

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
- Sewage treatment plants
- Sludge disposal

Fluids handled

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

Operating data

Operating properties

Characteristic		Value
Flow rate	Q	Up to 10,000 m ³ /h
		Up to 2778 l/s
Head	H	Up to 120 m
Motor rating	P ₂	0.8 kW to 850 kW
Fluid temperature	t	Up to +60 °C
Enclosure		IP 68 to IEC 60034-5; explosion protection to ATEX II 2G T3 or ATEX II 2G T4 available

Designation

Example: Amarex KRT K 150-500/155 4 UN G-D IE3

Key to the designation

Code	Description
Amarex KRT	Type series
K	Impeller type
D	Open, diagonal single-channel impeller
E	Closed single-channel impeller
F	Free-flow impeller
K	Closed multi-channel impeller
S	Impeller with cutter
150	Nominal discharge nozzle diameter [mm]
500	Maximum nominal impeller diameter [mm]
155	Motor size
4	Number of poles
	2
	4
	6
	8
	10
	12
U	Motor version (⇒ Page 9)
U	Non-explosionproof
W	Hot water version, non-explosionproof
X	Explosion-proof to ATEX II 2G T3
Y	Explosion-proof to ATEX II 2G T4
N	Generation code
N	Optionally available with jacket cooling
K	Optionally available as dry-installed model with convection cooling
G	Material variant (⇒ Page 6)
G	Standard variant, grey cast iron
G1	Like G, with impeller made of duplex steel
G2	Like G, with impeller made of white cast iron
GH	Like G, with impeller and intermediate casing made of white cast iron
H	White cast iron
C1	Stainless steel
C2	Stainless steel
D	Installation type (⇒ Page 21)
S	Stationary wet installation with guide wire or guide rail arrangement
D	Stationary dry installation, vertical
P	Transportable wet-installed model
K	Stationary wet installation with guide wire or guide rail arrangement
H	Stationary dry installation, horizontal
IE3	Motor efficiency classification
1)	No efficiency classification
IE3	Efficiency classification to IEC 60034-30 optionally available

1) Blank

Design details

Design

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

Drive

- Three-phase asynchronous squirrel-cage motor

Motors integrated in explosion-proof pump sets are supplied in Ex d IIB type of protection.

Shaft seal

- Two bi-directional mechanical seals in tandem arrangement, with liquid reservoir
- Pumps with reinforced bearings: with leakage chamber

Impeller type

- Various, application-based impeller types

D impeller

	Open, diagonal single-channel impeller (D impeller)	Suitable for the following fluids: Fluids containing solid substances and long fibres
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E impeller

	Closed single-channel impeller (impeller type E)	Suitable for the following fluids: Fluids containing solids and stringy material
---	--	--

F impeller

	Free-flow impeller (impeller type F)	Suitable for the following fluids: fluids containing solids and stringy material as well as fluids with entrapped air or gas
---	--------------------------------------	--

D, E and F impellers are suitable for handling the following fluids:

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

K impeller

	Closed multi-channel impeller (impeller type K)	Suitable for the following fluids: Contaminated, solids-laden, non-gaseous fluids without stringy material
---	---	--

K impellers are suitable for handling the following fluids:

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

S impeller

	Impeller with cutter (impeller type S)	Suitable for the following fluids: Fluids containing coarse substances and/or long fibres
---	--	---

S impellers are suitable for handling the following fluids:

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

Standard bearing assembly

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

Reinforced bearing assembly

Motor-end bearing:

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

Pump-end bearings:

- Grease-lubricated bearings sealed for life
- Re-lubricable

Materials

Overview of available materials

Component	Material variant						
	G	G1	G2	GH	H	C1	C2
Pump set							
Pump casing	JL 1040				JN 3029	1.4517	
Wear plate (D impeller)	JL 1040		–				
Casing wear ring (for E and K impellers)	JL 1040			VG 434			
Impeller (D impeller JL 1040, with hardened edges)	JL 1040 JS 1030	1.4517	JN 3029			1.4517	
Intermediate casing / discharge cover	JL 1040			JN 3029		1.4517	
Mechanical seal (pump end)	SiC / SiC						
Mechanical seal (drive end)	Carbon / SiC						
Shaft	1.4021 / C45+N (⇒ Page 9)					1.4021 / 1.4462 / C45+N (⇒ Page 9)	
Bearing bracket	JL 1040					1.4517	
Motor housing	JL 1040 / 1.0038					1.4517	
Elastomer seals	Nitrile butadiene rubber (NBR)						Viton (FPM)
Screws/bolts	A4 ²⁾						1.4462
Cooling jacket	1.4571 / 1.0038			–			
Installation parts							
Flanged elbow	JL 1040				JN 3029	1.4517	
Claw	JL 1040 or JS 1030 / JS 1050					1.4571	
Mounting bracket	1.4571 up to DN 200; 1.0038 + Z from size 200-500						1.4571
Guide wire suspension brack- et	1.4571 up to DN 200; JL 1040 from size 200-500						1.4571
Guide wire	1.4401						1.4401 / TEFZEL
Foot plate / feet	1.0038 + Z					1.4571	1.4517 / 1.4462
Lifting chain / lifting rope	Lifting chain: 1.4404 lifting rope: polyamide / polypropylene					Lifting rope: polypropylene	

Description of materials

JL 1040 grey cast iron (lamellar graphite cast iron)

Lamellar graphite cast iron to DIN 1691 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 value should be ≥ 6.5 , the sand content ≤ 0.5 g/l.

Duplex stainless steel (1.4517 or technically equivalent material)

This type of cast 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 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. also against waste water containing phosphorous and sulphuric acid, this material is used in a wide range of applications in the chemical industry and in process engineering. Pumps made of duplex 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 (JN 3029 or technically equivalent material)

This is a wear-resistant white cast iron for highly abrasive fluids such as liquids containing sand, ash or iron ore sinter. It has a Rockwell hardness of 61.5 to 68, 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 JL 1040 grey cast iron and other cast materials.

Comparison of materials

EN	ASTM
JL 1040	A 48 Class 40 B
JN 3029	A 532 II C 15 % CrMo-Hc
1.4517	A 890 CD 4 MCu
1.4021	A 276 Type 420
1.4404	A 276 Type 316L
1.4462	A 182 F51
1.4571	A 276 Type 316 Ti
C45+N	A 576 Gr. 1045
1.0038	Steel
1.0038 + Z	Galvanised steel
NBR	NBR
FPM	FKM
JS 1030	A 536: 60-40-18
JS 1050	A 536: 60-45-12
VG 434	AISI 329

²⁾ Equivalent 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.
- Long service life due to corrosion-resistant hydraulic components made of stainless steel
- Reliable operation ensured by moisture 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 and energy efficiency

Acceptance tests / warranties

Functional test

- Every pump undergoes functional testing to KSB standard ZN 56525.
- Operating data is guaranteed to DIN EN ISO 9906 / A.

Acceptance tests

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

Warranties

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

Programme overview / selection tables

Table 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 our specialist department in Halle. Make use of our laboratory's wealth of experience when selecting materials.

