Pioneering for You



Wilo Philippines

Wilo-FlowAx KPC

Axial Submersible Pumps



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Series description



Product series Submersible axial flow pump in discharge tube

Main applications

- Irrigation and drainage pumping stations
- Stormwater pumping stations
- Raw and clean water pumps in waterworks and waste water treatment plants
- · Cooling water pumps in power stations and in industry
- Industrial water supply
- Aquaculture

Fluids handled

- Waste water
- Sludge
- Surface water
- Stormwater
- Grey water
- Seawater
- Brackish water

Operating propertiesCharacteristic valueFlowQUp to 12000 l/sHeadHUp to 21 mMotor ratingP2Up to 1400 kWFluid temperaturetUp to +40°C

Type key

Example:							
Wilo-FlowAx HS. KPC 1020.52-12/SA52-8							
Key to the designation							
Code	Description						
Wilo	Brand						
FlowAx	Product Family						
HS	Heavy Sewage						
KP	Kanal Propeller Pump						
С	Hydraulic execution types						
1020	Nominal diameter of discharge tube [mm]						
52	Hydraulic identification number (Q-H Raster)						
12	Angular position of propeller blades (in degrees)						
SA	Motor type (SA = Submersible Axial propeller motor						
52	Motor size						
8	Number of motor poles						

Design

• Fully floodable submersible pump in discharge tube

(submersible motor pump)

- Not self-priming
- Close-coupled design
- Single-stage
- Vertical installation

Operating data

Drive

Three-phase asynchronous squirrel-cage motor

Shaft seal

- Two or three independent mechanical seals in tandem arrangement.
- Three shaft seal including pump side seal and motor side seal located in the oil sealing house

Impeller type

The opened axial propeller, the semi-adjustable blades or fixed blades.

Bearings

Grease-packed rolling element bearings

Materials

Standard configuration of materials				
Description	Material			
Blade	X20Cr13			
Impeller hub	EN-GJL-200			
Impeller casing	EN-GJL-200			
Diffuser	EN-GJL-200			
Suction chamber	EN-GJL-200			
Motor casing	GJS-500-7U			
Shaft	X20Cr13			
Mechanical seal	Burgmann			
Bearing	SKF/FAG			
Fasteners	A2-70			
Sealing element	NBR			

Material configuration, according to customer's actual requirements

Coating and preservation

Paint

- Surface treatment: SA 2 1/2 (SIS 055900) AN 1865
- Primer: primer coat on unfinished casting
- · Top coat: environmentally-friendly WILO standard coating

Special coating

The special coating on request.

Product benefits

- The pump's own weight ensures self-centring seating in the discharge tube, and an O-ring seals it; quick to install or remove
- The slim motor minimizes discharge tube flow losses
- High reliability thanks to bearing temperature monitoring, vibration sensor, thermal motor protection, leakage sensors in the motor and connection space, and leakage monitoring of the mechanical seal system
- Low-vibration hydraulic system; inlet ribs and optimized bellmouth for vortex-free inflow
- Absolutely water-tight cable entries prevent any water from entering the motor even in the event of a damaged cable

Acceptance tests / Quantity Warranties

Functional test

- Every pump undergoes functional testing to WILO standard
- Operating data is guaranteed to DIN EN ISO 9906 / 2 / 2B

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

Selection information

The documented characteristic curves refer to this data. This must be taken into account when calculating system losses. The indicated heads and performance data apply to pumped fluids with a density $\rho=1$ kg/dm³ and a kinematic viscosity v of up to 20 mm²/s

The pump input power must be matched to the density of the fluid handled:

$$P_{2req} = \rho_{fluid} [kg/dm^3] x P_{2docu}$$

The operating point with the largest pump input power is decisive for the operating range of the motor. To compensate the unavoidable tolerances of the characteristic curves of system, pump and motor we recommend selecting a motor size which provides sufficient power reserves

Operating data

Recommended minimum reserves			
Required pump input power	Motor power reserve		
[kW]	Mains operation	With frequency inverter	
≤30	10 %	15 %	

If larger reserves are stipulated by local regulations or are required to compensate for uncertain factors in system calculations, these larger reserves must be provided.

Intake chamber

Determine the minimum water level $t_{1\min}$ (diagram in general arrangement drawing):

The minimum water level $t_{1\min}$ is the water level required in the pump's suction chamber to ensure:

- That there is a sufficient liquid cover above the hydraulic system (propeller) (shown in diagram depending on pump size)
- That the pump does not draw in air-entraining vortices
- That there is no cavitation in the hydraulic system (check against the NPSH required value indicated in the technical literature)

