

Submersible Motor Pump

## Amarex KRT

50 Hz

### Type Series Booklet



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Type Series Booklet Amarex KRT

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## Waste Water

### Submersible Motor Pump

## Amarex KRT



### Main applications

- Waste water management
- Service water supply systems
- Disposal
- Waste water treatment plants
- Sludge disposal

### Fluids handled

- Waste water with faeces
- Activated sludge
- Digested sludge
- Raw sludge
- Gas-containing liquids
- Industrial waste water

### Operating data

Table 1: Operating properties

| Characteristic    |                     | Value     |
|-------------------|---------------------|-----------|
| Flow rate         | Q [m³/h]            | ≤ 10080   |
|                   | Q [l/s]             | ≤ 2800    |
| Head              | H [m]               | ≤ 120     |
| Fluid temperature | T [°C]              | ≤ +60     |
| Motor rating      | P <sub>2</sub> [kW] | 0,8 - 850 |

### Design details

#### Design

- Fully floodable submersible motor pump
- Not self-priming
- Close-coupled design

### Drive

- Three-phase asynchronous squirrel-cage motor
- Type of protection Ex db IIB (applies to explosion-proof pump sets only)
- Enclosure: IP68 to EN 60529/IEC529

### Shaft seal

Depending on the motor design:

- Two bi-directional mechanical seals in tandem arrangement with liquid reservoir, with leakage chamber on some models
- Double cartridge seal with leakage chamber

### Impeller type

- Various application-oriented impeller types (⇒ Page 14)

### Bearings

- Various application-oriented bearings (⇒ Page 8)

Drive end:

- Grease-packed bearings sealed for life
- Maintenance-free

Pump end:

- Standard bearings
  - Grease-packed bearings sealed for life
  - Maintenance-free
- Reinforced bearings
  - Grease-lubricated bearings
  - Can be re-lubricated

## Designation

**Example: Amarex KRT K 150-503/155 4 UN G-D IE3**

**Table 2:** Designation key

| Code       | Description                                                                                                                            |
|------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Amarex KRT | Type series                                                                                                                            |
| K          | Impeller type                                                                                                                          |
|            | S/S-max Impeller with cutter                                                                                                           |
|            | F/F-max Vortex impeller                                                                                                                |
|            | E/E-max Closed single-channel impeller                                                                                                 |
|            | D/D-max Open, diagonal single-vane impeller / open, radial multi-vane impeller                                                         |
|            | K/K-max Closed multi-channel impeller                                                                                                  |
| 150        | Nominal discharge nozzle diameter [mm]                                                                                                 |
| 503        | Maximum nominal impeller diameter [mm]                                                                                                 |
| 155        | Motor size                                                                                                                             |
| 4          | Number of motor poles                                                                                                                  |
| UN         | Motor version (⇒ Page 8)                                                                                                               |
|            | UN/UE Non-explosion-proof, for fluid temperatures of up to 40 °C <sup>1)</sup>                                                         |
|            | UF Non-explosion-proof, for fluid temperatures of up to 40 °C, ambient temperatures of up to 55 °C                                     |
|            | WN/WE Non-explosion-proof, for fluid temperatures of up to 60 °C <sup>1)</sup>                                                         |
|            | XN/XE Explosion protection Ⓢ II2G Ex db h IIB T3 Gb, for fluid temperatures of up to 40 °C <sup>1)</sup>                               |
|            | XF Explosion protection Ⓢ II2G Ex db h IIB T3 Gb, for fluid temperatures of up to 40 °C, ambient temperatures of up to 55 °C           |
|            | YN/YE Explosion protection Ⓢ II2G Ex db h IIB T4 Gb, for fluid temperatures of up to 40 °C <sup>1)</sup>                               |
|            | ZN/ZE Explosion protection Ⓢ II2G Ex db h IIB T3 Gb, for fluid temperatures of up to 60 °C <sup>1)</sup>                               |
| G          | Material variant (⇒ Page 6)                                                                                                            |
|            | G Standard variant, grey cast iron                                                                                                     |
|            | G1 Like G, impeller made of duplex stainless steel                                                                                     |
|            | G2 Like G, impeller made of white cast iron                                                                                            |
|            | GH Like G, impeller and discharge cover made of white cast iron                                                                        |
|            | H Wetted components made of white cast iron                                                                                            |
|            | C1 Wetted parts made of duplex stainless steel, mechanical seal with elastomer bellows, bolts/screws made of A4                        |
|            | C2 Wetted parts made of duplex stainless steel, mechanical seal with covered spring, bolts/screws made of 1.4462                       |
| D          | Installation type (⇒ Page 33)                                                                                                          |
|            | D Stationary dry installation, vertical (S1 duty)                                                                                      |
|            | H Stationary dry installation, horizontal (S1 duty)                                                                                    |
|            | K Stationary wet installation (S1 duty with motor outside of the fluid possible) with guide wire arrangement or guide rail arrangement |
|            | S Stationary wet installation (S1 duty with submerged motor) with guide wire arrangement or guide rail arrangement                     |
|            | P Wet installation of transportable model (S1 duty with submerged motor)                                                               |
| IE3        | Motor efficiency classification <sup>2)</sup>                                                                                          |
|            | <sup>3)</sup> No efficiency classification                                                                                             |
|            | IE3 Premium Efficiency                                                                                                                 |

<sup>1</sup> Maximum fluid temperature and ambient temperature

<sup>2</sup> The IEC 60034-30 standard is not binding for submersible motor pumps. Efficiencies are calculated / determined by analogy with the measurement method specified in IEC 60034-2. The marking is used for submersible motors that achieve efficiency levels similar to those of standardised motors acc. to the IEC 60034-30 standard.3759

<sup>3</sup> Blank

## Materials

**Table 3:** Overview of available materials

| Part No.           | Description                                                       | Material variant                                                 |           |              |              |   |                                |                   |
|--------------------|-------------------------------------------------------------------|------------------------------------------------------------------|-----------|--------------|--------------|---|--------------------------------|-------------------|
|                    |                                                                   | G                                                                | G1        | G2           | GH           | H | C1                             | C2                |
| Pump set           |                                                                   |                                                                  |           |              |              |   |                                |                   |
| 101                | Pump casing                                                       | EN-GJL-250                                                       |           |              | EN-GJN-HB555 |   | 1.4517                         |                   |
| 135                | Wear plate for D/D-max impeller                                   | EN-GJL-250 <sup>4)</sup>                                         |           | EN-GJN-HB555 |              | - |                                |                   |
| 163                | Discharge cover                                                   | EN-GJL-250                                                       |           |              | EN-GJN-HB555 |   | 1.4517                         |                   |
| 210                | Shaft                                                             | 1.4021 (⇒ Page 8)                                                |           |              |              |   | 1.4021/1.4462/C45+N (⇒ Page 8) |                   |
| 230                | Impeller <sup>5)</sup>                                            | EN-GJL-250                                                       | JL 1.4517 | EN-GJN-HB555 |              |   | 1.4517                         |                   |
| 350                | Bearing housing                                                   | EN-GJL-250                                                       |           |              |              |   | 1.4517/EN-GJL-250              |                   |
| 412                | O-ring                                                            | Nitrile butadiene rubber (NBR)                                   |           |              |              |   |                                | Viton (FKM)       |
| 433.01 / 433       | Mechanical seal (drive end)<br>Double mechanical seal (drive end) | Carbon/SiC                                                       |           |              |              |   |                                |                   |
| 433.02 / 433       | Mechanical seal (pump end)<br>Double mechanical seal (pump end)   | SiC / SiC                                                        |           |              |              |   |                                |                   |
| 502                | Casing wear ring <sup>6)</sup>                                    | EN-GJL-250                                                       |           |              | VG 434       |   |                                |                   |
| 66- 2              | Cooling jacket                                                    | 1.4571                                                           |           |              | -            |   |                                |                   |
| 811                | Motor housing                                                     | EN-GJL-250                                                       |           |              |              |   | 1.4517                         |                   |
| 824                | Power cable                                                       | (⇒ Table 7)                                                      |           |              |              |   |                                |                   |
| 900                | Bolts/screws                                                      | A4 <sup>7)</sup>                                                 |           |              |              |   |                                | 1.4462            |
| Installation parts |                                                                   |                                                                  |           |              |              |   |                                |                   |
| 572                | Guide wire suspension bracket                                     | 1.4571 up to DN 200; EN-GJL-250 from size K200-502               |           |              |              |   |                                | 1.4571            |
| 59-24              | Guide wire                                                        | 1.4401                                                           |           |              |              |   |                                | 1.4401/<br>Tefzel |
| 72-1               | Flanged bend                                                      | EN-GJL-250                                                       |           |              | EN-GJN-HB555 |   | 1.4517                         |                   |
| 732                | Claw                                                              | EN-GJL-250 or EN-GJS-400-15/EN-GJS-500-7                         |           |              |              |   | 1.4517                         |                   |
| 885                | Lifting chain / lifting rope                                      | Lifting chain: 1.4404<br>Lifting rope: polyamide / polypropylene |           |              |              |   | Lifting rope: polypropylene    |                   |
| 892                | Foot plate / feet                                                 | 1.0038 + Z                                                       |           |              |              |   | 1.4571                         | 1.4517/<br>1.4462 |
| 894                | Mounting bracket                                                  | 1.4571 up to DN 200; 1.0038 + Z from size K200-502               |           |              |              |   |                                | 1.4571            |

## Description of materials

### EN-GJL-250 grey cast iron (lamellar graphite cast iron)

Lamellar graphite cast iron to EN 1561 is the most widely used cast material for handling municipal sewage, waste water and sludges as well as stormwater and surface water. It is suitable for neutral fluids which are only slightly aggressive and cause little wear. The pH should be  $\geq 6.5$ , the sand content  $\leq 0.5$  g/l.

### Nodular cast iron EN-GJS-400-15

Its ductile structure, mechanical properties and wear resistance make this nodular cast iron to EN 1561 a suitable propeller material that is also suitable for handling digestion substrate.

### Duplex stainless steel (1.4517 or technically equivalent material)

This type of carbon steel is resistant to cavitation, has excellent strength values and is used for high circumferential speeds. An excellent resistance to pitting corrosion makes ferritic-austenitic stainless carbon steel a popular choice for pumping acidic waste water with a high chloride content as well as seawater and brackish water. Thanks to its good chemical resistance, e.g. against waste water containing phosphorous and sulphuric acid, this material is used in a wide range of applications in the chemical industry and process engineering. Pumps made of duplex stainless steel have a very long service life, even when handling brines, chemical waste water (pH 1 - 12), grey water and landfill leachate.

### Wear-resistant white cast iron (EN-GJN-HB555 [XCR14] or technically equivalent material)

Wear-resistant white cast iron is suitable for handling highly abrasive fluids containing sand, ash or iron ore sinter, for example. It has a Rockwell hardness of at least 54 HRC, which is higher than that of hardened chrome steel. Owing to its hardness, the chromium-molybdenum alloy cast iron features a notably higher wear resistance than EN-GJL-250 grey cast iron and other cast materials. The pH should be  $\geq 6.5$ .

<sup>4</sup> D impeller: EN-GJL-250; D-max impeller: EN-GJS-400-15

<sup>5</sup> D impeller: EN-GJL-250, with hardened edges; D-max impeller: EN-GJS-400-15, with hardened edges

<sup>6</sup> For E impeller and K impeller

<sup>7</sup> Corresponds to 1.4571

## Product benefits

- Absolutely water-tight resin-sealed cable entries prevent any water from entering the motor – even in the event of a damaged cable.
- Reliable operation ensured by leakage sensors signalling any ingress of moisture into the motor
- Reliable operation ensured by sensors monitoring the motor temperature and preventing overheating
- Non-clogging low-maintenance design with large free passages reduces clogging risk and, consequently, maintenance work.
- High-efficiency motors and variable hydraulic systems for optimum hydraulic efficiency and energy efficiency

## Material variants C1 and C2:

- Long service life due to corrosion-resistant wetted parts made of stainless steel

## Product information

### Product information as per Regulation No. 1907/2006 (REACH)

For information as per European chemicals regulation (EC) No. 1907/2006 (REACH) see <https://www.ksb.com/en-global/company/corporate-responsibility/reach>.

## Acceptance tests and warranty

### Functional test

- Every pump undergoes functional testing to KSB standard ZN 56525.

### K/K-max impeller:

- Operating data is guaranteed to DIN EN ISO 9906/2B. It can also be guaranteed to DIN EN ISO 9906/1B, 3B and 1U (with re-evaluation of D2 and  $\eta$ ).

### S, F/F-max, E/E-max, D/D-max impellers:

- Operating data is guaranteed to DIN EN ISO 9906/3B. It can also be guaranteed to DIN EN ISO 9906/2B.

### Power input P<sub>2</sub> of the pump below 10 kW.

- Operating data is guaranteed to DIN EN ISO 9906 §4.4.2. Other acceptance grades are not approved.

## Acceptance inspections/tests

- Acceptance test to ISO/DIN or comparable standards available against a surcharge.

## Warranty

- Quality is assured by means of an audited and certified quality assurance system to DIN EN ISO 9001.

## Selection information

- The indicated heads and performance data apply to material variant G, for fluids with a density  $\rho = 1 \text{ kg/dm}^3$  and a kinematic viscosity  $\nu \leq 20 \text{ mm}^2/\text{s}$ .

## Impeller type

- S, F, E, and D impellers can only be supplied with the documented impeller diameters. Indicate the pump set designation and the impeller diameter in the purchase order.

- Impellers K and D-max are trimmed to the duty point. Indicate the H/Q data or the impeller diameter in the purchase order. In the hydraulic selection program, the impeller diameter is automatically computed based on the H/Q data and added to the designation of the pump set.

## Pump input power

- Adjust the power input to the density of the fluid handled:  
 $P_2 \text{ (required)} = \rho \text{ [kg/dm}^3\text{]} \text{ (fluid handled)} \times P_2 \text{ (documented)}$
- Select the operating point with the largest power input within an operating range. Select a motor size providing a power reserve to compensate the tolerances in the system characteristic / pump characteristic.

**Table 4:** Recommended motor power reserve<sup>8)</sup>

| P <sub>2</sub><br>[kW] | Reserve         |                         |
|------------------------|-----------------|-------------------------|
|                        | Mains operation | With frequency inverter |
| ≤ 30                   | 10 %            | 15 %                    |
| > 30                   | 5 %             | 10 %                    |

- For installation types D and K (with cooling jacket) with motors UN/XN/YN an additional power reserve of 1.5 kW must always be added for the cooling circuit.

**i** In the case of waste water, too low a flow velocity in the discharge line will lead to clogging and increased wear. The minimum flow velocity required in vertical risers was determined experimentally as a function of the pipe diameter used and shown to be between 1.2 m/s for nominal size 100 and 2.4 m/s for nominal size 1000. For more information on flow velocities required in horizontal and vertical discharge lines refer to "KSB Know-how: Planning Information for Amarex KRT Submersible Motor Pumps".

**i** In the case of waste water, too low a circumferential speed of the impeller will lead to clogging of the hydraulic system (operation on a frequency inverter). A minimum circumferential speed (measured at the impeller diameter) of 12 m/s must be observed.<sup>9)</sup>

<sup>8</sup> If larger power reserves are stipulated by local regulations, these larger reserves must be provided.

<sup>9</sup> For F impellers, a circumferential speed below 12 m/s is permissible.

## Overview of product features / selection tables

## Overview of product features

Table 5: Material variants G, G1, G2, GH

| Feature              | Motor                                                                                             |                   |                     |                                                   |                                                                                                                       |                     |                       |                              |
|----------------------|---------------------------------------------------------------------------------------------------|-------------------|---------------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------|-----------------------|------------------------------|
| 2 poles              | 3 2 E ... 26 2 E                                                                                  | 30 2 E ... 37 2 E | 55 2 E ... 75 2 E   | 18 2 F ... 75 2 F                                 | -                                                                                                                     | -                   | -                     | -                            |
| 4 poles              | 2 4 E ... 22 4 E                                                                                  | 30 4 E ... 37 4 E | 45 4 E ... 75 4 E   | 15 4 F ... 75 4 F                                 | 80 4 N ... 110 4 N                                                                                                    | 130 4 N ... 175 4 N | 200 4 N ... 350 4 N   | -                            |
| 6 poles              | 7 6 E ... 18 6 E                                                                                  | 22 6 E ... 30 6 E | 31 6 E ... 55 6 E   | 15 6 F ... 55 6 F                                 | 60 6 N ... 100 6 N                                                                                                    | 120 6 N ... 165 6 N | 190 6 N ... 480 6 N   | 530 6 N ... 850 6 N          |
| 8 poles              | -                                                                                                 | 11 8 E ... 22 8 E | 30 8 E ... 45 8 E   | 15 8 F ... 45 8 F                                 | 50 8 N ... 75 8 N                                                                                                     | 90 8 N ... 130 8 N  | 150 8 N ... 400 8 N   | 460 8 N ... 760 8 N          |
| 10 poles             | -                                                                                                 | -                 | -                   | -                                                 | -                                                                                                                     | 40 10 N ... 90 10 N | 110 10 N ... 350 10 N | 390 10 N ... 660 10 N        |
| 12 poles             | -                                                                                                 | -                 | -                   | -                                                 | -                                                                                                                     | -                   | 105 12 N ... 300 12 N | 340 12 N ... 560 12 N        |
| Shaft material       |                                                                                                   |                   |                     |                                                   |                                                                                                                       |                     |                       |                              |
| Shaft                | 1.4021                                                                                            |                   |                     |                                                   |                                                                                                                       |                     |                       |                              |
| Bearing assembly     | Grease-packed rolling element bearings sealed for life <sup>10)</sup>                             |                   |                     |                                                   | Regreasable rolling element bearings (pump end)<br>Grease-packed rolling element bearings sealed for life (drive end) |                     |                       |                              |
| Explosion protection |                                                                                                   |                   |                     |                                                   |                                                                                                                       |                     |                       |                              |
| Version U            | Non-explosion-proof                                                                               |                   |                     |                                                   |                                                                                                                       |                     |                       |                              |
| Version X            | ⚡ II2G Ex db h IIB T3 Gb                                                                          |                   |                     |                                                   |                                                                                                                       |                     |                       | -                            |
| Version Y            | ⚡ II2G Ex db h IIB T4 Gb                                                                          |                   |                     | -                                                 | ⚡ II2G Ex db h IIB T4 Gb                                                                                              |                     | -                     | -                            |
| Version W            | Non-explosion-proof                                                                               |                   |                     | -                                                 | Non-explosion-proof                                                                                                   |                     |                       | -                            |
|                      |                                                                                                   |                   |                     | -                                                 |                                                                                                                       |                     |                       |                              |
| Version Z            | ⚡ II2G Ex db h IIB T3 Gb                                                                          |                   |                     | -                                                 | ⚡ II2G Ex db h IIB T3 Gb                                                                                              |                     |                       | -                            |
| Motor                |                                                                                                   |                   |                     |                                                   |                                                                                                                       |                     |                       |                              |
| Starting method      | DOL / star-delta (690 V only DOL) <sup>11)</sup>                                                  |                   |                     |                                                   |                                                                                                                       |                     |                       | DOL                          |
| Voltage              | 400 V / 380 V <sup>12)</sup> / 415 V <sup>12)</sup> / 500 V <sup>12)</sup> / 690 V <sup>12)</sup> |                   |                     |                                                   |                                                                                                                       |                     |                       | 400 V / 690 V <sup>12)</sup> |
| Cooling              | Cooled by surrounding fluid / air cooling <sup>13)</sup>                                          |                   | With cooling jacket | Cooled by surrounding fluid / with cooling jacket |                                                                                                                       |                     |                       |                              |
| Immersion depth      | ≤ 30 m                                                                                            |                   |                     |                                                   |                                                                                                                       |                     |                       |                              |
| Power cable          |                                                                                                   |                   |                     |                                                   |                                                                                                                       |                     |                       |                              |
| Type                 | See "Overview of power cables" (⇒ Table 7)                                                        |                   |                     |                                                   |                                                                                                                       |                     |                       |                              |
| Length               | 10 m / ≤ 40 m <sup>12)</sup>                                                                      |                   |                     |                                                   |                                                                                                                       |                     |                       |                              |
| Cable entry          | Absolutely water-tight                                                                            |                   |                     |                                                   |                                                                                                                       |                     |                       |                              |
| Sealing elements     |                                                                                                   |                   |                     |                                                   |                                                                                                                       |                     |                       |                              |
| Elastomer seals      | Nitrile butadiene rubber NBR / Viton = fluorocarbon rubber FPM <sup>12)</sup>                     |                   |                     |                                                   |                                                                                                                       |                     |                       |                              |

