Pump Station

CK 800-EU Pump Station

Type Series Booklet

Legal information/Copyright

Type Series Booklet CK 800-EU Pump Station

Contents

Building Services: Drainage

Package Pump Stations

CK 800-EU Pump Station

Main applications

- Waste water disposal
- Drainage of buildings, drainage of premises
- Redevelopment of premises
- Pumped drainage

Fluids handled

- Waste water with/without faeces
- Grey water
- Rainwater (not containing abrasive substances)

When pumping faeces observe the explosion protection regulations.

Operating data

Operating properties

Characteristic		Value
Flow rate	Q [m³/h]	≤ 22
	Q [l/s]	≤ 6,1
Head	H [m]	≤ 49
Fluid temperature	T [°C]	≤ +40
Motor rating	P_N [kW]	≤ 4,2

Design details

Design

- Ready-to-connect single-pump station or dual-pump station
- 1 or 2 submersible motor pumps
- Compact design
- Package pump station designed to DIN 1986-100 and EN 752 / EN 476 / EN 1671
- Polyethylene collecting tank
- Automatic above-water coupling system made of stainless steel
- Stainless steel piping
- Integrated angle ball valve with connection for flushing option and socket ball valve made of stainless steel

Installation

- Underfloor (buried) installation

Impeller type

- Cutter

2334.543/13-EN

Designation

Example: Pump Station CK 800 E NS 32-1 -EU

Designation key

Code	Description	
CK	Package pump station with plastic collecting tank	
800	Tank diameter [mm]	
E	Station type	
	E	Single-pump station
	D	Dual-pump station
NS / PS	Pump with cutter	
32	Pump size DN	
	32	DN 32
	50	DN 50
	545	DN 50
-1	Impeller code	
EU	Design EU = design for Europe	

Example: LevelControl BC1 400 DPNO 040 control unit

Designation key

Code	Description	
LevelControl	Type series	
BC	Type	
	BC	Basic Compact (plastic housing)
	BS	Basic control cabinet (sheet steel housing)
1	Number of pumps	
	1	Single-pump station
	2	Dual-pump station
400	Voltage, number of wires	
	400	400 V, 4-wire connection / 5-wire connection
D	Starting method	
	D	DOL starting
P	Sensors	
	P	Pneumatic level measurement 3 m
	L	Bubbler control 2 m
N	ATEX	
	N	Without ATEX functions
	E	With ATEX functions
O	Installation variants	
	O	Standard
040	Nominal current	
	040	4,0 A
	063	6,3 A
	100	10 A

2334.543/13-EN

Configuration and function

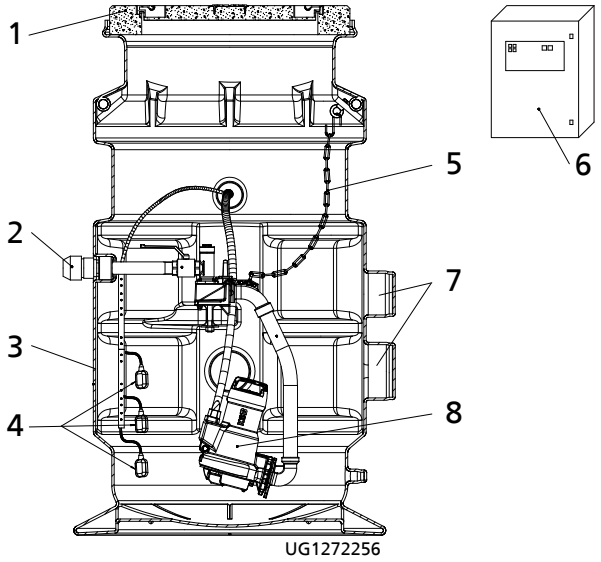


Fig. 1: Sectional drawing

1	Tank cover	2	Discharge line connection
3	Collecting tank	4	Sensors
5	Chain(s)	6	Control unit
7	Connection nozzle	8	Submersible motor pump(s)

Pump station

Ready-to-connect package single-pump or dual-pump station with polyethylene collecting tank for buried installation. With one or, for dual-pump stations, with two powerful submersible waste water pumps with cutter.

Tank design to DIN 1986-100 and EN 752/EN 476/EN 1671 and EN 12050-1. Complete discharge line, automatic above-water coupling system, integrated angle ball valve with connection for flushing option, and socket ball valve. Coupling, piping and valves made of stainless steel.
Groundwater-proof collecting tank made of polyethylene, protected against hydrostatic uplift, designed to prevent deposits and equipped with integral external transport lugs. The collecting tank meets the requirements of load class B when the respective tank cover is used.

Collecting tank

Collecting tank with tank extension option.

Telescopic tank extensions made of polyethylene enable flexible height adjustment to the surrounding terrain or traffic areas of load classes A and B.
For pump stations with class D tank covers, the height can generally be flexibly adjusted by means of the required telescopic extension with plate. Protection of the collecting tank including the tank extension against hydrostatic uplift has been tested and confirmed by an independent expert (LGA tested).

Tank diameter	800 mm
Tank depth	1820 mm, with tank extension up to 2700 mm
Inlet	3 connection nozzles DN 150 1 connection nozzle DN 200, closed and at different heights
Discharge outlet	DN 32 single-pump station DN 40 dual-pump station For clamped connections as per selection
Venting and cable entry	2 DN 100 connection nozzles, closed (opposite each other)
Emergency drainage	1 DN 40 connection nozzle, closed

Cross-beam

Cross beam and automatic above-water coupling for either one or two pumps with fully mounted discharge line, one or two integrated, vertically closing angle ball check valves, with inspection hole and connection for flushing option, one socket ball valve, elastic discharge line penetration sealed by two ring-shaped discs compressing a rubber element.

Pumps

One or two submersible motor pump/s with cutter.
Off-the-shelf range
including submersible waste water pumps Ama-Porter S 545 ND, Amarex N S 32 or Amarex N S 50 without explosion protection.
Configurable range
including submersible waste water pumps Ama-Porter SB 545 NE, Ama-Porter S 545 ND, Amarex N S 32 or Amarex N S 50 without explosion protection.

Tank cover

Tank cover without ventilation to EN 124/ DIN 1229.
Off-the-shelf range
Class A 15 - tread-proof (for pedestrians and cyclists)
Configurable range
Class A 15 - tread-proof (for pedestrians and cyclists)
Class B 125 - for car parks and driveways
Class D 400 - for roads and paved driveways; class D requires a load distribution plate and telescopic extension with plate.

Switchgear / control units

MSE/MSD for single-pump station, 16 A back-up fuse required at site.
Rated voltage 1/N/PE AC 230 V, 50 Hz or 3/N/PE AC 400 V, 50 Hz
Control voltage AC 230 V
DOL starting
The level is controlled via float switches depending on the water level.

LevelControl Basic 2 type BC1 / BS1 for single-pump station or LevelControl Basic 2 type BC2 / BS2 for dual-pump station with automatic alternate, stand-by and peak-load operation with motor protection switch.
Rated voltage 230 V, 3 wires (L1, N, PE)
Rated voltage 400 V, 4 or 5 wires (L1, L2, L3, (N), PE)
Control voltage 24 V DC
DOL starting
The water level is controlled using float switches (F), the pneumatic method (P) or a bubbler system (L).

Install all control units and alarm switchgear in a flood-proof location inside a ventilated room. They are not explosion-proof and therefore must only be operated outside potentially explosive atmospheres.

Function

The fluid enters the collecting tank (3) via one of the four inlets (7). The fluid is collected in the collecting tank until it reaches a pre-set level. When this level is reached, the sensor system (4) signals this event to the control unit / switchgear (6), which starts up the submersible motor pump(s) (8). The submersible motor pump(s) transport the fluid through the discharge line connection (2) to the public sewer.

2334.543/13-EN

Materials

Overview of available materials

Part No.	Description	Material
591	Collecting tank	Polyethylene
57-3	Cross beam with coupling component	Polyurethane
700	Discharge pipe with coupling	Stainless steel
741	Angle ball check valve	Stainless steel
743	Socket ball valve	Stainless steel
71-9, 720	Discharge line	Stainless steel

Product benefits

- Low weight pump station, ready to connect, minimal installation work
- Installation depths of up to 2700 mm, with anti-lift protection
- Variable pipe connections
- Either pneumatic level control (without compressor) or bubbler control using LevelControl Basic 2 control unit

Product information

Product information as per Regulation No. 1907/2006 (REACH)

For information as per chemicals Regulation (EC) No. 1907/2006 (REACH), see http://www.ksb.com/reach.