Selection aid for materials and hydraulic systems per fluid

Fluid handled ³⁾	Recommen- ded material	Recom- mended impeller type ⁴⁾	Comments, further recommendations
Grey water	Grey cast iron	K, D, E, F	Free passage > fluid possibly pre-screened to remove solids
River water	Grey cast iron	K, D, E, F	Free passage > fluid possibly pre-screened to remove solids
Stormwater	Grey cast iron	K, D, E, F	Free passage > fluid possibly pre-screened to remove solids
Waste water			
- Untreated municipal waste water	Grey cast iron	F, S, D, E, K	ATV ⁵⁾ recommends a free passage of 100 mm; min. free passage: 76 mm
- Waste water containing air or gas	Grey cast iron	F	Up to 8 % , contact KSB for fluids with high outgassing rates
Sludge			
- Raw sludge	Grey cast iron	F, D, E	Pumpable up to a dry substance content of: 13% (D), 8 % (F), 6 % (E)
- Digested sludge	Grey cast iron	F, D, E	Pumpable up to a dry substance content of: 13% (D), 8 % (F), 6 % (E)
- Activated sludge	Grey cast iron	D, K	Pumpable up to a dry substance content of: 13% (D), 5 % (K)
Industrial waste water containing ...			
- Paint suspensions	Grey cast iron	K	Solvent-free, observe the operator's instructions!
- Lacquer/paint/varnish suspensions	Grey cast iron	F, E	Solvent-free, contact KSB for silicone-free version
- Fibres/pulp	Grey cast iron	F, S, D	–
- Chips/swarf	Grey cast iron	K, F	G2 or GH variant, special mechanical seal; solids content < 5 g/l
- Abrasive substances ⁶⁾	Grey cast iron	K, F	G2 or GH variant, special mechanical seal; solids content < 5 g/l
Mildly acidic industrial waste water	Grey cast iron	K, F	pH value ≥ 6.5 C1 variant and FPM (Viton) O-rings
Non-corrosive waste water			
- Ammonia water	Grey cast iron	K	–
- Ammonium hydroxide 5 % NH ₄ OH	Grey cast iron	K	–
- Urea 25 % (NH ₂) ₂ -CO	Grey cast iron	K	–
- Potassium hydroxide 10 % KOH	Grey cast iron	K	–
- Calcium hydroxide 5 % Ca(OH) ₂	Grey cast iron	K	–
- Sodium hydroxide 5 % NaOH	Grey cast iron	K	–
- Sodium carbonate 30 % Na ₂ CO ₃	Grey cast iron	K	–
Non-corrosive waste water containing ...			
- Aliphatic hydrocarbons, e.g. oils, petrol, butane, methane	Grey cast iron	K	–
- Aromatic hydrocarbons, e.g. benzene, styrene	Grey cast iron	K	FPM (Viton) O-rings ⁷⁾
- Chlorinated hydrocarbons, e.g. tetra-chloroethylene, ethylene chloride, chloroform, methylene chloride	Grey cast iron	K	FPM (Viton) O-rings ⁷⁾
Highly abrasive industrial waste water causing wear (chemically neutral)⁸⁾			
- Water containing iron ore sinter	Wear-resistant white cast iron	K	Sinter content < 5 g/l: GH variant Sinter content > 5 g/l: H variant
- Lime milk containing quartz and pigment suspensions	Wear-resistant white cast iron	K	Lime milk content < 15 %: GH variant Lime milk content > 15 %: H variant
- Wash water containing solids	Wear-resistant white cast iron	K, F	Material selection based on fluid analysis
- Waste water containing dust or ash	Wear-resistant white cast iron	K	Material selection based on fluid analysis

3) For any fluids which are not listed in this table contact KSB.

4) The first impeller type listed should be given preference.

5) ATV = German regulatory body for waste water management

6) 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.

7) 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.

8) The required material variants highly depend on the operating hours, rotational speed and flow velocity.

Fluid handled ³⁾	Recommended material	Recommended impeller type ⁴⁾	Comments, further recommendations
Water/sand mixture	Wear-resistant white cast iron	K, F	Solids content < 5 g/l: GH variant Solids content > 5 g/l: H variant
Seawater	Duplex steel	K, F	C2 variant
Brackish water	Duplex steel	K, F	C1 or G1 variant (with 250 µm 2-component-epoxy paint) - depending on salt content
Corrosive industrial waste water	Duplex steel	K, F	C1 or C2 variant, depending on fluid analysis

Overview of product features

Material variants G, G1, G2, GH

Motor size						
2-pole	5 2 ... 25 2	37 2 ... 55 2	–	–	–	–
4-pole	4 4 ... 29 4 4 4.KG 5 4.KG 7 4.KG	35 4 ... 65 4	35 4.N ... 80 4.N	95 4.N ... 175 4.N	200 4.N ... 350 4.N	–
6-pole	4 6 ... 19 6 4 6.KG 6 6.KG	32 6 ... 50 6	32 6.N ... 60 6.N	80 6.N ... 165 6.N	190 6.N ... 480 6.N	530 6.N ... 850 6.N
8-pole	–	26 8 ... 35 8	26 8.N ... 50 8.N	75 8.N ... 130 8.N	150 8.N ... 400 8.N	460 8.N ... 760 8.N
10-pole	–	–	–	40 10.N ... 80 10.N	110 10.N ... 350 10.N	390 10.N ... 660 10.N
12-pole	–	–	–	–	105 12.N ... 300 12.N	340 12.N ... 560 12.N
Shaft material						
Shaft	1.4021	1.4021	C45+N	1.4021	1.4021	1.4021
Shaft protecting sleeve	–	–	1.4021	1.4021	1.4021	1.4021
Bearings	Grease-packed rolling element bearings sealed for life	Grease-packed rolling element bearings sealed for life ⁹⁾	Pump end: regreasable rolling element bearings; drive end: grease-packed rolling element bearings sealed for life			
Explosion protection						
Version U	Non-explosionproof					
Version X	⊕ ATEX II 2G T3					–
Version Y	⊕ ATEX II 2G T4				–	
Version W	Non-explosionproof					–
Motor						
Starting method	DOL or star-delta (690 V only DOL)					DOL
Voltage	400 V ¹⁰⁾					400 V ¹¹⁾
Cooling	Cooled by surrounding fluid ¹²⁾	Cooled by surrounding fluid ¹³⁾				
Immersion depth	30 m max.					
Power cable						
Type	Rubber-sheathed cable, type see Motor Data Booklet ¹⁴⁾					
	15)				-	
Length	10 m ¹⁶⁾					

³⁾ For any fluids which are not listed in this table contact KSB.

⁴⁾ The first impeller type listed should be given preference.

⁹⁾ For D impeller: pump end: regreasable rolling element bearings; drive end: grease-packed rolling element bearings sealed for life

¹⁰⁾ Optional: 380 V, 415 V, 500 V, 690 V

¹¹⁾ Optional: 690 V

¹²⁾ Installation types D, H, K with convection cooling

¹³⁾ Optional: jacket cooling

¹⁴⁾ Optional: rubber-sheathed cable, shielded

¹⁵⁾ Optional: TEHSITE with ETFE sheath

Motor size						
2-pole	5 2 ... 25 2	37 2 ... 55 2	–	–	–	–
4-pole	4 4 ... 29 4 4 4.KG 5 4.KG 7 4.KG	35 4 ... 65 4	35 4.N ... 80 4.N	95 4.N ... 175 4.N	200 4.N ... 350 4.N	–
6-pole	4 6 ... 19 6 4 6.KG 6 6.KG	32 6 ... 50 6	32 6.N ... 60 6.N	80 6.N ... 165 6.N	190 6.N ... 480 6.N	530 6.N ... 850 6.N
8-pole	–	26 8 ... 35 8	26 8.N ... 50 8.N	75 8.N ... 130 8.N	150 8.N ... 400 8.N	460 8.N ... 760 8.N
10-pole	–	–	–	40 10.N ... 80 10.N	110 10.N ... 350 10.N	390 10.N ... 660 10.N
12-pole	–	–	–	–	105 12.N ... 300 12.N	340 12.N ... 560 12.N
Cable entry	Absolutely watertight					
Sealing elements						
Elastomer seals	Nitrile butadiene rubber NBR ¹⁷⁾					
Shaft seal	Bellows-type mechanical seal ¹⁸⁾					Mechanical seal with covered spring
Monitoring						
Winding temperature, versions U, W ; installation types S, P	Temperature switch (bimetal) in the winding					
Winding temperature, versions X, Y ; installation types S, P	Temperature switch (bimetal) in the winding, plus PTC for explosion protection					–
Winding temperature; installation types D, H, K	PTC thermistor	–	PTC thermistor			
Coolant temperature; installation types D, K	–	–	PTC thermistor			
Bearing temperature	–	– ¹⁹⁾	Pump-end PT100 ¹⁹⁾			Pump-end and drive-end PT100
Leakage inside the motor	Leakage monitor inside the motor					
Mechanical seal leakage	–	Float switch in leakage area for D impeller	Float switch in leakage area			
Vibration sensor	–	–	– ²⁰⁾			
Coating	Environmentally-friendly KSB standard coating, colour RAL 5002 ²¹⁾					
Max. fluid temperature						
Version U	40 °C					
Version X, Y	40 °C					–
Version W	60 °C					–
Tests/inspections						
Hydraulic system	KSB standard (ZN 56525) ²²⁾					
General	KSB standard (ZN 56525)					
Installation						
Stationary, with guide wire	Installation depth: 4.5 m ²³⁾					
Transportable	Up to size 300-401, except sizes 200-500/501, 200-631, 250-630					–

¹⁶⁾ Optional: up to 50 m

¹⁷⁾ Optional: Viton = fluorocarbon rubber FPM

¹⁸⁾ Optional: mechanical seal with covered spring

¹⁹⁾ Optional: drive-end PT100

²⁰⁾ Optional: internal vibration sensor

²¹⁾ Optional: 250 µm two-part epoxy coating

²²⁾ Optional: impeller types **S, D, E, F** to ISO 9906/A, **K** impellers to ISO 9906//1/2/A

