

Submersible Motor Pump

Ama-Porter



Type Series Booklet



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Type Series Booklet Ama-Porter

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Building Services: Drainage

Drainage Pumps/Waste Water Pumps

Ama-Porter



Main applications

- Drainage systems
- Water extraction
- Drainage

Fluids handled

- Grey water
- Waste water containing long fibres and solid substances
- Gas-containing fluids

Operating data

Operating properties

Characteristic	Ama-Porter	Ama-Porter S
Flow rate	Q 40 m ³ /h (11 l/s)	17 m ³ /h (4.7 l/s)
Head	H 16 m	21 m
Fluid temperature	t max. +40°C (+70°C for short periods)	

Designation

Example: Ama-Porter SB 545 SE

Key to the designation

Code	Description
Ama-Porter	Type series
S	Impeller
1)	F impeller
S	S impeller

Code	Description
B	Starting aid
1)	Without start capacitor
B	With start capacitor
5	Size
5 __	DN 50
6 __	DN 65
01	Impeller size
SE	Motor version
SE	Single-phase AC motor with float switch
NE	Single-phase AC motor without float switch
ND	Three-phase asynchronous motor without float switch

Design details

Design

- Fully floodable submersible motor pump
- Close-coupled design
- Vertical installation
- Single-stage

Installation types

- Wet-installed stationary pump sets
- Wet-installed transportable pump sets

Shaft seal

Drive end

- Shaft seal ring

Pump end

- 1 bi-directional mechanical seal with liquid reservoir

Impeller type

	Free-flow impeller (impeller type F)	Suitable for the following fluids: fluids containing solids and stringy material as well as fluids with entrapped air or gas
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	Impeller with cutter (impeller type S)	Suitable for the following fluids: faeces, domestic sewage and waste water containing long fibres
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Drive

- Single-phase AC motor
 - 50 Hz: 230 V
 - With integrated temperature switch
- Three-phase asynchronous motor
 - 50 Hz: 400 V
 - DOL starting
- Enclosure: IP68 (permanently submerged) to EN 60529 / IEC 529
- Thermal class of winding insulation: F

Bearings

- Grease-lubricated bearings sealed for life

1) Blank

Coating and preservation

Primer and top coat

Surface treatment: Blasted to SA 2 1/2 to DIN EN ISO 12944
 Top coat: Two-component high-solid epoxy resin finish (RAL 5002), min. layer thickness = 75 µm

Special coating

Available on request (extra charge and a longer delivery period apply).

Materials

Overview of available materials

Component		Ama-Porter 5 __ / 6 __	Ama-Porter S 545
Casing		JL 1030	
F impeller		JL 1030	JL 1040
Cutter		-	1.2080 (K100)
Shaft		1.4021	
Shaft seal	Drive end	Shaft seal ring	
	Pump end	Mechanical seal SiC / AL ₂ O ₃	Mechanical seal SiC / SiC
Bolts and nuts		A2	
Joint rings		Nitrile	
Float switch		Polypropylene	

Product benefits

- Easy and fast installation/removal with polarised, absolutely watertight cable and KSB plug connection ensuring correct installation

- Motor absolutely watertight, also in the event of damage to the cable sheath and core insulation, with individually stripped, tinned and resin-sealed conductors
- High operating reliability due to dry, pressure-tight and encapsulated squirrel-cage motor, thermal class F
- Three-phase motor: protected against overheating even under tough operating conditions due to generously sized motor.
- AC motor: protected against overheating by thermal switches in the windings
- Long service life with shaft made of corrosion-resistant stainless steel
- Increased reliability due to bi-directional mechanical seal
- Ease of service with wetted bolts made of stainless steel, which are easy to undo even after years of operation
- Trouble-free operation: clogging by coarse particles is prevented by large free passage (free-flow impeller) or by cutter with high mechanical resistance for waste water
- Stationary pump sets easy to install and remove with automatic, bolt-free connection; leakage prevented by elastic sealing elements

Certifications

Label	Valid in:	Comment
	Europe	Suitable for plants to Standard EN 12050-1
	Europe	BMW (test report) Nos.: 0420266-01 to 05

Overview of range

Standard variants

Size	F impeller			S impeller		
	Ama-Porter 5 __ / 6 __			Ama-Porter S 545		
Motor version	SE	NE	ND	SE	NE	ND
Number of motor poles						
2-pole	X	X	X	X	X	X
Explosion protection						
Motor versions SE, NE, ND	Not explosion-proof					
Motor						
With start capacitor	-	-	-	X	X	-
Starting method	DOL ²⁾					
Voltage	230 V 1~	230 V 1~	400 V 3~	230 V 1~	230 V 1~	400 V 3~
Cooling	Cooled by surrounding fluid					
Mode of operation	S1 – submerged (max. 10 m)					
Level measurement: with float switch	X	-	-	X	-	-
Power cable						
Type	Rubber-sheathed cable					
	H07RN8-F 3x1 ²		H07RN8-F 4x1 ²			
Length	10 m ³⁾					
Cable entry	Absolutely watertight					
Sealing elements						
Shaft seal	Drive end: shaft seal ring Pump end: mechanical seal					
Elastomer seals	NBR					
Monitoring equipment						
Winding temperature	Thermal motor protection		-	Thermal motor protection		-
Coating	Environmentally friendly KSB top coat (two-component epoxy paint), colour RAL 5002, film thickness = 75 µm					
Installation						
Stationary, with guide hoop	Installation depths 1.5 m/1.8 m/2.1 m					
Stationary, with single guide rail	Installation depth 4.5 m					
Stationary, with twin guide rail	Installation depth 4.5 m					
Stationary, with guide wire	Installation depth 4.5 m					
Transportable	Installation depth 4.5 m					
Maximum temperature of fluid handled						
Motor versions SE, NE, ND	40 °C					

2) Maximum switching frequency: 15 starts per hour

3) Optional: 20 m

Technical data
Ama-Porter 5 _ _ , F impeller

50 Hz - 1 ~ 230 V, 10 m power cable

Size	Impeller Ø	Free passage	P ₁	P ₂	I _N	I _A	Mains connection	Mat. No.	[kg]
	[mm]	[mm]	[kW]	[kW]	[A]	[A]	[mm ²]		
500 SE	100	45	1,00	0,55	5,00	18,2	3 x 1,0	39017187	23
501 SE	110	45	1,25	0,75	6,00	18,2	3 x 1,0	39017100	23
502 SE	120	43	1,80	1,10	8,20	18,2	3 x 1,0	39017101	23
503 SE	130	41	1,80	1,10	8,20	18,2	3 x 1,0	39017102	23
500 NE	100	45	1,00	0,55	5,00	18,2	3 x 1,0	39017195	22
501 NE	110	45	1,25	0,75	6,00	18,2	3 x 1,0	39017188	23
502 NE	120	43	1,80	1,10	8,20	18,2	3 x 1,0	39017189	23
503 NE	130	41	1,80	1,10	8,20	18,2	3 x 1,0	39017190	23

50 Hz - 1~ 230 V, 20 m power cable

Size	Impeller Ø	Free passage	P ₁	P ₂	I _N	I _A	Mains connection	Mat. No.	[kg]
	[mm]	[mm]	[kW]	[kW]	[A]	[A]	[mm ²]		
500 NE	100	45	1,00	0,55	5,00	18,2	3 x 1,0	39018542	23.2
501 NE	110	45	1,25	0,75	6,00	18,2	3 x 1,0	39018543	23.2
502 NE	120	43	1,80	1,10	8,20	18,2	3 x 1,0	39018544	23.2
503 NE	130	41	1,80	1,10	8,20	18,2	3 x 1,0	39018545	23.2

50 Hz - 3 ~ 400 V, 10 m power cable

Size	Impeller Ø	Free passage	P ₁	P ₂	I _N	I _A	Mains connection	Mat. No.	[kg]
	[mm]	[mm]	[kW]	[kW]	[A]	[A]	[mm ²]		
500 ND	100	45	0,90	0,55	2,30	18,3	4 x 1,0	39017191	22
501 ND	110	45	1,10	0,75	2,80	18,3	4 x 1,0	39017103	23
502 ND	120	43	1,50	1,10	3,00	18,3	4 x 1,0	39017104	23
503 ND	130	41	2,05	1,50	3,50	18,3	4 x 1,0	39017105	23

50 Hz - 3 ~ 400 V, 20 m power cable

Size	Impeller Ø	Free passage	P ₁	P ₂	I _N	I _A	Mains connection	Mat. No.	[kg]
	[mm]	[mm]	[kW]	[kW]	[A]	[A]	[mm ²]		
500 ND	100	45	0,90	0,55	2,30	18,3	4 x 1,0	39018538	23.4
501 ND	110	45	1,10	0,75	2,80	18,3	4 x 1,0	39018539	23.4
502 ND	120	43	1,50	1,10	3,00	18,3	4 x 1,0	39018540	23.4
503 ND	130	41	2,05	1,50	3,50	18,3	4 x 1,0	39018541	23.4

Ama-Porter 6 _ _ , F impeller

50 Hz - 1 ~ 230 V, 10 m power cable

Size	Impeller Ø	Free passage	P ₁	P ₂	I _N	I _A	Mains connection	Mat. No.	[kg]
	[mm]	[mm]	[kW]	[kW]	[A]	[A]	[mm ²]		
601 SE	110	60	1,25	0,75	6,00	18,2	3 x 1,0	39017106	26
602 SE	120	58	1,80	1,10	8,20	18,2	3 x 1,0	39017107	26
603 SE	130	56	1,80	1,10	8,20	18,2	3 x 1,0	39017108	26
601 NE	110	60	1,25	0,75	6,00	18,2	3 x 1,0	39017192	26
602 NE	120	58	1,80	1,10	8,20	18,2	3 x 1,0	39017193	26
603 NE	130	56	1,80	1,10	8,20	18,2	3 x 1,0	39017194	26

50 Hz - 1 ~ 230 V, 20 m power cable

Size	Impeller Ø	Free passage	P ₁	P ₂	I _N	I _A	Mains connection	Mat. No.	[kg]
	[mm]	[mm]	[kW]	[kW]	[A]	[A]	[mm ²]		
601 NE	110	60	1,25	0,75	6,20	18,2	3 x 1,0	39018549	26.2
602 NE	120	58	1,80	1,10	8,20	18,2	3 x 1,0	39018628	26.2
603 NE	130	56	1,80	1,10	8,20	18,2	3 x 1,0	39018629	26.2

50 Hz - 3 ~ 400 V, 10 m power cable

Size	Impeller Ø	Free passage	P ₁	P ₂	I _N	I _A	Mains connection	Mat. No.	[kg]
	[mm]	[mm]	[kW]	[kW]	[A]	[A]	[mm ²]		
601 ND	110	60	1,10	0,75	2,80	18,3	4 x 1,0	39017109	25
602 ND	120	58	1,50	1,10	3,00	18,3	4 x 1,0	39017110	25
603 ND	130	56	2,05	1,50	3,50	18,3	4 x 1,0	39017111	25

50 Hz - 3 ~ 400 V, 20 m power cable

Size	Impeller Ø	Free passage	P ₁	P ₂	I _N	I _A	Mains connection	Mat. No.	[kg]
	[mm]	[mm]	[kW]	[kW]	[A]	[A]	[mm ²]		
601 ND	110	60	1,10	0,75	2,80	18,3	4 x 1,0	39018546	26.4
602 ND	120	58	1,50	1,10	3,00	18,3	4 x 1,0	39018547	26.4
603 ND	130	56	2,05	1,50	3,50	18,3	4 x 1,0	39018548	26.4

