

Axially Split Volute Casing Pump

Omega / Omega V

Type Series Booklet



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Type Series Booklet Omega / Omega V

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Water Supply

Axially Split Volute Casing Pump

Omega / Omega V



Main applications

- Water supply systems
- Desalination plants
- Pressure boosting
- Water transport
- Service and cooling water for power stations and industry
- Irrigation and drainage pumping stations
- Fire-fighting systems
- Shipbuilding
- District heating and cooling systems

Fluids handled

OMEGA / OMEGA V pumps are designed for pumping water and other fluids with a low solids content. The pumps are very versatile and can be used for the following fluids, for example:

- Brackish water
- River, lake and groundwater
- Stormwater
- Service water
- Fire-fighting water
- Cooling water
- Condensate
- Heating water
- Drinking water

Operating data

Operating properties

Characteristic	Value	
Sizes	DN	80-350 mm [3-14 inch]
Flow rate ¹⁾	Q	Up to 2,880 m ³ /h [12,680 US.gpm]
Head ²⁾	H	Up to 210 m [689 ft]
Operating pressure ²⁾	p	Up to 25 bar [363 psi]
Fluid temperature ³⁾	t	Up to 140 °C [284 °F]

Designation

Example: Omega V 150 - 460 A GB P M

Key to the designation

Code	Description	
Omega	Type series	
V	Installation type	
	4)	Horizontal installation
	V	Vertical installation
150	Nominal discharge nozzle diameter [mm]	
460	Nominal impeller diameter [mm]	
A	Impeller type	
GB	Material variant (⇒ Page 5)	
	GB	Grey cast iron / bronze
	GC	Grey cast iron / chrome steel
	SB	Nodular cast iron / bronze
	SC	Nodular cast iron / chrome steel
	DD ₃₅	Duplex stainless steel / duplex stainless steel
P	Shaft seal	
	P	Gland packing
	G	Mechanical seal
M	Bearing lubrication	
	F	Grease
	M	Product-lubricated

Design details

Design

- Volute casing pump
- Horizontal/vertical installation
- Single-stage
- Nominal diameter of the discharge nozzles: 80 mm to 350 mm

Pump casing

- Axially split volute casing
- Volute casing with integrally cast pump feet
- Replaceable casing wear rings
- Mating dimensions to EN or ASME

Impeller type

- Double-entry radial impeller optionally with impeller wear rings

1) For larger flow rates see type series RDLO / RDLOV

2) Depending on the material and size

3) Standard design up to 80 °C [176 °F] max.

4) Blank

Pump shaft

- Completely dry shaft for design with rolling element bearings
- Shaft protecting sleeves in the seal area

Shaft seal

- Gland packing
- Mechanical seal

Bearings

For horizontal installation:

- Rolling element bearings, greased for life

For vertical installation:

- Lower bearing: product-lubricated plain bearing / Upper bearing: rolling element bearing, greased for life

Materials

Overview of available materials (standard design)⁵⁾

Part No.	Description	Material variant				
		GB	GC	SB	SC	DD ₃₅ ⁶⁾
All pump sets						
102	Volute casing	Grey cast iron	Grey cast iron	Nodular cast iron	Nodular cast iron	Duplex stainless steel
211	Pump shaft	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Duplex stainless steel
234	Impeller	Bronze	Duplex stainless steel	Bronze	Duplex stainless steel	Duplex stainless steel
350.1	Bearing housing	Grey cast iron	Grey cast iron	Grey cast iron	Grey cast iron	Grey cast iron
360	Bearing cover	Grey cast iron	Grey cast iron	Grey cast iron	Grey cast iron	Grey cast iron
441	Shaft seal housing	Grey cast iron	Grey cast iron	Nodular cast iron	Nodular cast iron	Duplex stainless steel
502	Casing wear ring	Bronze	Bronze	Bronze	Bronze	Duplex stainless steel
503	Impeller wear ring (optional)	Bronze	Stainless steel	Bronze	Stainless steel	Duplex stainless steel
524.1	Shaft protecting sleeve	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Duplex stainless steel
For pump sets with product-lubricated plain bearing only						
160	Cover	Grey cast iron	Grey cast iron	Nodular cast iron	Nodular cast iron	Duplex stainless steel
350.2	Bearing housing	Grey cast iron	Grey cast iron	Nodular cast iron	Nodular cast iron	Duplex stainless steel
545	Bearing bush	Silicon carbide	Silicon carbide	Silicon carbide	Silicon carbide	Silicon carbide
524.2	Shaft protecting sleeve	Silicon carbide	Silicon carbide	Silicon carbide	Silicon carbide	Silicon carbide
550.3	Disc	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Duplex stainless steel
525.1	Spacer sleeve	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Duplex stainless steel
For pump sets with gland packing only						
452	Gland follower	Unalloyed steel	Unalloyed steel	Unalloyed steel	Unalloyed steel	-
455	Stuffing box insert	Bronze	Bronze	Bronze	Bronze	-
457	Neck ring	Bronze	Bronze	Bronze	Bronze	-
458	Lantern ring	Bronze/ thermosetting plastics ⁷⁾	Bronze/ thermosetting plastics ⁷⁾	Bronze/ thermosetting plastics ⁷⁾	Bronze/ thermosetting plastics ⁷⁾	-
461	Packing ring	Ramie fibre PTFE- impregnated	Ramie fibre PTFE- impregnated	Ramie fibre PTFE- impregnated	Ramie fibre PTFE- impregnated	-
For pump sets with mechanical seal only						
433	Balanced mechanical seal	Carbon/ silicon carbide	Carbon/ silicon carbide	Carbon/ silicon carbide	Carbon/ silicon carbide	Carbon/ silicon carbide
433	Unbalanced mechanical seal	Silicon carbide / silicon carbide	Silicon carbide / silicon carbide	Silicon carbide / silicon carbide	Silicon carbide / silicon carbide	Silicon carbide / silicon carbide
457.2	Neck ring	Bronze	Bronze	Bronze	Bronze	Duplex stainless steel

⁵⁾ Max. fluid temperatures ≤ 80°C [176°F]

⁶⁾ For duplex stainless steel with special PREN values contact the manufacturer.

⁷⁾ For OMEGA 80-210 / 80-270 / 80-370 / 100-250 / 100-310 / 100-375 only

Part No.	Description	Material variant				
		GB	GC	SB	SC	DD ₃₅ ⁶⁾
471	Seal cover	Grey cast iron	Grey cast iron	Grey cast iron	Grey cast iron	Duplex stainless steel
525.2	Spacer sleeve	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Duplex stainless steel

Overview of available materials (hot water variant)

Part No.	Description	Material variant				
		GB	GC ⁸⁾	SB	SC ⁹⁾	DD ₃₅
All pump sets						
102	Volute casing	-	Grey cast iron	-	Nodular cast iron	-
211	Pump shaft	-	Stainless steel	-	Stainless steel	-
234	Impeller	-	Duplex stainless steel	-	Duplex stainless steel	-
350.1	Bearing housing	-	Grey cast iron	-	Grey cast iron	-
360	Bearing cover	-	Grey cast iron	-	Grey cast iron	-
441	Shaft seal housing	-	Grey cast iron	-	Nodular cast iron	-
502	Casing wear ring	-	Stainless steel	-	Stainless steel	-
503	Impeller wear ring (optional)	-	-	-	-	-
524.1	Shaft protecting sleeve	-	Stainless steel	-	Stainless steel	-
For pump sets with product-lubricated plain bearing only						
160	Cover	-	-	-	-	-
350.2	Bearing housing ES	-	-	-	-	-
545	Bearing bush	-	-	-	-	-
524.2	Shaft protecting sleeve	-	-	-	-	-
550.3	Disc	-	-	-	-	-
525.1	Spacer sleeve	-	-	-	-	-
For pump sets with gland packing only						
452	Gland follower	-	-	-	-	-
455	Stuffing box insert	-	-	-	-	-
457	Neck ring	-	-	-	-	-
458	Lantern ring	-	-	-	-	-
461	Packing ring	-	-	-	-	-
For pump sets with mechanical seal only						
433	Balanced mechanical seal ⁸⁾	-	Silicon carbide / carbon	-	Silicon carbide / carbon	-
433	Unbalanced mechanical seal ⁸⁾	-	-	-	-	-
457.2	Neck ring	-	Stainless steel	-	Stainless steel	-
471	Seal cover	-	Grey cast iron	-	Grey cast iron	-
525.2	Spacer sleeve	-	Stainless steel	-	Stainless steel	-

⁶⁾ For duplex stainless steel with special PREN values contact the manufacturer.

