

**Etaline 040-040-250 GG**  
 ETL 040-040-250-GGSCV66 WS2CM4KAB

**Operating point 1 Dimensioning operating point**

**Operating conditions (purchaser requirements)**

Target flow rate		Vapour pressure determined	0.01278 bar.a
Target head			
Fluid	Antifreeze on ethylene glycol base, inhibited, closed system, e.g. Antifrogen N or similar products	Specified ambient temperature	20 °C
		Installation altitude above sea level	1,000 m
Fluid variant	Concentration 30% 50295		
Specified fluid temperature	7 °C		
Density Fluid handled	1,045 kg/m <sup>3</sup>		
Kinematic viscosity Fluid handled	3.388 mm <sup>2</sup> /s		

**Operating conditions (performance)**

Flow rate	21.6 m <sup>3</sup> /h	Maximum power input at duty point	2.496 kW
Minimum permissible flow rate	2.619 m <sup>3</sup> /h	Maximum power input / curve	2.941 kW
Head	18.45 m	Pump speed	1,500 1/min
Shut-off head	25.15 m	Discharge pressure-max.	2.578 bar
Efficiency Pump	45.44 %		
NPSH required	2.44 m		

**Design data pump**

Scope of supply Pump supplied by KSB	Pump	Mains voltage	400 V
Pump standard	EN 733	Mains frequency	50 Hz
Shaft axis position	Vertical	Minimum efficiency index MEI	0.7
Pump design	Close-coupled	Minimum permissible fluid temperature	-30 °C
Pump system design	Single-pump system	Maximum permissible fluid temperature	120 °C
Specification of wetted parts	Manufactured without paint wetting impairment substances	Quantity Stages, single-entry	1
Pump direction of rotation, viewed from casing side	Counterclockwise	Casing wear ring design suction-side	Flat
Hydraulic impeller diameter	261 mm	Casing wear ring design discharge-side	Flat
Impeller type	Radial, closed, multi-channel	Installation chamber Casing cover	Conical (A-type cover)
Free passage	7.1 mm	Bearing bracket size / shaft unit	25
Nut lock for Impeller	No	Pump directive	CE
Swirl break	No		
Support foot	No		

**Etaline 040-040-250 GG**

ETL 040-040-250-GGSCV66 WS2CM4KAB

**Nozzle connections pump**

Nominal diameter Suction nozzle	DN 40	Nominal diameter Discharge nozzle	DN 40
Nominal pressure Suction nozzle	PN 16	Nominal pressure Discharge nozzle	PN 16
Suction nozzle position	Opposite of discharge nozzle	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,C)		
Flange facing type Outlet	Raised face (B,RF,C)		

**Auxiliary connections pump**

6B Fluid Drain	G 1/4 Drilled and plugged	1M Pressure gauge Discharge nozzle	G 1/4 Drilled and plugged
6D Fluid Filling and venting	G 1/4 Drilled and plugged	1M Pressure gauge Suction nozzle	G 1/4 Drilled and plugged
Connection type 24E Quench liquid inlet	Without Without		
Connection type 5B Venting and drain	G 1/4 Manual globe valve, fitted		

**Shaft sealing**

Shaft seal type	SMS A-type cover, vented	Shaft seal code	Code 66
Determined pressure Seal chamber	-0.15 bar	Shaft seal manufacturer inboard	BURGMANN
		Mechanical seal type inboard	MG13G6
		Material Shaft seal inboard	Q7Q7EGG

**Etaline 040-040-250 GG**

ETL 040-040-250-GGSCV66 WS2CM4KAB

**Materials**

Material Volute casing (102)	EN-GJL-250/A48 CL 35B	Material Bolts/Screws	8.8
Material Casing cover (161)	EN-GJL-250/A48 CL 35B	Hydraulic casing (902.01)	
Material Shaft	C45+N	Material Screw plug Hydraulic casing (903.01)	ST
Material Impeller (230)	EN-GJL-250/A48 CL 35B	Material Static seal Screw plug Volute casing	A4/AISI 316
Material Static seal Hydraulic casing (400.10)	DPAF DW001	Material Nut Impeller fastening (920.95)	(ST)
Material Casing wear ring suction-side	JL/LAMELLAR GRAPHITE CAST IRON	Material Key	C45+C/A311 GR 1045 CLASS A
Material Casing wear ring discharge-side (502.02)	JL/LAMELLAR GRAPHITE CAST IRON		
Material Shaft protecting sleeve (523)	(CRNIMO ST INT)		
Material Bearing bracket	WITHOUT		
Material Static seal Discharge cover	DPAF DW001		
Material Drive lantern	EN-GJL-250/A48 CL 35B		
Material Support foot	WITHOUT		