<sup>10)</sup> For versions with D impeller and motors 55 2 E/F ... 75 2 E/F, 45 4 E/F ... 75 4 E/F, 31 6 E/F ... 55 6 E/F, 30 8 E/F ... 45 8 E/F: regreasable rolling element bearings (pump end) / grease-packed rolling element bearings sealed for life (drive end)

<sup>11)</sup> Depending on the motor size and voltage

<sup>12)</sup> Optional

<sup>13)</sup> Optional for motors 11 2 E ... 26 2 E, 7 4 E ... 22 4 E, 7 6 E ... 18 6 E

| Feature                                                     | Motor                                                                                                                                                                                                                      |                   |                                                        |                                                                                                                       |                                                                                                      |                     |                       |                                                                                         |
|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|---------------------|-----------------------|-----------------------------------------------------------------------------------------|
| 2 poles                                                     | 3 2 E ... 26 2 E                                                                                                                                                                                                           | 30 2 E ... 37 2 E | 55 2 E ... 75 2 E                                      | 18 2 F ... 75 2 F                                                                                                     | -                                                                                                    | -                   | -                     | -                                                                                       |
| 4 poles                                                     | 2 4 E ... 22 4 E                                                                                                                                                                                                           | 30 4 E ... 37 4 E | 45 4 E ... 75 4 E                                      | 15 4 F ... 75 4 F                                                                                                     | 80 4 N ... 110 4 N                                                                                   | 130 4 N ... 175 4 N | 200 4 N ... 350 4 N   | -                                                                                       |
| 6 poles                                                     | 7 6 E ... 18 6 E                                                                                                                                                                                                           | 22 6 E ... 30 6 E | 31 6 E ... 55 6 E                                      | 15 6 F ... 55 6 F                                                                                                     | 60 6 N ... 100 6 N                                                                                   | 120 6 N ... 165 6 N | 190 6 N ... 480 6 N   | 530 6 N ... 850 6 N                                                                     |
| 8 poles                                                     | -                                                                                                                                                                                                                          | 11 8 E ... 22 8 E | 30 8 E ... 45 8 E                                      | 15 8 F ... 45 8 F                                                                                                     | 50 8 N ... 75 8 N                                                                                    | 90 8 N ... 130 8 N  | 150 8 N ... 400 8 N   | 460 8 N ... 760 8 N                                                                     |
| 10 poles                                                    | -                                                                                                                                                                                                                          | -                 | -                                                      | -                                                                                                                     | -                                                                                                    | 40 10 N ... 90 10 N | 110 10 N ... 350 10 N | 390 10 N ... 660 10 N                                                                   |
| 12 poles                                                    | -                                                                                                                                                                                                                          | -                 | -                                                      | -                                                                                                                     | -                                                                                                    | -                   | 105 12 N ... 300 12 N | 340 12 N ... 560 12 N                                                                   |
| Shaft seal                                                  | Mechanical seal with elastomer bellows / double cartridge mechanical seal <sup>12)</sup>                                                                                                                                   |                   |                                                        | Double cartridge mechanical seal                                                                                      | Mechanical seal with elastomer bellows / pump-end mechanical seal with covered spring <sup>12)</sup> |                     |                       | Stationary mechanical seal with covered spring                                          |
| Monitoring equipment                                        |                                                                                                                                                                                                                            |                   |                                                        |                                                                                                                       |                                                                                                      |                     |                       |                                                                                         |
| Winding temperature, versions U, W; installation types S, P | Temperature switches (bimetal) in the winding                                                                                                                                                                              |                   |                                                        | -                                                                                                                     | Temperature switches (bimetal) in the winding                                                        |                     |                       |                                                                                         |
| Winding temperature, versions X, Z; installation types S, P | Temperature switches (bimetal) in the winding, plus PTC thermistors for explosion protection<br>Temperature switches (bimetal) in the winding, plus temperature switches (bimetal) for explosion protection <sup>14)</sup> |                   |                                                        | -                                                                                                                     | Temperature switches (bimetal) in the winding, plus PTC thermistors for explosion protection         |                     |                       | -                                                                                       |
| Winding temperature; installation types D, H, K             | PTC thermistor                                                                                                                                                                                                             | -                 |                                                        | PTC thermistor / Pt100 resistance thermometer <sup>15)</sup>                                                          | PTC thermistor                                                                                       |                     |                       |                                                                                         |
| Coolant temperature; installation types D, K                | -                                                                                                                                                                                                                          |                   |                                                        | -                                                                                                                     | PTC thermistor                                                                                       |                     |                       |                                                                                         |
| Bearing temperature                                         | -                                                                                                                                                                                                                          |                   | Pt100 resistance thermometer (pump end) <sup>12)</sup> | Pt100 resistance thermometer (pump end) <sup>16)</sup><br><br>Pt100 resistance thermometer (drive end) <sup>15)</sup> | Pt100 resistance thermometer (pump end)<br>Pt100 resistance thermometer (drive end) <sup>12)</sup>   |                     |                       | Pt100 resistance thermometer (pump end)<br><br>Pt100 resistance thermometer (drive end) |
| Leakage in the motor space                                  | Leakage sensor in the motor space                                                                                                                                                                                          |                   |                                                        |                                                                                                                       |                                                                                                      |                     |                       |                                                                                         |
| Mechanical seal leakage                                     | -                                                                                                                                                                                                                          |                   |                                                        | Float switch in leakage area                                                                                          |                                                                                                      |                     |                       |                                                                                         |
| Vibration sensor                                            | -                                                                                                                                                                                                                          |                   |                                                        | Internal vibration sensor <sup>15)</sup>                                                                              | Internal vibration sensor <sup>12)</sup>                                                             |                     |                       |                                                                                         |
| Coating                                                     | Environmentally friendly KSB standard coating (colour RAL 5002) / 250 µm, 2-component epoxy coating <sup>12)</sup>                                                                                                         |                   |                                                        |                                                                                                                       |                                                                                                      |                     |                       |                                                                                         |
| Maximum fluid temperature and ambient temperature           |                                                                                                                                                                                                                            |                   |                                                        |                                                                                                                       |                                                                                                      |                     |                       |                                                                                         |

<sup>14)</sup> Only for motors 3 2 E, 2 4 E, 3 4 E

<sup>15)</sup> Option: Premium package

<sup>16)</sup> Option: Basic Plus package or Premium package

| Feature                                                             | Motor                                                                                                                                              |                   |                   |                                               |                                                               |                     |                       |                       |
|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------|-----------------------------------------------|---------------------------------------------------------------|---------------------|-----------------------|-----------------------|
| 2 poles                                                             | 3 2 E ... 26 2 E                                                                                                                                   | 30 2 E ... 37 2 E | 55 2 E ... 75 2 E | 18 2 F ... 75 2 F                             | -                                                             | -                   | -                     | -                     |
| 4 poles                                                             | 2 4 E ... 22 4 E                                                                                                                                   | 30 4 E ... 37 4 E | 45 4 E ... 75 4 E | 15 4 F ... 75 4 F                             | 80 4 N ... 110 4 N                                            | 130 4 N ... 175 4 N | 200 4 N ... 350 4 N   | -                     |
| 6 poles                                                             | 7 6 E ... 18 6 E                                                                                                                                   | 22 6 E ... 30 6 E | 31 6 E ... 55 6 E | 15 6 F ... 55 6 F                             | 60 6 N ... 100 6 N                                            | 120 6 N ... 165 6 N | 190 6 N ... 480 6 N   | 530 6 N ... 850 6 N   |
| 8 poles                                                             | -                                                                                                                                                  | 11 8 E ... 22 8 E | 30 8 E ... 45 8 E | 15 8 F ... 45 8 F                             | 50 8 N ... 75 8 N                                             | 90 8 N ... 130 8 N  | 150 8 N ... 400 8 N   | 460 8 N ... 760 8 N   |
| 10 poles                                                            | -                                                                                                                                                  | -                 | -                 | -                                             | -                                                             | 40 10 N ... 90 10 N | 110 10 N ... 350 10 N | 390 10 N ... 660 10 N |
| 12 poles                                                            | -                                                                                                                                                  | -                 | -                 | -                                             | -                                                             | -                   | 105 12 N ... 300 12 N | 340 12 N ... 560 12 N |
| Version U                                                           | 40 °C <sup>17), 18)</sup>                                                                                                                          |                   |                   | 40 °C <sup>17)</sup> and 55 °C <sup>18)</sup> | 40 °C <sup>17), 18)</sup>                                     |                     |                       |                       |
| Version X                                                           | 40 °C <sup>17), 18)</sup>                                                                                                                          |                   |                   | 40 °C <sup>17)</sup> and 55 °C <sup>18)</sup> | 40 °C <sup>17), 18)</sup>                                     |                     |                       | -                     |
| Version Y                                                           | 40 °C <sup>17), 18)</sup>                                                                                                                          |                   |                   | -                                             | 40 °C <sup>17), 18)</sup>                                     |                     |                       | -                     |
| Versions W, Z                                                       | 60 °C <sup>17), 18)</sup>                                                                                                                          |                   |                   | -                                             | 60 °C <sup>17), 18)</sup>                                     |                     |                       | -                     |
| Tests/inspections                                                   |                                                                                                                                                    |                   |                   |                                               |                                                               |                     |                       |                       |
| Hydraulic system                                                    | KSB standard (ZN 56525) / S impeller, D impeller, E impeller, F impeller (ISO 9906/A) <sup>12)</sup> / K impeller (ISO 9906//1/2/A) <sup>12)</sup> |                   |                   |                                               |                                                               |                     |                       |                       |
| General                                                             | KSB standard (ZN 56525)                                                                                                                            |                   |                   |                                               |                                                               |                     |                       |                       |
| Installation type                                                   |                                                                                                                                                    |                   |                   |                                               |                                                               |                     |                       |                       |
| Stationary, with guide wire arrangement                             | Installation depth 4.5 m / 15 m <sup>19)</sup> / ≤ 30 m <sup>12)</sup>                                                                             |                   |                   |                                               |                                                               |                     |                       |                       |
| Transportable                                                       | Up to size 300-403<br>(except sizes 200-503/504/505, 200-632)                                                                                      |                   |                   | -                                             | Up to size 300-403<br>(except sizes 200-503/504/505, 200-632) |                     |                       | -                     |
| Stationary, with guide rail arrangement                             | Installation depth 4.5 m / ≤ 30 m <sup>12)</sup>                                                                                                   |                   |                   |                                               |                                                               |                     |                       |                       |
| Stationary, dry-in-<br>stalled                                      | - air cooling <sup>13)</sup>                                                                                                                       |                   |                   | With cooling jacket                           | With cooling jacket                                           |                     |                       |                       |
| Stationary, dry-in-<br>stalled, horizontal,<br>with maintenance aid | -                                                                                                                                                  |                   |                   | With Amaslide <sup>12)</sup>                  | -                                                             |                     |                       |                       |

<sup>17)</sup> Fluid temperature

<sup>18)</sup> Ambient temperature

<sup>19)</sup> From size K200-503

Table 6: Material variants H, C1, C2

| Feature                                     | Motor                                                                                                        |                   |                   |                                                                                                                       |                     |                                                |                              |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------|-------------------|-------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------|------------------------------------------------|------------------------------|
| 2 poles                                     | 3 2 E ... 26 2 E                                                                                             | 30 2 E ... 37 2 E | 55 2 E ... 75 2 E | -                                                                                                                     | -                   | -                                              | -                            |
| 4 poles                                     | 2 4 E ... 22 4 E                                                                                             | 30 4 E ... 37 4 E | 45 4 E ... 75 4 E | 80 4 N ... 110 4 N                                                                                                    | 130 4 N ... 175 4 N | 200 4 N ... 350 4 N                            | -                            |
| 6 poles                                     | 7 6 E ... 18 6 E                                                                                             | 22 6 E ... 30 6 E | 31 6 E ... 55 6 E | 60 6 N ... 100 6 N                                                                                                    | 120 6 N ... 165 6 N | 190 6 N ... 480 6 N                            | 530 6 N ... 850 6 N          |
| 8 poles                                     | -                                                                                                            | 11 8 E ... 22 8 E | 30 8 E ... 45 8 E | 50 8 N ... 75 8 N                                                                                                     | 90 8 N ... 130 8 N  | 150 8 N ... 400 8 N                            | 460 8 N ... 760 8 N          |
| 10 poles                                    | -                                                                                                            | -                 | -                 | -                                                                                                                     | 40 10 N ... 90 10 N | 110 10 N ... 350 10 N                          | 390 10 N ... 660 10 N        |
| 12 poles                                    | -                                                                                                            | -                 | -                 | -                                                                                                                     | -                   | 105 12 N ... 300 12 N                          | 340 12 N ... 560 12 N        |
| Shaft material for material variant H       |                                                                                                              |                   |                   |                                                                                                                       |                     |                                                |                              |
| Shaft                                       | 1.4021                                                                                                       |                   |                   |                                                                                                                       |                     |                                                |                              |
| Shaft material for material variants C1, C2 |                                                                                                              |                   |                   |                                                                                                                       |                     |                                                |                              |
| Shaft                                       | 1.4462 / C45+N                                                                                               |                   |                   | 1.4021 <sup>20)</sup>                                                                                                 | 1.4021              |                                                |                              |
| Suction flange                              | Drilled to DN 2501 <sup>12)</sup>                                                                            |                   |                   |                                                                                                                       |                     |                                                |                              |
| Bearing assembly                            | Grease-packed rolling element bearings sealed for life                                                       |                   |                   | Regreasable rolling element bearings (pump end)<br>Grease-packed rolling element bearings sealed for life (drive end) |                     |                                                |                              |
| Explosion protection                        |                                                                                                              |                   |                   |                                                                                                                       |                     |                                                |                              |
| Version U                                   | Non-explosion-proof                                                                                          |                   |                   |                                                                                                                       |                     |                                                |                              |
| Version X                                   | ⊕ II2G Ex db h IIB T3 Gb                                                                                     |                   |                   |                                                                                                                       |                     |                                                | -                            |
| Version Y                                   | ⊕ II2G Ex db h IIB T4 Gb                                                                                     |                   |                   |                                                                                                                       |                     | -                                              | -                            |
| Version W                                   | Non-explosion-proof                                                                                          |                   |                   |                                                                                                                       |                     |                                                |                              |
| Version Z                                   | ⊕ II2G Ex db h IIB T3 Gb                                                                                     |                   |                   |                                                                                                                       |                     |                                                | -                            |
| Motor                                       |                                                                                                              |                   |                   |                                                                                                                       |                     |                                                |                              |
| Starting method                             | DOL / star-delta (690 V only DOL) <sup>11)</sup>                                                             |                   |                   |                                                                                                                       |                     |                                                | DOL                          |
| Voltage                                     | 400 V / 380 V <sup>12)</sup> / 415 V <sup>12)</sup> / 500 V <sup>12)</sup> / 690 V <sup>12)</sup>            |                   |                   |                                                                                                                       |                     |                                                | 400 V / 690 V <sup>12)</sup> |
| Cooling                                     | Cooled by surrounding fluid                                                                                  |                   |                   |                                                                                                                       |                     |                                                |                              |
| Immersion depth                             | ≤ 30 m                                                                                                       |                   |                   |                                                                                                                       |                     |                                                |                              |
| Power cable                                 |                                                                                                              |                   |                   |                                                                                                                       |                     |                                                |                              |
| Type                                        | See "Overview of power cables" (⇒ Table 7)                                                                   |                   |                   |                                                                                                                       |                     |                                                |                              |
| Length                                      | 10 m / ≤ 40 m <sup>12)</sup>                                                                                 |                   |                   |                                                                                                                       |                     |                                                |                              |
| Cable entry                                 | Absolutely water-tight                                                                                       |                   |                   |                                                                                                                       |                     |                                                |                              |
| Sealing elements                            |                                                                                                              |                   |                   |                                                                                                                       |                     |                                                |                              |
| Elastomer seals                             | Nitrile butadiene rubber NBR / Viton = fluorocarbon rubber FPM <sup>12)</sup> / fluorocarbon rubber FPM (C2) |                   |                   |                                                                                                                       |                     |                                                |                              |
| Shaft seal                                  | C1: Mechanical seal with elastomer bellows <sup>21)</sup><br>H, C2: Double cartridge mechanical seal         |                   |                   | C1: Mechanical seal with elastomer bellows <sup>22)</sup><br>H, C2: Pump-end mechanical seal with covered spring      |                     | Stationary mechanical seal with covered spring |                              |
| Monitoring equipment                        |                                                                                                              |                   |                   |                                                                                                                       |                     |                                                |                              |

<sup>20)</sup> For maximum nominal impeller diameters 400 mm / 401 mm / 402 mm / 403 mm: 1.4462

