | 265 | 18 | 18 |
| 24.5 | 21.3 / 24.5 | 872 | 363 | 258 | 410 | 298 | 225 | 1368 | 20.0 | 300 | 350 | 305 | 265 | 18 | 18 |
| 33.5 / 41.5 | 33.5 | 931 | 402 | 305 | 400 | 263 | 473 | 1427 | 25.0 | 318 | 398 | 355 | 305 | 25 | 34 |
| - | 41.5 | 967 | 442 | 328 | 450 | 288 | 531 | 1473 | 37.0 | 356 | 436 | 361 | 286 | 25 | 34 |
| 51 | - | 973 | 442 | 328 | 450 | 288 | 531 | 1479 | 37.0 | 356 | 436 | 361 | 286 | 25 | 34 |
| - | 51 | 1027 | 442 | 328 | 450 | 288 | 531 | 1533 | 37.0 | 356 | 436 | 361 | 286 | 25 | 34 |
| 62 | - | 1093 | 505 | 392 | 525 | 313 | 560 | 1589 | 30.0 | 406 | 506 | 409 | 349 | 30 | 42 |
| 84 | - | 1251 | 555 | 432 | 555 | 280 | 607 | 1749 | 30.0 | 457 | 557 | 479 | 419 | 30 | 42 |
| 101 | - | 1361 | 555 | 432 | 555 | 280 | 607 | 1859 | 30.0 | 457 | 557 | 479 | 419 | 30 | 42 |

High Pressure Pumps

TFS5, FFS5

Screw spindles

60 Hz

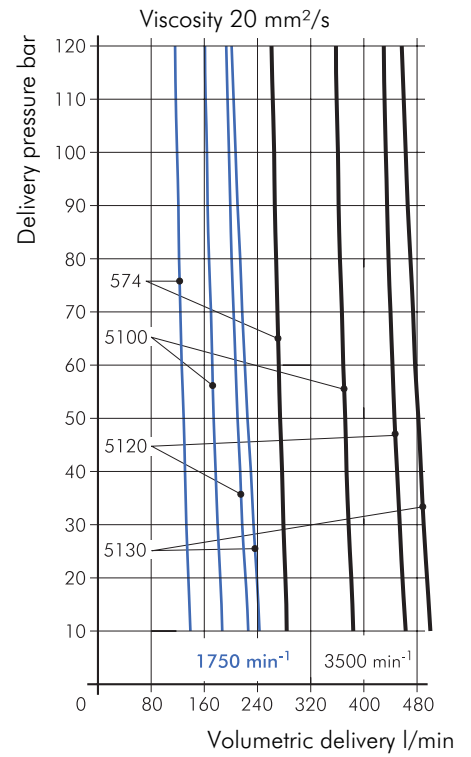
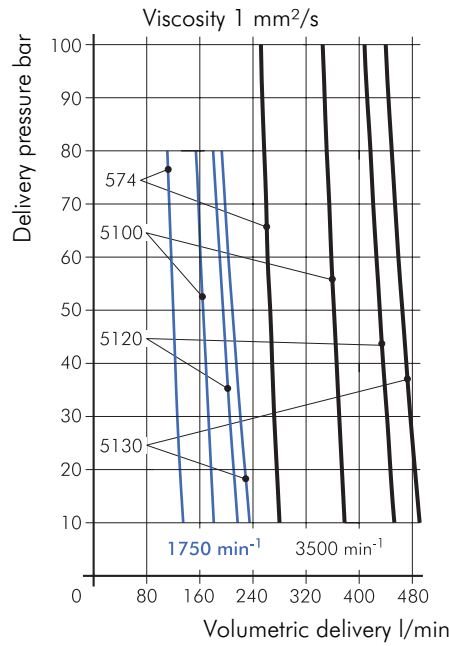
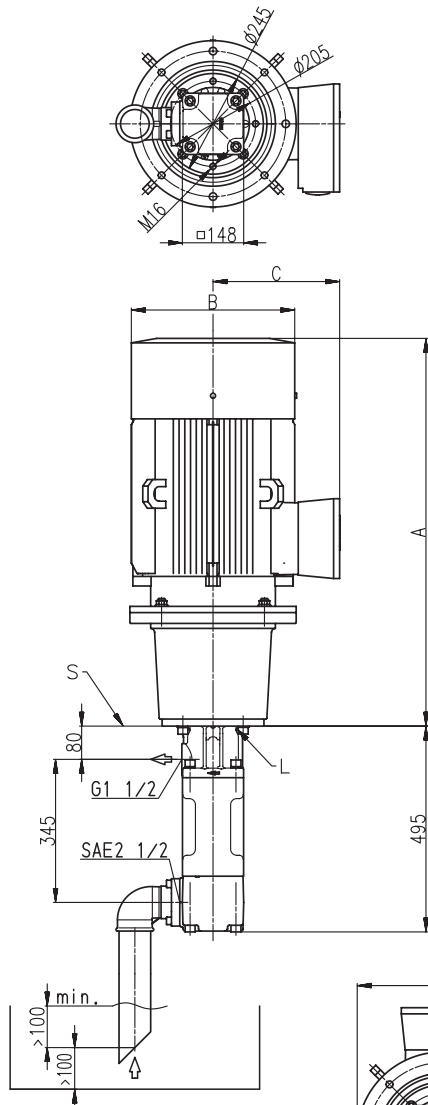
| Pressure max. | 2-pole motor rotation speed 3500 RPM | | | | | 4-pole motor rotation speed 1750 RPM | | | | | | |
|------------------|--------------------------------------------|-----------------------|--------------------------------|-----------------------|-------|-----------------------------------------|--------------------------------------------|-----------------------|--------------------------------|-----------------------|-------|--------|
| | 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 |
| TFS 5120/ | Q_{Th}¹⁾ 472.9 – | | – | – | – | – | Q_{Th}¹⁾ 236.4 – | | – | – | – | – |
| 10 | 453 | 463 | 9.2 | 10.0 | 17.3 | 153 | 217 | 226 | 4.4 | 5.0 | 6.3 | 114 |
| 20 | 447 | 458 | 17.1 | 18.4 | 21.3 | 173 | 211 | 222 | 8.4 | 9.2 | 12.6 | 152 |
| 30 | 442 | 454 | 24.9 | 26.7 | 33.5 | 259 | 205 | 217 | 12.3 | 13.4 | 17.3 | 178 |
| 40 | 436 | 450 | 32.8 | 35.1 | 41.5 | 288 | 200 | 214 | 16.3 | 17.6 | 21.3 | 197 |
| 50 | 431 | 446 | 40.7 | 43.5 | 51.0 | 403 | 195 | 210 | 20.2 | 21.8 | 24.5 | 217 |
| 60 | 426 | 443 | 48.6 | 51.9 | 62.0 | 498 | 190 | 207 | 24.1 | 26.1 | 33.5 | 273 |
| 70 | 421 | 440 | 56.5 | 60.2 | 62.0 | 498 | 185 | 204 | 28.1 | 30.3 | 33.5 | 273 |
| 80 | 417 | 437 | 64.3 | 68.6 | 84.0 | 608 | 180 | 201 | 32.0 | 34.5 | 41.5 | 363 |
| 90 | 412 | 435 | 72.2 | 77.0 | 84.0 | 608 | – | 199 | – | 38.7 | 41.5 | 363 |
| 100 | 408 | 433 | 80.1 | 85.4 | 101 | 693 | – | 197 | – | 42.9 | 51.0 | 403 |
| 110 | – | 431 | – | 93.7 | 101 | 693 | – | 195 | – | 47.1 | 51.0 | 403 |
| 120 | – | 430 | – | 102.1 | 123 | 868 | – | 193 | – | 51.3 | 62.0 | 468 |
| TFS 5130/ | Q_{Th}¹⁾ 512.3 – | | – | – | – | – | Q_{Th}¹⁾ 256.1 – | | – | – | – | – |
| 10 | 491 | 500 | 9.8 | 11.7 | 17.3 | 153 | 235 | 243 | 4.8 | 5.4 | 6.3 | 114 |
| 20 | 484 | 495 | 18.4 | 20.3 | 24.5 | 202 | 228 | 239 | 9.0 | 10.7 | 12.6 | 152 |
| 30 | 477 | 490 | 26.9 | 29.0 | 33.5 | 259 | 221 | 234 | 13.3 | 16.0 | 17.3 | 178 |
| 40 | 471 | 486 | 35.5 | 37.6 | 41.5 | 288 | 215 | 230 | 17.6 | 21.3 | 24.5 | 217 |
| 50 | 465 | 482 | 44.0 | 46.2 | 51.0 | 403 | 209 | 225 | 21.8 | 26.6 | 33.5 | 273 |
| 60 | 459 | 477 | 52.5 | 54.8 | 62.0 | 498 | 203 | 221 | 26.1 | 32.0 | 33.5 | 273 |
| 70 | 454 | 474 | 61.1 | 63.5 | 84.0 | 608 | 198 | 217 | 30.4 | 37.3 | 41.5 | 363 |
| 80 | 449 | 470 | 69.6 | 72.1 | 84.0 | 608 | 193 | 214 | 34.7 | 42.6 | 51.0 | 403 |
| 90 | 444 | 466 | 78.1 | 80.7 | 84.0 | 608 | – | 210 | – | 47.9 | 51.0 | 403 |
| 100 | 440 | 463 | 86.7 | 89.3 | 101 | 693 | – | 207 | – | 53.2 | 62.0 | 468 |
| 110 | – | 460 | – | 98.0 | 123 | 868 | – | 204 | – | 58.5 | 62.0 | 468 |
| 120 | – | 457 | – | 106.6 | 123 | 868 | – | 201 | – | 63.8 | 84.0 | 674 |