²³⁾ Optional: up to 30 m, from size 200-500 up to 15 m

Motor size						
2-pole	5 2 ... 25 2	37 2 ... 55 2	–	–	–	–
4-pole	4 4 ... 29 4 4 4.KG 5 4.KG 7 4.KG	35 4 ... 65 4	35 4.N ... 80 4.N	95 4.N ... 175 4.N	200 4.N ... 350 4.N	–
6-pole	4 6 ... 19 6 4 6.KG 6 6.KG	32 6 ... 50 6	32 6.N ... 60 6.N	80 6.N ... 165 6.N	190 6.N ... 480 6.N	530 6.N ... 850 6.N
8-pole	–	26 8 ... 35 8	26 8.N ... 50 8.N	75 8.N ... 130 8.N	150 8.N ... 400 8.N	460 8.N ... 760 8.N
10-pole	–	–	–	40 10.N ... 80 10.N	110 10.N ... 350 10.N	390 10.N ... 660 10.N
12-pole	–	–	–	–	105 12.N ... 300 12.N	340 12.N ... 560 12.N
Stationary, with guide rail(s)	Installation depth: 4.5 m ²⁴⁾					
Stationary, dry-installed	– ²⁵⁾	With jacket cooling				

Material variants H, C1, C2

Motor size						
2-pole	1 2 ... 03 2	5 2 ... 25 2	–	–	–	–
4-pole	1 4 ... 03 4	4 4 ... 29 4	35 4 ... 65 4	80 4.N	95 4.N ... 175 4.N	200 4.N ... 350 4.N
6-pole	–	4 6 ... 19 6	32 6 ... 50 6	60 6.N	80 6.N ... 165 6.N	190 6.N ... 480 6.N
8-pole	–	–	26 8 ... 35 8	50 8.N	75 8.N ... 130 8.N	150 8.N ... 480 8.N
10-pole	–	–	–	–	–	110 10.N ... 350 10.N
12-pole	–	–	–	–	–	105 12.N ... 300 12.N
Shaft material for material variant H						
Shaft	1.4021	1.4021	1.4021	C45+N	1.4021	1.4021
Shaft protecting sleeve	–	–	–	1.4021	1.4021	1.4021
Shaft material for material variants C1, C2						
Shaft	1.4462 / C45+N	1.4462 / C45+N	1.4462 / C45+N	1.4021	1.4021	1.4021
Shaft protecting sleeve	–	–	–	1.4462	1.4462	1.4462
Suction flange	26)					
Bearings	Grease-packed rolling element bearings sealed for life			Pump end: regreasable rolling element bearings; drive end: grease-packed rolling element bearings sealed for life		
Explosion protection						
Version U	Non-explosionproof					
Version X	–	Ⓔ ATEX II 2G T3				–
Version Y	Ⓔ ATEX II 2G T4				–	
Version W	Non-explosionproof					–
Motor						
Starting method	DOL	DOL or star-delta (690 V only DOL)				
Voltage	400 V ²⁷⁾	400 V ²⁸⁾				
Cooling	Cooled by surrounding fluid					
Immersion depth	30 m max.					
Power cable						
Type	Rubber-sheathed cable, type see Motor Data Booklet ²⁹⁾					
	Rubber-sheathed cable, type see Motor Data Booklet (optional: TEHSITE with ETFE sheath)					–
Length	10 m ³⁰⁾					
Cable entry	Absolutely watertight					

²⁴⁾ Optional: up to 30 m

²⁵⁾ For motors 4 4.KG ... 7 4.KG and 4 6.KG ... 6 6.KG optionally available with convection cooling

²⁶⁾ Optional: drilled to DN 2501

²⁷⁾ Optional: 230 V, 500 V, 690 V

²⁸⁾ 500 V, 690 V

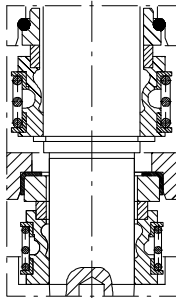
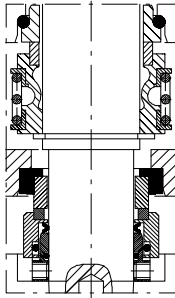
²⁹⁾ Optional: rubber-sheathed cable, shielded

³⁰⁾ Optional: up to 50 m

Motor size						
2-pole	1 2 ... 03 2	5 2 ... 25 2	–	–	–	–
4-pole	1 4 ... 03 4	4 4 ... 29 4	35 4 ... 65 4	80 4.N	95 4.N ... 175 4.N	200 4.N ... 350 4.N
6-pole	–	4 6 ... 19 6	32 6 ... 50 6	60 6.N	80 6.N ... 165 6.N	190 6.N ... 480 6.N
8-pole	–	–	26 8 ... 35 8	50 8.N	75 8.N ... 130 8.N	150 8.N ... 480 8.N
10-pole	–	–	–	–	–	110 10.N ... 350 10.N
12-pole	–	–	–	–	–	105 12.N ... 300 12.N
Sealing elements						
Elastomer seals	Nitrile butadiene rubber NBR ³¹⁾ , C2: always fluorocarbon rubber FPM					
Shaft seal	C1:bellows-type mechanical seal ³²⁾ H, C2: mechanical seal with covered spring					Mechanical seal with covered spring
Monitoring						
Winding temperature, versions U, W	Temperature switch (bimetal) in the winding			Temperature switch (PTC) in the winding		
Winding temperature, versions X, Y	Temperature switch (bimetal) in the winding, plus PTC for explosion protection			2 sets of series-connected PTC thermistors in the winding		-
Bearing temperature	–	–	–	Pump-end PT100		
Motor leakage	Leakage monitor inside the motor					
Coating	H:environment-friendly KSB standard coating, colour RAL 5002 ³³⁾ C1, C2: without coating					
Max. fluid temperature						
Version U	40 °C					
Version X, Y	40 °C					-
Version W	60 °C					
Tests/inspections						
Hydraulic system	KSB standard (ZN 56525) ³⁴⁾					
General	KSB standard (ZN 56525)					
Installation						
Stationary, with guide wire	Installation depth: 4.5 m ³⁵⁾					
Transportable	Installation depth: 4.5 m					

Shaft seal

Available shaft seal types per bearing bracket

Standard design	Standard variant ³⁶⁾
Mechanical seal with elastomer bellows (NBR, optional: Viton) ³⁷⁾	Product-side mechanical seal with covered spring ³⁸⁾³⁹⁾
	

³¹⁾ Optional: Viton = fluorocarbon rubber FPM

³²⁾ Optional: mechanical seal with covered spring

³³⁾ Optional: 250 µm two-part epoxy coating

³⁴⁾ Optional: impeller types S, F to ISO 9906/A, K impellers to ISO 9906//1/2/A

³⁵⁾ Optional: up to 30 m

³⁶⁾ A surcharge and longer delivery times apply to standard variants.

³⁷⁾ For all types of waste water

³⁸⁾ For very abrasive fluids or fluids containing metallic particles (e.g. shavings from drilling)

³⁹⁾ Standard on material variants H and C2 (optionally available for material variants G, G1, G2, GH and C1)

Technical data

Grey cast iron (G, G1, G2, GH)