<sup>21)</sup> Optional: Double cartridge mechanical seal

<sup>22)</sup> Optional: Mechanical seal with covered spring

| Feature                                           | Motor                                                                                                                                                                                                                          |                   |                                                        |                                                                                                    |                     |                                                                                         |                       |
|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------|-----------------------------------------------------------------------------------------|-----------------------|
| 2 poles                                           | 3 2 E ... 26 2 E                                                                                                                                                                                                               | 30 2 E ... 37 2 E | 55 2 E ... 75 2 E                                      | -                                                                                                  | -                   | -                                                                                       | -                     |
| 4 poles                                           | 2 4 E ... 22 4 E                                                                                                                                                                                                               | 30 4 E ... 37 4 E | 45 4 E ... 75 4 E                                      | 80 4 N ... 110 4 N                                                                                 | 130 4 N ... 175 4 N | 200 4 N ... 350 4 N                                                                     | -                     |
| 6 poles                                           | 7 6 E ... 18 6 E                                                                                                                                                                                                               | 22 6 E ... 30 6 E | 31 6 E ... 55 6 E                                      | 60 6 N ... 100 6 N                                                                                 | 120 6 N ... 165 6 N | 190 6 N ... 480 6 N                                                                     | 530 6 N ... 850 6 N   |
| 8 poles                                           | -                                                                                                                                                                                                                              | 11 8 E ... 22 8 E | 30 8 E ... 45 8 E                                      | 50 8 N ... 75 8 N                                                                                  | 90 8 N ... 130 8 N  | 150 8 N ... 400 8 N                                                                     | 460 8 N ... 760 8 N   |
| 10 poles                                          | -                                                                                                                                                                                                                              | -                 | -                                                      | -                                                                                                  | 40 10 N ... 90 10 N | 110 10 N ... 350 10 N                                                                   | 390 10 N ... 660 10 N |
| 12 poles                                          | -                                                                                                                                                                                                                              | -                 | -                                                      | -                                                                                                  | -                   | 105 12 N ... 300 12 N                                                                   | 340 12 N ... 560 12 N |
| Winding temperature, versions U, W                | Temperature switches (bimetal) in the winding                                                                                                                                                                                  |                   |                                                        |                                                                                                    |                     |                                                                                         |                       |
| Winding temperature, versions X, Y                | Temperature switches (bimetal) in the winding, plus PTC thermistors for explosion protection<br><br>Temperature switches (bimetal) in the winding, plus temperature switches (bimetal) for explosion protection <sup>14)</sup> |                   |                                                        | Temperature switches (bimetal) in the winding, plus PTC thermistors for explosion protection       |                     |                                                                                         |                       |
| Bearing temperature                               | -                                                                                                                                                                                                                              |                   | Pt100 resistance thermometer (pump end) <sup>12)</sup> | Pt100 resistance thermometer (pump end)<br>Pt100 resistance thermometer (drive end) <sup>12)</sup> |                     | Pt100 resistance thermometer (pump end)<br><br>Pt100 resistance thermometer (drive end) |                       |
| Motor leakage                                     | Leakage sensor in the motor space                                                                                                                                                                                              |                   |                                                        |                                                                                                    |                     |                                                                                         |                       |
| Coating                                           | H: Environmentally friendly KSB standard coating (colour RAL 5002) / H: 250 µm, 2-component epoxy coating <sup>12)</sup> / C1, C2: Without coating                                                                             |                   |                                                        |                                                                                                    |                     |                                                                                         |                       |
| Maximum fluid temperature and ambient temperature |                                                                                                                                                                                                                                |                   |                                                        |                                                                                                    |                     |                                                                                         |                       |
| Version U                                         | 40 °C <sup>17), 18)</sup>                                                                                                                                                                                                      |                   |                                                        | 40 °C <sup>23), 17), 18)</sup><br>30 °C <sup>24), 17), 18)</sup>                                   |                     |                                                                                         |                       |
| Versions X, Y                                     | 40 °C <sup>17), 18)</sup>                                                                                                                                                                                                      |                   |                                                        | 40 °C <sup>23), 17), 18)</sup><br>30 °C <sup>24), 17), 18)</sup>                                   |                     | -                                                                                       |                       |
| Versions W, Z                                     | 60 °C <sup>17), 18)</sup>                                                                                                                                                                                                      |                   |                                                        |                                                                                                    |                     | -                                                                                       |                       |
| Tests/inspections                                 |                                                                                                                                                                                                                                |                   |                                                        |                                                                                                    |                     |                                                                                         |                       |
| Hydraulic system                                  | KSB standard (ZN 56525) / S impeller, F impeller (ISO 9906/A) <sup>12)</sup> / K impeller (ISO 9906//1/2/A) <sup>12)</sup>                                                                                                     |                   |                                                        |                                                                                                    |                     |                                                                                         |                       |
| General                                           | KSB standard (ZN 56525)                                                                                                                                                                                                        |                   |                                                        |                                                                                                    |                     |                                                                                         |                       |
| Installation type                                 |                                                                                                                                                                                                                                |                   |                                                        |                                                                                                    |                     |                                                                                         |                       |
| Stationary, with guide wire arrangement           | Installation depth 4.5 m / ≤ 30 m <sup>12)</sup>                                                                                                                                                                               |                   |                                                        |                                                                                                    |                     |                                                                                         |                       |
| Transportable                                     | Installation depth 4.5 m                                                                                                                                                                                                       |                   |                                                        |                                                                                                    | -                   |                                                                                         |                       |

<sup>23</sup> White cast iron H

<sup>24</sup> Stainless steel C

Table 7: Overview of power cables

| Feature                                                           | S1BN8-F<br>rubber-sheathed cable | S07RC4N8-F<br>rubber-sheathed cable | TEHSITE<br>Tefzel cable |
|-------------------------------------------------------------------|----------------------------------|-------------------------------------|-------------------------|
| Design                                                            | Standard                         | Optional                            | Optional                |
| Rated voltage                                                     | 1000 V                           | 750 V                               | 750 V                   |
| EMC screening                                                     | -                                | ✓                                   | -                       |
| Insulation material                                               | EPR <sup>25)</sup>               | EPR <sup>25)</sup>                  | ETFE <sup>26)</sup>     |
| Max. continuous temperature of insulation                         | 90 °C                            | 90 °C                               | 135 °C                  |
| For permanent immersion in waste water to DIN VDE 0282-16/HD22.16 | ✓                                | ✓                                   | ✓                       |

<sup>25)</sup> EPR = ethylene propylene rubber  
<sup>26)</sup> ETFE = ethylene tetrafluoroethylene

## Impellers

|                                                                                   |                                                 |                                                                                                     |
|-----------------------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------------------|
|  | Impeller with cutter<br>(impeller type S/S-max) | <b>Suitable for the following fluids:</b><br>fluids containing coarse substances and/or long fibres |
|-----------------------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------------------|

Further fluids (impeller type S/S-max):

- Domestic waste water
- Grey water
- Waste water with faeces

|                                                                                   |                                                             |                                                                                                                                                  |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Free-flow impeller<br>(impeller type F/F-max)               | <b>Suitable for the following fluids:</b><br>fluids containing solids and stringy material as well as fluids with entrapped air or entrapped gas |
|  | Closed single-channel impeller<br>(impeller type E/E-max)   | <b>Suitable for the following fluids:</b><br>fluids containing solids and stringy material                                                       |
|  | Open, diagonal single-channel impeller<br>(impeller type D) | <b>Suitable for the following fluids:</b><br>fluids containing solid substances and long fibres                                                  |
|  | Open radial multi-vane impeller<br>(impeller type D-max)    | <b>Suitable for the following fluids:</b><br>fluids containing solid substances and long fibres                                                  |

Further fluids (impeller types F/F-max, E/E-max, D/D-max):

- Activated sludge
- Digested sludge
- Heating sludge
- Mixed water
- Raw waste water
- Raw sludge
- Recirculated sludge

|                                                                                     |                                                          |                                                                                                                      |
|-------------------------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
|  | Closed multi-channel impeller<br>(impeller type K/K-max) | <b>Suitable for the following fluids:</b><br>contaminated, solids-laden, non-gaseous fluids without stringy material |
|-------------------------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|

Further fluids (impeller type K/K-max):

- Activated sludge
- Landfill waste water
- Industrial waste water
- Industrial grey water
- Mechanically treated waste water
- Pre-screened waste water
- Stormwater

## Overview of fluids handled

The table below for your guidance is based on KSB's long-standing experience. The data are standard values and are not to be considered as generally binding recommendations. More detailed advice is available from KSB. Make use of our laboratory's expertise when selecting materials.

**Table 8:** Selection aid for materials and hydraulic systems per fluid

| Fluid handled <sup>27)</sup>                    | Recommended material variant | Recommended impeller type <sup>28)</sup>    | Comments, further recommendations                                                   |
|-------------------------------------------------|------------------------------|---------------------------------------------|-------------------------------------------------------------------------------------|
| Grey water                                      | G                            | K/K-max, D/D-max, E/E-max, F/F-max          | Free passage > any solids contained, possibly pre-screened                          |
| River water                                     | G                            | K/K-max, D/D-max, E/E-max, F/F-max          | Free passage > any solids contained, possibly pre-screened                          |
| Stormwater                                      | G                            | K/K-max, D/D-max, E/E-max, F/F-max          | Free passage > any solids contained, possibly pre-screened                          |
| Waste water:                                    |                              |                                             |                                                                                     |
| ▪ Untreated municipal waste water               | G                            | F/F-max, S/S-max, D/D-max, E/E-max, K/K-max | ATV <sup>29)</sup> recommends a free passage of 100 mm; minimum free passage: 76 mm |
| ▪ Containing air and gas                        | G                            | F/F-max                                     | Up to 8 %, contact KSB for fluids with high outgassing rates                        |
| Sludges:                                        |                              |                                             |                                                                                     |
| ▪ Raw sludge                                    | G                            | F/F-max, D/D-max, E/E-max                   | Pumpable up to a dry substance content of: 13 % (D), 8 % (F/D-max), 6 % (E)         |
| ▪ Digested sludge                               | G                            | F/F-max, D/D-max, E/E-max                   | Pumpable up to a dry substance content of: 13 % (D), 8 % (F/D-max), 6 % (E)         |
| ▪ Activated sludge                              | G                            | D/D-max, K/K-max                            | Pumpable up to a dry substance content of: 13 % (D), 8 % (D-max), 5 % (K)           |
| Industrial waste water containing:              |                              |                                             |                                                                                     |
| ▪ Paint suspensions                             | G                            | K/K-max                                     | Solvent-free, observe the operator's instructions.                                  |
| ▪ Lacquer/paint/varnish suspensions             | G                            | F/F-max, E/E-max                            | Solvent-free, contact KSB for silicone-free version.                                |
| ▪ Fibrous material                              | G                            | F/F-max, S/S-max, D/D-max                   | -                                                                                   |
| ▪ Chips/swarf                                   | G2 / GH                      | K/K-max, F/F-max                            | Material variants G2 or GH, special mechanical seal, solids content < 5 g/l         |
| ▪ Abrasive substances <sup>30)</sup>            | G2 / GH                      | K/K-max, F/F-max                            | Material variants G2 or GH, special mechanical seal, solids content < 5 g/l         |
| Mildly acidic industrial waste water            | C                            | K/K-max, F/F-max                            | pH ≥ 6.5, material variant C1 and FPM (Viton) O-rings                               |
| Neutral non-corrosive waste water:              |                              |                                             |                                                                                     |
| ▪ Ammonium hydroxide                            | G                            | K/K-max                                     | -                                                                                   |
| ▪ Ammonium hydroxide 5 % NH <sub>4</sub> OH     | G                            | K/K-max                                     | -                                                                                   |
| ▪ Urea 25 % (NH <sub>2</sub> ) <sub>2</sub> -CO | G                            | K/K-max                                     | -                                                                                   |

<sup>27)</sup> For any fluids which are not listed in this table contact KSB.

<sup>28)</sup> The first impeller type listed should be given preference.

<sup>29)</sup> ATV = German regulatory body for waste water management

<sup>30)</sup> Severe hydroabrasive wear occurs if solids contents of approx. 0.5 g/l or higher are combined with circumferential speeds exceeding 20 m/s or low-flow conditions to the left of the duty point.

| Fluid handled <sup>27)</sup>                                                                             | Recommended material variant   | Recommended impeller type <sup>28)</sup> | Comments, further recommendations                                                             |
|----------------------------------------------------------------------------------------------------------|--------------------------------|------------------------------------------|-----------------------------------------------------------------------------------------------|
| ▪ Potassium hydroxide 10 % KOH                                                                           | G                              | K/K-max                                  | -                                                                                             |
| ▪ Calcium hydroxide 5 % Ca(OH) <sub>2</sub>                                                              | G                              | K/K-max                                  | -                                                                                             |
| ▪ Sodium hydroxide 5 % NaOH                                                                              | G                              | K/K-max                                  | -                                                                                             |
| ▪ Sodium carbonate 30 % Na <sub>2</sub> CO <sub>3</sub>                                                  | G                              | K/K-max                                  | -                                                                                             |
| Neutral, non-corrosive waste water containing:                                                           |                                |                                          |                                                                                               |
| ▪ Aliphatic hydrocarbons, e.g. oils, petrol, butane, methane                                             | G                              | K/K-max                                  | -                                                                                             |
| ▪ Aromatic hydrocarbons, e.g. benzene, styrene                                                           | G                              | K/K-max                                  | FPM (Viton) O-rings <sup>31)</sup>                                                            |
| ▪ Chlorinated hydrocarbons (e.g. tetrachloroethylene, ethylene chloride, chloroform, methylene chloride) | G                              | K/K-max                                  | FPM (Viton) O-rings <sup>31)</sup>                                                            |
| Highly abrasive industrial waste water causing wear (chemically neutral): <sup>32)</sup>                 |                                |                                          |                                                                                               |
| ▪ Water containing iron ore sinter                                                                       | GH / H                         | K/K-max                                  | Sinter content < 5 g/l: material variant GH<br>Sinter content > 5 g/l: material variant H     |
| ▪ Lime milk containing quartz and pigment suspensions                                                    | GH / H                         | K/K-max                                  | Lime milk content < 15 %: material variant GH<br>Lime milk content > 15 %: material variant H |
| ▪ Wash water containing solids                                                                           | Wear-resistant white cast iron | K/K-max, F/F-max                         | Material selection based on fluid analysis                                                    |
| ▪ Waste water containing dust or ash                                                                     | GH / H                         | K/K-max                                  | Material selection based on fluid analysis                                                    |
| Water/sand mixture                                                                                       | GH / H                         | K/K-max, F/F-max                         | Solids content < 5 g/l: material variant GH<br>Solids content > 5 g/l: material variant H     |
| Seawater                                                                                                 | C                              | K/K-max, F/F-max                         | Material variant C2 ≤ 25 °C fluid temperature <sup>33)</sup>                                  |
| Brackish water                                                                                           | G1 / C1                        | K/K-max, F/F-max                         | Material variant C1 or G1 (with 250 µm two-component epoxy resin), depending on salt content  |
| Corrosive industrial waste water                                                                         | C                              | K/K-max, F/F-max                         | Material variants C1 or C2, depending on fluid analysis                                       |

<sup>31)</sup> The hydrocarbons mentioned may occur in very high concentrations due to the difference in specific weight and their low solubility. If this is the case, contact KSB.

<sup>32)</sup> The required material variants highly depend on the operating hours, rotational speed and flow velocity.

<sup>33)</sup> Higher fluid temperatures on request.

## Shaft seal

Available shaft seal types per bearing bracket

Table 9: UE/WE/XE/YE/ZE motors

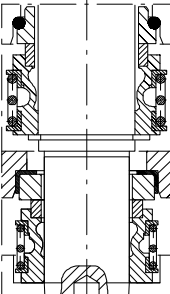
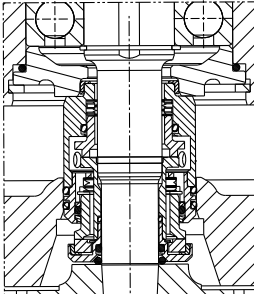
| Mechanical seal with elastomer bellows <sup>34)</sup>                             | Double cartridge mechanical seal <sup>35)</sup>                                    |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|  |  |

Table 10: UF/XF motors

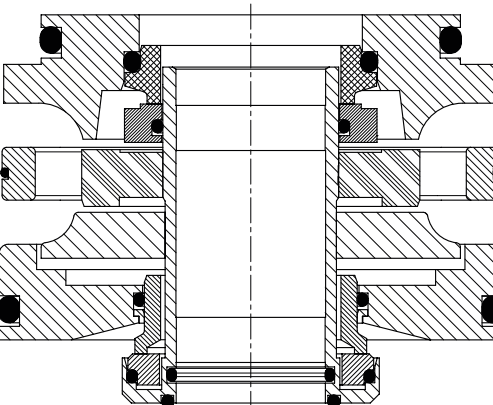
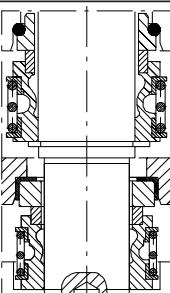
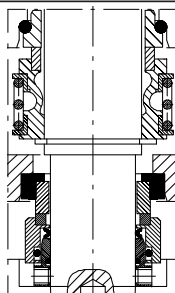
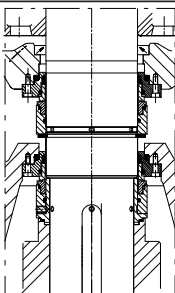
| Double cartridge mechanical seal                                                   |
|------------------------------------------------------------------------------------|
|  |

Table 11: UN/WN/XN/YN/ZN motors

| Mechanical seal with elastomer bellows <sup>34)</sup>                               | Pump-end mechanical seal with covered spring <sup>35)</sup>                         | Stationary mechanical seal with spring outside of fluid handled                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |

For more information, see overview of product features. (⇒ Page 8)

<sup>34)</sup> For all types of waste water

<sup>35)</sup> For very abrasive fluids or fluids containing metallic particles (e.g. shavings from drilling)