¹⁾ Q_{Th}: Theoretical flow rate

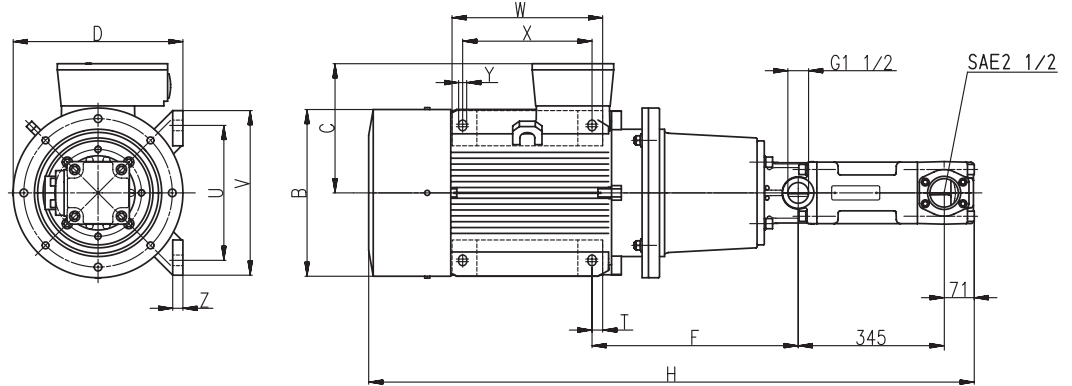
Characteristics and dimensions

TFS5, FFS5

60 Hz



L = Leakage hole
S = Mounting plate, please find the cut-out of mounting hole on page 43.



For mounting patterns of foot-mounted motors smaller than 45 kW please refer to page 33.

| Motor 2 pole kW | Motor 4 pole kW | A | B | C | D | E | F | H | T | U | V | W | X | Y | Z |
|-----------------------|-----------------------|------|-----|-----|-----|-----|-----|------|------|-----|-----|-----|-----|----|----|
| | | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| - | 6.3 | 583 | 267 | 167 | 335 | 248 | 185 | 1076 | 22.5 | 265 | 300 | 270 | 225 | 14 | 18 |
| 17.3 | 12.6 | 748 | 320 | 197 | 410 | 298 | 225 | 1244 | 20.0 | 300 | 350 | 305 | 265 | 18 | 18 |
| 21.3 | 17.3 | 828 | 320 | 197 | 410 | 298 | 225 | 1324 | 20.0 | 300 | 350 | 305 | 265 | 18 | 18 |
| 24.5 | 21.3 / 24.5 | 872 | 363 | 258 | 410 | 298 | 225 | 1368 | 20.0 | 300 | 350 | 305 | 265 | 18 | 18 |
| 33.5 / 41.5 | 33.5 | 931 | 402 | 305 | 400 | 263 | 473 | 1427 | 25.0 | 318 | 398 | 355 | 305 | 25 | 34 |
| - | 41.5 | 967 | 442 | 328 | 450 | 288 | 531 | 1473 | 37.0 | 356 | 436 | 361 | 286 | 25 | 34 |
| 51 | - | 973 | 442 | 328 | 450 | 288 | 531 | 1479 | 37.0 | 356 | 436 | 361 | 286 | 25 | 34 |
| - | 51 | 1027 | 442 | 328 | 450 | 288 | 531 | 1533 | 37.0 | 356 | 436 | 361 | 286 | 25 | 34 |
| 62 | - | 1093 | 505 | 392 | 525 | 313 | 560 | 1589 | 30.0 | 406 | 506 | 409 | 349 | 30 | 42 |
| 84 | - | 1251 | 555 | 432 | 555 | 280 | 607 | 1749 | 30.0 | 457 | 557 | 479 | 419 | 30 | 42 |
| 101 | - | 1361 | 555 | 432 | 555 | 280 | 607 | 1859 | 30.0 | 457 | 557 | 479 | 419 | 20 | 42 |
| 123 | - | 1319 | 621 | 500 | 645 | 378 | 661 | 1817 | 35.0 | 508 | 628 | 527 | 457 | 35 | 52 |

