

Process Pump

RPH

Type Series Booklet



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Type Series Booklet RPH

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Centrifugal Pumps with Shaft Seal

Process Pumps

RPH



Main applications

Pump for handling the large variety of crude oil products in refineries as well as in the chemical and petrochemical industry.

- Refineries
- Chemical industry
- Petrochemical industry

Operating data

Operating properties

| Characteristic | | Value |
|----------------------------------|---|---|
| Flow rate | Q | Up to 4150 m ³ /h |
| Head | H | Up to 270 m |
| Operating temperature | T | -70 °C to +450 °C |
| Operating pressure ¹⁾ | p | Up to 51 bar (at 20 °C) (ASME B 16.5 class 300) for A 216 Grade WBC |

Designation

Example: RPH-H-I S1 80-280B

Key to the designation

| Code | Description |
|------|---|
| RPH | Type series |
| H | Heatable model |
| I | Version with auxiliary impeller (inducer) |
| S1 | Material variant to API 610 |
| 80 | Nominal discharge nozzle diameter [mm] |

¹⁾ Higher pressures and flange pressure ratings on request

| Code | Description |
|------|-----------------------------------|
| 280 | Nominal impeller diameter [mm] |
| B | Special hydraulic system (type B) |

Design details

Design

- Volute casing pump
- Horizontal installation
- Back pull-out design
- Single-stage
- Meets technical requirements to API 610, 11th edition / ISO 13709

Pump casing

- Volute casing with integrally cast pump feet
- Centreline pump feet
- Single or double volute, depending on the pump size
- Radially split volute casing
- Axial inlet nozzle, tangential discharge nozzle pointing vertically upwards.
(From DN 250 / from impeller diameter 500 / pump size 200-401: radial discharge nozzle pointing vertically upwards)
- Volute casing with casing wear ring
- Casing cover (with casing wear ring, as required)

Optional:

- Casing and casing cover heatable/coolable, depending on size

Impeller type

- Closed radial impeller
- Impeller with impeller wear ring on the suction side (if required also on the discharge side)
- Sealing gap and balancing holes balance axial forces.

Optional:

- Inducer to improve the NPSH value

Shaft seal

- Cartridge seal to API 682

Bearings

- Uncooled

Optional:

- Cooled bearing bracket

Drive-end bearing:

- Fixed bearing
- Paired angular contact ball bearings
- Oil bath lubrication
- **Optional:** oil mist lubrication

Pump-end bearing:

- Radial bearing

- Cylindrical roller bearing
- Absorbs radial loads only
- Oil bath lubrication
- **Optional:** oil mist lubrication

Bearing bracket designation

Example: B03

Bearing bracket designation

| Designation | Description |
|-------------|---|
| B | Back pull-out bearing bracket |
| 03 | Size code (based on dimensions of seal chamber, shaft end and bearings) |

Bearings used

Bearing design

| KSB designation | FAG designation | SKF designation |
|-----------------|-----------------|-----------------|
| B.MUA | B-MP-UA | BECBM |

Standard bearing assembly

| Bearing bracket | Rolling element bearings | |
|-----------------|--------------------------|---------------|
| | Pump end | Motor end |
| B02 | NU211C3 | 2 x 7309B-MUA |
| B03 | NU213C3 | 2 x 7311B-MUA |
| B05 | NU316C3 | 2 x 7315B-MUA |
| B06 | NU324C3 | 2 x 7224B-MUA |
| B07 | NU324C3 | 2 x 7324B-MUA |

Reinforced bearing assembly (triple bearing assembly)

| Bearing bracket | Rolling element bearings | |
|-----------------|--------------------------|---------------|
| | Pump end | Motor end |
| B02 | NU211C3 | 3 x 7309B-MUA |
| B03 | NU213C3 | 3 x 7311B-MUA |
| B05 | NU316C3 | 3 x 7315B-MUA |
| B06 | NU324C3 | 3 x 7224B-MUA |
| B07 | NU324C3 | 3 x 7324B-MUA |

Bearing life

The calculated minimum bearing life is:

- 25,000 h to API 610

Materials

Materials

| Part No. | Description | Design | | | | | | |
|----------|-------------------------|------------------|--|--|--------|-----------------------------|--|-----|
| | | S1 ²⁾ | S5 ³⁾⁴⁾ | S6 | S8 | A8 | C6 | D1 |
| 102 | Volute casing | CS | | | | 316AUS | 12Cr | DSS |
| 161 | Casing cover (uncooled) | CS | | | | 316AUS | 12Cr | DSS |
| | Casing cover (cooled) | CS | | | | 316AUS | 12Cr | DSS |
| 210 | Shaft ⁵⁾ | CS | 12Cr+H ³⁾ 4140AS ⁴⁾ | 12Cr+H ²⁾³⁾ 4140AS ⁴⁾ | DSS | DSS 316AUS ⁴⁾ | 12Cr+H ²⁾³⁾ 12Cr ⁴⁾ | DSS |
| 230 | Impeller | CI | CS | 12Cr | 316AUS | 316AUS | 12Cr | DSS |

2) Europe

3) Asia

4) Americas

5) Above 250 °C: CrMo; -10 °C to 250 °C: CS; -40 °C to +300 °C: DSS

| Part No. | Description | Design | | | | | | |
|---------------|-------------------------------|--|--------------------------------|--------|---|--------------------------------|----------------------------|------------------|
| | | S1 ²⁾ | S5 ³⁾⁴⁾ | S6 | S8 | A8 | C6 | D1 |
| 330 | Bearing bracket | CS | | | | | | |
| 411.10 | Joint ring | AUS/ graphite | | | | | | DSS/ graphite |
| 502.01/02 | Casing wear ring | 27Cr | 27Cr 12Cr+H ³⁾⁴⁾ | 316AUS | 316AUS 316AUS+HF ³⁾ 12Cr ⁴⁾ | 27Cr 12Cr+H ³⁾⁴⁾ | AUS DSS ³⁾⁴⁾ | |
| 503.01/02 | Impeller wear ring | 12Cr+H | 12Cr+H | 316AUS | 316AUS 12Cr ⁴⁾ | 12Cr+H | AUS DSS ³⁾⁴⁾ | |
| 542.02 | Throttling bush | 12Cr+H | 12Cr+H 12Cr ⁴⁾ | 316AUS | | 12Cr+H 12Cr ⁴⁾ | AUS DSS ³⁾⁴⁾ | |
| 902.01/920.01 | Casing screws/ hexagon nut | CrMoV / CrMo 4140AS ³⁾⁴⁾ | | | | | | |

Material variant for pump components

| Description | Material class | Material | | |
|------------------------------------|----------------|------------------------------|------------------------------------|---------------------------|
| | | Europe | Asia | Americas |
| Cast components, general | CI | JS1025 | - | - |
| | CS | A216 Gr WCB | A216 Gr WCB | A216 Gr WCB |
| | 316AUS | 1.4408 1.4409 | A743 Gr CF3M A743 Gr CF8M | A743 Gr CF8M |
| | 12Cr | 1.4008 | A743 Gr CA6NM | A743 Gr CA6NM |
| | 27Cr | VG434 | - | - |
| | DSS | 1.4593 A890 Gr 1B | A890 Gr 1B | A890 Gr 1B |
| Pressure-retaining cast components | CS | A216 Gr WCB | A216 Gr WCB | A216 Gr WCB |
| | 316AUS | A351 Gr CF3M A351 Gr CF8M | A351 Gr CF3M A351 Gr CF8M | A351 Gr CF8M |
| | 12Cr | A217 Gr CA15 | A487 Gr CA6NM | A487 Gr CA6NM |
| | DSS | 1.4593 A995 Gr 1B | A995 Gr 1B | A995 Gr 1B |
| Bar stock (shaft) | CS | C45+N | - | - |
| | CrMo | 1.7709 | - | - |
| | 316AUS | - | - | A276 Type 316 |
| | 4140AS | - | - | A434 Cl. BB |
| | 12Cr | - | - | A276 Type 420 |
| | 12Cr+H | 1.4021+QT700 | A276 Type 410 H&T | - |
| Bar stock | DSS | 1.4462 | AISI 329 1.4462 | 1.4462 |
| | AUS | 1.4539 | - | - |
| | 316AUS | 1.4571 | A 276 Type 316 | AISI 316 A276 Type 316 |
| | 12Cr | - | - | AISI 420 A276 Type 420 |
| | 12Cr+H | 1.4027+QT | 1.4024.19 A276 Type 410 H&T | AISI 420 Hard |
| | DSS | 1.4462 | AISI 329 1.4462 | 1.4462 |
| Screw/bolt/stud | 316AS+HF | - | A743 Gr CF8M + Colmonoy Coating | - |
| | 4140AS | - | A193 Gr B7 | A193 Gr B7 |
| Nut | CrMo | 1.7709 | - | - |
| | 4140AS | - | A194 Gr 2H | A194 Gr 2H |
| | CrMo | 1.7258 | - | - |

- 2) Europe
3) Asia
4) Americas

Abbreviations used

| Abbreviation | Material |
|--------------|--|
| CI | Cast iron |
| CS | Unalloyed steel |
| 316AUS | Austenitic stainless steel >2 % molybdenum |
| 12Cr | 12 % chrome steel |
| 27Cr | 27 % chrome steel |
| DSS | Duplex stainless steel |
| 4140AS | 4140 alloyed steel |
| +H | Hardened |
| +HF | Hard-faced |