**Technical data**
**Table 12: Grey cast iron (G, G1, G2, GH)**

| Size    | Impeller type | Material variant | Impeller          |                   |                                  |                                  | Installation type                                |                       |                                                  |                       | Moment of inertia J <sup>36)</sup> |
|---------|---------------|------------------|-------------------|-------------------|----------------------------------|----------------------------------|--------------------------------------------------|-----------------------|--------------------------------------------------|-----------------------|------------------------------------|
|         |               |                  |                   |                   |                                  |                                  | D, H                                             |                       | K, S, P                                          |                       |                                    |
|         |               |                  | Impeller channels | Free pas-<br>sage | Max. im-<br>peller dia-<br>meter | Min. im-<br>peller dia-<br>meter | Max. oper-<br>ating pres-<br>sure <sup>37)</sup> | Max. test<br>pressure | Max. oper-<br>ating pres-<br>sure <sup>37)</sup> | Max. test<br>pressure |                                    |
|         |               |                  | Qty               | [mm]              | [mm]                             | [mm]                             | [bar]                                            | [bar]                 | [bar]                                            | [bar]                 |                                    |
| 40-252  | S             | G                | 4                 | 7                 | 235                              | 175                              | -                                                | -                     | 10                                               | 13                    | 0,03                               |
| 40-252  | F             | G, G1, G2, GH    | -                 | 25                | 210                              | 150                              | 10                                               | 15                    | 7,6                                              | 9,8                   | 0,03                               |
| 40-252  | K             | G, G1, G2, GH    | 3                 | 15                | 260                              | 150                              | 10                                               | 15                    | 10                                               | 13                    | 0,047                              |
| 50-215  | F             | G, G1, G2, GH    | -                 | 42                | 210                              | 130                              | 10                                               | 15                    | 8                                                | 10,5                  | 0,019                              |
| 50-216  | S             | G                | 4                 | 4                 | 210                              | 175                              | -                                                | -                     | 9                                                | 12                    | 0,018                              |
| 50-216  | F             | G, G1, G2, GH    | -                 | 25                | 210                              | 130                              | 10                                               | 15                    | 6,5                                              | 8,5                   | 0,025                              |
| 65-215  | F             | G, G1, G2, GH    | -                 | 65                | 210                              | 130                              | 6                                                | 9                     | 5,5                                              | 7,5                   | 0,025                              |
| 65-216  | E             | G                | 1                 | 65                | 180                              | 140                              | 6                                                | 9                     | 5,5                                              | 7,5                   | 0,02                               |
| 65-217  | F             | G, G1, G2, GH    | -                 | 65                | 200                              | 130                              | 7                                                | 10,5                  | 6                                                | 8                     | 0,02                               |
| 80-215  | F             | G, G1, G2, GH    | -                 | 76                | 200                              | 130                              | 5,5                                              | 8,5                   | 4,5                                              | 6                     | 0,025                              |
| 80-216  | F             | G, G1, G2, GH    | -                 | 76                | 210                              | 130                              | 7                                                | 10,5                  | 5                                                | 6,5                   | 0,025                              |
| 80-216  | E             | G                | 1                 | 76                | 210                              | 160                              | 7                                                | 10,5                  | 5,5                                              | 7,5                   | 0,035                              |
| 80-252  | F             | G, G1, G2, GH    | -                 | 76                | 265                              | 150                              | 6                                                | 9                     | 6,3                                              | 8,2                   | 0,14                               |
| 80-253  | F             | G, G1, G2, GH    | -                 | 76                | 237                              | 150                              | 7,2                                              | 10,8                  | 7,2                                              | 9,4                   | 0,055                              |
| 80-253  | E             | G                | 1                 | 76                | 270                              | 225                              | 6                                                | 9                     | 2,8                                              | 3,7                   | 0,17                               |
| 80-253  | K             | G, G1, G2, GH    | 2                 | 33                | 220                              | 140                              | 6,6                                              | 10                    | 6,6                                              | 8,6                   | 0,15                               |
| 80-315  | D             | G, G1            | 1                 | 65                | 260                              | 230                              | 10                                               | 15                    | 11                                               | 15                    | 0,124                              |
| 80-315  | K             | G, G1, G2        | 2                 | 33                | 260                              | 140                              | 10                                               | 15                    | 9,1                                              | 11,9                  | 0,11                               |
| 80-317  | F             | G, G1, G2, GH    | -                 | 76                | 240                              | 150                              | 10                                               | 15                    | 7                                                | 9,1                   | 0,14                               |
| 80-317  | D             | G, G1            | 1                 | 76                | 220                              | 180                              | 10                                               | 15                    | 6                                                | 9                     | 0,047                              |
| 100-215 | F             | G, G1, G2, GH    | -                 | 100               | 210                              | 130                              | 6                                                | 9                     | 4                                                | 5,5                   | 0,025                              |
| 100-253 | E             | G                | 1                 | 76                | 270                              | 210                              | 5,5                                              | 8,5                   | 4,5                                              | 6                     | 0,15                               |
| 100-253 | D             | G, G1            | 1                 | 76                | 265                              | 234                              | 6                                                | 9                     | 3,5                                              | 4,6                   | 0,115                              |
| 100-253 | K             | G, G1, G2, GH    | 2                 | 76                | 256                              | 200                              | 4,5                                              | 7                     | 3,5                                              | 4,6                   | 0,15                               |
| 100-254 | F             | G, G1, G2, GH    | -                 | 100               | 265                              | 200                              | 6                                                | 9                     | 3,4                                              | 4,5                   | 0,056                              |
| 100-254 | K             | G, G1, G2, GH    | 2                 | 71                | 256                              | 210                              | 6                                                | 9                     | 2,5                                              | 3,2                   | 0,07                               |
| 100-315 | F             | G, G1, G2, GH    | -                 | 100               | 310                              | 270                              | -                                                | -                     | 3,5                                              | 4,6                   | 0,056                              |
| 100-315 | E             | G                | 1                 | 100               | 330                              | 262                              | -                                                | -                     | 4,3                                              | 5,6                   | 0,26                               |
| 100-315 | D             | G, G1            | 1                 | 75                | 222                              | 196                              | 10                                               | 15                    | 6,8                                              | 8,8                   | 0,065                              |
| 100-315 | K             | G, G1, G2, GH    | 2                 | 80                | 312                              | 254                              | -                                                | -                     | 4                                                | 5,2                   | 0,15                               |
| 100-316 | D             | G, G1            | 1                 | 85                | 306                              | 270                              | 10                                               | 15                    | 3,6                                              | 4,7                   | 0,233                              |
| 100-316 | F             | G, G1, G2, GH    | -                 | 100               | 310                              | 236                              | 6                                                | 9                     | 4,9                                              | 6,4                   | 0,075                              |
| 100-316 | K             | G, G1, G2, GH    | 2                 | 76                | 309                              | 235                              | 6                                                | 9                     | 4,9                                              | 6,4                   | 0,13                               |
| 100-317 | E             | G                | 1                 | 76                | 328                              | 286                              | 7                                                | 10,5                  | 6                                                | 8                     | 0,25                               |
| 100-400 | K             | G, G1, G2, GH    | 2                 | 76                | 408                              | 355                              | 10                                               | 15                    | 9,2                                              | 12                    | 1,1                                |
| 100-403 | D             | G, G1, G2        | 2                 | 76                | 408                              | 300                              | 10                                               | 15                    | 9,2                                              | 12                    | 0,5                                |
| 100-401 | F             | G, G1, G2, GH    | -                 | 100               | 390                              | 325                              | 10                                               | 13                    | 7,6                                              | 9,8                   | 0,248                              |
| 100-401 | E             | G                | 1                 | 80                | 412                              | 389                              | -                                                | -                     | 5,1                                              | 6,6                   | 0,6                                |
| 100-401 | K             | G, G1, G2, GH    | 2                 | 50                | 404                              | 310                              | 10                                               | 13                    | 9,3                                              | 12,1                  | 0,504                              |
| 150-253 | D             | G, G1            | 1                 | 100               | 254                              | 225                              | 6                                                | 9                     | 1,9                                              | 2,4                   | 0,15                               |
| 150-315 | F             | G, G1, G2, GH    | -                 | 120               | 290                              | 250                              | 6                                                | 9                     | 1,8                                              | 2,3                   | 0,144                              |
| 150-315 | D             | G, G1            | 1                 | 100               | 317                              | 280                              | 6                                                | 9                     | 3,3                                              | 4,3                   | 0,289                              |
| 150-317 | D             | G, G1, G2        | 2                 | 76                | 309                              | 250                              | 6                                                | 9                     | 5                                                | 6,5                   | 0,17                               |
| 150-317 | E             | G                | 1                 | 110               | 320                              | 254                              | 6                                                | 9                     | 3,1                                              | 4,1                   | 0,31                               |
| 150-317 | K             | G, G1, G2, GH    | 2                 | 76                | 309                              | 250                              | 6                                                | 9                     | 5                                                | 6,5                   | 0,28                               |
| 150-400 | D             | G, G1            | 1                 | 100               | 363                              | 326                              | 10                                               | 15                    | 5,2                                              | 6,8                   | 0,573                              |
| 150-400 | K             | G, G1, G2, GH    | 3                 | 76                | 404                              | 300                              | 10                                               | 15                    | 8,4                                              | 11                    | 0,83                               |
| 150-401 | F             | G, G1, G2, GH    | -                 | 135               | 390                              | 270                              | 10                                               | 15                    | 4,2                                              | 5,5                   | 0,248                              |

<sup>36</sup> Data applies to maximum impeller diameter and impeller with water fill.

<sup>37</sup> Permissible operating pressure = inlet pressure + pressure at Q = 0

| Size    | Impeller type | Material variant | Impeller          |              |                        |                        | Installation type                      |                    |                                        |                    | Moment of inertia <sup>j<sub>36</sub></sup> |
|---------|---------------|------------------|-------------------|--------------|------------------------|------------------------|----------------------------------------|--------------------|----------------------------------------|--------------------|---------------------------------------------|
|         |               |                  |                   |              |                        |                        | D, H                                   |                    | K, S, P                                |                    |                                             |
|         |               |                  | Impeller channels | Free passage | Max. impeller diameter | Min. impeller diameter | Max. operating pressure <sup>37)</sup> | Max. test pressure | Max. operating pressure <sup>37)</sup> | Max. test pressure |                                             |
|         |               |                  | Qty               | [mm]         | [mm]                   | [mm]                   | [bar]                                  | [bar]              | [bar]                                  | [bar]              |                                             |
| 150-401 | E             | G                | 1                 | 115          | 407                    | 348                    | 10                                     | 15                 | 6,3                                    | 8,2                | 0,68                                        |
| 150-401 | D             | G, G1            | 1                 | 110          | 384                    | 370                    | 10                                     | 15                 | 5,3                                    | 6,9                | 0,999                                       |
| 150-403 | D             | G, G1, G2        | 2                 | 76           | 408                    | 340                    | 10                                     | 15                 | 8,5                                    | 11,1               | 0,53                                        |
| 150-403 | K             | G, G1, G2, GH    | 2                 | 76           | 408                    | 340                    | 10                                     | 15                 | 8,5                                    | 11,1               | 0,691                                       |
| 150-503 | D             | G, G1, G2        | 2                 | 76           | 508                    | 400                    | 10                                     | 15                 | 10                                     | 13                 | 1,13                                        |
| 150-503 | K             | G, G1, G2        | 2                 | 76           | 508                    | 400                    | 10                                     | 15                 | 10                                     | 13                 | 0,91                                        |
| 151-403 | K             | G, G1, G2, GH    | 2                 | 76           | 408                    | 340                    | 10                                     | 15                 | 9,3                                    | 11,9               | 0,691                                       |
| 200-401 | E             | G                | 1                 | 120          | 400                    | 319                    | 10                                     | 15                 | 5,7                                    | 7,4                | 0,86                                        |
| 200-315 | D             | G, G1            | 1                 | 100          | 315                    | 280                    | 6                                      | 9                  | 2,7                                    | 3,4                | 0,261                                       |
| 200-315 | K             | G, G1, G2, GH    | 3                 | 70           | 295                    | 245                    | 6                                      | 9                  | 1,9                                    | 2,4                | 0,22                                        |
| 200-316 | K             | G, G1, G2, GH    | 2                 | 100          | 305                    | 265                    | 6                                      | 9                  | 1,7                                    | 2,2                | 0,22                                        |
| 200-317 | K             | G, G1, G2, GH    | 3                 | 76           | 309                    | 240                    | 3                                      | 4,5                | 3,5                                    | 5                  | 0,4                                         |
| 200-318 | K             | G, G1, G2, GH    | 2                 | 100          | 309                    | 230                    | 3                                      | 4,5                | 3                                      | 4                  | 0,28                                        |
| 200-400 | D             | G, G1            | 1                 | 100          | 375                    | 355                    | 10                                     | 15                 | 4,2                                    | 5,5                | 0,825                                       |
| 200-402 | D             | G, G1, G2        | 3                 | 80           | 408                    | 300                    | 10                                     | 15                 | 6,5                                    | 9,8                | 0,5                                         |
| 200-402 | K             | G, G1, G2, GH    | 3                 | 80           | 408                    | 300                    | 6,5                                    | 9,8                | 6,5                                    | 9,8                | 0,84                                        |
| 200-405 | D             | G, G1, G2        | 2                 | 90           | 408                    | 300                    | 10                                     | 15                 | 8,7                                    | 11,4               | 0,55                                        |
| 200-403 | K             | G, G1, G2, GH    | 2                 | 90           | 408                    | 300                    | 6,5                                    | 9,8                | 6,5                                    | 9,8                | 0,931                                       |
| 200-504 | K             | G, G1            | 3                 | 76           | 508                    | 400                    | 10                                     | 15                 | 9,7                                    | 12,6               | 0,83                                        |
| 200-503 | D             | G, G1, G2        | 2                 | 90           | 508                    | 400                    | 10                                     | 15                 | 9,8                                    | 12,8               | 1,2                                         |
| 200-505 | K             | G, G1            | 2                 | 90           | 508                    | 400                    | 10                                     | 15                 | 9,8                                    | 12,8               | 1,636                                       |
| 250-400 | D             | G, G1            | 1                 | 120          | 370                    | 320                    | 10                                     | 15                 | 3,5                                    | 4,6                | 0,653                                       |
| 250-401 | K             | G, G1, G2, GH    | 2                 | 105          | 400                    | 310                    | 10                                     | 15                 | 6                                      | 7,8                | 0,55                                        |
| 250-402 | D             | G, G1, G2        | 3                 | 106          | 398                    | 300                    | 10                                     | 15                 | 6                                      | 7,8                | 0,6                                         |
| 250-403 | K             | G, G1, G2, GH    | 2                 | 107          | 408                    | 300                    | 10                                     | 15                 | 7                                      | 9,1                | 1,13                                        |
| 250-632 | K             | G, G1            | 3                 | 105          | 638                    | 500                    | 10                                     | 15                 | 10,6                                   | 13,8               | 5,684                                       |
| 250-900 | K             | G, G1            | 3                 | 110          | 840                    | 717                    | 13                                     | 19,5               | 11,7                                   | 15,2               | 19,03                                       |
| 300-400 | D             | G, G1            | 1                 | 150          | 408                    | 375                    | 10                                     | 15                 | 1,7                                    | 2,2                | 0,925                                       |
| 300-400 | K             | G, G1, G2, GH    | 3                 | 100          | 408                    | 332                    | 10                                     | 15                 | 3,5                                    | 4,6                | 0,75                                        |
| 300-401 | K             | G, G1, G2, GH    | 2                 | 135          | 408                    | 367                    | 10                                     | 15                 | 2,3                                    | 2,9                | 0,75                                        |
| 300-402 | D             | G, G1, G2        | 3                 | 100          | 408                    | 300                    | 10                                     | 15                 | 3,5                                    | 4,6                | 0,63                                        |
| 300-403 | K             | G, G1, G2, GH    | 2                 | 102          | 408                    | 300                    | 10                                     | 15                 | 3,8                                    | 5                  | 1,439                                       |
| 300-420 | K             | G, G1            | 3                 | 100          | 408                    | 370                    | 6                                      | 9                  | 5,6                                    | 7,3                | 0,95                                        |
| 300-500 | K             | G, G1            | 3                 | 90           | 504                    | 430                    | 10                                     | 15                 | 6,2                                    | 8                  | 1,48                                        |
| 300-502 | D             | G, G1, G2        | 2                 | 102          | 508                    | 400                    | 10                                     | 15                 | 8                                      | 10,4               | 2,5                                         |
| 300-505 | D             | G, G1, G2        | 2                 | 127          | 508                    | 400                    | 10                                     | 15                 | 8,5                                    | 11                 | 2,5                                         |
| 300-505 | K             | G, G1            | 2                 | 102          | 508                    | 400                    | 10                                     | 15                 | 8                                      | 10,4               | 2,919                                       |
| 350-500 | K             | G, G1            | 3                 | 110          | 508                    | 426                    | 6                                      | 9                  | 5,7                                    | 7,4                | 3,12                                        |
| 350-502 | D             | G, G1, G2        | 2                 | 145          | 508                    | 400                    | 6                                      | 9                  | 4,6                                    | 6                  | 3,5                                         |
| 350-503 | D             | G, G1, G2        | 2                 | 140          | 508                    | 400                    | 6                                      | 9                  | 4,6                                    | 6                  | 3,5                                         |
| 350-503 | K             | G, G1            | 2                 | 140          | 508                    | 400                    | 6                                      | 9                  | 4,6                                    | 6                  | 4,073                                       |
| 350-632 | K             | G, G1            | 3                 | 140          | 638                    | 500                    | 10                                     | 15                 | 6,5                                    | 8,4                | 6,451                                       |
| 350-633 | K             | G, G1            | 2                 | 135          | 638                    | 500                    | 10                                     | 15                 | 9,4                                    | 12,2               | 6,979                                       |
| 350-710 | K             | G, G1            | 3                 | 110          | 730                    | 580                    | 10                                     | 15                 | 9,4                                    | 12,2               | 10,6                                        |
| 350-713 | K             | G, G1            | 2                 | 125          | 738                    | 580                    | 13                                     | 19,5               | 12,2                                   | 16                 | 14,557                                      |
| 400-500 | K             | G, G1            | 3                 | 130          | 508                    | 443                    | 6                                      | 9                  | 3,4                                    | 4,5                | 3,37                                        |
| 400-632 | K             | G, G1            | 3                 | 142          | 638                    | 527                    | 6                                      | 9                  | 5,7                                    | 7,41               | 9,074                                       |
| 400-900 | K             | G, G1            | 3                 | 130          | 830                    | 659                    | 13                                     | 19,5               | 11,3                                   | 14,7               | 17,79                                       |
| 401-710 | K             | G, G1            | 3                 | 165          | 739                    | 587                    | 10                                     | 15                 | 8,8                                    | 11,5               | 16                                          |
| 401-713 | K             | G, G1            | 2                 | 143          | 738                    | 580                    | 11,5                                   | 17,3               | 11,5                                   | 15                 | 15,894                                      |
| 500-634 | K             | G, G1            | 3                 | 132          | 638                    | 448                    | 4,5                                    | 6                  | 4,5                                    | 6                  | 10,248                                      |
| 501-710 | K             | G, G1            | 3                 | 150          | 700                    | 586                    | 8,5                                    | 13                 | 8,5                                    | 11,5               | 16                                          |
| 501-900 | K             | G, G1            | 3                 | 178          | 908                    | 721                    | 9                                      | 13,5               | 8                                      | 10,3               | 45                                          |
| 600-520 | K             | G, G1            | 3                 | 145          | 532                    | 457                    | 4                                      | 6                  | 2,4                                    | 3,2                | 7,02                                        |

| Size    | Impeller type | Material variant | Impeller          |              |                        |                        | Installation type                       |                    |                                         |                    | Moment of inertia J <sup>(36)</sup> |
|---------|---------------|------------------|-------------------|--------------|------------------------|------------------------|-----------------------------------------|--------------------|-----------------------------------------|--------------------|-------------------------------------|
|         |               |                  |                   |              |                        |                        | D, H                                    |                    | K, S, P                                 |                    |                                     |
|         |               |                  | Impeller channels | Free passage | Max. impeller diameter | Min. impeller diameter | Max. operating pressure <sup>(37)</sup> | Max. test pressure | Max. operating pressure <sup>(37)</sup> | Max. test pressure |                                     |
|         |               |                  | Qty               | [mm]         | [mm]                   | [mm]                   | [bar]                                   | [bar]              | [bar]                                   | [bar]              |                                     |
| 600-710 | K             | G, G1            | 3                 | 165          | 736                    | 685                    | 4                                       | 6                  | 4,2                                     | 5,5                | 16,96                               |
| 700-901 | K             | G, G1            | 3                 | 180          | 908                    | 760                    | 9                                       | 13,5               | 7,2                                     | 9,3                | 50                                  |
| 700-902 | K             | G, G1            | 3                 | 190          | 887                    | 680                    | 3,5                                     | 5                  | 3,5                                     | 4,6                | 40                                  |
| 701-902 | K             | G, G1            | 3                 | 190          | 887                    | 680                    | -                                       | -                  | 5                                       | 6,5                | 40                                  |