Size	Material variant	Impeller				Dry installation (installation types D, H)		Wet installation (installation types S, P, K)		Mass moment of inertia J_{40}
		Impeller channels	Free pas- sage	Max. im- peller di- ameter	Min. im- peller di- ameter	Max. oper- ating pres- sure ⁴¹⁾	Max. test pressure	Max. oper- ating pres- sure ⁴¹⁾	Max. test pressure	
		Qty.	[mm]	[mm]	[mm]	[bar]	[bar]	[bar]	[bar]	
S 40-250	G	4	7	235	175	-	-	10	13	0,03
F 40-250	G, G1, G2, GH	-	25	210	150	-	-	7,6	9,8	0,03
F 80-250	G, G1, G2, GH	-	76	265	150	6	9	6,3	8,2	0,14
F 80-251	G	-	50	230	145	-	-	6,2	8,1	0,057
F 100-240	G, G1, G2, GH	-	100	190	170	-	-	3,6	4,7	0,13
F 100-250	G, G1, G2, GH	-	100	265	200	6	9	3,4	4,5	0,056
F 100-315	G, G1, G2, GH	-	100	310	270	-	-	3,5	4,6	0,056
F 100-401	G, G1, G2, GH	-	100	390	325	10	15	7,6	9,8	0,248
F 150-315	G, G1, G2, GH	-	120	290	250	6	9	1,8	2,3	0,144
F 150-401	G, G1, G2, GH	-	135	390	270	10	15	4,2	5,5	0,248
E 80-250	G	1	76	270	225	6	9	2,8	3,7	0,17
E 100-250	G	1	90	245	202	6	9	2,2	2,9	0,16
E 100-315	G	1	100	330	262	-	-	4,3	5,6	0,26
E 100-401	G	1	80	412	389	-	-	5,1	6,6	0,6
E 150-315	G	1	110	320	254	6	9	3,1	4,1	0,31
E 150-401	G	1	115	407	348	10	15	6,3	8,2	0,68
E 200-401	G	1	120	400	319	10	15	5,7	7,4	0,86
D 80-315	G, G1	1	65	260	230	10	15	10,4	13,6	0,124
D 100-251	G, G1	1	76	265	234	6	9	3,5	4,6	0,115
D 100-315	G, G1	1	75	222	196	-	-	6,8	8,8	0,065
D 100-316	G, G1	1	85	306	270	-	-	3,6	4,7	0,233
D 150-251	G, G1	1	100	254	225	6	9	1,9	2,4	0,15
D 150-315	G, G1	1	100	317	280	6	9	3,3	4,3	0,289
D 150-400	G, G1	1	100	363	326	-	-	5,2	6,8	0,573
D 150-401	G, G1	1	110	384	370	-	-	5,3	6,9	0,999
D 200-315	G, G1	1	100	315	280	6	9	2,7	3,4	0,261
D 200-400	G, G1	1	100	375	355	-	-	4,2	5,5	0,825
D 250-400	G, G1	1	120	370	320	-	-	3,5	4,6	0,653
D 300-400	G, G1	1	150	408	375	-	-	1,7	2,2	0,925
K 40-250	G, G1, GH	3	15	260	150	-	-	10	13	0,047
K 80-251	G, G1, GH	2	33	220	140	-	-	6,6	8,6	0,15
K 100-250	G, G1, GH	2	71	256	210	6	9	2,5	3,2	0,07
K 100-315	G, G1, GH	2	80	312	254	-	-	4	5,2	0,15
K 100-400	G, G1	2	76	408	355	10	15	9,2	12	1,1
K 100-401	G, G1, GH	2	50	404	310	10	15	9,3	12,1	0,504
K 150-315	G, G1, GH	2	76	310	235	6	9	3,5	4,6	0,18
K 150-400	G	3	76	404	300	10	15	8,4	11	0,83
K 150-401	G, G1, GH	2	76	404	310	10	15	8,9	11,6	0,916
K 151-401	G, G1, GH	3	80	408	300	10	15	8,6	11,2	0,52
K 150-500	G, G1, GH	3	60	460	420	10	15	8,6	11,2	0,71
K 200-315	G, G1, GH	3	70	295	245	6	9	1,9	2,4	0,22
K 200-316	G, G1, GH	2	100	305	265	6	9	1,7	2,2	0,22
K 200-330	G, G1, GH	3	70	326	287	10	15	5,2	6,8	0,35
K 200-400	G	3	80	408	300	10	15	6,5	8,5	0,52
K 200-401	G, G1, GH	3	80	408	300	10	15	7,1	9,2	0,52
K 200-500	G, G1	3	76	504	400	10	15	9,7	12,6	0,83
K 200-501	G, G1	2	105	502	450	10	15	6,4	8,3	1,68
K 200-631	G, G1	2	105	622	540	10	15	9,8	12,8	4,41
K 250-400	G, G1, GH	3	85	370	300	10	15	6,6	8,5	0,5
K 250-401	G, G1, GH	2	105	400	310	10	15	6	7,8	0,55
K 250-630	G, G1	4	90	630	500	10	15	10,4	13,5	2,76

⁴⁰⁾ Data applies to maximum impeller diameter and impeller with water fill

⁴¹⁾ Permissible operating pressure = inlet pressure + pressure at Q = 0

Size	Material variant	Impeller				Dry installation (installation types D, H)		Wet installation (installation types S, P, K)		Mass moment of inertia $J^{40)}$
		Impeller channels	Free pas- sage	Max. impeller di- ameter	Min. impeller di- ameter	Max. op- erating pres- sure ⁴¹⁾	Max. test pressure	Max. op- erating pres- sure ⁴¹⁾	Max. test pressure	
		Qty.	[mm]	[mm]	[mm]	[bar]	[bar]	[bar]	[bar]	
K 250-900	G, G1	3	110	840	717	13	19,5	11,7	15,2	19,03
K 300-400	G, G1, GH	3	100	408	332	10	15	3,5	4,6	0,75
K 300-401	G, G1, GH	2	135	408	367	10	15	2,3	2,9	0,75
K 300-420	G, G1	3	100	408	370	6	9	5,6	7,3	0,95
K 300-500	G, G1	3	90	504	430	10	15	6,2	8	1,48
K 300-503	G, G1	5	50	480	405	10	15	8,9	11,6	2,5
K 350-420	G, G1	3	100	450	387	6	9	3,5	4,6	1,22
K 350-500	G, G1	3	110	508	426	6	9	5,7	7,4	3,12
K 350-501	G	2	170	509	495	6	9	2,8	3,7	3
K 350-630	G, G1	3	135	630	500	10	15	7,3	9,4	5,22
K 350-636	G, G1	5	75	595	510	10	15	6,4	8,3	5,42
K 350-710	G, G1	3	110	730	580	10	15	9,4	12,2	10,6
K 400-500	G, G1	3	130	508	443	6	9	3,4	4,5	3,37
K 400-630	G, G1	3	132	620	546	6	9	6,2	8	8,21
K 400-710	G, G1	3	165	739	587	10	15	8,8	11,5	16
K 400-900	G, G1	3	130	830	659	13	19,5	11,3	14,7	17,79
K 500-630	G, G1	3	133	582	520	4	6	4,2	5,5	6,11
K 500-710	G, G1	3	150	700	586	8	12	6,9	9	16
K 500-900	G, G1	3	202	908	721	9	13,5	8	10,3	45
K 600-520	G, G1	3	145	532	457	4	6	2,4	3,2	7,02
K 600-710	G, G1	3	165	736	685	4	6	4,2	5,5	16,96
K 700-900	G, G1	3	190	850	738	3	4,5	3,3	4,3	40
K 700-901	G, G1	3	180	908	760	9	13,5	7,2	9,3	50

Industrial materials (H, C1, C2)

Size	Material variant	Impeller				Wet installation (installation types S, P)		Mass moment of inertia $J^{40)}$
		Impeller channels	Free pas- sage	Max. impeller diameter	Min. impeller diameter	Max. operat- ing pressure ⁴¹⁾	Max. test pres- sure	
		Qty.	[mm]	[mm]	[mm]	[bar]	[bar]	
S 50-210	H, C1, C2	4	7	185	170	4,2	5,5	0,006
F 40-250	H, C1, C2	-	25	210	150	7,6	9,8	0,03
F 50-210	H, C1, C2	-	40	200	170	3	3,9	0,008
F 65-210	H, C1, C2	-	65	195	115	2	2,6	0,014
F 80-210	H, C1, C2	-	80	210	158	1,3	1,7	0,027
F 80-250	H, C1, C2	-	76	265	150	6,3	8,2	0,14
F 100-240	H, C1, C2	-	100	190	170	3,6	4,7	0,13
F 100-250	H, C1, C2	-	100	265	200	3,4	4,5	0,056
F 100-315	H, C1, C2	-	100	310	270	3,5	4,6	0,056
F 100-401	H, C1, C2	-	100	390	325	7,6	9,8	0,248
F 150-315	H, C1, C2	-	120	290	250	1,8	2,3	0,144
F 150-401	H, C1, C2	-	135	390	270	4,2	5,5	0,248
K 50-210	C1, C2	5	7	208	130	3,5	4,5	0,025
K 40-250	H, C1, C2	3	15	260	150	10	13	0,047
K 80-251	H, C1, C2	2	33	220	140	6,6	8,6	0,15
K 100-250	H, C1, C2	2	71	256	210	2,5	3,2	0,07
K 100-315	H, C1, C2	2	80	312	254	4	5,2	0,15
K 100-400	C1, C2	2	76	408	355	9,2	12	1,1
K 100-401	H, C1, C2	2	50	404	310	9,3	12,1	0,504
K 150-315	H, C1, C2	2	76	310	235	3,5	4,6	0,18
K 150-401	H, C1, C2	2	76	404	310	8,9	11,6	0,916
K 151-401	H, C1, C2	3	80	404	300	8,6	11,2	0,52