Table of comparison of materials

| Material type | Code | Material No. | Standard | Closest ASTM equivalent |
|----------------------------------|---|---------------|--|-------------------------|
| Cast iron | GJS-400-15 | JS1030 | EN 1563 | A 536 Grade 60-40-18 |
| | GJS-400-18-LT | JS1025 | EN 1563 | A 536 |
| | GJL-250 | JL1040 | EN 1561 | A 48 Class 30 |
| Cast steel | GP240GH+N | 1.0619+N | EN 10213-2 | A 216 Grade WCB |
| Cast stainless steel | GX5CrNiMo19-11-2 | 1.4408 | EN 10213-4 | A 351 Grade CF8M |
| | GX5CrNiMo19-11-2 | 1.4408 | EN 10213 | A 743 Grade CF8M |
| | GX2CrNiMo19-11-2 | 1.4409 | EN 10213-4 | A 351 Grade CF3M |
| | GX2CrNiMo19-11-2 | 1.4409 | EN 10213 | A 743 Grade CF3M |
| | GX3CrNiMoCuN24-6-2-3 | 1.4593 | - | - |
| | GX2CrNiMoCuN25-6-3-3 | 1.4517 | EN 10213 | - |
| Cast chrome steel | GX20Cr 14+QT | 1.4027+QT | SEW 410 | A 743 Grade CA15 |
| | GX35CrNiMo25-4 | VG 434 | KSB materials data sheet Material identification code 2800 | - |
| | GX7CrNiMo12-1 | 1.4008 | EN 10283 | A 743 Grade CA15 |
| | GX8CrNi12 | 1.4107 | EN 10213-2 | A 217 Grade CA15 |
| | GXZ5CrNi13-4 | 1.4317 | EN 10213-2 | A 487 CA6NM |
| | GXZ5CrNi13-4 | 1.4317 | EN 10283 | A 743 CA6NM |
| Stainless steel | X6CrNiMoTi17-12-2 | 1.4571 | EN 10088 | A 276 Type 316Ti |
| | X2CrNiMoN22-5-3 | 1.4462 | EN 10088 | A 182 Grade F51 |
| Chrome steel | X20Cr13+QT700 | 1.4021+QT700 | EN 10088 | A 276 Type 420 |
| | X20Cr13 | 1.4021 | EN 10088 | AISI 420 Hard |
| | X15Cr13 | 1.4024.19 | KSB materials data sheet Material identification code 1219 | A 276 Type 410 |
| | X29CrS13 | 1.4029 | EN 10088 | - |
| | X12Cr13 | 1.4006 | EN 10088 | A 276 Type 410 H&T |
| | X5CrNiMo17-12-2 | 1.4401 | EN 10088 | A 276 Type 316 |
| | X4CrNiMoN27-5-2 | 1.4460 | EN 10088 | AISI 329 |
| | X2CrNiMoN17-13-3 | 1.4429 | EN 10088 | A 276 Type 316L |
| | Steel which is creep-resistant at elevated temperatures | 21CrMoV5-7+QT | 1.7709+QT | EN 10269 |
| P355GH | | 1.0566 | EN 10028-3 | |
| Carbon steel | C45+N | 1.0503+N | EN 10083 | A 576 Grade 1045 |
| | C22+N | 1.0402+N | EN 10083 | A 576 Grade 1020 |
| Cast stainless steel, hard-faced | GX5CrNiMo19-11-Colm.6 | 1.4408-Colm.6 | - | A 743 Grade CF8M-Colm.6 |

Coating and preservation

- Coating and preservation to KSB standard

Product benefits

- Double volute from DN 80 (3 in.): low radial load and less shaft deflection for longer service life of bearings and mechanical seal
- Easy to service thanks to back pull-out design

- Heatable casing covers optionally available for high-temperature applications
- Wide variety of flanges to all standards up to PN 100 equivalent (ASME Class 600)
- Max. shaft diameter in acc. with API 610 makes for very long service life of mechanical seal
- Dimensioned for longer service life than specified by API 610, reducing maintenance expenditure and work
- Tandem bearing arrangement optionally available to absorb high axial forces

- Cast steel bearing brackets with integrated cooling fins enable higher fluid temperatures and reduce bearing temperatures.
- Optional fan impeller: no cooling water supply required for high temperatures
- Seal chamber to API 610 accommodates all mechanical seals to API 682.
- Individual adjustment of axial thrust balancing for maximum bearing life
- "Low Nss hydraulic systems" (inducer on option) for optimum selection to API

Acceptance tests / Warranties

- Materials testing
 - Test report 2.2 on request
 - Test report 3.1 on request
- Final inspection
 - Inspection certificate 3.1 to EN 10204 on request
- Hydraulic test

The operating point of each pump is warranted according to ISO 9906/2B.

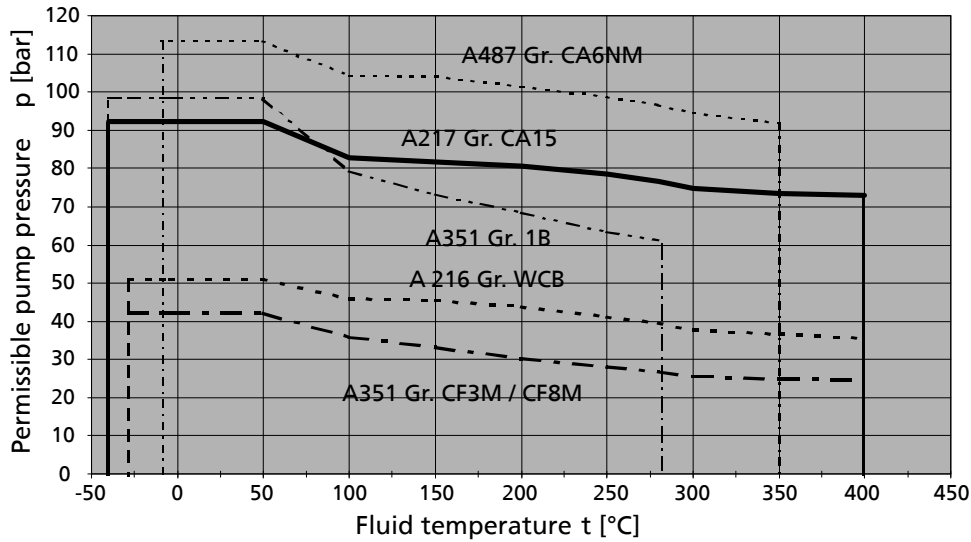
The following acceptance tests may be performed and certified at extra charge:

 - Performance test to ISO 9906
 - Performance test to API (API 610)
 - NPSH test
- Other tests (e.g. vibrations, strength) on request.
- Warranty

Warranties are given within the scope of the valid delivery conditions.

Pressure and temperature limits

Average values – the values of individual pump sizes may be higher or lower than the values indicated. (Contact KSB!)



Pressure and temperature limits of pump

Sizes

Nominal impeller diameters available

| Nominal diameter of the discharge nozzle | Nominal impeller diameter | | | | | | | | | | | | | | | | | |
|--|---------------------------|-----|-----------------|-----|-----------------|-----|-----------------|-----|-------------------|-------------------|-----------------|---------------------|-------------------|---------------------|---------------------|---------------------|-------------------|---------------------|
| | 180 | 181 | 230 | 231 | 280 | 281 | 360 | 361 | 400 | 401 | 450 | 500 | 501 | 504 | 506 | 630 | 670 | 710 |
| 25 | X | - | X | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 40 | X | X | X | X | X | X | - | X | - | - | - | - | - | - | - | - | - | - |
| 50 | X | - | X ⁶⁾ | - | X ⁶⁾ | - | X ⁶⁾ | - | - | - | X ⁶⁾ | - | - | - | - | - | - | - |
| 80 | X | - | X ⁶⁾ | - | X ⁶⁾ | - | X ⁶⁾ | - | - | - | X ⁶⁾ | - | - | - | - | - | - | - |
| 100 | X | - | X ⁶⁾ | - | X ⁶⁾ | - | X ⁶⁾ | - | - | - | X ⁶⁾ | - | - | - | - | - | - | - |
| 150 | - | - | X ⁶⁾ | - | X ⁶⁾ | - | X ⁶⁾ | - | - | X ⁶⁾⁷⁾ | X ⁶⁾ | - | X ⁶⁾⁷⁾ | - | - | X ⁶⁾⁷⁾ | - | - |
| 200 | - | - | - | - | X ⁶⁾ | - | X ⁶⁾ | - | - | X ⁶⁾⁷⁾ | X ⁶⁾ | - | X ⁶⁾⁷⁾ | - | - | - | X ⁶⁾⁷⁾ | - |
| 250 | - | - | - | - | - | - | - | - | - | X ⁶⁾⁷⁾ | - | - | X ⁶⁾⁷⁾ | - | - | X ⁶⁾⁷⁾ | - | X ⁶⁾⁷⁾ |
| 300 | - | - | - | - | - | - | - | - | X ⁶⁾⁷⁾ | - | - | X ⁶⁾⁷⁾ | - | - | - | X ⁶⁾⁷⁾ | - | X ⁶⁾⁷⁾⁸⁾ |
| 350 | - | - | - | - | - | - | - | - | X ⁶⁾⁷⁾ | - | - | X ⁶⁾⁷⁾⁸⁾ | - | - | - | X ⁶⁾⁷⁾⁸⁾ | - | X ⁶⁾⁷⁾⁸⁾ |
| 400 | - | - | - | - | - | - | - | - | - | - | - | - | - | X ⁶⁾⁷⁾⁸⁾ | X ⁶⁾⁸⁾⁹⁾ | X ⁶⁾⁷⁾⁸⁾ | - | X ⁶⁾⁷⁾⁸⁾ |

- 6) Casing with double volute
- 7) Complementary sizes: only in combination with 4-pole drive
- 8) Size on request
- 9) Complementary sizes: only in combination with 6-pole drive