High Pressure Pumps

TFS6, FFS6

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 |
| TFS 690/ | Q_{Th}¹⁾ 554.0 – | | – | – | – | – | Q_{Th}¹⁾ 277.0 – | | – | – | – | – |
| 10 | 540 | 545 | 11.6 | 13.3 | 17.3 | 213 | 263 | 268 | 5.6 | 6.2 | 8.6 | 190 |
| 20 | 532 | 540 | 20.9 | 22.6 | 24.5 | 262 | 255 | 263 | 10.2 | 10.8 | 12.6 | 212 |
| 30 | 524 | 535 | 30.1 | 31.8 | 33.5 | 319 | 247 | 258 | 14.9 | 15.5 | 17.3 | 238 |
| 40 | 516 | 531 | 39.3 | 41.0 | 51.0 | 464 | 239 | 254 | 19.5 | 20.1 | 24.5 | 277 |
| 50 | 509 | 527 | 48.6 | 50.3 | 62.0 | 559 | 232 | 250 | 24.1 | 24.7 | 33.5 | 333 |
| 60 | 502 | 523 | 57.8 | 59.5 | 62.0 | 559 | 225 | 246 | 28.7 | 29.3 | 33.5 | 333 |
| 70 | 496 | 519 | 67.0 | 68.7 | 84.0 | 669 | 219 | 242 | 33.3 | 33.9 | 41.5 | 424 |
| 80 | 490 | 515 | 76.3 | 78.0 | 84.0 | 669 | 213 | 238 | 37.9 | 38.5 | 41.5 | 424 |
| TFS 6120/ | Q_{Th}¹⁾ 739.0 – | | – | – | – | – | Q_{Th}¹⁾ 369.0 – | | – | – | – | – |
| 10 | 720 | 726 | 14.7 | 16.4 | 21.3 | 233 | 351 | 357 | 7.2 | 7.8 | 8.6 | 190 |
| 20 | 710 | 721 | 27.0 | 28.7 | 33.5 | 319 | 341 | 351 | 13.3 | 13.9 | 17.3 | 238 |
| 30 | 701 | 715 | 39.3 | 41.0 | 51.0 | 464 | 331 | 346 | 19.5 | 20.1 | 21.3 | 257 |
| 40 | 692 | 710 | 51.6 | 53.3 | 62.0 | 559 | 322 | 340 | 25.6 | 26.2 | 33.5 | 333 |
| 50 | 683 | 704 | 64.0 | 65.7 | 84.0 | 669 | 314 | 335 | 31.8 | 32.4 | 33.5 | 333 |
| 60 | 676 | 699 | 76.3 | 78.0 | 84.0 | 669 | 306 | 330 | 37.9 | 38.5 | 41.5 | 424 |
| 70 | 668 | 695 | 88.6 | 90.3 | 101 | 754 | 299 | 325 | 44.1 | 44.7 | 51.0 | 464 |
| TFS 6145/ | Q_{Th}¹⁾ 893.0 – | | – | – | – | – | Q_{Th}¹⁾ 446.0 – | | – | – | – | – |
| 10 | 870 | 878 | 17.3 | 19.0 | 21.3 | 233 | 424 | 432 | 8.4 | 9.0 | 12.6 | 212 |
| 20 | 857 | 868 | 32.2 | 33.9 | 41.5 | 348 | 411 | 422 | 15.9 | 16.5 | 21.3 | 257 |
| 30 | 845 | 859 | 47.0 | 48.7 | 62.0 | 559 | 398 | 413 | 23.3 | 23.9 | 33.5 | 333 |
| 40 | 833 | 851 | 61.9 | 63.6 | 84.0 | 669 | 386 | 405 | 30.8 | 31.4 | 33.5 | 333 |
| 50 | 822 | 844 | 76.8 | 78.5 | 84.0 | 669 | 375 | 397 | 38.2 | 38.8 | 41.5 | 424 |
| 60 | 811 | 837 | 91.7 | 93.4 | 101 | 754 | 365 | 391 | 45.6 | 46.2 | 51.0 | 464 |

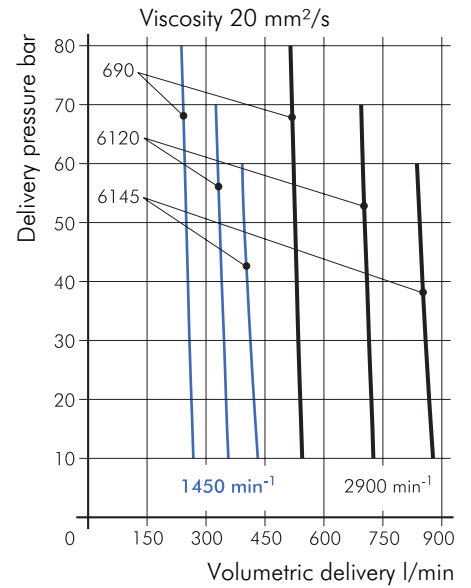
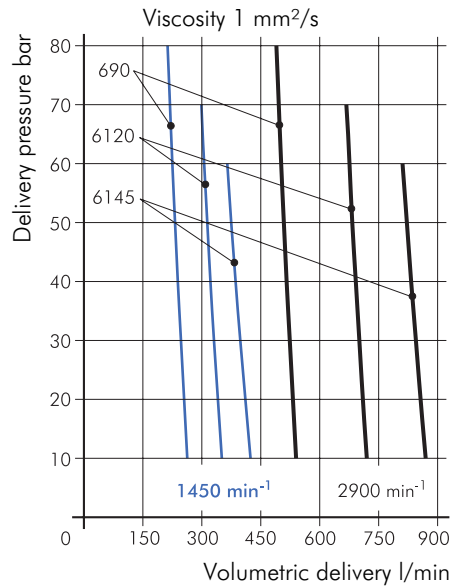
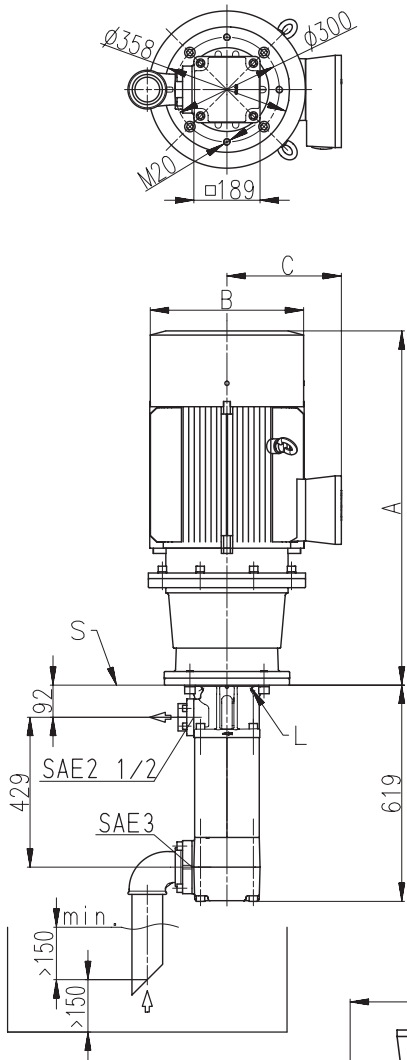
¹⁾ Q_{Th}: Theoretical flow rate

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 1 bar of pressure to the pump inlet.

