# SIGMA PUMPY HRANICE

# FAC, FAD, FAT, FAG, FAH, FACV, FADV, FATV

## THREE-SCREW PUMPS

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## Application

Three-screw pumps of FAC, FAD, FAG, FAH, FACV and FADV Series are intended for clean viscous liquids forced pumping. Their main application may be found in high-pressure hydraulic oil systems of all kinds, e.g. with presses, machine-tools and forming and/or shearing machines, lifts and further lifting gears, boiler house auxilliary systems, turbine governors, turbo-compressors, paper and/or printing machines, etc. Those pumps are also available for hydraulic drives, provided that there only unidirectional rotary motion is required. They are intended for delivering standard sorts of lubricating and/or engine oils and even viscous stuffs having lubricating capacity but without mechanical impurities and corrosive effects, neither congealing nor crystalizing.

Max. delivery pressure ..... 63 bar
Max. temperature of a pumped liquid ..... 180 °C
Kinematic viscosity
of a pumped liquid ranging ..... from 2.5 to 1,500 $mm^2.s^{-1}$

## Sense of rotation

Those pumps rotate **clockwise**, as viewed from the drive side. Counterclockwise version of those pumps may be supplied on the customer request.

## Construction

Pumps are of positive-displacement screw type, with rotary movement of working parts. Its design and functioning are very simple and reliable. They may be noted for their performance stability, continuous supply of a liquid without pulsations, and noiseless running. Further advantages that should be mentioned there are low dependence of capacity on pressure, self-priming and high-speed abilities.
For lubrication of all friction areas and the pump bearing there a pumped liquid may be used.

## Material options for main parts

Pump main parts are of following constructional materials:

- Pump casing is of cast carbon steel
- Bearing housing, bearing flange and suction shield are of grey cast iron
- Cartridge is of aluminium-base alloy
- Screws are of heat-treated carbon steel

## Pump model key

65 - FAC - 52 N - 63 - AO - 010

65 Discharge branch I.D.

FAC Series designation

52 Driving screw adendum circle diameter in mm

N Screw lead designation

63 Tenfold of max. manometric pressure on the pump discharge side in bar

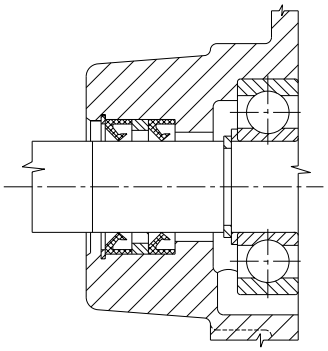
AO Pump material option

010 Number of alteration
Pump clockwise version,
soft cord-type packing

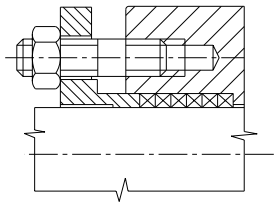
Number of alteration 070 - counterclockwise pump version, sealing - soft cord-type packing
Number of alteration 020 - clockwise pump version, sealing - radial lip seal ring „gufero“
Number of alteration 030 - clockwise pump version, mechanical seal

# Pump seal

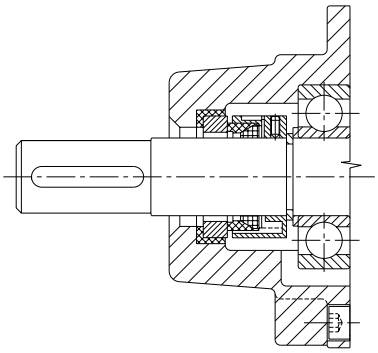
In accordance with operational conditions those pumps may be provided with following types of seals:



Radial lip seal „gufero“ for temperatures of a pumped liquid up to 90 ˚C



Soft cord-type packing for temperatures of a pumped liquid up to 180 ˚C



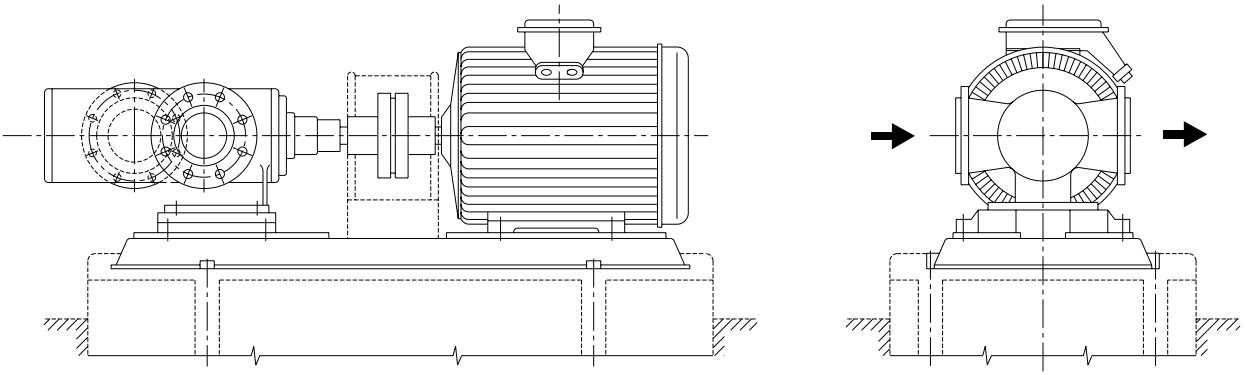
Mechanical seal for temperatures of a pumped liquid up to 180 ˚C

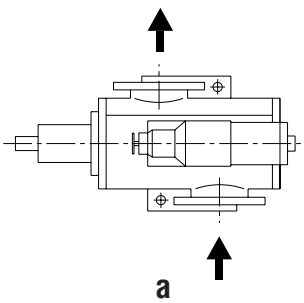
Pumps are pressure-relieved for max. permissible value of overpressure 0.5 bar using transfer of a pumped liquid from the space in front of the seal back to the suction space through the pump bore. The seal internal relieving system may be completed with a relief valve ensuring continuous overpressure up to 0.5 bar within operation both on the seal and its closure (as well as journal bearing lubrication) even in such a case that a pump works with suction (underpressure).

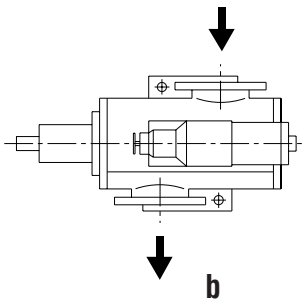
Provided there is overpressure (positive suction head) in the pump suction branch higher than 0.5 bar or even up to max. permissible value 6 bar relief may be realized in front of the seal in such a manner to prevent overpressure rise up to values higher than 0.5 bar. Seal may be relieved with liquid carrying away direct into a collecting tank of a pumped liquid. That modification can be executed only by the manufacturer on the customer request and according to pressures on the pump suction side.

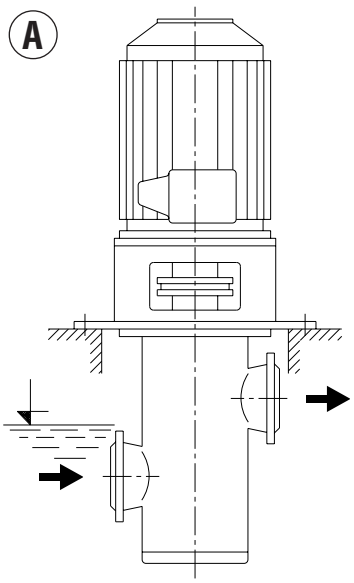
## Working positions

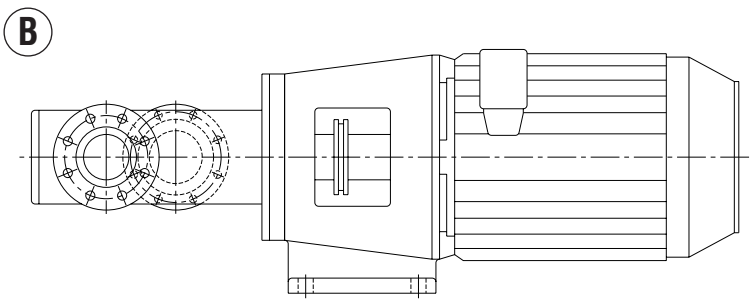
Pumps FAC, FACV delivered together with an electric motor on a common bed plate work in horizontal position, considering their foot-mounted workmanship.
Basic positions of branches - suction branch (S 90), delivery branch (T 270) - see Fig. a. With turning the casing through an angle of 180° it is possible to reach positions S 270, T 90, - see Fig. b. Pumps FAD, FADV are of flange-mounted types and they are installed together with a motor as a vertical-type pump-set, as a rule. Flanged electric motor is coupled with a pump through a lantern bracket with a widened supporting plate - a flange - ensuring the pump-set stability. Further, it is possible to install these pumps on the foot-type spacer serving for the pump-set fixing on the foundation at any position, however, the horizontal position is the most usual (see the pump-set Charts A; B).





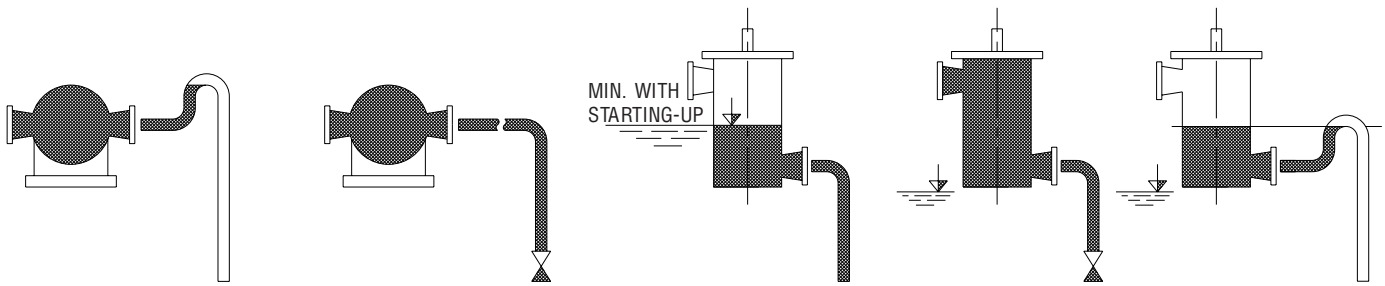



# Pump selection

With selection or design of these pumps it is necessary to observe not only general principles needful for right function of positive-displacement pumps but also some specific features and operational load.