Certifications

Overview

Label	Effective in:
TÜVRheinland ZERTIFIZIERT Bauart geprüft und überwacht www.tuv.com ID 0217007934	Europe

Selection information

Lightning protection

- Electrical installations must be protected against overvoltage (compulsory since 14 December 2018) (see DIN VDE 0100-443 (IEC60364-4-44:2007/A1:2015, modified) and DIN VDE 0100-534 (IEC 60364-5-53:2001/A2:2015, modified). Whenever modifications are made to existing installations, retrofitting a surge protective device (SPD) in accordance with VDE is mandatory.
- A maximum cable length of 10 metres should not be exceeded between the surge protective device (usually type 1, internal lightning protection) installed at the service entrance and the equipment to be protected. For longer cables, additional surge protective devices (type 2) must be provided in the sub-distribution board upstream of the equipment to be protected or directly in the equipment itself.
- Sensor cables that cross the boundaries between lightning protection zones must be additionally protected by suitable surge protective devices (e.g. when using a 4 - 20 mA immersion probe).
- Control units installed outdoors (e.g. in outdoor cabinets) should always be equipped with Type 1 surge protective devices (lightning protection), as they will not normally be protected by a suitable upstream service entrance SPD.
- The associated lightning protection concept must be provided by the operator or by a suitable provider commissioned by the operator. Surge protective devices can be found in the accessories range as optional control unit components.

2334.543/13-EN

Overview of product features / selection tables

Features per range

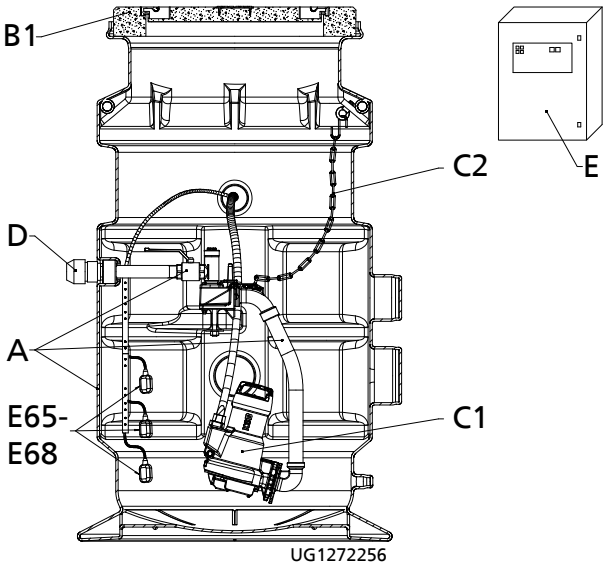


Fig. 2: Illustration of the pump station

Symbols key

Symbol	Description
●	Off-the-shelf range: ready-to-connect pump station
○	Configurable range: individually selected components
-	Not available/not feasible

Pump station components

Components		Features per range	
A	**Collecting tank** Above-water coupling with integrated angle ball valve, socket ball valve and discharge line	●	○
B1	**Tank cover with frame**		
	Class A 15, test force 15 kN (1.5 tonnes)	●	○
	Class B 125, test force 125 kN (12.5 tonnes)	-	○
	Class D 400, test force 400 kN (40 tonnes)[1)]	-	○
C1	**Submersible motor pumps with cutter**		
	Amarex N S without explosion protection	●	○
	Ama-Porter S without explosion protection	●	○
C2	**Chain length per pump**		
	2 m	●	○
D	**Clamped discharge line connection**	○	○
E	**Control unit / switchgear (float switch)**		
	MSE/MSD without explosion protection	●	○
	LevelControl Basic 2 without explosion protection	●	○
	Control unit (pneumatic control)		
	LevelControl Basic 2 without explosion protection	-	○
	Control unit (bubbler control)		
	LevelControl Basic 2 without explosion protection	-	○
	Control unit		
	LevelControl Basic 2 with supplementary equipment	-	○
E65 - E68	**Sensors**		
	Float switch set	●	○
	Open pressure bell set	●	○
	Closed pressure bell set	-	○

1) Load distribution plate and height extension required in addition.

2334.543/13-EN

System overview: off-the-shelf-range

Selection table

Size	Collecting tank	Submersible motor pump	Switchgear / control unit	Complete pump station
	Mat. No.	Mat. No.	Mat. No.	[kg]
Single-pump stations				
CK 800 E PS 50-1 EU	29130862	39017859	19070117	195
CK 800 E NS 32-1 EU	29130862	39190481	19070116	199
CK 800 E NS 50-1 Eu	29130862	39100017	19070116	211
CK 800 E NS 50-2 EU	29130862	39100019	19070116	211
CK 800 E NS 50-3 Eu	29130862	39100021	19070117	211
CK 800 E NS 50-4 EU	29130862	39100041	19070118	226
CK 800 E NS 50-5 EU	29130862	39100043	19070119	226
Dual-pump stations				
CK 800 D PS 50-1 EU	29130863	39017859 (2x)	19073778	233
CK 800 D NS 32-1 EU	29130863	39190481 (2x)	19073777	241
CK 800 D NS 50-1 EU	29130863	39100017 (2x)	19073777	263
CK 800 D NS 50-2 EU	29130863	39100019 (2x)	19073777	263
CK 800 D NS 50-3 EU	29130863	39100021 (2x)	19073778	263
CK 800 D NS 50-4 EU	29130863	39100041 (2x)	19073779	293
CK 800 D NS 50-5 EU	29130863	39100043 (2x)	19073779	293

The scope of supply includes all switchgear and control units required for pump operation, as well as alarm equipment.

Scope of supply

Scope of supply		Single-pump station	Dual-pump station
A 	Collecting tank Above-water coupling with integrated angle ball valve, socket ball valve and discharge line	Discharge outlet DN 32 (1 $^{1}/_{4}$)	Discharge outlet DN 40 (1 $^{1}/_{2}$)
B1 	Tank cover	Ø 600 mm, class A	Ø 600 mm, class A
C1 	Ama-Porter S 545 ND or Amarex N S 32/50 submersible motor pumps	1 pump	2 pumps
C2 	Chain (2 m) and shackle	1× (stainless steel)	2× (stainless steel)
E	Switchgear/control unit / Alarm equipment	MSD ... 1 AS 0 alarm switchgear (included in item A)	BC2 400 DFNO ... Switchgear/control unit with alarm equipment (buzzer)
E68	Float switch (10-metre power cable)	1× ON/OFF 1× Alarm	2× ON/OFF 1× Alarm
D 	Clamped discharge line connection	Selection as per the following table	

The pump station is supplied in three parts and must be assembled on site:

- 1 pallet with collecting tank incl. fitted cross-beam, valves and pipe
- 1 pallet with tank cover and seating ring, connection set (comprising discharge pipe with coupling, installation accessories, discharge line connection), 1 cardboard box with alarm switchgear
- 1 pallet with outdoor cabinet (optional)

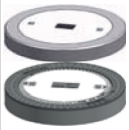
Selection table for the discharge line connection

Nominal size	Single-pump station	Dual-pump station	Dimensions	Discharge pipe	Mat. No.	[kg]
DN 32	✗	-	Rp 1 1/4 × 40	PE-HD 40	01147343	0,162
DN 40	✗	-	Rp 1 1/4 x 50	PE-HD 50	01155617	0,304
DN 50	✗	-	Rp 1 1/4 x 63	PE-HD 63	01155618	0,488
DN 40	-	✗	Rp 1 1/2 × 50	PE-HD 50	01052682	0,293
DN 50	-	✗	Rp 1 1/2 x 63	PE-HD 63	01155619	0,494

2334.543/13-EN

System overview: configurable range

Selection table

Item	Description	Mat. No.	[kg]
A	**Collecting tank**		
	CK 800 E single-pump station DN 32 (1 1/4)	19074284	70
	CK 800 D dual-pump station DN 40 (1 1/2)	19074285	80
B1	**Tank cover with frame**		
	Tank cover with frame Ø 600 mm A 15 (tread-proof), without ventilation to EN 124/ DIN 1229	19071423	92
	Tank cover with frame, Ø 600 mm, B 125 (tread-proof), without ventilation to EN 124/ DIN 1229	19074281	125
B2	**Tank cover with frame and telescopic extension with plate**		
	Tank cover with frame, load distribution plate and telescopic extension with plate Class D 400 with 600 mm tank extension	19074282	350
B3	Tank cover with frame, load distribution plate and telescopic extension with plate Class D 400 with 1200 mm tank extension	19074283	360
			