Ama-Porter S 545, S impeller

50 Hz - 1 ~ 230 V, 10 m power cable

Size	Impeller Ø	Free passage	P ₁	P ₂	I _N	I _A	Mains connection	Mat. No.	[kg]
	[mm]	[mm]	[kW]	[kW]	[A]	[A]	[mm ²]		
SB 545 SE	145	7	1,80	1,10	8,20	18,2	4 x 1,0	39018468	26.5
SB 545 NE	145	7	1,80	1,10	8,20	18,2	4 x 1,0	39018469	26.5

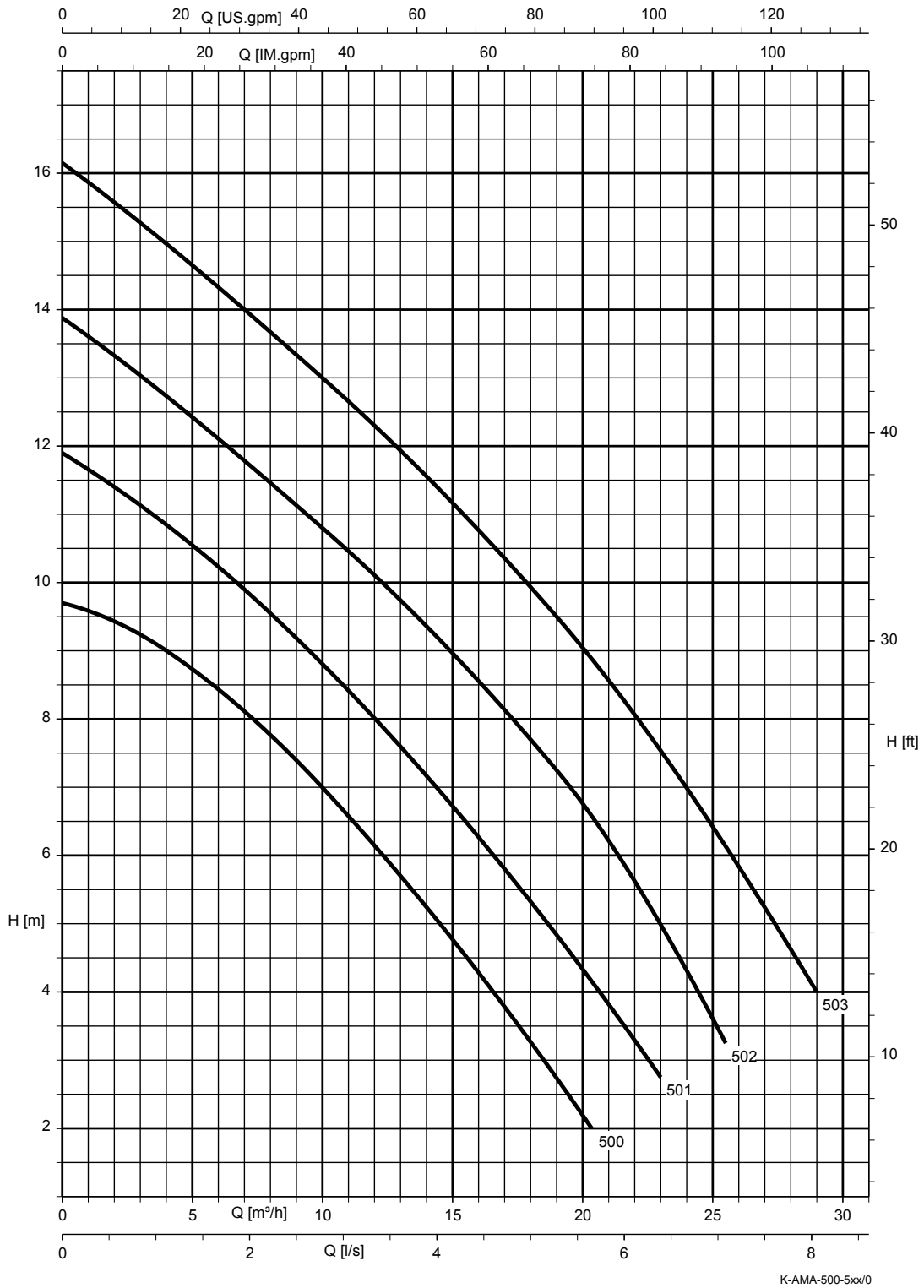
50 Hz - 3 ~ 400 V, 10 m power cable

Size	Impeller Ø	Free passage	P ₁	P ₂	I _N	I _A	Mains connection	Mat. No.	[kg]
	[mm]	[mm]	[kW]	[kW]	[A]	[A]	[mm ²]		
S 545 ND	145	7	2,05	1,50	3,50	18,3	4 x 1,0	39017859	25

Characteristic curves

Ama-Porter 5 _ _ ; n = 2900 rpm; F impeller

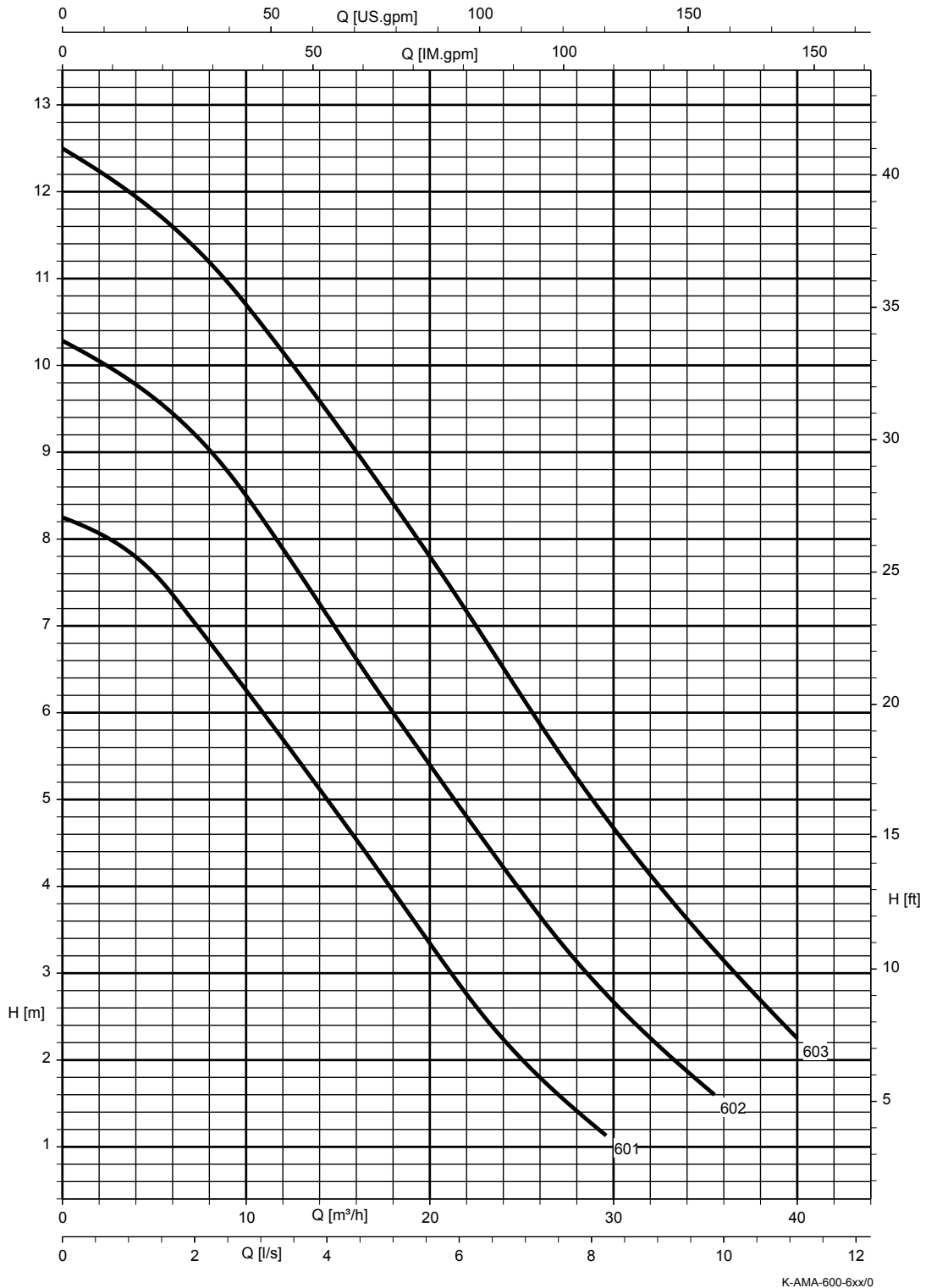
Characteristic curves to ISO 9906 Class 2A / 3B, below 10 kW to § 4.4.2. The curves refer to the effective motor speed.



Free passage: 500/501 = 45 mm, 502 = 43 mm, 503 = 41 mm

Ama-Porter 6 _ _; n = 2900 rpm; F impeller

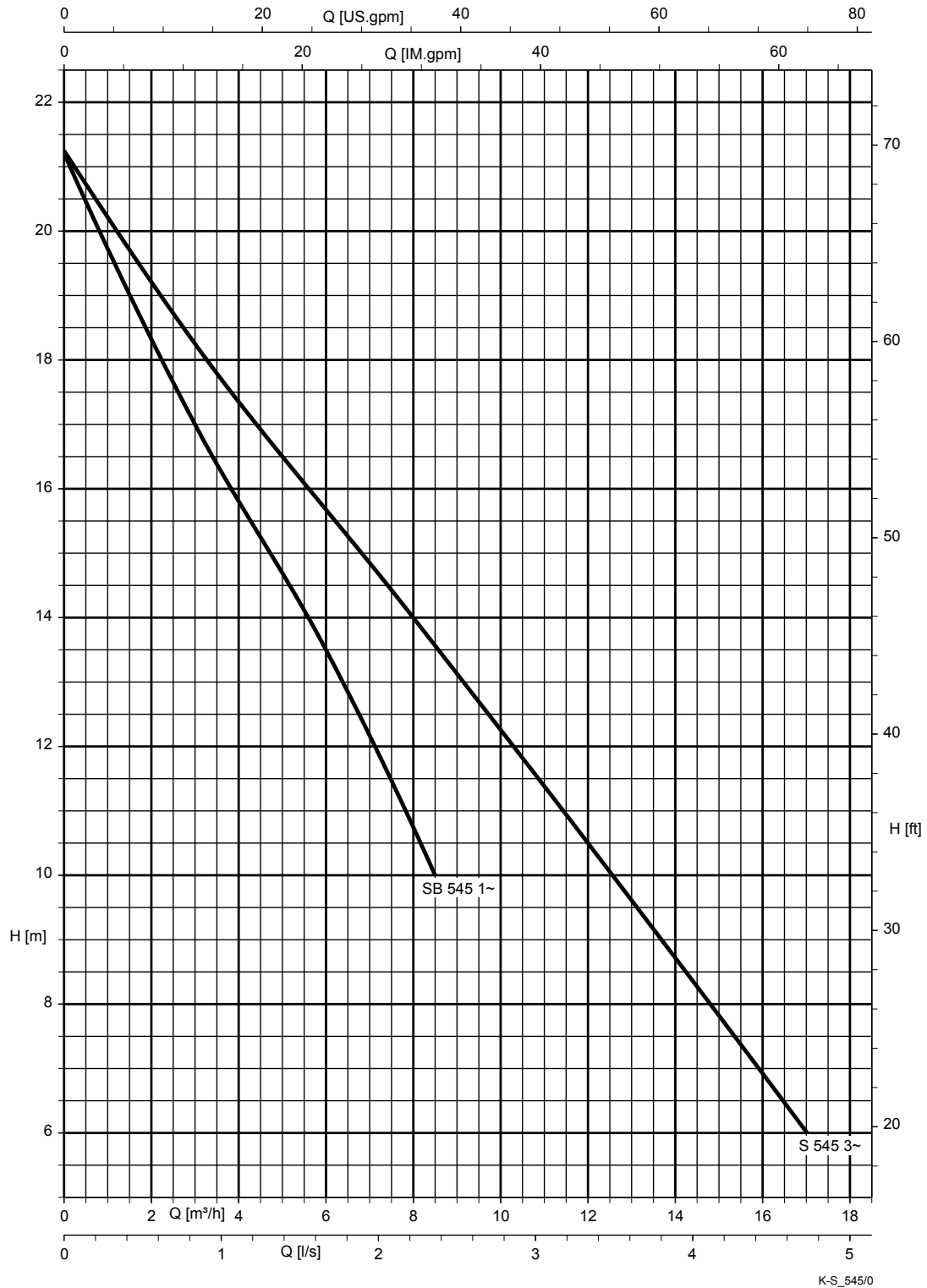
Characteristic curves to ISO 9906 Class 2A / 3B, below 10 kW to § 4.4.2. The curves refer to the effective motor speed.



