Data sheet

ETLZ050-050-250 GGSAV11D200554 BKSBIE5 PD2EM
Inline pump

Operating data

Requested flow rate		Actual flow rate	45.00 m³/h
Requested developed head		Actual developed head	23.00 m
Pumped medium	Water, heating water Heating water up to 100°C (max.), acc. to VDI 2035 Not containing chemical and mechanical substances which affect the materials	Efficiency	55.8 %
		MEI (Minimum Efficiency Index)	= 0.70
		Power absorbed	4.96 kW
		Pump speed of rotation	1718 rpm
		NPSH required	3.29 m
Ambient air temperature	20.0 °C	Permissible operating pressure	16.00 bar.g
Fluid temperature	60.0 °C		
Fluid density	983 kg/m³		
Fluid viscosity	0.48 mm²/s	Discharge press.	2.22 bar.g
Suction pressure max.	0.00 bar.g	Min. allow. mass flow for continuous stable operation	1.57 kg/s
Mass flow rate	12.29 kg/s		
Max. power on curve	5.81 kW	Max. allow. mass flow	18.92 kg/s
Min. allow. flow for continuous stable operation	5.74 m³/h	Design	Twin system one full duty + one standby pump Tolerances to ISO 9906 Class 3B; below 10 kW acc. to paragraph 4.4.2
Shutoff head	31.96 m		

Design

Pump standard	Without	Shaft seal code	11
Design	Close coupled twin inline	Sealing plan	Single-acting mechanical seal with vented chamber (A-type casing cover, taper bore)
Orientation	Vertical		
Suction nominal dia.	DN 50	Minimum requirements for hot water quality: treatment acc. to VdTÜV regulation TCH 1466 and solids content up to max. 5 mg/l.	
Suction nominal pressure	PN 16		
Suction position	180° (down)	Seal chamber design	Conical seal chamber (A-type cover)
Suction flange drilled according to standard	EN1092-2	Contact guard	With
		Wear ring	Casing wear ring
Discharge nominal dia.	DN 50	Impeller diameter	260.0 mm
Discharge norminal pressure	PN 16	Free passage size	8.0 mm
Discharge position	top (0°/360°)	Direction of rotation from drive	Clockwise
Discharge flange drilled according to standard	EN1092-2	Bearing bracket construction	Close-coupled
		Bearing bracket size	25
Shaft seal	Single acting mechanical seal	Bearing type	Anti-friction bearings
Manufacturer	KSB	Lubrication type	Grease
Type	1	Color	Vermilion (RAL 2002)
Material code	BQ1EGG-WA		

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Driver, accessories

Driver type	Electric motor
Drive standard mech.	IEC
Model (make)	KSB SuPremE®
Type series motor manufacturer	SuPremE C2 (with mounting plate for PumpDrive 2, non removable)
Drive supplied by	Standard motor supplied by KSB - mounted by KSB
Motor const. type	V1
Motor size	132S
Efficiency class	Efficiency class IE5 acc. IEC/TS 60034-30-2 (2016) – free of magnets. Motor size 80 with ferrite magnets. The efficiency of the motor for a quadratic torque-speed characteristic is > 95% of the nominal efficiency even at 25% of the nominal power.
Speed control selection	Speed adjustment
Frequency	50 Hz
Designed for operation with frequency inverter	Yes
Rated voltage	400 V
Rated power P2	5.50 kW
Available reserve	10.84 %
Rated current	13.5 A
Insulation class	F to IEC 34-1
Motor enclosure	IP55
Cos phi at 4/4 load	0.73
Motor efficiency at 4/4 load	92.0 %
Temperature sensor	3 PTC resistors
Terminal box position	0° same orientation Viewed from the drive
Motor winding	230 / 400 V
Connection mode	Star
Motor cooling method	Surface cooling
Motor material	Aluminium
Motor noise pressure level	61 dBa
Driver colour	Same as the pump