Technical data

Bearing brackets B02S - B06

| Size | Bearing bracket ¹⁰⁾ | Impeller | | | | Shaft diameter | | | | Drive | | | | |
|---------|--------------------------------|-----------------------|-------------------------|-------------------|------|-----------------|-------------|--------------------------|-------------|--------------------------|-----------------------|-----------------------|--------------|--------------|
| | | Impeller outlet width | Impeller inlet diameter | Impeller diameter | | In seal chamber | At bearings | | At coupling | P/n value ¹¹⁾ | Max. drive power at | | | |
| | | | | Max. | Min. | | Pump end | Drive end ¹²⁾ | | | n = 1450 rpm | n = 1750 rpm | n = 2900 rpm | n = 3500 rpm |
| | | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | [mm] | | [kW] | [kW] | [kW] | [kW] |
| 25-180 | BS02S | 6 | 48 | 179 | 120 | 50 | 55 | 45 | 32 | 0,0226 | 32,77 | 39,55 | 65,54 | 79,10 |
| 25-230 | BS02S | 6 | 48 | 224 | 180 | 50 | 55 | 45 | 32 | 0,0226 | 32,77 | 39,55 | 65,54 | 79,10 |
| 40-180 | BS02S | 6 | 58 | 180 | 130 | 50 | 55 | 45 | 32 | 0,0226 | 32,77 | 39,55 | 65,54 | 79,10 |
| 40-230 | BS02S | 6,2 | 57 | 224 | 1 | 50 | 55 | 45 | 32 | 0,0226 | 32,77 | 39,55 | 65,54 | 79,10 |
| 40-181 | BS02L | 7,8 | 75 | 180 | 130 | 50 | 55 | 45 | 32 | 0,0334 | 48,43 | 58,45 | 96,86 | 116,90 |
| 40-231 | BS02L | 7,7 | 75 | 230 | 180 | 50 | 55 | 45 | 32 | 0,0334 | 48,43 | 58,45 | 96,86 | 116,90 |
| 40-280 | BS02L | 7,5 | 61 | 278 | 220 | 50 | 55 | 45 | 32 | 0,0334 | 48,43 | 58,45 | 96,86 | 116,90 |
| 40-281 | BS02L | 7,7 | 71 | 278 | 230 | 50 | 55 | 45 | 32 | 0,0334 | 48,43 | 58,45 | 96,86 | 116,90 |
| 40-361 | BS02L | 7,9 | 69 | 343 | 280 | 50 | 55 | 45 | 32 | 0,0334 | 48,43 | 58,45 | 96,86 | 116,90 |
| 50-180 | BS02L | 10,9 | 88 | 180 | 140 | 50 | 55 | 45 | 32 | 0,0334 | 48,43 | 58,45 | 96,86 | 116,90 |
| 50-230 | B03 | 10 | 95 | 230 | 180 | 60 | 65 | 55 | 42 | 0,0675 | 97,88 | 118,13 | 195,75 | 236,25 |
| 50-280 | B03 | 9,6 | 93 | 286 | 230 | 60 | 65 | 55 | 42 | 0,0675 | 97,88 | 118,13 | 195,75 | 236,25 |
| 50-360 | B03 | 9,6 | 88 | 343 | 280 | 60 | 65 | 55 | 42 | 0,0675 | 97,88 | 118,13 | 195,75 | 236,25 |
| 50-450 | B03 | 10 | 87 | 430 | 340 | 60 | 65 | 55 | 42 | 0,0675 | 97,88 | 118,13 | 195,75 | 236,25 |
| 80-180 | B03 | 17 | 110 | 190 | 140 | 60 | 65 | 55 | 42 | 0,0675 | 97,88 | 118,13 | 195,75 | 236,25 |
| 80-230 | B03 | 14 | 113 | 235 | 190 | 60 | 65 | 55 | 42 | 0,0675 | 97,88 | 118,13 | 195,75 | 236,25 |
| 80-280 | B03 | 12,5 | 110 | 286 | 230 | 60 | 65 | 55 | 42 | 0,0675 | 97,88 | 118,13 | 195,75 | 236,25 |
| 80-360 | B03 | 11,5 | 111 | 350 | 280 | 60 | 65 | 55 | 42 | 0,0675 | 97,88 | 118,13 | 195,75 | 236,25 |
| 80-450 | B05S | 12 | 110 | 430 | 350 | 80 | 80 | 75 | 60 | 0,2141 | 311,32 | 375,73 | 622,63 | 751,45 |
| 100-180 | B03 | 28 | 133 | 190 | 150 | 60 | 65 | 55 | 42 | 0,0675 | 97,88 | 118,13 | 195,75 | 236,25 |
| 100-230 | B03 | 22,3 | 128 | 235 | 190 | 60 | 65 | 55 | 42 | 0,0675 | 97,88 | 118,13 | 195,75 | 236,25 |
| 100-280 | B03 | 17,8 | 130 | 295 | 230 | 60 | 65 | 55 | 42 | 0,0675 | 97,88 | 118,13 | 195,75 | 236,25 |
| 100-360 | B05S | 15,5 | 136 | 355 | 295 | 80 | 80 | 75 | 60 | 0,2141 | 311,32 | 375,73 | 622,63 | 751,45 |
| 100-450 | B05S | 14,5 | 140 | 440 | 355 | 80 | 80 | 75 | 60 | 0,2141 | 311,32 | 375,73 | 622,63 | 751,45 |
| 150-230 | B03 | 35 | 161 | 240 | 190 | 60 | 65 | 55 | 42 | 0,0675 | 97,88 | 118,13 | 195,75 | 236,25 |
| 150-280 | B05S | 28,5 | 164 | 295 | 230 | 80 | 80 | 75 | 60 | 0,2141 | 311,32 | 375,73 | 622,63 | 751,45 |
| 150-360 | B05S | 22 | 160 | 365 | 295 | 80 | 80 | 75 | 60 | 0,2141 | 311,32 | 375,73 | 622,63 | 751,45 |
| 150-450 | B05L | 19,5 | 171 | 450 | 360 | 80 | 80 | 75 | 60 | 0,3259 | 472,56 | 570,33 | 945,11 | 1140,65 |
| 150-501 | B05L | 23 | 190 | 504 | 400 | 80 | 80 | 75 | 60 | 0,3259 | 472,56 | 570,33 | - | - |
| 150-630 | B06 | 20,9 | 201,9 | 636 | 520 | 100 | 120 | 120 | 95 | 0,8514 | 1234,53 | 1489,95 | - | - |
| 200-280 | B05S | 43,1 | 198 | 295 | 235 | 80 | 80 | 75 | 60 | 0,2141 | 311,32 | 375,73 | 622,63 | 751,45 |
| 200-360 | B05L | 35,5 | 204 | 360 | 295 | 80 | 80 | 75 | 60 | 0,3259 | 472,56 | 570,33 | 945,11 | 1140,65 |
| 200-401 | B05L | 40 | 222 | 408 | 320 | 80 | 80 | 75 | 60 | 0,3259 | 472,56 | 570,33 | - | - |
| 200-450 | B05L | 28 | 204 | 456 | 360 | 80 | 80 | 75 | 60 | 0,3259 | 472,56 | 570,33 | 945,11 | 1140,65 |
| 200-501 | B05L | 32 | 222 | 509 | 400 | 80 | 80 | 75 | 60 | 0,3259 | 472,56 | 570,33 | - | - |
| 200-670 | B06 | 26 | 220 | 690 | 530 | 100 | 120 | 120 | 95 | 0,8514 | 1234,53 | 1489,95 | - | - |
| 250-401 | B05L | 63 | 294 | 404 | 320 | 80 | 80 | 75 | 60 | 0,3259 | 472,56 | 570,33 | - | - |
| 250-501 | B05L | 43 | 280 | 504 | 400 | 80 | 80 | 75 | 60 | 0,3259 | 472,56 | 570,33 | - | - |
| 250-630 | B06 | 38 | 275 | 630 | 515 | 100 | 120 | 120 | 95 | 0,8514 | 1234,53 | 1489,95 | - | - |
| 250-710 | B06 | 38 | 275 | 719 | 520 | 100 | 120 | 120 | 95 | 0,8514 | 1234,53 | 1489,95 | - | - |
| 300-400 | B05L | 68 | 294 | 404 | 353 | 80 | 80 | 75 | 60 | 0,3259 | 472,56 | 570,33 | - | - |
| 300-500 | B05L | 58 | 320 | 504 | 410 | 80 | 80 | 75 | 60 | 0,3259 | 472,56 | 570,33 | - | - |
| 300-630 | B06 | 59 | 317 | 638 | 548 | 100 | 120 | 120 | 95 | 0,8514 | 1234,53 | 1489,95 | - | - |
| 350-400 | B06 | 115,4 | 337 | 408 | 380 | 100 | 120 | 120 | 95 | 0,4530 | 656,70 | 792,60 | - | - |
| 400-506 | B07 | 106,4 | 400 | 560 | 450 | 120 | 120 | 120 | 95 | 1,2357 | 1186,3 ¹³⁾ | 1421,1 ¹³⁾ | - | - |

10) Coolable on request

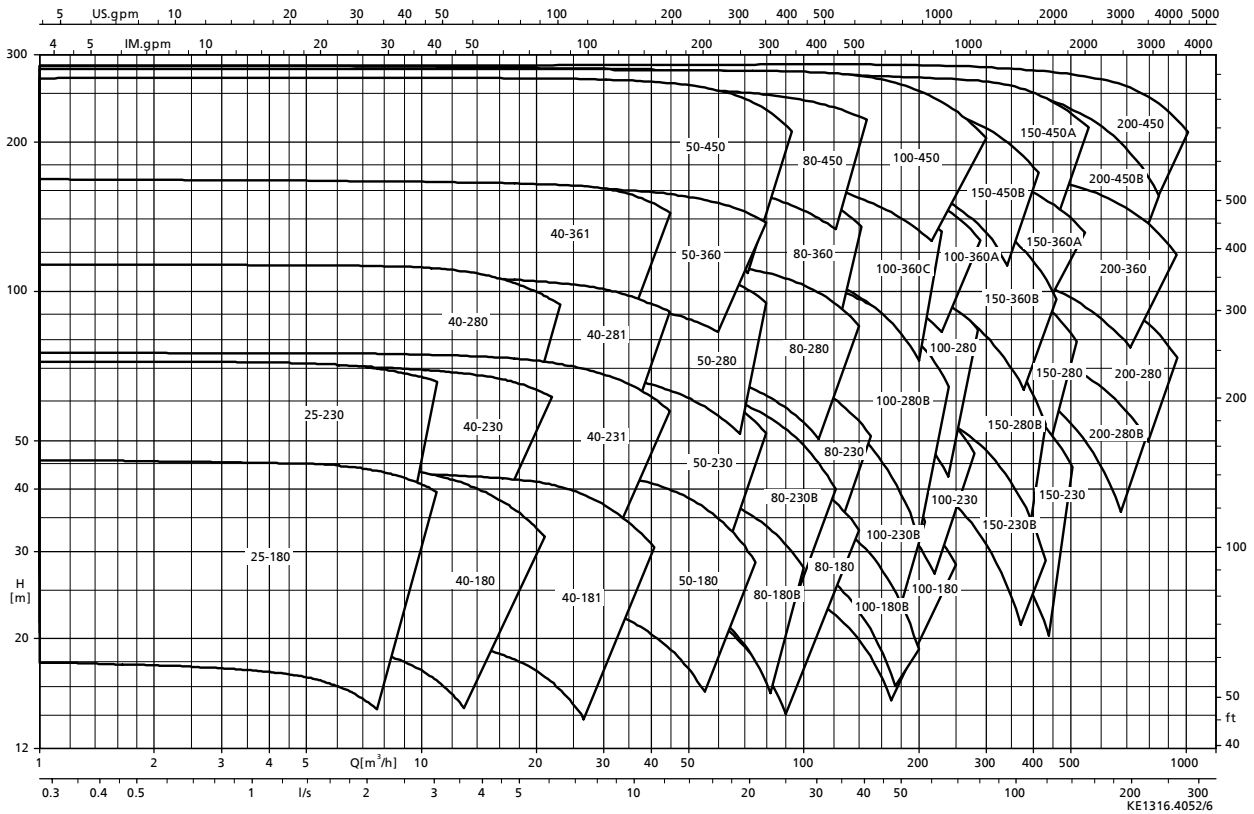
11) Values indicated refer to shaft in material C45+N, key in C45+K, impeller in JS1025 and T < 100 °C; for other materials and higher temperatures contact KSB.