⁸⁾ Only permissible for fluid temperatures ≤ 120 °C [248 °F]

⁹⁾ Only permissible for fluid temperatures ≤ 140 °C [284 °F]

Coating and preservation

Coating for indoor installation

Coating type	Material variant					Casing			Base frame
	GB	GC	SB	SC	DD ₃₅	Exterior	Interior	Bearing housing	
A1 ¹⁰⁾	X	X	X	X	–	Epoxy resin base paint, colour RAL 5002 (ultramarine blue) ¹¹⁾	Epoxy resin base primer, colour at our discretion	Epoxy resin base paint, colour RAL 5002 (ultramarine blue) ¹¹⁾	Epoxy resin base paint, colour RAL 5002 (ultramarine blue) ¹¹⁾
A1-E ¹⁰⁾¹²⁾	X	X	X	X	–	Epoxy resin base paint, colour RAL 5002 (ultramarine blue) ¹¹⁾	Epoxy resin base paint, colour RAL 5015 (sky blue) ¹³⁾	Epoxy resin base paint, colour RAL 5002 (ultramarine blue) ¹¹⁾	Epoxy resin base paint, colour RAL 5002 (ultramarine blue) ¹¹⁾
B1-E ¹⁰⁾	–	–	–	–	X	Epoxy resin base paint, colour RAL 5002 (ultramarine blue) ¹¹⁾	None; sand-blasted SA 2 ½	Epoxy resin base paint, colour RAL 5002 (ultramarine blue) ¹¹⁾	Epoxy resin base paint, colour RAL 5002 (ultramarine blue) ¹¹⁾

Coating for outdoor installation

Coating type	Material variant					Casing			Base frame
	GB	GC	SB	SC	DD ₃₅	Exterior	Interior	Bearing housing	
A2	X	X	X	X	–	Polyurethane base paint, colour RAL 5002 (ultramarine blue) ¹⁴⁾	Epoxy resin base primer, colour at our discretion	Polyurethane base paint, colour RAL 5002 (ultramarine blue) ¹⁴⁾	Polyurethane base paint, colour RAL 5002 (ultramarine blue) ¹⁴⁾
A2-E ¹⁰⁾¹²⁾	X	X	X	X	–	Polyurethane base paint, colour RAL 5002 (ultramarine blue) ¹⁴⁾	Epoxy resin base paint, colour RAL 5015 (sky blue) ¹³⁾	Polyurethane base paint, colour RAL 5002 (ultramarine blue) ¹⁴⁾	Polyurethane base paint, colour RAL 5002 (ultramarine blue) ¹⁴⁾
B2-E ¹⁰⁾	–	–	–	–	X	Polyurethane base paint, colour RAL 5002 (ultramarine blue) ¹⁴⁾	None; sand-blasted SA 2 ½	Polyurethane base paint, colour RAL 5002 (ultramarine blue) ¹⁴⁾	Polyurethane base paint, colour RAL 5002 (ultramarine blue) ¹⁴⁾

10) Only permissible for fluid temperatures ≤ 80 °C [176 °F]

11) For indoor use in industry and in a marine atmosphere; other colours only in coating variants A2 or B2 and on request.

12) Extra charge

13) Approved for drinking water (KTW, DVGW, ACS). The impeller and rotor components are generally not coated. No other colours available. Max. permissible temperature for drinking water approved coating = 60 °C [140 °F]. Only approved for drinking water up to 25 °C [77 °F] max.

14) For indoor and outdoor use in industry and in a marine atmosphere; other colours on request.

Product benefits

- Low maintenance costs:
 - Fast and easy to install thanks to self-centring components (upper casing part, rotor, casing cover)
 - Materials resistant to corrosion and abrasion
 - Smooth operation with low vibration levels
 - Replacement and spare parts fit several pump sizes
- Long service life:
 - Sealed and dry shaft
 - Short bearing distances and a short shaft
 - Protected rolling element bearings greased for life
 - Optional impeller wear rings
 - Replaceable shaft protecting sleeve
- High operating reliability:
 - Rigid shaft without threads between the bearings
 - Generously sized bearings ($L_{h_{10}} = 100,000$ hours)
 - Reliable sealing thanks to solid casing split flange
 - Double-entry impeller for axial thrust balancing
 - Double volute design
- High flexibility:
 - Drive can be positioned to the left or right of the pump

- Shaft sealed by gland packing or mechanical seals
- Various horizontal and vertical installation options
- Flanges to DIN or ASME
- Excellent efficiencies and NPSH values:
 - Computer-optimised impellers
 - Large impeller inlet diameters for optimum suction behaviour
 - Cost-effective replacing of casing and impeller wear rings
 - Vortex-free intake elbow with low energy losses
 - Impeller trimmed to match the specified duty point
 - Several hydraulic systems per pump size

Acceptance tests

- Functional and acceptance tests
 - For information on acceptance tests and inspections refer to the QCPs (see KSB Standard ZN56555-1A / ZN56555-1B / ZN56555-1C)
- Quality assurance system
 - DIN ISO 9001 / EN 29001

Selection information

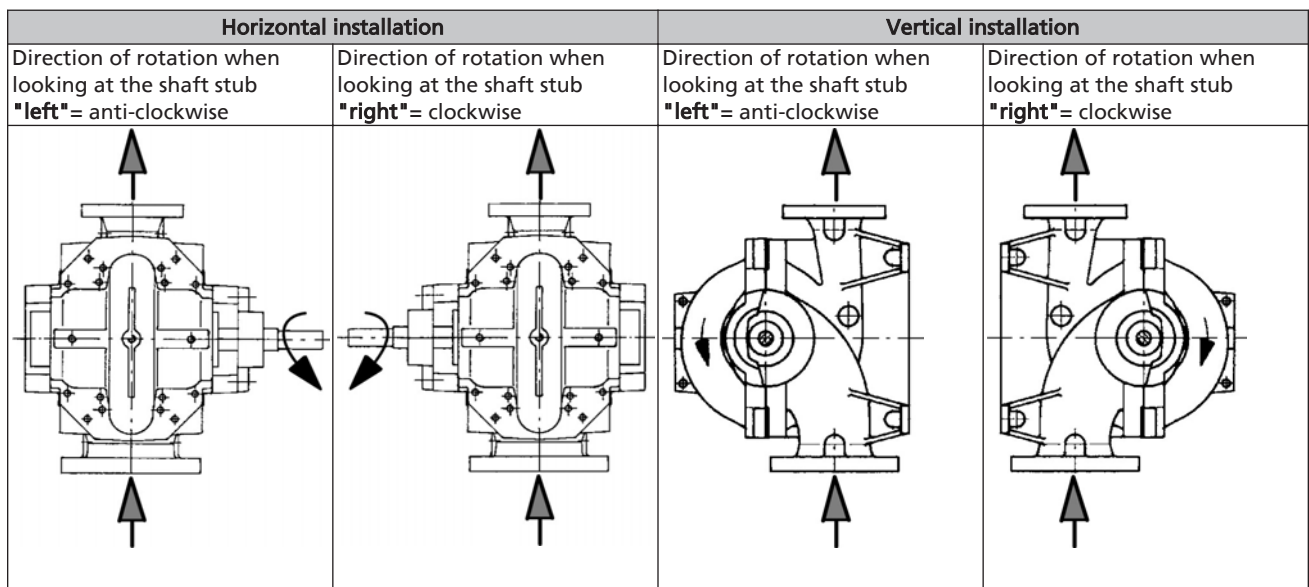
Solids content

Solids content by shaft seal and material variant in [ppm] or [mg/l]

Shaft seal	Material variant					
	Max. permissible solids content for variants with barrier and flushing water line without cyclone separator			Max. permissible solids content for variants with barrier and flushing water line with cyclone separator ¹⁵⁾		
	Grey cast iron (GB/GC)	Nodular cast iron (SB/SC)	Cast steel (DD ₃₅)	Grey cast iron (GB/GC)	Nodular cast iron (SB/SC)	Cast steel (DD ₃₅)
Gland packing	50	50	50	100	100	100
Unbalanced mechanical seal	50	50	50	100	100	100
Balanced mechanical seal	50	50	50	100	100	100

Directions of rotation and flow

Directions of rotation and flow



The pumps are designed symmetrically, which means that the designs for clockwise and anti-clockwise rotation are identical. The direction of rotation can be reversed at a later stage without retrofitting or modifying components.