Free passage: 601 = 60 mm, 602 = 58 mm, 603 = 56 mm

Ama-Porter S 545; n = 2900 rpm; S impeller

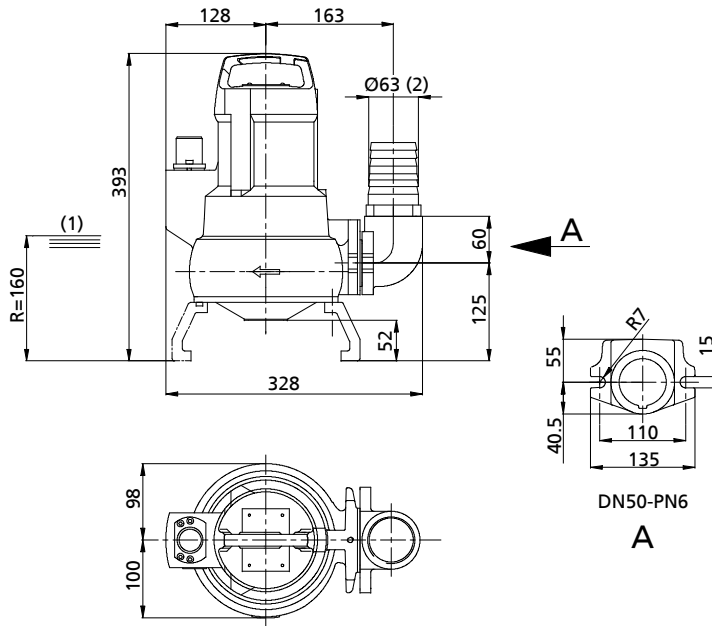
Characteristic curves to ISO 9906 Class 2A / 3B, below 10 kW to § 4.4.2. The curves refer to the effective motor speed.



Free passage = 7 mm

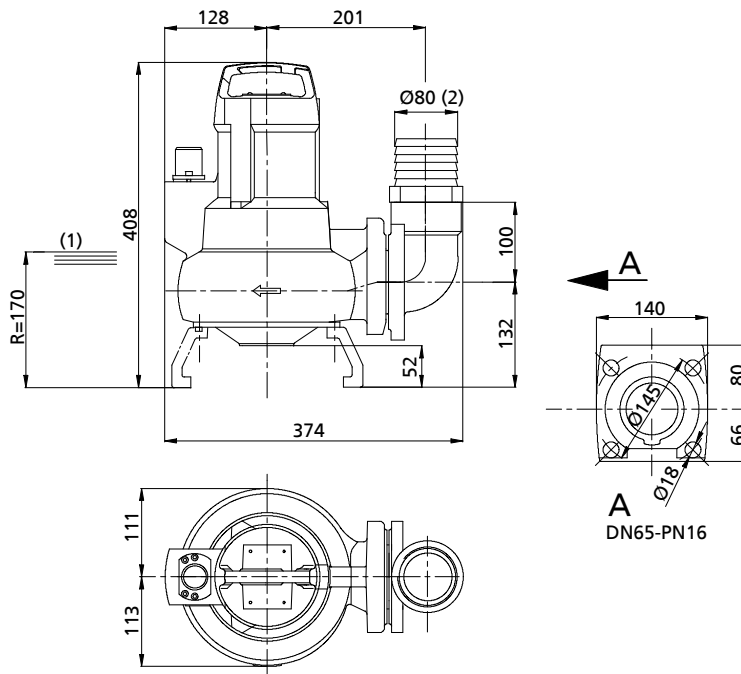
Dimensions

Ama-Porter 5 ___, F impeller, transportable wet-installed model



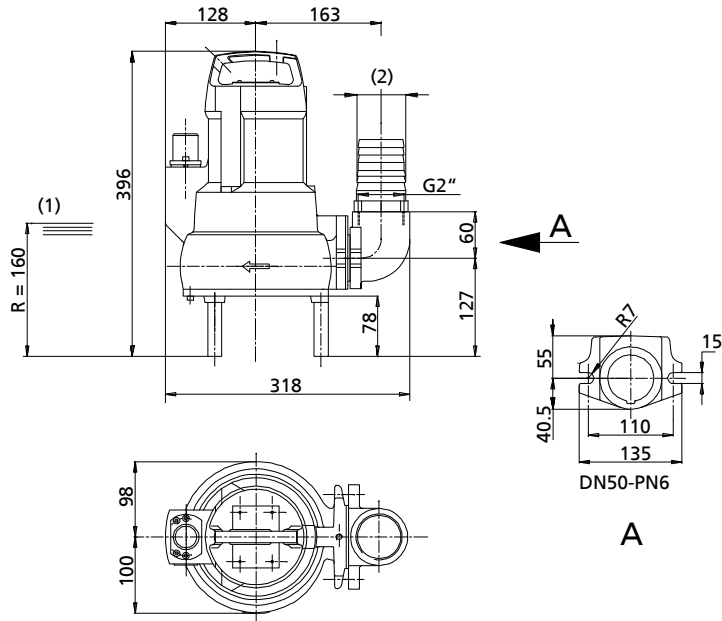
(1)	Lowest switch-off point	(2)	Hose inner diameter: 63 mm
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Ama-Porter 6 ___, F impeller, transportable wet-installed model



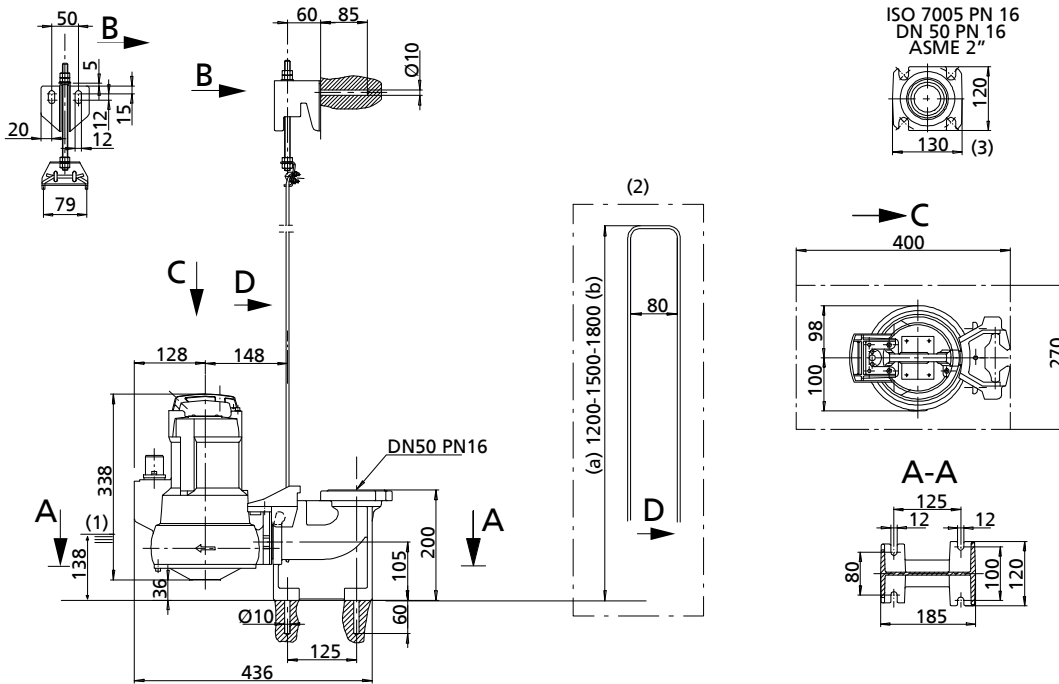
(1)	Lowest switch-off point	(2)	Hose inner diameter: 80 mm
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Ama-Porter S 545, S impeller, transportable wet-installed model



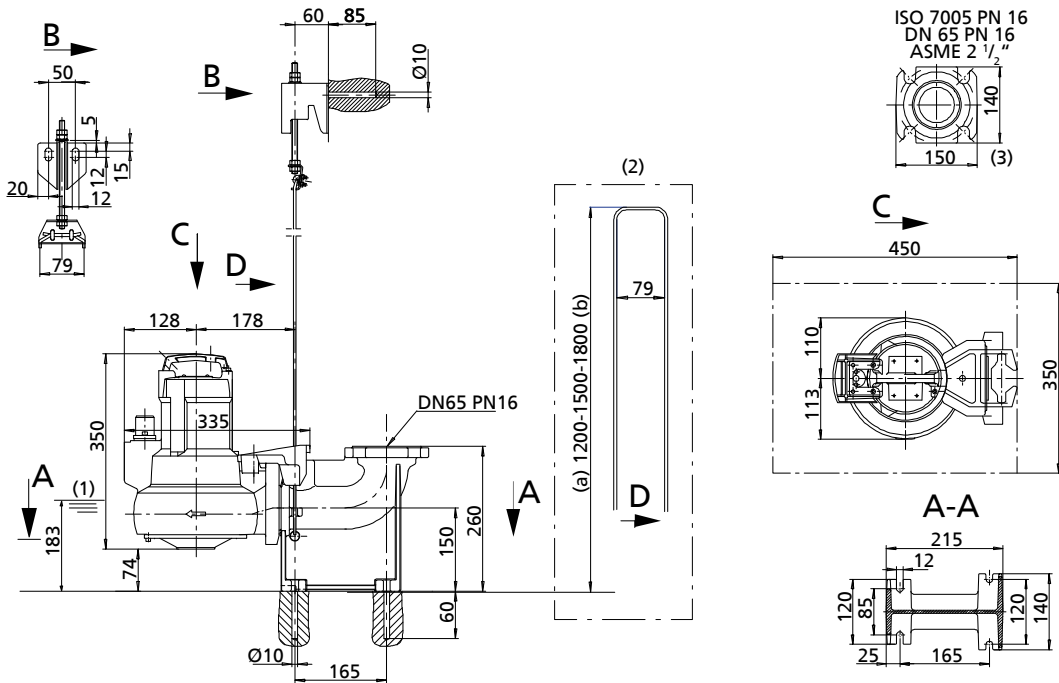
(1)	Lowest switch-off point	(2)	Hose inner diameter: 63 mm
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Ama-Porter 5 __, F impeller, stationary wet-installed model with guide wire/guide hoop, duckfoot bend DN 50/50