C1	**Submersible motor pump DN 32/50**		
	Amarex N S 32 with/without explosion protection Amarex N S 50 with/without explosion protection Ama-Porter S 545 without explosion protection Cable length 10 m, optionally 20 m	Technical data see Type Series Booklet Amarex N S/ Ama-Porter	
C2	**Chain**		
	Stainless steel chain, 2 m, short-linked, tested and duly labelled to Directive 2006/42/EC (Machinery Directive), 3 suspension elements for installation depths <= 2.28 m	01236267	0,9
	Stainless steel chain, 3 m, short-linked, tested and duly labelled to Directive 2006/42/EC (Machinery Directive), 4 suspension elements for installation depths > 2.28 m	01236268	1,089
	Stainless steel chain, 5 m, short-linked, tested and duly labelled to Directive 2006/42/EC (Machinery Directive), 6 suspension elements for all installation depths	01236269	1,688
C3 -	Polypropylene lifting rope, 5 metres, with shackle 1.4401 and hook 1.4571 per pump (for Amarex N S DN 32/50 and Ama-Porter S 5..)	39021975	2,5
D	**Discharge line connection including clamped connection for CK 800 E single-pump station**		
	DN 32 / Rp 1 1/4, PE-HD 40	01147343	0,162
	DN 40 / Rp 1 1/4, PE-HD 50	01155617	0,304
	DN 50 / Rp 1 1/4, PE-HD 63	01155618	0,488
	Discharge line connection including clamped connection for CK 800 D dual-pump station		
	DN 40 / Rp 1 1/2, PE-HD 50	01052682	0,293
	DN 50 / Rp 1 1/2, PE-HD 63	01155619	0,494
E -	**Switchgear / control unit**		
	Explosion-proof switchgear / control units	-	-
	Non-explosionproof switchgear / control units	-	-
	Electrical accessories and sensors	-	-
	Supplementary equipment can be added to extend the basic functions of switchgear / control units.		

Technical data

CK 800-EU - Ama-Porter / Amarex N - off-the-shelf range

Pumps with cutter, without explosion protection, 3~400 V

Pump	Single-pump station	Dual-pump station	Collecting tank	Submersible motor pump	Switchgear / control unit	[kg]
			A+B1+C2+E68[2)]	C1[2)]	E[2)]	
			Mat. No.	Mat. No.	Mat. No.	
Ama-Porter S 545 ND, without explosion protection						
S 545 ND	CK 800 E PS 50-1 EU	-	29130862	39017859	19070117	195
	-	CK 800 D PS 50-1 EU	29130863	39017859 (2x)	19073778	233
Amarex N S 32-160/..., without explosion protection						
002 ULG-160	CK 800 E NS 32-1 EU	-	29130862	39190481	19070116	199
	-	CK 800 D NS 32-1 EU	29130863	39190481 (2x)	19073777	241
Amarex N S 50-172/..., without explosion protection						
002 ULG-120	CK 800 E NS 50-1 EU	-	29130862	39100017	19070116	211
	-	CK 800 D NS 50-1 EU	29130863	39100017 (2x)	19073777	263
002 ULG-140	CK 800 E NS 50-2 EU	-	29130862	39100019	19070116	211
	-	CK 800 D NS 50-2 EU	29130863	39100019 (2x)	19073777	263
012 ULG-160	CK 800 E NS 50-3 EU	-	29130862	39100021	19070117	211
	-	CK 800 D NS 50-3 EU	29130863	39100021 (2x)	19073778	263
Amarex N S 50-222/..., without explosion protection						
032 ULG-175	CK 800 E NS 50-4 EU	-	29130862	39100041	19070118	226
	-	CK 800 D NS 50-4 EU	29130863	39100041 (2x)	19073779	293
042 ULG-190	CK 800 E NS 50-5 EU	-	29130862	39100043	19070119	226
	-	CK 800 D NS 50-5 EU	29130863	39100043 (2x)	19073779	293

CK 800-EU - Amarex N - configurable range

Amarex N with cutter, with and without explosion protection, 3~400 V

Amarex N Submersible motor pump	P_1	P_2	I_n	Single-pump station		Dual-pump station	
	[kW]	[kW]	[A]	Collecting tank with DN 32 discharge outlet	Switchgear MSD 040/063/080/100 optionally BC1 400 DF ... with float switch or pneumatic control: BC1 400 DP ...	Collecting tank with DN 40 discharge outlet	Switchgear / control unit BC2 400 DF ... with float switch or pneumatic control: BC2 400 DP ...
Amarex N S 32-160/... without explosion protection							
Amarex N S 32-160/002 ULG-160	2,05	1,5	3,4	CK-E	...NO 040	CK-D	...NO 040
Amarex N S 50-172/... without explosion protection							
Amarex N S 50-172/002 ULG-120	1,75	1,3	3,56	CK-E	...NO 040	CK-D	...NO 040
Amarex N S 50-172/002 ULG-140	1,75	1,3	3,56	CK-E	...NO 040	CK-D	...NO 040
Amarex N S 50-172/012 ULG-160	2,6	1,9	4,5	CK-E	...NO 063	CK-D	...NO 063
Amarex N S 50-222/... without explosion protection							
Amarex N S 50-222/032 ULG-175	4,0	3,1	7,0	CK-E	...NO 100	CK-D	...NO 100
Amarex N S 50-222/042 ULG-190	5,3	4,2	8,8	CK-E	...NO 100	CK-D	...NO 100

2334.543/13-EN

2) For a key see scope of supply, off-the-shelf range

CK 800 EU - Ama-Porter S - configurable range

Ama-Porter with cutter, without explosion protection, 1~230 V, 3~400 V

Ama-Porter Submersible motor pump	P_1	P_2	I_n	Single-pump station		Dual-pump station	
	[kW]	[kW]	[A]	Collecting tank with DN 32 discharge outlet	Switchgear / control unit Ama-Porter NE MSE 100.1 optionally: BC1 230 DF ... with float switch or pneumatic control: BC1 230 DP ... Switchgear / control unit Ama-Porter ND MSD 60.1 optionally: BC1 400 DF ... with float switch or pneumatic control: BC1 400 DP ...	Collecting tank with DN 40 discharge outlet	Switchgear / control unit Ama-Porter NE BC2 230 DF ... with float switch or pneumatic control: BC2 230 DP ... Switchgear / control unit Ama-Porter ND BC2 400 DF ... with float switch or pneumatic control: BC2 400 DP ...
Ama-Porter SB 545 NE without explosion protection							
Ama-Porter SB 545 NE	1,8	1,1	8,2	CK-E	...NO 100	CK-D	...NO 100
Ama-Porter S 545 ND without explosion protection							
Ama-Porter S 545 ND	2,05	1,5	3,5	CK-E	...NO 063	CK-D	...NO 063