**Table 13: Industrial materials (H, C1, C2)**

| Size    | Impeller type | Material variant | Impeller          |              |                        |                        | Installation type                       |                    | Moment of inertia J <sup>(36)</sup> |
|---------|---------------|------------------|-------------------|--------------|------------------------|------------------------|-----------------------------------------|--------------------|-------------------------------------|
|         |               |                  | Impeller channels | Free passage | Max. impeller diameter | Min. impeller diameter | S, P                                    |                    |                                     |
|         |               |                  |                   |              |                        |                        | Max. operating pressure <sup>(37)</sup> | Max. test pressure |                                     |
|         |               |                  |                   |              |                        |                        |                                         |                    |                                     |
| Qty     | [mm]          | [mm]             | [mm]              | [bar]        | [bar]                  | [kgm <sup>2</sup> ]    |                                         |                    |                                     |
| 40-252  | F             | H, C1, C2        | -                 | 24           | 210                    | 150                    | 7,6                                     | 9,8                | 0,03                                |
| 40-252  | K             | H, C1, C2        | 3                 | 15           | 260                    | 150                    | 10                                      | 13                 | 0,047                               |
| 50-215  | F             | H, C1, C2        | -                 | 42           | 210                    | 130                    | 8                                       | 10,5               | 0,019                               |
| 50-216  | F             | H, C1, C2        | -                 | 25           | 210                    | 130                    | 6,5                                     | 8,5                | 0,025                               |
| 65-215  | F             | H, C1, C2        | -                 | 65           | 210                    | 130                    | 5,5                                     | 7,5                | 0,025                               |
| 80-216  | F             | H, C1, C2        | -                 | 76           | 210                    | 130                    | 5                                       | 6,5                | 0,025                               |
| 80-252  | F             | H, C1, C2        | -                 | 76           | 265                    | 150                    | 6,3                                     | 8,2                | 0,14                                |
| 80-253  | F             | H, C1, C2        | -                 | 76           | 237                    | 150                    | 7,2                                     | 9,4                | 0,055                               |
| 80-253  | K             | H, C1, C2        | 2                 | 33           | 220                    | 140                    | 7,2                                     | 9,4                | 0,15                                |
| 100-253 | K             | H, C1, C2        | 2                 | 76           | 256                    | 200                    | 3,5                                     | 5                  | 0,15                                |
| 100-254 | F             | H, C1, C2        | -                 | 100          | 265                    | 200                    | 3,4                                     | 4,5                | 0,056                               |
| 100-254 | K             | H, C1, C2        | 2                 | 71           | 256                    | 210                    | 2,5                                     | 3,2                | 0,07                                |
| 100-315 | F             | H, C1, C2        | -                 | 100          | 310                    | 270                    | 3,5                                     | 4,6                | 0,056                               |
| 100-315 | K             | H, C1, C2        | 2                 | 80           | 312                    | 254                    | 4                                       | 5,2                | 0,15                                |
| 100-316 | K             | H, C1, C2        | 2                 | 76           | 309                    | 235                    | 4,9                                     | 6,4                | 0,15                                |
| 100-400 | K             | C1, C2           | 2                 | 76           | 408                    | 355                    | 9,2                                     | 12                 | 1,1                                 |
| 100-401 | F             | H, C1, C2        | -                 | 100          | 390                    | 325                    | 7,6                                     | 9,8                | 0,248                               |
| 100-401 | K             | H, C1, C2        | 2                 | 50           | 404                    | 310                    | 9,3                                     | 12,1               | 0,504                               |
| 150-315 | F             | H, C1, C2        | -                 | 120          | 290                    | 250                    | 1,8                                     | 2,3                | 0,144                               |
| 150-317 | K             | H, C1, C2        | 2                 | 76           | 309                    | 250                    | 5                                       | 6,5                | 0,28                                |
| 150-400 | K             | H, C1, C2        | 3                 | 76           | 404                    | 300                    | 8,4                                     | 11                 | 0,83                                |
| 150-401 | F             | H, C1, C2        | -                 | 135          | 390                    | 270                    | 4,2                                     | 5,5                | 0,248                               |
| 150-403 | K             | H, C1, C2        | 2                 | 76           | 408                    | 340                    | 8,5                                     | 11,1               | 0,691                               |
| 150-503 | K             | C1, C2           | 2                 | 76           | 508                    | 400                    | 10                                      | 13                 | 0,91                                |
| 151-403 | K             | H, C1, C2        | 2                 | 76           | 408                    | 340                    | 9,3                                     | 11,9               | 0,691                               |
| 200-315 | K             | H, C1, C2        | 3                 | 70           | 295                    | 245                    | 1,9                                     | 2,4                | 0,22                                |
| 200-316 | K             | H, C1, C2        | 2                 | 100          | 305                    | 265                    | 1,7                                     | 2,2                | 0,22                                |
| 200-402 | K             | H, C1, C2        | 3                 | 80           | 408                    | 300                    | 6,5                                     | 9,8                | 0,84                                |
| 200-403 | K             | H, C1, C2        | 2                 | 90           | 408                    | 300                    | 6,5                                     | 8,5                | 0,931                               |
| 200-504 | K             | C1, C2           | 3                 | 76           | 508                    | 400                    | 9,7                                     | 12,6               | 0,83                                |
| 200-505 | K             | C1, C2           | 2                 | 90           | 508                    | 400                    | 9,8                                     | 12,8               | 1,636                               |
| 250-401 | K             | H, C1, C2        | 2                 | 105          | 400                    | 310                    | 6                                       | 7,8                | 0,55                                |
| 250-403 | K             | H, C1, C2        | 2                 | 107          | 408                    | 300                    | 7                                       | 9,1                | 1,13                                |
| 300-400 | K             | H, C1, C2        | 3                 | 100          | 408                    | 332                    | 3,5                                     | 4,6                | 0,75                                |
| 300-401 | K             | H, C1, C2        | 2                 | 135          | 408                    | 367                    | 2,3                                     | 2,9                | 0,75                                |
| 300-403 | K             | H, C1, C2        | 2                 | 102          | 408                    | 300                    | 3,8                                     | 5                  | 1,439                               |
| 300-420 | K             | C1, C2           | 3                 | 100          | 408                    | 370                    | 5,6                                     | 7,3                | 0,95                                |
| 300-500 | K             | C1, C2           | 3                 | 90           | 504                    | 430                    | 6,2                                     | 8                  | 1,48                                |
| 350-500 | K             | C1, C2           | 3                 | 110          | 508                    | 426                    | 5,7                                     | 7,4                | 3,12                                |
| 350-503 | K             | C1, C2           | 2                 | 140          | 508                    | 400                    | 4,6                                     | 6                  | 4,073                               |
| 350-632 | K             | C1, C2           | 3                 | 140          | 638                    | 500                    | 6,5                                     | 8,4                | 6,451                               |
| 350-633 | K             | C1, C2           | 2                 | 135          | 638                    | 500                    | 9,4                                     | 12,2               | 6,979                               |
| 350-710 | K             | C1, C2           | 3                 | 110          | 730                    | 580                    | 9,4                                     | 12,2               | 10,6                                |
| 350-713 | K             | C1, C2           | 2                 | 125          | 738                    | 580                    | 12,2                                    | 16                 | 14,557                              |
| 400-500 | K             | C1, C2           | 3                 | 130          | 508                    | 443                    | 3,4                                     | 4,5                | 3,37                                |
| 400-632 | K             | C1, C2           | 3                 | 142          | 638                    | 527                    | 5,7                                     | 7,41               | 9,074                               |
| 401-713 | K             | C1, C2           | 2                 | 143          | 738                    | 580                    | 11,5                                    | 15                 | 15,894                              |
| 500-634 | K             | C1, C2           | 3                 | 133          | 638                    | 448                    | 4,5                                     | 6                  | 10,248                              |
| 600-520 | K             | C1, C2           | 3                 | 145          | 532                    | 457                    | 2,4                                     | 3,2                | 7,02                                |
| 600-710 | K             | C1, C2           | 3                 | 165          | 736                    | 685                    | 4,2                                     | 5,5                | 16,96                               |
| 700-901 | K             | C1, C2           | 3                 | 180          | 908                    | 760                    | 7,2                                     | 9,3                | 50                                  |
| 700-902 | K             | C1, C2           | 3                 | 190          | 887                    | 680                    | 3,5                                     | 4,6                | 40                                  |

# Moments of inertia depending on the motor

Table 14: 2 poles

| Motor  | Motor type | J<br>[kgm <sup>2</sup> ] |
|--------|------------|--------------------------|
| 3 2 E  | 1          | 0,002                    |
| 4 2 E  | 1          | 0,005                    |
| 5 2 E  | 1          | 0,006                    |
| 7 2 E  | 1          | 0,011                    |
| 11 2 E | 2          | 0,012                    |
| 15 2 E | 2          | 0,022                    |
| 18 2 E | 2          | 0,034                    |
| 22 2 E | 2          | 0,044                    |
| 26 2 E | 2          | 0,044                    |
| 30 2 E | 3          | 0,06                     |
| 37 2 E | 3          | 0,08                     |
| 55 2 E | 3          | 0,190                    |
| 65 2 E | 3          | 0,220                    |
| 75 2 E | 3          | 0,250                    |
| 18 2 F | 5          | 0,034                    |
| 22 2 F | 5          | 0,044                    |
| 26 2 F | 5          | 0,044                    |
| 30 2 F | 5          | 0,077                    |
| 37 2 F | 5          | 0,097                    |
| 55 2 F | 5          | 0,189                    |
| 65 2 F | 5          | 0,219                    |
| 75 2 F | 5          | 0,249                    |

Table 15: 4 poles

| Motor   | Motor type | J<br>[kgm <sup>2</sup> ] |
|---------|------------|--------------------------|
| 2 4 E   | 1          | 0,003                    |
| 3 4 E   | 1          | 0,004                    |
| 4 4 E   | 1          | 0,011                    |
| 5 4 E   | 1          | 0,011                    |
| 7 4 E   | 2          | 0,022                    |
| 11 4 E  | 2          | 0,032                    |
| 15 4 E  | 2          | 0,054                    |
| 18 4 E  | 2          | 0,064                    |
| 22 4 E  | 2          | 0,074                    |
| 30 4 E  | 3          | 0,136                    |
| 37 4 E  | 3          | 0,176                    |
| 45 4 E  | 3          | 0,263                    |
| 55 4 E  | 3          | 0,323                    |
| 65 4 E  | 3          | 0,380                    |
| 75 4 E  | 3          | 0,450                    |
| 15 4 F  | 5          | 0,054                    |
| 18 4 F  | 5          | 0,064                    |
| 22 4 F  | 5          | 0,074                    |
| 30 4 F  | 5          | 0,137                    |
| 37 4 F  | 5          | 0,177                    |
| 55 4 F  | 5          | 0,326                    |
| 65 4 F  | 5          | 0,379                    |
| 75 4 F  | 5          | 0,449                    |
| 35 4 N  | 4          | 0,25                     |
| 50 4 N  | 4          | 0,28                     |
| 65 4 N  | 4          | 0,33                     |
| 80 4 N  | 4          | 0,46                     |
| 95 4 N  | 4          | 0,55                     |
| 110 4 N | 4          | 0,63                     |
| 130 4 N | 4          | 1,26                     |

| Motor   | Motor type | J<br>[kgm <sup>2</sup> ] |
|---------|------------|--------------------------|
| 155 4 N | 4          | 1,43                     |
| 175 4 N | 4          | 1,57                     |
| 200 4 N | 4          | 3,78                     |
| 250 4 N | 4          | 4,13                     |
| 300 4 N | 4          | 4,82                     |
| 350 4 N | 4          | 5,51                     |

Table 16: 6 poles

| Motor   | Motor type | J<br>[kgm <sup>2</sup> ] |
|---------|------------|--------------------------|
| 7 6 E   | 2          | 0,032                    |
| 11 6 E  | 2          | 0,042                    |
| 15 6 E  | 2          | 0,094                    |
| 18 6 E  | 2          | 0,114                    |
| 22 6 E  | 3          | 0,186                    |
| 30 6 E  | 3          | 0,216                    |
| 31 6 E  | 3          | 0,463                    |
| 37 6 E  | 3          | 0,463                    |
| 45 6 E  | 3          | 0,550                    |
| 55 6 E  | 3          | 0,650                    |
| 15 6 F  | 5          | 0,094                    |
| 18 6 F  | 5          | 0,114                    |
| 22 6 F  | 5          | 0,187                    |
| 30 6 F  | 5          | 0,217                    |
| 31 6 F  | 5          | 0,466                    |
| 37 6 F  | 5          | 0,466                    |
| 45 6 F  | 5          | 0,549                    |
| 55 6 F  | 5          | 0,649                    |
| 32 6 N  | 4          | 0,37                     |
| 40 6 N  | 4          | 0,45                     |
| 50 6 N  | 4          | 0,54                     |
| 60 6 N  | 4          | 0,66                     |
| 80 6 N  | 4          | 0,80                     |
| 100 6 N | 4          | 0,94                     |
| 120 6 N | 4          | 1,98                     |
| 140 6 N | 4          | 2,25                     |
| 165 6 N | 4          | 2,55                     |
| 190 6 N | 4          | 7,30                     |
| 225 6 N | 4          | 8,57                     |
| 260 6 N | 4          | 9,84                     |
| 320 6 N | 4          | 14,32                    |
| 360 6 N | 4          | 15,89                    |
| 400 6 N | 4          | 17,58                    |
| 440 6 N | 4          | 19,15                    |
| 480 6 N | 4          | 20,71                    |
| 530 6 N | 4          | 32,54                    |
| 580 6 N | 4          | 37,34                    |
| 630 6 N | 4          | 42,06                    |
| 690 6 N | 4          | 46,82                    |
| 770 6 N | 4          | 51,58                    |
| 850 6 N | 4          | 56,34                    |

Table 17: 8 poles

| Motor  | Motor type | J<br>[kgm <sup>2</sup> ] |
|--------|------------|--------------------------|
| 11 8 E | 3          | 0,186                    |
| 15 8 E | 3          | 0,186                    |
| 18 8 E | 3          | 0,226                    |
| 22 8 E | 3          | 0,276                    |

| Motor   | Motor type | J<br>[kgm <sup>2</sup> ] |
|---------|------------|--------------------------|
| 30 8 E  | 3          | 0,463                    |
| 37 8 E  | 3          | 0,550                    |
| 45 8 E  | 3          | 0,650                    |
| 15 8 F  | 5          | 0,187                    |
| 18 8 F  | 5          | 0,227                    |
| 22 8 F  | 5          | 0,277                    |
| 30 8 F  | 5          | 0,466                    |
| 37 8 F  | 5          | 0,549                    |
| 45 8 F  | 5          | 0,649                    |
| 26 8 N  | 4          | 0,40                     |
| 35 8 N  | 4          | 0,50                     |
| 50 8 N  | 4          | 0,66                     |
| 65 8 N  | 4          | 0,80                     |
| 75 8 N  | 4          | 0,94                     |
| 90 8 N  | 4          | 1,98                     |
| 110 8 N | 4          | 2,25                     |
| 130 8 N | 4          | 2,55                     |
| 150 8 N | 4          | 7,30                     |
| 185 8 N | 4          | 8,57                     |
| 220 8 N | 4          | 9,84                     |
| 260 8 N | 4          | 13,27                    |
| 300 8 N | 4          | 15,88                    |
| 350 8 N | 4          | 19,13                    |
| 400 8 N | 4          | 20,70                    |
| 460 8 N | 4          | 32,54                    |
| 530 8 N | 4          | 37,30                    |
| 580 8 N | 4          | 42,06                    |
| 630 8 N | 4          | 46,82                    |
| 690 8 N | 4          | 51,58                    |
| 760 8 N | 4          | 56,34                    |

Table 18: 10 poles

| Motor    | Motor type | J<br>[kgm <sup>2</sup> ] |
|----------|------------|--------------------------|
| 40 10 N  | 4          | 1,75                     |
| 60 10 N  | 4          | 1,93                     |
| 75 10 N  | 4          | 2,20                     |
| 90 10 N  | 4          | 2,49                     |
| 110 10 N | 4          | 7,96                     |
| 150 10 N | 4          | 9,66                     |
| 190 10 N | 4          | 11,83                    |
| 230 10 N | 4          | 17,73                    |
| 270 10 N | 4          | 20,50                    |
| 310 10 N | 4          | 23,15                    |
| 350 10 N | 4          | 25,79                    |
| 390 10 N | 4          | 37,12                    |
| 430 10 N | 4          | 42,64                    |
| 475 10 N | 4          | 48,17                    |
| 535 10 N | 4          | 53,69                    |
| 600 10 N | 4          | 59,21                    |
| 660 10 N | 4          | 64,73                    |