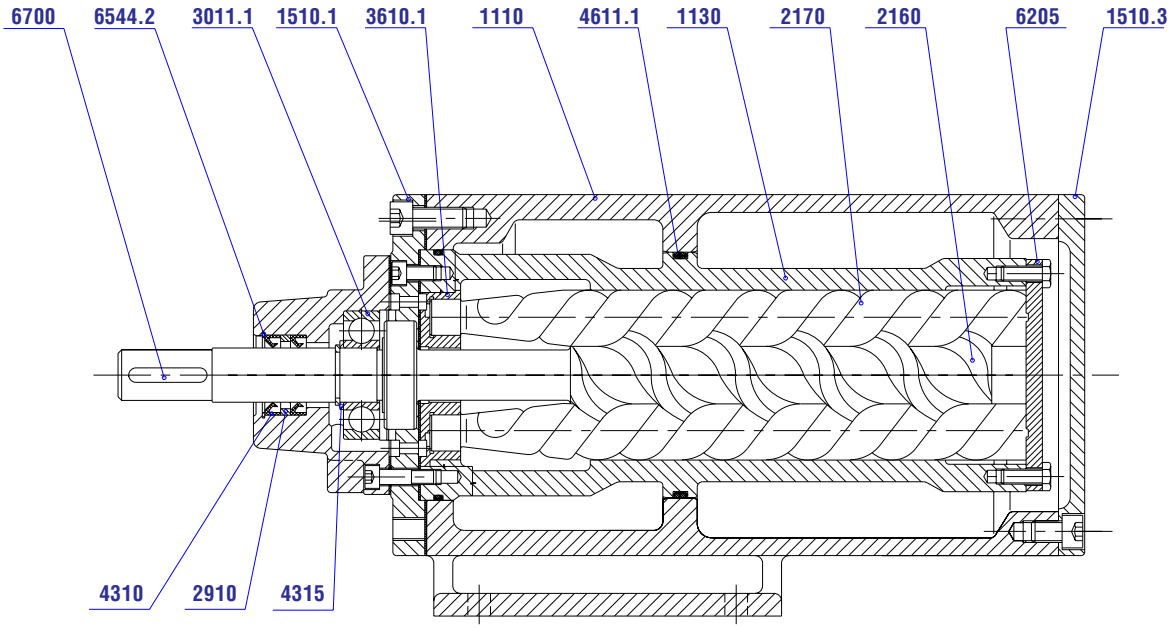
1. **Delivery piping -** provided the pump is not equipped with its own relief valve, it is necessary to provide it with a separate relief valve - according to real working conditions.
2. **With lower temperatures** of a pumped liquid and due to physical and other changes - above all due to considerable rise of viscosity and a liquid density or drop of lubricating capacity, etc, - the pump starting-up conditions being widely different contrary to stable operational conditions may get worse, as a rule. Those circumstances must be considered with dimensioning the pump drive, speed selection or method of starting-up or with further measures to ensure the pump correct function within transient conditions.
3. **With circulating systems** it is necessary to ensure cooling of a reversible liquid provided its temperature on the pump suction side would exceed a permissible value.
4. **Return piping** in circulating systems shall be directed up, below the lowest level being assumed there to prevent oil foaming. Oil being sucked into the pump must be clean, deaerated thoroughly and non-foamed.
5. **Filter in suction piping** should have larger through-flow area than the suction piping I.D. could be, so its hydraulic resistance shall be as small as possible even with partial clogging and in no case the pump permissible suction pressure can be exceeded. Further, it is recommended to select such efficiency of the filter to prevent penetration of mechanical impurities larger than 0.03 - 0.05 mm into a liquid being pumped, in accordance with the pump size.
6. **Pump running „dry" is inadmissible there,** because it could produce pump damage or seizure; that is why it is necessary to prime the pump with a liquid before its every and each starting-up. With the pump working with an inflow into the suction branch, its flooding shall be automatic there. But with pumping with positive suction, that is, with underpressure on the suction side, then it will be necessary to find out another suitable method:
   a) **with horizontal pumps FAC, FACV,** with arrangement of branches on either side of the pump being placed close to a suction tank, there continuous flooding, safe and reliable starting-up may be ensured. With the suction piping length being longer substantially than its possible minimal length (e.g. with the pump installation out of an oil tank room) it will be necessary to use a loop (see Chart „a") or a non-return valve (see Chart „b") to prevent evacuation of suction piping and a liquid sucking-in prolongation with all unfavourable accompanying phenomena as a liquid temperature rise or cavitation, and so on.
   b) **with pumps FAD, FADV being installed in their vertical position** it is required for their reliable starting-up to flood them up to a half at least, that is, up to plane intermediate between axes of both branches (see Charts „c" or „e"). Provided oil level in a tank is on such a level or even higher (see Chart „c") there request on a pump flooding within its starting-up may be realized automatically . With a lower level in a tank it is necessary to ensure a pump flooding within its starting-up even with minimal length of suction piping using a reliable reversible organ (see Chart „d") or to re-locate the suction piping to keep the pump flooded even with a level drop using a loop (see Chart „e").
7. **With running-in a pump on counter pressure** both partial or rated ones, there will be necessary to locate the pump in such a manner to reach flooding with a pumped liquid not only the pump **but even suction piping**
8. **Pump speed** should conform to viscosity and lubricating capacity of a liquid being pumped, working pressure and pump size. In general, there must be counted on that:
   a) with thinner liquid and higher working pressure there a higher speed should be selected, while with low viscosity it is necessary to reduce max. permissible working pressure, as a rule;
   b) with thicker liquid and lower working pressure there lower speed should be selected;
   c) with lower lubricating capacity there lower speed and lower working pressure should be selected, as well;
   d) the larger pump size is, the lower max. speed may be selected.

There a special and careful selection of working conditions seems to be necessary, even with extreme-low and/or high viscosity values of a pumped liquid, because relations among important values may differ fairly and those problems should be consulted with the manufacturer.

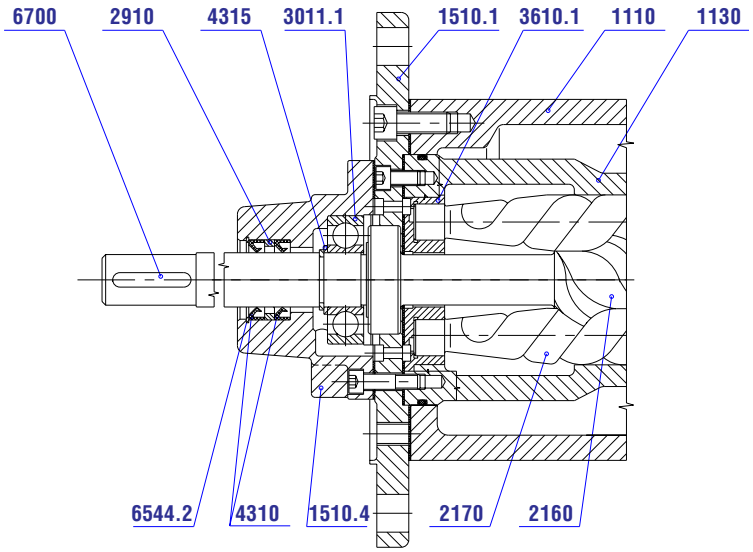


# Informatory section through pumps FAC, FAD

## FAC



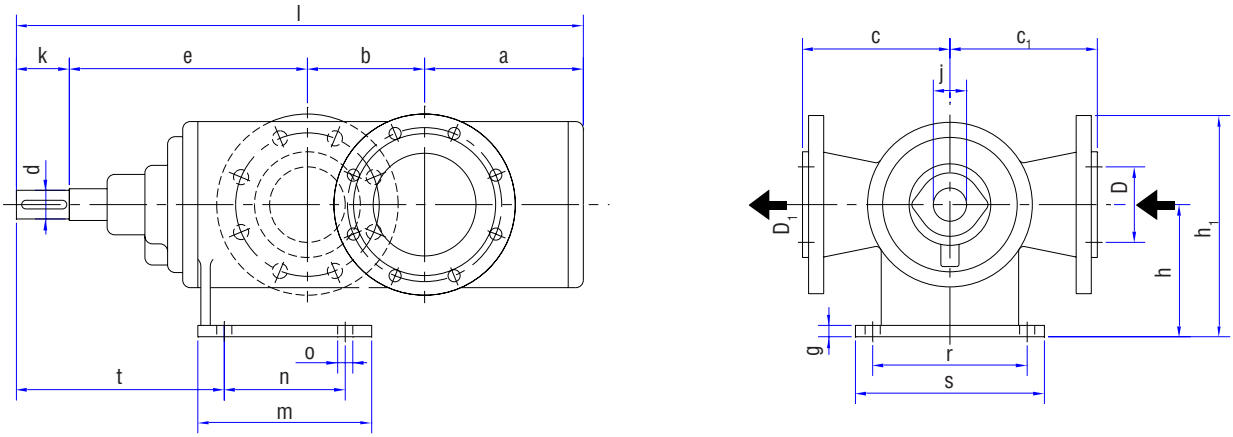

## FAD




| | |
|---|---|
| 1110 | Pump casing |
| 1130 | Cartridge |
| 1510.1 | Bearing flange |
| 1510.3 | Suction shield |
| 1510.4 | Bearing housing |
| 2160 | Driving screw |
| 2170 | Driven screw |
| 2910 | Radial lip seal ring |
| 3011.1 | Bearing |
| 3610.1 | Balance bush |
| 4310 | Radial lip seal ring „gufero“ |
| 4315 | Wear ring |
| 6205 | Back plate |
| 6544.2 | Circlip |
| 6700 | Coupling key |

# Pumps FAC, FAD

As the pump basic functional part there three screws mounted into an exchangeable cartridge being pressed in the pump casing may be considered.
Driving screw, axial force of which is balanced hydraulically in the discharge space, is supported on a single-row rolling-contact bearing, that may take up residual axial forces. The driving screw is provided with a cylindrical end intended for a coupling sliding on to ensure a torque transmission there.
Driven screws are situated on opposite sides of the driving screw and powered with a liquid pressure within standard stable operation. Axial force acting on driven screws is balanced hydraulically with pressure oil being supplied below balance pistons of driven screws from the pump discharge space. Oil from the seal space and pressure oil from piston of driven screws is directed back onto the suction side through a relief valve. Construction of pumps FAC, FAD makes deliveries of spare parts possible with using built-in workmanship being designated FAG and FAH.
Pumps FAC, FAD are not provided with their own safety devices for preventing excessive rise of the pump delivery pressure. For the pump reliable operation it is required to equip delivery piping with a relief valve, that should be installed close to the pump.