**Driver**

Electric motor	Yes	Rated speed Motor	1,500 1/min
Drive concept	With electric actuator	Number of motor poles	4
Drive standard, mechanical	IEC	Rated power Motor	4 kW
Drive standard electric	IEC	Motor power reserve determined	60.5 %
Motor bearing, insulated	No	Rated voltage Motor	400 V
Motor manufacturer	KSB	Motor winding	- / 400 V
Customer supply Drive	No	Rated frequency Motor	50Hz
Motor construction type	IM V1 (IM3011) IEC 60034-7	Motor switching type	Star
Motor size	112M	Rated current Motor	9.6 A
Efficiency class	IE5 (Ultra Premium)	Motor cos phi at nominal speed	0.73
Material motor housing	AL	Rated efficiency Motor	91.2 %
Enclosure Motor	IP55 (TEFC)	Directive Drive	CE
Thermal class	155 (F) nach IEC 60085		
Temperature sensor motor	3 PTC thermistors		
Terminal box position of motor (looking at the motor shaft)	360 Grad		
Operation on a frequency inverter permitted	Required by design		
Sound pressure level Motor	61 dBa		
Type series Motor manufacturer	SuPremE C2		

**Etaline 040-040-250 GG**  
ETL 040-040-250-GGSCV66 WS2CM4KAB

**Coating**

**Aggregate**

Surface preparation  
Properties Primer coat  
Thickness Primer coat  
Properties Top coat  
Thickness Top coat  
Colour Top coat

Free from dirt, grease, rust  
Hydro dip primer, water-dilutable  
60 µm  
Polyco/acrylate polym w-based  
50 µm  
RAL2002 Pastel Orange

**Packaging**

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

**Nameplates**

Duplicate name plate	No
----------------------	----



**Etaline 040-040-250 GG**

ETL 040-040-250-GGSCV66 WS2CM4KAB

**Accessories & Service**

**HX SOCK HD CAP SCRW M 4 X 16**

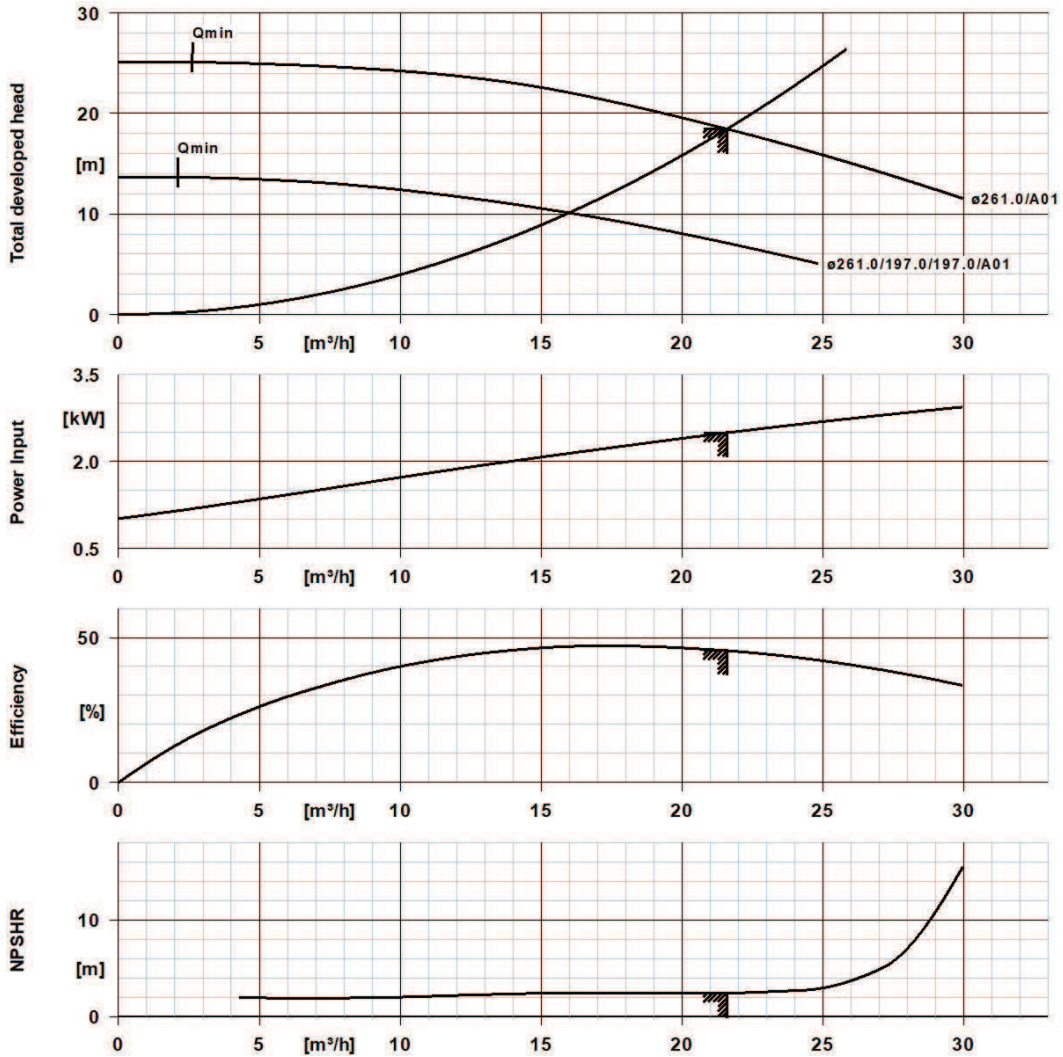
Hexagon socket head cap screw M 4X16 ISO4762 8.8+A2A