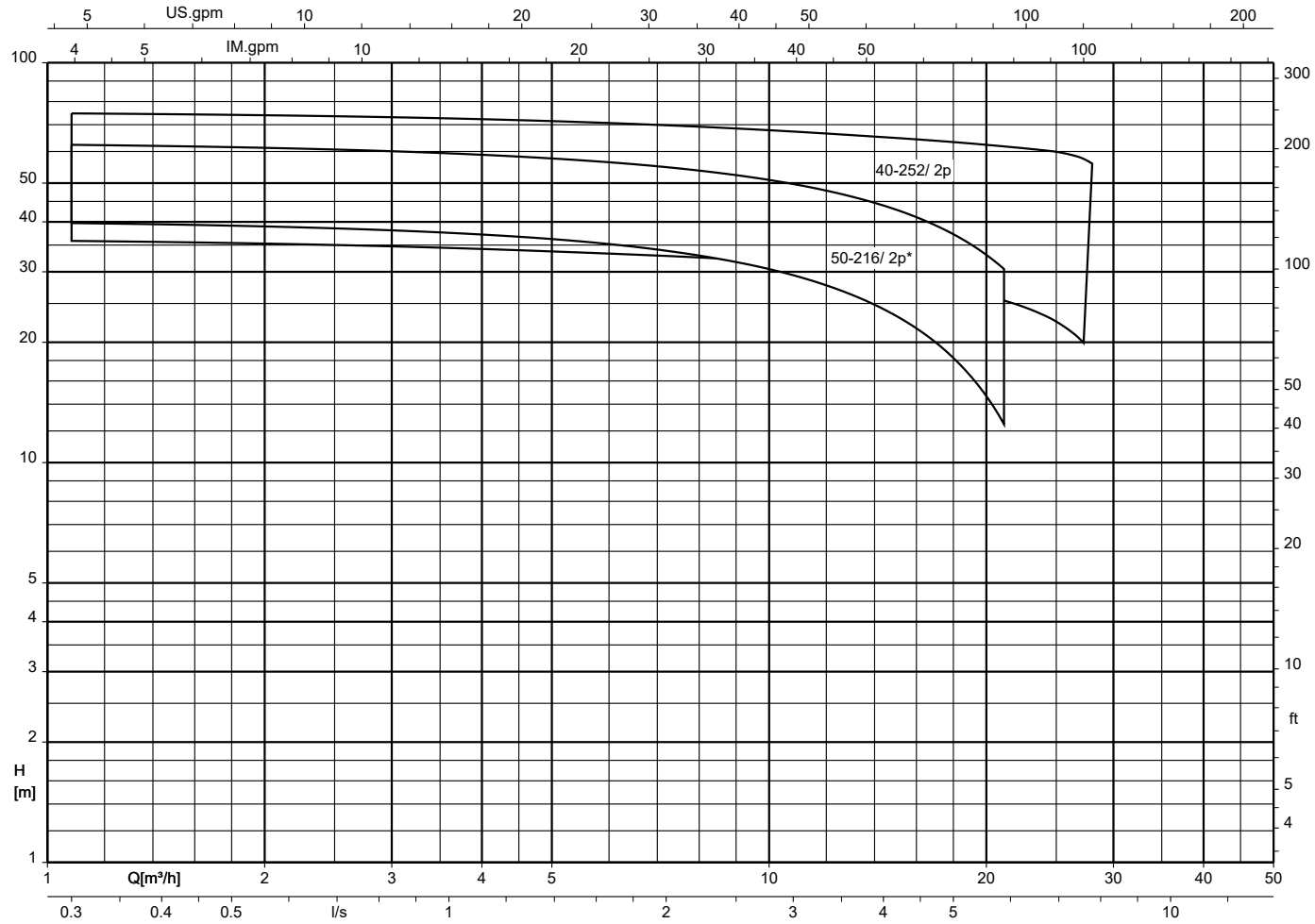
Table 19: 12 poles

| Motor    | Motor type | J<br>[kgm <sup>2</sup> ] |
|----------|------------|--------------------------|
| 195 12 N | 4          | 17,73                    |
| 230 12 N | 4          | 20,50                    |
| 265 12 N | 4          | 23,15                    |
| 300 12 N | 4          | 25,79                    |

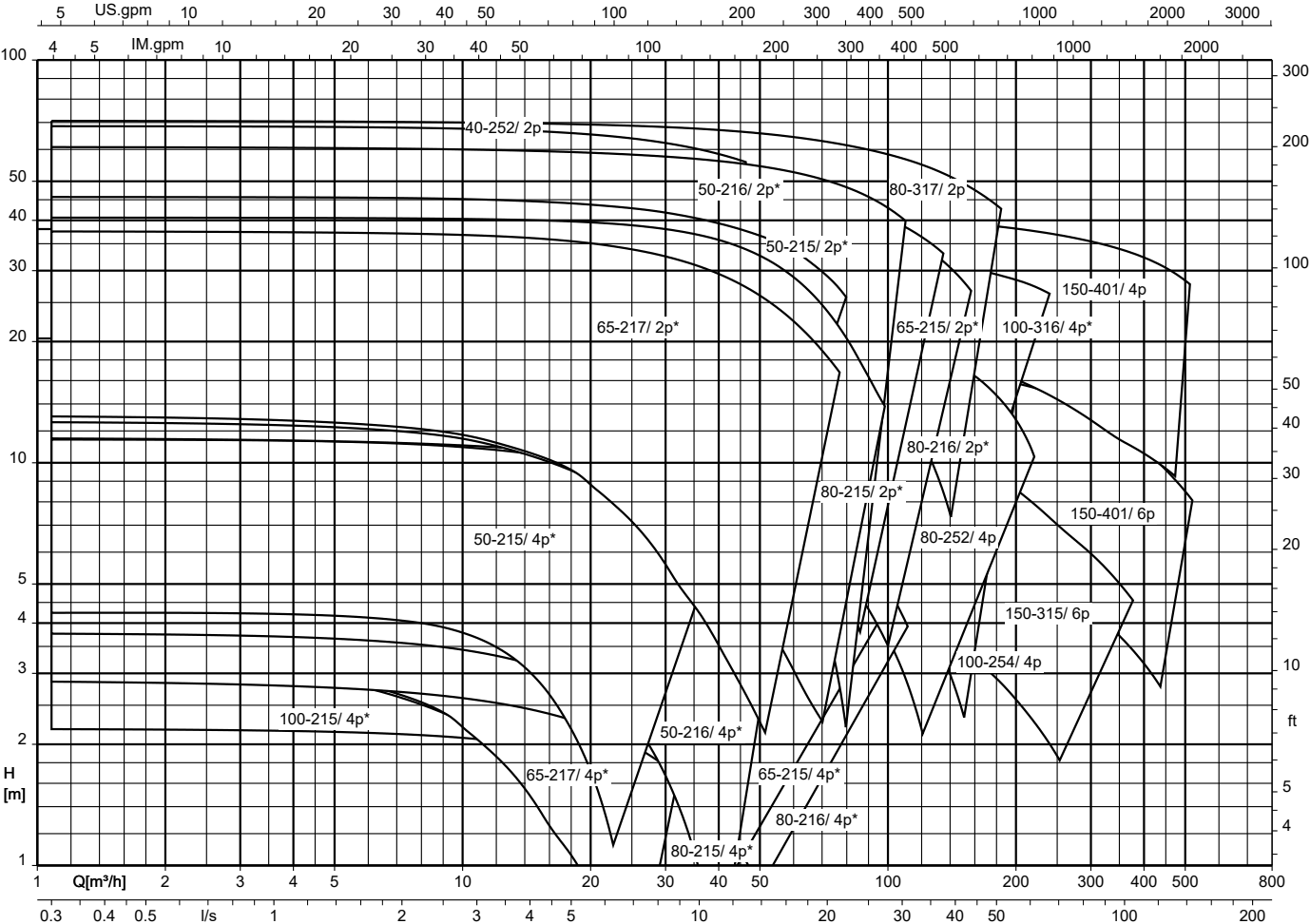
| Motor    | Motor type | J<br>[kgm <sup>2</sup> ] |
|----------|------------|--------------------------|
| 340 12 N | 4          | 42,64                    |
| 380 12 N | 4          | 48,17                    |
| 450 12 N | 4          | 53,69                    |
| 490 12 N | 4          | 59,21                    |
| 560 12 N | 4          | 64,73                    |

## Selection charts

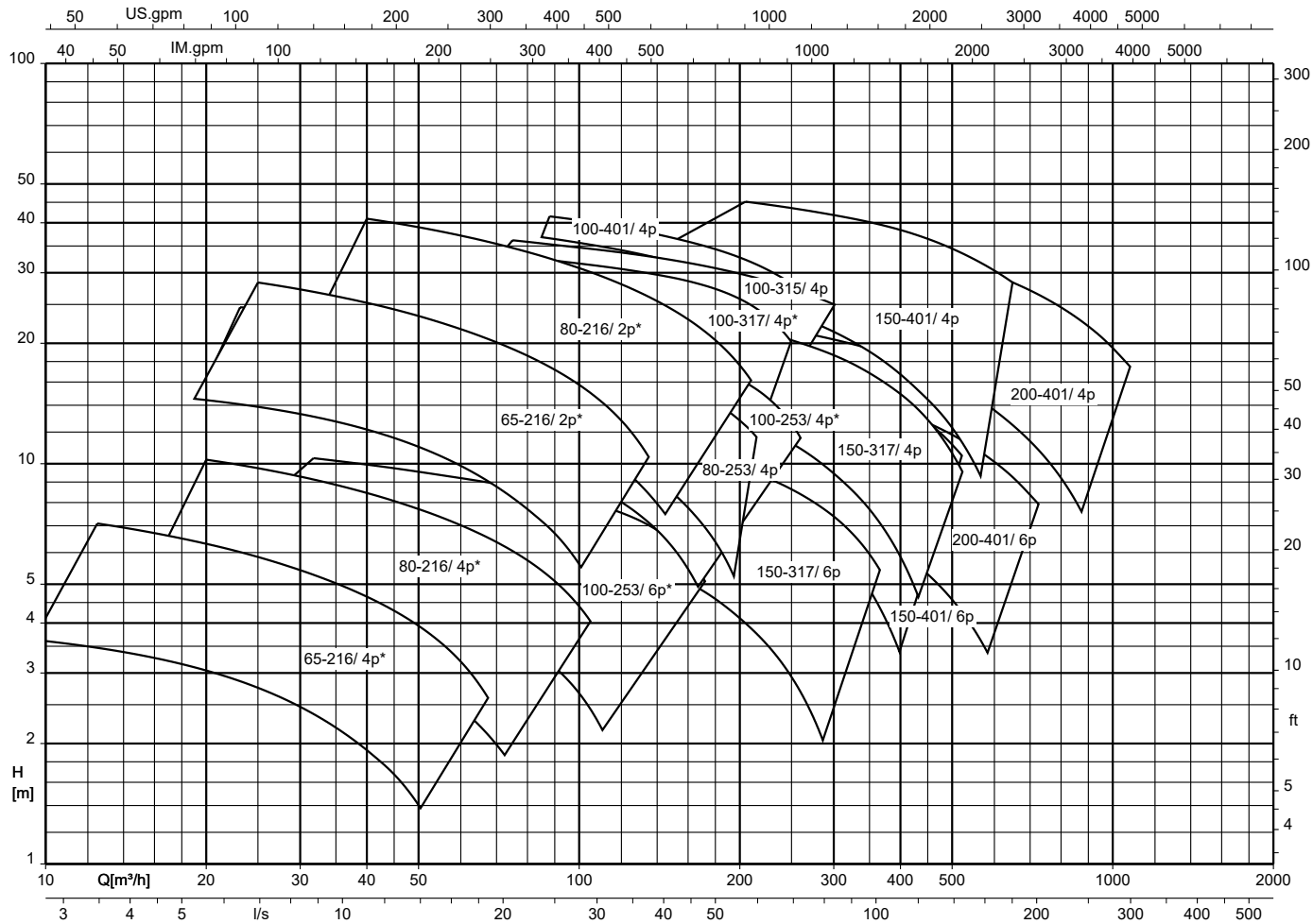
Amarex KRT S + \*S-max, n = 2900 rpm



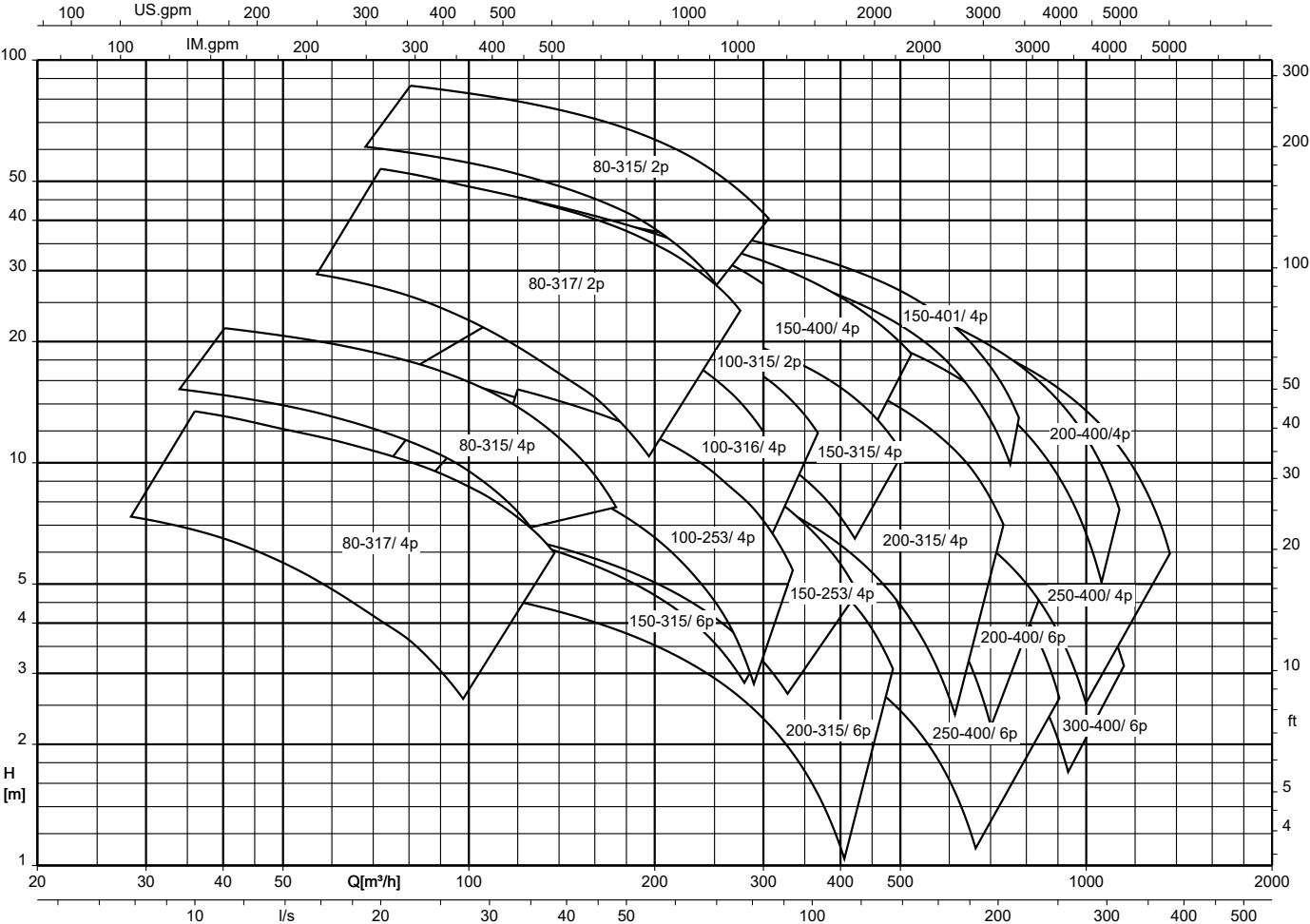
Amarex KRT F + \*F-max, n = 2900/1450/960 rpm



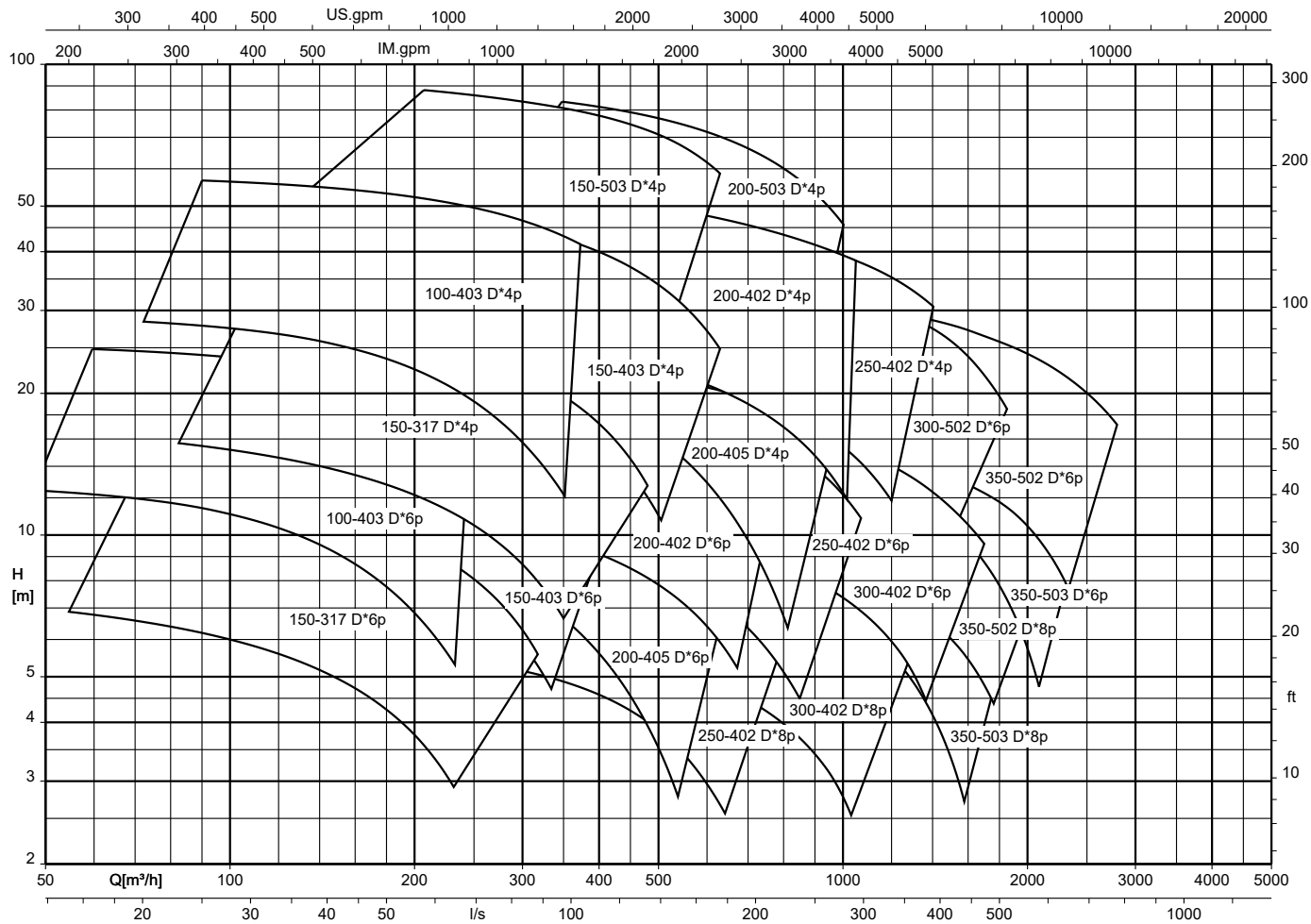
Amarex KRT E + \*E-max, n = 2900/1450/960 rpm