The following conditions must be met:

$$\begin{split} -\text{NPSH}_{\text{available}} &> \text{NPSH}_{\text{required}} + \text{safety allowance} \\ -\text{NPSH}_{\text{available}} &= 10.0 + (t_1 - t_2 - h_7/2) \\ -\text{Safety allowance:} \\ \text{up to } Q_{\text{opt}} &=> 0.5 \text{ m} \\ \text{larger than } Q_{\text{opt}} &=> 1.0 \text{ m} \\ \text{Head (H)} \\ \text{The total pump head is composed as follows:} \\ \text{H} &= \text{H}_{\text{geo}} + \Delta\text{HV} \end{split}$$

H_{geo} (static head)

- Without discharge elbow Difference between suction-side water level and overflow edge
- With discharge elbow Difference between suction-side and discharge-side water level
 AHV (losses in the system)
 - ΔHV (losses in the system)
- Starting 0.5 m downstream of the pump: e.g. pipe friction, elbow, swing check valve, etc.
- Losses by inlet, riser and elbow

Losses are caused by the inlet, riser and elbow (or free discharge).

- Losses in the riser up to the indicated reference level (0.5m above the motor) are taken into account in the documented characteristic curves
- Inlet and elbow losses are system losses and must be taken into account for selection
- For information on structural requirements, pump installation and pump sump design please refer to the KPC Installation types

Order Data

- Designation of the pump
- Flow Q
- Head H total
- Type and temperature of the fluid pumped
- Voltage, frequency, starting method, cable length
- Quantity and language of operating manuals
- Required accessories
 - -For discharge tubes indicate all required deepness and the type of installation
 - -For a support rope indicate dimension, the number of additional lifting rings (depending on the lifting height of the hoisting tackle) as well as the elevations and type of installation

Performance range



No.	Pump Model	No.	Pump Model	No.	Pump Model
1	FlowAx KPC820.21	8	FlowAx KPC820.55	15	FlowAx KPC1420.53R
2	FlowAx KPC600.52	9	FlowAx KPC1020.35	16	FlowAx KPC1420.45
3	FlowAx KPC600.43	10	FlowAx KPC1020.52	17	FlowAx KPC1420.53
4	FlowAx KPC600.43R	11	FlowAx KPC1020.63	18	FlowAx KPC1420.54
5	FlowAx KPC820.44	12	FlowAx KPC1020.54	19	FlowAx KPC1420.72
6	FlowAx KPC820.43	13	FlowAx KPC1020.66	20	FlowAx KPC1650.54
7	FlowAx KPC1020.23	14	FlowAx KPC1420.33	21	FlowAx KPC1650.63

Performance range



Selection chart					
No.	Pump Model	No.	Pump Model	No.	Pump Model
1	HS.KPC630.55 Dxxx	9	HS.KPC 720.55-DXX/SA	17	HS.KPC 920.46-XX/SA
2	HS.KPC630.66 Dxxx	10	HS.KPC720.66Dxxx/SA20	18	HS.KPC 920.65-XX/SA
3	HS.KPC630.55-XX/SA	11	HS.KPC 720.56-DXX/SA	19	HS.KPC 1020.54-XX/SA
4	HS.KPC 630.45-XX/SA	12	HS.KPC 920.66-DXX/SA	20	HS.KPC 1020.64-XX/SA
5	HS.KPC 630.44-XX/SA	13	HS.KPC 920.56-DXX/SA	21	HS.KPC 1020.63-XX/SA
6	HS.KPC 720.45-XX/SA	14	HS.KPC 920.55-XX/SA	22	HS.KPC 1020.55-XX/SA
7	HS.KPC 630.54-XX/SA	15	HS.KPC 920.44-XX/SA		
8	HS.KPC 720.65-DXX/SA	16	HS.KPC920.54-XX/SA		

Installation types

Overview of installation types



1 Installation with discharge tube GT



3. Installation with discharge tube and floor support GD



2 Installation with discharge tube and elbow GTW



4 Overflow installation in open intake chamber with discharge nozzle GK 1

Installation types

Overview of installation types



5 Overflow installation in open intake chamber GK2



6 Installation with concrete discharge tube SGT



1 Pump, 2 Discharge tube, 3 Valve, 4 Strainer, 5 Titling disc check valve

Installation types

Overview of installation types



9 Bowl shaped intake chamber with concrete discharge tube

Scope of supply

Depending on the model, the following items are included in the scope of supply:

- Pump set complete with 15 m power cable

- O-ring

Accessories (optional):

- Support rope
- Accessories for cable support
 - Spacer
 - Turnbuckle
- Cable support sleeves
- Discharge tube



10 Bell shaped intake chamber with concrete discharge tube

System Installation



Cross-section of cable support

WILO SE Philippines 8F Unit 810 The Infinity 26th Street, Bonifacion Global City Taguig, 1634 Philippines T +63 2 553 4016 F +63 2 553 0544 sales@wilo-philippines.com www.wilo.com

WILO SE Nortkirchenstraße 100 D-44263 Dortmund Germany T+49 231 4102-0 F+49 231 4102-7363 wilo@wilo.com www.wilo.de

More contact details at www.wilo.com