12) For triple bearing assembly: 3 identical bearings as indicated, for high inlet pressures

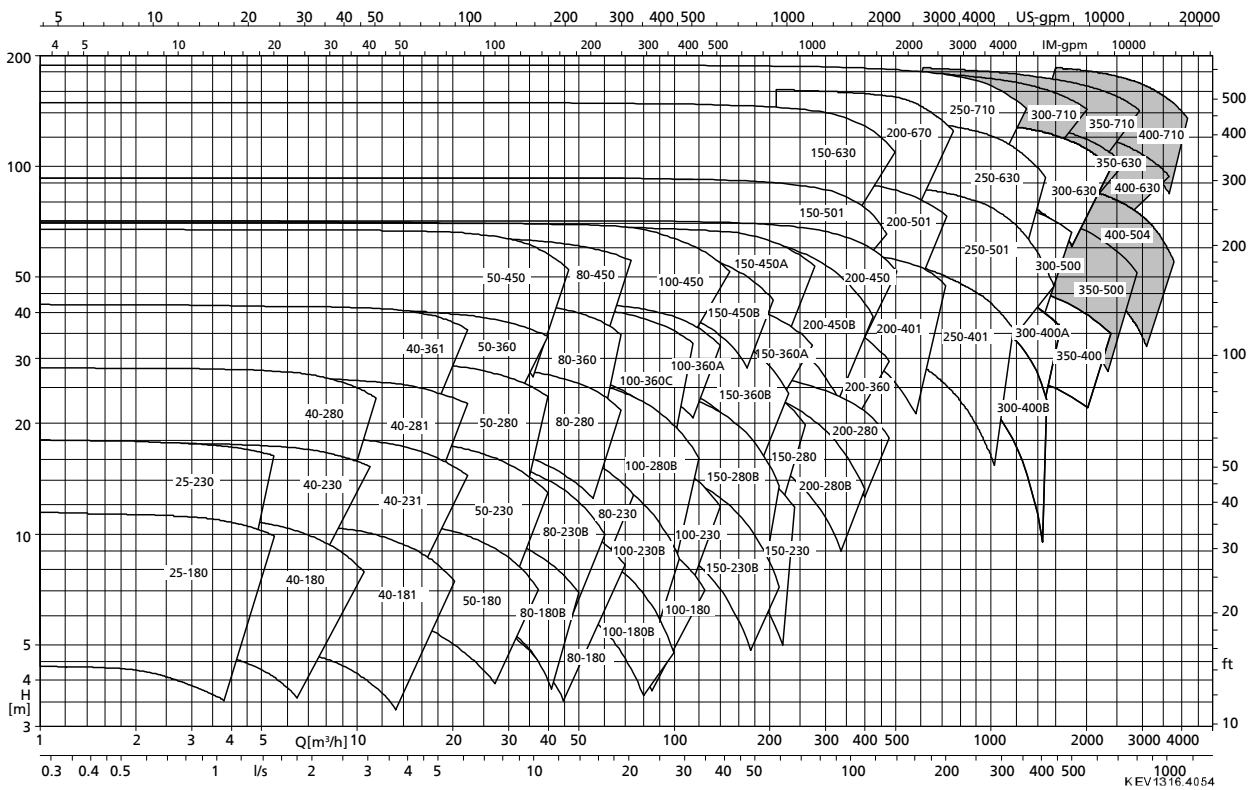
13) Only 6-pole operation is permissible for 960 rpm or 1150 rpm.

