

Etabloc 050-032-2001 GG

ETB 050-032-2001GGSBV01 WSECX4HAB

Operating point 1

Dimensioning operating point

Operating conditions (purchaser requirements)

Target flow rate	14 m³/h
Target head	74.49 m
Specified fluid temperature	60 °C
Density Fluid handled	700 kg/m³
Kinematic viscosity Fluid handled	15 mm²/s

Vapour pressure determined	0.2 bar.a
Specified inlet pressure	-0.1135 bar.r
NPSH available	10 m
Specified ambient temperature	20 °C
Installation altitude above sea level	1,000 m

Operating conditions (performance)

Flow rate	14 m³/h
Minimum permissible flow rate	3.843 m³/h
Maximum permissible flow rate	24.41 m³/h
Pump set	
Maximum permissible flow rate	28.78 m³/h
Maximum pressure determined at duty point	5 bar.r
Efficiency Pump	46.59 %
NPSH required	3 m

Maximum power input at duty point	4.252 kW
Maximum power input / curve	5.935 kW
Pump speed	3,363 1/min
Shut-off discharge pressure	5.19 bar.r

Design data pump

Scope of supply Pump supplied by KSB	Pump + motor
Pump standard	EN 733
Shaft axis position	Horizontal
Pump design	Close-coupled
Pump system design	Single-pump system
Pump direction of rotation, viewed from casing side	Counterclockwise
Hydraulic impeller diameter	204 mm
Impeller type	Radial, closed, multi-channel
Free passage	5.3 mm
Support foot	No

Mains voltage	400 V
Mains frequency	50 Hz
Minimum efficiency index MEI	0.5
Quantity Stages, single-entry	1
Casing wear ring design suction-side	Flat
Casing wear ring design discharge-side	Flat
Installation chamber Casing cover	Conical (A-type cover)
Bearing bracket size / shaft unit	25
Pump directive	CE

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Nozzle connections pump

Nominal diameter Suction nozzle	DN 50	Nominal diameter Discharge nozzle	DN 32
Nominal pressure Suction nozzle	PN 16	Nominal pressure Discharge nozzle	PN 16
Suction nozzle position	Axial	Discharge nozzle position	0 deg
Suction nozzle design acc.to	EN1092-2	Discharge nozzle design acc.to	EN1092-2
Suction flange bolt hole pattern as per standard	EN1092-2	Discharge flange bolt hole pattern as per standard	EN1092-2
Flange facing type Inlet	Raised face (B,RF)		
Flange facing type Outlet	Raised face (B,RF)		

Auxiliary connections pump

6B Fluid Drain	G 1/4 Drilled and plugged	1M Pressure gauge Discharge nozzle	Without Without
6D Fluid Filling and venting	G 1/4 Drilled and plugged	1M Pressure gauge Suction nozzle	Without Without
5B Venting and drain	G 1/4 Drilled and plugged		

Shaft sealing

Shaft seal type	Single mechanical seal; seal chamber can be vented (A-type casing cover) - AV	Shaft seal code	Code 01
Operating mode of mechanical seal (function)	API plan 03	Shaft seal manufacturer inboard	KSB's choice
Determined pressure Seal chamber	0.2 bar.r	Mechanical seal type inboard	KSB's choice
		Material Shaft seal inboard	QQVGG

Materials

Material Volute casing (102)	EN-GJL-250/A48 CL 35B	Material Bolts/Screws Volute casing (902.01)	8.8
Material Casing cover (161)	EN-GJL-250/A48 CL 35B	Material Nut Impeller fastening (920.95)	(ST)
Material Shaft	C45+N		
Material Impeller (230)	EN-GJL-250/A48 CL 35B		
Material Casing wear ring suction-side (502.01)	JL/LAMELLAR GRAPHITE CAST IRON		
Material Casing wear ring discharge-side (502.02)	JL/LAMELLAR GRAPHITE CAST IRON		
Material Shaft protecting sleeve (523)	(CRNIMO ST INT)		
Material Static seal Discharge cover	DPAF DW001		
Material Drive lantern	EN-GJL-250/A48 CL 35B		