Ident-No. 01598711

# Performance Curve (Pump)



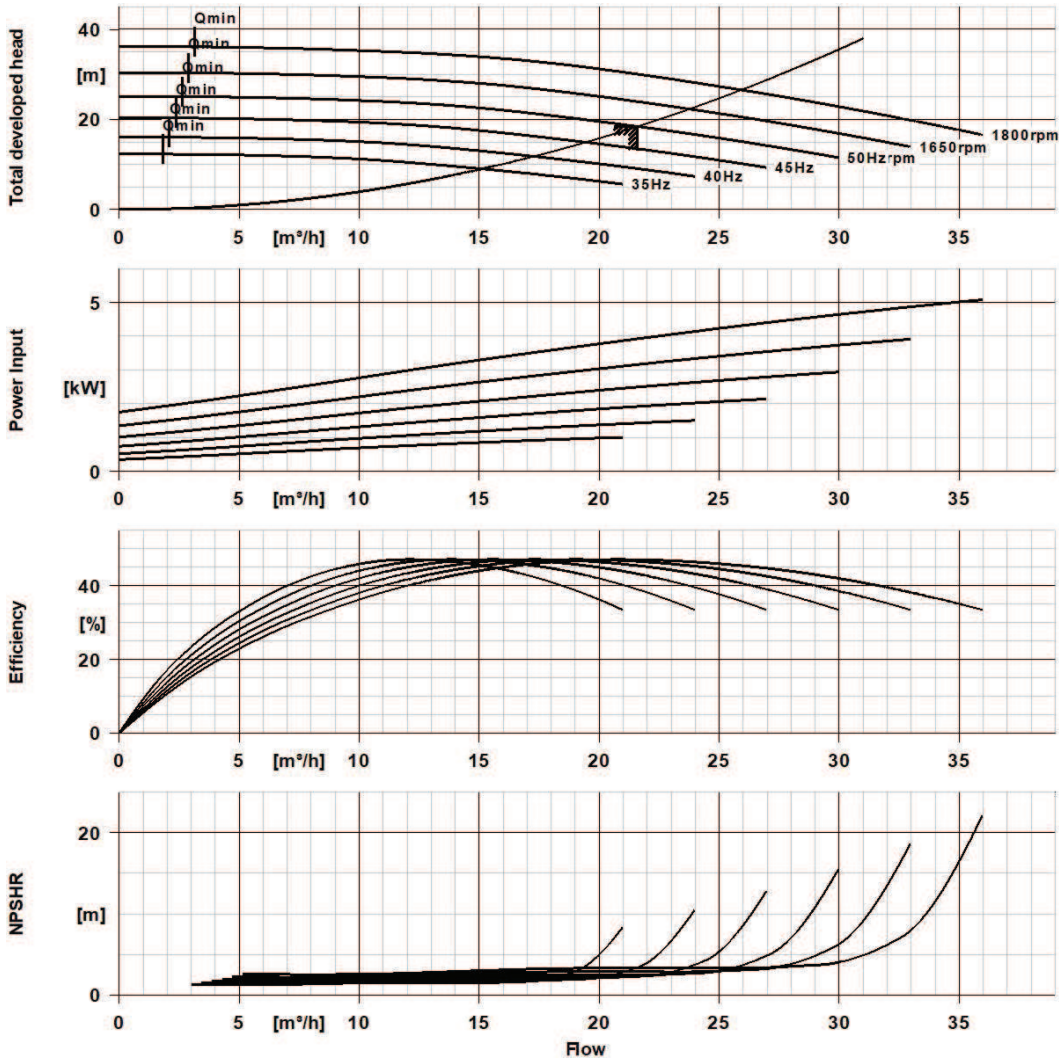
**Etaline 040-040-250 GG**  
 ETL 040-040-250-GGSCV66 WS2CM4KAB



