

Etaline 040-040-160 GG

ETL 040-040-160-GGSCV66 WSECD2HHB

Operating point 1

Dimensioning operating point

Operating conditions (purchaser requirements)

Target flow rate	28 m³/h	Vapour pressure determined	0.007512 bar.a
Target head	20 m	Minimum inlet pressure required	-0.3 bar.r
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	-1 °C		
Density Fluid handled	1,048 kg/m³		
Kinematic viscosity Fluid handled	4.566 mm²/s		

Operating conditions (performance)

Flow rate	27.99 m³/h	Maximum power input at duty point	2.517 kW
Minimum permissible flow rate	4.183 m³/h	Maximum power input / curve	2.915 kW
Head	19.98 m	Pump speed	2,926 1/min
Shut-off head	25.42 m	Discharge pressure-max.	2.614 bar.r
Efficiency Pump	63.44 %		
NPSH required	3.25 m		

Design data pump

Scope of supply Pump supplied by KSB	Pump + motor	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	110 °C
Pump direction of rotation, viewed from casing side	Counterclockwise	Quantity Stages, single-entry	1
Hydraulic impeller diameter	137.5 mm	Installation chamber Casing cover	Conical (A-type cover)
Impeller type	Radial, closed, multi-channel	Bearing bracket size / shaft unit	25
Free passage	5.8 mm	Pump directive	CE
Hydraulic casing foot	Yes		

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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)		
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	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
5B Venting and drain	G 1/4 Manual globe valve, fitted		

Shaft sealing

Shaft seal type	Single mechanical seal; seal chamber can be vented (A-type casing cover) - AV	Shaft seal code	Code 66
		Shaft seal manufacturer inboard	BURGMANN
Determined pressure Seal chamber	1.66 bar.r	Mechanical seal type inboard	EMG13G6
		Material Shaft seal inboard	Q7Q7EGG-Y10 DW001

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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 Static seal Volute casing (400.10)	DPAF DW001		
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		
Material Volute casing foot	ST+PAINTED		
Material Support foot	WITHOUT		

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Driver

Electric motor	Yes	Rated speed Motor	2,910 1/min
Drive concept	Electric actuator	Number of motor poles	2
Drive standard, mechanical	IEC	Rated power Motor	3 kW
Drive standard electric	IEC	Motor power reserve determined	19.2 %
Motor bearing, insulated	No	Rated voltage Motor	400 V
Motor manufacturer	KSB's choice	Motor winding	400 / 690 V
Customer supply Drive	No	Rated frequency Motor	50Hz
Motor construction type	IM V1 (IM3011) IEC 60034-7	Motor switching type	Delta
Motor size	100L	Rated current Motor	5.9 A
Efficiency class	IE3 (Premium)	Starting current ratio Ia/In	8.9
Material motor housing	AL	Cos phi at 4/4 load	0.84
Enclosure Motor	IP55 (TEFC)	Motor efficiency at 4/4 load	87.1 %
Enclosure Unit	Without	Limit value Maximum humidity Motor	30 g/m³
Thermal class	155 (F) according to IEC 60085	Marking according to directive Drive	CE
Temperature sensor motor	3 PTC thermistors		
Terminal box position of motor (looking at the motor shaft)	360 °		
Operation on a frequency inverter permitted	Yes (acc to motor manufact)		
Sound pressure level Motor	70 dBa		
Type series Motor manufacturer	Acc. to motor manufacturer (IEC, IE3)		

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



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Energy cost and Environmental Impact

Result

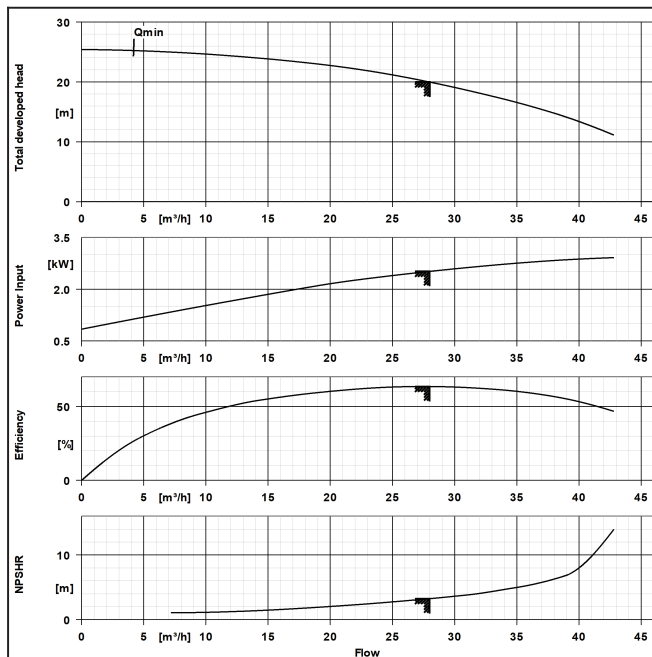
Estimated Product Carbon Footprint (cradle-to-gate) (CO₂eq) 294 kg
*

This PCF indication is based on the product mass assuming the typical shares 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).