¹⁵⁾ Higher solids contents on request

Overview of product features/selection tables

Standard design

Overview of product features of the standard design

Features	Material variant					Installation type				
	GB	GC	SB	SC	DD ₃₅	Fig.0	3E	DB/DK	DP	DJ
Direction of rotation										
"Right": clockwise	●	●	●	●	●	●	●	●	●	●
"Left": anti-clockwise	●	●	●	●	●	●	●	●	●	●
Flange										
Drilled to DIN EN 1092 – flat face (type A)	●	●	●	●	●	●	●	●	●	●
Drilled to DIN EN 1092 – raised face (type B)	□	□	□	□	□	□	□	□	□	□
Drilled to ASME B16 – flat face (type FF)	●	●	●	●	●	●	●	●	●	●
Drilled to ASME B16 – raised face (type RF)	□	□	□	□	□	□	□	□	□	□
Special flange	16)	16)	16)	16)	16)	16)	16)	16)	16)	16)
Bearings										
Grease-lubricated rolling element bearing at the drive end (sealed for life)	●	●	●	●	●	●	●	●	●	●
Grease-lubricated rolling element bearing at the non-drive end (sealed for life)	●	●	●	●	●	●	-	-	-	-
Grease-lubricated rolling element bearing at the non-drive end (sealed for life)	16)	16)	16)	16)	16)	-	-	16)	16)	16)
Product-lubricated plain bearing at the non-drive end	●	●	●	●	-	-	-	●	●	●
Oil-lubricated rolling element bearings at both ends	-	-	-	-	-	-	-	-	-	-
Wear rings										
Casing with wear rings / impeller without wear rings	●	●	●	●	●	●	●	●	●	●
Casing with wear rings / impeller with wear rings	○	○	○	○	○	○	○	○	○	○
Shaft seal										
Gland packing	●	●	●	●	-	●	●	●	●	●
Single mechanical seal (unbalanced)	○	○	○	○	○	○	○	○	○	○
Single mechanical seal (balanced)	○	○	○	○	○	○	○	○	○	○
Special shaft seal (make/design different to KSB specifications)	16)	16)	16)	16)	16)	16)	16)	16)	16)	16)
Piping										
Barrier fluid / flushing water line made of flexible PTFE (malleable cast iron)	●	●	●	●	●	●	●	●	●	●
Barrier fluid / flushing water line made of flexible PTFE (stainless steel)	□	□	□	□	-	□	□	□	□	□
Barrier fluid / flushing water line made of flexible PTFE (duplex)	-	-	-	-	●	●	●	●	●	●
Special piping (to customer requirements)	16)	16)	16)	16)	16)	16)	16)	16)	16)	16)
Coating										
Coating for indoor installation (KSB blue / RAL 5002)	●	●	●	●	●	●	●	●	●	●
Coating for outdoor installation (KSB blue / RAL 5002)	□	□	□	□	□	□	□	□	□	□
Drinking water approved coating (can be selected for fluid temperatures ≤ 60 °C)	□	□	□	□	□	□	□	□	□	□
Coating for outdoor installation (special colour)	□	□	□	□	□	□	□	□	□	□
Special coating (customised coating system/composition)	16)	16)	16)	16)	16)	16)	16)	16)	16)	16)
Accessories										
Cyclone separator	○	○	○	○	-	○	○	○	○	○
Manually actuated vent valve (without additional piping) ¹⁷⁾	○	○	○	○	○	○	○	○	○	○
Automatically actuated vent valve (without additional piping) ¹⁷⁾	□	□	□	□	□	□	□	□	□	□
Manually actuated drain valve (without additional piping) ¹⁷⁾	○	○	○	○	○	○	○	○	○	○
PumpMeter	○	○	○	○	○	○	○	○	○	○
PT100 temperature sensor ¹⁷⁾¹⁸⁾	○	○	○	○	○	○	○	○	○	○
Limit switch for PT100 ¹⁷⁾¹⁸⁾	○	○	○	○	○	○	○	○	○	○
Transmitter for PT100 ¹⁷⁾¹⁸⁾	○	○	○	○	○	○	○	○	○	○
Measuring nipple (SPM) for manual vibration measurement ¹⁷⁾¹⁸⁾	○	○	○	○	○	○	○	○	○	○
Vibration sensor including vibration monitoring device ¹⁷⁾¹⁸⁾	○	○	○	○	○	○	○	○	○	○
Pressure gauge nominal diameter 100, including valves (without attenuation) ¹⁷⁾¹⁸⁾	○	○	○	○	-	○	○	○	○	○
Pressure gauge nominal diameter 100, including valves (with attenuation) ¹⁷⁾¹⁸⁾	○	○	○	○	○	○	○	○	○	○
Installation parts										
Without installation parts	●	●	●	●	●	●	-	-	-	-

¹⁶⁾ On request

¹⁷⁾ If no valve or measuring equipment is selected as accessory the corresponding connection is closed with a plug.

¹⁸⁾ Measuring equipment is supplied with the pump but not fitted. It has to be connected at the time of commissioning of the pump. This connection is closed with a plug when the pump is supplied.

Features	Material variant					Installation type				
	GB	GC	SB	SC	DD ₃₅	Fig.0	3E	DB/DK	DP	DJ
Base frame for pump and motor, including foundation bolts ¹⁹⁾	●	●	●	●	●	-	●	-	-	-
Special base frame for pump and motor, including foundation bolts	16)	16)	16)	16)	16)	-	16)	-	-	-
Pump foundation (foot) including foundation blocks and drive lantern	●	●	●	●	●	-	-	●	●	-
Special design of pump foundation (foot) including foundation blocks and motor pedestal	16)	16)	16)	16)	16)	-	-	16)	16)	-
Pump foundation (foot) including foundation blocks	●	●	●	●	●	-	-	-	-	●
Pump foundation (foot) including foundation blocks and motor support frame with foundation rails and foundation bolts	16)	16)	16)	16)	16)	-	-	-	-	16)
Coupling										
Without coupling and coupling guard	●	●	●	●	●	●	-	-	-	●
Without coupling and coupling guard	□	□	□	□	□	-	□	-	-	-
Torsionally flexible 3-piece jaw coupling (coupling guard not tread-proof)	□	□	□	□	□	□	-	-	-	-
Torsionally flexible 3-piece jaw coupling (coupling guard not tread-proof)	●	●	●	●	●	-	●	●	●	-
Torsionally flexible 3-piece jaw coupling (coupling guard tread-proof)	16)	16)	16)	16)	16)	-	16)	-	-	-
Torsion-resistant flexible disc coupling with spacer (coupling guard not tread-proof)	□	□	□	□	□	□	□	-	-	-
Torsion-resistant flexible disc coupling with spacer (coupling guard not tread-proof)	16)	16)	16)	16)	16)	-	-	16)	16)	-
Torsion-resistant flexible disc coupling with spacer (coupling guard tread-proof)	16)	16)	16)	16)	16)	-	16)	-	-	-
Cardan shaft / coupling with spacer (with/without intermediate bearing)	16)	16)	16)	16)	16)	-	-	-	-	16)
Motor										
Without motor	●	●	●	●	●	●	●	●	●	●
Low-voltage motor to IEC or NEMA standard (make selected by KSB) ¹⁷⁾²⁰⁾²¹⁾	□	□	□	□	□	□	-	-	-	-
Low-voltage motor to IEC or NEMA standard (make selected by KSB) ¹⁷⁾²⁰⁾²¹⁾	●	●	●	●	●	-	●	●	●	●
Low-voltage motor to IEC or NEMA standard (make to KSB standard) ¹⁷⁾²⁰⁾²¹⁾	□	□	□	□	□	□	-	-	-	-
Low-voltage motor to IEC or NEMA standard (make to KSB standard) ¹⁷⁾²⁰⁾²¹⁾	●	●	●	●	●	-	●	●	●	●
Special motor (motor size ≤ IEC280M or ≤ NEMA 444/5T) to customer requirements (make not documented) ¹⁷⁾²¹⁾	16)	16)	16)	16)	16)	16)	16)	16)	16)	16)
Special motor (motor size > IEC280M or > NEMA 444/5T) to customer requirements (make not documented) ^{17)20)21) 22)}	16)	16)	16)	16)	16)	16)	16)	-	-	16)
Special motor (motor size > IEC280M or > NEMA 444/5T) to customer requirements (make not documented) ¹⁷⁾²⁰⁾²¹⁾²²⁾	16)	16)	16)	16)	16)	-	-	16)	16)	-
Acceptance tests										
Hydraulic acceptance test to KSB standard DIN ISO 9906 - 2B (equivalent to ANSI HI 14.6-2011/2B)	●	●	●	●	●	●	●	●	●	●
Hydraulic acceptance test to DIN ISO 9906 - 1B (equivalent to ANSI HI 14.6-2011/1B)	○	○	○	○	○	○	○	○	○	○
Hydraulic acceptance test to DIN ISO 9906 - 1U (equivalent to ANSI HI 14.6-2011/1U or Hydraulic Institute A)	○	○	○	○	○	○	○	○	○	○
NPSH test (to DIN ISO 9906 or Hydraulic Institute)	○	○	○	○	○	○	○	○	○	○
Sound measurement	○	○	○	○	○	○	○	○	○	○
Vibration test	○	○	○	○	○	○	○	○	○	○
Bearing temperature measurement	□	□	□	□	□	□	□	□	□	□
Visual inspection after test run (strip test)	○	○	○	○	○	○	○	○	○	○
Hydrostatic test	○	○	○	○	○	○	○	○	○	○
Impeller balancing test	□	□	□	□	□	□	□	□	□	□
Coating inspection	16)	16)	16)	16)	16)	16)	16)	16)	16)	16)
Dimensional inspection	16)	16)	16)	16)	16)	16)	16)	16)	16)	16)
Replacement and spare parts										
Replacement and spare parts for 2 years of operation	○	○	○	○	○	○	○	○	○	○

19) Only supplied assembled as a pump set up to motor size IEC 280M or max. total weight ≤ 1500 kg

20) The motor can be supplied by the customer and mounted at the site of installation. Motors supplied by KSB can also be mounted by the customer.

21) On request, customer-supplied motors can be mounted by KSB.

22) From motor size > IEC 280M the motor dimensions depend on the make. KSB uses motors made by Siemens. When using other makes or designs the base frame / motor pedestal must be adjusted (special base frame).