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Power Drive System

Drive concept	Electric actuator	Rated speed Motor	3,000 1/min
Drive standard, mechanical	IEC	Number of motor poles	4
Drive standard electric	IEC	Rated power Motor	5.5 kW
Motor manufacturer	KSB	Motor power reserve	29.3 %
Motor construction type	IM V15 (IM2011) IEC 60034-7	determined	
Motor size	132S	Rated voltage Motor	400 V
Efficiency class	IE5 (Ultra Premium)	Motor winding	- / 400 V
Material motor housing	AL	Rated frequency Motor	100Hz
Enclosure Motor	IP55 (TEFC)	Motor switching type	Star
Thermal class	155 (F) according to IEC 60085	Maximum current Unit	0 A
Temperature sensor motor	3 PTC thermistors	Rated current Motor	12.5 A
Terminal box position of motor (looking at the motor shaft)	360 °	Cos phi at 4/4 load	0.76
Operation on a frequency inverter permitted	Required by design	Motor efficiency at 4/4 load	91.4 %
Sound pressure level Motor	71 dBa	Marking according to directive	CE
Type series Motor manufacturer	SuPremE C2	Drive	

Coating

Aggregate

Surface preparation	Free from dirt, grease, rust
Properties Primer coat	Hydro dip primer, water-dilutable
Thickness Primer coat	60 µm
Properties Top coat	Acrylate dispersion water-thinned
Thickness Top coat	40 µm
Colour Top coat	RAL5002 Ultramarine Blue

Energy cost and Environmental Impact

Result

Estimated Product Carbon Footprint (cradle-to-gate) (CO₂eq) 484 kg

*

This PCF indication is based on the product mass assuming the typical share of materials in use. The conversion rate between product mass and CO₂ emissions is based on several life cycle assessments acc. to ISO14040 / 14044 of sample products of the same type series. Objective and scope of these LCAs was defined as being limited to the manufacturing phase (cradle-to-gate). With regard to inputs, all materials, energy and auxiliary materials were accounted for, and with regard to outputs, emissions, scrap and waste were accounted for. The impact of outbound logistics is not covered. The assessments' input variables cover at least 95 % of the total product mass. The analysis focuses exclusively on the Global Warming Potential (EF3.0 Climate Change – total).



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Packaging

Suitable for transport

Truck transport

Suitable for storage

Indoor storage

Packaging category

KSB's choice (A0)