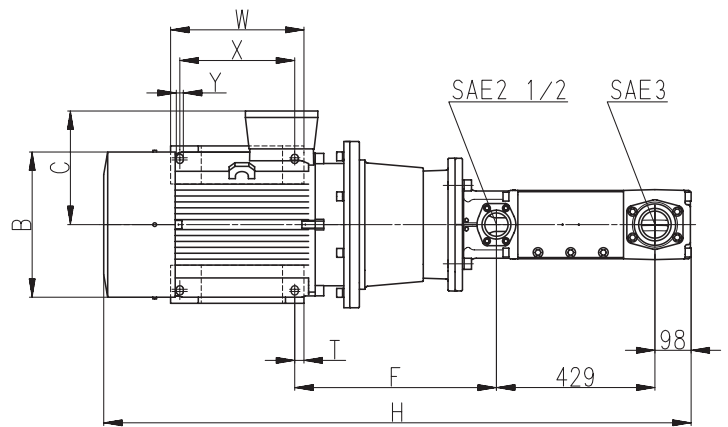
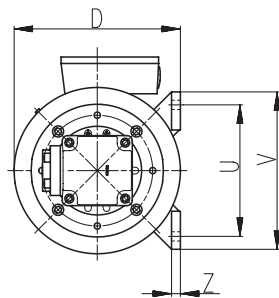
Characteristics and dimensions

TFS6, FFS6

60 Hz



L = Leakage hole
S = Mounting plate, please find the cut-out of mounting hole on page 43.



For mounting patterns of foot-mounted motors smaller than 45 kW please refer to page 33.

| Motor 2 pole kW | Motor 4 pole 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 | 698 | 267 | 167 | 394 | 285 | 1317 | 25 | 350 | 400 | 350 | 300 | 18 | 20 |
| 17.3 | 12.6 | 779 | 320 | 197 | 420 | 293 | 1397 | 25 | 350 | 400 | 350 | 300 | 18 | 20 |
| 21.3 | 17.3 | 819 | 320 | 197 | 420 | 293 | 1437 | 25 | 350 | 400 | 350 | 300 | 18 | 20 |
| 24.5 | 21.3 | 903 | 363 | 258 | 442 | 293 | 1529 | 25 | 350 | 400 | 350 | 300 | 18 | 20 |
| 33.5 / 41.5 | 33.5 | 958 | 402 | 305 | 461 | 291 | 1577 | 25 | 350 | 400 | 350 | 300 | 18 | 20 |
| – | 41.5 | 974 | 442 | 328 | 516 | 307 | 1593 | 25 | 400 | 450 | 385 | 335 | 18 | 22 |
| 51 | – | 1014 | 442 | 328 | 446 | 546 | 1634 | 25 | 356 | 436 | 361 | 311 | 19 | 34 |
| – | 51 | 1034 | 442 | 328 | 446 | 566 | 1653 | 25 | 356 | 436 | 361 | 311 | 19 | 34 |
| 62 | – | 1066 | 505 | 392 | 502 | 581 | 1685 | 30 | 406 | 490 | 409 | 349 | 25 | 40 |
| 84 | – | 1160 | 555 | 432 | 558 | 622 | 1779 | 56 | 457 | 540 | 479 | 368 | 25 | 40 |
| 101 | – | 1250 | 555 | 432 | 558 | 622 | 1869 | 30 | 457 | 540 | 479 | 419 | 24 | 40 |

Valves

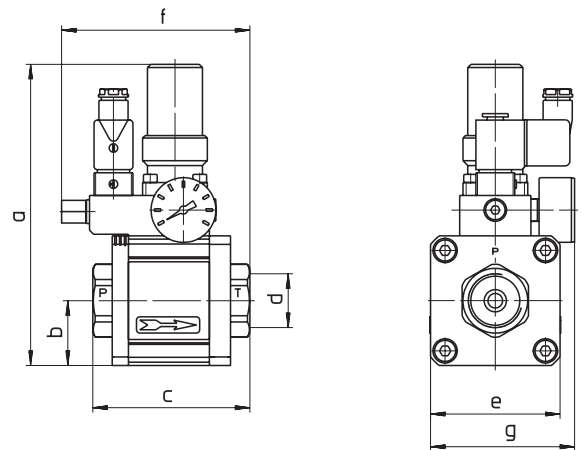
Adjustable Pressure Relief Valves

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

| Type | Pressure p (bar) | Flow Q _{max} (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 |



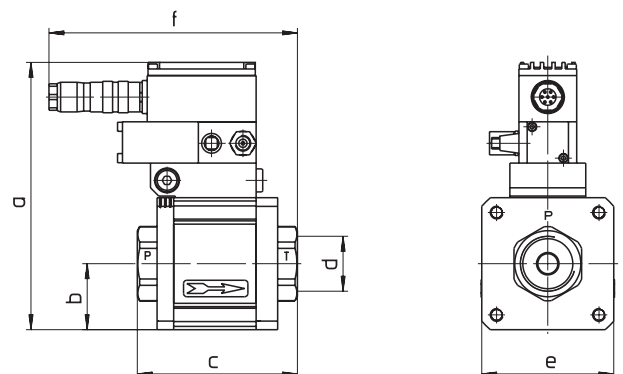
| Type | a mm | b mm | c mm | d mm | e mm | f mm | g mm |
|----------|------|------|------|-------------------------------|-------|-------|------|
| 3-HPB 08 | 180 | 37 | 138 | G ³ / ₈ | ∅ 74 | - | - |
| S / H 15 | 186 | 40 | 97 | G1 | □ 80 | 116.3 | 89 |
| S / H 32 | 231 | 60 | 160 | G1½ | □ 120 | 125 | 109 |
| S 50 | 251 | 70 | 160 | G1½ | □ 140 | - | - |

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.