2334.543/13-EN

Characteristic curves

CK 800 pump station, Amarex NS 32-160, n = 2900 rpm, S impeller

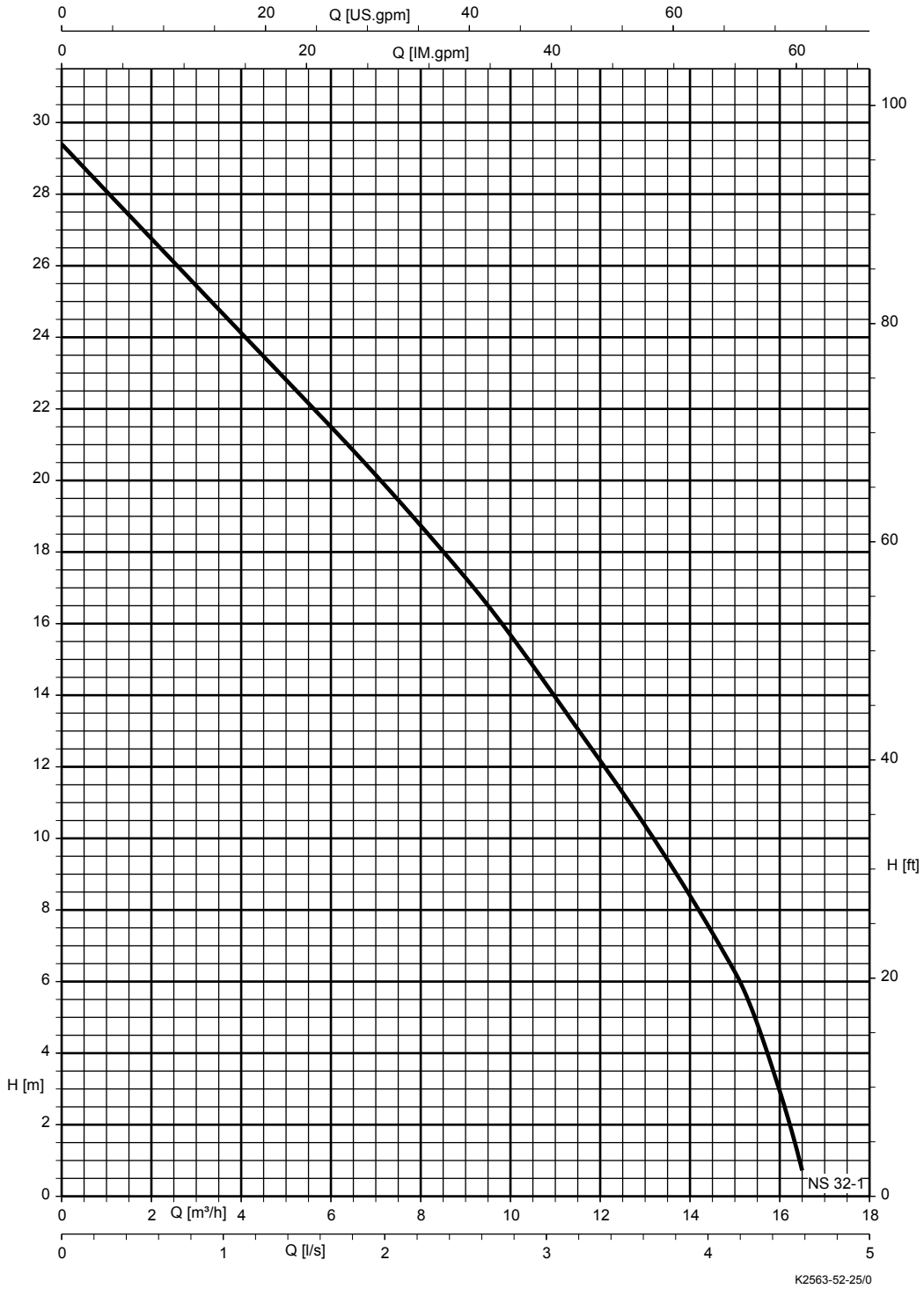


Fig. 3: Free passage = 6 mm:
NS 32-1 = Amarex N S 32-160

2334.543/13-EN

CK 800 pump station, Amarex NS 50-172, 50-222, n = 2900 rpm, S impeller

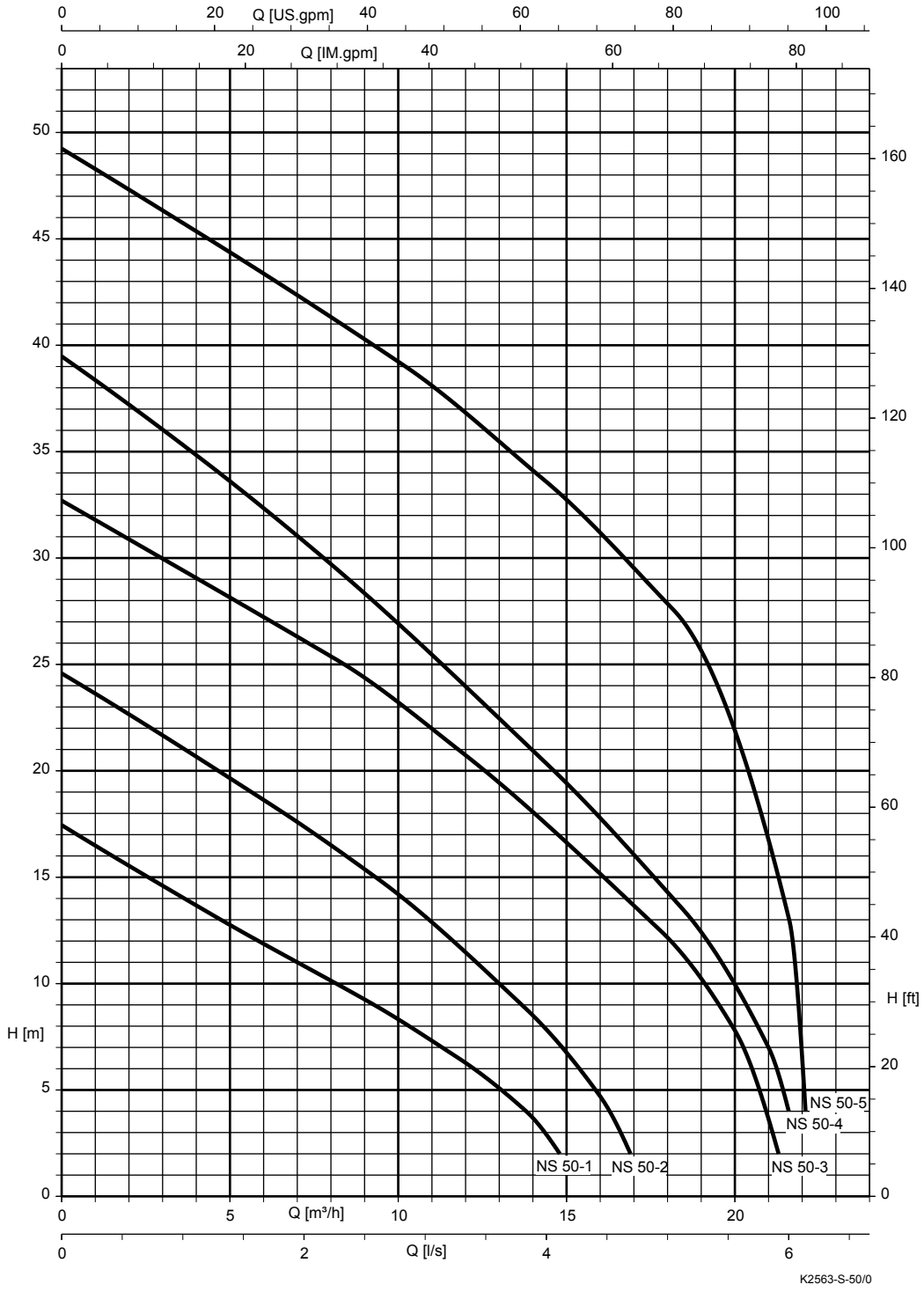


Fig. 4: Free passage = 6 mm:
NS 50-1 = Amarex N S 50-172/…-120
NS 50-2 = Amarex N S 50-172/…-140
NS 50-3 = Amarex N S 50-172/…-160
NS 50-4 = Amarex N S 50-222/…-175
NS 50-5 = Amarex N S 50-222/…-190