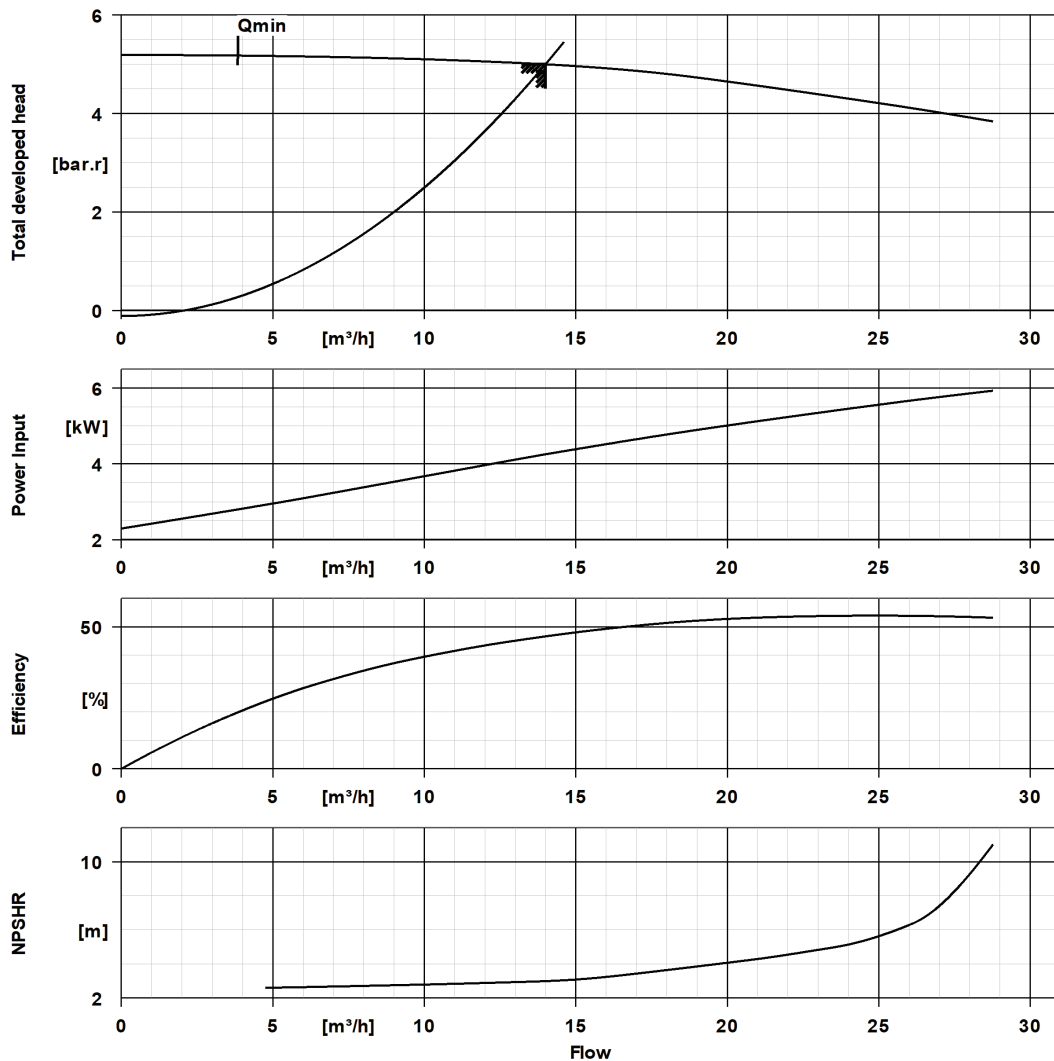
Performance Curve (Pump)



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Curve Data

Pump speed	3,363 1/min	Efficiency Pump	46.6 %
Density Fluid handled	700 kg/m^3	Minimum efficiency index MEI	0.5
Kinematic viscosity Fluid handled	15 mm^2/s	Maximum power input at duty point	4.25 kW
Flow rate	14 m^3/h	NPSH required	3 m
Maximum permissible flow rate	28.8 m^3/h	Hydraulic impeller diameter	204 mm
Head	74.5 m	Hydraulic calculation according to standard/class	EN ISO 9906
Maximum pressure determined at duty point	5 bar.r		Class 3B