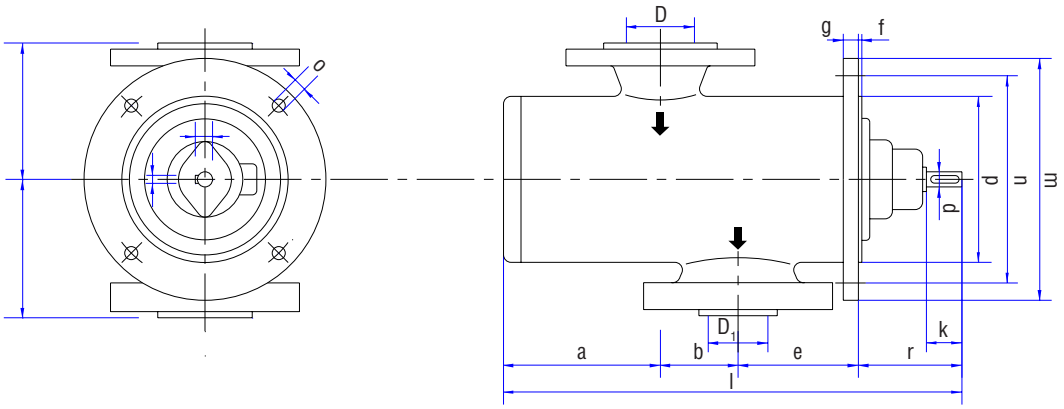

## Dimensions of pumps FAC

| Pump model | a | b | c | $c_1$ | Ød | g | h | $h_1$ | i | j | k | m | n | Øo | r | s | D | $D_1$ | Version 010 | | | Versions 020; 030 | | | Weight kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | e | l | t | e | l | t | |
| 65-FAC--52N-63 | 115 | 145 | 155 | 140 | 28 | 12 | 140 | 238 | 8 | 30,9 | 55 | 155 | 100 | 15 | 170 | 200 | DN 80 | DN 65 | 258 | 572 | 181 | 205 | 520 | 183 | 73 |
| 80-FAC--60N-63 | 126 | 165 | 170 | 160 | 32 | 12 | 150 | 258 | 10 | 35,3 | 55 | 195 | 140 | 15 | 185 | 220 | DN 100 | DN 80 | 274 | 620 | 194 | 220 | 566 | 195 | 92 |
| 100-FAC--70N-63 | 145 | 180 | 180 | 180 | 35 | 16 | 160 | 285 | 10 | 38,3 | 60 | 225 | 160 | 19 | 200 | 240 | DN 125 | DN 100 | 305 | 690 | 175,5 | 250 | 635 | 180 | 102 |
| 100-FAC--80N-63 | 204 | 165 | 195 | 195 | 40 | 18 | 180 | 305 | 12 | 43,1 | 75 | 245 | 170 | 19 | 230 | 270 | DN 125 | DN 100 | 347 | 790 | 198,5 | 286 | 730 | 213 | 134 |
| 125-FAC--90N-63 | 233 | 225 | 210 | 205 | 48 | 16 | 200 | 340 | 14 | 51,5 | 80 | 295 | 220 | 19 | 250 | 280 | DN 150 | DN 125 | 352 | 890 | 237 | 298 | 836 | 263 | 186 |

Dimensions are in mm.
**Flange of suction branch (D)** is intended for PN 16, with raised face.
**Flange of discharge branch ($D_1$)** is intended for PN 64, with a spigot.
Pump-set dimensions (pump with an electric motor being placed on a common bed plate) may be given individually, because they may vary in dependence on a motor type and size.

# Drive

On principle, drive of pumps FAC, FACV and FAD, FADV may be only a direct one, through a flexible coupling with a driving machine. The most usual there is a direct drive by an electric motor or a gearbox may be placed between the pump and the electric motor there. A drive by V-belts, gear drive or further ones shall be excluded there, because a bearing of the pump driving shaft has not been dimensioned for load and stress due to a gear overhung mounting.
A belt drive or a geared one may be used only in such a case if another external bearing is mounted there for taking-down radial load.



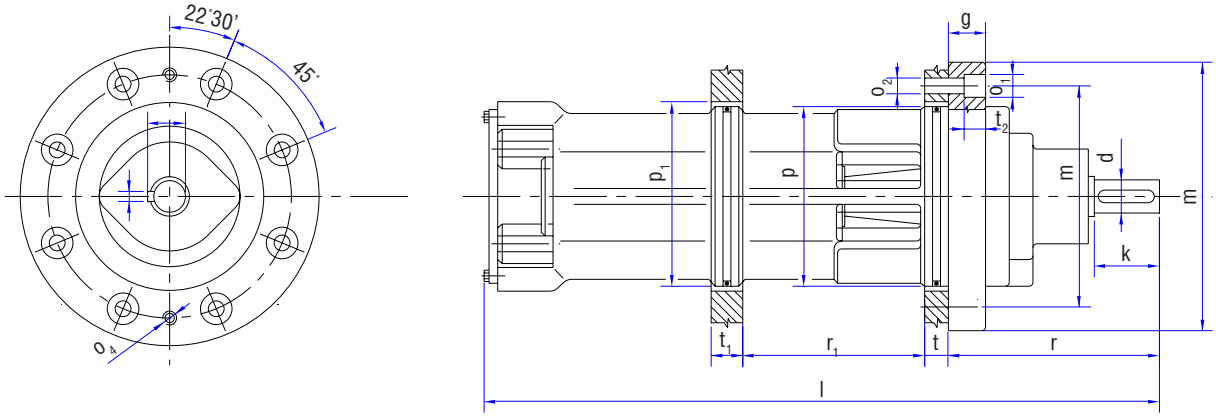

## Dimensions of pumps FAD

| Pump model | 32-FAD--32N-63 | 50-FAD--38N-63 | 50-FAD--45N-63 | 65-FAD--52N-63 | 80-FAD--60N-63 | 100-FAD--70N-63 | 100-FAD--80N-63 | 125-FAD--90N-63 |
|---|---|---|---|---|---|---|---|---|
| a | 96 | 115 | 119 | 116 | 130 | 145 | 211 | 236 |
| b | 65 | 75 | 113 | 145 | 165 | 180 | 165 | 225 |
| c | 120 | 120 | 140 | 155 | 170 | 180 | 195 | 210 |
| $c_1$ | 120 | 120 | 130 | 140 | 160 | 180 | 195 | 205 |
| ∅ d | 16 | 18 | 24 | 28 | 32 | 35 | 40 | 48 |
| e | 89 | 111 | 110 | 124 | 130 | 156 | 176 | 178 |
| f | 5,5 | 4,5 | 5 | 6 | 6 | 4 | 7 | 7 |
| g | 14 | 15,5 | 17,5 | 19 | 20 | 25 | 25 | 28 |
| i | 5 | 6 | 8 | 8 | 10 | 10 | 12 | 14 |
| j | 18,1 | 20,5 | 26,9 | 30,9 | 35,3 | 38,3 | 43,1 | 51,5 |
| k | 30 | 35 | 50 | 55 | 55 | 60 | 75 | 80 |
| ∅ m | 190 | 230 | 260 | 290 | 310 | 360 | 380 | 400 |
| ∅ n | 160 | 190 | 220 | 250 | 260 | 310 | 320 | 350 |
| ∅ o | 4x ∅ 14 | 4x ∅ 18 | 4x ∅ 18 | 4x ∅ 18 | 4x ∅ 24 | 4x ∅ 26 | 4x ∅ 26 | 8x ∅ 22 |
| ∅ p | 130 | 155 | 185 | 205 | 220 | 250 | 270 | 290 |
| D | DN 40 | DN 65 | DN 65 | DN 80 | DN 100 | DN 125 | DN 125 | DN 150 |
| $D_1$ | DN 32 | DN 50 | DN 50 | DN 65 | DN 80 | DN 100 | DN 100 | DN 125 |
| Version 010 r | 130 | 139 | 168 | 187 | 195 | 209 | 239 | 251 |
| Version 010 l | 380 | 440 | 510 | 572 | 620 | 690 | 790 | 890 |
| Versions 020; 030 r | 92 | 102 | 115 | 135 | 141 | 154 | 178 | 197 |
| Versions 020; 030 l | 342 | 403 | 457 | 520 | 566 | 635 | 730 | 836 |
| Weight | 21 | 29 | 50 | 76 | 80 | 100 | 130 | 186 |

Dimensions are in mm.
**Flange of suction branch (D)** is intended for PN 16, with raised face.
**Flange of discharge branch ($D_1$)** is intended for PN 64, with a spigot.
Pump-set dimensions may be given individually, because they may vary in dependence on a motor type and size.

# Built-in versions FAG, FAH

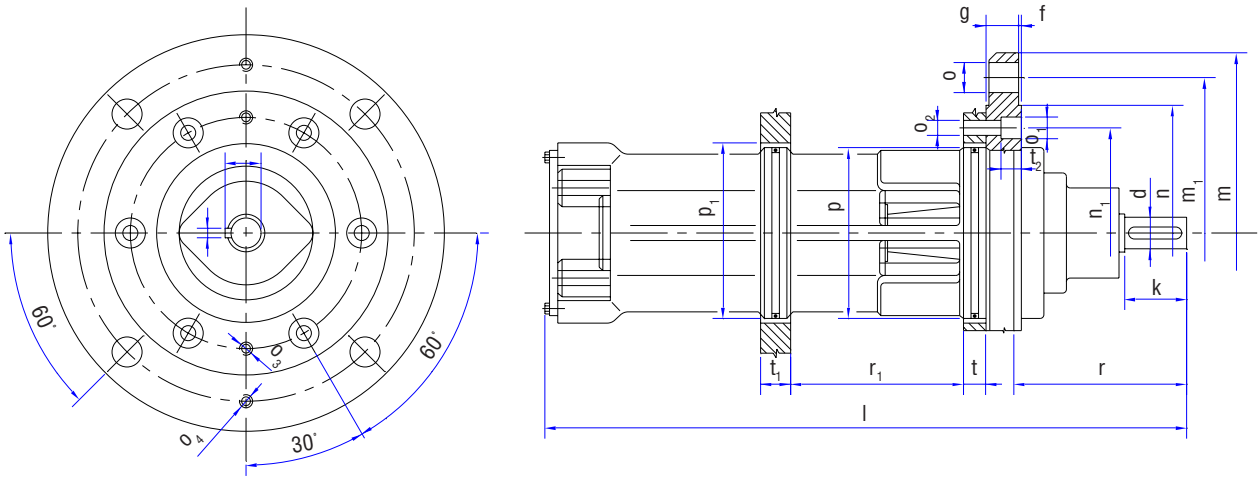
Those pumps consist of the hydraulic part being formed by screws, a cartridge and a fixing part of bearing flange and bearing housing. They are available as spare parts for the FAC, FAD pump series or as built-in workmanship for hydraulic systems of various machinery. They can be attached to machines with the aid of centring and clamping flanges.