Key to the symbols

Symbol	Description
•	Standard design
◦	Standard variant ²³⁾

Symbol	Description
□	Special design ²³⁾
-	Selection unavailable

²³⁾ A surcharge and longer delivery times apply to standard variants and special designs.

Hot water variant

Overview of product features of the hot water variant²⁴⁾

Features	Material variant					Installation type				
	GB	GC	SB	SC	DD ₃₅	Fig.0	3E	DB/DK	DP	DJ
Direction of rotation										
"Right": clockwise	-	● ²⁵⁾	-	●	-	●	●	●	●	●
"Left": anti-clockwise	-	● ²⁵⁾	-	●	-	●	●	●	●	●
Flange										
Drilled to DIN EN 1092 – flat face (type A)	-	● ²⁵⁾	-	●	-	●	●	●	●	●
Drilled to DIN EN 1092 – raised face (type B)	-	□ ²⁵⁾	-	□	-	□	□	□	□	□
Drilled to ASME B16 – flat face (type FF)	-	● ²⁵⁾	-	●	-	●	●	●	●	●
Drilled to ASME B16 – raised face (type RF)	-	□ ²⁵⁾	-	□	-	□	□	□	□	□
Special flange	-	26)25)	-	26)	-	26)	26)	26)	26)	26)
Bearings										
Grease-lubricated rolling element bearing at the drive end (sealed for life)	-	● ²⁵⁾	-	●	-	●	●	●	●	●
Grease-lubricated rolling element bearing at the non-drive end (sealed for life)	-	● ²⁵⁾	-	●	-	●	●	-	●	-
Grease-lubricated rolling element bearing at the non-drive end (sealed for life)	-	26)25)	-	26)	-	-	-	26)	26)	26)
Product-lubricated plain bearing at the non-drive end	-	-	-	-	-	-	-	-	-	-
Oil-lubricated rolling element bearings at both ends	-	-	-	-	-	-	-	-	-	-
Wear rings										
Casing with wear rings / impeller without wear rings	-	● ²⁵⁾	-	●	-	●	●	●	●	●
Casing with wear rings / impeller with wear rings	-	○ ²⁵⁾	-	○	-	○	○	○	○	○
Shaft seal										
Gland packing	-	-	-	-	-	-	-	-	-	-
Single mechanical seal (unbalanced)	-	-	-	-	-	-	-	-	-	-
Single mechanical seal (balanced)	-	○ ²⁵⁾	-	○	-	○	○	○	○	○
Special shaft seal (make/design different to KSB specifications)	-	26)25)	-	26)	-	26)	26)	26)	26)	26)
Piping										
Barrier fluid / flushing water line made of flexible PTFE (malleable cast iron)	-	● ²⁵⁾	-	●	-	●	●	●	●	●
Barrier fluid / flushing water line made of flexible PTFE (stainless steel)	-	□ ²⁵⁾	-	□	-	□	□	□	□	□
Barrier fluid / flushing water line made of flexible PTFE (duplex)	-	-	-	-	-	-	-	-	-	-
Special piping (to customer requirements)	-	26)25)	-	26)	-	26)	26)	26)	26)	26)
Coating										
Coating for indoor installation (KSB blue / RAL 5002)	-	-	-	-	-	-	-	-	-	-
Coating for outdoor installation (KSB blue / RAL 5002)	-	□ ²⁵⁾	-	□	-	□	□	□	□	□
Drinking water approved coating (can be selected for fluid temperatures ≤ 60 °C)	-	-	-	-	-	-	-	-	-	-
Coating for outdoor installation (special colour)	-	□ ²⁵⁾	-	□	-	□	□	□	□	□
Special coating (customised coating system/composition)	-	26)25)	-	26)	-	26)	26)	26)	26)	26)
Accessories										
Cyclone separator	-	-	-	-	-	-	-	-	-	-
Manually actuated vent valve (without additional piping) ²⁷⁾	-	○ ²⁵⁾²⁸⁾	-	○ ²⁸⁾	-	○ ²⁸⁾	○ ²⁸⁾	○ ²⁸⁾	○ ²⁸⁾	○ ²⁸⁾
Automatically actuated vent valve (without additional piping) ²⁷⁾	-	-	-	-	-	-	-	-	-	-
Manually actuated drain valve (without additional piping) ²⁷⁾	-	○ ²⁵⁾	-	○	-	○	○	○	○	○
PumpMeter	-	-	-	-	-	-	-	-	-	-
PT100 temperature sensor ²⁷⁾²⁹⁾	-	○ ²⁵⁾	-	○	-	○	○	○	○	○
Limit switch for PT100 ²⁷⁾²⁹⁾	-	○ ²⁵⁾	-	○	-	○	○	○	○	○
Transmitter for PT100 ²⁷⁾²⁹⁾	-	○ ²⁵⁾	-	○	-	○	○	○	○	○

24) Max. fluid temperature ≤ 140 °C [284 °F]

25) Max. fluid temperatures ≤ 120 °C [248 °F]

26) On request

27) If no valve or measuring equipment is selected as accessory the corresponding connection is closed with a plug.

28) Only permissible up to 16 bar

29) Measuring equipment is supplied with the pump but not fitted. It has to be connected at the time of commissioning of the pump. This connection is closed with a plug when the pump is supplied.

Features	Material variant					Installation type				
	GB	GC	SB	SC	DD ₃₅	Fig.0	BE	DB/DK	DP	DJ
Measuring nipple (SPM) for manual vibration measurement ²⁷⁾²⁹⁾	-	○ ²⁵⁾	-	○	-	○	○	○	○	○
Vibration sensor including vibration monitoring device ²⁷⁾²⁹⁾	-	○ ²⁵⁾	-	○	-	○	○	○	○	○
Pressure gauge nominal diameter 100, including valves (without attenuation) ²⁷⁾²⁹⁾	-	○ ²⁵⁾	-	○	-	○	○	○	○	○
Pressure gauge nominal diameter 100, including valves (with attenuation) ²⁷⁾²⁹⁾	-	○ ²⁵⁾	-	○	-	○	○	○	○	○
Installation parts										
Without installation parts	-	● ²⁵⁾	-	●	-	●	-	-	-	-
Base frame for pump and motor, including foundation bolts ³⁰⁾	-	□ ²⁵⁾	-	□	-	-	□	-	-	-
Special base frame for pump and motor, including foundation bolts	-	26)25)	-	26)	-	-	26)	-	-	-
Pump foundation (foot) including foundation blocks and drive lantern	-	26)25)	-	26)	-	-	-	26)	26)	-
Special design of pump foundation (foot) including foundation blocks and motor pedestal	-	26)25)	-	26)	-	-	-	26)	26)	-
Pump foundation (foot) including foundation blocks	-	26)25)	-	26)	-	-	-	-	-	26)
Pump foundation (foot) including foundation blocks and motor support frame with foundation rails and foundation bolts	-	26)25)	-	26)	-	-	-	-	-	26)
Coupling										
Without coupling and coupling guard	-	● ²⁵⁾	-	●	-	●	-	-	-	●
Without coupling and coupling guard	-	□ ²⁵⁾	-	□	-	-	□	-	-	-
Torsionally flexible 3-piece jaw coupling (coupling guard not tread-proof)	-	-	-	-	-	-	-	-	-	-
Torsionally flexible 3-piece jaw coupling (coupling guard tread-proof)	-	-	-	-	-	-	-	-	-	-
Torsion-resistant flexible disc coupling with spacer (coupling guard not tread-proof)	-	□ ²⁵⁾	-	□	-	□	□	-	-	-
Torsion-resistant flexible disc coupling with spacer (coupling guard not tread-proof)	-	26)25)	-	26)	-	-	-	26)	26)	-
Torsion-resistant flexible disc coupling with spacer (coupling guard tread-proof)	-	26)25)	-	26)	-	-	26)	-	-	-
Cardan shaft / coupling with spacer (with/without intermediate bearing)	-	26)25)	-	26)	-	-	-	-	-	26)
Motor										
Without motor	-	● ²⁵⁾	-	●	-	●	●	●	●	●
Low-voltage motor to IEC or NEMA standard (make selected by KSB) ³⁰⁾³¹⁾³²⁾	-	□ ²⁵⁾	-	□	-	□	-	-	-	-
Low-voltage motor to IEC or NEMA standard (make selected by KSB) ³⁰⁾³¹⁾³²⁾	-	● ²⁵⁾	-	●	-	-	●	●	●	●
Low-voltage motor to IEC or NEMA standard (make to KSB standard) ³⁰⁾³¹⁾³²⁾	-	□ ²⁵⁾	-	□	-	□	-	-	-	-
Special motor (motor size > IEC280M or > NEMA 444/5T) to customer requirements (make not documented) ^{30)31)32) 33)}	-	● ²⁵⁾	-	●	-	-	●	●	●	●
Special motor (motor size ≤ IEC280M or ≤ NEMA 444/5T) to customer requirements (make not documented) ³⁰⁾³²⁾	-	26)25)	-	26)	-	26)	26)	26)	26)	26)
Special motor (motor size > IEC280M or > NEMA 444/5T) to customer requirements (make not documented) ^{30)31) 32)33)}	-	26)25)	-	26)	-	26)	26)	-	-	26)
Special motor (motor size > IEC280M or > NEMA 444/5T) to customer requirements (make not documented) ^{30)31)32) 33)}	-	26)25)	-	26)	-	-	-	26)	26)	-
Acceptance tests										
Hydraulic acceptance test to KSB standard DIN ISO 9906 - 2B (equivalent to ANSI HI 14.6-2011/2B)	-	● ²⁵⁾	-	●	-	●	●	●	●	●
Hydraulic acceptance test to DIN ISO 9906 - 1B (equivalent to ANSI HI 14.6-2011/1B)	-	○ ²⁵⁾	-	○	-	○	○	○	○	○

³⁰⁾ Only supplied assembled as a pump set up to motor size ≤ IEC 280M or max. total weight ≤ 1500 kg

³¹⁾ The motor can be supplied by the customer and mounted at the site of installation. Motors supplied by KSB can also be mounted by the customer.