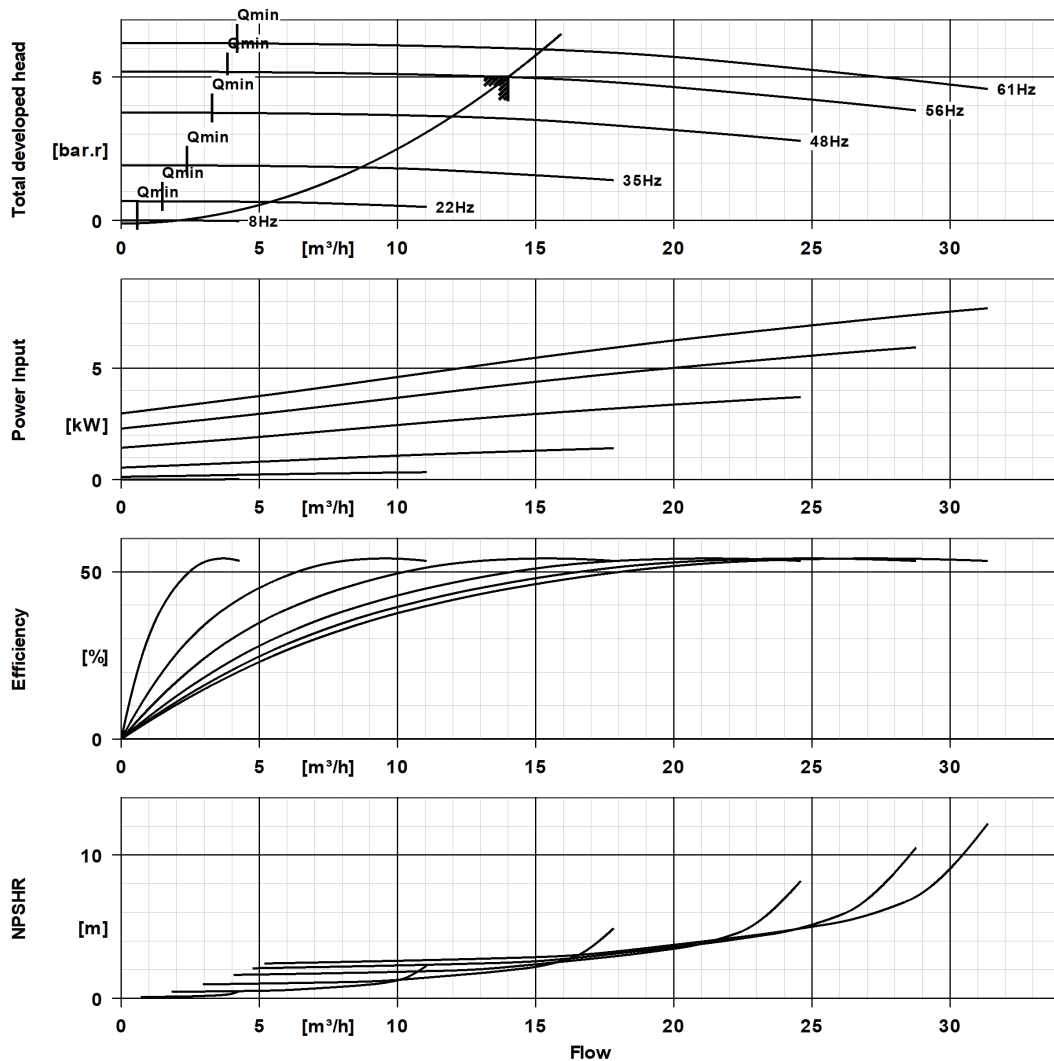
Speed Curve



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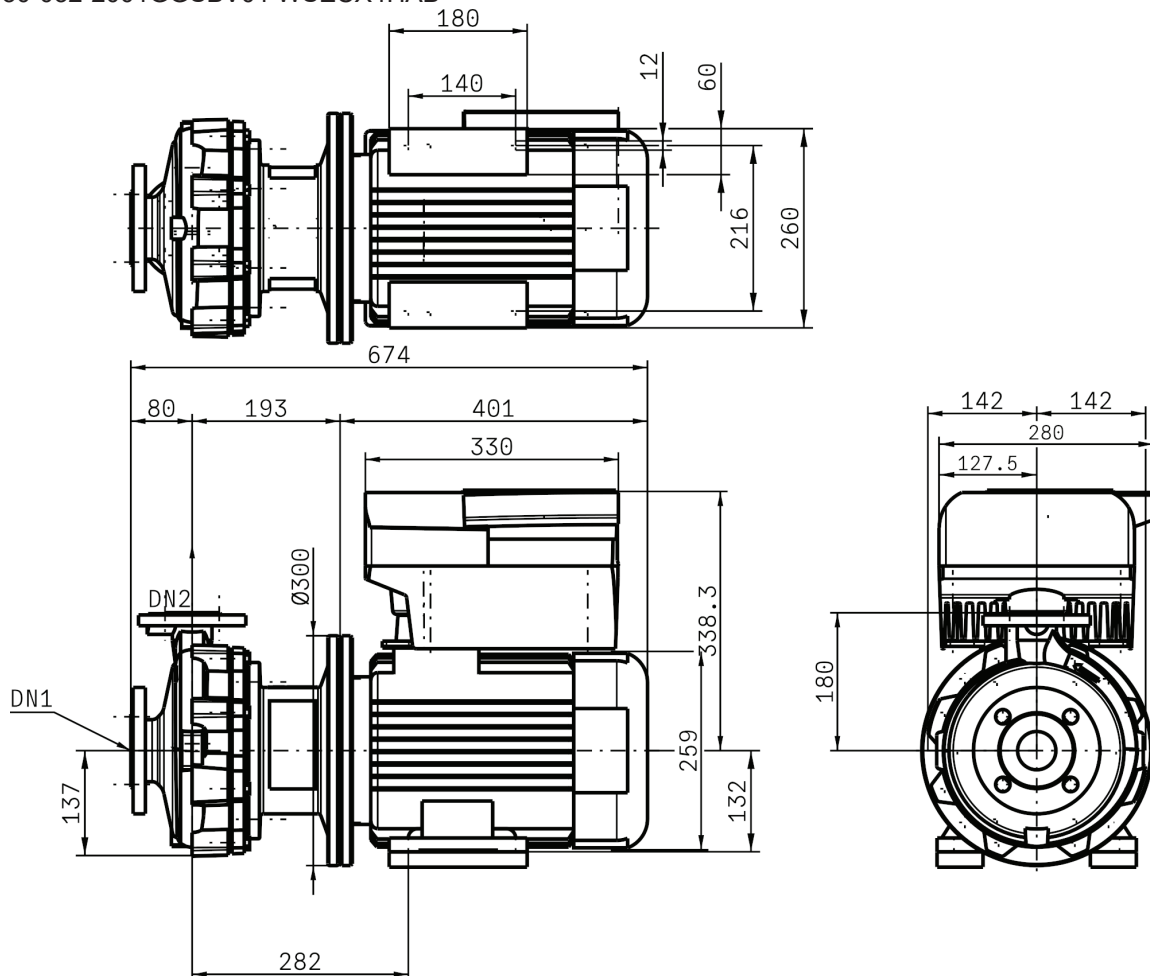


Curve Data

Density Fluid handled	700 kg/m^3	Maximum pressure determined at duty point	5 bar.r
Kinematic viscosity Fluid handled	15 mm^2/s	Minimum efficiency index MEI	0.5
Flow rate	14 m^3/h	Hydraulic impeller diameter	204 mm

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Drawing is not to scale.

Dimensions are given in mm

Motor

Motor manufacturer	KSB
Motor size	132S
Rated power Motor	5.5 kW
Number of motor poles	4
Rated speed Motor	3,000 1/min
Terminal box position of motor (looking at the motor shaft)	360 °

Connections

Nominal diameter Suction nozzle	DN 50
Suction flange bolt hole pattern as per standard	EN1092-2
Nominal diameter Discharge nozzle	DN 32
Discharge flange bolt hole pattern as per standard	EN1092-2
Nominal pressure Suction nozzle	PN 16
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Net weight

Total weight Pump	37.64 kg
Total weight Drive	43 kg
Total weight Control unit	10.63 kg
Total weight Pump set	91.27 kg
Total weight Assembly/transport aids	2.4 kg

Connect pipelines stress-free

Dimensional tolerances for shaft axis height: DIN 747

Dimensions without tolerances, middle tolerances to: ISO 2768-m

Connection dimensions for pumps: EN735

Dimensions without tolerances - welded parts: ISO 13920-B

Dimensions without tolerances - gray cast iron parts: ISO 8062-CT9

Plan for additional connections see extra drawing

Design

Modular, self-cooling frequency inverter enabling continuously variable speed control of asynchronous and synchronous reluctance motors.