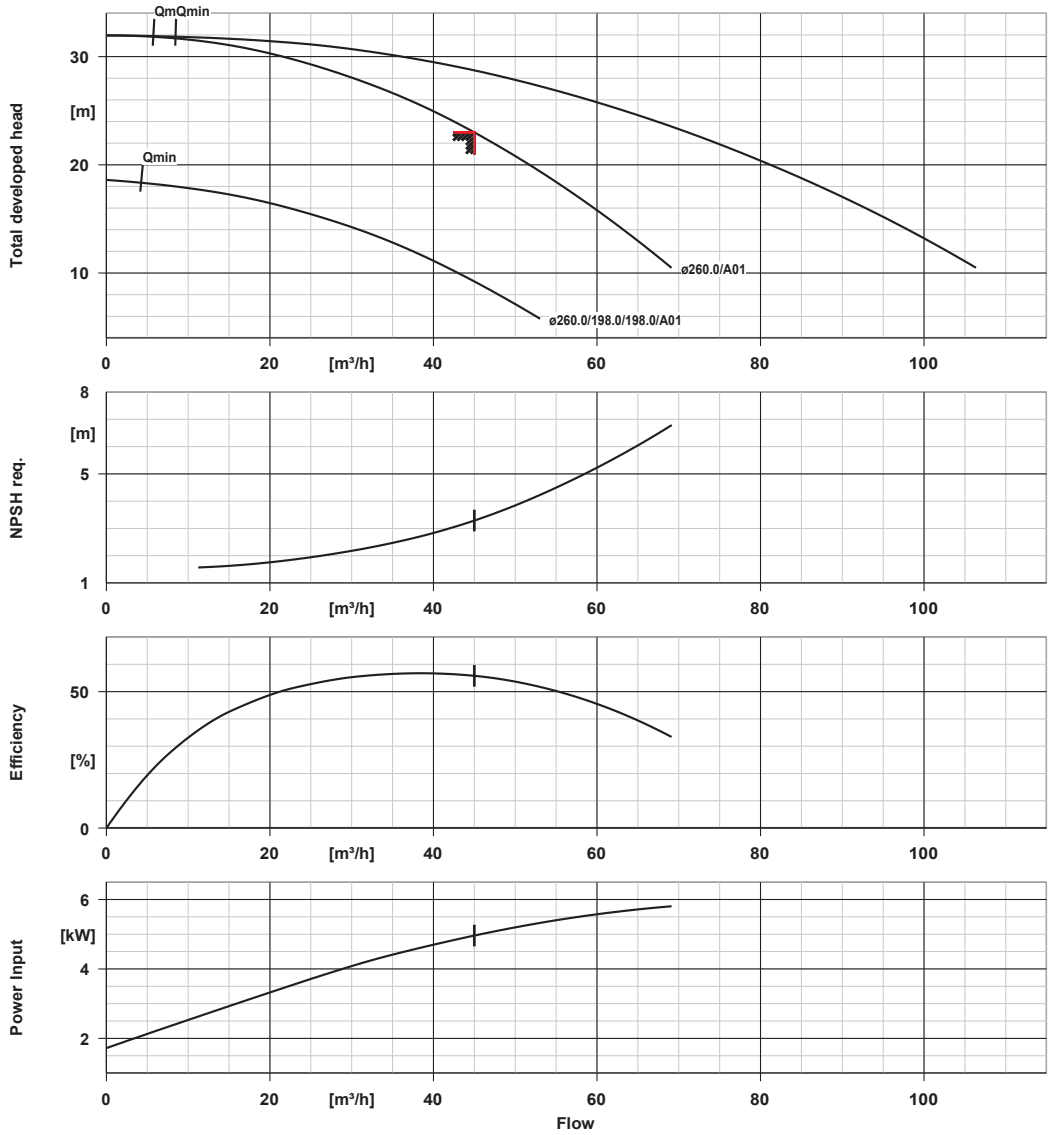
Materials G

Notes 1
Unalloyed cast iron components: pH = 9 to 10.5 and O2 content <= 0.02 mg/kg.

Volute casing (102)	Grey cast iron EN-GJL-250/A48CL35B
Casing cover (161)	Grey cast iron EN-GJL-250/A48CL35B
Shaft (210)	Tempered steel C45+N
Impeller (230)	Grey cast iron EN-GJL-250/A48CL35B
Motor stool (341)	Grey cast iron EN-GJL-250/A48CL35B
Flat gasket (400)	DPAF seal plate asbestos free
Joint ring (411)	Steel ST
Casing wear ring (502.1)	Grey cast iron GG/CAST IRON
Casing wear ring (502.2)	Grey cast iron GG/CAST IRON
Disc (550)	Steel ST
Stud (902)	Steel 8.8
Nut (920)	8+A2A/ 8+B633 SC1 TP3
Impeller nut (922)	Steel 8
Key (940)	Steel C45+C / A311 GR 1045 CLASS A
Pipe line (700)	Steel ST

