Data sheet

ETL 032-032-160 GGSAV10D200114 BKSBIE5 PD2
Inline pump

Operating data

Requested flow rate		Actual flow rate	3.00 m³/h
Requested developed head		Actual developed head	13.00 m
Pumped medium		Efficiency	33.4 %
		MEI (Minimum Efficiency Index)	≥ 0.70
		Power absorbed	0.32 kW
		Pump speed of rotation	1659 rpm
Max. ambient air temperature	20.0 °C	NPSH required	2.68 m
Min. ambient air temperature	20.0 °C	Permissible operating pressure	16.00 bar.g
Fluid temperature	12.0 °C		
Fluid density	999 kg/m³	Discharge press.	1.27 bar.g
Fluid viscosity	1.25 mm²/s	Min. allow. mass flow for continuous stable operation	0.55 kg/s
Suction pressure max.	0.00 bar.g	Shutoff head	13.09 m
Mass flow rate	0.83 kg/s	Max. allow. mass flow	5.69 kg/s
Max. power on curve	0.74 kW	Design	Twin system one full duty + one standby pump Tolerances to ISO 9906 Class 3B; below 10 kW acc. to paragraph 4.4.2
Min. allow. flow for continuous stable operation	1.99 m³/h		

Design

Pump standard	Without	Type	1
Back pull out unit will not fit in an Etaline ordered before Feb. 23, 2014		Material code	Q1Q1X4GG
Only back pull-out unit without pump casing		Shaft seal code	10
Caution: The overall length from suction to discharge can be different to the previous generation of Etaline.		Sealing plan	Single-acting mechanical seal with vented chamber (A-type casing cover, taper bore)
Design	Close-coupled in-line	Seal chamber design	Conical seal chamber (A-type cover)
Orientation	Vertical		
Suction nominal dia.	DN 32	Contact guard	With
Suction nominal pressure	PN 16	Wear ring	Casing wear ring
Suction position	180° (down)	Impeller diameter	170.0 mm
Suction flange drilled according to standard	EN1092-2	Free passage size	5.4 mm
		Direction of rotation from drive	Clockwise
Discharge nominal dia.	DN 32	Silicon free pump assembly	Yes
Discharge norminal pressure	PN 16	Bearing bracket construction	Close-coupled
Discharge position	top (0°/360°)	Bearing bracket size	25
Discharge flange drilled according to standard	EN1092-2	Bearing type	Anti-friction bearings
		Lubrication type	Grease
Surface type	Raised face (form B to EN 1092)	Color	Vermilion (RAL 2002)
Shaft seal	Single acting mechanical seal		
Manufacturer	KSB		