Design concept	Advanced	Total weight Control unit	10.63 kg
Display type	With graphical control panel	Maximum length	330 mm
Rated power Control unit	5.5 kW	Maximum width	280 mm
Maximum output current Control unit	14 A	Maximum height	210 mm
M12 module	Without		
Integrated connection hardware for self-parameterisation	Without		
Integrated master switch	No		
Field bus module	Profinet		
Additional IO module	Without		
Mounting location	Motor		

Parameterized for driver

Motor manufacturer	KSB	Efficiency class	IE5 (Ultra Premium)
Type series Motor manufacturer	SuPremE C2	Number of motor poles	4
		Total weight Drive	43 kg

Packaging

Suitable for transport	Truck transport
Suitable for storage	Indoor storage
Packaging category	KSB's choice (A0)

PumpDrive 2

PumpDrive2 [A]

Modular, self-cooling frequency inverter enabling continuously variable speed control of asynchronous and synchronous reluctance motors.

Installation options:

Motor-mounted, wall-mounted or cabinet-mounted from 0,37 - 11 kW

Protective functions:

- Full protection by means of over current limitation and PTC thermistor monitoring
- Automatic speed reduction at overload and excessive temperatures. Protection against phase failure motor side, short-circuit monitoring motor side (phase to phase and phase to earth), overvoltage/undervoltage.
- Protection against motor overload
- Suppression of resonant frequencies
- Cable integrity monitoring (live zero)
- Protection against dry running and hydraulic blockage (sensorless via learning function)
- Characteristic curve control

Open/closed-loop control

- Open-loop control via analog input, display or field bus
- Closed-loop control mode via integrated PID controller
- Controlled variables: pressure, differential pressure delta-p (constant) or delta-p (variable), temperature, level control, flow rate
- Sensorless differential pressure control (?p const) in a single-pump configuration
- Sensorless differential pressure control with dynamic pressure compensation (?p var) in a single-pump configuration
- Sensorless flow rate control
- Functional check run

Operation and display:

- Display of measured values and alerts and for setting parameters
- Operating point estimation (Q, H)
- Optical service interface for connection to KSB ServiceTool

PumpDrive functions:

- Programmable start and stop ramps
- Field-oriented control (vector control) with selectable motor control method (ASM, SuPremE)
- Automatic motor adaptation (AMA)
- Manual-0-automatic operation
- Sleep mode (stand-by mode)

Installation options:

- M12 module for bus connection of PumpMeter and for multiple pump operation of up to six pumps
- Wireless module for communication with a smartphone
- Field bus module Modbus RTU, as an alternative to the M12 module

Interference suppression class:

Motor ≤ 11 kW: EN 61800-3:2005-07 C1 / EN 55011 Class B / cable length < 5 m

Housing:

Heat sink: die-cast aluminium

Housing cover: polyamide, glass fibre reinforced

Control panel: polyamide, glass fibre reinforced

Mains voltage 3~380 V AC -10% to 480 V AC +10 %

Mains frequency 50 - 60 Hz ± 2 %

Internal power supply unit 24 V DC ± 10 %, max. 600 mA



Enclosure IP55 (to EN 60529)

Ambient temperature -10 to +50°C

Rel. humidity 5 to 85 % (non-condensing)

Note regarding outdoor installation: Provide the frequency inverter with suitable protection when installed outdoors to prevent condensation on the electronic equipment and exposure to excessive sunlight.

Service interface: optical

2 analog inputs, 0/2-10 V or 0/4-20 mA

1 analog output, 0-10 V or 4-20 mA

Digital inputs:

1 hardware enable input

3 parameterisable inputs

Relay output:

2 NO contact, parameterisable

Manufacturer KSB