Performance curve

ETLZ050-050-250 GGSAV11D200554 BKSBIE5 PD2EM
Inline pump



Curve data

Speed of rotation	1718 rpm	Efficiency	55.8 %
Fluid density	983 kg/m³	MEI (Minimum Efficiency Index)	= 0.70
Viscosity	0.48 mm²/s		
Flow rate	45.00 m³/h	Power absorbed	4.96 kW
Requested flow rate	45.00 m³/h	NPSH required	3.29 m
Total developed head	23.00 m	Curve number	K1161.464/28
Requested developed head	23.00 m	Effective impeller diameter	260.0 mm
		Acceptance standard	Tolerances to ISO 9906 Class 3B; below 10 kW acc. to paragraph 4.4.2

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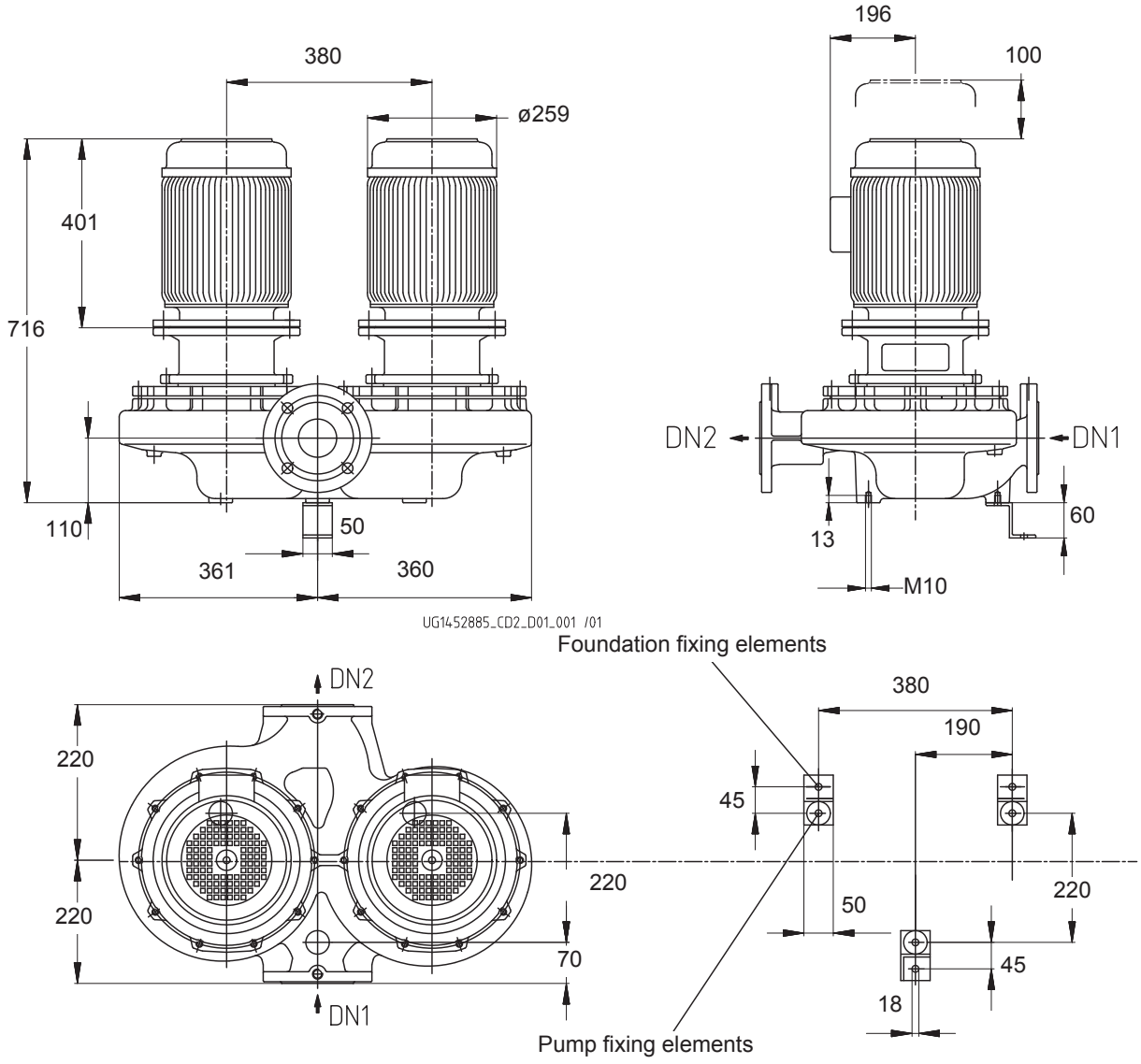
Inline pump