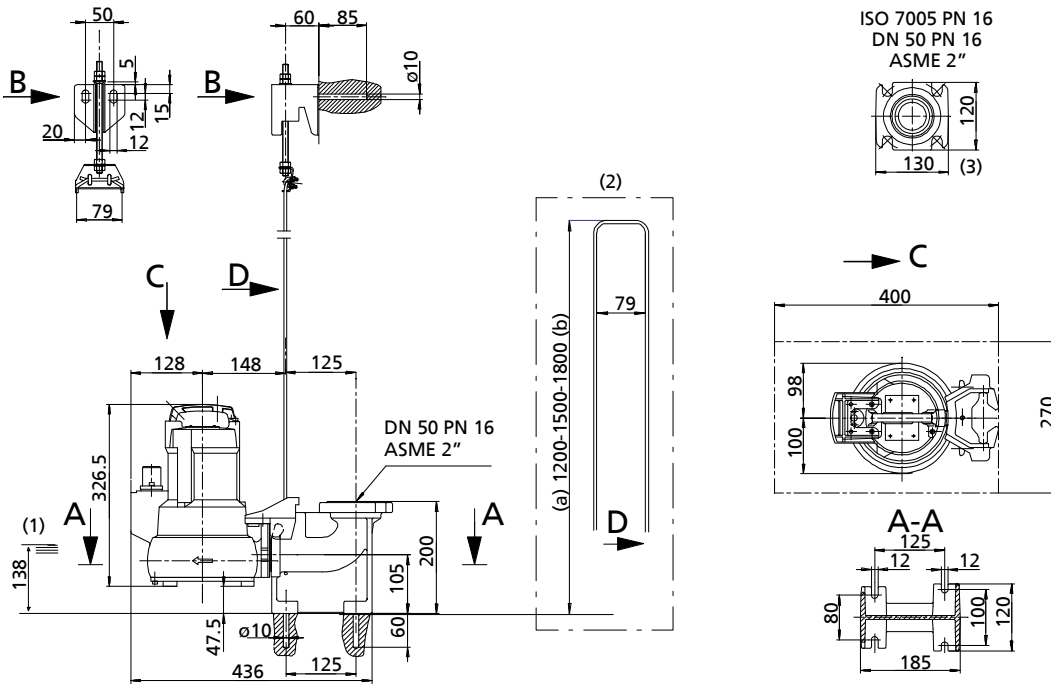
(1)	Lowest switch-off point	(a)	Minimum
(2)	Guide hoop	(b)	Maximum
(3)	Flange of duckfoot bend		

Ama-Porter 6 __, F impeller, stationary wet-installed model with guide wire/guide hoop, duckfoot bend DN 65/65



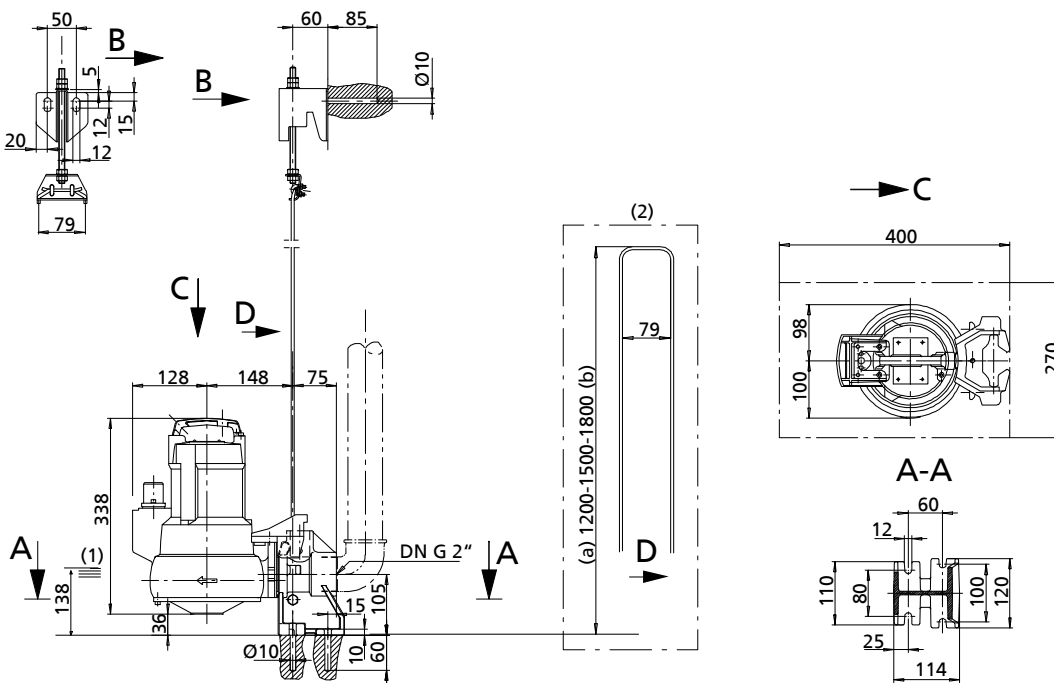
(1)	Lowest switch-off point	(a)	Minimum
(2)	Guide hoop	(b)	Maximum
(3)	Flange of duckfoot bend		

Ama-Porter S 545, S impeller, stationary wet-installed model with guide wire/guide hoop, duckfoot bend DN 50/50



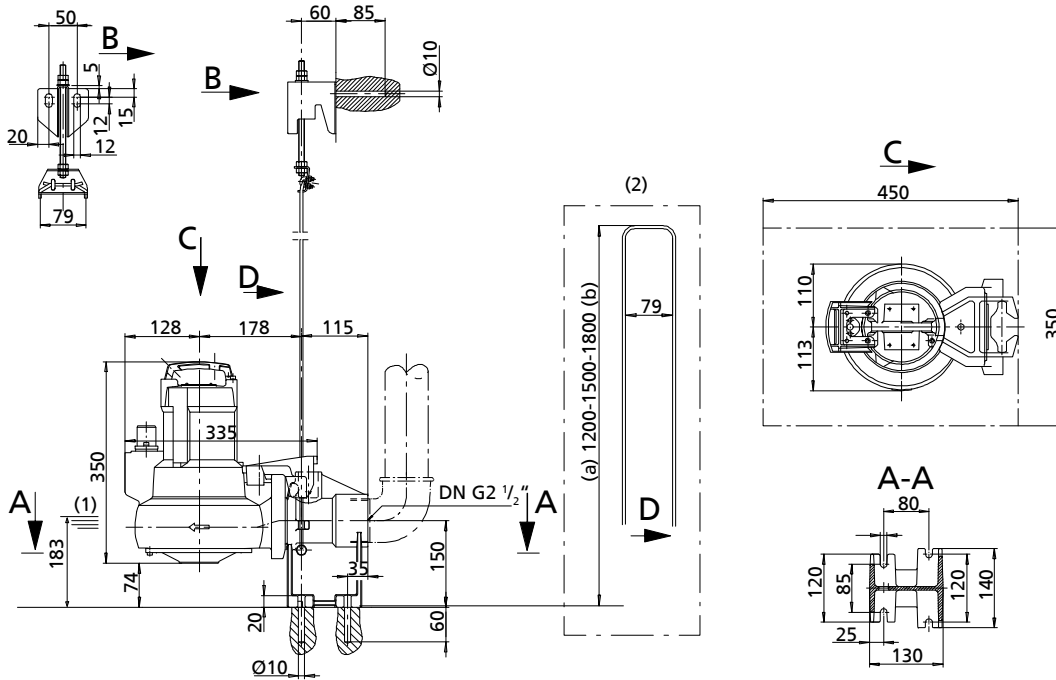
(1)	Lowest switch-off point	(a)	Minimum
(2)	Guide hoop	(b)	Maximum
(3)	Flange of duckfoot bend		

Ama-Porter 5 _ _ , F impeller, stationary wet-installed model with guide wire/guide hoop, straight pump foot G 2"



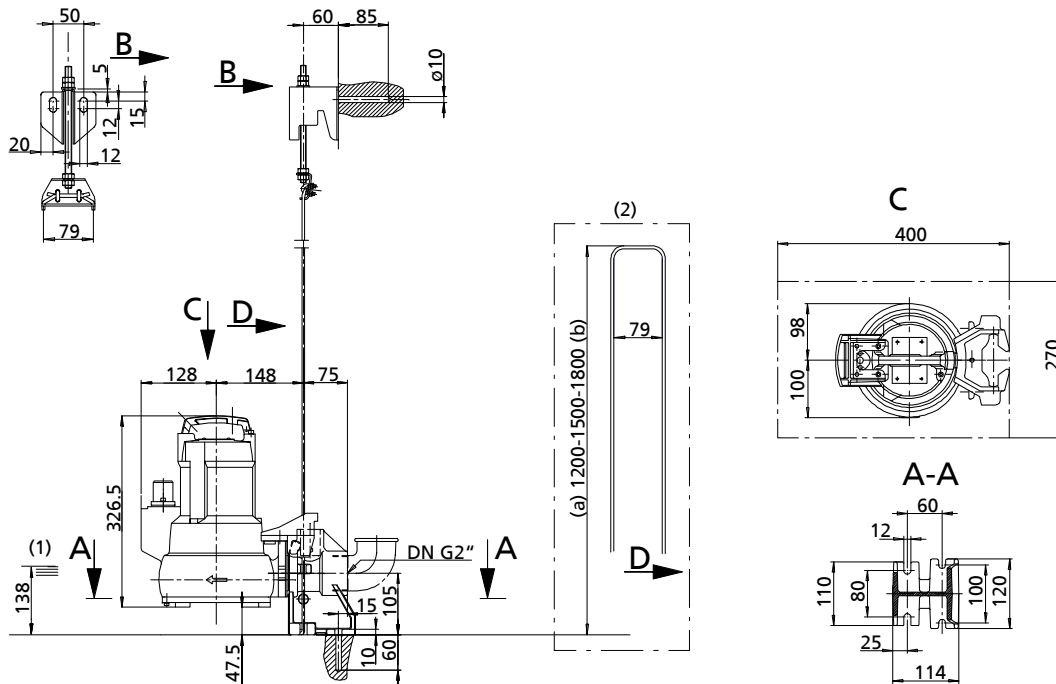
(1)	Lowest switch-off point	(a)	Minimum
(2)	Guide hoop	(b)	Maximum

Ama-Porter 6 __, F impeller, stationary wet-installed model with guide wire/guide hoop, straight pump foot G 2½"