ETL 032-032-160 GGSAV10D200114 BKSBIE5 PD2
Inline pump

Driver, accessories

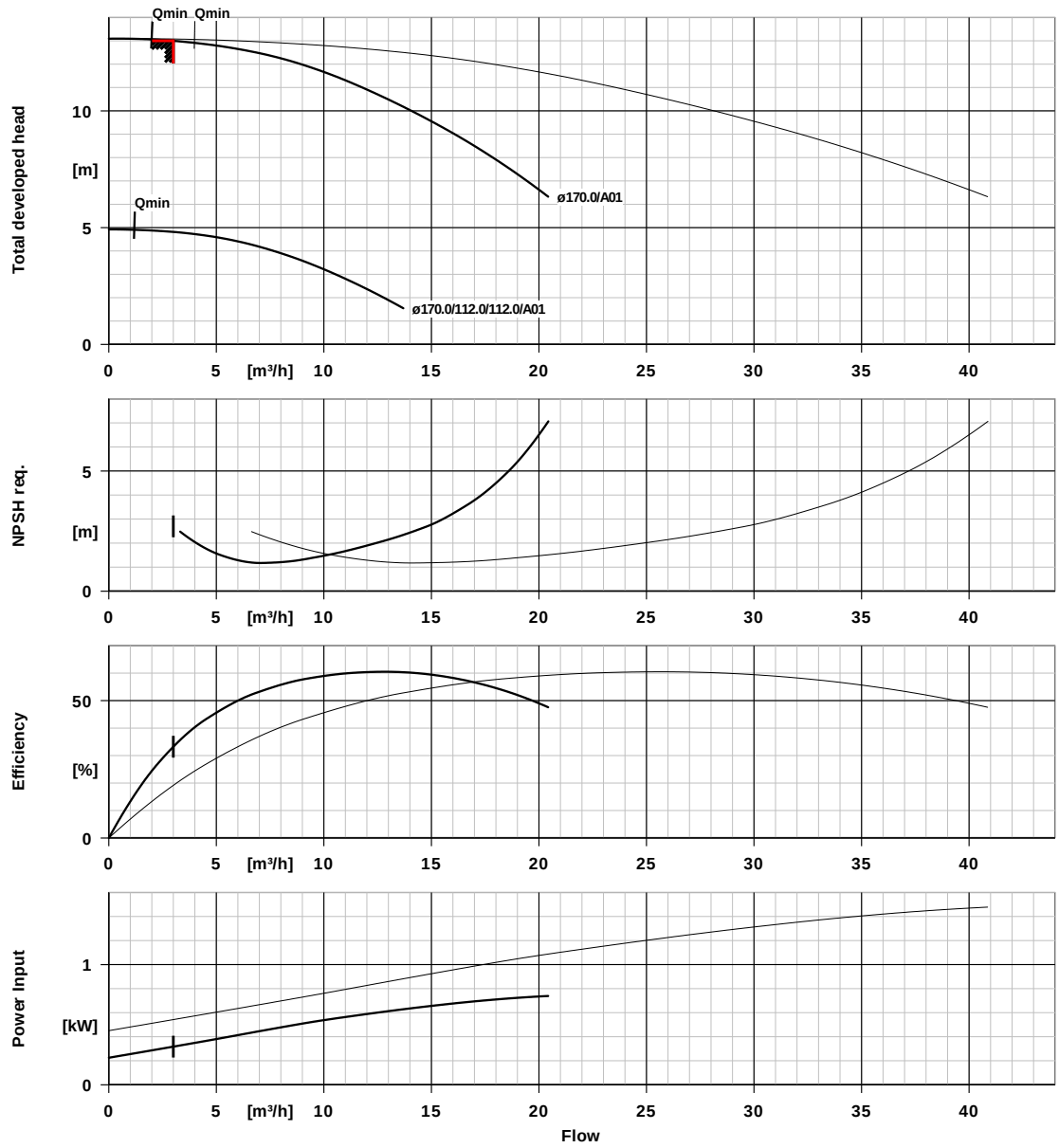
Driver type	Electric motor	Rated current	3.0 A
Drive standard mech.	IEC	Insulation class	F to IEC 34-1
Model (make)	KSB SuPremE®	Motor enclosure	IP55
Type series motor manufacturer	SuPremE C2 (with mounting plate for PumpDrive 2, non removable)	Cos phi at 4/4 load	0.67
		Motor efficiency at 4/4 load	87.2 %
		Temperature sensor	3 PTC resistors
Drive supplied by	Standard motor supplied by KSB - mounted by KSB	Terminal box position	0° same orientation Viewed from the drive
Motor const. type	V1	Motor winding	400 V
Motor size	90S	Connection mode	Star
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.	Motor cooling method	Surface cooling
		Motor material	Aluminium
		Motor noise pressure level	60 dBa
		Driver colour	Same as the pump
Speed control selection	Speed adjustment		
Frequency	50 Hz		
Designed for operation with frequency inverter	Yes		
Rated voltage	400 V		
Rated power P2	1.10 kW		
Available reserve	246.07 %		

Materials G

Casing cover (161)	Grey cast iron EN-GJL-250/A48CL35B	Joint ring (411)	Steel ST
		Shaft sleeve (523)	CrNiMo steel
Shaft (210)	Tempered steel C45+N	Stud (902)	Steel 8.8
Impeller (230)	Grey cast iron EN-GJL-250/A48CL35B	Impeller nut (922)	Steel 8
		Key (940)	Steel C45+C / A311 GR 1045 CLASS A
Motor stool (341)	Grey cast iron EN-GJL-250/A48CL35B		
Flat gasket (400)	DPAF seal plate asbestos free		