Packaging

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

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Design data pump

Pump standard	EN 733
Pump design	Close-coupled
Nominal diameter Suction nozzle	DN 40
Suction nozzle design acc.to	EN1092-2
Suction flange bolt hole pattern as per standard	EN1092-2
Nominal diameter Discharge nozzle	DN 40
Discharge nozzle design acc.to	EN1092-2
Discharge flange bolt hole pattern as per standard	EN1092-2
Nominal pressure Suction nozzle	PN 16
Nominal pressure Discharge nozzle	PN 16
Shaft/Stem seal	Inboard single mechanical seal
Material Shaft seal inboard	Q7Q7EGG-Y10 DW001
Shaft seal code	Code 66
Hydraulic impeller diameter	137.5 mm
Free passage	5.8 mm
Colour Top coat	RAL5002 Ultramarine Blue

Materials

Material Volute casing	EN-GJL-250/A48 CL 35B
Material Casing cover	EN-GJL-250/A48 CL 35B
Material Support foot	WITHOUT
Material Shaft	C45+N
Material Impeller	EN-GJL-250/A48 CL 35B

Dimensioning operating point

Fluid	Antifreeze on ethylene glycol base, inhibited, closed system, e.g. Antifrogen N or similar products
Fluid variant	Concentration 30% 50295
Specified ambient temperature	20 °C
Specified fluid temperature	-1 °C
Flow rate	28 m³/h
Head	20 m
Efficiency Pump	63.4 %
Minimum efficiency index MEI	0.7
Maximum power input at duty point	2.517 kW

Pump speed	2,926 1/min
Pump system design	Single-pump system
NPSH required	3.25 m

Driver

Drive concept	Electric actuator
Drive standard, mechanical	IEC
Drive standard electric	IEC
Efficiency class	IE3 (Premium)
Rated speed Motor	2,910 1/min
Rated frequency Motor	50Hz
Rated voltage Motor	400 V
Motor power reserve determined	19.2 %



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	Rated current Motor	5.9 A
	Starting current ratio Ia/In	8.9
	Thermal class	155 (F) according to IEC 60085
	Enclosure Motor	IP55 (TEFC)
	Temperature sensor motor	3 PTC thermistors
	Mains voltage	400 V
	Motor switching type	Delta
	Operation on a frequency inverter permitted	Yes (acc to motor manufact)
	Sound pressure level Motor	70 dBa
	Terminal box position of motor (looking at the motor shaft)	360 °
	Colour Top coat Drive	RAL5002 Ultramarine Blue

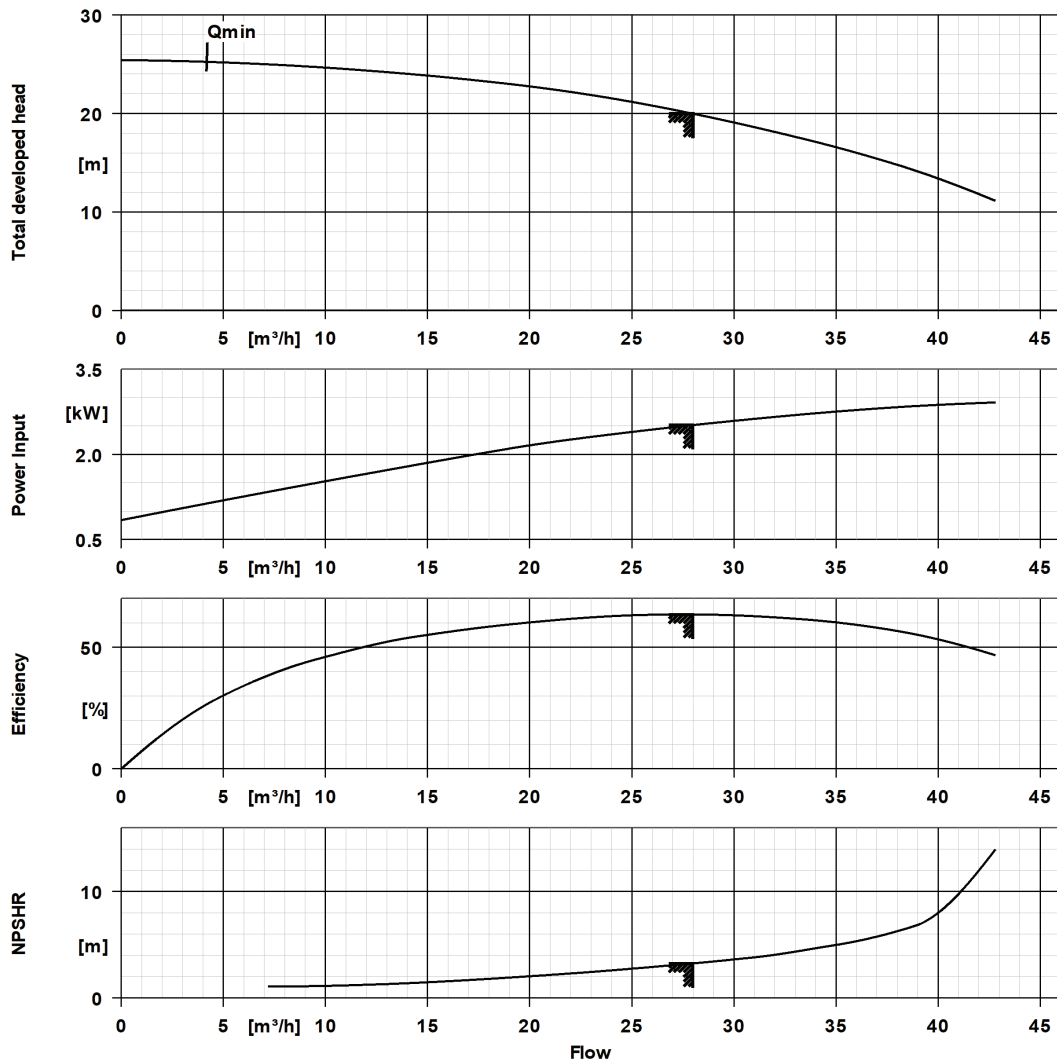
Performance Curve (Pump)