Selection charts

RPH, n = 2900 rpm

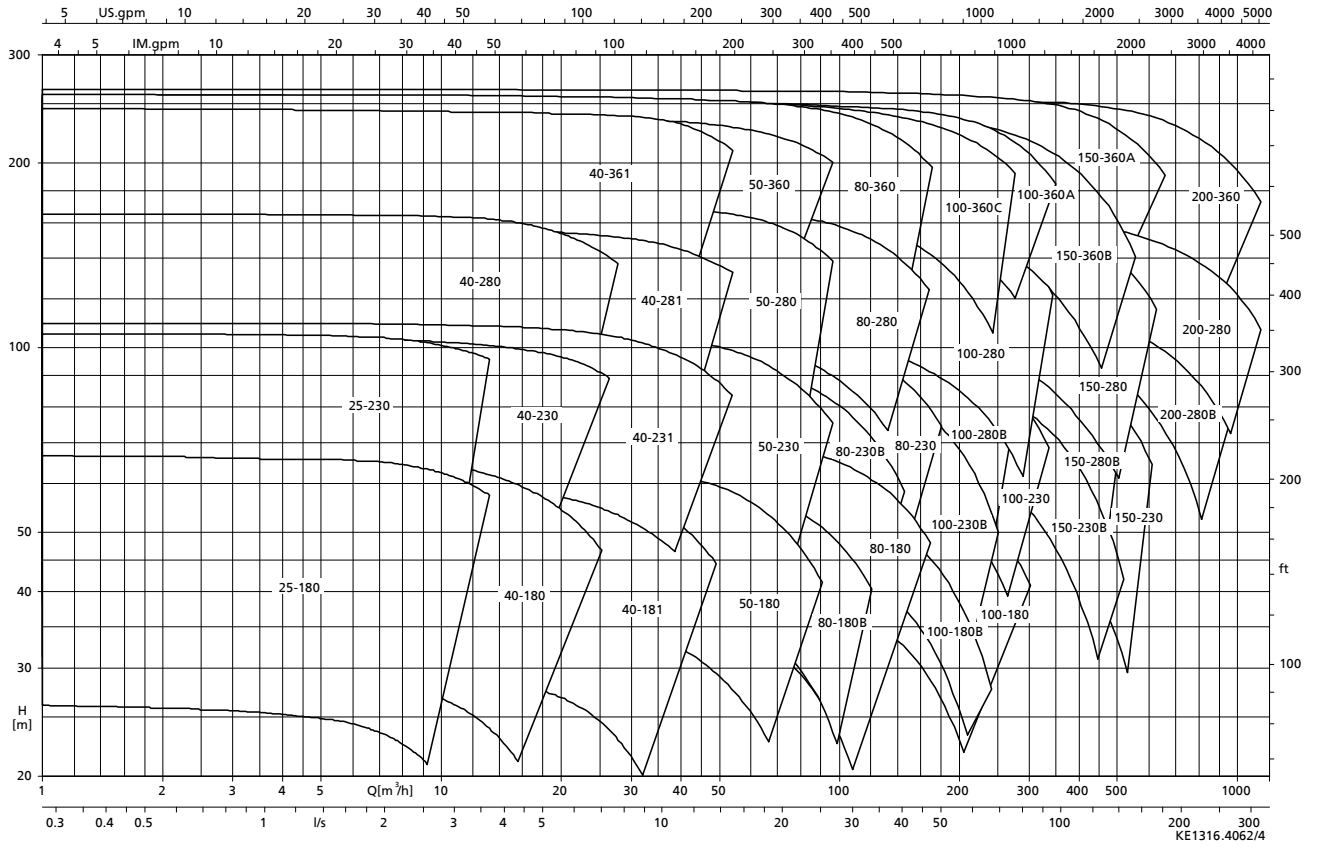


RPH, n = 1450 rpm

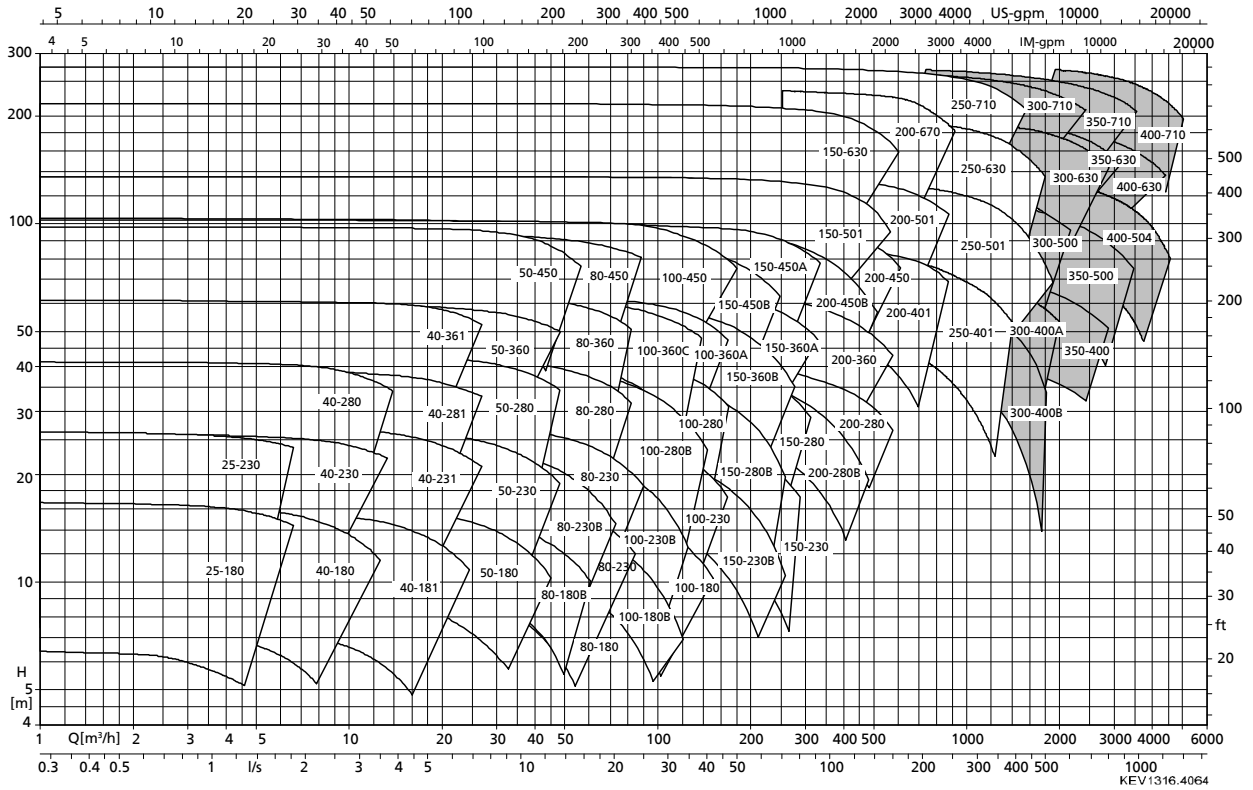


Size on request

RPH, n = 3500 rpm



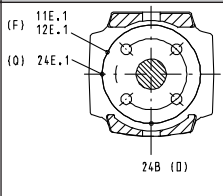
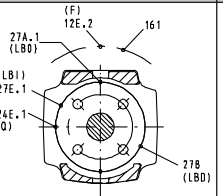
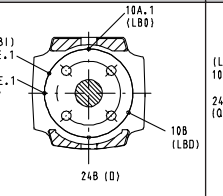
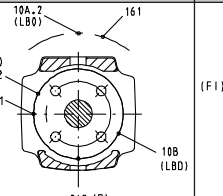
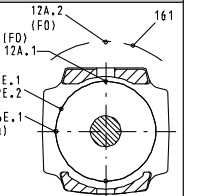
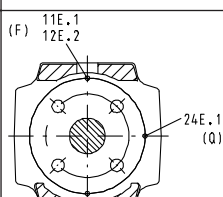
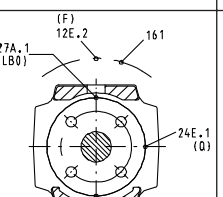
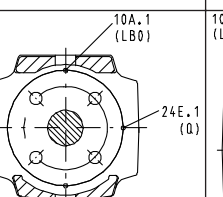
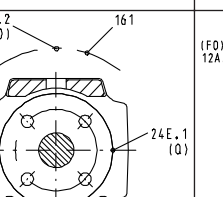
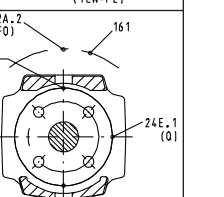
RPH, n = 1750 rpm



■ Size on request

Dimensions and connections

Shaft seal connections

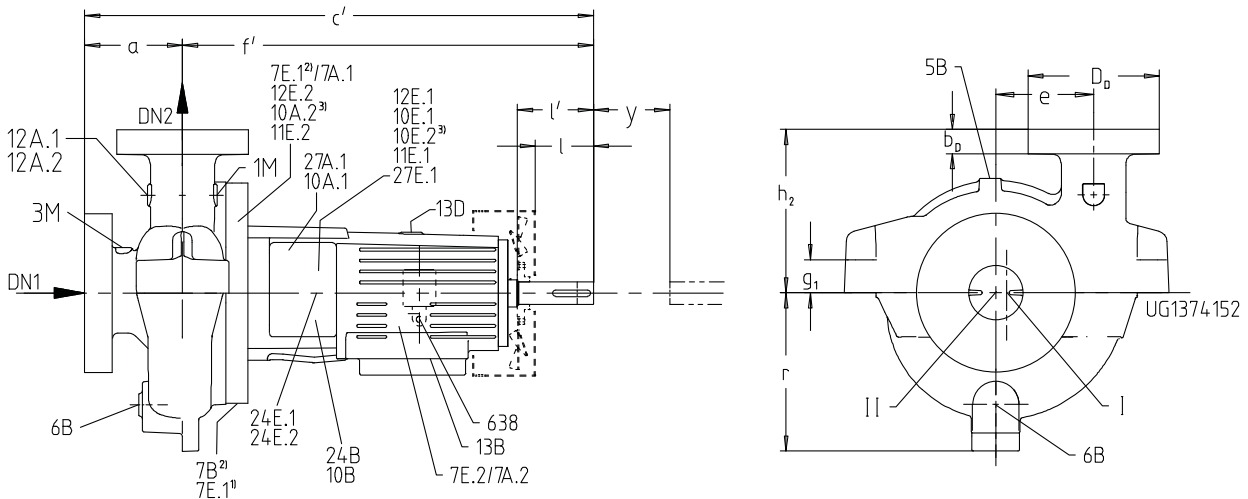
| Design | Mechanical seal with quench supply, single | Mechanical seal, double (unpressurised tandem arrangement) | Mechanical seal, double (pressurised tandem arrangement) | Mechanical seal, back-to-back | Mechanical seal, single (API 23) |
|--------------|--|--|---|---|---|
| KSB standard |  <p>API 11/61 (62-DAMPF) (1CW-FL)</p> |  <p>API 11/52/61 (2CW-CW)</p> |  <p>API 02/53/61 (3CW-FB)</p> |  <p>API 53/61 (3CW-BB)</p> |  <p>API 23/61 (1CW-FL)</p> |
| API standard |  <p>API 11/61 (62-DAMPF) (1CW-FL)</p> |  <p>API 11/52/61 (2CW-CW)</p> |  <p>API 02/53/61 (3CW-FB)</p> |  <p>API 53/61 (3CW-BB)</p> |  <p>API 23/61 (1CW-FL)</p> |

Connection types

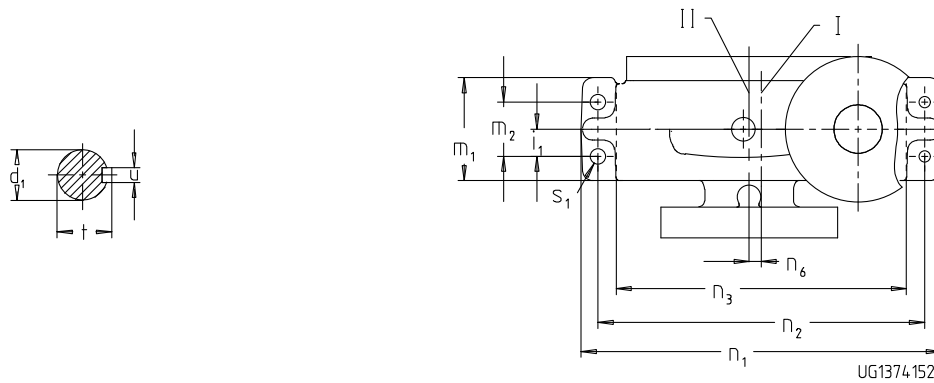
| Connection | ≤ DN 50 | ≥ DN 80 | Description |
|------------|-----------------|---------------------------|----------------------------|
| 1M | NPT 1/2-14 | NPT 1/2-14 | Pressure gauge |
| 3M | NPT 1/2-14 | NPT 1/2-14 | Pressure gauge |
| 5B | NPT 1/2-14 | NPT 1/2-14 | Vent |
| 6B | DN15 ASME B16.5 | | Fluid drain |
| 7B | NPT 1/2-14 | NPT 1/2-14 | Cooling liquid drain |
| 7E.1/A.1 | NPT 1/2-14 | NPT 1/2-14 | Cooling liquid IN/OUT |
| 7E.2/A.2 | NPT 1/2-14 | NPT 1/2-14 | Cooling liquid IN/OUT |
| 10B | NPT 1/2-14 | NPT 1/2-14 | Barrier fluid drain |
| 10E.1/A.1 | NPT 1/2-14 | NPT 1/2-14 ¹⁴⁾ | Barrier fluid IN/OUT |
| 10E.2/A.2 | NPT 1/2-14 | NPT 1/2-14 ¹⁴⁾ | Barrier fluid IN/OUT |
| 11E.1 | NPT 1/2-14 | NPT 1/2-14 | Flushing liquid IN |
| 11E.2 | NPT 1/2-14 | NPT 1/2-14 | Flushing liquid IN |
| 12E.1/A.1 | NPT 1/2-14 | NPT 1/2-14 | Circulation liquid IN/OUT |
| 12E.2/A.2 | NPT 1/2-14 | NPT 1/2-14 | Circulation liquid IN/OUT |
| 13B | NPT 1/2-14 | NPT 1/2-14 | Oil drain |
| 13D | NPT 1/2-14 | NPT 1/2-14 | Vent plug |
| 24B | NPT 3/8-18 | NPT 3/8-18 | Quench liquid drain |
| 24 E.1/A.1 | NPT 3/8-18 | NPT 3/8-18 | Quench liquid IN/OUT |
| 24 E.2/A.2 | NPT 3/8-18 | NPT 3/8-18 | Quench liquid IN/OUT |
| 27B | NPT 1/2-14 | NPT 1/2-14 | Buffer liquid drain |
| 27 E.1/A.1 | NPT 1/2-14 | NPT 1/2-14 ¹⁴⁾ | Buffer liquid inlet/outlet |
| 638 | NPT 3/8-18 | NPT 3/8-18 | Constant level oiler |

14) NPT3/4-14 on bearing brackets B05 and B06

Standard sizes



Dimensions of standard pump sizes



Foot bolt and shaft end dimensions of standard pump sizes

| | |
|----|--|
| 1) | Not for material variant S and bearing bracket B06 |
| 2) | For pressurised tandem seals |
| 3) | For "back-to-back" seals |
| I | Middle of pump foot |
| II | Middle of DN ₁ , shaft |