⁴⁰⁾ Data applies to maximum impeller diameter and impeller with water fill

⁴¹⁾ Permissible operating pressure = inlet pressure + pressure at Q = 0

Size	Material variant	Impeller				Wet installation (installation types S, P)		Mass moment of inertia J ⁽⁴⁰⁾
		Impeller channels	Free pas- sage	Max. impeller diameter	Min. impeller diameter	Max. operat- ing pressure ⁽⁴¹⁾	Max. test pres- sure	
		Qty.	[mm]	[mm]	[mm]	[bar]	[bar]	[kgm ²]
K 150-500	C1, C2	3	60	460	420	8,6	11,2	0,71
K 200-315	H, C1, C2	3	70	295	245	1,9	2,4	0,22
K 200-316	H, C1, C2	2	100	305	265	1,7	2,2	0,22
K 200-330	H, C1, C2	3	70	326	287	5,2	6,8	0,35
K 200-401	H, C1, C2	3	80	404	330	7,1	9,2	0,52
K 200-500	C1, C2	3	76	504	400	9,7	12,6	0,83
K 200-501	C1, C2	2	105	502	450	6,4	8,3	1,68
K 200-631	C1, C2	2	105	622	540	9,8	12,8	4,41
K 250-400	H, C1, C2	3	85	370	300	6,6	8,5	0,5
K 250-401	H, C1, C2	2	105	400	310	6	7,8	0,55
K 250-630	C1, C2	3	90	630	500	10,4	13,5	2,76
K 300-400	H, C1, C2	3	100	408	332	3,5	4,6	0,75
K 300-401	H, C1, C2	2	135	408	367	2,3	2,9	0,75
K 300-420	C1, C2	3	100	408	370	5,6	7,3	0,95
K 300-500	C1, C2	3	90	504	430	6,2	8	1,48
K 300-503	C1, C2	5	50	480	405	8,9	11,6	2,5
K 350-420	C1, C2	3	100	450	387	3,5	4,6	1,22
K 350-500	C1, C2	3	110	508	426	5,7	7,4	3,12
K 350-630	C1, C2	3	135	630	500	7,3	9,4	5,22
K 350-636	C1, C2	5	75	595	510	6,4	8,3	5,42
K 350-710	C1, C2	3	110	730	580	9,4	12,2	10,6
K 400-500	C1, C2	3	130	508	443	3,4	4,5	3,37
K 400-630	C1, C2	3	132	620	546	6,2	8	8,21
K 500-630	C1, C2	3	133	582	520	4,2	5,5	6,11
K 600-520	C1, C2	3	145	532	457	2,4	3,2	7,02
K 600-710	C1, C2	3	165	736	685	4,2	5,5	16,96
K 700-900	C1, C2	3	190	850	738	3,3	4,3	40
K 700-901	C1, C2	3	180	908	760	7,2	9,3	50

Mass moments of inertia as a function of motor size

2-pole

Motor size	Mass moment of inertia J [kgm ²]
5 2	0,01
6 2	0,01
8 2	0,01
12 2	0,02
17 2	0,03
22 2 / 25 2	0,04
23 2	0,05
37 2	0,13
55 2	0,14

4-pole

Motor size	Mass moment of inertia J [kgm ²]
4 4 / 5 4	0,01
7 4	0,02
11 4	0,04
16 4	0,05
4 4.KG / 5 4.KG	0,05
7 4.KG	0,06
19 4 / 21 4	0,06
23 4	0,07
29 4	0,11
35 4	0,22
50 4	0,25
65 4	0,30
35 4.N	0,25
50 4.N	0,28

Motor size	Mass moment of inertia J [kgm ²]
65 4.N	0,33
80 4.N	0,46
95 4.N	0,55
110 4.N	0,63
130 4.N	1,26
155 4.N	1,43
175 4.N	1,57
200 4.N	3,78
250 4.N	4,13
300 4.N	4,82
350 4.N	5,51

6-pole

Motor size	Mass moment of inertia J [kgm ²]
4 6	0,02
6 6	0,02
9 6	0,05
12 6	0,07
4 6.KG	0,07
6 6.KG	0,09
15 6	0,09
19 6	0,09
20 6	0,10
26 6	0,13
32 6	0,34
40 6	0,42
50 6	0,51
32 6.N	0,37

Motor size	Mass moment of inertia J [kgm ²]
40 6.N	0,45
50 6.N	0,54
60 6.N	0,66
80 6.N	0,80
100 6.N	0,94
120 6.N	1,89
140 6.N	2,25
165 6.N	2,55
190 6.N	7,30
225 6.N	8,57
260 6.N	9,84
320 6.N	14,3
360 6.N	15,9
400 6.N	17,6
440 6.N	19,2
480 6.N	20,7
530 6.N	31,5
580 6.N	36,3
630 6.N	41,1
690 6.N	45,8
770 6.N	50,6
850 6.N	55,3

8-pole

Motor size	Mass moment of inertia J [kgm ²]
10 8	0,09
17 8	0,12
21 8	0,18
26 8	0,37
35 8	0,47
26 8.N	0,40
35 8.N	0,50
50 8.N	0,66
75 8.N	0,94
90 8.N	1,98
110 8.N	2,25
130 8.N	2,55
150 8.N	7,30
185 8.N	8,57
220 8.N	9,84
260 8.N	13,3
300 8.N	15,9
350 8.N	19,1
400 8.N	20,7
460 8.N	31,5
530 8.N	36,3
580 8.N	41,1
630 8.N	45,8
690 8.N	50,6
760 8.N	55,3

10-pole

Motor size	Mass moment of inertia J [kgm ²]
40 10.N	1,75
60 10.N	1,93
75 10.N	2,20
90 10.N	2,49
110 10.N	7,96
150 10.N	9,66
190 10.N	11,8
230 10.N	17,7
270 10.N	20,5

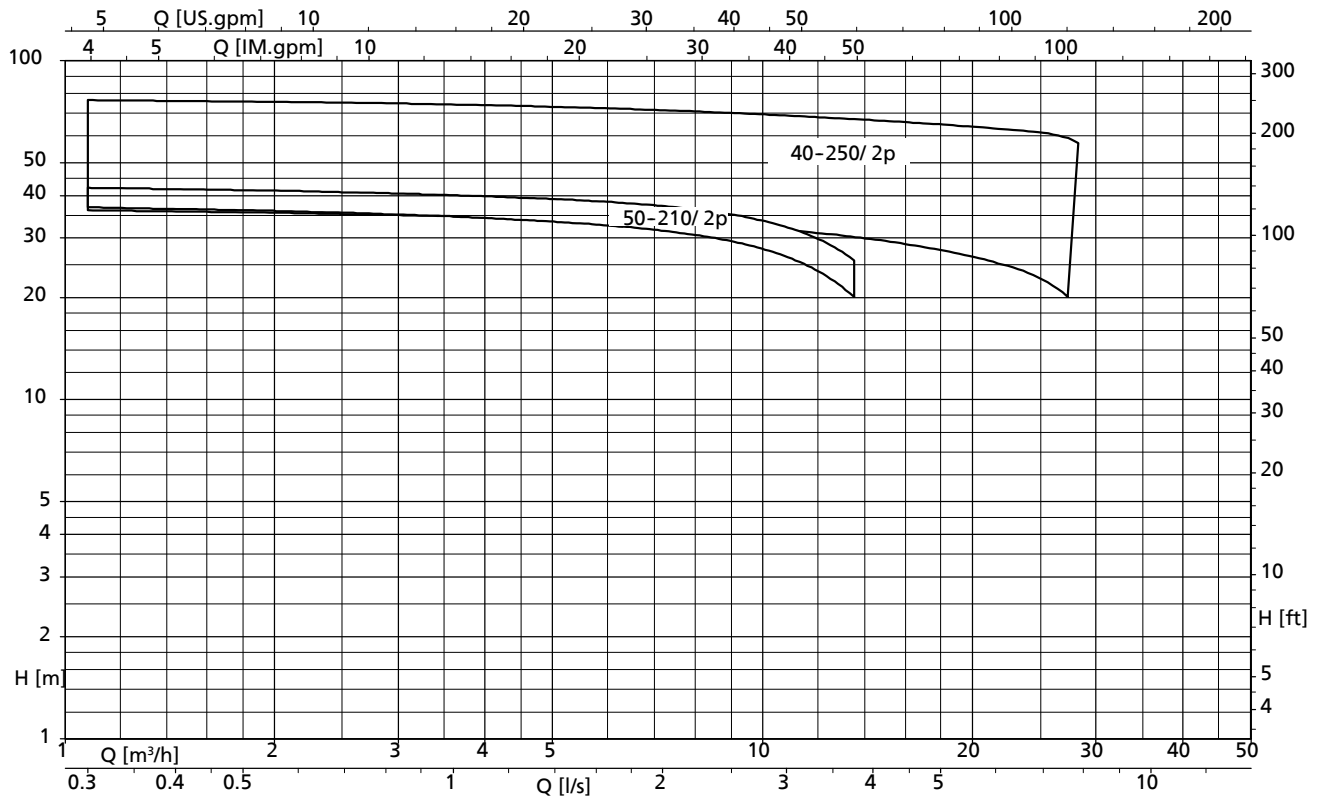
Motor size	Mass moment of inertia J [kgm ²]
310 10.N	23,2
350 10.N	25,8
390 10.N	36,1
430 10.N	41,6
475 10.N	47,2
535 10.N	52,7
600 10.N	58,2
660 10.N	63,7