³²⁾ On request, customer-supplied motors can be mounted by KSB.

³³⁾ From motor size > IEC 280M the motor dimensions depend on the make. KSB uses motors made by Siemens. When using other makes or designs the base frame / motor pedestal must be adjusted (special base frame).

Features	Material variant					Installation type				
	GB	GC	SB	SC	DD ₃₅	Fig.0	BE	DB/DK	DP	DJ
Hydraulic acceptance test to DIN ISO 9906 - 1U (equivalent to ANSI HI 14.6-2011/1U or Hydraulic Institute A)	-	○ ²⁵⁾	-	○	-	○	○	○	○	○
NPSH test (to DIN ISO 9906 or Hydraulic Institute)	-	○ ²⁵⁾	-	○	-	○	○	○	○	○
Sound measurement	-	○ ²⁵⁾	-	○	-	○	○	○	○	○
Vibration test	-	○ ²⁵⁾	-	○	-	○	○	○	○	○
Bearing temperature measurement	-	□ ²⁵⁾	-	□	-	□	□	□	□	□
Visual inspection after test run (strip test)	-	○ ²⁵⁾	-	○	-	○	○	○	○	○
Hydrostatic test	-	○ ²⁵⁾	-	○	-	○	○	○	○	○
Impeller balancing test	-	□ ²⁵⁾	-	□	-	□	□	□	□	□
Coating inspection	-	26)25)	-	26)	-	26)	26)	26)	26)	26)
Dimensional inspection	-	26)25)	-	26)	-	26)	26)	26)	26)	26)
Replacement and spare parts										
Replacement and spare parts for 2 years of operation	-	○ ²⁵⁾	-	○	-	○	○	○	○	○

Key to the symbols

Symbol	Description
●	Standard design
○	Standard variant ³⁴⁾
□	Special design ³⁴⁾
-	Selection unavailable

Related documents

- General Arrangement Drawings DIN /IEC motors 1384.3940
- General Arrangement Drawings NEMA motors 1384.3946
- Characteristic Curves Booklet 50 Hz 1384.450
- Characteristic Curves Booklet 60 Hz 1384.460

³⁴⁾ A surcharge and longer delivery times apply to standard variants and special designs.

Specifications required for enquiries/orders

Pump:

- Designation of the pump
- Maximum and minimum inlet pressure
- Flow rate Q, head H_{total}
- Flange design
- Shaft seal
- Type and temperature of the fluid pumped
- Solids content
- Direction of rotation / motor position
- Accessories required
- Special inspections and acceptance tests

- Quantity and language of operating manuals

Drive (selected by KSB):

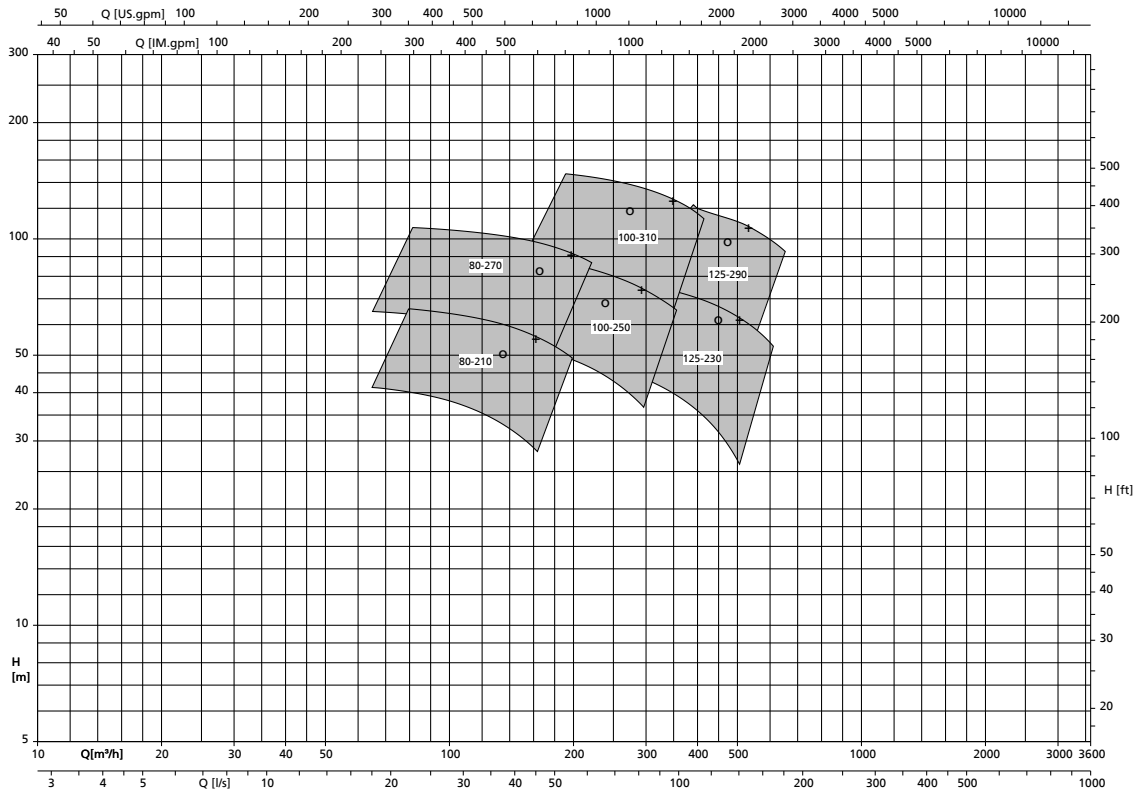
- Type of construction
- Enclosure
- Voltage, frequency, starting method
- Ambient temperature
- Thermal class
- Accessories required

Drive (selected by customer):