## Dimensions of pumps FAG

| Pump model | Ø d | g | i | j | k | Ø m | Ø $m_1$ | Ø $o_1$ | Ø $o_2$ | Ø $o_4$ | Ø p | Ø $p_1$ | $r_1$ | t | $t_1$ | $t_2$ | Version 010 | | Versions 020; 030 | | Weight kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | l | r | l | r | |
| FAG-52 | 28 | 19,5 | 8 | 30,9 | 55 | 203 | 175 | 6x Ø20 | 6x Ø14 | M12 | 141 | 140 | 115 | 14 | 18 | 11 | 555 | 207 | 495 | 155 | 24 |
| FAG-60 | 32 | 20,5 | 10 | 35,3 | 55 | 217 | 180 | 6x Ø26 | 6x Ø18 | M16 | 148 | 147 | 147 | 19 | 20 | 11,5 | 601 | 217 | 550 | 163 | 33 |
| FAG-70 | 35 | 26 | 10 | 38,3 | 60 | 243 | 205 | 8x Ø26 | 8x Ø18 | M16 | 172 | 171 | 174 | 19 | 25 | 14 | 673 | 235 | 620 | 180 | 38 |
| FAG-80 | 40 | 25 | 12 | 43,1 | 75 | 266 | 230 | 8x Ø26 | 8x Ø18 | M16 | 192 | 191 | 189 | 24 | 28 | 14 | 771 | 265 | 710 | 204 | 55 |
| FAG-90 | 48 | 27 | 14 | 51,5 | 80 | 290 | 250 | 8x Ø33 | 8x Ø22 | M20 | 215 | 214 | 233 | 27 | 30 | 16 | 855 | 280 | 800 | 226 | 100 |

# Dimensions of pumps FAH

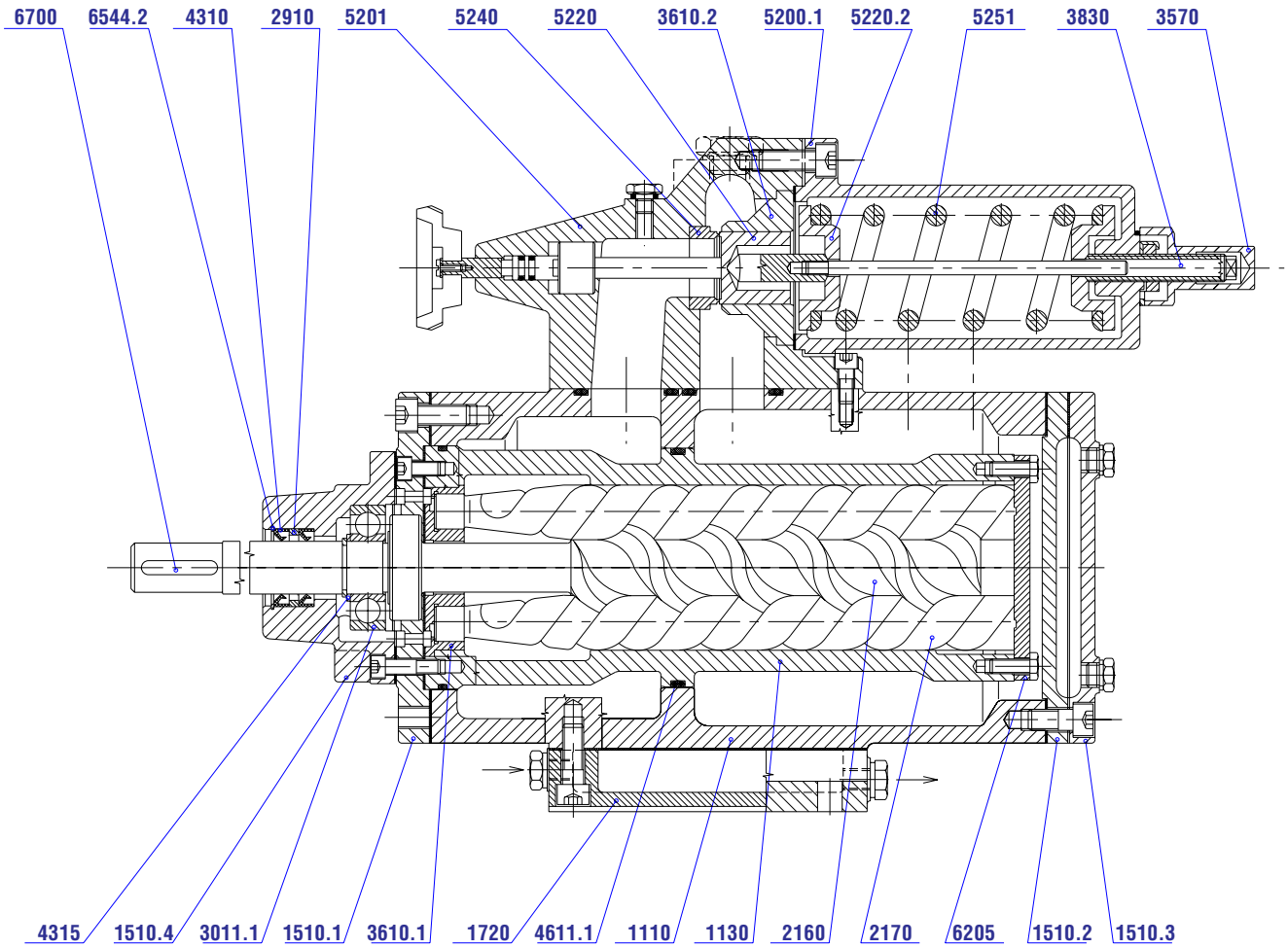



## Dimensions of pumps FAH

| Pump model | Ød | f | g | i | j | k | Øm | Øm$_1$ | Øn | Øn$_1$ | Øo | Øo$_1$ | Øo$_2$ | Øo$_3$ | Øo$_4$ | Øp | Øp$_1$ | r$_1$ | t | t$_1$ | t$_2$ | Version 010 | | Versions 020; 030 | | Weight kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | l | r | l | r | |
| FAH-32 | 16 | 5,5 | 14 | 5 | 18 | 30 | 190 | 160 | 130 | 105 | 4x Ø14 | 4x Ø18 | 4x Ø11 | M10 | M12 | 86 | 85 | 66 | 12 | 13 | 14 | 352 | 130,5 | 315 | 92 | 5,5 |
| FAH-38 | 18 | 4,5 | 16 | 6 | 21,5 | 35 | 230 | 190 | 155 | 130 | 4x Ø18 | 6x Ø18 | 6x Ø11 | M10 | M16 | 106 | 105 | 95 | 115 | 13 | 15,5 | 413 | 139 | 380 | 102 | 13,5 |
| FAH-45 | 24 | 5 | 18 | 8 | 27 | 45 | 260 | 220 | 185 | 152 | 4x Ø18 | 6x Ø20 | 6x Ø14 | M12 | M16 | 121 | 120 | 108 | 15 | 15 | 17 | 481 | 168,5 | 435 | 115 | 22 |
| FAH-52 | 28 | 5 | 19,5 | 8 | 30,9 | 55 | 290 | 250 | 205 | 175 | 4x Ø18 | 6x Ø20 | 6x Ø14 | M12 | M16 | 141 | 140 | 115 | 14 | 18 | 16,5 | 555 | 187 | 495 | 135 | 26 |
| FAH-60 | 32 | 5 | 22 | 10 | 35,3 | 55 | 310 | 260 | 220 | 180 | 4x Ø24 | 6x Ø26 | 6x Ø18 | M16 | M16 | 148 | 147 | 147 | 19 | 20 | 18 | 601 | 195 | 550 | 141 | 35 |
| FAH-70 | 35 | 4 | 26 | 10 | 38,3 | 60 | 360 | 310 | 250 | 205 | 4x Ø26 | 8x Ø26 | 8x Ø18 | M16 | M16 | 172 | 171 | 154 | 19 | 25 | 21 | 673 | 209 | 620 | 174 | 44 |
| FAH-80 | 40 | 7 | 26 | 12 | 43,1 | 75 | 380 | 320 | 270 | 2230 | 4x Ø26 | 8x Ø26 | 8x Ø18 | M16 | M16 | 192 | 191 | 178 | 24 | 28 | 21 | 771 | 239 | 710 | 189 | 57 |
| FAH-90 | 48 | 7 | 29 | 14 | 51,5 | 80 | 400 | 350 | 290 | 250 | 4x Ø26 | 8x Ø33 | 8x Ø22 | M20 | M20 | 215 | 214 | 197 | 27 | 30 | 27 | 855 | 251 | 800 | 233 | 104 |

# Pumps FACV, FADV

Construction of those pumps is the very same as with the standard Models FAC, FAD, however, they are provided with a pop safety valve ensuring  a pumped liquid by-passing with delivery pressure rise over 63 bar.




| | |
|---|---|
| 1110 | Pump casing |
| 1130 | Cartridge |
| 1510.1 | Bearing flange |
| 1510.3 | Suction shield |
| 1510.4 | Bearing housing |
| 1720 | Foot |
| 2160 | Driving screw |
| 2170 | Driven screw |
| 2910 | Radial lip seal ring „gufero“ |
| 3011.1 | Bearing |
| 3570 | Guard |
| 3610.1 | Balance bush |
| 3610.2 | Guide bush |
| 3830 | Lock screw |
| 4310 | Radial lip seal ring „gufero“ |
| 4315 | Bearing ring |
| 4611.1 | Wear ring |
| 5200.1 | Guard |
| 5201 | Valve body |
| 5220.2 | Valve head |
| 5240 | Seat |
| 5251 | Valve spring |
| 6205 | Back plate |
| 6544.2 | Circlip |
| 6700 | Coupling key |

# Relief valve

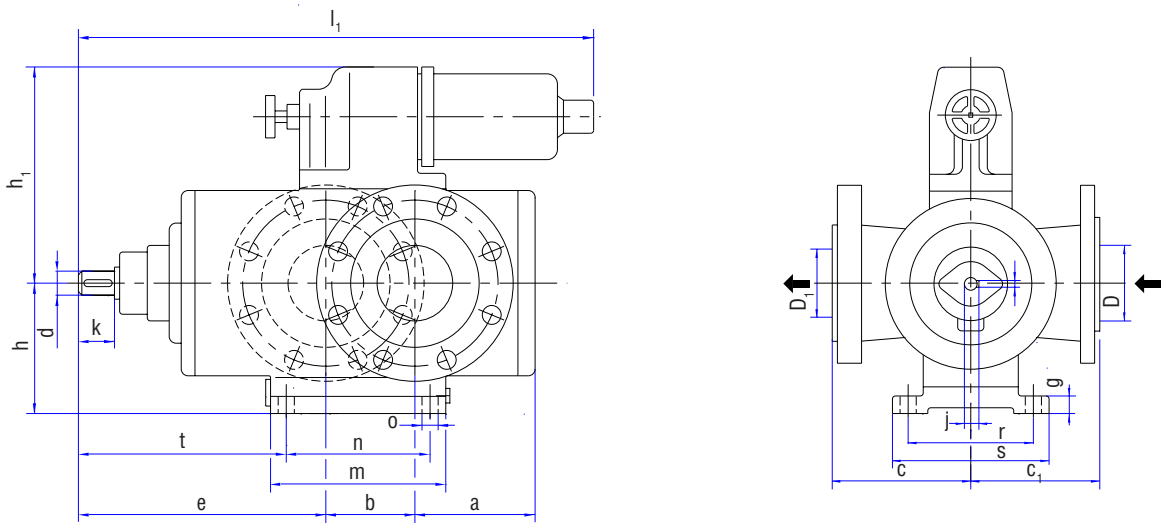
Relief valve may be supplied in following workmanships:

a Relief valve with no control/regulation starts its working with exceeding maximal pressure - the valve shall be turned on and a pumped liquid shall be directed onto the pump suction side;

b Relief valve with a control/regulation - with turning a hand wheel the seat may be lifted and a liquid may pass through onto the suction side. With reaching a working temperature and specified viscosity of a pumped liquid, the seat will be returned to its starting position using the hand wheel again.

c If there is a real danger, that with circulation of a pumped liquid through a valve - that is from the discharge side onto the suction one - there a working temperature exceeding and viscosity drop happened, then it is recommended to install a non-return valve there. With that valve working there a pumped liquid may be directed from the discharge side through the seat into a suction pit or the pump suction line.

d That valve functioning is the very same as with the „c“ version. However, the non-return valve is provided with regulation with the aid of a hand wheel.