### Curve Data

Pump speed	1,500 1/min	Efficiency Pump	45.44 %
Density Fluid handled	1,045 kg/m³	Minimum efficiency index MEI	0.7
Kinematic viscosity Fluid handled	3.388 mm²/s	Maximum power input at duty point	2.5 kW
Flow rate	21.6 m³/h	NPSH required	2.44 m
Head	18.45 m	Hydraulic calculation according to standard/class	EN ISO 9906 class 3B

**Etaline 040-040-250 GG**  
 ETL 040-040-250-GGSCV66 WS2CM4KAB



**Curve Data**

Density Fluid handled	1,045 $kg/m^3$	Minimum efficiency index MEI	0.7
Kinematic viscosity Fluid handled	3.39 $mm^2/s$	Hydraulic impeller diameter	261 mm
Flow rate	21.6 $m^3/h$	Head	18.45 m

**Etaline 040-040-250 GG**  
ETL 040-040-250-GGSCV66 WS2CM4KAB

Dimensions are given in mm

### Motor

Motor manufacturer	KSB
Motor size	112M
Rated power Motor	4 kW
Number of motor poles	4
Rated speed Motor	1,500 1/min
Terminal box position of motor (looking at the motor shaft)	360 Grad

### Connections

Nominal diameter Suction nozzle	DN 40
Suction flange bolt hole pattern as per standard	EN1092-2
Nominal diameter Discharge nozzle	DN 40
Discharge flange bolt hole pattern as per standard	EN1092-2
Nominal pressure Suction nozzle	PN 16
Nominal pressure Discharge nozzle	PN 16

### Net weight

Total weight Pump	42.9 kg
Total weight Drive	33 kg
Total weight Pump set	85.9 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



**PumpDrive 2 ECO 4,00 kW**  
PDRV2ER004K0M K E5P4 00000

**Design**

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

Design concept	Eco	Maximum length	290 mm
Display type	With standard control panel	Maximum width	186 mm
Rated power Control unit	4 kW	Maximum height	144 mm
Maximum output current Control unit	10 A		
M12 module	Without		
Integrated connection hardware for self-parameterisation	Without		
Integrated master switch	No		
Field bus module	Without		
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	33 kg
		Weight Motor	33 kg

**Packaging**

Suitable for transport	Truck transport
Suitable for storage	Indoor storage
Packaging category	KSB's choice (A0)
Phytosanitary certificate	No

## **PumpDrive 2 ECO 4,00 kW** PDRV2ER004K0M K E5P4 OOOOO

### **PumpDrive 2 Eco**

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

### **PumpDrive 2 ECO 4,00 kW**

PDRV2ER004K0M K E5P4 OOOOO

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

Mains frequency 50 - 60 Hz  $\pm$  2 %

Internal power supply unit 24 V DC  $\pm$  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



**PumpDrive 2 ECO 4,00 kW**  
PDRV2ER004K0M K E5P4 OOOOO

**Accessories & Service**

**HX SOCK HD CAP SCRW M 4 X 16**  
Hexagon socket head cap screw M 4X16 ISO4762 8.8+A2A

Ident-No. 01598711