- Binding data sheet with motor dimensions and effective speed

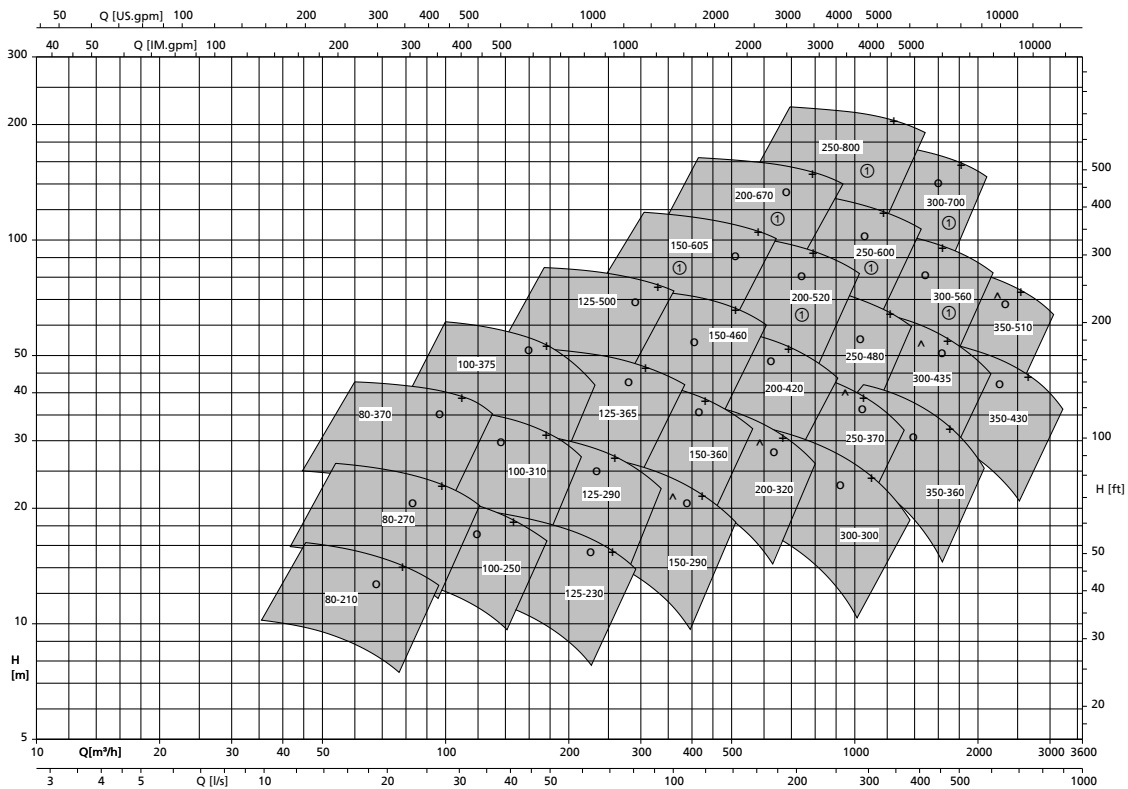
Selection charts

Omega / Omega V, 50 Hz, n = 2900 rpm



+ = η_{opt} A impeller / o = η_{opt} B impeller / ^ = η_{opt} C impeller

Omega / Omega V, 50 Hz, n = 1450 rpm

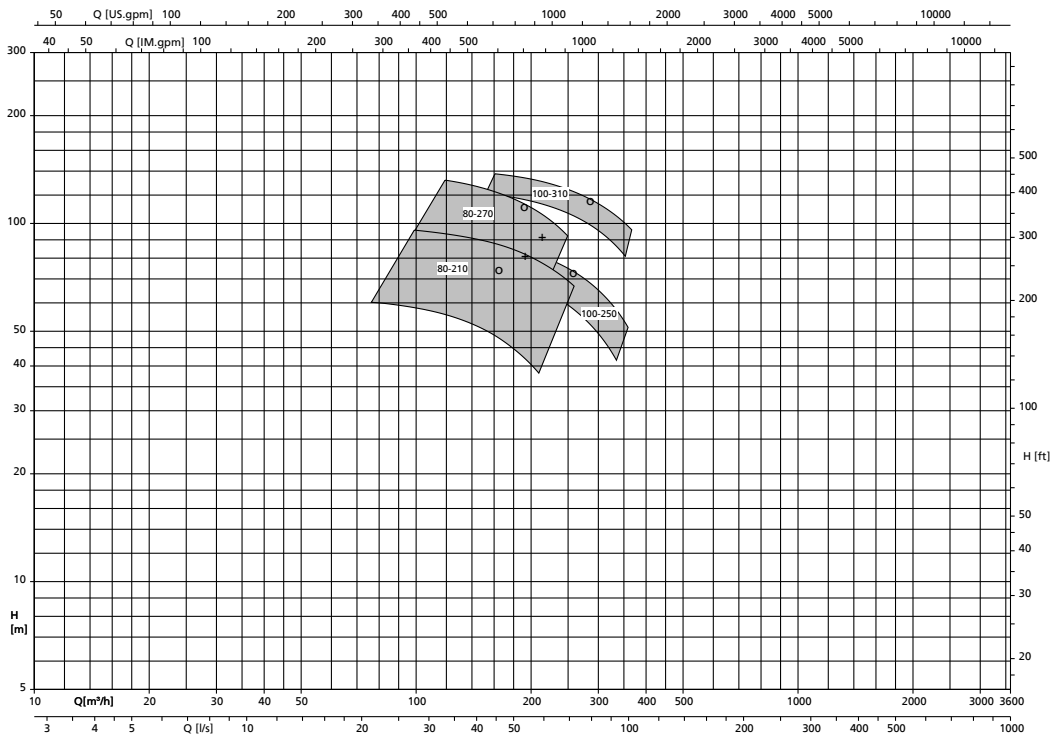


+ = η_{opt} A impeller / o = η_{opt} B impeller / ^ = η_{opt} C impeller

⊙: Pump casing with double volute

Omega / Omega V; 60 Hz; n = 3500 rpm

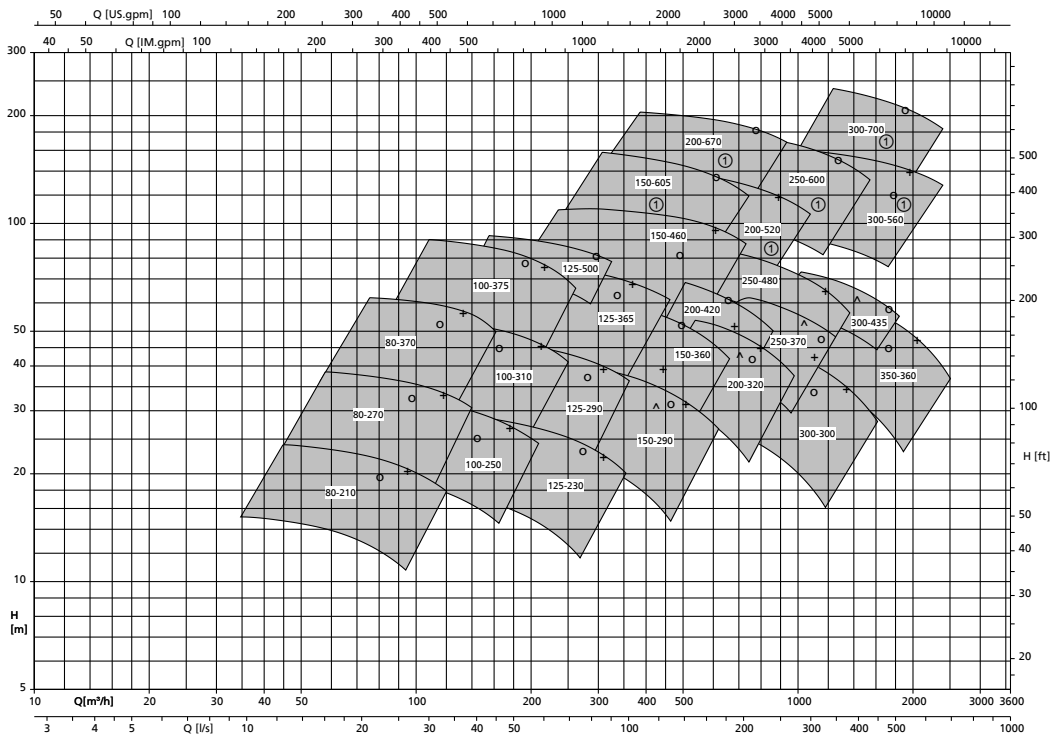
n = 3500 rpm



+ = η_{opt} A impeller / o = η_{opt} B impeller / ^ = η_{opt} C impeller

Omega / Omega V; 60 Hz; n = 1750 rpm

n = 1750 rpm



+ = η_{opt} A impeller / o = η_{opt} B impeller / ^ = η_{opt} C impeller
Ⓜ: Pump casing with double volute

Types of installation

Fig.0

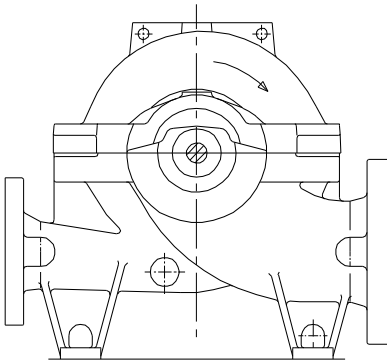


Fig.0: Bare shaft pump

Options of installation parts:

- None

Coupling options:

- Torsionally flexible 3-piece jaw coupling
- Torsion-resistant flexible disc coupling (on request)

Coupling guard options:

- Light-duty design, not tread-proof

Delivery / transport:

- Pump

Options of installation parts:

- Base frame for pump and motor, including foundation bolts
- Special base frame for pump and motor, including foundation bolts³⁵⁾

Coupling options:

- Torsionally flexible 3-piece jaw coupling
- Torsion-resistant flexible disc coupling with spacer³⁶⁾

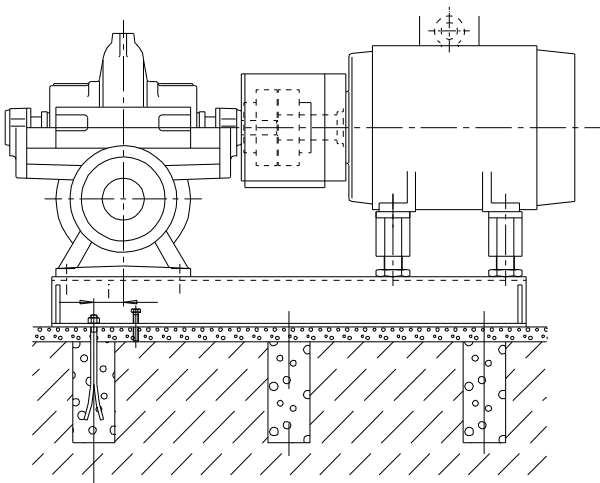
Coupling guard options:

- Light-duty design, not tread-proof
- Heavy-duty, tread-proof design (on request)

Delivery / transport:

- Up to motor size ≤ IEC 280M or NEMA 444/5T or a max. total weight ≤ 1500 kg [3307 lbs] pump and motor supplied on the base frame.
- From motor size > IEC 280M or NEMA 444/5T or a max. total weight > 1500 kg [3307 lbs] pump, motor and base frame are supplied separately.