Dimensions of standard pump sizes

| Size | Bearing bracket | Weight [kg] | Pump dimensions | | | | | | | | | | | | |
|--------|-----------------|-------------|-----------------|-----------------|-----|-----|-----|-----|----------------|----------------|----------------|----------------|----------------|----------------|-----|
| | | | DN ₁ | DN ₂ | a | c' | e | f' | g ₁ | h ₂ | m ₁ | n ₁ | n ₃ | n ₆ | r |
| 25-180 | B02S | 116 | 40 | 25 | 120 | 772 | 105 | 652 | 40 | 230 | 130 | 420 | 320 | 0 | 185 |
| 25-230 | B02S | 131 | 40 | 25 | 120 | 772 | 125 | 652 | 40 | 255 | 130 | 460 | 360 | 0 | 205 |
| 40-180 | B02S | 122 | 50 | 40 | 130 | 782 | 105 | 652 | 40 | 250 | 130 | 420 | 320 | 0 | 188 |
| 40-181 | B02L | 136 | 50 | 40 | 130 | 786 | 110 | 656 | 40 | 250 | 130 | 420 | 320 | 0 | 198 |
| 40-230 | B02S | 138 | 50 | 40 | 130 | 782 | 130 | 652 | 40 | 265 | 136 | 460 | 360 | 0 | 215 |
| 40-231 | B02L | 158 | 50 | 40 | 140 | 796 | 135 | 656 | 40 | 265 | 146 | 460 | 360 | 0 | 220 |
| 40-280 | B02L | 197 | 50 | 40 | 140 | 796 | 160 | 656 | 40 | 290 | 146 | 540 | 440 | 0 | 238 |
| 40-281 | B02L | 195 | 50 | 40 | 140 | 796 | 160 | 656 | 40 | 290 | 150 | 540 | 440 | 0 | 248 |
| 40-361 | B02L | 249 | 50 | 40 | 150 | 806 | 195 | 656 | 40 | 305 | 150 | 640 | 540 | 0 | 275 |
| 50-180 | B02L | 153 | 80 | 50 | 150 | 806 | 120 | 656 | 50 | 265 | 150 | 470 | 360 | 0 | 220 |
| 50-230 | B03 | 240 | 80 | 50 | 155 | 910 | 140 | 755 | 50 | 265 | 150 | 510 | 400 | 0 | 230 |
| 50-280 | B03 | 289 | 80 | 50 | 170 | 915 | 170 | 755 | 50 | 290 | 150 | 550 | 440 | 0 | 255 |
| 50-360 | B03 | 347 | 80 | 50 | 170 | 915 | 200 | 755 | 50 | 310 | 150 | 650 | 540 | 0 | 285 |
| 50-450 | B03 | 441 | 80 | 50 | 180 | 935 | 245 | 755 | 50 | 365 | 150 | 750 | 640 | 0 | 325 |
| 80-180 | B03 | 242 | 100 | 80 | 175 | 945 | 140 | 770 | 60 | 290 | 170 | 510 | 400 | 0 | 235 |
| 80-230 | B03 | 264 | 100 | 80 | 170 | 925 | 160 | 755 | 60 | 290 | 170 | 550 | 440 | 20 | 265 |
| 80-280 | B03 | 317 | 100 | 80 | 180 | 935 | 180 | 755 | 60 | 300 | 170 | 590 | 480 | 20 | 290 |
| 80-360 | B03 | 361 | 100 | 80 | 190 | 945 | 210 | 755 | 60 | 310 | 170 | 650 | 540 | 15 | 325 |

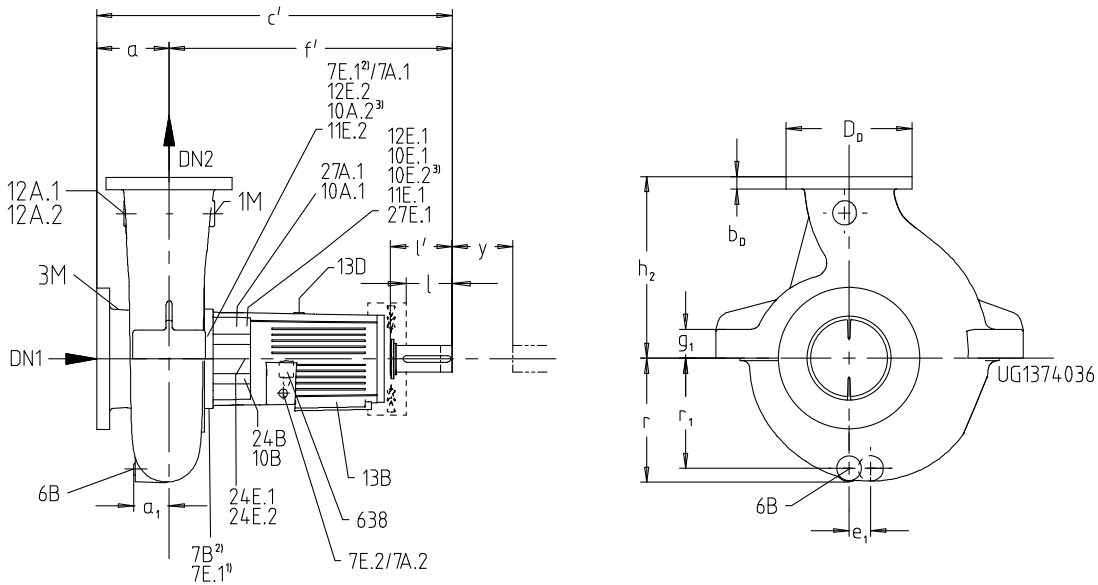
| Size | Bearing bracket | Weight [kg] | Pump dimensions | | | | | | | | | | | | |
|---------|-----------------|-------------|-----------------|-----------------|-----|------|-----|-----|----------------|----------------|----------------|----------------|----------------|----------------|-----|
| | | | DN ₁ | DN ₂ | a | c' | e | f' | g ₁ | h ₂ | m ₁ | n ₁ | n ₃ | n ₆ | r |
| 80-450 | B05S | 547 | 100 | 80 | 200 | 1080 | 260 | 880 | 60 | 370 | 170 | 760 | 650 | 20 | 375 |
| 100-180 | B03 | 289 | 150 | 100 | 185 | 955 | 170 | 770 | 70 | 325 | 190 | 590 | 480 | 25 | 275 |
| 100-230 | B03 | 303 | 150 | 100 | 170 | 925 | 175 | 755 | 70 | 325 | 170 | 590 | 480 | 30 | 285 |
| 100-280 | B03 | 345 | 150 | 100 | 170 | 925 | 200 | 755 | 70 | 335 | 190 | 650 | 540 | 30 | 315 |
| 100-360 | B05S | 477 | 150 | 100 | 200 | 1080 | 225 | 880 | 70 | 355 | 190 | 730 | 590 | 25 | 340 |
| 100-450 | B05S | 576 | 150 | 100 | 210 | 1090 | 270 | 880 | 70 | 385 | 190 | 860 | 720 | 30 | 395 |
| 150-230 | B03 | 369 | 200 | 150 | 200 | 955 | 210 | 755 | 80 | 335 | 200 | 730 | 590 | 45 | 330 |
| 150-280 | B05S | 461 | 200 | 150 | 200 | 1080 | 225 | 880 | 80 | 365 | 200 | 730 | 590 | 40 | 355 |
| 150-360 | B05S | 533 | 200 | 150 | 230 | 1110 | 250 | 880 | 80 | 365 | 200 | 780 | 640 | 40 | 385 |
| 150-450 | B05L | 659 | 200 | 150 | 230 | 1110 | 280 | 880 | 80 | 415 | 200 | 870 | 720 | 35 | 420 |
| 200-280 | B05S | 575 | 250 | 200 | 230 | 1110 | 260 | 880 | 90 | 395 | 230 | 870 | 720 | 50 | 400 |
| 200-360 | B05L | 683 | 250 | 200 | 230 | 1110 | 275 | 880 | 90 | 395 | 230 | 910 | 760 | 60 | 430 |
| 200-450 | B05L | 804 | 250 | 200 | 250 | 1130 | 310 | 880 | 90 | 435 | 230 | 970 | 820 | 50 | 475 |

Shaft end and foot bolt dimensions of standard pump sizes

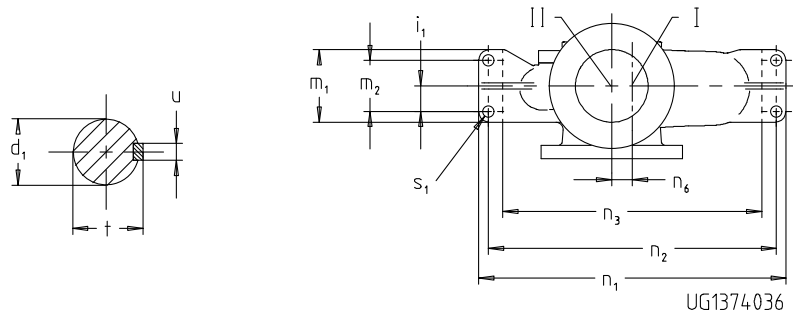
| Size | Bearing bracket | Shaft end | | | | | | Foot bolts | | | |
|---------|-----------------|-------------------------------|-----|-----|----|----|-----|----------------|----------------|----------------|----------------|
| | | d ₁ ¹⁵⁾ | l | l' | t | u | y | i ₁ | m ₂ | n ₂ | s ₁ |
| 25-180 | B02S | 32 | 80 | 115 | 35 | 10 | 140 | 30 | 60 | 380 | 17,5 |
| 25-230 | B02S | 32 | 80 | 115 | 35 | 10 | 140 | 30 | 60 | 420 | 17,5 |
| 40-180 | B02S | 32 | 80 | 115 | 35 | 10 | 140 | 30 | 60 | 380 | 17,5 |
| 40-230 | B02S | 32 | 80 | 115 | 35 | 10 | 140 | 30 | 60 | 420 | 17,5 |
| 40-181 | B02L | 32 | 80 | 115 | 35 | 10 | 140 | 30 | 60 | 380 | 17,5 |
| 40-231 | B02L | 32 | 80 | 115 | 35 | 10 | 140 | 30 | 60 | 420 | 17,5 |
| 40-280 | B02L | 32 | 80 | 115 | 35 | 10 | 140 | 35 | 70 | 500 | 17,5 |
| 40-281 | B02L | 32 | 80 | 115 | 35 | 10 | 140 | 35 | 70 | 500 | 17,5 |
| 40-361 | B02L | 32 | 80 | 115 | 35 | 10 | 140 | 35 | 70 | 600 | 17,5 |
| 50-180 | B02L | 32 | 80 | 115 | 35 | 10 | 140 | 35 | 70 | 420 | 22 |
| 50-230 | B03 | 42 | 110 | 140 | 45 | 12 | 140 | 35 | 70 | 460 | 22 |
| 50-280 | B03 | 42 | 110 | 140 | 45 | 12 | 140 | 35 | 70 | 500 | 22 |
| 50-360 | B03 | 42 | 110 | 140 | 45 | 12 | 140 | 45 | 90 | 600 | 22 |
| 50-450 | B03 | 42 | 110 | 140 | 45 | 12 | 140 | 45 | 90 | 700 | 22 |
| 80-180 | B03 | 42 | 110 | 140 | 45 | 12 | 140 | 45 | 90 | 460 | 22 |
| 80-230 | B03 | 42 | 110 | 140 | 45 | 12 | 140 | 45 | 90 | 500 | 22 |
| 80-280 | B03 | 42 | 110 | 140 | 45 | 12 | 140 | 45 | 90 | 540 | 22 |
| 80-360 | B03 | 42 | 110 | 140 | 45 | 12 | 140 | 45 | 90 | 600 | 22 |
| 80-450 | B05S | 60 | 140 | 182 | 64 | 12 | 180 | 45 | 90 | 710 | 22 |
| 100-180 | B03 | 42 | 110 | 140 | 45 | 12 | 140 | 50 | 100 | 540 | 26 |
| 100-230 | B03 | 42 | 110 | 140 | 45 | 12 | 140 | 50 | 100 | 540 | 26 |
| 100-280 | B03 | 42 | 110 | 140 | 45 | 12 | 140 | 50 | 100 | 600 | 26 |
| 100-360 | B05S | 60 | 140 | 140 | 64 | 18 | 180 | 55 | 110 | 670 | 26 |
| 100-450 | B05S | 60 | 140 | 182 | 64 | 18 | 180 | 55 | 110 | 800 | 26 |
| 150-230 | B03 | 42 | 110 | 140 | 45 | 12 | 140 | 50 | 100 | 670 | 33 |
| 150-280 | B05S | 60 | 140 | 182 | 64 | 18 | 180 | 60 | 120 | 670 | 33 |
| 150-360 | B05S | 60 | 140 | 182 | 64 | 18 | 180 | 60 | 120 | 720 | 33 |
| 150-450 | B05L | 60 | 140 | 182 | 64 | 18 | 180 | 55 | 110 | 800 | 33 |
| 200-280 | B05S | 60 | 140 | 182 | 64 | 18 | 180 | 55 | 110 | 800 | 36 |
| 200-360 | B05L | 60 | 140 | 182 | 64 | 18 | 180 | 55 | 110 | 840 | 36 |
| 200-450 | B05L | 60 | 140 | 182 | 64 | 18 | 180 | 55 | 110 | 900 | 36 |