2334.543/13-EN

CK 800 pump station, Ama-Porter SB 545 NE, n = 2900 rpm

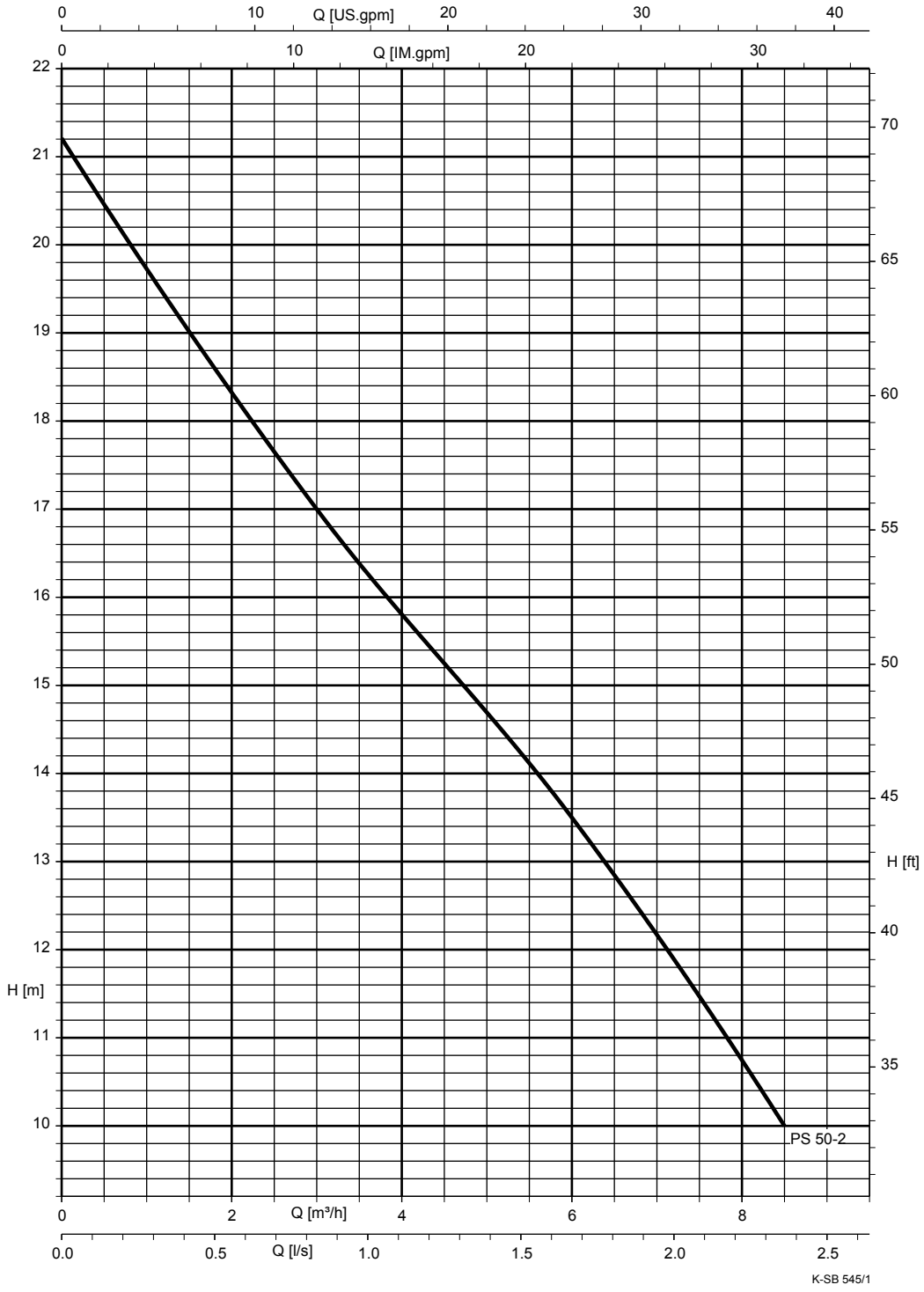


Fig. 5: Free passage = 7 mm:
PS 50-2 = Ama-Porter SB 545 NE

2334.543/13-EN

CK 800 pump station, Ama-Porter S 545 ND, n = 2900 rpm

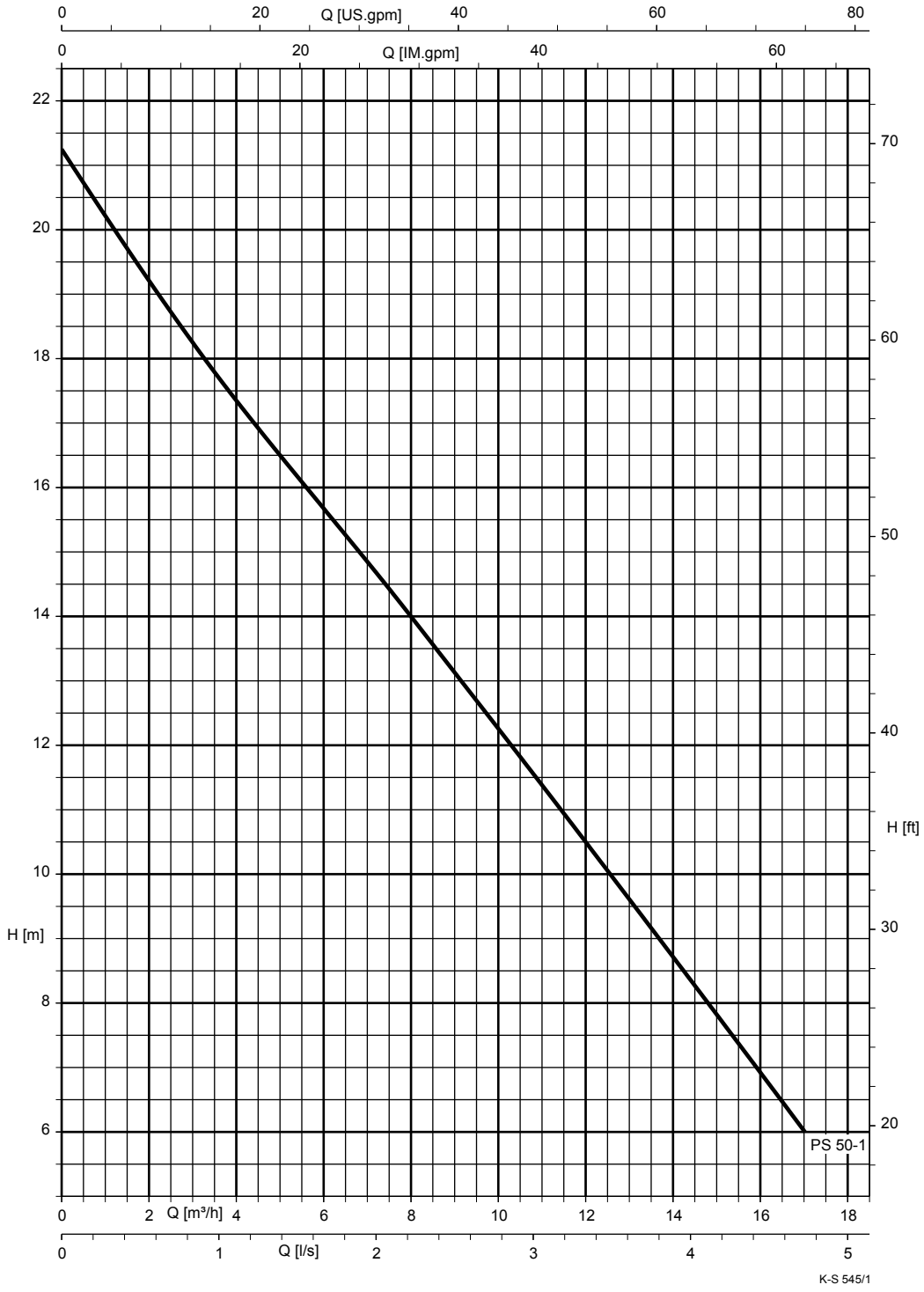


Fig. 6: Free passage = 7 mm:
PS 50-1 = Ama-Porter S 545 ND

Dimensions and connections

Tank dimensions

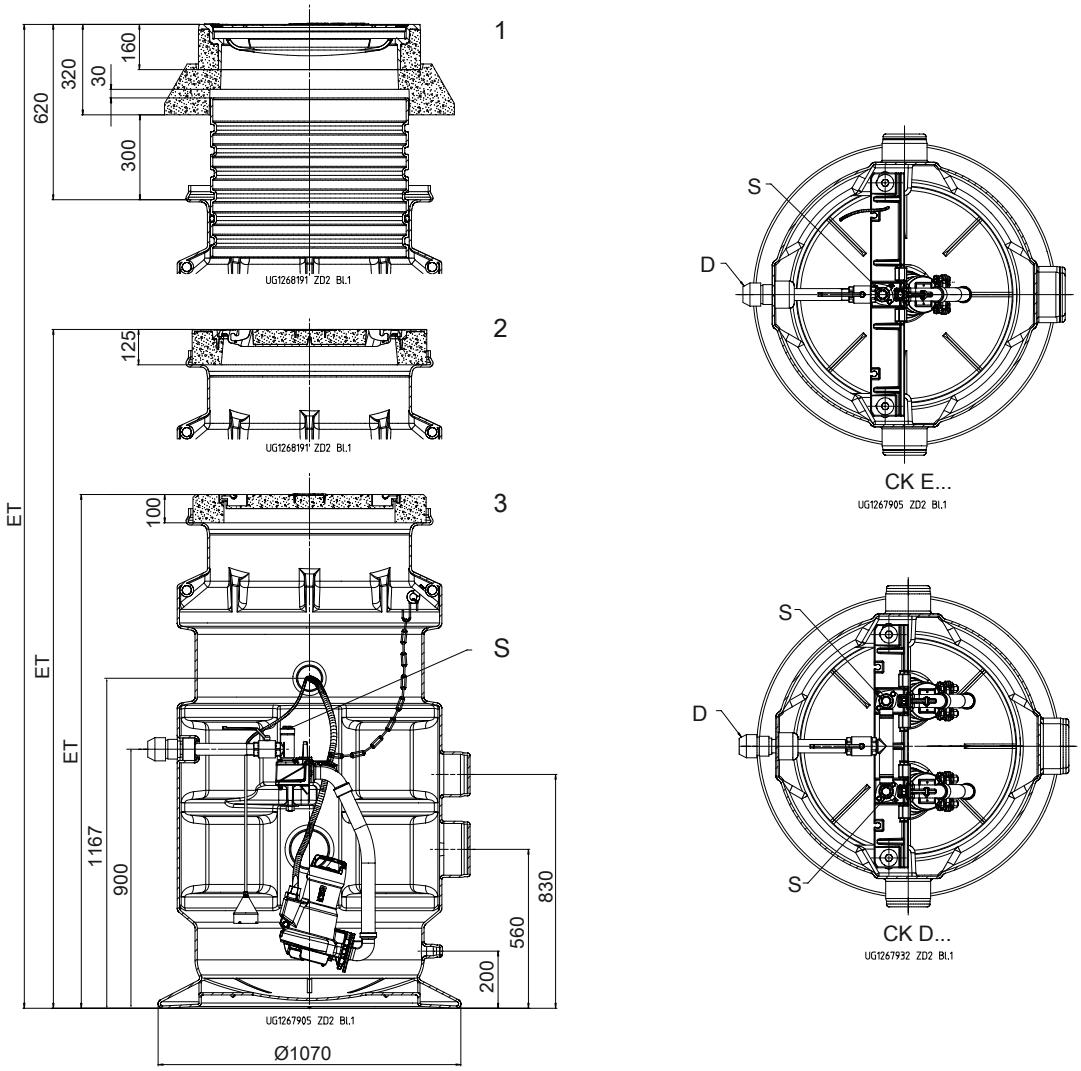


Fig. 7: Tank dimensions

1	Class D 400 cover
2	Class B 125 cover
3	Class A 15 cover
D	Clamped discharge line connection
ET	Installation depth (⇨ Page 20)
S	Flushing connection and vacuum breaker

2334.543/13-EN

Connections

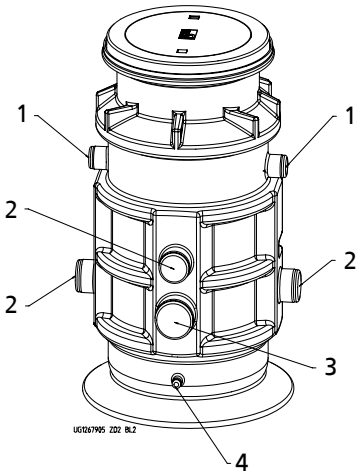


Fig. 8: Illustration of nozzles

1	Nozzles for venting and cable entry (DN 100)
2	Inlet nozzles (DN 150)
3	Inlet nozzles (DN 200)
4	Connection for emergency drainage (DN 40)

Connection for single-pump station and dual-pump station

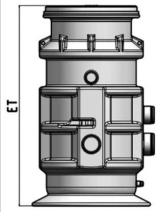
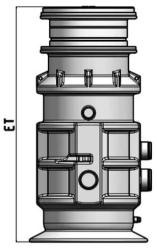
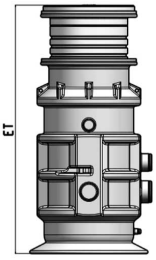
Piping	Flushing connection S	Discharge line connection D
CK 800 E single-pump station		
DN 32	Rp 1 $^{1}/_{4}$	PE-HD 40
DN 40	Rp 1 $^{1}/_{4}$	PE-HD 50
DN 50	Rp 1 $^{1}/_{4}$	PE-HD 63
CK 800 D dual-pump station		
DN 40	Rp 1 $^{1}/_{2}$	PE-HD 50
DN 50	Rp 1 $^{1}/_{2}$	PE-HD 63

2334.543/13-EN

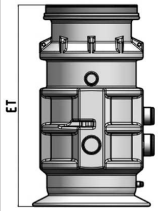
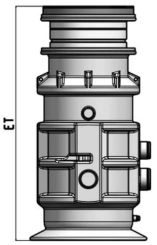
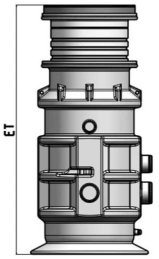
Installation depths

Flexible tank depths thanks to telescopic extension or fitting commercially available height compensation rings

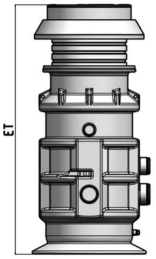
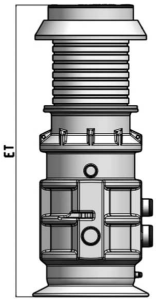
Tank cover load class A 15

CK 800 pump station tank extension		