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Curve Data

Pump speed	2,926 1/min	Efficiency Pump	63.4 %
Density Fluid handled	1,048 kg/m³	Minimum efficiency index MEI	0.7
Kinematic viscosity Fluid handled	4.57 mm²/s	Maximum power input at duty point	2.52 kW
Flow rate	28 m³/h	NPSH required	3.25 m
Head	20 m	Hydraulic impeller diameter	137.5 mm
		Hydraulic calculation according to standard/class	EN ISO 9906 Class 3B

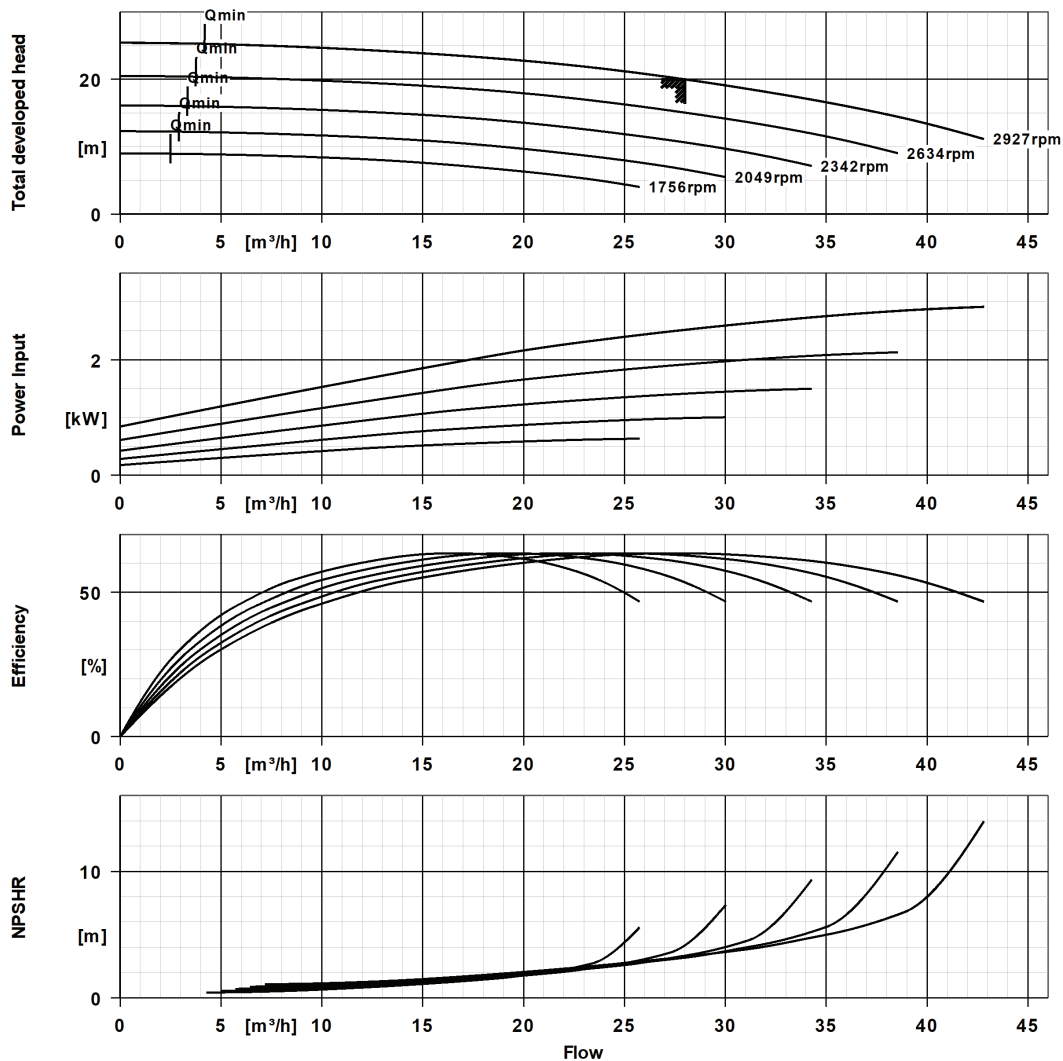
Speed Curve



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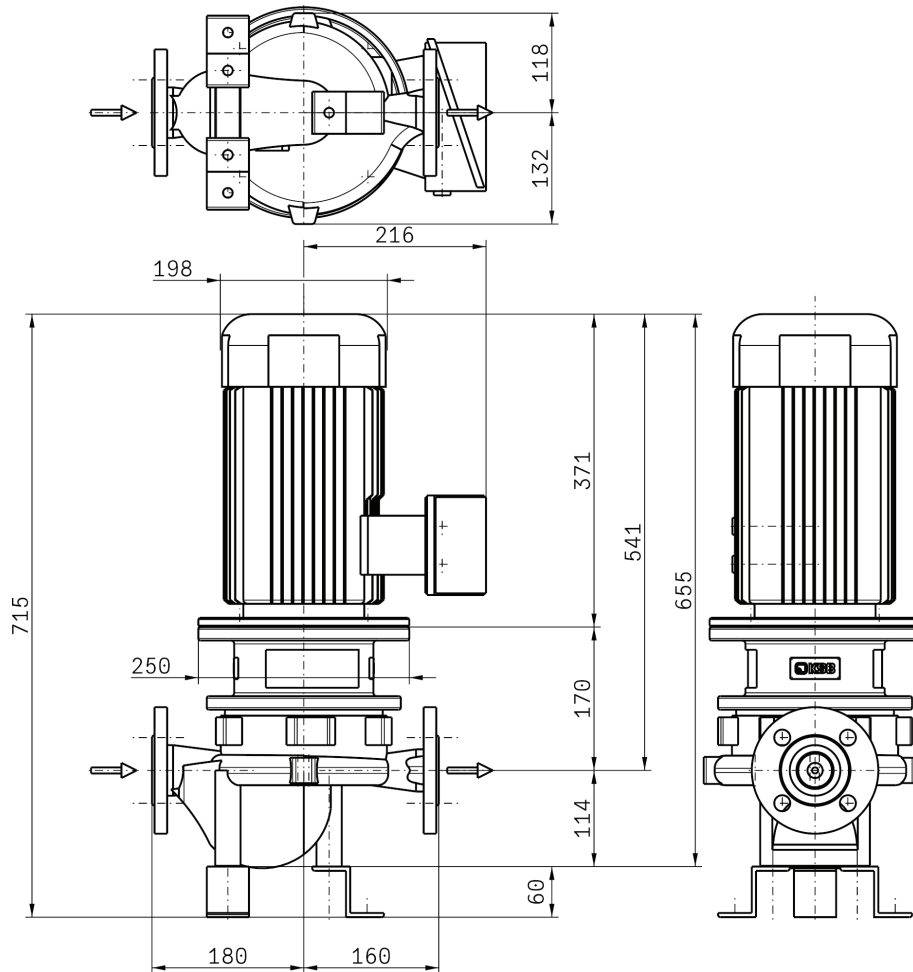


Curve Data

Density Fluid handled	1,048 kg/m^3	Minimum efficiency index MEI	0.7
Kinematic viscosity Fluid handled	4.57 mm^2/s	Hydraulic impeller diameter	137.5 mm
Flow rate	27.99 m^3/h	Head	19.98 m

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Drawing is not to scale.

Dimensions are given in mm

Motor

Electric motor	Yes
Motor manufacturer	KSB's choice
Motor size	100L
Rated power Motor	3 kW
Number of motor poles	2
Rated speed Motor	2,910 1/min
Terminal box position of motor (looking at the motor shaft)	360 °

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



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Net weight

Total weight Pump	28.32 kg
Total weight Drive	29 kg
Total weight Pump set	57.32 kg
Total weight Assembly/transport aids	2.42 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