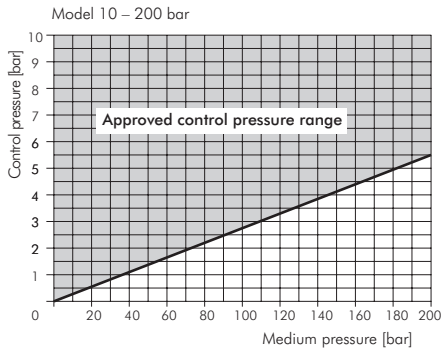
| Type | Pressure p (bar) | Flow Q _{max} (l/min) |
|------------|------------------|-------------------------------|
| SPB - 08 | 10 - 200 | 18 |
| SPB - S 15 | 5 - 64 | 100 |
| SPB - H 15 | 5 - 120 | 100 |
| SPB - S 32 | 5 - 64 | 400 |
| SPB - H 32 | 5 - 120 | 240 |



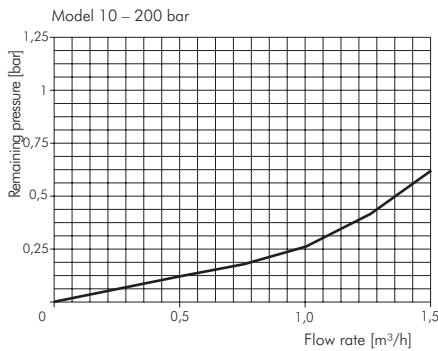
| Type | a mm | b mm | c mm | d mm | e mm | f mm |
|----------|-------|------|------|------|-------|-------|
| SPB | | | | | | |
| S / H 15 | 162 | 40 | 97 | G1 | □ 80 | 150.5 |
| S / H 32 | 192.5 | 60 | 160 | G1½ | □ 120 | 176.5 |

3-HPS – 08, SPB – 08

Control pressure diagram

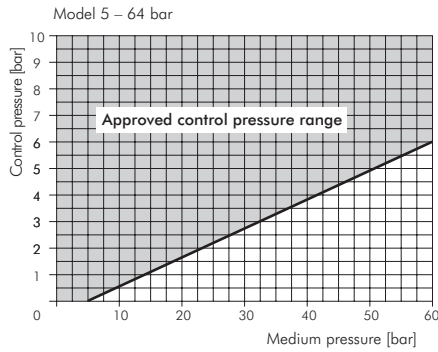


Depressurized recirculation mode

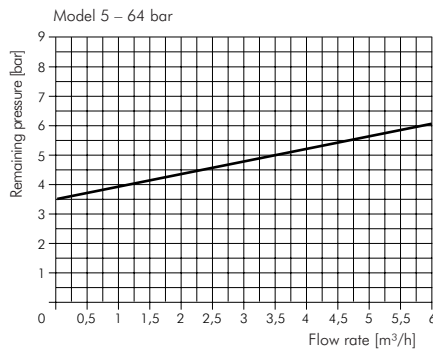


3 – HPB – S15, SPB – S 15

Control pressure diagram

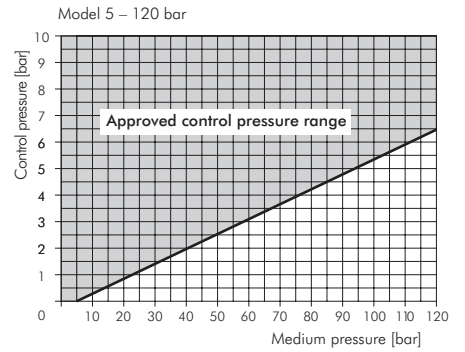


Depressurized recirculation mode

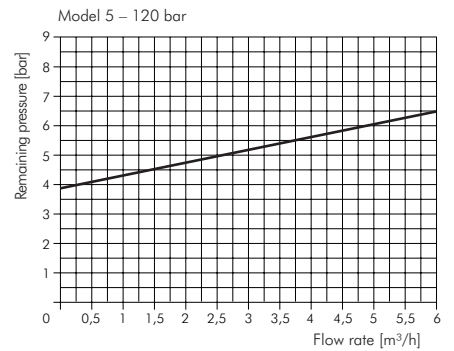


3 – HPB – H 15, SPB – H 15

Control pressure diagram

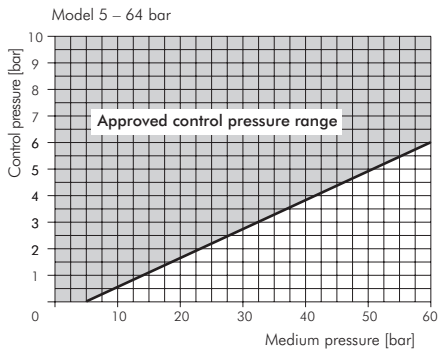


Depressurized recirculation mode

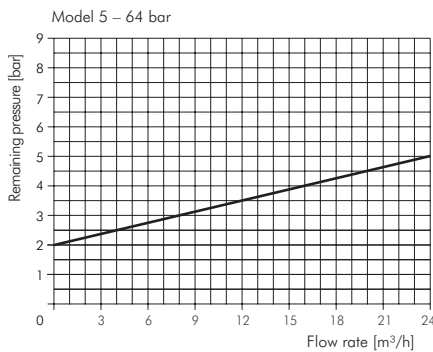


3 – HPB – S 32, SPB – S 32

Control pressure diagram

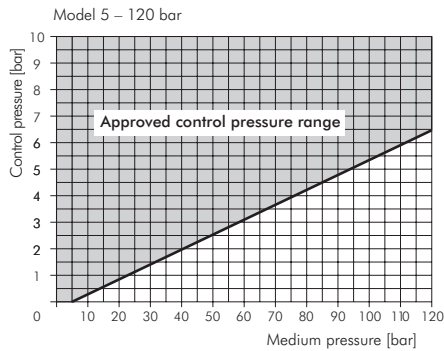


Depressurized recirculation mode

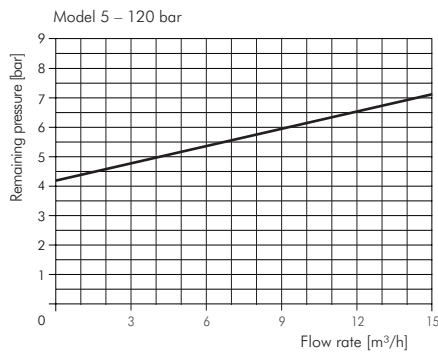


3 – HPB – H 32, SPB – H 32

Control pressure diagram

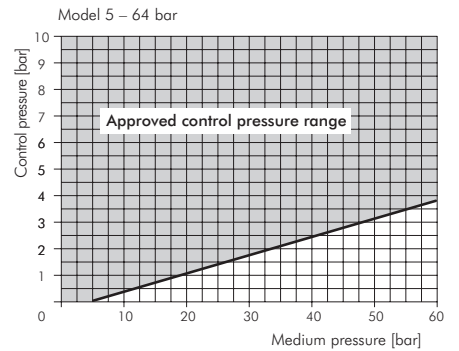


Depressurized recirculation mode

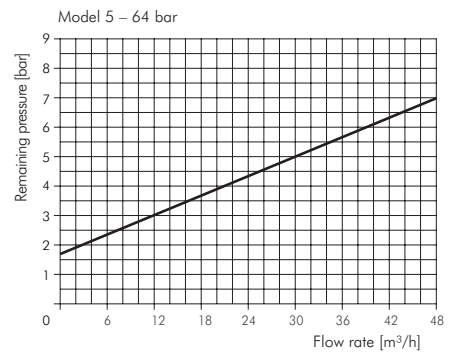


3 – HPB – S 50

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.