Base tank A (off-the-shelf range)	+ telescopic extension (configurable range)	
	ZK3.1 H = 600 mm	ZK3.2 H = 1200 mm
		
Installation depths from 1820* to 2120 [mm] * Base tank A with up to three height compensation rings DIN 4034 AR 625 x 100 possible (accessory ZK4)	Installation depths from 2120 to 2250 [mm]	Installation depths from 2250 to 2700 [mm]

Tank cover load class B 125

CK 800 pump station tank extension		
Base tank A (configurable range)	+ telescopic extension (configurable range)	
	ZK3.1 H = 600 mm	ZK3.2 H = 1200 mm
		
Installation depths from 1840* to 2150 [mm] * Base tank A with up to three height compensation rings DIN 4034 AR 625 x 100 possible (accessory ZK4)	Installation depths from 2150 to 2280 [mm]	Installation depths from 2280 to 2700 [mm]

Tank cover load class D 400

CK 800 pump station tank extension		
Base tank A (configurable range)	+ telescopic extension (configurable range)	
	ZK3.1 H = 600 mm	ZK3.2 H = 1200 mm
-		
-	Installation depth 2340 [mm]	Installation depths from 2340 to 2700 [mm]

2334.543/13-EN

Installation information

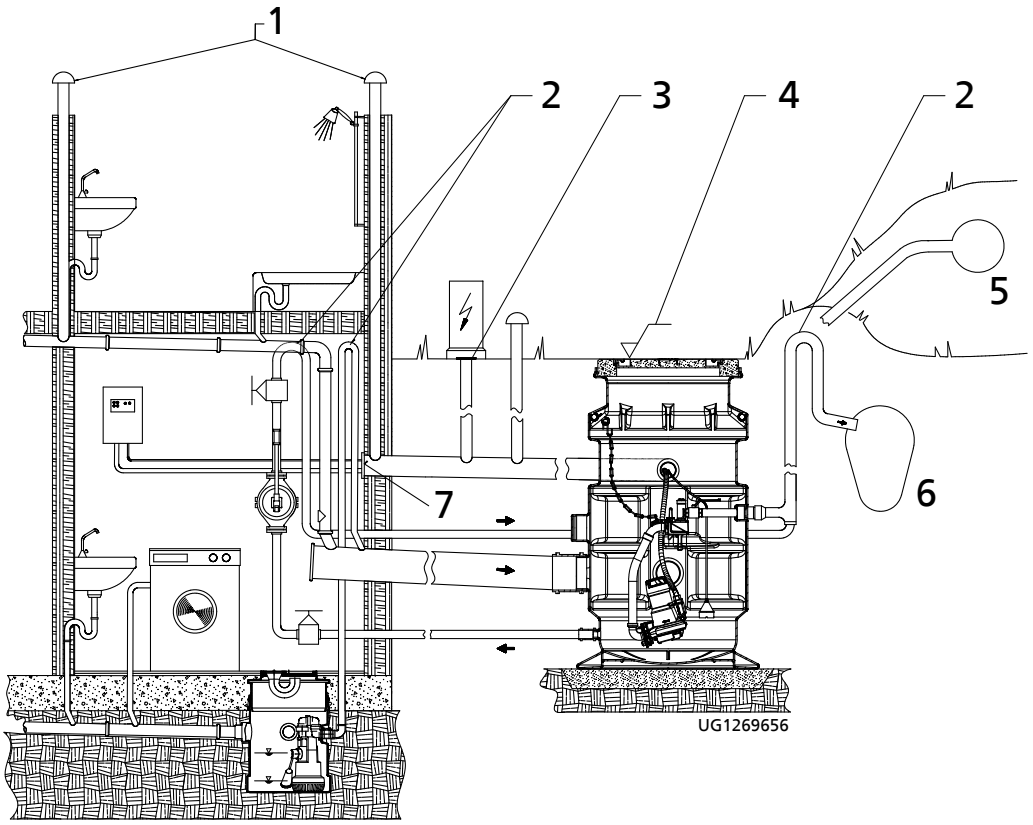


Fig. 9: Installation example

1	Venting out of the roof	5	Collecting discharge line
2	Lay backflow loop with invert level above flood level	6	Gravity sewer
3	Gas-tight seal	7	Socket plug, pressure-proof up to approximately 0.5 bar
4	Flood level		

We recommend the following alternatives to ensure frost-proof laying of the discharge line with backflow loop outside the building:

- Buried in slopes
- Underneath planted mounds
- In a heatable control cabinet for outdoor installation
- In auxiliary buildings

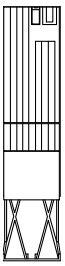
Observe the local regulations as well as DIN 1986-100, EN 476 and EN 742 for the connection.