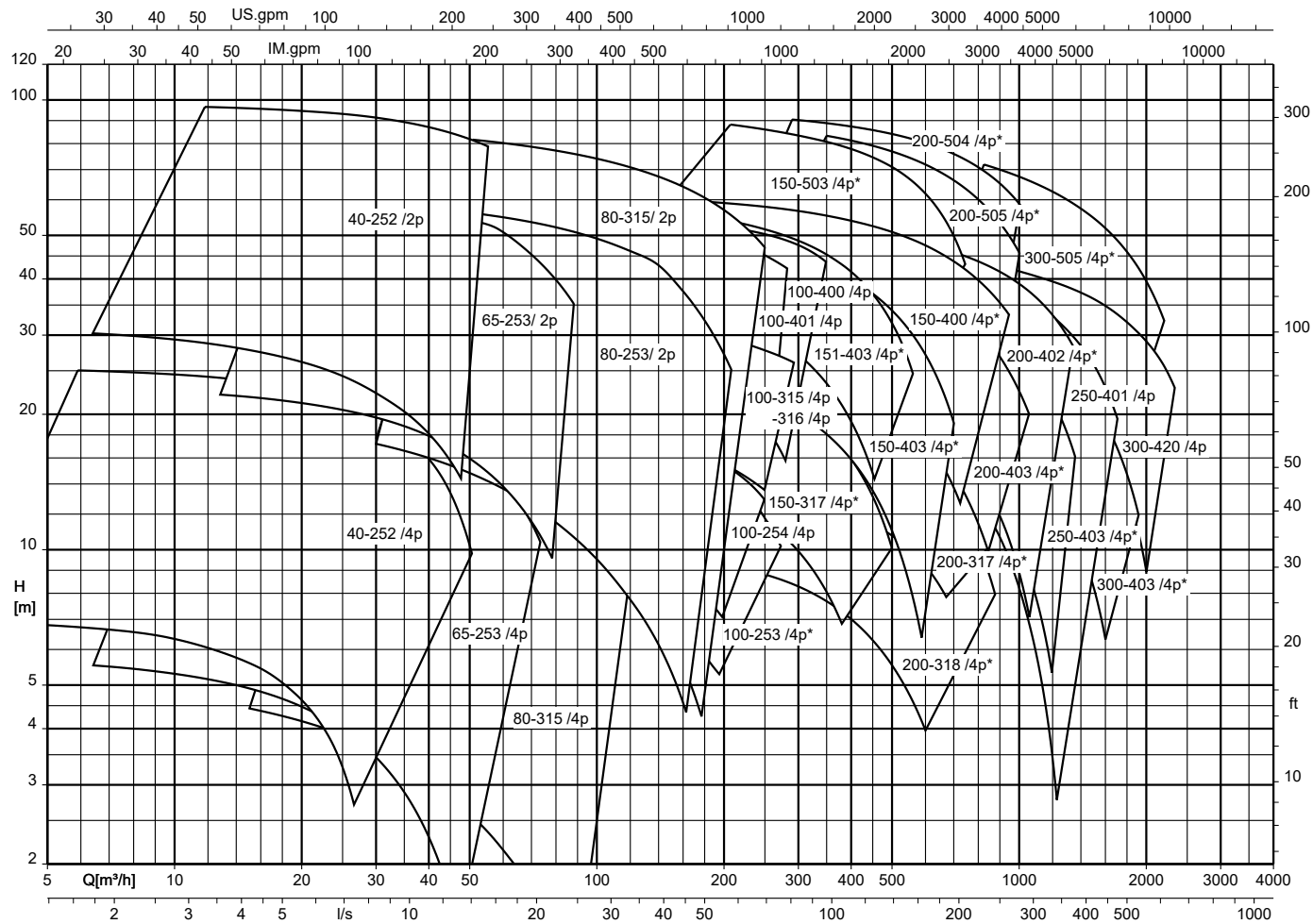
Amarex KRT D, n = 2900/1450/960 rpm



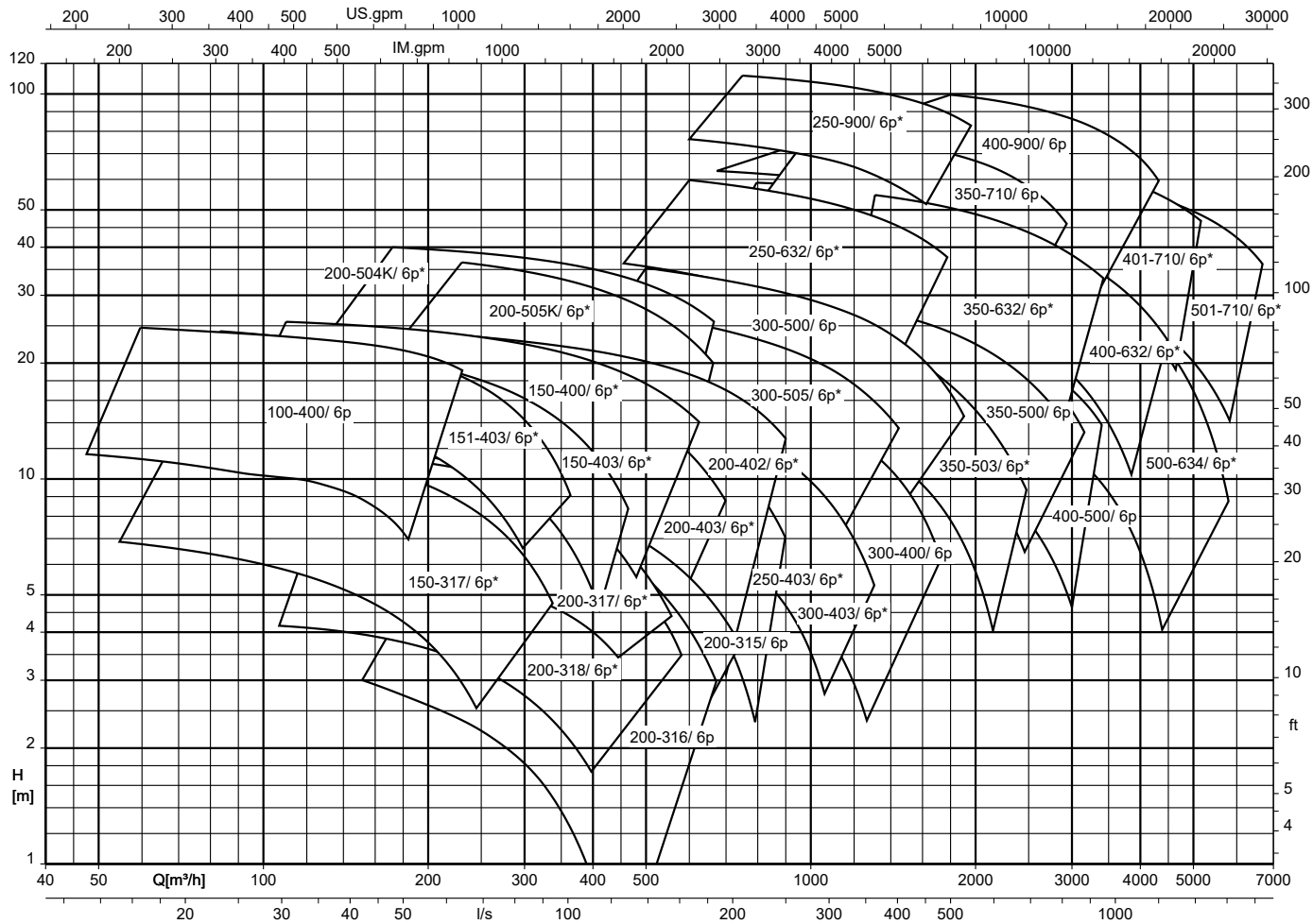
Amarex KRT D-max, n = 1450/960/725 rpm



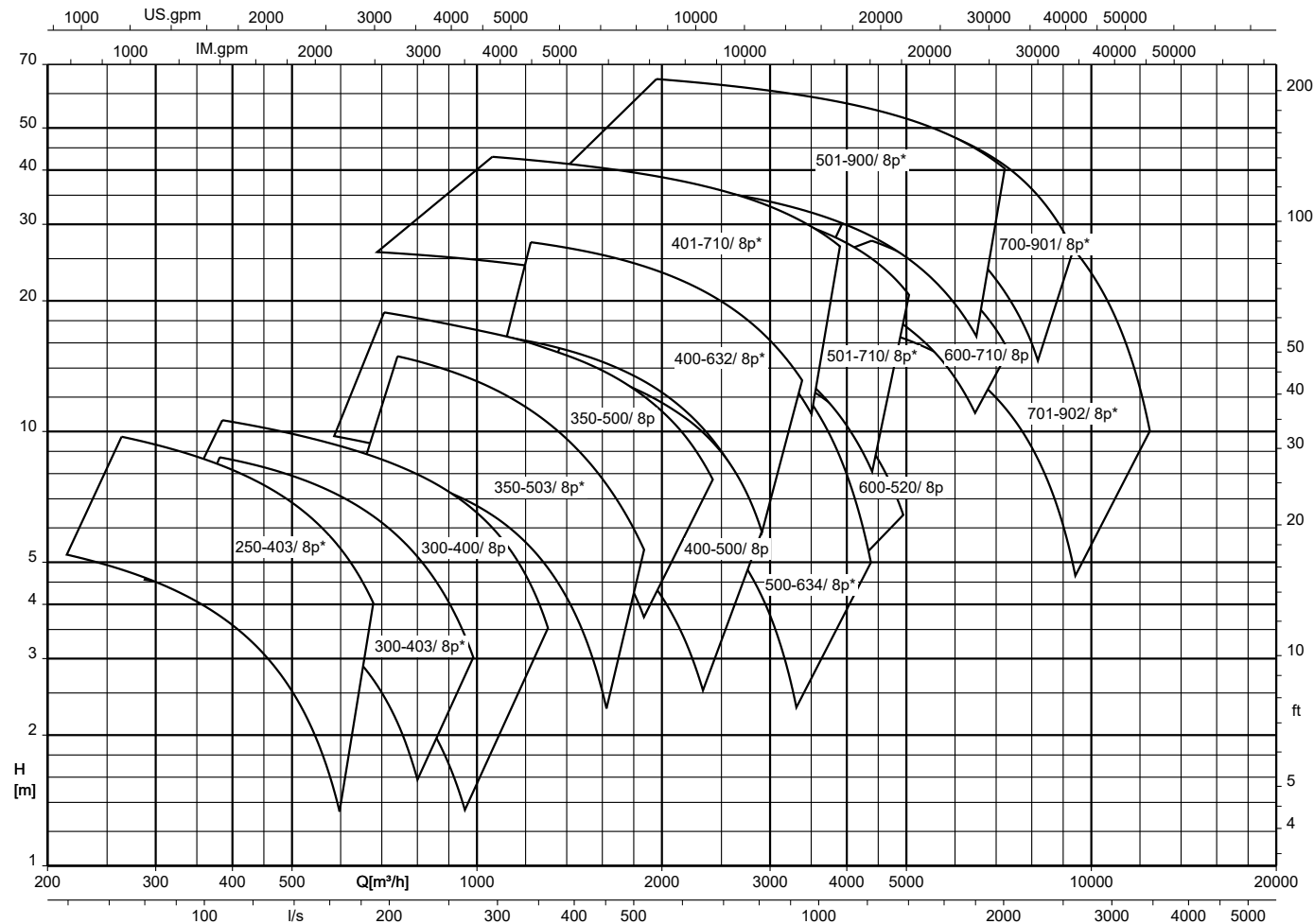
## Amarex KRT K + \*K-max, n = 2900/1450 rpm



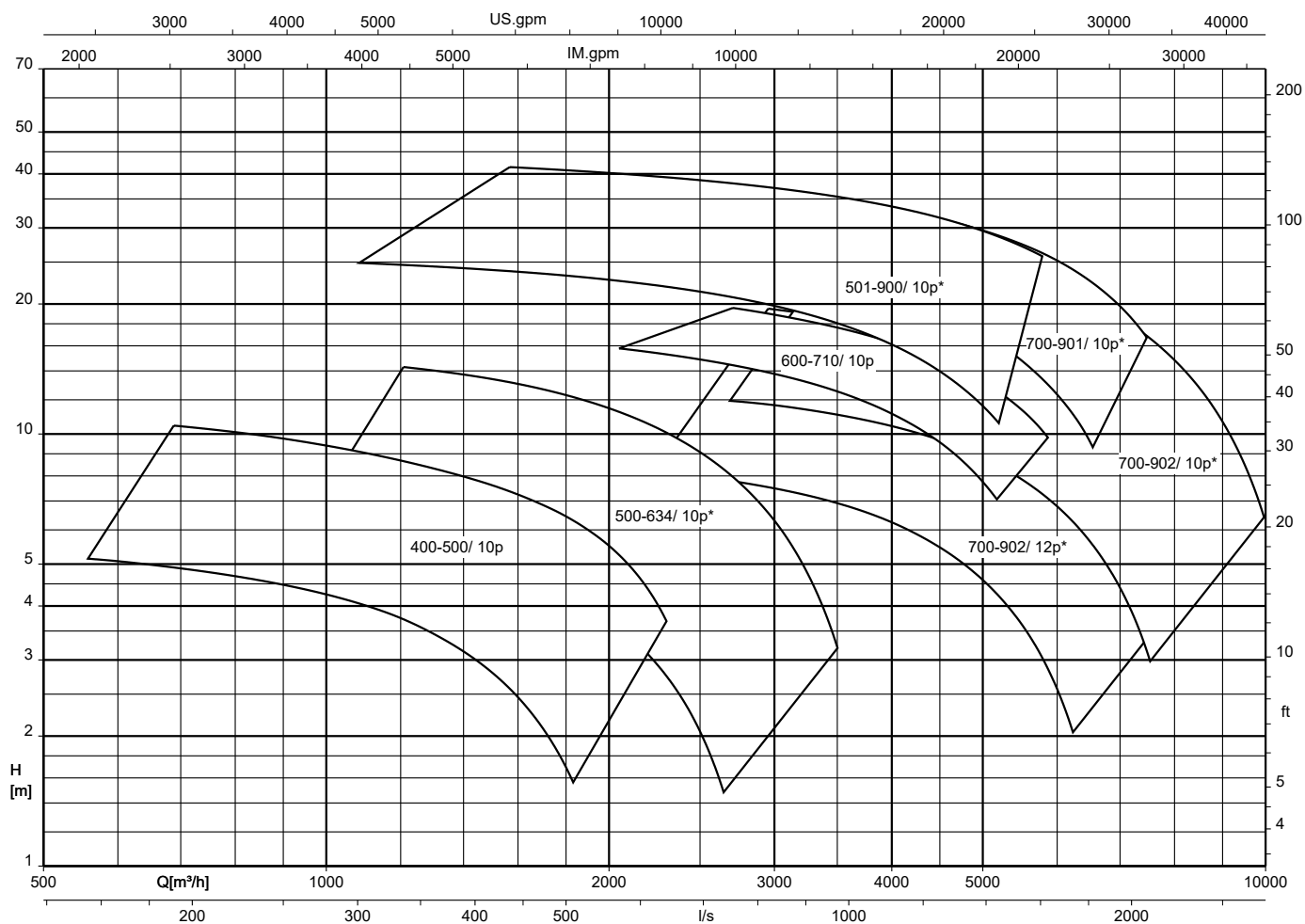
Amarex KRT K + \*K-max, n = 960 rpm



Amarex KRT K + \*K-max, n = 725 rpm



Amarex KRT K + \*K-max, n = 580/480 rpm



## Installation types



Fig. 1: Installation types

|   |                                                                                                                                                                                                                                                |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Installation type D: stationary dry installation, vertical (S1 duty)                                                                                                                                                                           |
| 2 | Installation type H: stationary dry installation, horizontal (S1 duty)                                                                                                                                                                         |
| 3 | Installation type K: stationary wet installation (S1 duty with motor outside of the fluid possible) with guide rail arrangement<br>Installation type S: stationary wet installation (S1 duty with submerged motor) with guide rail arrangement |
| 4 | Installation type K: stationary wet installation (S1 duty with motor outside of the fluid possible) with guide wire arrangement<br>Installation type S: stationary wet installation (S1 duty with submerged motor) with guide wire arrangement |
| 5 | Installation type P: wet installation of transportable model (S1 duty with submerged motor)                                                                                                                                                    |

### Pump sets of installation types D, H and K

are suitable for continuous duty with the motor outside the fluid. Cooling is effected by means of air convection. Versions with a cooling jacket have an additional internal cooling circuit.

### Pump sets of installation types P and S

are designed for continuously submerged operation. The motor is cooled by the fluid handled on the motor surface. Operation with the motor outside the fluid handled is possible for short periods.

## Scope of supply

### Stationary dry installation - vertical (installation type D)

- Pump set complete with electric cables
- Suction elbow with inspection hole<sup>38)</sup> (optional) and fastening elements
- Optional: suction elbow with inspection hole

### Stationary dry installation - horizontal (installation type H)

- Pump set complete with electric cables
- Foundation rails<sup>39)</sup>
- Suction-side flanged spacer with inspection hole<sup>40)</sup> (optional)
- Amaslide maintenance aid (optional)

### Stationary wet installation (installation types K and S)

- Pump set complete with electric cables
- Claw with sealing elements and fasteners
- Lifting rope, lifting chain or lifting bail (optional)
- Mounting bracket with fasteners
- Flanged bend and fastening elements
- Guide wire / guide rail (guide rails are not included in KSB's scope of supply)

### Transportable wet-installed model (installation type P)

- Pump set complete with electric cables
- Foot plate or pump stool with fasteners

<sup>38</sup> For nominal discharge nozzle diameter  $\geq$  DN100

<sup>39</sup> For UE/XE motors only

<sup>40</sup> For nominal discharge nozzle diameter  $\geq$  DN 100

## General arrangement drawings with list of components

### Amarex KRT, motor type 1

For the motor type assigned to the motor see (⇒ Page 22)

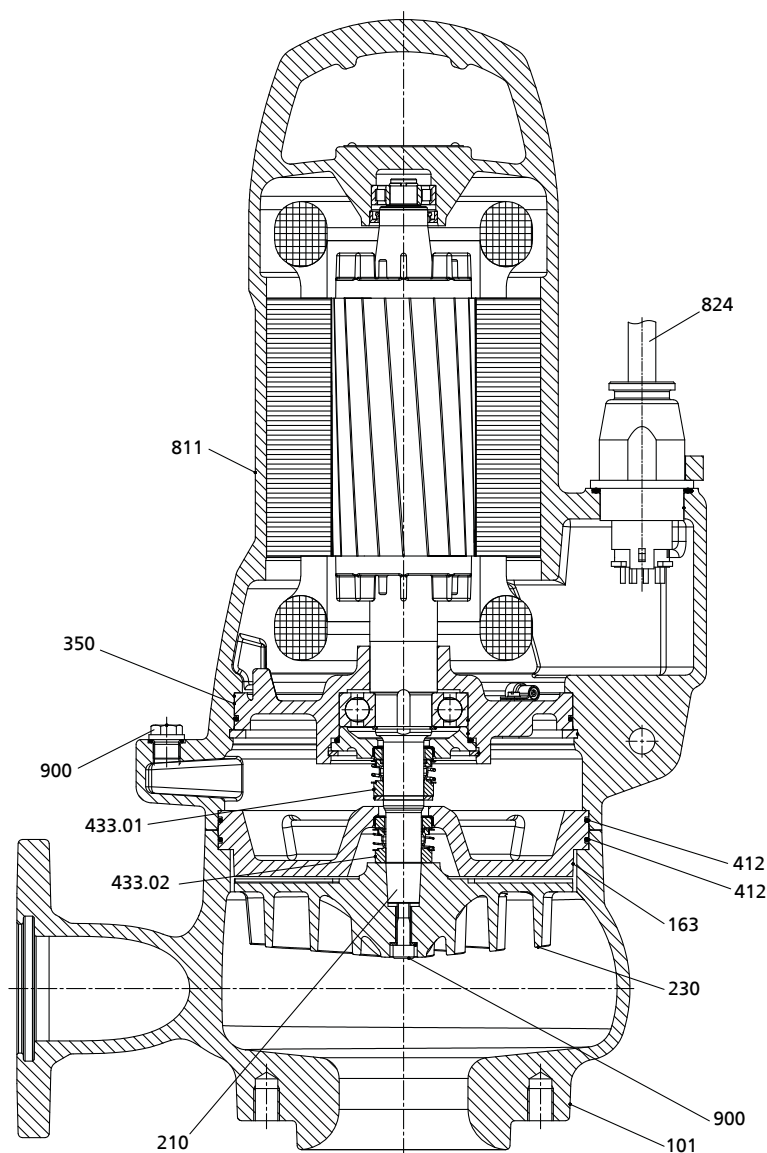


Fig. 2: General assembly drawing, example: Amarex KRT F65-215

Table 20: List of components

| Part No. | Description     | Part No.  | Description     |
|----------|-----------------|-----------|-----------------|
| 101      | Pump casing     | 412       | O-ring          |
| 163      | Discharge cover | 433.01/02 | Mechanical seal |
| 210      | Shaft           | 811       | Motor housing   |
| 230      | Impeller        | 824       | Power cable     |
| 350      | Bearing housing | 900       | Bolt/screw      |