¹⁵⁾ d1 Ø k6 for bearing brackets B02 and B03; d1 Ø n6 for bearing bracket B05

Complementary sizes



Dimensions of complementary pump sizes



Foot bolt and shaft end dimensions of complementary pump sizes

| | |
|----|--|
| 1) | Not for material variant S and bearing bracket B06 |
| 2) | For pressurised tandem seals |
| 3) | For "back-to-back" seals |
| I | Middle of pump foot |
| II | Middle of DN ₁ , shaft |

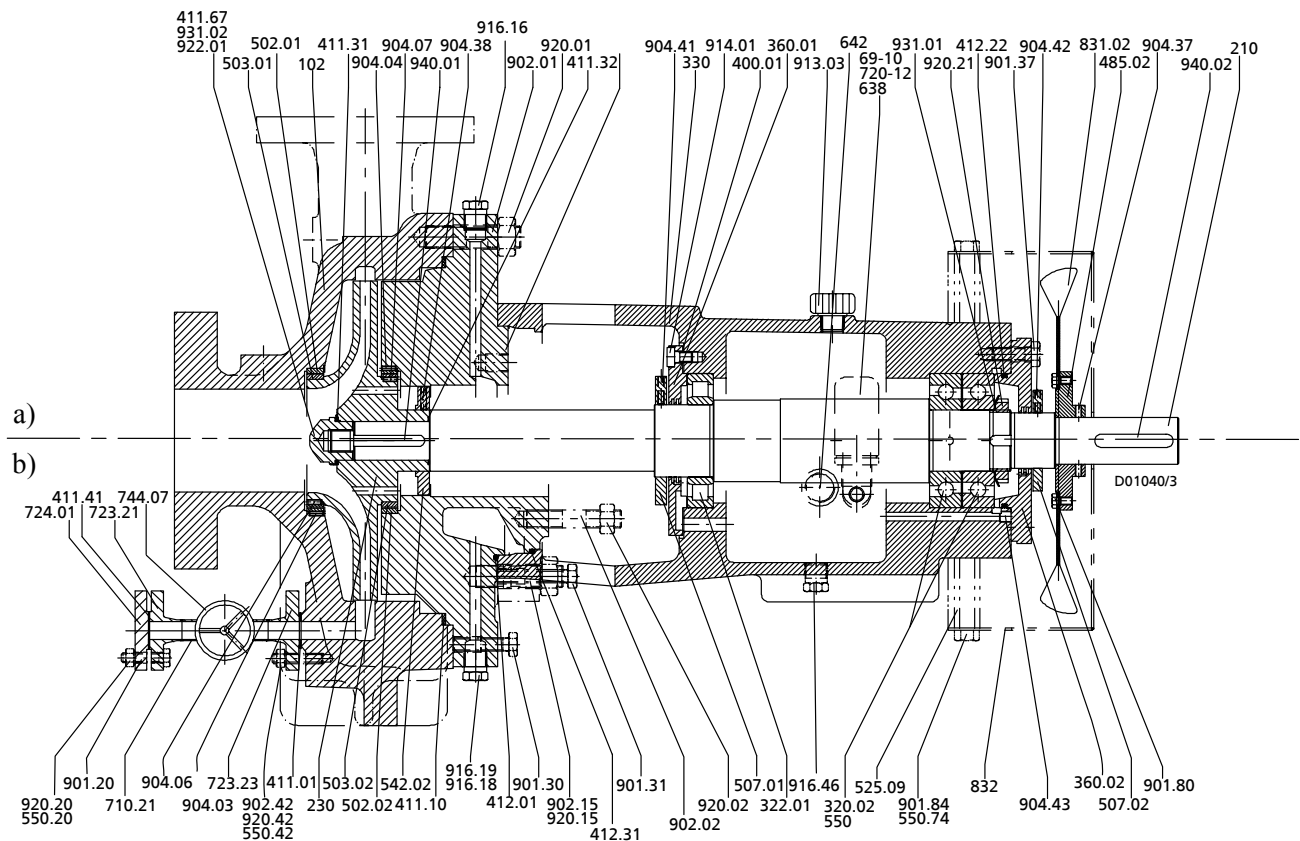
Dimensions of complementary pump sizes

| Size | Bearing bracket | Weight [kg] | Pump dimensions | | | | | | | | | | |
|---------|-----------------|-------------|-----------------|-----------------|-----|------|------|----------------|----------------|----------------|----------------|----------------|----------------|
| | | | DN ₁ | DN ₂ | a | c' | f' | g ₁ | h ₂ | m ₁ | n ₁ | n ₃ | n ₆ |
| 150-501 | B05L | 516 | 200 | 150 | 180 | 1080 | 900 | 90 | 500 | 180 | 960 | 820 | 0 |
| 150-630 | B06 | 1190 | 200 | 150 | 250 | 1435 | 1185 | 90 | 670 | 310 | 1200 | 1020 | 60 |
| 200-401 | B05L | 528 | 250 | 200 | 190 | 1095 | 905 | 90 | 510 | 180 | 960 | 820 | 0 |
| 200-501 | B05L | 676 | 250 | 200 | 200 | 1085 | 885 | 90 | 560 | 180 | 1060 | 920 | 0 |
| 200-670 | B06 | 1440 | 250 | 200 | 250 | 1430 | 1180 | 90 | 670 | 310 | 1360 | 1180 | 0 |
| 250-401 | B05L | 734 | 300 | 250 | 240 | 1140 | 900 | 90 | 600 | 210 | 1160 | 1000 | 0 |
| 250-501 | B05L | 926 | 300 | 250 | 200 | 1100 | 900 | 90 | 670 | 210 | 1200 | 1040 | 0 |
| 250-630 | B06 | 1500 | 300 | 250 | 300 | 1440 | 1140 | 90 | 750 | 310 | 1200 | 1020 | 70 |
| 250-710 | B06 | 1630 | 300 | 250 | 300 | 1430 | 1130 | 90 | 800 | 310 | 1460 | 1280 | 0 |
| 300-400 | B05L | 1135 | 350 | 300 | 310 | 1197 | 887 | 90 | 640 | 310 | 1200 | 1020 | 0 |
| 300-500 | B05L | 1255 | 350 | 300 | 300 | 1174 | 874 | 120 | 750 | 300 | 1270 | 1070 | 85 |
| 300-630 | B06 | 1722 | 350 | 300 | 300 | 1489 | 1189 | 90 | 800 | 300 | 1460 | 1280 | 0 |
| 350-350 | B06 | 1690 | 350 | 300 | 350 | 1509 | 1159 | 120 | 750 | 310 | 1370 | 1180 | 80 |
| 400-506 | B07 | 2410 | 400 | 400 | 350 | 1615 | 1265 | 120 | 900 | 400 | 1560 | 1320 | 90 |