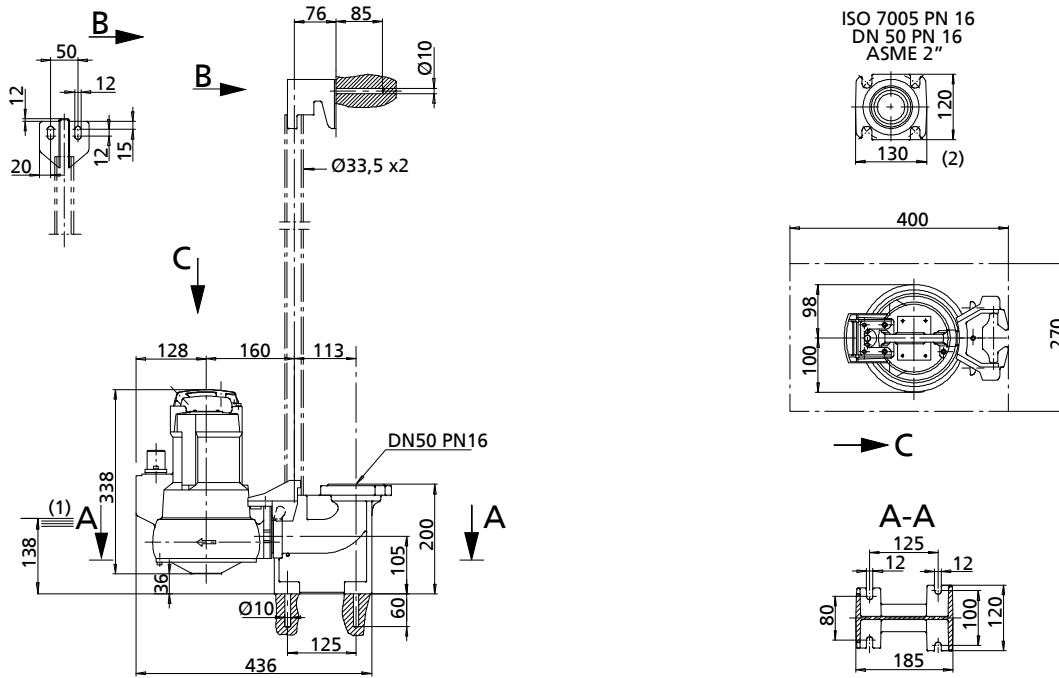
(1)	Lowest switch-off point	(a)	Minimum
(2)	Guide hoop	(b)	Maximum

Ama-Porter S 545, S impeller, stationary wet-installed model with guide wire/guide hoop, straight pump foot G 2"



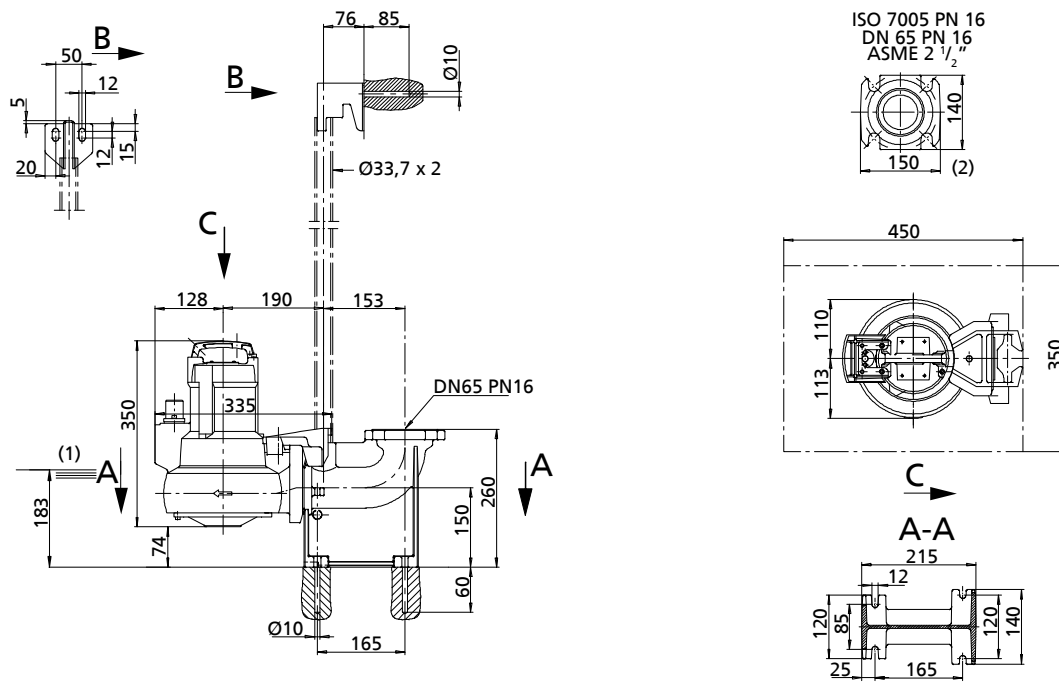
(1)	Lowest switch-off point	(a)	Minimum
(2)	Guide hoop	(b)	Maximum

Ama-Porter 5 _ _ F impeller, stationary wet-installed model with single guide rail, duckfoot bend DN 50/50



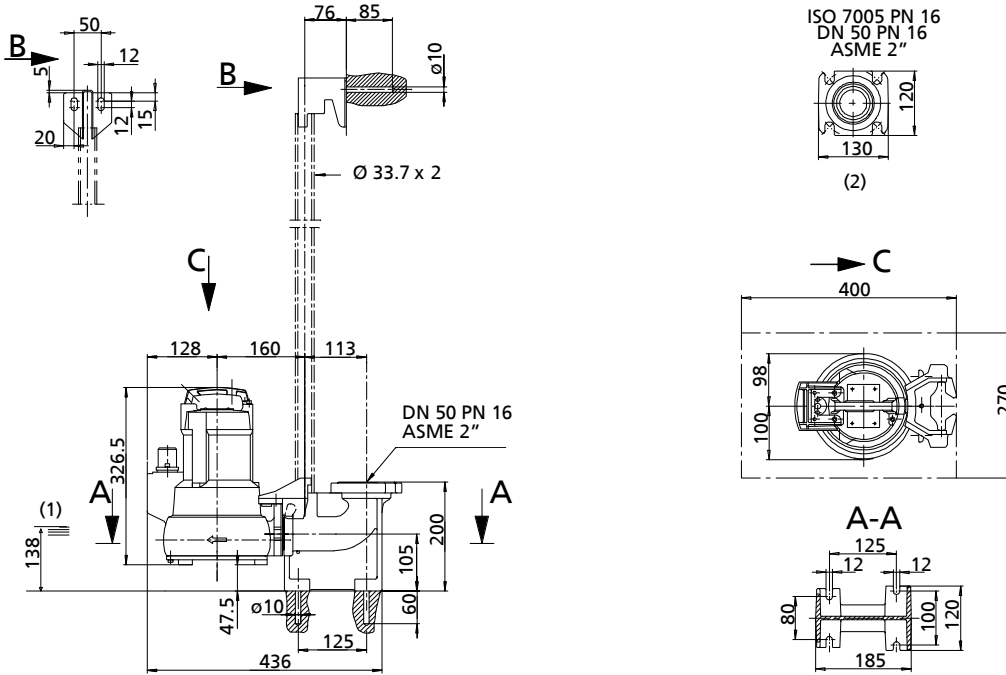
(1)	Lowest switch-off point	(2)	Flange of duckfoot bend
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Ama-Porter 6 _ _ F impeller, stationary wet-installed model with single guide rail, duckfoot bend DN 65/65



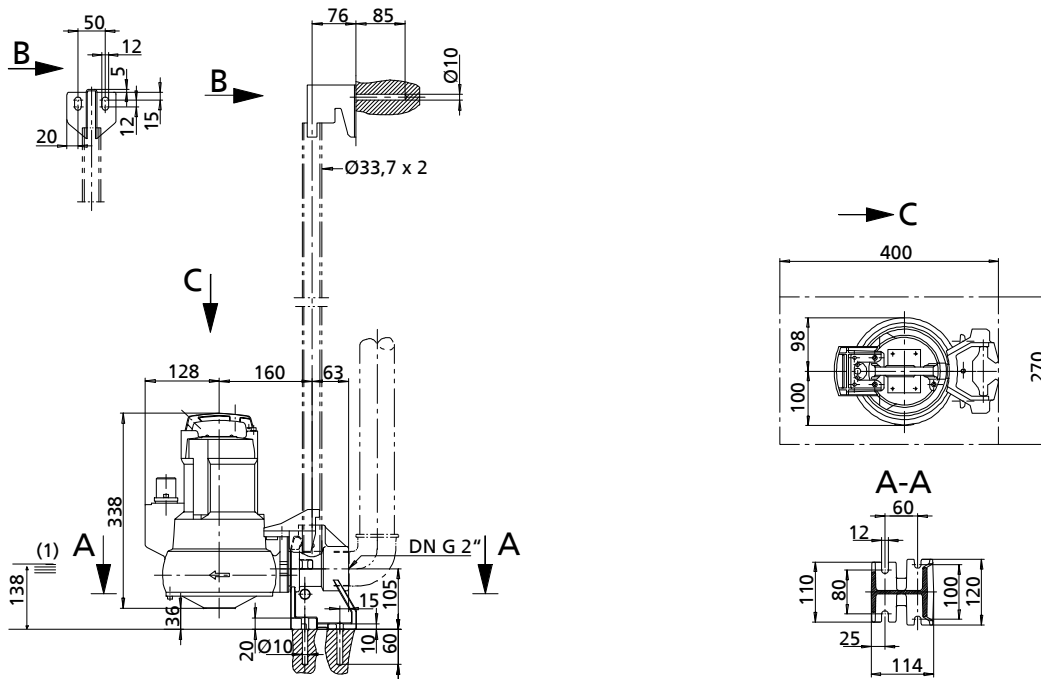
(1)	Lowest switch-off point	(2)	Flange of duckfoot bend
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Ama-Porter S 545, S impeller, stationary wet-installed model with single guide rail, duckfoot bend DN 50/50



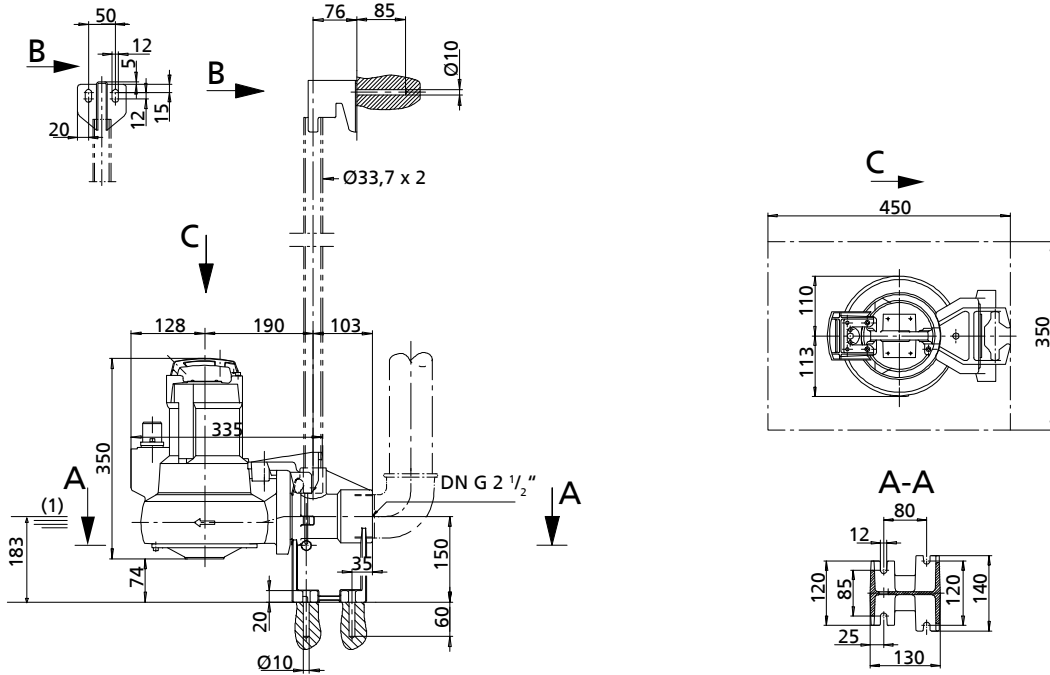
(1)	Lowest switch-off point	(2)	Flange of duckfoot bend
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Ama-Porter 5 _ _ F impeller, stationary wet-installed model with single guide rail, straight pump foot G 2"