In areas with high groundwater level or for clay soils, we recommend backfilling the gap around the plastic collecting tank with layers of concrete (min. 1 m³).

Control units

Programme overview of product features of LevelControl Basic 2 control units

Overview of control units

LevelControl BC1 400 DF/DP	LevelControl BC2 400 DF/DP
Standard	**Standard**
Item E14	Item E34
Indoor installation	Indoor installation
Plastic housing, IP54, 400x281x135 mm	Plastic housing, IP54, 400x281x135 mm
Installation of special components not possible	Installation of special components not possible
	
Outdoor installation	
Item OE10	
Outdoor cabinet type 142, IP44  2334:194	
Suitable for buried installation	

LevelControl Basic 2 control units, non-ATEX-compliant

Overview of non-ATEX-compliant control units

Item	Description	Minimum nominal current [A]	Maximum nominal current [A]	Type	Mat. No.	[kg]
Switchgear / control unit for single-pump station						
E14	**Off-the-shelf range**					
	Control unit / switchgear for single-pump station, IP54, with float switch, 3~ 400 V	2,6	3,7	40.1	19070116	1
		3,7	5,5	60.1	19070117	1
		5,5	8,0	80.1	19070118	1
		8,0	11,5	100.1	19070119	1
	**Configurable range**					
	With float switch, 1~230 V	1,0	10,0	100.1	19070140	1
		1	10,0	BC1 230 DFNO 100	19073760	4,5
	With float switch, 3~400 V	2,6	3,7	40.1	19070116	1
		3,7	5,5	60.1	19070117	1
		5,5	8,0	80.1	19070118	1
		8,0	11,5	100.1	19070119	1
		2,5	4,0	BC1 400 DFNO 040	19073763	4,5
		4,0	6,3	BC1 400 DFNO 063	19073764	4,5
		6,3	10,0	BC1 400 DFNO 100	19073765	4,5
	Pneumatic control, 1~230 V	1	10,0	BC1 230 DPNO 100	19073766	4,5
	Pneumatic control, 3~400 V	2,5	4,0	BC1 400 DPNO 040	19073768	4,5
		4,0	6,3	BC1 400 DPNO 063	19073769	4,5
		6,3	10,0	BC1 400 DPNO 100	19073770	4,5
Switchgear / control unit for dual-pump station						
E34	**Off-the-shelf range**					
	Control unit / switchgear for dual-pump station, IP54, with float switch, 3~ 400 V	2,5	4,0	BC2 400 DFNO 040	19073777	4,7
		4,0	6,3	BC2 400 DFNO 063	19073778	4,7
		6,3	10,0	BC2 400 DFNO 100	19073779	4,7
	Configurable range					
	With float switch, 1~230 V	1	10,0	BC2 230 DFNO 100	19073774	4,7
	Pneumatic control, 1~230 V	1	10,0	BC2 230 DPNO 100	19073780	4,7
	Pneumatic control, 3~400 V	2,5	4,0	BC2 400 DPNO 040	19073782	4,7
		4,0	6,3	BC2 400 DPNO 063	19073783	4,7
		6,3	10,0	BC2 400 DPNO 100	19073784	4,7

2334.543/13-EN

Features of LevelControl Basic 2 control units

Symbols key

Symbol	Description
●	Off-the-shelf range
o	Configurable range
✗	Available
-	Not available

Comparison of functions of single-pump station and dual-pump station

Feature	Single-pump station			Dual-pump station		
	Float switch	Pneumatic control	Bubbler control	Float switch	Pneumatic control	Bubbler control
	BC1 230/400	BC1 230/400	BS1 230/400	BC2 230/400	BC2 230/400	BS2 230/400
400 V: 2,5 - 4,0 A	**DFNO 040**	**DPNO 040**	**DLNO 040**	**DFNO 040**	**DPNO 040**	**DLNO 040**
400 V: 4,0 - 6,3 A	**DFNO 063**	**DPNO 063**	**DLNO 063**	**DFNO 063**	**DPNO 063**	**DLNO 063**
400 V: 6,0 - 10,0 A	**DFNO 100**	**DPNO 100**	**DLNO 100**	**DFNO 100**	**DPNO 100**	**DLNO 100**
In off-the-shelf range	-	-	-	●	-	-
In configurable range	o	o	o	o	o	o
Functions						
Draining	✗	✗	✗	✗	✗	✗
Peak load operation function	-	-	-	✗	✗	✗
Stand-by pump: 1 pump redundant	-	-	-	✗	✗	✗
Pump changeover after each start	-	-	-	✗	✗	✗
Pump switchover in event of fault	-	-	-	✗	✗	✗
Runtime limitation	✗	✗	✗	✗	✗	✗
OFF via after-run time	✗	✗	✗	✗	✗	✗
OFF via level	✗	✗	✗	✗	✗	✗
Functional check run after idle period	✗	✗	✗	✗	✗	✗
Alert history	✗	✗	✗	✗	✗	✗
Display and operation						
7-segment display	✗	✗	✗	✗	✗	✗
Indication of water level	✗	✗	✗	✗	✗	✗
Operation/fault/pump running (displayed for each pump)	Multicolour LED	Multicolour LED	Multicolour LED	Multicolour LED	Multicolour LED	Multicolour LED
General fault (traffic light)	✗	✗	✗	✗	✗	✗
High water	✗	✗	✗	✗	✗	✗
Mains voltage	✗	✗	✗	✗	✗	✗
Operating hours of each pump	✗	✗	✗	✗	✗	✗
Starts per pump	✗	✗	✗	✗	✗	✗
Effective power per pump	-	-	-	-	-	-
Rotary field recognition of mains power supply	At 400 V	At 400 V	At 400 V	At 400 V	At 400 V	At 400 V
Phase monitoring	At 400 V	At 400 V	At 400 V	At 400 V	At 400 V	At 400 V
Change of switching levels	-	✗	✗	-	✗	✗
Housing H × W × D [mm], IP54						
Plastic 400 × 281 × 135	✗	✗	-	✗	✗	-
Sheet steel 400 × 300 × 155	-	-	✗	-	-	✗
Built-in components						
Master switch (lockable)	o	o	✗	o	o	✗
Manual-0-automatic selector switch per pump	✗	✗	✗	✗	✗	✗

Feature	Single-pump station			Dual-pump station		
	Float switch	Pneumatic control	Bubbler control	Float switch	Pneumatic control	Bubbler control
	BC1 230/400	BC1 230/400	BS1 230/400	BC2 230/400	BC2 230/400	BS2 230/400
400 V: 2,5 - 4,0 A	**DFNO 040**	**DPNO 040**	**DLNO 040**	**DFNO 040**	**DPNO 040**	**DLNO 040**
400 V: 4,0 - 6,3 A	**DFNO 063**	**DPNO 063**	**DLNO 063**	**DFNO 063**	**DPNO 063**	**DLNO 063**
400 V: 6,0 - 10,0 A	**DFNO 100**	**DPNO 100**	**DLNO 100**	**DFNO 100**	**DPNO 100**	**DLNO 100**
In off-the-shelf range	-	-	-	●	-	-
In configurable range	o	o	o	o	o	o
DOL starting	✗	✗	✗	✗	✗	✗
Motor protection						
Motor protection switch	At 400 V	At 400 V	At 400 V	At 400 V	At 400 V	At 400 V
Motor temperature warning input	✗	✗	✗	✗	✗	✗
Motor temperature alert input	✗	✗	✗	✗	✗	✗
Pump						
Thermal circuit breaker/bimetal	✗	✗	✗	✗	✗	✗
Moisture monitoring: motor leakage per pump (for Amarex N humidity sensor required; not an option for Ama-Porter)	✗	✗	✗	✗	✗	✗
Optional components						
Rechargeable battery for powering the device	o	o	o	o	o	o
Control cabinet heating	-	-	o	-	-	o
Alarm equipment						
1 free alarm input (non-explosionproof)	✗	✗	✗	✗	✗	✗
1 digital high water alert input (e.g. for float switch)	✗	✗	✗	✗	✗	✗
Volt-free contact (changeover contact) for general fault indication	✗	✗	✗	✗	✗	✗
Piezo buzzer 85 dB(A)	✗	✗	✗	✗	✗	✗
Horn / alarm combination / alarm strobe light 12 V DC	o	o	o	o	o	o
Inputs/outputs						
Number of inputs for float switches[3]	1[4]	1[4]	1[4]	1[4]	1[4]	1[4]
4 - 20 mA analog input	✗	✗	✗	✗	✗	✗
Installed pneumatic pressure sensor	-	✗	-	-	✗	-
Bubbler control with compressor	-	-	✗	-	-	✗
Remote acknowledgement	✗	✗	✗	✗	✗	✗
12 V DC connection for horn, etc.	✗	✗	✗	✗	✗	✗
Sensors						
Float switch	✗	-	-	✗	o	o
Open pressure bell	-	o	o	-	o	o
Closed pressure bell	-	o	-	-	o	-
Tools						
KSB Service Tool for Windows XP	o	o	o	o	o	o