12-pole

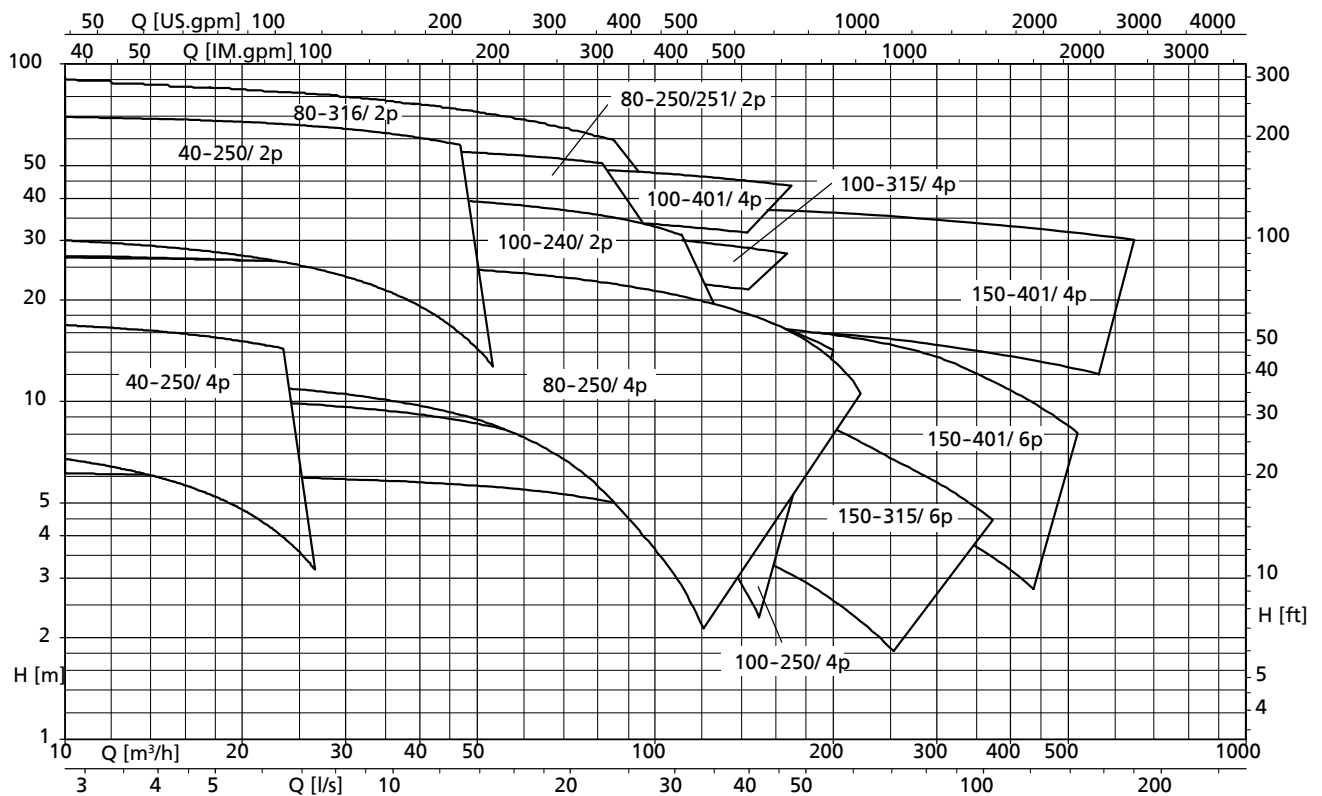
Motor size	Mass moment of inertia J [kgm ²]
105 12.N	7,96
135 12.N	9,66
165 12.N	11,8
195 12.N	17,7
230 12.N	20,5
265 12.N	23,2
290 12.N	36,1
300 12.N	25,8
340 12.N	4,6
380 12.N	47,2
450 12.N	52,7
490 12.N	58,2
560 12.N	63,7