## Dimensions of pumps FACV

| Pump model | a | b | c | $c_1$ | Ød | g | h | $h_1$ | i | j | k | m | n | Øo | r | s | D | $D_1$ | Version 010 | | | Versions 020; 030 | | | Weight kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | e | $l_1$ | t | e | $l_1$ | t | |
| 65-FACV--52N-63 | 115 | 145 | 160 | 140 | 28 | 17 | 140 | 235 | 8 | 30,9 | 55 | 182 | 140 | 15 | 160 | 200 | DN 80 | DN 65 | 313 | 645 | 292 | 260 | 592 | 239 | 87 |
| 80-FACV--60N-63 | 126 | 165 | 170 | 160 | 32 | 17 | 147 | 242 | 10 | 35,3 | 55 | 182 | 140 | 15 | 160 | 200 | DN 100 | DN 80 | 329 | 695 | 340 | 275 | 640 | 289 | 106 |
| 100-FACV--70N-63 | 145 | 180 | 180 | 180 | 35 | 20 | 163 | 296 | 10 | 38,3 | 60 | 270 | 220 | 18 | 210 | 250 | DN 125 | DN 100 | 365 | 835 | 362 | 310 | 780 | 307 | 127 |
| 100-FACV--80N-63 | 204 | 165 | 195 | 195 | 40 | 20 | 175 | 308 | 12 | 43,1 | 75 | 270 | 220 | 18 | 210 | 250 | DN 125 | DN 100 | 422 | 895 | 420 | 361 | 835 | 359 | 159 |
| 125-FACV--90N-63 | 233 | 225 | 210 | 205 | 48 | 20 | 183 | 316 | 14 | 51,5 | 80 | 270 | 220 | 18 | 210 | 250 | DN 150 | DN 125 | 432 | 1017 | 478 | 378 | 963 | 424 | 211 |

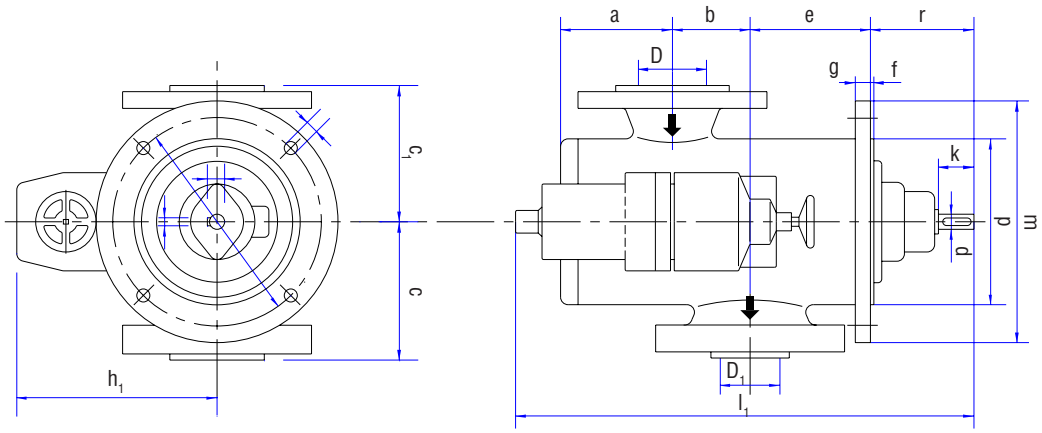
Dimensions are in mm.

**Flange of suction branch (D)** is intended for PN 16, with raised face.

**Flange of discharge branch ($D_1$)** is intended for PN 64, with a spigot.

Pump-set dimensions (pump with an electric motor being placed on a common bed plate) may be given individually, because they may vary in dependence on a motor type and size.

# Dimensions of pumps FADV

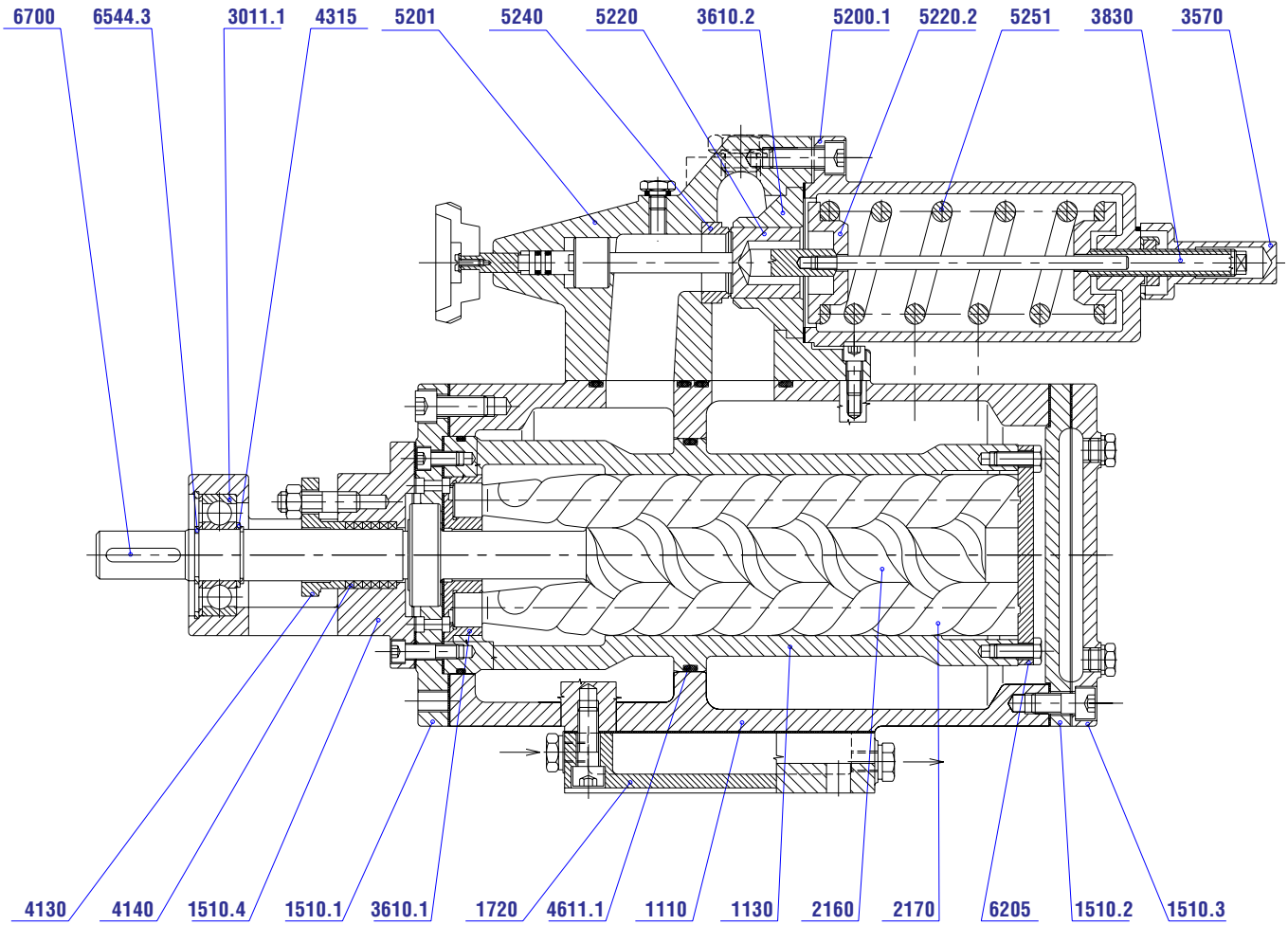



## Dimensions of pumps FADV

| Pump model | | 32-FADV--32N-63 | 50-FADV--38N-63 | 50-FADV--45N-63 | 65-FADV--52N-63 | 80-FADV--60N-63 | 100-FADV--70N-63 | 100-FADV--80N-63 | 125-FADV--90N-63 |
|---|---|---|---|---|---|---|---|---|---|
| a | | 96 | 115 | 119 | 116 | 130 | 145 | 211 | 236 |
| b | | 65 | 75 | 113 | 145 | 165 | 180 | 165 | 225 |
| c | | 120 | 130 | 140 | 160 | 170 | 180 | 195 | 210 |
| $c_1$ | | 120 | 120 | 130 | 140 | 160 | 180 | 195 | 205 |
| ∅ d | | 16 | 18 | 24 | 28 | 32 | 35 | 40 | 48 |
| e | | 89 | 111 | 110 | 124 | 130 | 156 | 176 | 178 |
| f | | 5,5 | 4,5 | 5 | 6 | 6 | 4 | 7 | 7 |
| g | | 13,5 | 15,5 | 17,5 | 19 | 20 | 25 | 25 | 28 |
| $h_1$ | | 178 | 191 | 205 | 235 | 242 | 296 | 308 | 316 |
| i | | 5 | 6 | 8 | 8 | 10 | 10 | 12 | 14 |
| j | | 18,1 | 20,5 | 26,9 | 30,9 | 35,3 | 38,3 | 43,1 | 51,5 |
| k | | 30 | 35 | 50 | 55 | 55 | 60 | 75 | 80 |
| ∅ m | | 190 | 230 | 260 | 290 | 310 | 360 | 380 | 400 |
| ∅ n | | 160 | 190 | 220 | 250 | 260 | 310 | 320 | 350 |
| ∅ o | | 4x ∅ 14 | 4x ∅ 18 | 4x ∅ 18 | 4x ∅ 18 | 4x ∅ 24 | 4x ∅ 26 | 4x ∅ 26 | 8x ∅ 22 |
| ∅ p | | 130 | 155 | 185 | 205 | 220 | 250 | 270 | 290 |
| D | | DN 40 | DN 65 | DN 65 | DN 80 | DN 100 | DN 125 | DN 125 | DN 150 |
| $D_1$ | | DN 32 | DN 50 | DN 50 | DN 65 | DN 80 | DN 100 | DN 100 | DN 125 |
| Version 010 | $l_1$ | 430 | 475 | 525 | 645 | 695 | 835 | 895 | 1017 |
| | r | 130,5 | 139 | 168,5 | 187 | 195 | 209 | 245 | 251 |
| Versions 020; 030 | $l_1$ | 392 | 440 | 470 | 592 | 640 | 780 | 835 | 963 |
| | r | 92 | 102 | 115 | 135 | 141 | 154 | 178 | 197 |
| Weight | | 30 | 38 | 58 | 90 | 94 | 125 | 155 | 211 |

Dimensions are in mm.
**Flange of suction branch (D)** is intended for PN 16, with raised face.
**Flange of discharge branch ($D_1$)** is intended for PN 64, with a spigot.
Pump-set dimensions (pump with an electric motor being placed on a common bed plate) may be given individually, because they may vary in dependence on a motor type and size.