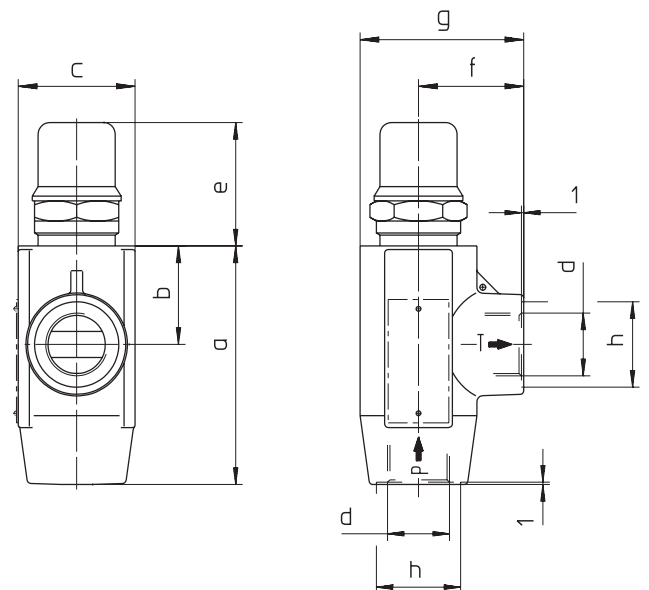
Non-adjustable Pressure Relief Valves BBV

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 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| TFS3, 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 3/4 | 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.

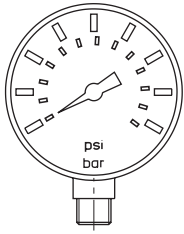
Above mentioned pressure relief valves are available upon request in a adjustable version.

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).

Accessories

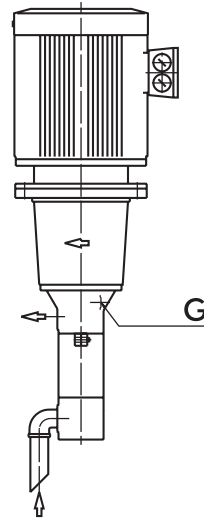
Pressure gauge / Suction protection G4 Version / Mounting hole patterns

Pressure gauge



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

G4 Version

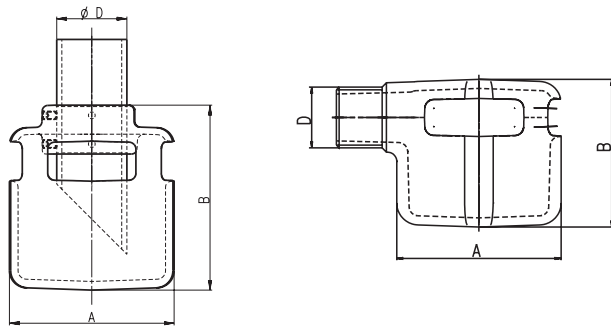


G1/8" BFS/FFS 1, 2
G1/4" TFS/FFS 3, 4, 5

Depressurized leakage return to tank

Suction protection

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



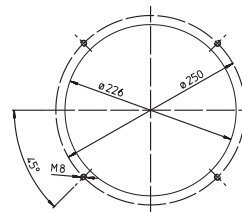
AS

AS-H

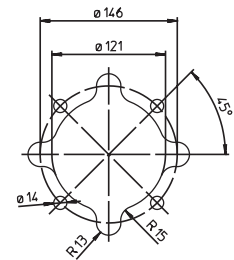
| Type | Type of Pumps | A mm | B mm | Ø D |
|---------|---------------|------|------|------|
| AS1-2 | BFS1, BFS2 | 90 | 94 | 1" |
| AS3 | TFS3 | 115 | 129 | 1½" |
| AS4 | TFS4 | 150 | 175 | 2" |
| AS5 | TFS5 | 195 | 190 | 2½" |
| AS1-2-H | BFS1, BFS2 | 90 | 60 | 1" |
| AS3H | TFS3 | 115 | 115 | G1½" |
| AS4H | TFS4 | 153 | 175 | G2 |
| AS5H | TFS5 | 194 | 190 | G2½" |