Selection charts

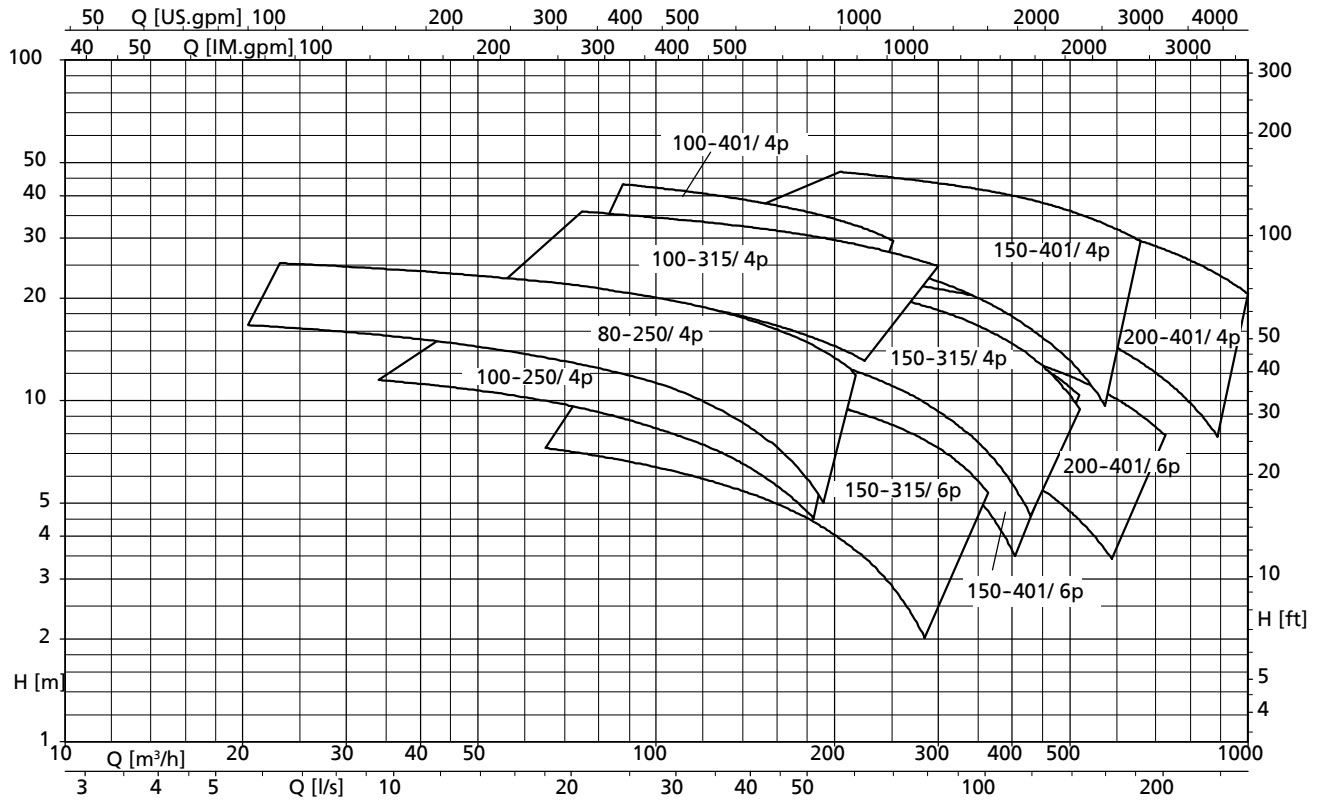
Amarex KRT; $n = 2900$ rpm; S impeller



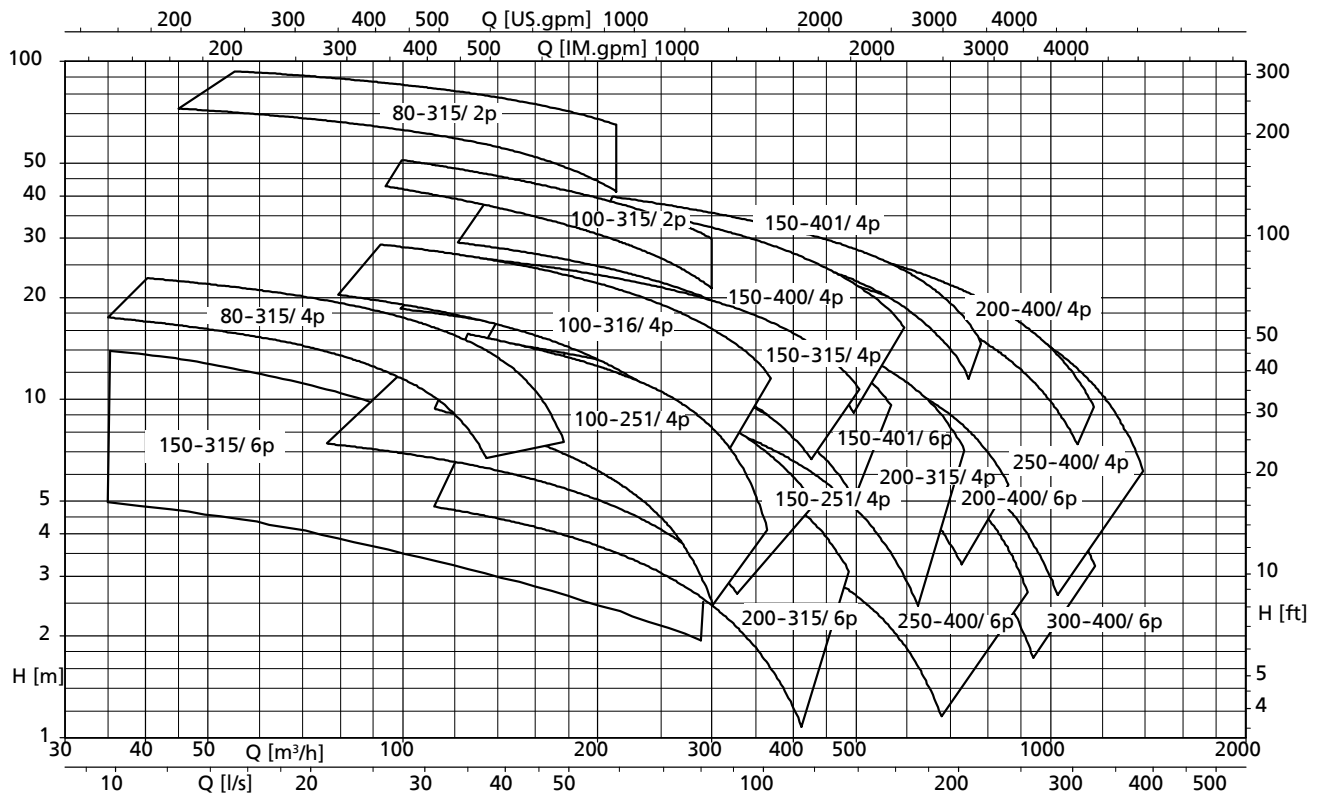
Amarex KRT, $n = 2900 / 1450 / 960$ rpm, F impeller



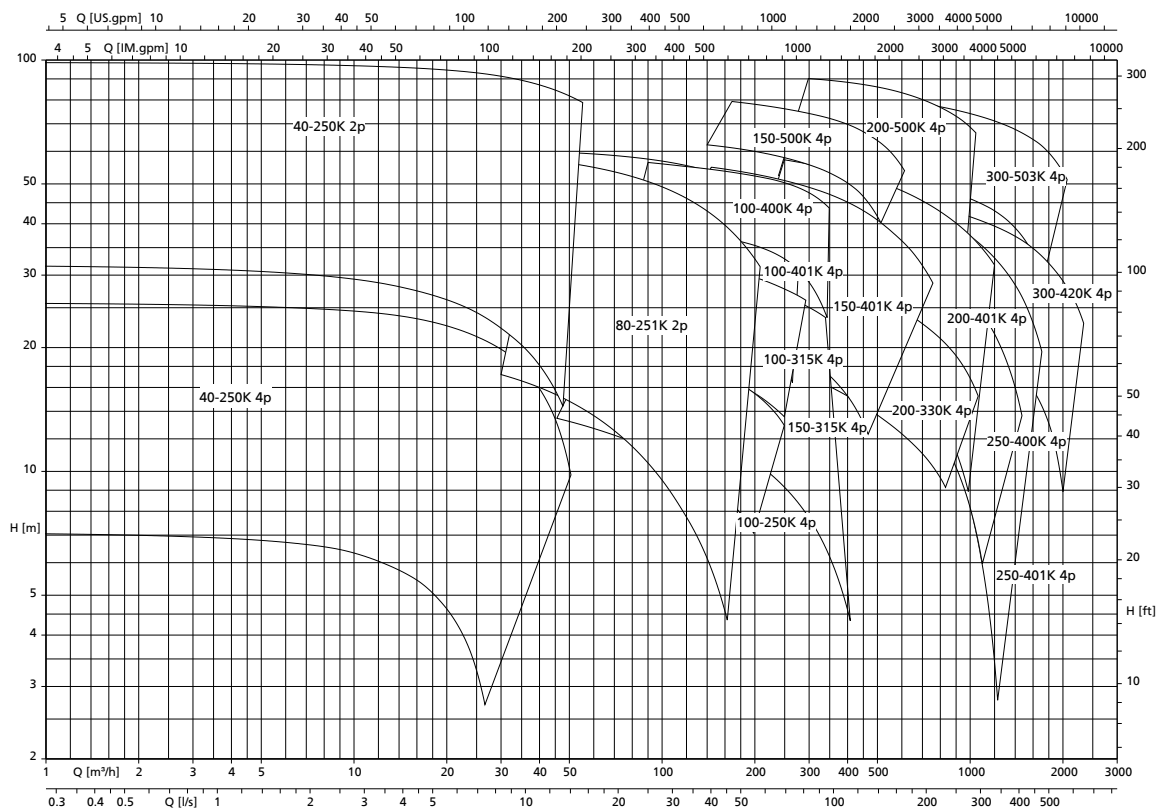
Amarex KRT, n = 1450 / 960 rpm, E impeller



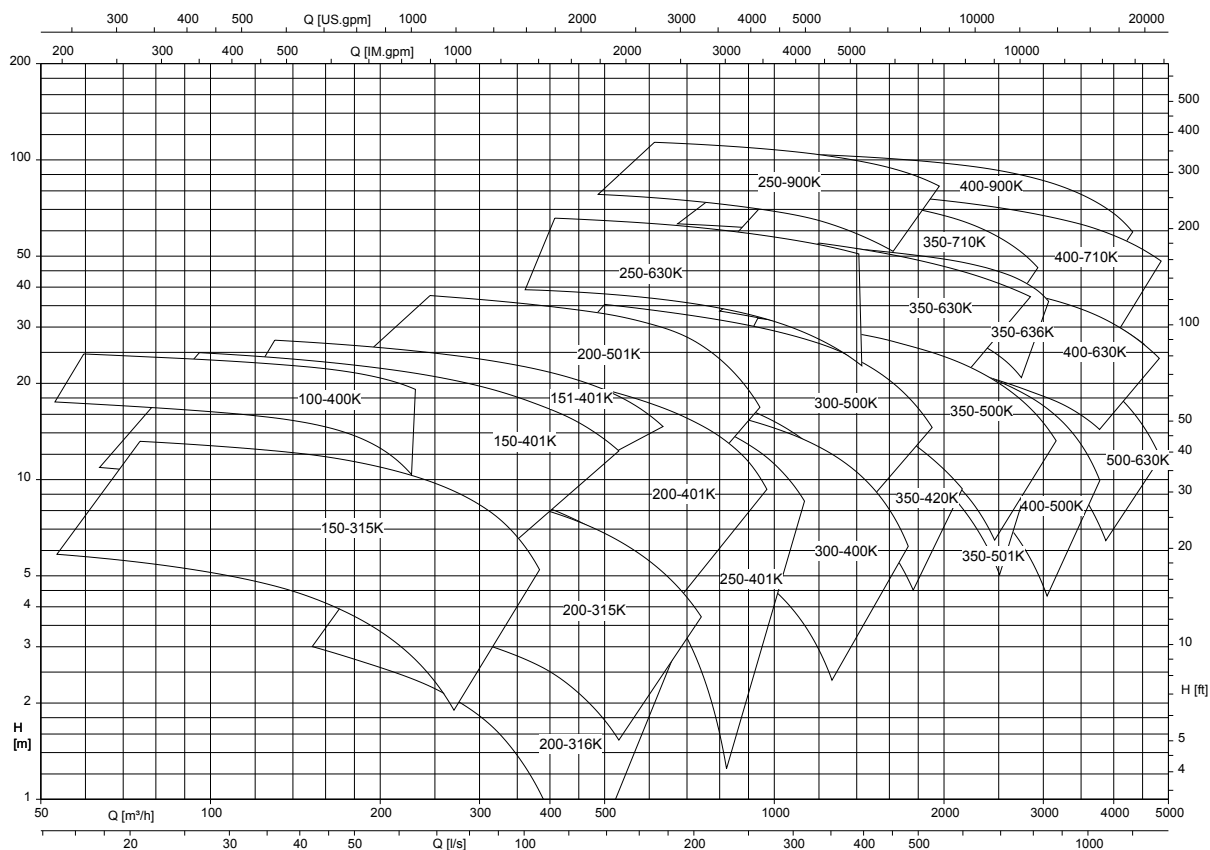
Amarex KRT, n = 2900 / 1450 / 960 rpm, D impeller