# Informatory section through pumps FAT, FATV



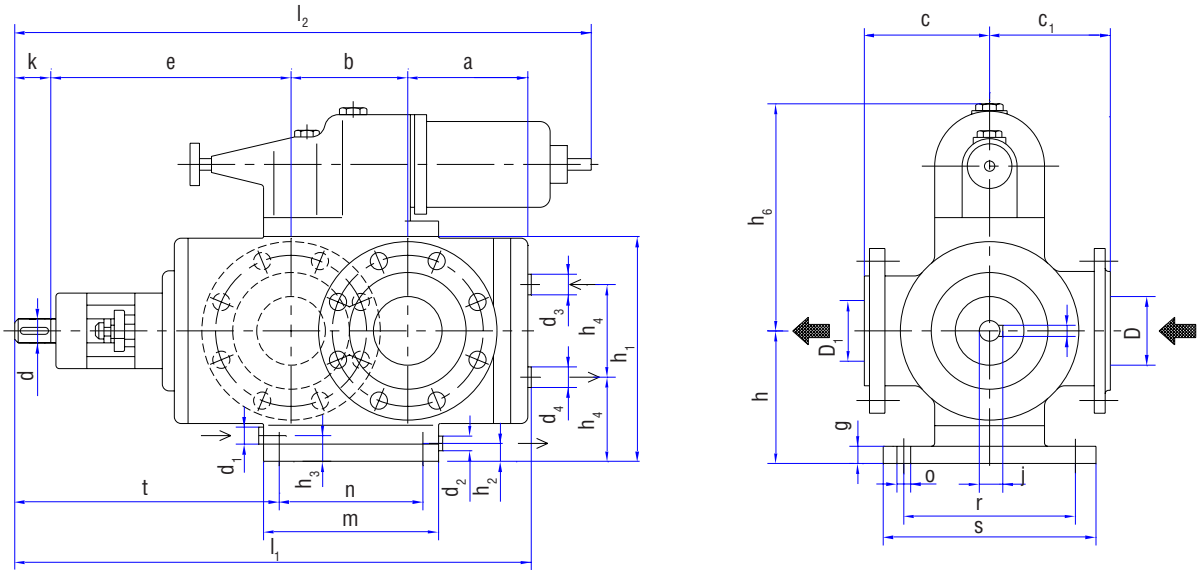

| | |
|---|---|
| 1110 | Pump casing |
| 1130 | Cartridge |
| 1510.1 | Bearing flange |
| 1510.2 | Heating shield |
| 1510.3 | Suction shield |
| 1510.4 | Bearing housing |
| 1720 | Foot |
| 2160 | Driving screw |
| 2170 | Driven screw |
| 3011.1 | Bearing |
| 3570 | Screw guard |
| 3610.1 | Balance bush |
| 3610.2 | Guide bush |
| 3830 | Lock screw |
| 4130 | Gland |
| 4140 | Gland packing |
| 4315 | Bearing ring |
| 4611.1 | Wear ring |
| 5200.1 | Guard |
| 5201 | Valve body |
| 5220.2 | Valve head |
| 5240 | Seat |
| 5251 | Valve spring |
| 6205 | Back plate |
| 6544.2 | Circlip |
| 6700 | Coupling key |

# Pumps FAT, FATV

They are intended for delivering heavy and /or light oils to pressure-type torches. They can also cope with further self-lubricating viscous liquids.

Max. delivery pressure ..... 40 bar
Max. temperature of a pumped liquid ..... 180 ˚C
Kinematic viscosity
of a pumped liquid ranging ..... from 21.5 to 380 $mm^2.s^{-1}$

Max. temperature of a heating medium ..... 130 ˚C
Max. overpressure of a heating medium ..... 3 bar
With pumps FAT there max. unification with the standard Series FAC has been applied to. Pump casing is provided with a heating shield and a plate using for warming a pumped medium in the pump by steam or water.




## Dimensions of pumps FAT, FATV

| Pump model | a | b | c | $c_1$ | d | e | g | h | $h_1$ | $h_2$ | $h_3$ | $h_4$ | $h_5$ | $h_6$ | i | j | k | $l_1$ | $l_2$ | m | n | o | r | s | t | D | $D_1$ | Weight kg | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | FAT | FATV |
| 50-FAT--38N-40 | 134 | 75 | 130 | 120 | 18 | 215 | 15 | 112 | 205 | 17 | 22 | 70 | 80 | 203 | 6 | 20,5 | 35 | 465 | 500 | 150 | 114 | 12 | 140 | 170 | 270 | DN 65 | DN 50 | 31 | 40 |
| 65-FAT--52N-40 | 134 | 145 | 160 | 140 | 28 | 260 | 17 | 140 | 265 | 20 | 25 | 80 | 120 | 250 | 8 | 30,9 | 55 | 600 | 700 | 182 | 140 | 15 | 160 | 200 | 343 | DN 80 | DN 65 | 76 | 90 |
| 100-FAT--70N-40 | 163 | 180 | 180 | 180 | 35 | 310 | 20 | 160 | 300 | 20 | 25 | 75 | 170 | 310 | 10 | 38,3 | 60 | 710 | 830 | 270 | 220 | 17 | 210 | 250 | 425 | DN 125 | DN 100 | 110 | 132 |

Dimensions are in mm.
**Flange of suction branch (D)** is intended for PN 16, with raised face.
**Flange of discharge branch ($D_1$)** is intended for PN 64, with a spigot.
**$d_1$; $d_3$** ..... heating medium supply - uniform dimension of hole is G 1/4“
**$d_2$; $d_4$** ..... heating medium drain - uniform dimension of hole is G 1/4“.