Drawing is not to scale

Dimensions in mm

ETLZ050-050-250 GGSAV11D200554 BKSBIE5 PD2EM
Inline pump

Motor

Motor manufacturer	KSB
Motor size	132S
Motor power	5.50 kW
Number of poles	4
Speed of rotation	1500 rpm
Position of terminal box	0° same orientation Viewed from the drive

Connections

Suction nominal size DN1	DN 50 / EN1092-2
Discharge nominal size DN2	DN 50 / EN1092-2
Nominal pressure suct.	PN 16
Rated pressure disch.	PN 16

Weight net

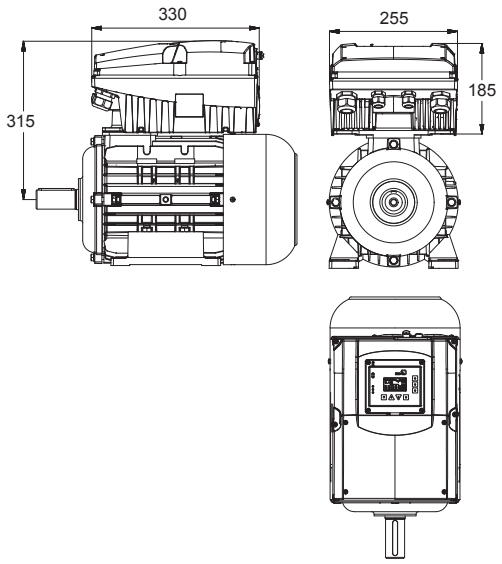
Pump	106 kg
Motor	45 kg
Total	151 kg

Connect pipes without stress or strain!

For auxiliary connections see separate drawing.

Supplementary drawing for PumpDrive

ETLZ050-050-250 GGSAV11D200554 BKSBIE5 PD2EM
Inline pump



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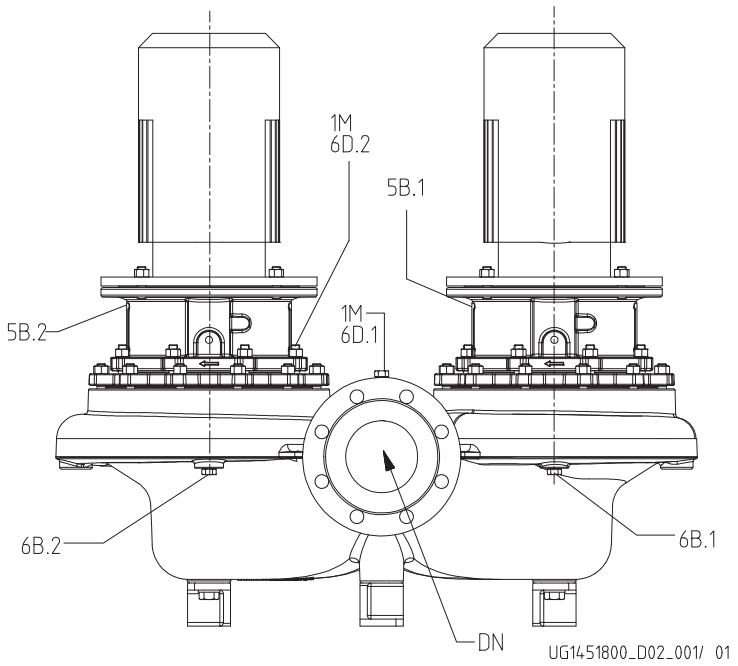
Inline pump



Connections

Pump casing variant		XX46
1M.1 Pressure gauge connection	G 1/4	Pressure sensor for PumpMeter fitted
1M.2 Pressure gauge connection	G 1/4	Pressure sensor for PumpMeter fitted
6B.1 Pumped liquid drain	G 1/4	Drilled and plugged.
6B.2 Pumped liquid drain	G 1/4	Drilled and plugged.
6D.1 Pumped medium - filling/venting	G 1/4	Drilled and plugged.
6D.2 Pumped medium - filling / venting	G 1/4	Drilled and plugged.
5B.1 venting	G 1/4	Closed with venting plug
5B.2 venting	G 1/4	Closed with venting plug