3E

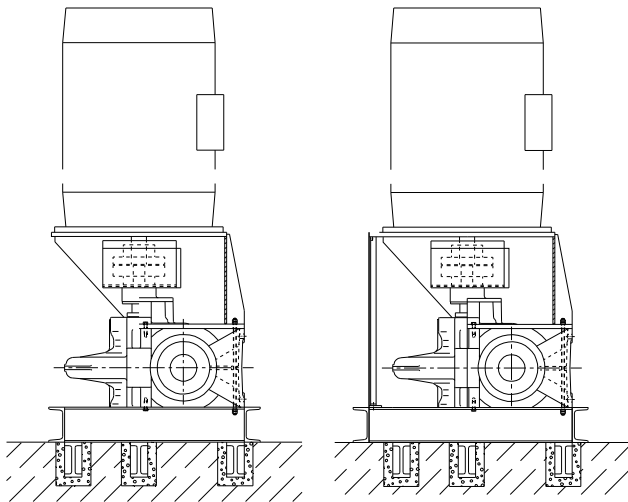


3E: Pump and motor on a common base frame

³⁵⁾ On request only; for motors > IEC 280M or NEMA 444/5T and motors outside KSB standard as well as for other customer-specific versions, special base frame for transporting pump sets with motors > IEC 280M or NEMA 444/5T

³⁶⁾ On request only; special base frame required

DB/DK



DB installation

DK installation

DB/DK: motor mounted on the drive lantern

Options of installation parts:

- Pump foundation including foundation blocks and motor pedestal
- Pump foundation including foundation blocks and special motor pedestal³⁷⁾

Coupling options:

- Torsionally flexible 3-piece jaw coupling
- Torsion-resistant flexible disc coupling with spacer³⁷⁾

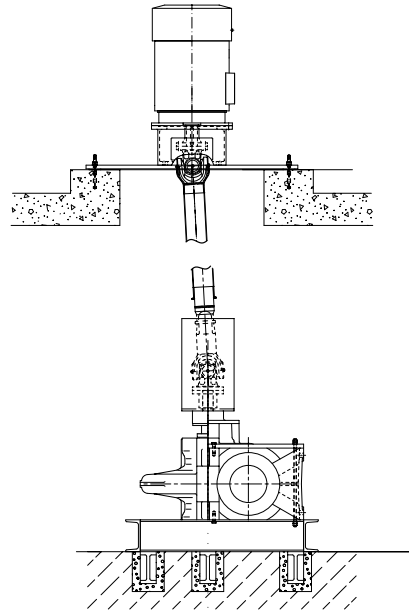
Coupling guard options:

- Light-duty design, not tread-proof

Delivery / transport:

- Pump supplied on pump foundation with drive lantern mounted. The motor is supplied separately.

DJ



DJ: Pump and motor on separate levels

Options of installation parts:

- Pump foundation (foot) including foundation blocks
- Pump foundation (foot) including foundation blocks, motor support frame, foundation rails and foundation bolts (on request)

Coupling options:

- Cardan shaft with/without intermediate bearing (on request)
- Coupling with spacer (on request)

Coupling guard options:

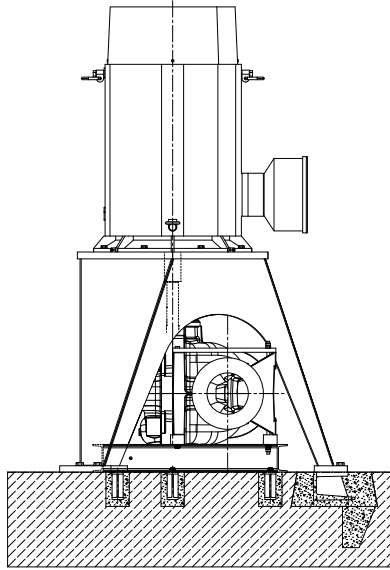
- Light-duty design, not tread-proof

Delivery / transport:

- Pump on corresponding pump foot. Motor and motor support frame are supplied separately.

³⁷⁾ On request only: for motors > IEC 280M and/or NEMA 444/5T and motors outside KSB standard as well as for other customer-specific versions, special motor pedestal for motors > IEC 280M bzw. NEMA 444/5T

DP



DP: motor mounted on separate drive lantern

Options of installation parts:

- Pump base frame (foot) including foundation bolts, and drive lantern (including foundation rails and foundation bolts)

Coupling options:

- Torsionally flexible 3-piece jaw coupling
- Torsion-resistant flexible disc coupling with spacer³⁸⁾

Coupling guard options:

- Light-duty design, not tread-proof

Delivery/transport:

- Pump with pump base frame (foot), motor and drive lantern supplied as individual units

³⁸⁾ On request only; for motors > IEC 280M or outside KSB standard as well as for other customer-specific versions, special motor pedestals for motors > IEC 280M

Scope of supply

Omega (standard design)

- Bare shaft pump (without accessories)
- With casing wear rings
- Shaft sealed by gland packing
- Grease-packed rolling element bearings
- Barrier/flushing water line made of flexible material, without cyclone separator
- KSB standard coating for indoor installation
- 2 operating manuals (EU languages)

Omega V (standard design)

- Bare shaft pump (without accessories, with pump foundation)
- With casing wear rings
- Shaft sealed by gland packing
- One grease-lubricated and one product-lubricated bearing
- Barrier and flushing water line made of flexible material, without cyclone separator
- KSB standard coating for indoor installation
- 2 operating manuals (EU languages)

Components for completing the pump set

- For horizontal installation: baseplate / base frame for pump and motor (including foundation bolts)

- For vertical installation: drive lantern and foot (including support feet and foundation bolts, depending on the motor size)
- With motor
- With coupling and coupling guard

Accessories:

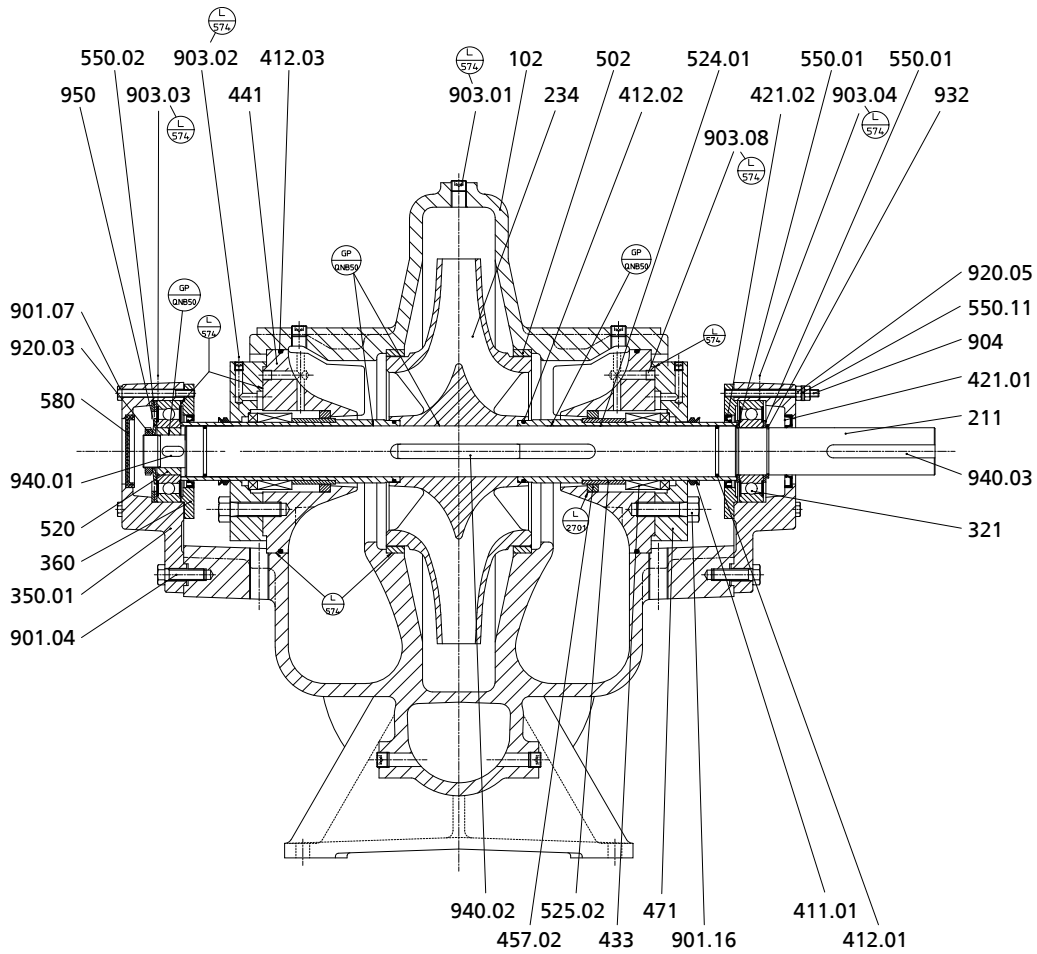
- Barrier/flushing water line with cyclone separator
- Vent valves and/or drain valves
- Pressure gauges
- Temperature sensor for rolling element bearings (PT100)
- Limit switch or transmitter for PT100
- PumpMeter
- SPM nipple or vibration monitoring device

Shipment/transport and packaging

After the pump sets are completely assembled at the factory to be adjusted to the specific requirements, they are partly dismantled again for shipment. The assembly status a pump set is supplied in depends on the type of pump set, its dimensions and its weight. Pump, baseplate and motor are supplied ex works without packaging. On request, a variety of packaging options can be provided against a surcharge. More information (⇒ Page 19) .