Shaft end and foot bolt dimensions of complementary pump sizes

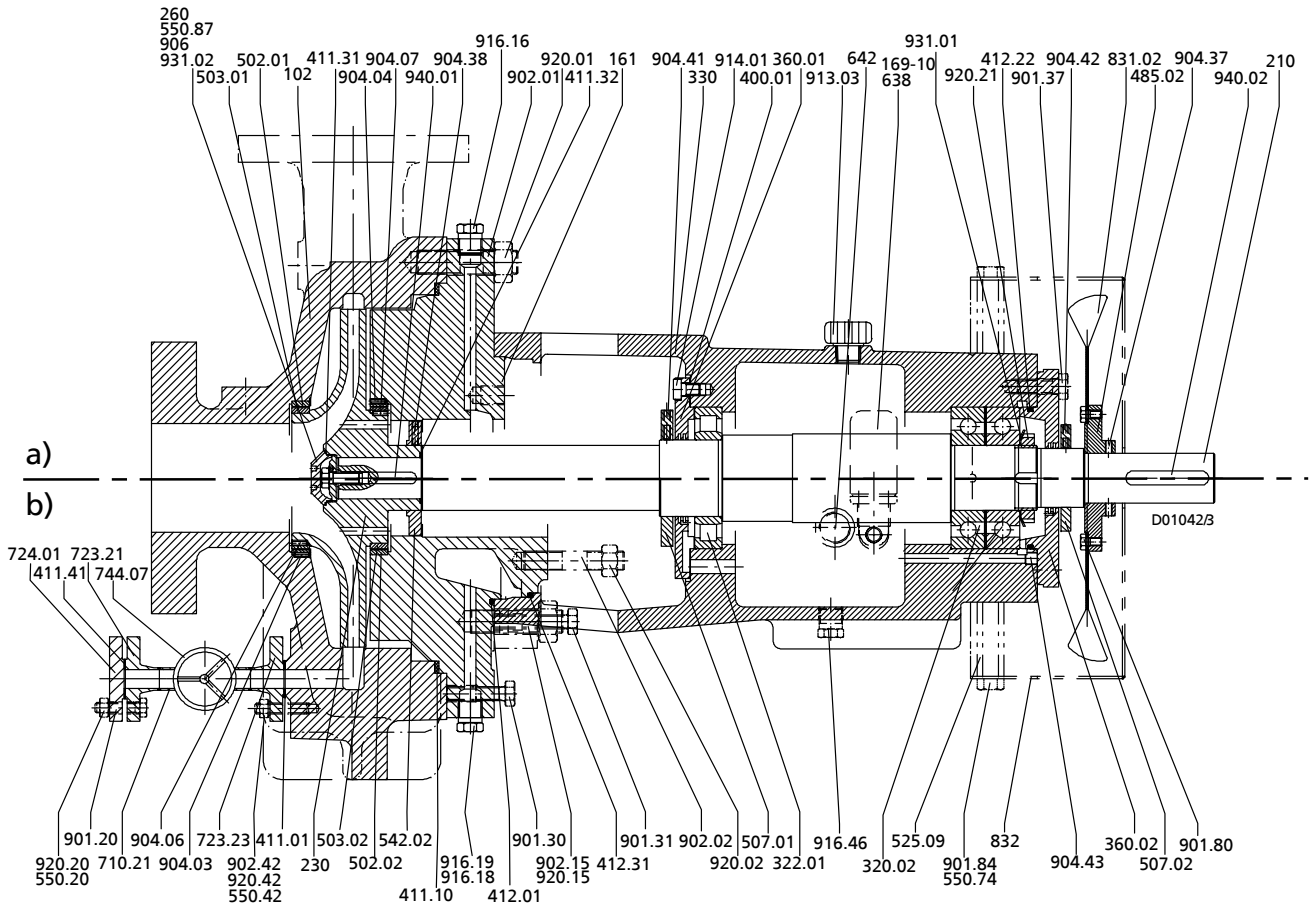
| Size | Bearing bracket | Shaft end | | | | | | Foot bolts | | | | Drain line | | |
|---------|-----------------|-------------------------------|-----|-----|-----|----|-----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | | d ₁ ¹⁶⁾ | l | l' | t | u | y | i ₁ | m ₂ | n ₂ | s ₁ | e ₁ | r ₁ | a ₁ |
| 150-501 | B05L | 60 | 140 | 182 | 64 | 18 | 180 | 60 | 120 | 900 | 33 | 0 | 315 | 63,5 |
| 150-630 | B06 | 95 | 170 | 215 | 100 | 25 | 250 | 105 | 210 | 1120 | 36 | 85 | 412,5 | 80 |
| 200-401 | B05L | 60 | 140 | 182 | 64 | 18 | 180 | 60 | 120 | 900 | 33 | 0 | 330 | 64,5 |
| 200-501 | B05L | 60 | 140 | 182 | 64 | 18 | 180 | 60 | 120 | 1000 | 33 | 0 | 360 | 78,5 |
| 200-670 | B06 | 95 | 170 | 215 | 100 | 25 | 250 | 105 | 210 | 1280 | 36 | 0 | 425 | 73 |
| 250-401 | B05L | 60 | 140 | 182 | 64 | 18 | 180 | 75 | 150 | 1080 | 33 | 0 | 365 | 105 |
| 250-501 | B05L | 60 | 140 | 182 | 64 | 18 | 180 | 75 | 150 | 1120 | 33 | 0 | 412 | 102 |
| 250-630 | B06 | 95 | 170 | 215 | 100 | 25 | 250 | 105 | 210 | 1120 | 36 | 0 | 425 | 108 |
| 250-710 | B06 | 95 | 170 | 215 | 100 | 25 | 250 | 105 | 210 | 1380 | 36 | 0 | 500 | 122 |
| 300-400 | B05L | 60 | 140 | 182 | 64 | 18 | 250 | 130 | 210 | 1120 | 33 | 0 | 395 | 167 |
| 300-500 | B05L | 60 | 140 | 182 | 64 | 18 | 250 | 105 | 210 | 1190 | 33 | 0 | 455 | 147 |
| 300-630 | B06 | 95 | 170 | 215 | 100 | 25 | 250 | 105 | 210 | 1380 | 36 | 0 | 503 | 173 |
| 350-350 | B06 | 95 | 170 | 215 | 100 | 25 | 330 | 105 | 210 | 1280 | 33 | 50 | 500 | 161 |
| 400-506 | B07 | 110 | 205 | 255 | 116 | 28 | 350 | 150 | 300 | 1460 | 36 | 90 | 585 | 186 |

General assembly drawing with list of components



Bearing brackets B02 to B05, a) uncooled and b) cooled

16) d1 Ø n6



Bearing brackets B06 and B07, a) uncooled and b) cooled

List of components

| Part No. | Comprising | Description |
|----------|---------------------------|--------------------|
| 102 | 102 | Volute casing |
| | 411.10 | Joint ring |
| | 502.01 | Casing wear ring |
| | 902.01 | Stud |
| | 904.03 | Grub screw |
| | 916.01 ¹⁷⁾ | Plug |
| | 920.01 | Hexagon nut |
| 161 | 161 | Casing cover |
| | 411.10 | Joint ring |
| | 412.01/.31 ¹⁸⁾ | O-ring |
| | 502.02 ²⁵⁾ | Casing wear ring |
| | 901.30 | Hexagon head bolt |
| | 902.15 | Stud |
| | 904.04 ²⁵⁾ | Grub screw |
| 210 | 916.16 | Plug |
| | 920.15 | Hexagon nut |
| | 210 | Shaft |
| | 920.21 | Slotted round nut |
| 230 | 931.01 | Lock washer |
| | 940.01/.02 | Key |
| | 230 | Impeller |
| | 931.02 | Lock washer |
| | 503.01/.02 | Impeller wear ring |

17) Not shown in drawing

18) For cooled design only

| Part No. | Comprising | Description |
|---------------------------|---|-----------------------------------|
| | 904.06/.07 | Grub screw |
| | 411.31 ¹⁹⁾ /.32 ¹⁹⁾ /.67 ¹⁹⁾ 20) | Joint ring |
| 260 ²¹⁾ | 260 | Impeller hub cap |
| | 550.87 | Disc |
| | 906 | Impeller screw |
| 320.02/550 ²²⁾ | 320.02 ²³⁾ | Angular contact ball bearing |
| | 550 ²⁴⁾ | Adjusting washer |
| 322.01 | 322.01 | Cylindrical roller bearing |
| 330 | 330 | Bearing bracket |
| | 69.10 | Protective cage |
| | 360.01/.02 | Bearing cover |
| | 400.01 | Gasket |
| | 412.22 | O-ring |
| | 638 | Constant level oiler |
| | 642 | Oil level sight glass |
| | 710.21 | Pipe |
| | 901.31/.37 | Hexagon head bolt |
| | 913.03 | Vent plug |
| | 916.46 | Plug |
| | 914.01 | Hexagon socket head cap screw |
| 360.01/.02 | 360.01/.02 | Bearing cover |
| | 400.01 | Gasket |
| | 412.22 | O-ring |
| | 914.01 | Hexagon socket head cap screw |
| 502.01/.02 ²⁵⁾ | 502.01/.02 | Casing wear ring |
| | 904.03/.04 ²⁵⁾ | Grub screw |
| 503.01/.02 ²⁵⁾ | 503.01/.02 | Impeller wear ring |
| | 904.06/.07 ²⁵⁾ | Grub screw |
| 507.01/.02 | 507.01/.02 | Thrower |
| | 904.41/.42 | Grub screw |
| 542.02 | 542.02 | Throttling bush |
| | 904.38 | Grub screw |
| 638 | 638 | Constant level oiler |
| 70-3 ²⁰⁾ | 70-3 | Drain line |
| | 411.01 | Joint ring |
| | 902.42 | Stud |
| | 920.42 | Hexagon nut |
| | 550.42 | Disc |
| | 723.23 | Flange |
| | 744.07 | Gate valve |
| | 710.21 | Pipe |
| | 723.21 | Flange |
| | 411.41 | Joint ring |
| | 724.01 | Blind flange |
| | 901.20 | Hexagon head bolt |
| | 920.20 | Hexagon nut |
| | 550.20 | Disc |
| 831.02 ²⁰⁾ | 831.02 | Fan impeller |
| | 832 | Fan hood |
| | 485.02 | Fan hub |
| | 904.37 | Grub screw |
| 922.01 ¹⁹⁾ | 922.01 | Impeller nut |
| | 931.02 | Lock washer |
| 99-g ¹⁷⁾ | 99-g ¹⁷⁾ | Set of sealing elements, complete |

-
- 19) For bearing brackets B02 to B05 only
20) Optional
21) For bearing brackets B06 and B07 only
22) For bearing brackets B03 and B05 only
23) For bearing brackets B03 and B05 only
24) For bearing brackets B03 and B05 only
25) For impellers with balancing of axial thrust only

Design variants

Design variants

| Design | Detailed view |
|--------------------------------------|---------------|
| Design with coolable bearing bracket | |
| Design with thrower | |
| Design with plug | |
| Design with welded drain | |

| Design | Detailed view |
|---|---------------|
| <p>Design with bearings in tandem arrangement</p> | |
| <p>Design with heatable casing</p> | |
| <p>Design with auxiliary impeller</p> | |