PDRV2E_005K50M_KSUPBE5P4_MOOOO

PumpDrive 2

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

Design concept of control unit	PumpDrive 2 Eco
Display type	With standard control panel
Rated power	5.50 kW
Max. allowed current	14.0 A
M12 module	With
Remote operation	Without
Mounting	MM - Mounted on the motor

Weight	10 kg
PumpDrive length	330.0 mm
PumpDrive width	255.0 mm
PumpDrive height	185.0 mm
Manufacturer	KSB
PumpDrive adapter	No
Designation	-

Characteristic

Mains voltage: 3 ~ 380 V AC -10% to 480 V AC +10 %
Mains frequency: 50 - 60 Hz +/- 2%
Interference suppression class: <= 11 kW: EN 61800-3 C1 / EN 55011 Class B / cable length <= 5 m
Internal power supply: 24 V +/- 10 %, max. 600 mA DC
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 contacts, parameterisable

Environment:
IP 55 enclosure (acc. EN 60529)
Ambient temperature: -10 to 50 °C
Rel. humidity in operation: 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.

Housing:
Heat sink: die-cast aluminium
Housing cover: Polyamid, glass fibre reinforced
Control panel: Polyamid, glass fibre reinforced

Protective functions:
- Full protection by means of overcurrent 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 fieldbus
- 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 (Δp const) in a single-pump configuration
- Sensorless differential pressure control with dynamic pressure compensation (Δp var) in a single-pump configuration
- Sensorless flow rate control
- Functional check run

PDRV2E_005K50M_KSUPBE5P4_MOOOO

Operation and display:
- Operating point estimation (Q, H)
- Optical service interface for connection to KSB Service Tool

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.

PDRV2E_005K50M_KSUPBE5P4_MOOOO

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Max. allowed current	14.0 A	PumpDrive height	185.0 mm
M12 module	With	Manufacturer	KSB
Remote operation	Without	PumpDrive adapter	No
Mounting	MM - Mounted on the motor	Designation	-

Characteristic

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Mains frequency: 50 - 60 Hz +/- 2%
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Digital inputs:
1 hardware enable input
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PumpMeter

Intelligent Pressure Transmitter PumpMeter - with on-site display of operating point

General description:

PumpMeter in an intelligent pressure transmitter with on-site display of measurement values and operating data of the pump. It comes factory-provided completely assembled and parameterised for your individual pump, to be connected via M12 connector and immediately ready to operate. PumpMeter records the pumps load profile during operation in order to – if applicable – provide information on the potential for energy savings or increased availability.

On-site display unit:

Backlit display unit for on-site display of measurement values and operating data of pump with intuitive and internationally comprehensible icons, rotatable in steps of 90°.

Display values:

suction pressure, pressure at inlet of pump in bar, gauge pressure
discharge pressure, pressure at outlet of pump in bar, gauge pressure
differential pressure between in- and outlet of pump in bar
qualitative indication of operating point

Connection of display unit via connector (M12 x 1, 5-pin for power supply and utilization of communication interface.
Making alternatively available:
measurement value of discharge pressure via analogue signal 4 … 20 mA
calculated value of differential pressure via analogue signal 4 … 20 mA
all display values via serial interface RS 485 (Modbus RTU).
Service interface RS232 for parameterisation.
Factory provided parameterisation for individual pump.

Sensors:

Two gauge pressure transmitters, one each factory provided on both, inlet and discharge side of pump. Connected to display unit via connector.

Accuracy of measurement (sum of errors; relating to measurement range):

±1% for fluid temperature -10 … 100 °C

±2.5% for fluid temperature -30 … -10 °C and 100 … 140 °C

Material of measuring cell: stainless steel (no internal gasket)

Available measurement ranges:

-1 ...10 bar (gauge pressure)

-1 ...10 bar (gauge pressure)

Ambient conditions:

Type of protection: IP 65

Ambient temperature:
-30°C … 80°C (during transport, storage)
-10°C … 60°C (operation)

Fluid temperature: -30°C … 140°C

Scuff resistance:
Ultraviolet resistance (outdoor installation)
Resistance to most cleaning agents
Resistance to oil mist

Silicone free:
No detrimental to paint adhesion

Electric data:

Power supply:
24V DC ± 10%, min. 140 mA
Interfaces, alternatively utilisable:
4 … 20 mA, 3-conductor (discharge pressure or differential pressure)
RS485, Modbus RTU (Slave)
Service interface: RS232
EMC:
EN 61326 (Immunity: industrial environment, Emissions: applicable in home and building environment)