General assembly drawing with list of components

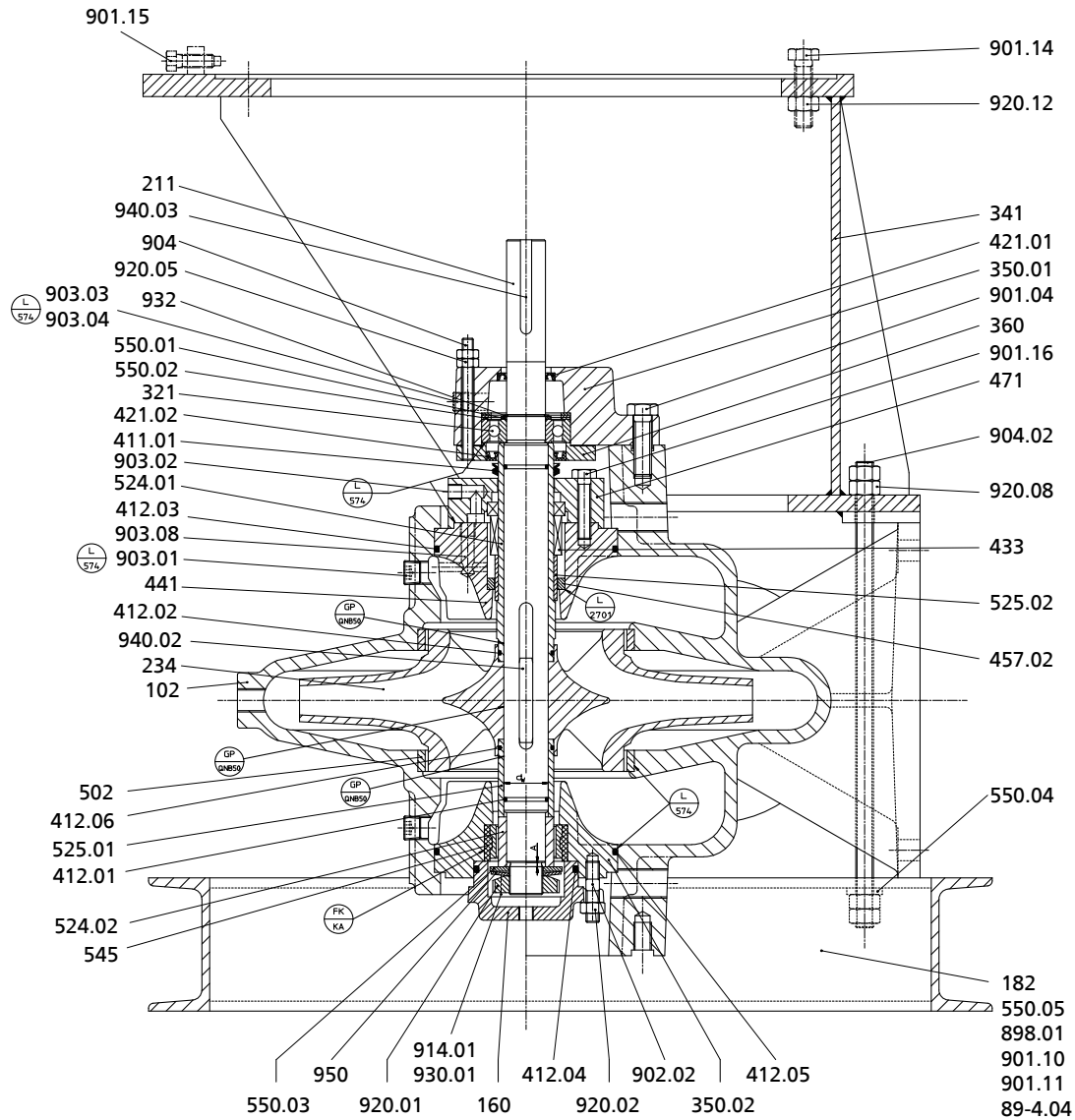
Horizontal installation (example)



List of components

Part No.	Description	Part No.	Description
102	Volute casing	502	Casing wear ring
211	Pump shaft	503	Impeller wear ring
234	Impeller	520	Sleeve
321	Radial ball bearing	524.01	Shaft protecting sleeve
350.01	Bearing housing	525.02	Spacer sleeve
360	Bearing cover	550.01/.02/.11	Disc
411.01	Joint ring	561.01/.02	Grooved pin
412.01/.02/.03	O-ring	580	Cap
421.01/.02	Lip seal	901.01/.02/.03/.04/.7/.16	Hexagon head bolt
433	Mechanical seal	902.01	Stud
441	Shaft seal housing	903.01/.02/.03/.04/.08	Screw plug
452	Gland follower	904	Grub screw
455	Stuffing box insert	920.02/.03/.05	Nut
457.02	Neck ring	932	Circlip
458	Lantern ring	940.01/.02/.03	Key
461	Gland packing	950	Spring
471	Seal cover		

Vertical installation (example)

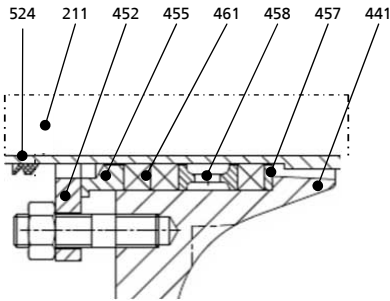


List of components

Part No.	Description	Part No.	Description
102	Volute casing	502	Casing wear ring
160	Cover	503	Impeller wear ring
182	Foot	524.01/.02	Shaft protecting sleeve
211	Pump shaft	525.01/.02	Spacer sleeve
234	Impeller	531.01	Locking sleeve
321	Radial ball bearing	545	Bearing bush
341	Drive lantern	550.01/.02/.03/.04/.05	Disc
350.01/.02	Bearing housing	561.01/.02/.04	Grooved pin
360	Bearing cover	89-4.04	Shim
411.01	Joint ring	898.01	Foundation block
412.01/.02/.03/.04/.05/.06	O-ring	901.01/.02/.03/.04/.10/.11/.12/.13/.14/.15/.16	Hexagon head bolt
421.01/.02	Lip seal	902.01/.02	Stud
433	Mechanical seal	903.01/.02/.03/.04/.08	Screw plug
441	Shaft seal housing	904.02	Grub screw
452	Gland follower	914.01	Hexagon socket head cap screw
455	Stuffing box insert	920.01/.02/.05/.08/.12	Nut
457.02	Neck ring	930.01	Safety device
458	Lantern ring	932	Circlip

Part No.	Description	Part No.	Description
461	Gland packing	940.02/03	Key
471	Seal cover	950	Spring

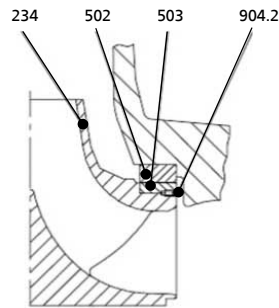
Standard design: gland packing



List of components

Part No.	Description
211	Pump shaft
441	Shaft seal housing
452	Gland follower
455	Gland packing insert
457	Neck ring
458	Lantern ring
461	Packing rings
524	Shaft protecting sleeve

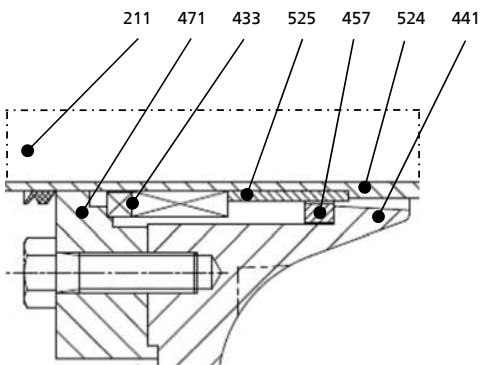
Standard variant: impeller with impeller wear ring



List of components

Part No.	Description
234	Double-entry impeller
502	Casing wear ring
503	Impeller wear ring
904.2	Grub screw

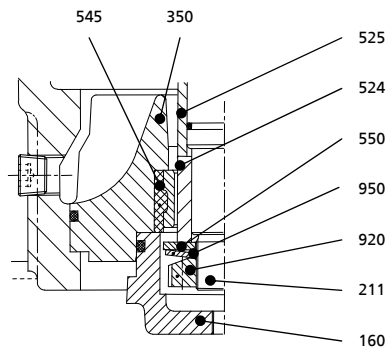
Standard variant: mechanical seal (schematic)



List of components

Part No.	Description
211	Pump shaft
433	Mechanical seal
441	Shaft seal housing
457	Neck ring
471	Seal cover
524	Shaft protecting sleeve
525	Spacer sleeve

Standard design: product-lubricated bearing (Omega V)



List of components

Part No.	Description
160	Cover
211	Pump shaft
350	Bearing housing
524	Shaft protecting sleeve
525	Spacer sleeve
545	Bearing bush
550	Disc
920	Nut
950	Disc spring



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