Performance curve

ETL 032-032-160 GGSAV10D200114 BKSBIE5 PD2
Inline pump



Curve data

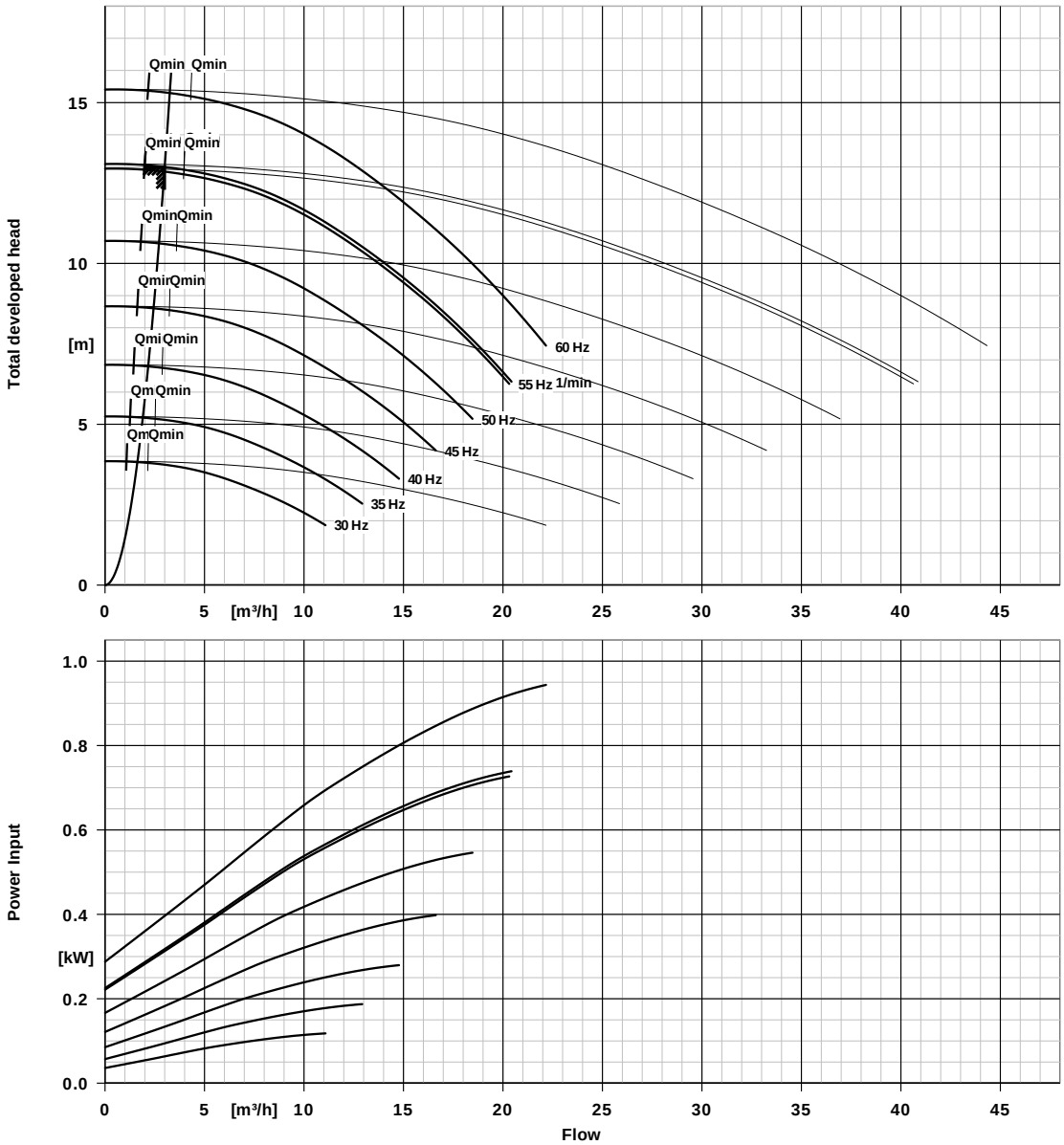
Speed of rotation	1659 rpm
Fluid density	999 kg/m³
Viscosity	1.25 mm²/s
Flow rate	3.00 m³/h
Requested flow rate	3.00 m³/h
Total developed head	13.00 m
Requested developed head	13.00 m

Efficiency	33.4 %
MEI (Minimum Efficiency Index)	≥ 0.70
Power absorbed	0.32 kW
NPSH required	2.68 m
Curve number	K1159.464/18
Effective impeller diameter	170.0 mm
Acceptance standard	Tolerances to ISO 9906 Class 3B; below 10 kW acc. to paragraph 4.4.2