## Amarex KRT, motor type 2

For the motor type assigned to the motor see (⇒ Page 22)

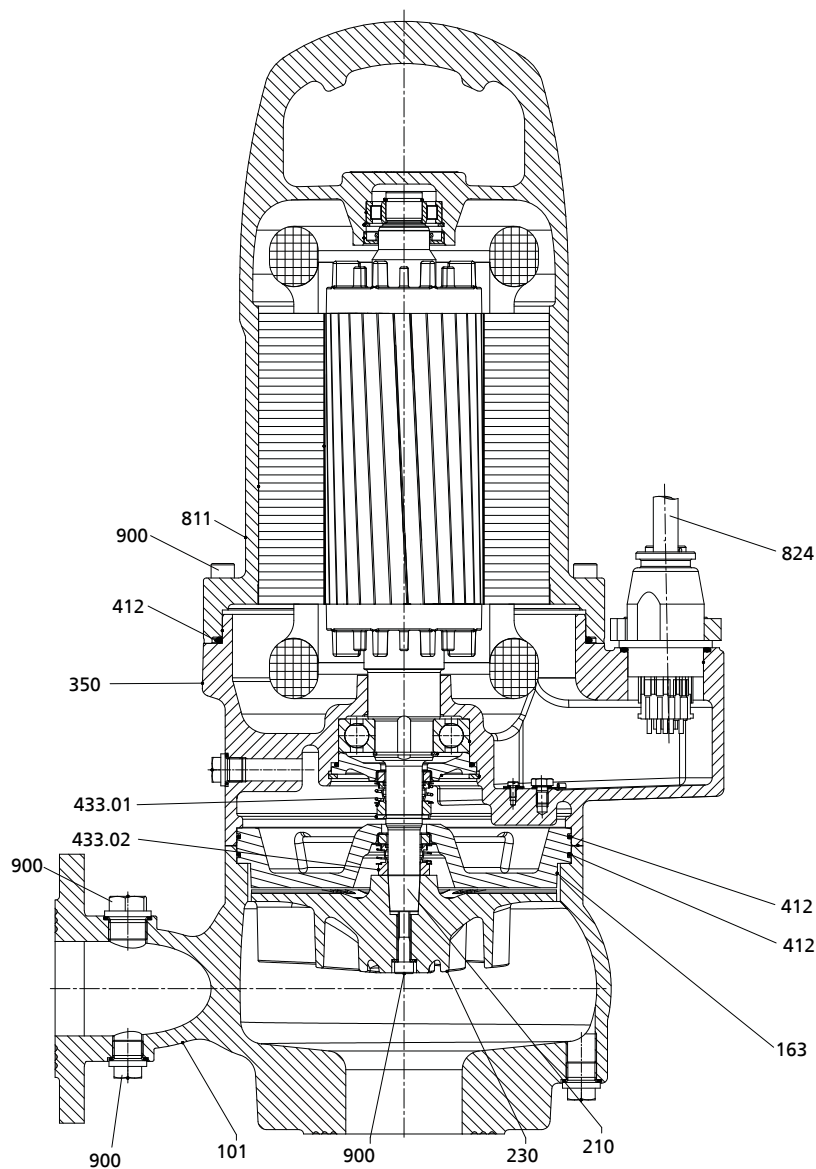


Fig. 3: General assembly drawing, example: Amarex KRT F 65-215

Table 21: List of components

| Part No. | Description     | Part No.  | Description     |
|----------|-----------------|-----------|-----------------|
| 101      | Pump casing     | 412       | O-ring          |
| 163      | Discharge cover | 433.01/02 | Mechanical seal |
| 210      | Shaft           | 811       | Motor housing   |
| 230      | Impeller        | 824       | Power cable     |
| 350      | Bearing housing | 900       | Bolt/screw      |

### Amarex KRT, motor type 3

For the motor type assigned to the motor see (⇒ Page 22)

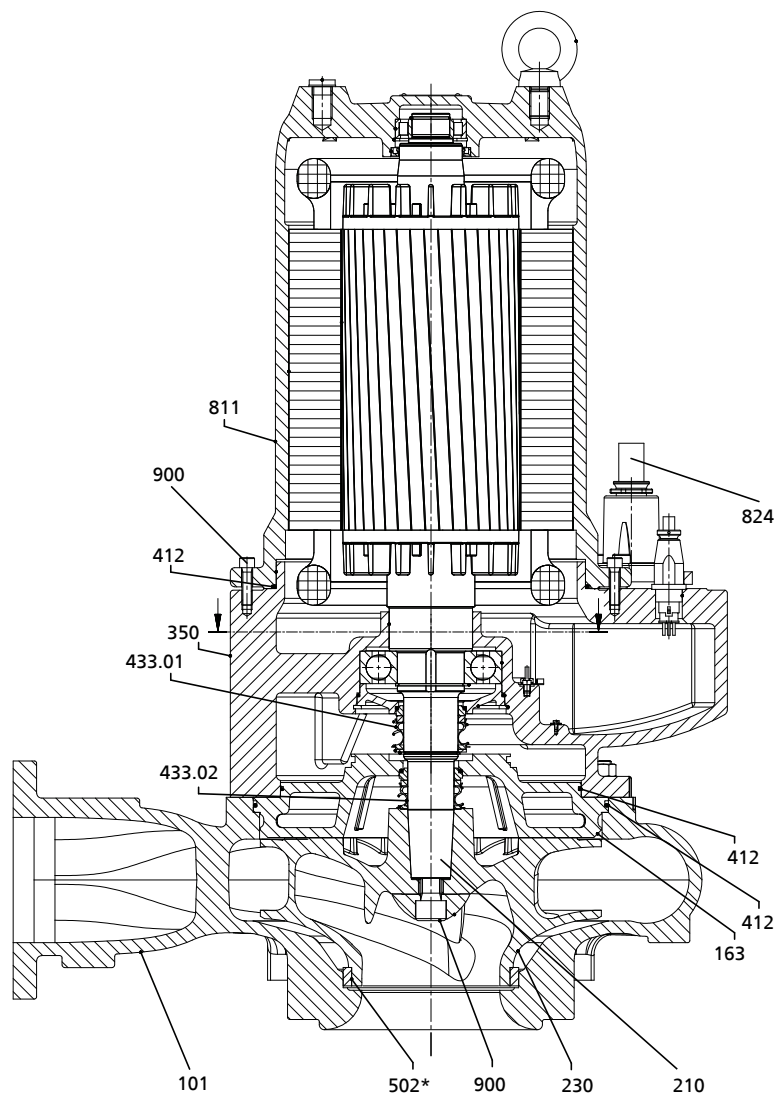


Fig. 4: General assembly drawing, example: Amarex KRT E/K 100-400/75 4 XEG

\*: On specific designs only

Table 22: List of components

| Part No. | Description     | Part No.   | Description      |
|----------|-----------------|------------|------------------|
| 101      | Pump casing     | 433.01/.02 | Mechanical seal  |
| 163      | Discharge cover | 502        | Casing wear ring |
| 210      | Shaft           | 811        | Motor housing    |
| 230      | Impeller        | 824        | Power cable      |
| 350      | Bearing housing | 900        | Bolt/screw       |
| 412      | O-ring          |            |                  |

# Amarex KRT, motor type 4, installation types S and P

For the motor type assigned to the motor see (⇒ Page 22)

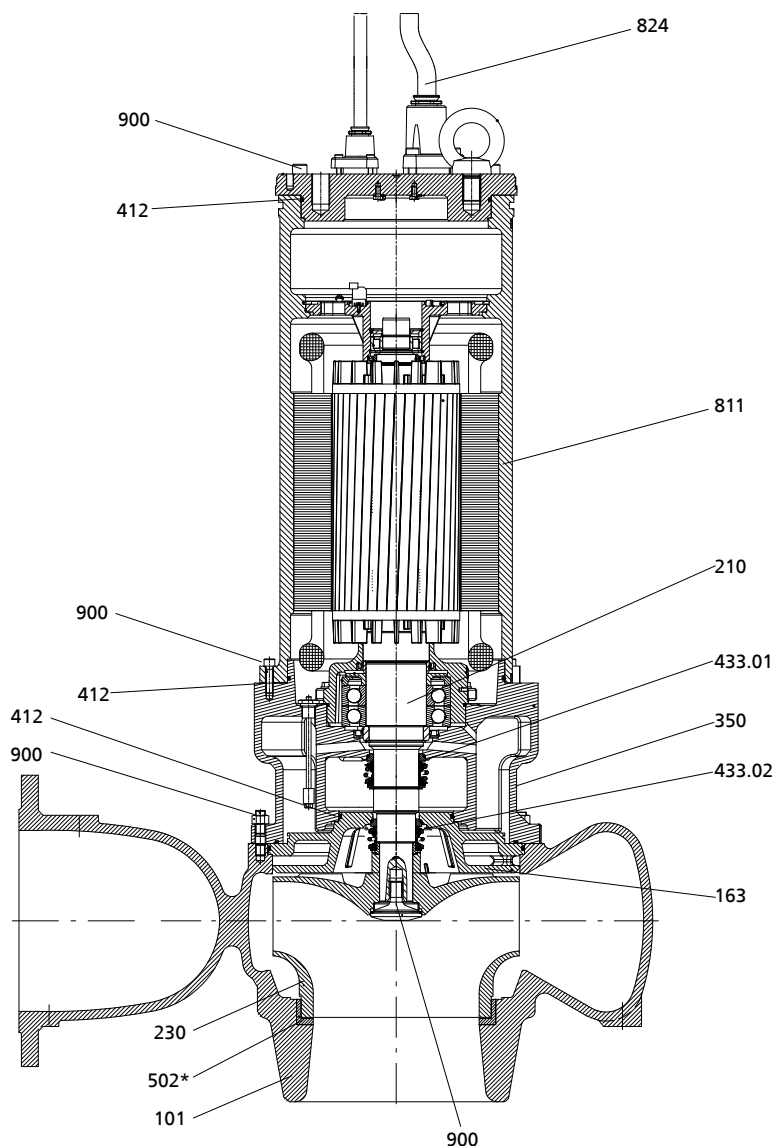


Fig. 5: General assembly drawing, example: Amarex KRT K 150-403 / 130 4 XNG-S without cooling jacket

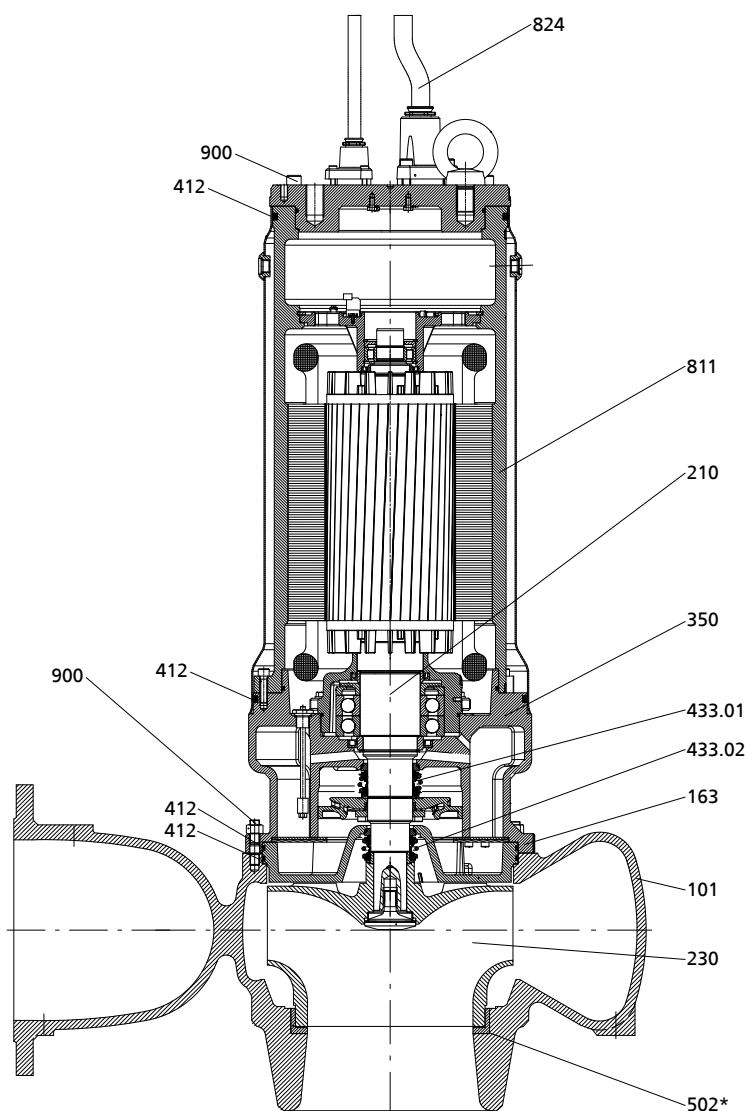
\*: On specific designs only

Table 23: List of components

| Part No. | Description     | Part No.   | Description      |
|----------|-----------------|------------|------------------|
| 101      | Pump casing     | 433.01/.02 | Mechanical seal  |
| 163      | Discharge cover | 502        | Casing wear ring |
| 210      | Shaft           | 811        | Motor housing    |
| 230      | Impeller        | 824        | Power cable      |
| 350      | Bearing housing | 900        | Bolt/screw       |
| 412      | O-ring          |            |                  |

# Amarex KRT, motor type 4, installation types K and D

For the motor type assigned to the motor see (⇒ Page 22)



**Fig. 6:** General assembly drawing, example: Amarex KRT K 150-403 / 130 4 XNG-K with cooling jacket

\*: On specific designs only

**Table 24:** List of components

| Part No. | Description     | Part No.   | Description      |
|----------|-----------------|------------|------------------|
| 101      | Pump casing     | 433.01/.02 | Mechanical seal  |
| 163      | Discharge cover | 502        | Casing wear ring |
| 210      | Shaft           | 811        | Motor housing    |
| 230      | Impeller        | 824        | Power cable      |
| 350      | Bearing housing | 900        | Bolt/screw       |
| 412      | O-ring          |            |                  |

## Amarex KRT, motor type 5

For the motor type assigned to the motor see (⇒ Page 22)

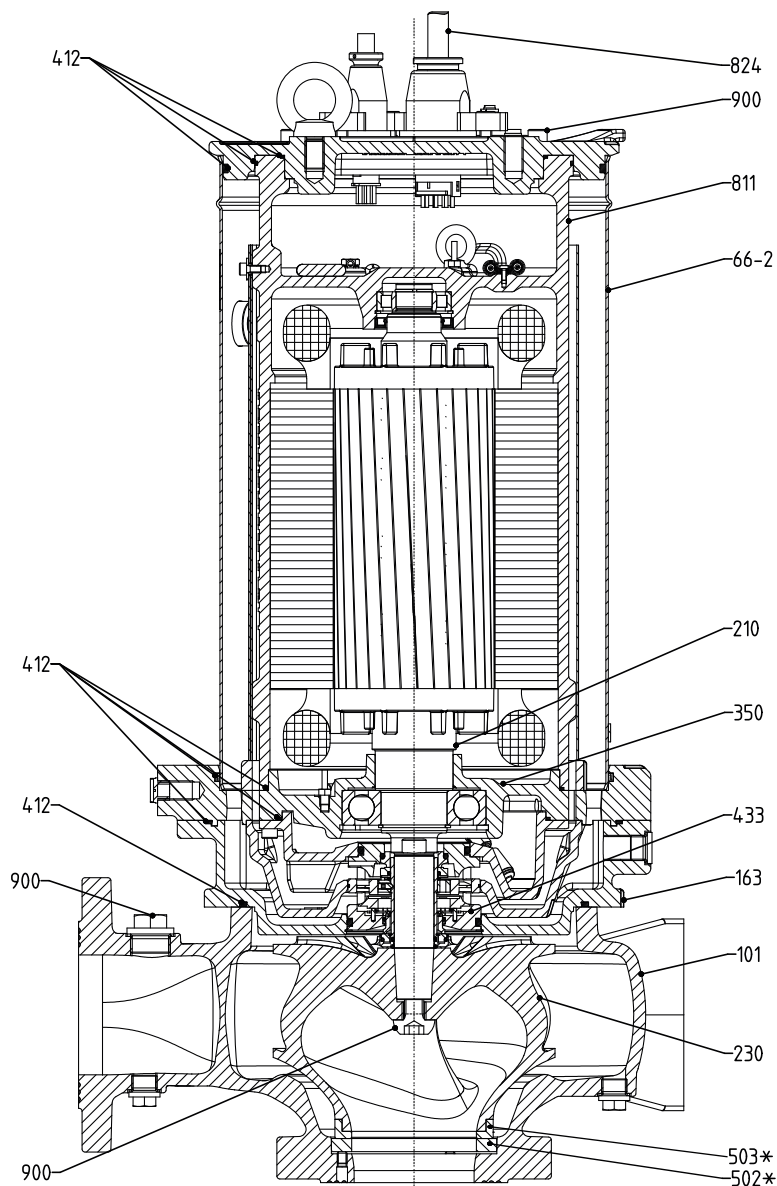


Fig. 7: General assembly drawing, example: Amarex KRT K 100-253 / 22 4 UFG-K with cooling jacket

\*: On specific designs only

Table 25: List of components

| Part No. | Description     | Part No. | Description        |
|----------|-----------------|----------|--------------------|
| 101      | Pump casing     | 502      | Casing wear ring   |
| 163      | Discharge cover | 503      | Impeller wear ring |
| 210      | Shaft           | 66-2     | Cooling jacket     |
| 230      | Impeller        | 811      | Motor housing      |
| 350      | Bearing housing | 824      | Power cable        |
| 412      | O-ring          | 900      | Bolt/screw         |
| 433      | Mechanical seal |          |                    |







**KSB SE & Co. KGaA**  
Turmstraße 92 • 06110 Halle (Germany)  
Tel. +49 345 4826-0  
[www.ksb.com](http://www.ksb.com)