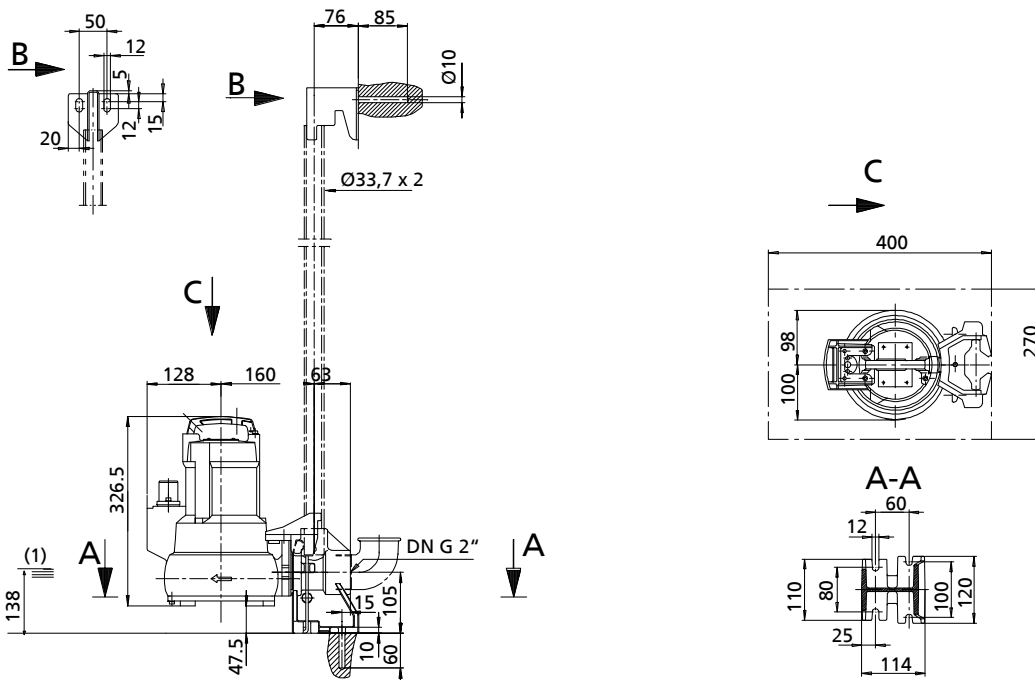
(1)	Lowest switch-off point
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Ama-Porter 6 __, F impeller, stationary wet-installed model with single guide rail, straight pump foot G 2 1/2"



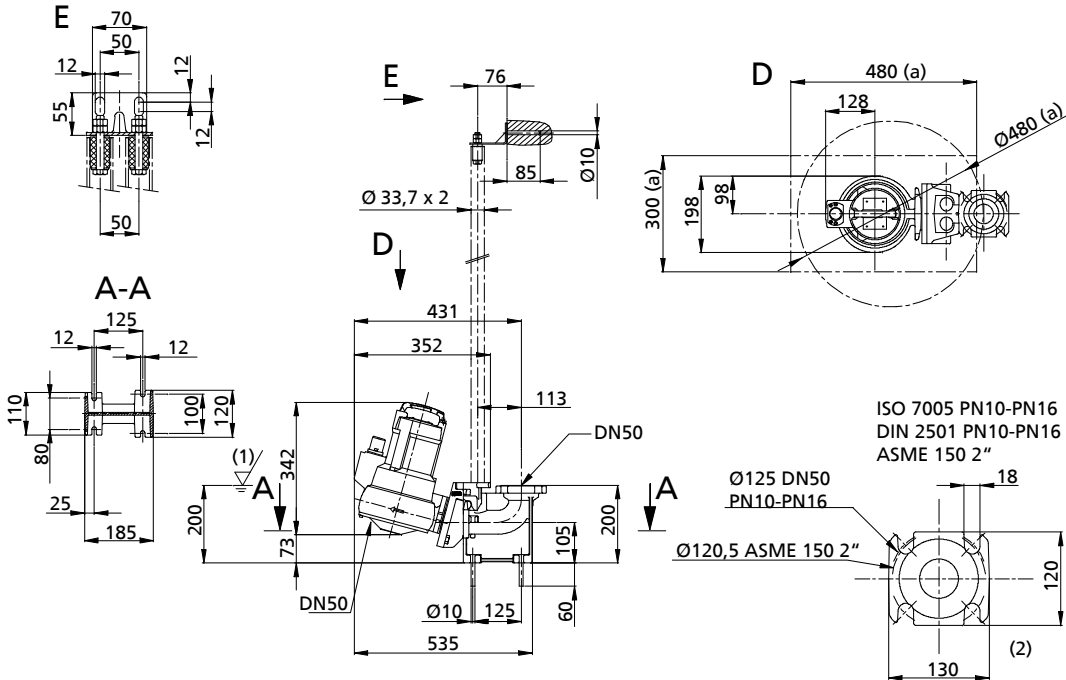
(1)	Lowest switch-off point
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Ama-Porter S 545, S impeller, stationary wet-installed model with single guide rail, straight pump foot G 2"



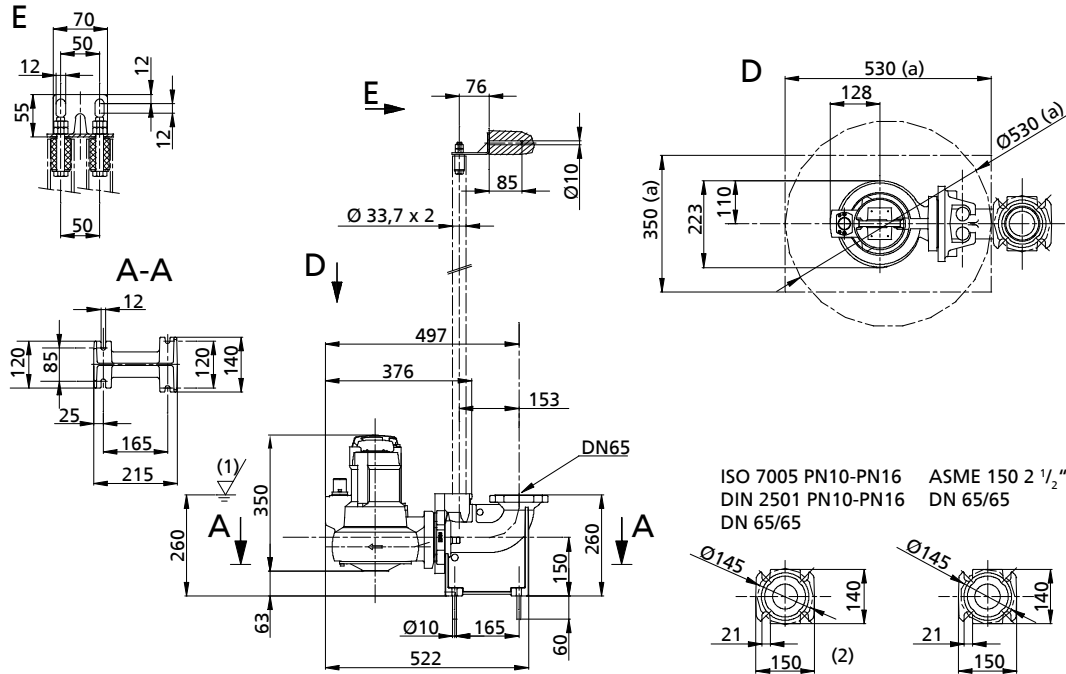
(1)	Lowest switch-off point
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Ama-Porter 5 __, F impeller, stationary wet-installed model with twin guide rails, duckfoot bend DN 50/50



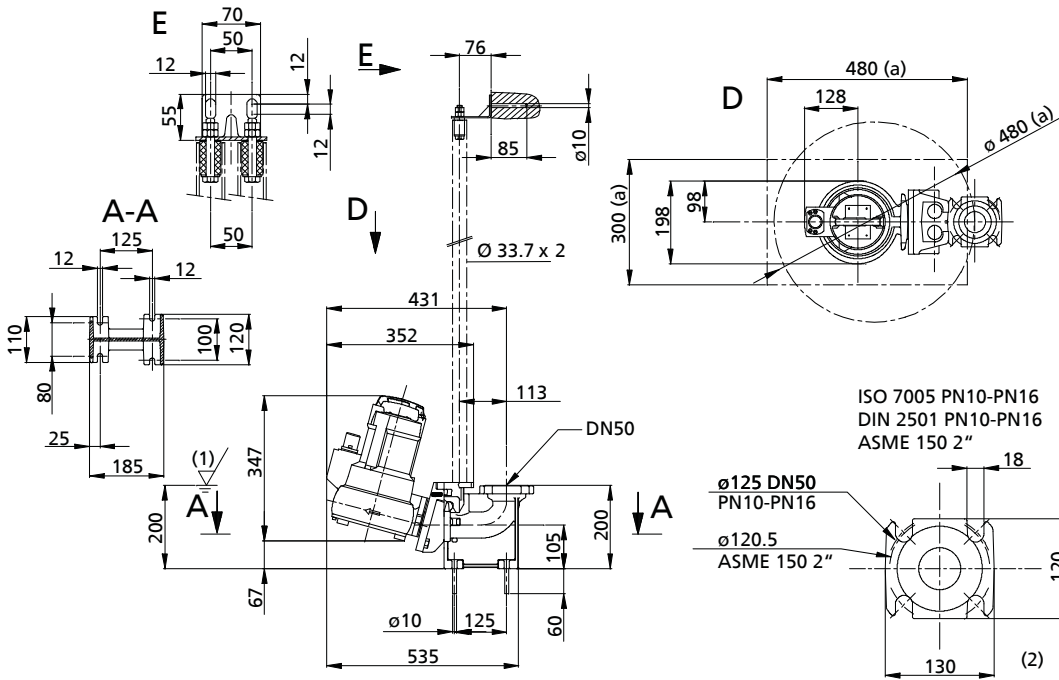
(1)	Lowest switch-off point	(a)	Minimum
(2)	Flange of duckfoot bend		

Ama-Porter 6 __, F impeller, stationary wet-installed model with twin guide rails, duckfoot bend DN 65/65



(1)	Lowest switch-off point	(a)	Minimum
(2)	Flange of duckfoot bend		

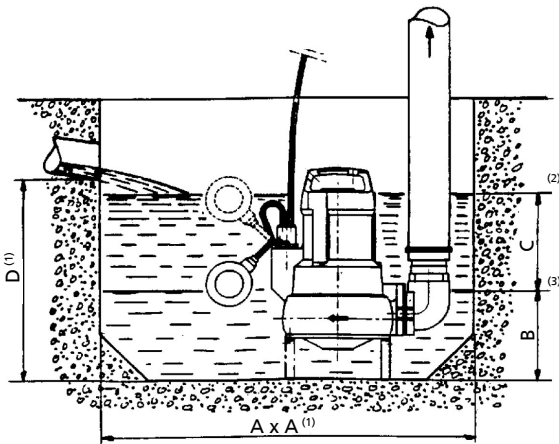
Ama-Porter S 545, S impeller, stationary wet-installed model with twin guide rails, duckfoot bend DN 50/50