3) ATEX-compliant version: only in type BS with additional intrinsic safety barrier
4) Additional redundant high water float switch

Features of the MSE, MSD switchgear

Symbols key

Symbol	Description
✘	Available

Comparison of functions of switchgear MSE, MSD

Feature	Switchgear / control unit	
	MSE (1~230 V)	MSD (3~400 V)
In off-the-shelf range	-	✘
In configurable range	✘	✘
Housing H × W × D [mm], IP54		
Plastic 170 × 100 × 112	✘	✘
Functions		
On/Off via level	✘	✘
Built-in components		
Manual-0-automatic selector switch	✘	✘
Mains contactor	✘	✘
Motor protection relay	✘	✘
Indicator elements		
“Operation” indicator lamp (green)	✘	✘
“Fault” indicator lamp (red)	✘	✘

2334.543/13-EN

Accessories

System accessories

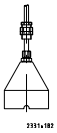
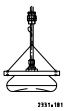
Overview of system accessories

Item	Description	Tank installation depth / Length of key extension	Mat. No.	[kg]
ZK1 	Flushing connection, can be combined with vacuum breaker G 1 1/2-Storz C, ALMGSI/1.4401		19074401	1,1
	Flushing connection, can be combined with vacuum breaker PERROT, 1 1/2 / 50, StTZN		19074402	1,3
ZK2 	Vacuum breaker (prevents complete draining of the collecting tank if the discharge line is laid with falling slope), G 1/DN 25, JM 1030+Z/POM		19074403	2,5
ZK3.1 	Telescopic tank extension made of polyethylene for tank cover classes A 15 and B 125 with profile joint and chain lug – installation depth ET up to 2280 mm – height of tank extension 600 mm		19074289	17
ZK3.2 	Telescopic tank extension made of polyethylene for tank cover classes A 15 and B 125 with profile joint and chain lug – installation depth ET up to 2700 mm – height of tank extension 1200 mm		19074290	27
ZK4 	Height compensation ring, 100 mm, concrete, for base tank without telescopic extension, DIN 4034-AR 625 × 100 (A maximum of 3 height compensation rings can be used.)		01056145	53
ZK5 	Ball valve key extension	ET 1820 = 600 mm	11037341	0,8
		ET 2120 = 1000 mm	11037342	1,1
		ET 2250 = 1400 mm	11037343	1,4
ZK6.1 -	Connection for hand diaphragm pump, DN 40 / Rp 1 1/2		01050445	0,69
ZK6.2 	Hand diaphragm pump, grey cast iron, for emergency drainage, ISO 7/1 / Rp 1 1/2		00520485	12
ZK6.3 -	Socket gate valve, CuZn, full port, Rp 1 1/2		00411502	0,8

2334.543/13-EN

Accessories and optional components for non-ATEX-compliant switchgear / control units

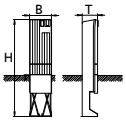
Overview of accessories for non-ATEX-compliant control units

Item	Description	Length [m]	Mat. No.	[kg]
E63 	Float switch set with holder, for redundant high water alert, switch housing made of polypropylene (fluid temperature max. 70 °C) with free cable end (NO contact) – circuit closed in upper float position, connection cable (H 07 RN-F3G1)	10	19074393	1,4
		20	19074394	2,5
E65 	Open pressure bell set, pneumatic or bubbler control with polyamide tube 8 x 1 mm	10	19071721	1,2
		20	19071837	2
		50	19074200	2,5
E66 	Closed pressure bell set – pneumatic with polyamide tube 8 x 3 mm	10	19071722	3,5
		> 10	On request	
E67 	Float switch set for single-pump station with holder for three float switches EC 931 / Régul Eco (1 x Pump On, 1 x Pump Off, and 1 x Alarm On/Off)	10	19074389	4,5
		20	19074390	7
	Float switch set for dual-pump station with holder for four float switches EC 931 / Régul Eco (2 x Pumps On, 1 x Pumps Off, and 1 x Alarm On/Off)	10	19074391	6
		20	19074392	9
E68 	Float switch set for single-pump station with holder for two float switches OPTI 1 (1 x Pump On/Off and 1 x Alarm On/Off)	10	19074405	3,4
		20	19074406	5,5
	Float switch set for dual-pump station with holder for three float switches OPTI 1 (2 x Pumps On/Off and 1 x Alarm On/Off)	10	19074407	4,9
		20	19074408	7,5
E70 	Horn, 12 V DC, 105 dB, 150 mA, IP54 not explosion-proof		01086547	0,1
E71 	Alarm combination, 12 V DC , not explosion-proof		01139930	0,1
E72 	Yellow alarm strobe light, 12 V DC, 195 mA, IP65 , not explosion-proof		01056355	0,3

2334.543/13-EN

Item	Description	Length [m]	Mat. No.	[kg]
E73 	KSB ServiceTool		47121210	0,2
E90 	Rechargeable battery retrofit kit for LevelControl Basic 2, type BC Scope of supply: 2 rechargeable batteries (6 V, 1.3 Ah) and charge controller		19074194	0,8
E91 	Rechargeable battery retrofit kit for LevelControl Basic 2, type BC Scope of supply: 1 rechargeable battery (12 V, 1.2 Ah) and charge controller		19074199	1

Optional components for LevelControl Basic 2 control units[5)]

Item	Description	Mat. No.	[kg]
O1 	Master switch for LevelControl Basic 2 BC, fitted	01143084	0,2
O2 	Control cabinet heating for type BS, fitted	19074269	0,3
O10 	Outdoor cabinet type 142 with base, for type BC External dimensions H × W × D [mm]: 1420 × 320 × 225 Internal dimensions H × W × D [mm]: 600 × 276 × 165 IP 44, glass fibre reinforced polyester, colour: RAL 7035, locking device: profile half cylinder, can be buried	19071911	15

2334.543/13-EN

5) Processed via KSB EasySelect, to avoid supply as unmounted item.

Alarm switchgears for pumps, non-ATEX-compliant

AS 0/AS 2/AS 4/AS 5

Item	Description	Mat. No.	[kg]
E50 	Alarm switchgear AS 0 with circuit breaker, acoustic signal transmitter with 85 dB(A), green equipment-on lamp Plastic housing, IP20, H × W × D = 140 × 80 × 57 [mm]. Use float switch or signal relay of control unit as contactor.	29128401	0,5
E51 	Alarm switchgear AS 2 With circuit breaker, acoustic signalling device with 85 dB(A), green equipment-on lamp, volt-free contact for hook-up to a control station Plastic housing, IP20, H × W × D = 140 × 80 × 57 [mm]. Use float switch or signal relay of control unit as contactor.	29128422	0,5
E52 	Alarm switchgear AS 4 with circuit breaker, acoustic signal transmitter with 85 dB(A), green equipment-on lamp, volt-free contact for hook-up to a control station, self-charging power supply unit for 5 hours of operation in the event of a power failure Plastic housing, IP20, H × W × D = 140 × 80 × 57 [mm]. Use float switch or signal relay of control unit as contactor.	29128442	0,5
E53 	Alarm switchgear AS 5 Mains-independent, with self-charging power supply unit for 10 hours of operation in the event of a power failure, mains pilot LED, fault indicator light, acknowledgement button, volt-free contact for hook-up to a control station, ready for connection with 1.8 m power cable and plug. (Alarm equipment required in addition) ISO housing, IP41, H × W × D = 190 × 165 × 75 [mm]. Use float switch or signal relay of control unit as contactor.	00530561	1,7

2334.543/13-EN

24/02/2020

2334.543/13-EN

KSB SE & Co. KGaA
Johann-Klein-Straße 9 • 67227 Frankenthal (Germany)
Tel. +49 6233 86-0
www.ksb.com