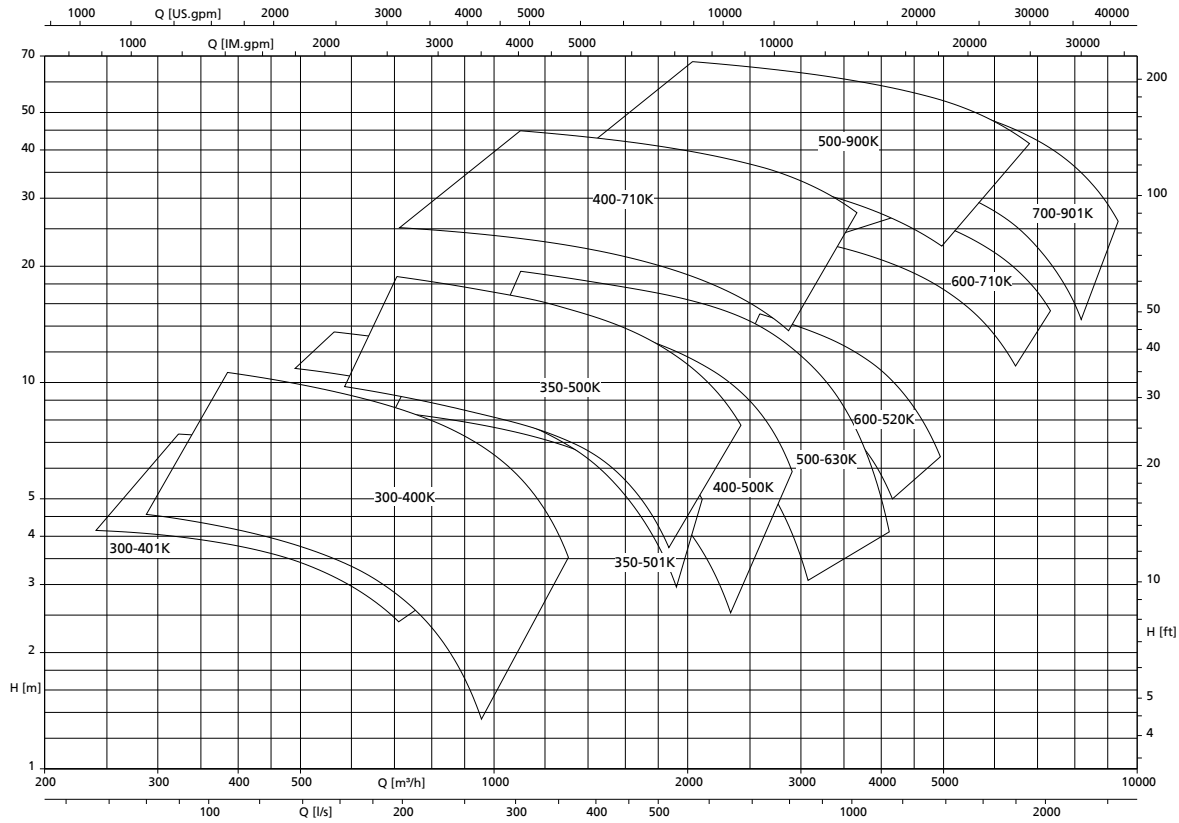
Amarex KRT, n = 2900 / 1450 rpm, K impeller



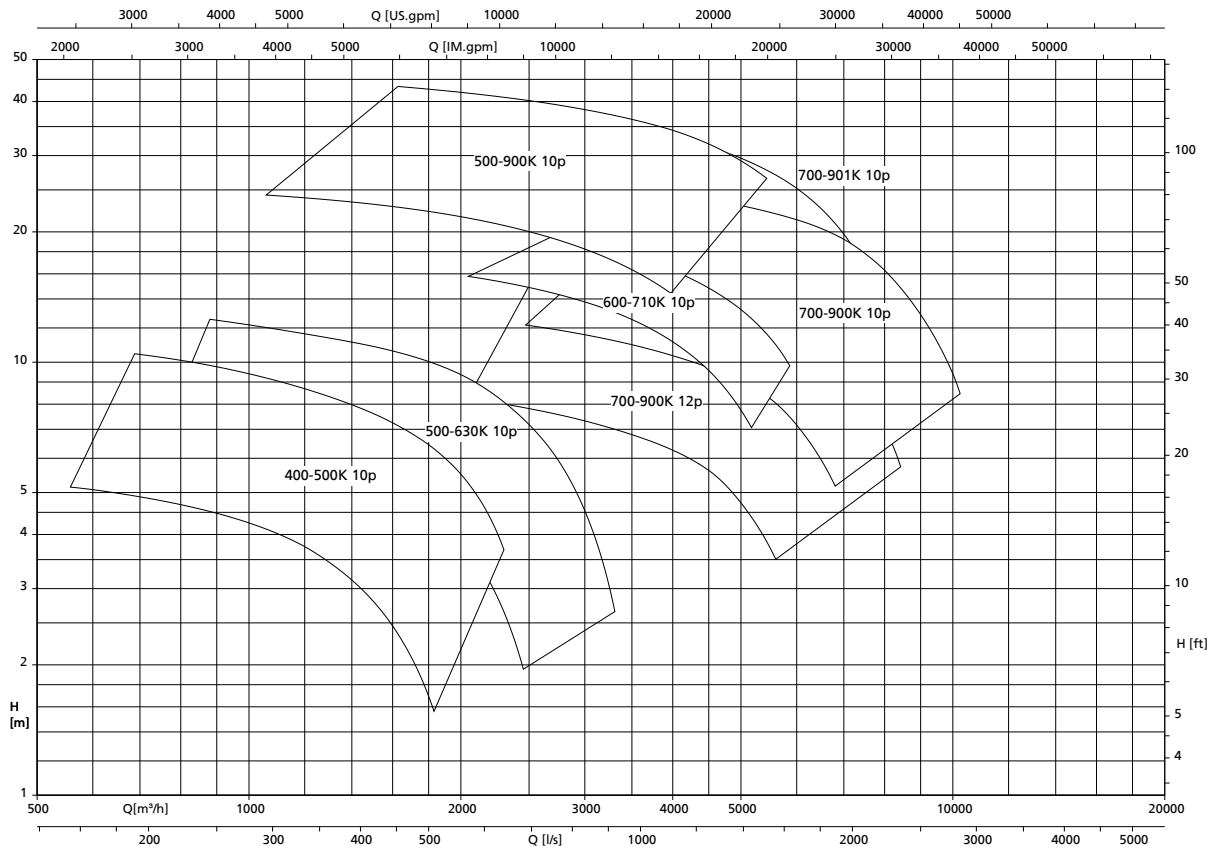
Amarex KRT, n = 960 rpm, K impeller



Amarex KRT, n = 725 rpm, K impeller



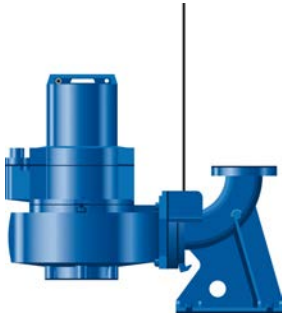
Amarex KRT, n = 580 / 480 rpm, K impeller



Installation types

Installation type S

Stationary wet installation (S1 operation with submerged motor)



Guide wire arrangement



Guide rail arrangement

Installation type D

Stationary dry installation, vertical (S1 operation)



Installation type P

Transportable wet-installed model (S1 operation with submerged motor)



Installation type K

Stationary wet installation (S1 operation with motor outside the fluid)



Guide wire arrangement



Guide rail arrangement

Installation type H

Stationary dry installation, horizontal (S1 operation)



Scope of supply

Stationary wet installation (installation types K and S)

- Pump set complete with power cables
- Claw with sealing element (O-ring) and mounting elements
- Lifting rope, lifting chain or lifting bail (optional)
- Mounting bracket with mounting elements
- Duckfoot bend with inspection hole and fastening elements
- Guide wire
(guide rails are not included in KSB's scope of supply)

Stationary dry installation - vertical (installation type D)

- Pump set complete with power cables
- Duckfoot bend with inspection hole and fastening elements
- or suction elbow with inspection hole

Transportable wet-installed model (installation type P)

- Pump set complete with power cables
- Foot plate or pump stool with mounting elements
- Lifting rope, lifting chain or lifting bail (optional)

Stationary dry installation - horizontal (installation type H)

- Pump set complete with power cables
- Foundation rails
- Suction-side flanged intermediate piece with inspection hole (optional)



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27.03.2013

2553.5/10-EN