Mounting hole patterns

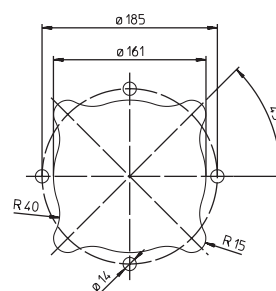
BFS1 / BFS2



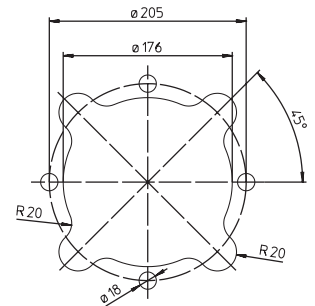
TFS1 / TFS2



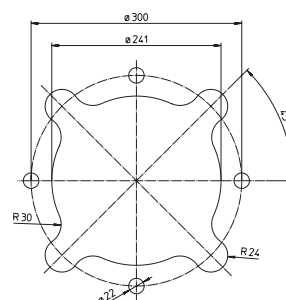
TFS3 / TFS4



TFS5



TFS6

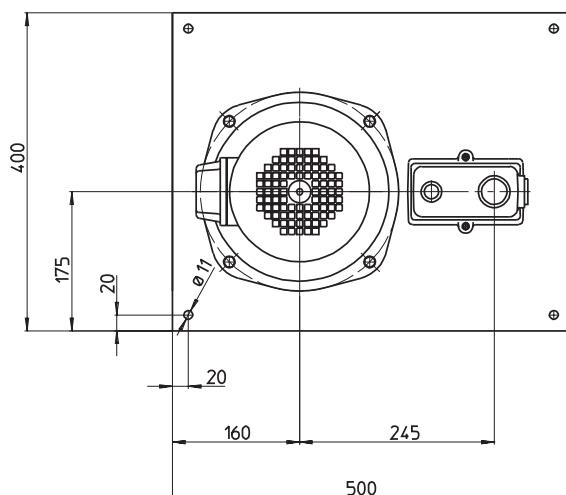
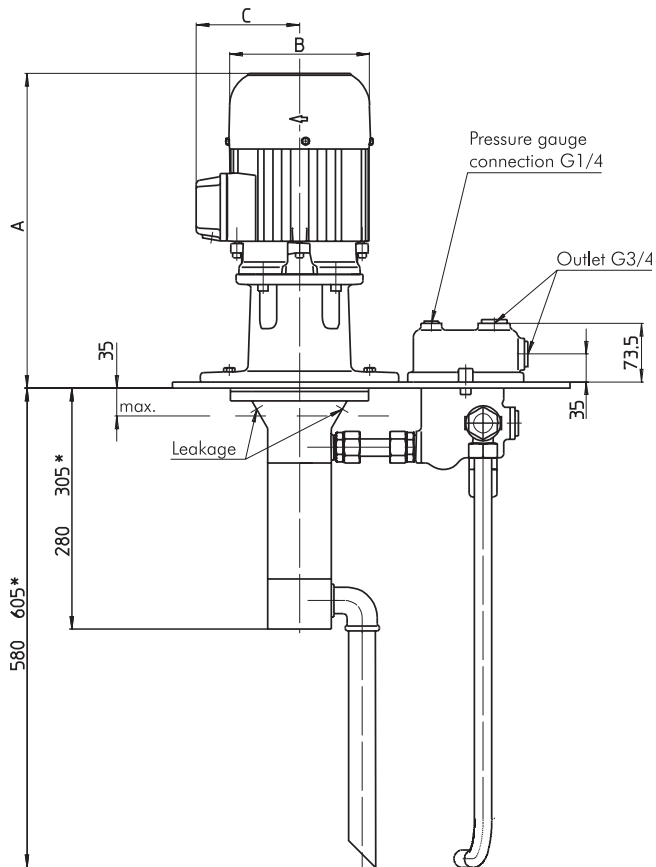


All corners must be deburred!
According to ISO 2768-m

Accessories

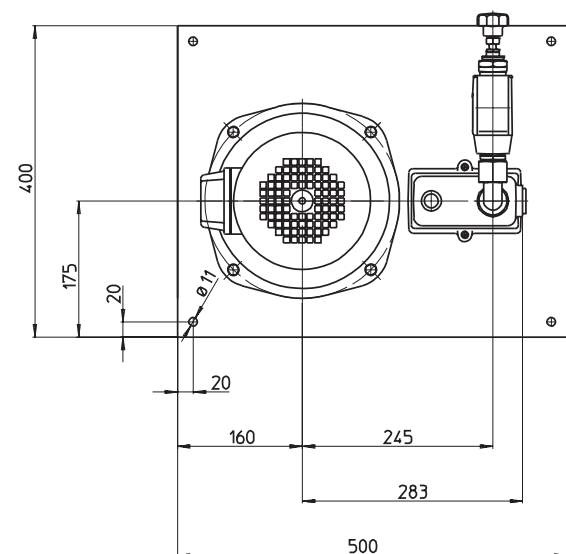
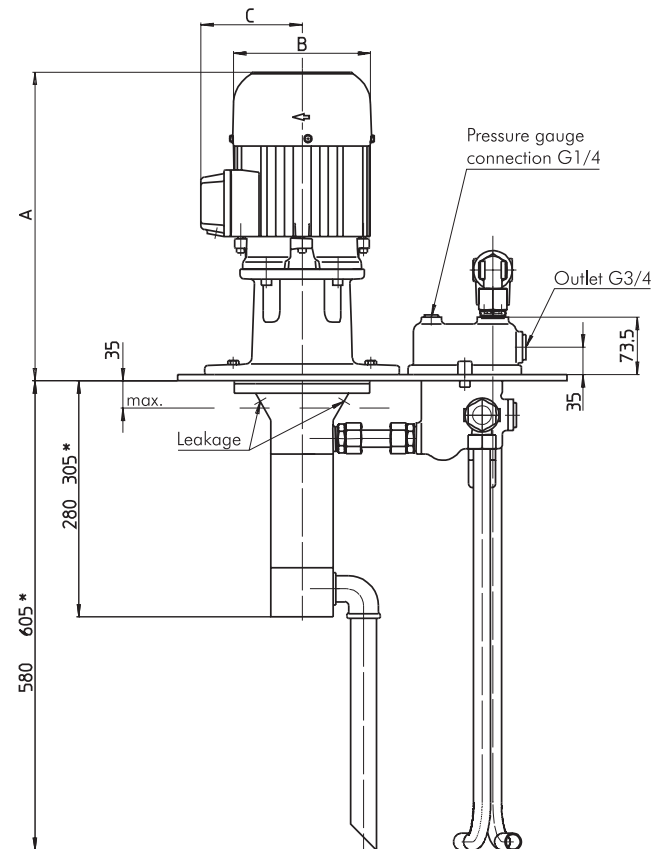
Pump system, fully assembled

- 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.



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

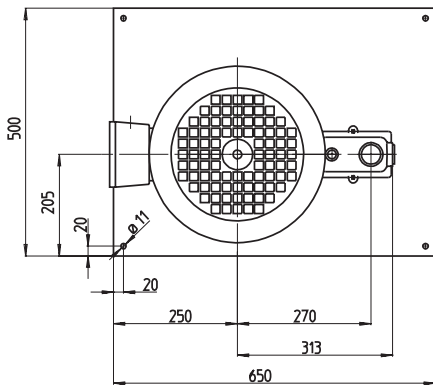
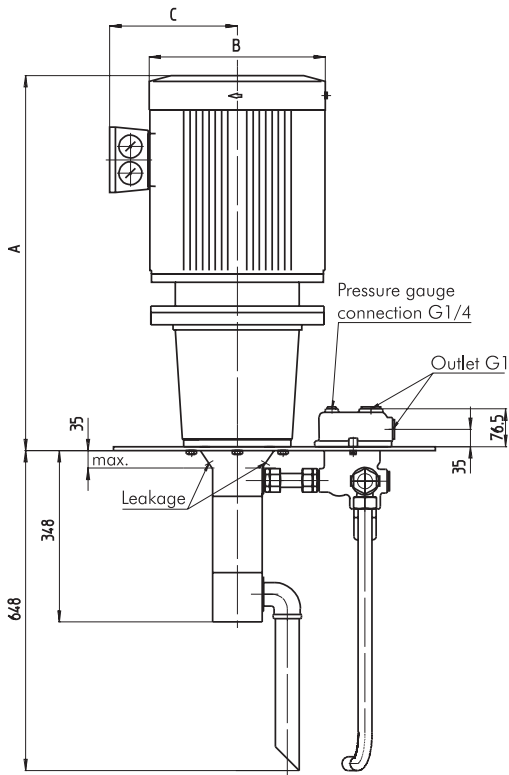
- Series **BFS1** and **BFS2**, adjustable pressure relief valve:
Screw pump with mounting plate, integrated connection block and piping fully assembled.
The non-adjustable pressure relief valve is integrated into the connection block.
The adjustable pressure relief valve is mounted above the plate.