# Survey of models and performance data of three-screw pumps 50 Hz

| Pump model | Speed n min$^{-1}$ | Delivery pressure $p_{do}$ bar | Performance data with various viscosity values in ( mm$^2$.s$^{-1}$) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 12 | | 28 | | 37 | | 76 | | 150 | | 230 | | 380 | |
| | | | Q l.s$^{-1}$ | P kW | Q l.s$^{-1}$ | P kW | Q l.s$^{-1}$ | P kW | Q l.s$^{-1}$ | P kW | Q l.s$^{-1}$ | P kW | Q l.s$^{-1}$ | P kW | Q l.s$^{-1}$ | P kW |
| FAH 32- FAD-32N FADV | 920 | 10 | 0,36 | 0,49 | 0,37 | 0,5 | 0,39 | 0,60 | 0,42 | 0,70 | 0,43 | 0,75 | 0,44 | 0,85 | 0,45 | 0,88 |
| | | 20 | 0,28 | 0,98 | 0,30 | 1,1 | 0,33 | 1,00 | 0,36 | 1,20 | 0,39 | 1,20 | 0,42 | 1,25 | 0,43 | 1,30 |
| | | 40 | - | - | 0,15 | 1,9 | 0,20 | 1,97 | 0,27 | 2,00 | 035 | 2,00 | 0,38 | 2,00 | 0,39 | 2,14 |
| | | 60 | - | - | - | - | - | - | 0,18 | 2,80 | 0,30 | 2,85 | 0,34 | 2,90 | 0,35 | 3,14 |
| | 1450 | 10 | 0,62 | 0,78 | 0,63 | 0,80 | 0,65 | 0,85 | 0,67 | 0,90 | 0,69 | 0,94 | 0,70 | 1,00 | 0,70 | 1,22 |
| | | 20 | 0,55 | 1,54 | 0,57 | 1,63 | 0,59 | 1,69 | 0,63 | 1,66 | 0,65 | 1,71 | 0,68 | 1,81 | 0,68 | 1,99 |
| | | 40 | 0,40 | 3,00 | 0,40 | 3,08 | 0,48 | 3,09 | 0,55 | 3,20 | 0,60 | 3,26 | 0,63 | 3,30 | 0,63 | 3,54 |
| | | 60 | - | - | 0,32 | 4,26 | 0,36 | 4,35 | 0,47 | 4,42 | 0,55 | 4,84 | 0,59 | 4,86 | 0,60 | 5,12 |
| | 2900 | 10 | 1,30 | 1,58 | 1,31 | 1,87 | 1,37 | 1,93 | 1,40 | 2,00 | 1,43 | 2,10 | 1,45 | 2,1 | 1,44 | 3,35 |
| | | 20 | 1,24 | 3,12 | 1,25 | 3,31 | 1,31 | 3,37 | 1,33 | 3,43 | 1,39 | 3,55 | 1,41 | 3,6 | 1,41 | 4,89 |
| | | 40 | 1,12 | 6,22 | 1,14 | 6,29 | 1,22 | 6,51 | 1,25 | 6,73 | 1,33 | 6,89 | 1,36 | 7,0 | 1,37 | 7,99 |
| | | 60 | 1,02 | 9,38 | 1,05 | 9,44 | 1,13 | 9,74 | 1,17 | 9,80 | 1,29 | 9,85 | 1,31 | 9,9 | 1,34 | 11,15 |
| FAH 50- FAD-38N FADV FAT FATV | 720 | 10 | 0,43 | 0,64 | 0,46 | 0,80 | 0,49 | 0,81 | 0,52 | 0,82 | 0,54 | 0,90 | 0,55 | 0,91 | 0,56 | 0,92 |
| | | 20 | - | - | 0,40 | 1,50 | 0,43 | 1,51 | 1,49 | 1,51 | 0,50 | 1,52 | 0,51 | 1,53 | 0,52 | 1,55 |
| | | 40 | - | - | 0,26 | 2,50 | 0,30 | 2,51 | 0,42 | 2,52 | 0,43 | 2,61 | 1,44 | 2,65 | 0,45 | 2,75 |
| | | 60 | - | - | 0,12 | 3,65 | 0,17 | 3,69 | 0,34 | 3,70 | 0,36 | 3,75 | 0,38 | 3,81 | 0,39 | 4,06 |
| | 920 | 10 | 0,60 | 0,82 | 0,63 | 1,17 | 0,66 | 1,23 | 0,69 | 1,28 | 0,70 | 1,3 | 0,72 | 1,32 | 0,73 | 1,33 |
| | | 20 | 0,46 | 1,63 | 0,57 | 1,96 | 0,60 | 2,01 | 0,65 | 2,05 | 0,66 | 2,1 | 0,68 | 2,12 | 0,69 | 2,14 |
| | | 40 | - | - | 0,43 | 3,54 | 0,47 | 3,59 | 0,55 | 3,59 | 0,59 | 3,6 | 0,61 | 3,62 | 0,62 | 3,65 |
| | | 60 | - | - | 0,29 | 5,12 | 0,34 | 5,14 | 0,44 | 5,15 | 0,52 | 5,2 | 0,55 | 5,25 | 0,56 | 5,29 |
| | 1450 | 10 | 1,05 | 1,30 | 1,09 | 1,92 | 1,09 | 2,06 | 1,11 | 2,13 | 1,13 | 2,17 | 1,16 | 2,17 | 1,18 | 2,20 |
| | | 20 | 0,91 | 2,59 | 1,01 | 2,95 | 1,003 | 3,13 | 1,07 | 3,29 | 1,10 | 3,32 | 1,12 | 3,34 | 1,13 | 3,35 |
| | | 40 | 0,69 | 5,19 | 0,89 | 5,29 | 0,92 | 5,47 | 0,97 | 5,65 | 1,03 | 3,65 | 1,05 | 5,67 | 1,06 | 5,93 |
| | | 60 | - | - | 0,75 | 7,51 | 0,80 | 7,79 | 0,86 | 8,08 | 0,96 | 7,19 | 0,99 | 7,99 | 1,01 | 8,57 |
| | 2900 | 10 | 2,29 | 2,65 | 2,35 | 3,85 | 2,37 | 3,92 | 2,40 | 3,98 | 2,42 | 3,42 | 2,48 | 4,10 | 2,41 | 5,61 |
| | | 20 | 2,15 | 5,22 | 2,26 | 6,08 | 2,30 | 6,20 | 2,35 | 6,25 | 2,38 | 6,28 | 2,40 | 6,30 | 2,41 | 8,18 |
| | | 40 | 1,93 | 10,42 | 2,14 | 10,68 | 2,16 | 10,89 | 2,21 | 10,98 | 2,21 | 11,00 | 2,27 | 11,10 | 2,30 | 13,39 |
| | | 60 | 1,75 | 15,50 | 1,98 | 15,23 | 2,02 | 15,53 | 2,04 | 15,66 | 2,15 | 15,70 | 2,20 | 15,80 | 2,24 | 18,67 |
| FAH 50- FAD-45N FADV | 720 | 10 | 0,62 | 1,0 | 0,74 | 1,00 | 0,76 | 1,05 | 0,79 | 1,05 | 0,83 | 1,24 | 0,88 | 1,26 | 0,89 | 1,37 |
| | | 20 | - | - | 0,63 | 2,01 | 0,64 | 2,07 | 0,66 | 2,10 | 0,72 | 2,26 | 0,80 | 2,30 | 0,81 | 2,43 |
| | | 40 | - | - | 0,29 | 4,01 | 0,34 | 4,06 | 0,41 | 4,09 | 0,54 | 4,28 | 0,66 | 4,29 | 0,67 | 4,57 |
| | | 60 | - | - | 0,09 | 6,01 | 0,10 | 6,08 | 0,21 | 6,11 | 0,37 | 6,30 | 0,52 | 6,33 | 0,53 | 6,75 |
| | 920 | 10 | 0,90 | 1,26 | 0,96 | 1,29 | 0,99 | 1,32 | 1,05 | 1,36 | 1,11 | 1,67 | 1,15 | 1,67 | 1,18 | 1,86 |
| | | 20 | - | - | 0,81 | 2,57 | 0,84 | 2,61 | 0,91 | 2,65 | 1,00 | 2,96 | 1,08 | 3,00 | 1,09 | 3,21 |
| | | 40 | - | - | 0,57 | 5,13 | 0,59 | 5,19 | 0,69 | 5,24 | 0,82 | 5,55 | 0,93 | 5,60 | 0,94 | 5,95 |
| | | 60 | - | - | 0,36 | 7,70 | 0,38 | 7,78 | 0,49 | 7,83 | 0,95 | 8,13 | 0,80 | 8,20 | 0,82 | 8,74 |
| | 1450 | 10 | 1,65 | 2,16 | 1,71 | 2,18 | 1,75 | 2,35 | 1,81 | 2,33 | 1,84 | 2,96 | 1,89 | 3,10 | 1,92 | 3,39 |
| | | 20 | 1,34 | 4,05 | 1,50 | 4,09 | 1,55 | 4,33 | 1,65 | 4,29 | 1,74 | 4,99 | 1,81 | 4,97 | 1,83 | 5,52 |
| | | 40 | - | - | 1,24 | 8,25 | 1,31 | 8,41 | 1,43 | 8,41 | 1,55 | 9,07 | 1,67 | 8,89 | 1,68 | 9,84 |
| | | 60 | - | - | 1,08 | 12,21 | 1,12 | 12,40 | 1,25 | 12,48 | 1,39 | 13,15 | 1,53 | 13,03 | 1,55 | 14,23 |
| | 1900 | 10 | 3,70 | 4,4 | 3,78 | 4,60 | 3,85 | 4,67 | 3,85 | 5,00 | 3,86 | 5,5 | 3,89 | 6,50 | 3,97 | 9,32 |
| | | 20 | 3,39 | 8,5 | 3,64 | 8,61 | 3,71 | 8,84 | 3,73 | 9,17 | 3,75 | 10,0 | 3,79 | 10,54 | 3,87 | 13,59 |
| | | 40 | 2,90 | 16,6 | 3,36 | 16,83 | 3,43 | 17,19 | 3,48 | 17,20 | 3,57 | 18,0 | 3,64 | 18,67 | 3,72 | 22,23 |
| | | 60 | 2,52 | 24,7 | 3,10 | 24,93 | 3,15 | 25,54 | 3,26 | 25,60 | 3,40 | 26,0 | 3,51 | 26,87 | 3,60 | 31,01 |
| FAG FAH 65- FAC-52N FAD FACV FAT FATV | 720 | 10 | 1,00 | 1,7 | 1,01 | 1,90 | 1,01 | 1,95 | 1,13 | 1,95 | 1,27 | 1,82 | 1,35 | 2,10 | 1,42 | 2,11 |
| | | 20 | - | - | 0,73 | 3,30 | 0,75 | 3,30 | 0,94 | 3,35 | 1,11 | 3,40 | 1,22 | 3,50 | 1,31 | 3,74 |
| | | 40 | - | - | 0,33 | 6,34 | 0,40 | 6,45 | 0,63 | 6,50 | 0,82 | 6,55 | 0,99 | 6,55 | 1,13 | 7,05 |
| | | 60 | - | - | - | - | 0,13 | 9,43 | 0,27 | 9,73 | 0,56 | 9,70 | 0,77 | 9,61 | 0,99 | 10,41 |
| | 920 | 10 | 1,40 | 2,1 | 1,42 | 2,19 | 1,43 | 2,20 | 1,57 | 2,27 | 1,70 | 2,40 | 1,76 | 2,57 | 1,86 | 2,86 |
| | | 20 | 1,15 | 4,1 | 1,16 | 4,16 | 1,19 | 4,20 | 1,37 | 4,28 | 1,54 | 4,41 | 1,63 | 4,52 | 1,75 | 4,95 |
| | | 40 | - | - | 0,76 | 8,10 | 0,85 | 8,11 | 1,06 | 8,31 | 1,25 | 8,44 | 1,40 | 8,46 | 1,57 | 9,18 |
| | | 60 | - | - | 0,42 | 12,04 | 0,57 | 12,10 | 0,80 | 12,33 | 1,00 | 12,47 | 1,19 | 12,50 | 1,43 | 13,48 |
| | 1450 | 10 | 2,50 | 3,33 | 2,56 | 3,66 | 2,60 | 3,84 | 2,76 | 4,25 | 2,85 | 4,40 | 2,88 | 4,62 | 3,02 | 5,23 |
| | | 20 | 2,20 | 6,40 | 2,27 | 6,44 | 2,36 | 6,74 | 2,53 | 6,82 | 2,68 | 7,19 | 2,75 | 7,43 | 2,90 | 8,52 |
| | | 40 | 1,77 | 12,40 | 1,91 | 12,65 | 2,03 | 12,85 | 2,21 | 13,09 | 1,40 | 13,54 | 2,51 | 13,62 | 2,72 | 15,19 |
| | | 60 | - | - | 1,59 | 18,78 | 1,76 | 19,33 | 1,95 | 19,50 | 2,14 | 19,89 | 2,31 | 19,81 | 2,58 | 21,96 |
| | 2900 | 10 | 5,70 | 6,80 | 5,70 | 9,0 | 5,86 | 12,00 | 5,87 | 12,00 | 5,88 | 12,10 | 5,89 | 12,20 | 6,18 | 14,38 |
| | | 20 | 5,50 | 13,37 | 5,50 | 15,5 | 5,70 | 17,73 | 5,75 | 17,73 | 5,76 | 17,74 | 5,76 | 17,75 | 6,06 | 20,97 |
| | | 40 | 4,93 | 26,71 | 5,12 | 27,0 | 5,42 | 29,46 | 5,48 | 29,46 | 5,52 | 29,48 | 5,52 | 29,50 | 5,88 | 34,30 |
| | | 60 | 4,49 | 39,00 | 4,72 | 39,0 | 5,15 | 41,20 | 5,23 | 41,20 | 5,26 | 41,22 | 5,29 | 41,25 | 5,75 | 47,84 |