(1)	Lowest switch-off point	(a)	Minimum
(2)	Flange of duckfoot bend		

Sump – Ama-Porter 5 __/6 __, F impeller / Ama-Porter S 545, S impeller

(1)	Minimum
(2)	ON
(3)	OFF



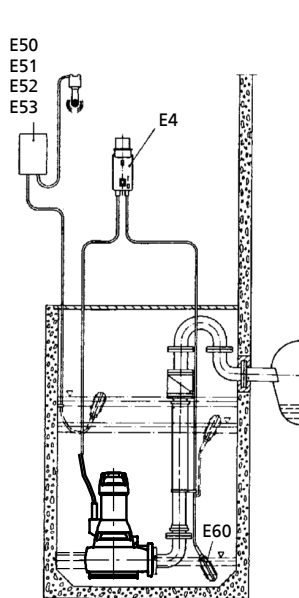
Size	A	B	C	D
Ama-Porter 5 __	600 x 600	160	190	450
Ama-Porter 6 __	600 x 600	170	190	480
Ama-Porter S 545	600 x 600	160	190	450

Information on installation

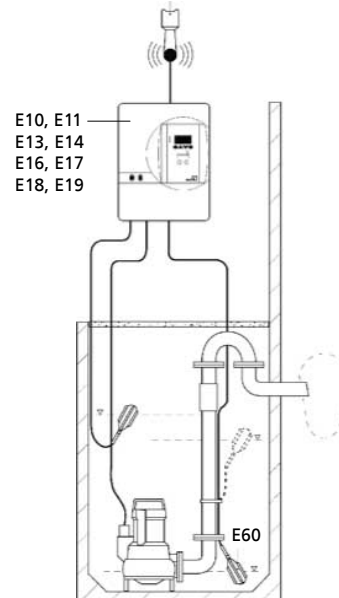
Suggested electrical installation layouts

Ama-Porter is available in non-explosionproof design.

Ama-Porter 5 __ / 6 __

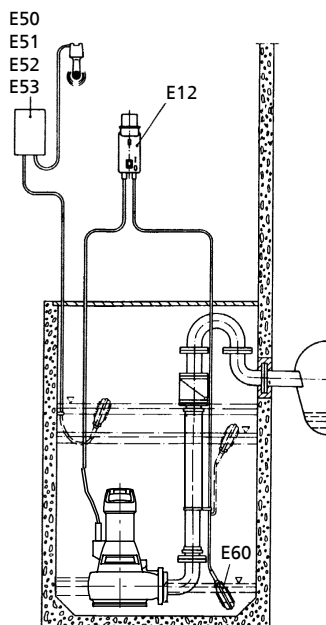


Suggested installation layout No. 1

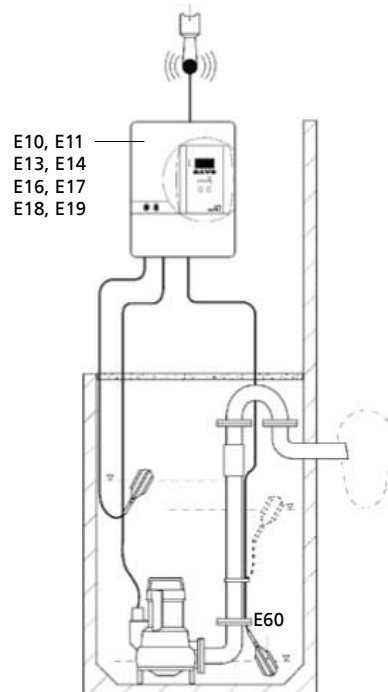


Suggested installation layout No. 2

Ama-Porter S 545



Suggested installation layout No. 1



Suggested installation layout No. 2

Scope of supply

Depending on the model, the following items are included in the scope of supply:

Stationary wet-installed model (installation type S)

- Pump set, complete with power cable
- Claw with sealing element (O-ring) and mounting elements
- Lifting chain⁴⁾
- Mounting bracket with mounting elements

- Duckfoot bend with mounting elements
- Guiding accessories
(guide rails are not included in KSB's scope of supply)

Transportable wet-installed model (installation type P)

- Pump set, complete with power cable
- Installation parts for transportable version, comprising:
three feet, connection elbow, connection piece and clamp
- Lifting chain⁵⁾

⁴⁾ Optional

⁵⁾ Optional

Accessories

Installation parts for stationary and transportable pump sets

Overview of installation parts for stationary and transportable pump sets

	Item	Description	Connection	Installation depth	Ama-Porter			Mat. No.	[kg]
					5	6	S 545		
	P2 + P5	Installation parts for stationary wet installation (guide hoop arrangement) Consisting of: DN 50 flanged duckfoot bend, guide hoop, anchor bolts, claw with stainless steel screws/bolts	DN 50	1,5 m	X	-	X	39020769	11
			DN 50	1,8 m	X	-	X	39020770	12
			DN 50	2,1 m	X	-	X	39020771	13
	P2 + P5	Installation parts for stationary wet installation (guide hoop arrangement) Consisting of: DN 65 flanged duckfoot bend, stainless steel anchor bolts, guide hoop, claw with stainless steel screws/bolts	DN 65	1,5 m	-	X	-	39020827	14.5
			DN 65	1,8 m	-	X	-	39020828	15.5
			DN 65	2,1 m	-	X	-	39020829	17
	P2 + P5	Installation parts for stationary wet installation (guide hoop installation) Consisting of: DN 50/2" flanged duckfoot bend, guide hoop, claw with stainless steel screws/bolts	DN 50/2"	1,5 m	X	-	X	39020795	7.8
			DN 50/2"	1,8 m	X	-	X	39020796	8.8
			DN 50/2"	2,1 m	X	-	X	39020797	10.8
	P2 + P5	Installation parts for stationary wet installation (guide hoop installation) Consisting of: DN 65/2 1/2" flanged duckfoot bend, guide hoop, claw with stainless steel screws/bolts	DN 65/2 1/2"	1,5 m	-	X	-	39020813	11.2
			DN 65/2 1/2"	1,8 m	-	X	-	39020814	12.2
			DN 65/2 1/2"	2,1 m	-	X	-	39020815	13.7
	P4 + P5	Installation parts for stationary wet installation (guide wire installation) Consisting of: flanged duckfoot bend, suspension bracket, mounting bracket, 10 m guide wire, screws, bolts, anchor bolts, claw with stainless steel screws/bolts	DN 50	4,5 m	X	-	X	39021023	14.3
			DN 65	4,5 m	-	X	-	39021025	17.6
	P4 + P5	Installation parts for stationary wet installation (guide wire installation) Consisting of: flanged duckfoot bend, suspension bracket, mounting bracket, 10 m guide wire, claw with stainless steel screws/bolts	DN 50 / 2"	4,5 m	X	-	X	39020779	11.5
			DN 65 / 2 1/2"	4,5 m	-	X	-	39020806	14.7
	P4 + P5	Installation parts for stationary wet installation (single guide rail arrangement) Consisting of: flanged duckfoot bend, mounting bracket, claw with stainless steel screws/bolts (guide rails not included in KSB's scope of supply)	DN 50	4,5 m	X	-	X	39021212	14
			DN 65	4,5 m	-	X	-	39021213	17.2
	P4 + P5	Installation parts for stationary wet installation (guide rail installation) Consisting of: flanged duckfoot bend, mounting bracket, claw with stainless steel screws/bolts (guide rails not included in KSB's scope of supply)	DN 50 / 2"	4,5 m	X	-	X	39021182	10.8
			DN 65 / 2 1/2"	4,5 m	-	X	-	39021188	14
	P4 + P5	Installation parts for stationary wet installation (twin guide rail arrangement) Consisting of: flanged duckfoot bend, stainless steel anchor bolts, mounting bracket, adapter, claw with stainless steel screws/bolts (guide rails not included in KSB's scope of supply)	DN 50, DN 3: DIN ISO ASME	4,5 m	X	-	X	39023002	14
			DN 65, DN 3: DIN ISO ASME	4,5 m	-	X	-	39023006	19.5
	P6	Kit for transportable models Includes: adapter for hose connection, connection elbow, three feet, hose clip including bolts	DN 50	(plastic hose inner ø 63 P19)	X	-	-	39023046	2

	Item	Description	Connection	Installation depth	Ama-Porter			Mat. No.	[kg]
					5 __	6 __	S 545		
			Only for S 545	(plastic hose inner ø 63 P19)	-	-	X	39018120	2
			DN 65	(plastic hose inner ø 80 P19)	-	X	-	39023047	4
	P5	Claw JL1040 with stainless steel bolts Guide wire, single guide rail, guide hoop arrangement			X	-	X	39021016	1.1
					-	X	-	39021018	1.9
	P5	Claw JL1040 with stainless steel bolts Twin guide rail arrangement	DN 50		X	-	X	39022990	6
			DN 65		-	X	-	39022993	7.3
		Parts for conversion to twin guide rail arrangement, consisting of: mounting bracket, stainless steel screws/bolts, adapter, anchor bolts	DN 50/DN 65		-	X	X	39022984	1.4

Chain for stationary and transportable pump sets






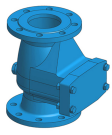




Overview of chains for stationary and transportable pump sets

Item	Description	Length	Ama-Porter			Mat. No.	[kg]
			5 __	6 __	S 545		
P7	Chain (1.4404) short-linked, tested and duly labelled to Directive 2006/42/EC (Machinery Directive), hook (1.4301), shackle (1.4404) Maximum load: 160 kg	2 m	X	X	X	39023811	1.2
		3 m	X	X	X	39023812	1.6
		5 m	X	X	X	39023813	2.4
		10 m	X	X	X	39023814	4.4

Pump accessories

Overview of accessories

	Item	Description	Connection	Length	Ama-Porter			Mat. No.	[kg]
					5 __	6 __	S 545		
	P8	Flange for pipe coupling PN 10, at the flanged elbow, mating dimensions to PN 16	DN 50/R2" pipe		X	-	X	19551111	1.2
			DN 65/R2½" pipe		-	X	-	39020184	1.2
	P10	Threaded flange PN 6, B50 DIN 2558 with screws/bolts for pump discharge nozzle	DN 50/Rp 2		X	-	X	19200721	1
	P14	Elbow with internal/external thread (to be used for flange connections with item 27), galvanised grey cast iron	G 2"		X	-	X	00241966	0.3
			G 2½"		-	X	-	00240316	1.4
	P15	Storz rigid coupling with flange, to DIN 2501, drilled to PN 16 (to be used for flange connections item 25), aluminium/steel	DN 65/B 75		-	X	-	18040148	3.5
	P16	2 hose clips, item 20, are required for hose mounting (for plastic hoses B 75, item 19)	B 75 (DIN 14322)		-	X	-	00520454	0.7
	P17	Storz rigid coupling with external thread, DIN ISO 228/1	C 52/G 2 A		X	-	X	00524370	0.2
			B 75 - G 2½"		-	X	-	00524371	0.4