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

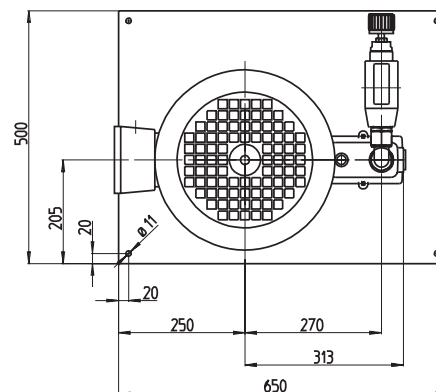
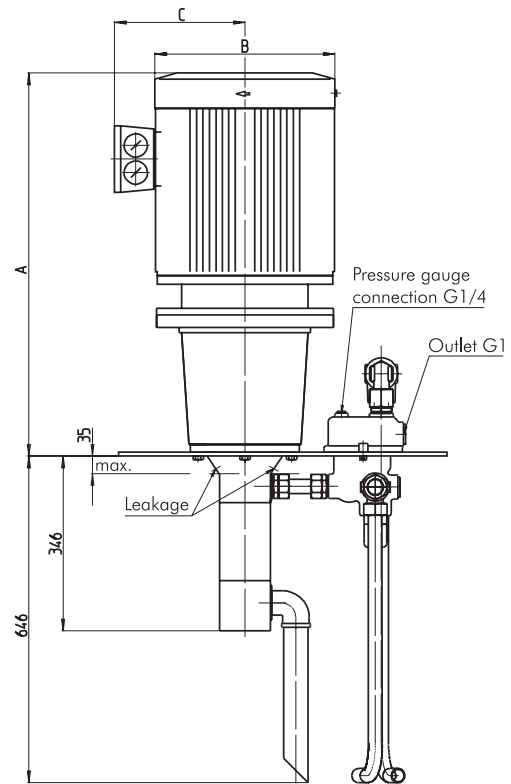
Pump system, fully assembled

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.



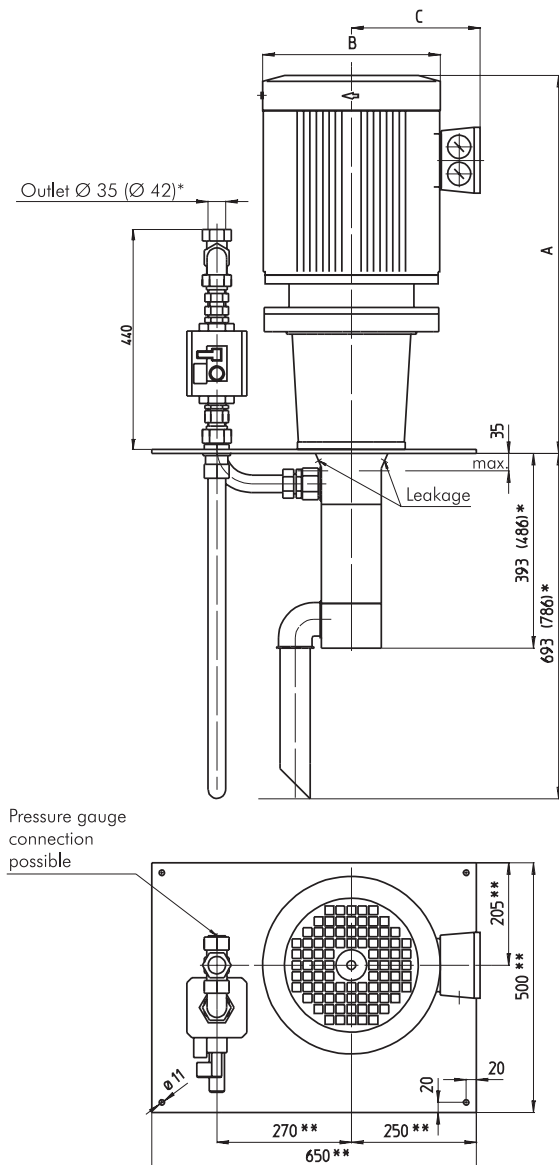
Dimensions A + 8 mm mounting plate

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.

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.

Upon request



*) Dimensions for TFS5

**) Maße für Motore größer 37 kW auf Anfrage
Dimensions A + 12 mm mounting plate

Application Questionnaire



Please forward questionnaire via fax to +49 (0) 2392 / 5006 - 180
via e-mail to Sales@BrinkmannPumps.de

Company Date
Location
Contact partner
Telephone

Field of application

type: grinding Al oxid Materials: cast iron specific abrasion: tinder
grinding CBN brass diamond
drilling Al silicon carbide
turning steel
milling other
other

Pump

Required performance data

Flow rate l/min.
Pressure bar

Dimensions

Immersion depth

Medium to be pumped

Coolants
Oils
Temperature °C
Viscosity at pumping mm²/s, cSt
temperature
Specific weight kg/l
pH value
Air in medium yes no
Lubricity in medium yes no

Filtration

Filtration μm
Filter type
ppm levels
Percentage of solids
by weight mg/l

Drive

Laid out for line power
 3 x 400 V, 50 Hz 3 x 460 V, 60 Hz 3 x 200 V, 60 Hz
 3 x 420 V, 50 Hz 3 x 230 V, 60 Hz
 3 x 380 V, 50 Hz 3 x 380 V, 60 Hz other
 3 x 200 V, 50 Hz 3 x 400 V, 60 Hz

Motor

Protective system IP55
Insulation classe F
Ambient temperature °C
Variable frequency drive Hz up to
On/off Cycles per min
Harting Connector yes

Other

.....
.....

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A series of horizontal dotted lines for writing notes, spanning the width of the page.

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.



Quality



At BRINKMANN PUMPS quality begins already with the careful selection of suppliers and materials. All production processes are continuously monitored. Some key processes and parts are even inspected and controlled on a 100% basis. Shipping and Receiving

along with all internal logistics are also crucial components of Brinkmann Pumps' quality efforts. The entire organization is ISO 9001 certified. Highly skilled employees, most modern measuring equipment, sophisticated testing procedures, and continuous improvements

efforts throughout each step of the production process are all critical components of Quality made by BRINKMANN.

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1950 – 2010



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