Speed curve

ETL 032-032-160 GGSAV10D200114 BKSBIE5 PD2

Inline pump

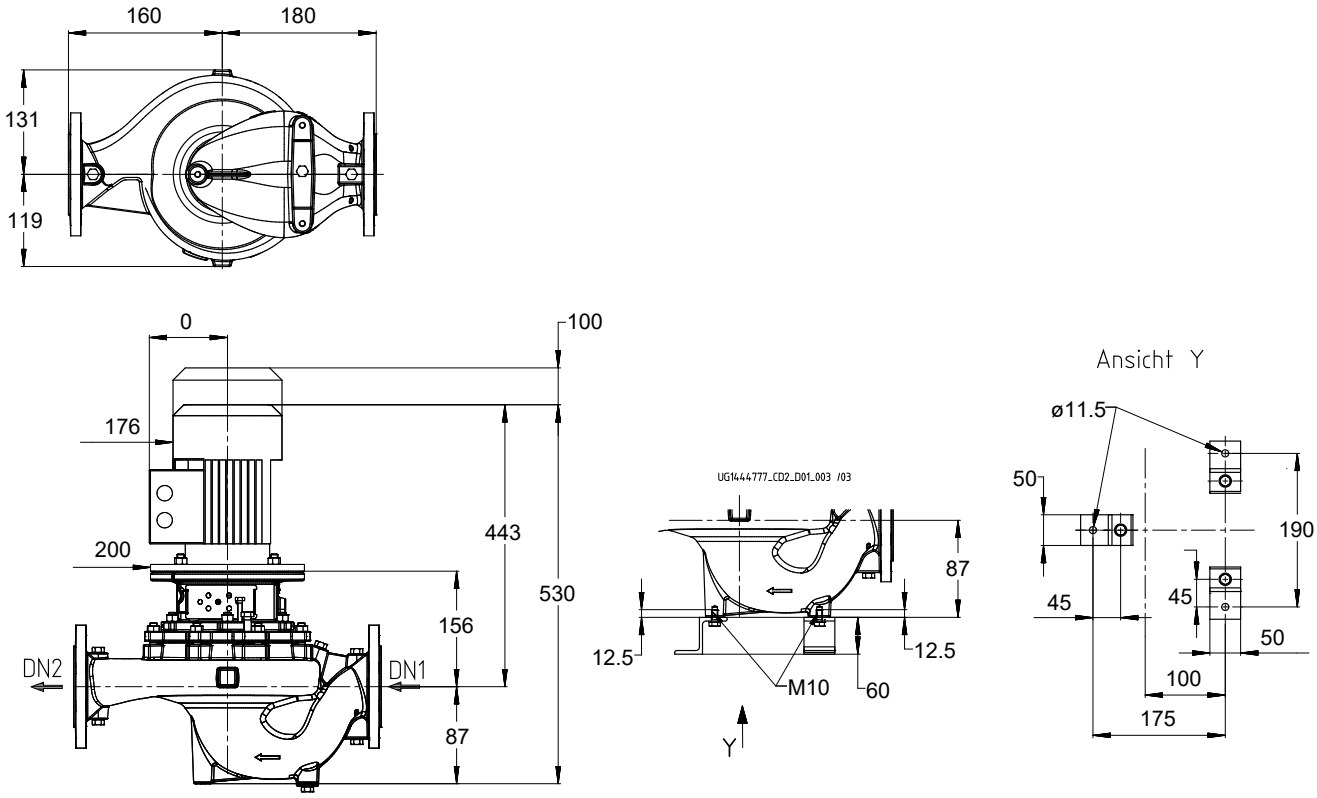


Curve data

Fluid density	999 kg/m³	Total developed head	13.00 m
Viscosity	1.25 mm²/s	Requested developed head	13.00 m
Flow rate	3.00 m³/h	MEI (Minimum Efficiency Index)	≥ 0.70
Requested flow rate	3.00 m³/h	Effective impeller diameter	170.0 mm

Installation plan

ETL 032-032-160 GGSAV10D200114 BKSBIE5 PD2
Inline pump



Drawing is not to scale

Dimensions in mm

Motor

Motor manufacturer	KSB
Motor size	90S
Motor power	1.10 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 32 / EN1092-2
Discharge nominal size DN2	DN 32 / EN1092-2
Nominal pressure suct.	PN 16
Rated pressure disch.	PN 16

Weight net

Pump	20 kg
Motor	16 kg
Total	36 kg

Connect pipes without stress or strain!