# Survey of models and performance data of three-screw pumps 50 Hz

| Pump model | Speed n min$^{-1}$ | Delivery pressure $p_{do}$ bar | Performance data with various viscosity values in ( mm$^2$.s$^{-1}$) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 12 | | 28 | | 37 | | 76 | | 150 | | 230 | | 380 | |
| | | | Q l.s$^{-1}$ | P kW | Q l.s$^{-1}$ | P kW | Q l.s$^{-1}$ | P kW | Q l.s$^{-1}$ | P kW | Q l.s$^{-1}$ | P kW | Q l.s$^{-1}$ | P kW | Q l.s$^{-1}$ | P kW |
| FAG FAH 80-FAC-60N FAD FACV FADV | 720 | 10 | 1,70 | 2,52 | 1,88 | 2,55 | 1,93 | 2,57 | 2,03 | 2,64 | 2,11 | 2,79 | 2,15 | 2,94 | 2,19 | 3,24 |
| | | 20 | - | - | 1,46 | 5,06 | 1,55 | 5,08 | 1,73 | 5,15 | 1,87 | 5,30 | 1,94 | 5,46 | 2,01 | 5,75 |
| | | 40 | - | - | - | - | 0,95 | 10,16 | 1,26 | 10,24 | 1,49 | 10,38 | 1,61 | 10,54 | 1,74 | 10,83 |
| | | 60 | - | - | - | - | - | - | - | - | - | - | 1,36 | 15,71 | 1,52 | 16,00 |
| | 920 | 10 | 2,37 | 3,22 | 2,55 | 3,28 | 2,60 | 3,31 | 2,70 | 3,43 | 2,78 | 3,66 | 2,82 | 3,92 | 2,86 | 4,40 |
| | | 20 | 1,82 | 6,44 | 2,13 | 6,49 | 2,22 | 6,52 | 2,40 | 6,64 | 2,54 | 6,88 | 2,61 | 7,13 | 2,68 | 7,61 |
| | | 40 | - | - | 1,47 | 12,98 | 1,62 | 13,01 | 1,93 | 13,14 | 2,16 | 13,37 | 2,28 | 13,63 | 2,41 | 14,11 |
| | | 60 | - | - | 0,96 | 19,58 | 1,16 | 19,61 | 1,56 | 19,74 | 1,87 | 19,97 | 2,03 | 20,23 | 2,19 | 20,71 |
| | 1450 | 10 | 4,15 | 5,12 | 4,32 | 5,24 | 4,37 | 5,32 | 4,47 | 5,62 | 4,55 | 6,21 | 4,59 | 6,84 | 4,63 | 8,03 |
| | | 20 | 3,60 | 10,18 | 3,91 | 10,30 | 3,99 | 10,38 | 4,18 | 10,68 | 4,31 | 11,27 | 4,39 | 11,91 | 4,46 | 13,10 |
| | | 40 | 2,72 | 20,42 | 3,25 | 20,55 | 3,40 | 20,62 | 3,70 | 20,93 | 3,94 | 21,51 | 4,06 | 22,15 | 4,18 | 23,34 |
| | | 60 | - | - | 2,74 | 30,94 | 2,93 | 31,02 | 3,34 | 31,33 | 3,65 | 31,91 | 3,81 | 32,55 | 3,97 | 33,74 |
| | 2900 | 10 | 9,01 | 10,42 | 9,18 | 10,93 | 9,45 | 11,57 | 9,48 | 12,45 | 9,50 | 14,80 | 9,52 | 17,34 | 9,49 | 20,09 |
| | | 20 | 8,45 | 20,55 | 8,76 | 21,05 | 9,19 | 21,96 | 9,25 | 22,57 | 9,29 | 24,92 | 9,32 | 27,46 | 9,32 | 32,22 |
| | | 40 | 7,58 | 41,03 | 8,10 | 41,53 | 8,77 | 41,90 | 8,85 | 43,06 | 8,90 | 45,40 | 8,95 | 47,94 | 9,04 | 52,70 |
| | | 60 | 6,90 | 61,83 | 7,59 | 62,33 | 8,44 | 61,11 | 8,50 | 63,86 | 8,55 | 66,20 | 8,60 | 68,74 | 8,83 | 73,50 |
| FAG FAH 100-FAC-70N FAD FACV FADV FAT FATV | 720 | 10 | 3,15 | 4,00 | 3,30 | 4,55 | 3,31 | 4,6 | 3,32 | 4,62 | 3,40 | 4,71 | 3,50 | 4,99 | 3,62 | 5,14 |
| | | 20 | 2,63 | 7,95 | 2,96 | 7,95 | 3,02 | 8,0 | 3,20 | 8,27 | 3,29 | 8,71 | 3,37 | 8,94 | 3,45 | 9,13 |
| | | 40 | - | - | 2,31 | 15,20 | 2,47 | 15,5 | 2,70 | 15,80 | 2,85 | 16,20 | 2,97 | 16,55 | 3,19 | 17,20 |
| | | 60 | - | - | 1,71 | 23,60 | 1,97 | 23,9 | 2,21 | 24,14 | 2,43 | 24,69 | 2,60 | 25,40 | - | - |
| | 920 | 10 | 4,22 | 5,12 | 4,39 | 6,13 | 4,43 | 6,19 | 4,54 | 6,21 | 4,61 | 6,23 | 4,64 | 6,54 | 4,68 | 6,99 |
| | | 20 | 3,69 | 10,22 | 4,03 | 11,06 | 4,11 | 11,16 | 4,27 | 11,25 | 4,37 | 11,34 | 4,43 | 11,62 | 5,51 | 12,08 |
| | | 40 | - | - | 3,39 | 20,91 | 3,55 | 21,11 | 3,78 | 21,33 | 3,93 | 21,55 | 4,03 | 221,79 | 4,25 | 22,40 |
| | | 60 | - | - | 2,79 | 30,77 | 3,05 | 31,06 | 3,33 | 31,41 | 3,52 | 31,76 | 03,65 | 31,96 | 4,05 | 32,88 |
| | 1450 | 10 | 7,04 | 8,12 | 7,05 | 8,71 | 7,19 | 8,71 | 7,60 | 9,98 | 7,62 | 10,10 | 7,63 | 10,39 | 7,65 | 12,76 |
| | | 20 | 6,51 | 16,16 | 6,75 | 16,44 | 6,90 | 16,44 | 7,31 | 17,88 | 7,33 | 18,25 | 7,34 | 18,60 | 7,35 | 20,79 |
| | | 40 | 5,68 | 31,60 | 6,10 | 31,89 | 6,31 | 31,89 | 6,84 | 33,11 | 6,87 | 33,60 | 6,90 | 34,00 | 7,07 | 37,06 |
| | | 60 | - | - | 5,45 | 47,17 | 5,73 | 47,17 | 6,42 | 48,94 | 6,47 | 49,15 | 6,52 | 50,32 | 6,87 | 53,57 |
| FAG FAH 100-FAC-80N FAD FACV FADV | 720 | 10 | 4,71 | 5,97 | 4,91 | 6,65 | 5,17 | 6,91 | 5,20 | 7,19 | 5,20 | 7,42 | 5,34 | 7,66 | 5,40 | 7,67 |
| | | 20 | 3,92 | 11,90 | 4,41 | 11,90 | 4,74 | 12,20 | 4,74 | 12,50 | 4,86 | 13,18 | 5,08 | 13,40 | 5,15 | 13,63 |
| | | 40 | - | - | 3,54 | 23,80 | 3,91 | 24,00 | 4,06 | 24,40 | 4,24 | 24,68 | 4,56 | 24,89 | 4,76 | 25,68 |
| | | 60 | - | - | 2,75 | 36,30 | 3,11 | 36,61 | 3,37 | 36,70 | 3,63 | 36,88 | 4,04 | 36,94 | - | - |
| | 920 | 10 | 6,30 | 7,64 | 6,51 | 9,32 | 6,76 | 9,54 | 6,79 | 9,82 | 6,85 | 10,01 | 6,90 | 10,41 | 6,99 | 10,43 |
| | | 20 | 5,51 | 15,25 | 6,01 | 16,76 | 6,48 | 17,70 | 6,74 | 17,80 | 6,80 | 17,90 | 6,82 | 18,00 | 6,83 | 18,10 |
| | | 40 | - | - | 5,14 | 31,65 | 5,60 | 32,60 | 5,70 | 32,60 | 5,81 | 32,80 | 6,12 | 33,00 | 6,35 | 33,44 |
| | | 60 | - | - | 4,35 | 46,54 | 4,81 | 48,40 | 5,00 | 51,20 | 5,20 | 51,50 | 5,59 | 52,00 | 6,04 | 52,10 |
| | 1450 | 10 | 10,51 | 12,13 | 10,74 | 13,63 | 10,67 | 13,65 | 10,99 | 15,23 | 11,20 | 17,76 | 11,30 | 18,83 | 11,32 | 19,04 |
| | | 20 | 9,72 | 24,12 | 10,37 | 25,50 | 10,42 | 25,50 | 10,82 | 27,00 | 11,03 | 29,35 | 11,20 | 30,38 | 11,22 | 31,04 |
| | | 40 | 8,48 | 48,40 | 9,57 | 48,90 | 9,92 | 48,90 | 10,26 | 51,00 | 10,30 | 52,52 | 10,60 | 53,49 | 10,62 | 55,32 |
| | | 60 | - | - | 8,82 | 72,90 | 9,42 | 72,92 | 9,77 | 74,40 | 10,00 | 75,69 | 10,30 | 76,59 | 10,32 | 79,97 |
| FAG FAH 125-FAC-90N FAD FACV FADV | 720 | 10 | 6,71 | 8,49 | 7,06 | 8,60 | 7,16 | 8,66 | 7,36 | 8,92 | 7,52 | 9,40 | 7,60 | 9,93 | 7,69 | 10,92 |
| | | 20 | 5,59 | 16,98 | 6,21 | 17,08 | 6,39 | 17,14 | 6,76 | 17,40 | 7,04 | 17,89 | 7,19 | 18,41 | 7,33 | 19,40 |
| | | 40 | - | - | 4,88 | 34,24 | 5,18 | 34,31 | 5,80 | 34,56 | 6,28 | 35,05 | 6,52 | 35,58 | 6,77 | 36,57 |
| | | 60 | - | - | - | - | 4,24 | 51,73 | 5,06 | 51,99 | 5,68 | 52,48 | 6,01 | 53,00 | - | - |
| | 920 | 10 | 8,97 | 10,88 | 9,32 | 11,05 | 9,42 | 11,16 | 9,63 | 11,57 | 9,78 | 12,37 | 9,87 | 13,23 | 9,95 | 14,85 |
| | | 20 | 7,85 | 21,72 | 8,48 | 21,89 | 8,65 | 21,99 | 9,02 | 22,41 | 9,30 | 23,21 | 9,45 | 24,07 | 9,59 | 25,68 |
| | | 40 | - | - | 7,14 | 43,82 | 7,44 | 43,92 | 8,06 | 44,34 | 8,54 | 45,14 | 8,79 | 46,00 | 9,03 | 47,61 |
| | | 60 | - | - | - | - | 6,50 | 66,19 | 7,32 | 66,61 | 7,94 | 67,40 | 8,27 | 68,27 | - | - |
| | 1450 | 10 | 14,96 | 17,27 | 15,31 | 17,70 | 15,78 | 19,03 | 15,90 | 19,50 | 16,00 | 20,96 | 16,10 | 23,10 | 15,94 | 27,12 |
| | | 20 | 13,84 | 34,35 | 14,47 | 34,78 | 15,20 | 35,79 | 15,29 | 36,58 | 15,35 | 38,04 | 15,45 | 40,18 | 15,59 | 44,20 |
| | | 40 | 12,07 | 68,91 | 13,13 | 69,34 | 14,30 | 70,05 | 14,35 | 71,14 | 14,5 | 72,60 | 14,78 | 74,75 | 15,03 | 78,76 |
| | | 60 | - | - | 12,09 | 104,44 | 13,65 | 103,98 | 13,70 | 106,24 | 13,94 | 107,70 | 14,26 | 109,84 | 14,59 | 113,86 |

Performace data being given above are valid for manometric pressure in the pump inlet section $p_{s\ man}$ = 0 bar.
For „FAT“ pumps $p_{perm.max.}$ = 40 bar is valid.

**Q** ..... pump capacity; **P** ..... pump power input. Driving motor power output shall be selected with a reasonable reserve, according to the pump running-in condition and its operational conditions, e.g. higher initial viscosity, long-run and/or continuous operations, and so on.
Permissible underpressure with speed ranging from 1,000 to 1,700 min$^{-1}$ and kinematic viscosity values from 21.5 to 380 mm$^2$.s$^{-1}$ is 0.5 bar.
With other speed and viscosity values it shall be solved individually.
Max. inflow for a pump in standard workmanship is 0.5 bar. With the pump special modification there $p_{s\ man}$ may be 6 bar.
Viscosity values of a pumped liquid may range from 21.5 to 380 mm$^2$.s$^{-1}$ commonly. According to values of suction and delivery pressure and speed there viscosities may range from 2.5 mm$^2$.s$^{-1}$ to 1.500 mm$^2$.s$^{-1}$.