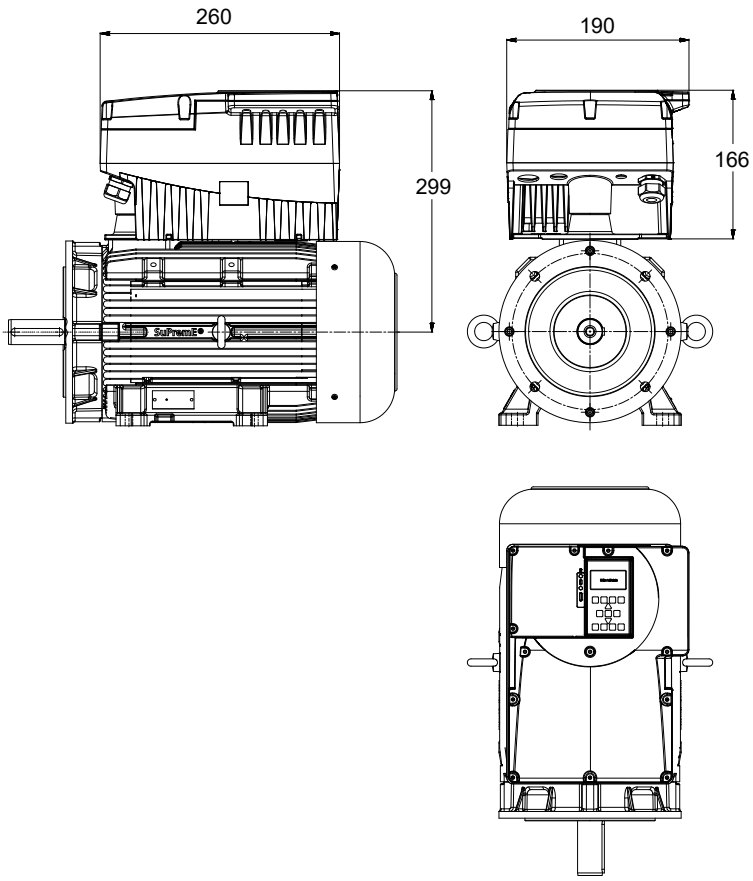
For auxiliary connections see separate drawing.

ETL 032-032-160 GGSAV10D200114 BKSBIE5 PD2
Inline pump

Supplementary drawing for PumpDrive

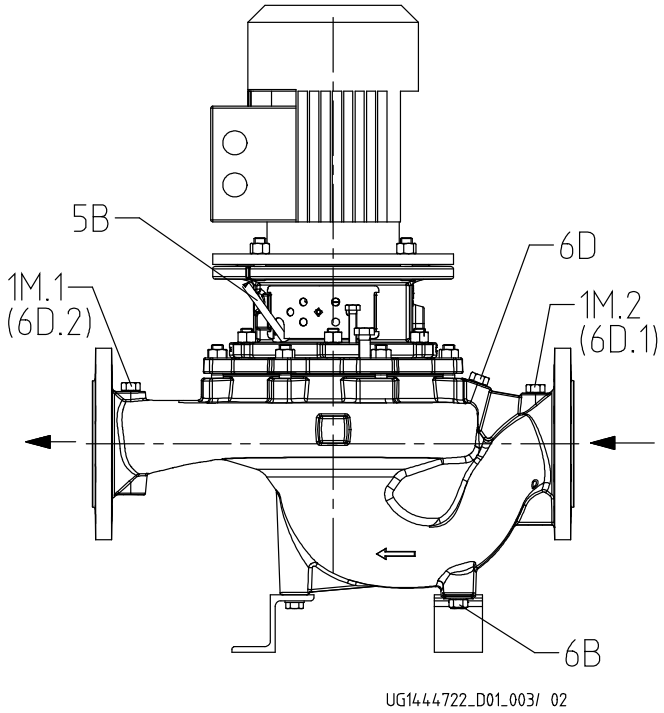
Installation plan

ETL 032-032-160 GGSAV10D200114 BKSBIE5 PD2
Inline pump



Drawing is not to scale

ETL 032-032-160 GGSAV10D200114 BKSBIE5 PD2
Inline pump



Connections

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

PDRV2 _001K10M_KSUPBE5P4_OOOOO

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
Display type	With graphic control panel
Rated power	1.10 kW
Max. allowed current	3.5 A
M12 module	Without
Remote operation	Without
Main switch	Without
Fieldbus	without fieldbus

Optional IO module	Without
Mounting	MM - Mounted on the motor
Weight	5 kg
PumpDrive length	260.0 mm
PumpDrive width	190.0 mm
PumpDrive height	166.0 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
Interference suppression class: > 11 kW: EN 61800-3: C2 / EN 55011 Class A, Group 1 / cable length <= 50 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
5 parameterisable inputs
Relay output: 2 changeover 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: die-cast aluminium
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
- User-definable max. speed (0 to 70 Hz or 140 Hz).
- 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

PDRV2 _001K10M_KSUPBE5P4_OOOOO

- 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
- Sensorless dynamic pressure compensation for pipe friction losses (DFS curve), enabling higher energy savings.
- Flow rate estimation
- Alternative setpoint
- Functional check run

Operation and display:
- Display of measured values and alerts and for setting parameters, incl. fault history, operating hours counter (motor, frequency inverter)
- Display of operating point (Q, H)
- Energy savings meter
- Optical service interface for connection to KSB Service Tool.
- Commissioning Wizard
- Display can be removed and mount on a wall or piping

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 modules Profibus DP, LON, Modbus RTU, BACnet MS/TP, Profinet
- I/O extension board
- Master switch