	Item	Description	Connection	Length	Ama-Porter			Mat. No.	[kg]
					5 --	6 --	S 545		
	P18	Plastic hose DN 50, DIN 14811, with integrated C couplings	C 52-5 m		X	-	X	00522262	2.3
			C 52-10 m		X	-	X	00522263	4.2
			C 52-20 m		X	-	X	00522264	5.7
	P19	Plastic hose Without coupling, DIN 14 811	Inside diameter 63	5 m	X	-	X	39018688	1.7
				10 m	X	-	X	39018689	3.4
				20 m	X	-	X	39018690	6.8
			B 75	5 m	-	X	-	39019064	2
				10 m	-	X	-	39019065	4
				20 m	-	X	-	39019066	8
	P20	Hose clip DIN 3017, chrome steel	B 50		X	-	X	00460476	0.03
			B 75		-	X	-	00109515	0.04
	P21	RK swing check valve Plastic, EN 12 050-4, with internal thread ISO 7/1, full port and drain plug; cannot be used for pumped drainage	Rp 2		X	-	X	01009773	0.5
	P22	Socket gate valve CuZn PN 10-12 DIN 3352	Rp 2		X	-	X	00411503	1.287
			Rp 2½		-	X	-	39000507	1.7
	P23	KSB check valve, grey cast iron With full port, backwash device, flanges drilled to DIN 2501, PN 16 (not for lifting units)	DN 65		-	X	-	48829253	16.2
	P24	ECOLINE GTR-16P gate valve, grey cast iron, PN 16, flanges drilled to ISO 7005/DIN 2501	DN 65		-	X	-	49709579	15
	P25	Set of installation accessories for a flange connection, discharge nozzle; items 14 or 15 Consisting of: 4 hexagon head bolts with nuts and 1 sealing element			-	X	-	19551115	0.8
	P27	Threaded flange PN 16/2", threaded connection C50 DIN 2566 with screws/bolts, sealing element and nuts for flanged bend Consisting of: flange, 4 hexagon head bolts with nuts and discs, and 1 sealing element	DN 50/Rp 2		X	-	X	19551353	2
			DN 65/Rp 2½		-	X	-	39021943	2.9
	P28	Suction strainer			X	X	-	39023050	2

Control units and switchgear

i Valid for all countries except France
Overview of control units and switchgear

Item	Description		230 V	400 V	Type	Ama-Porter								Mat. No.	[kg]
						500	501	502	503	601	602	603	S 545		
E1	Motor protection switchgear MSE	Float switch	X	-	MSE 60.1	X	-	-	-	-	-	-	-	19070138	1
			X	-	MSE 80.1	-	X	-	-	X	-	-	-	19070139	1
			X	-	MSE 100.1	-	-	X	X	-	X	X	X	19070140	1
E2	Motor protection switchgear MSD	Float switch	-	X	MSD 40.1	X	X	X	-	X	X	-	X	19070116	1
			-	X	MSD 60.1	-	-	-	X	-	-	X	X	19070117	1
E4	Multi-functional plug, type Hyper, with motor protection relay		-	X	Hyper 37.1	X	X	X	-	X	X	-	X	19071492	1
			-	X	Hyper 55.1	-	-	-	X	-	-	X	-	19071493	1
LevelControl Basic 2 control unit for single-pump station, IP54															
E10	For float switch or 4...20 mA sensor, optional master switch, 400 x 278 x 120 mm		X	-	BC1 230 ^{DFNO} 100	X	X	X	X	X	X	X	X	19073760	4.5
E11			-	X	BC1 400 ^{DFNO} 040	X	X	X	-	X	X	-	X	19073763	4.5
			-	X	BC1 400 ^{DFNO} 063	-	-	-	X	-	-	X	-	19073764	4.5
E 13	Pneumatic, optionally with 400 x 278 x 120 mm master switch		X	-	BC1 230 ^{DPNO} 100	X	X	X	X	X	X	X	X	19073766	4.5
E 14			-	X	BC1 400 ^{DPNO} 040	X	X	X	-	X	X	-	X	19073768	4.5
			-	X	BC1 400 ^{DPNO} 063	-	-	-	X	-	-	X	-	19073769	4.5
E 16	Bubbler control, with 400 x 300 x 155 mm master switch		X	-	BS1 230 ^{DLNO} 100	X	X	X	X	X	X	X	X	19073817	12
E 17			-	X	BS1 400 ^{DLNO} 040	X	X	X	-	X	X	-	X	19073818	12
			-	X	BS1 400 ^{DLNO} 063	-	-	-	X	-	-	X	X	19073819	12
E 18	Bubbler control for BC version Only to be used for connections with neutral conductor! Installation option O1 (master switch) not possible! 400 x 281 x 120		X	-	BC1 230 ^{DLNO} 100	X	X	X	X	X	X	X	X	19075146	4.5
E 19			-	X	BC1 400 ^{DLNO} 040	X	X	X	-	X	X	-	X	19075148	4.5
			-	X	BC1 400 ^{DLNO} 063	-	-	-	X	-	-	X	X	19075149	4.5
LevelControl Basic 2 control unit for dual-pump station, IP 54															
E30	For float switch or 4...20 mA sensor, optional master switch, 400 x 278 x 120 mm		X	-	BC2 230 ^{DFNO} 100	X	X	X	X	X	X	X	X	19073774	4.7
			-	X	BC2 400 ^{DFNO} 040	X	X	X	-	X	X	-	X	19073777	4.7
			-	X	BC2 400 ^{DFNO} 063	-	-	-	X	-	-	X	-	19073778	4.7
E 33	Pneumatic, optionally with 400 x 278 x 120 mm master switch		X	-	BC2 230 ^{DPNO} 100	X	X	X	X	X	X	X	X	19073780	4.7
			-	X	BC2 400 ^{DPNO} 040	X	X	X	-	X	X	-	X	19073782	4.7
			-	X	BC2 400 ^{DPNO} 063	-	-	-	X	-	-	X	-	19073783	4.7
E 36	Bubbler control, with 400 x 300 x 155 mm master switch		X	-	BS2 230 ^{DLNO} 100	X	X	X	X	X	X	X	X	19073859	13
			-	X	BS2 400 ^{DLNO} 040	X	X	X	-	X	X	-	X	19073860	13
			-	X	BS2 400 ^{DLNO} 063	-	-	-	X	-	-	X	-	19073861	13
E 38	Bubbler control for BC version Only to be used for connections with neutral conductor! Installation option O1 (master switch) not possible! 400 x 281 x 120 mm		X	-	BC2 230 ^{DLNO} 100	X	X	X	X	X	X	X	X	19075147	4.7
E 39			-	X	BC2 400 ^{DLNO} 040	X	X	X	-	X	X	-	X	19075151	4.7
			-	X	BC2 400 ^{DLNO} 063	-	-	-	X	-	-	X	X	19075152	4.7

i Valid for France!
Overview of control units and switchgear

Item	Description		230 V	400 V	Type	Ama-Porter								Mat. No.	[kg]
						500	501	502	503	601	602	603	S 545		
E1	Motor protection switchgear MSE	Float switch	X	-	MSE 60.1	X	-	-	-	-	-	-	-	19070138	1
			X	-	MSE 80.1	-	X	-	-	X	-	-	-	19070139	1
			X	-	MSE 100.1	-	-	X	X	-	X	X	X	19070140	1
E2	Motor protection switchgear MSD	Float switch	-	X	MSD 40.1	X	X	X	-	X	X	-	X	19070116	1
			-	X	MSD 60.1	-	-	-	X	-	-	X	X	19070117	1
E4	Multi-functional plug, type Hyper, with motor protection relay		-	X	Hyper 37.1	X	X	X	-	X	X	-	X	19071492	1
			-	X	Hyper 55.1	-	-	-	X	-	-	X	-	19071493	1
LevelControl Basic 2 control unit for single-pump station, IP 54															
E10	For float switch or 4...20 mA sensor, optional master switch, 400 x 278 x 120 mm,		X	-	BC1 230 ^{DFNM} 063 02	X	X	-	-	X	-	-	-	19073874	4.5
			X	-	BC1 230 ^{DFNM} 100 02	-	-	X	X	-	X	X	X	19073875	4.5
E11	For float switch or 4...20 mA sensor, optional master switch, 400 x 278 x 120 mm,		-	X	BC1 400 ^{DFNO} 025 02	X	-	-	-	-	-	-	-	19073877	4.5
			-	X	BC1 400 ^{DFNO} 040 02	-	X	X	X	X	X	X	X	19073878	4.5
LevelControl Basic 2 control unit for dual-pump station, IP 54															
E30	For float switch or 4...20 mA sensor, optional master switch, 400 x 278 x 120 mm		X	-	BC2 230 ^{DFNM} 063 02	X	X	-	-	X	-	-	-	19073884	4.7
			X	-	BC2 230 ^{DFNM} 100 02	-	-	X	X	-	X	X	X	19073885	4.7




Item	Description	230 V	400 V	Type	Ama-Porter								Mat. No.	[kg]	
					500	501	502	503	601	602	603	S 545			
E31	For float switch or 4...20 mA sensor, optional master switch, 400 x 278 x 120 mm	-	X	BC2 400 ^{DFNO} 025 02	X	-	-	-	-	-	-	-	-	19073887	4.7
		-	X	BC2 400 ^{DFNO} 040 02	-	X	X	X	X	X	X	X	X	19073888	4.7

LevelControl Basic 2 installation options (processed via KSB EasySelect)⁶⁾



Item	Description	Ama-Porter								Mat. No.	[kg]
		500	501	502	503	601	602	603	S 545		
O1	Master switch for LevelControl Basic 2, installed for type BC...	X	X	X	X	X	X	X	X	01143084	0.2
O2	Control cabinet heating, installed for type BS...	X	X	X	X	X	X	X	X	19074269	0.3
O10	Outdoor cabinet type 142 with integrated base for control unit BC Dimensions W x H x D [mm]: 320 x 1420 x 225	X	X	X	X	X	X	X	X	19071911	15
O11	Outdoor cabinet type 0/845 for control units BS1 (up to 25 A) and BS2 (up to 10 A) Dimensions W x H x D [mm]: 585 x 845 x 315	X	X	X	X	X	X	X	X	19071440	40
O200	Signalling module for type BC	X	X	X	X	X	X	X	X	19075182	0.2
O201	Signalling module for type BC, With pressure sensor 3 mlc for redundant pneumatic level measurement or redundant bubbler system	X	X	X	X	X	X	X	X	19075183	1.1
O203	Signalling module for type BS...	X	X	X	X	X	X	X	X	19075185	1.1
O204	Signalling module for type BS..., With pressure sensor 3 mlc for redundant pneumatic level measurement or redundant bubbler system	X	X	X	X	X	X	X	X	19075186	0.8

Alarm switchgears for pumps without ATEX

AS 0/AS 1/AS 2/AS 4/AS 5

	Item	Description	Mat. No.	[kg]
	E50	Alarm switchgear AS 0 with circuit breaker, piezoceramic signal transmitter, 85 dB(A) at a distance of 1 m and 4.1 kHz, green equipment-on lamp Plastic housing IP20, 140 x 80 x 57 mm. Use float switch, F1 moisture sensor (item E64), M1 alarm contactor or signal relay of control unit as contactor.	29128401	0.5
	E51	Alarm switchgear AS 2 with circuit breaker, piezoceramic signal transmitter, 85 dB(A) at a distance of 1 m and 4.1 kHz, green equipment-on lamp, volt-free contact for hook-up to a control station. Plastic housing IP 20, 140 x 80 x 57 mm. Use float switch, F1 moisture sensor (item E 64) or signal relay of control unit as contactor.	29128422	0.5
	E52	Alarm switchgear AS 4 with circuit breaker, piezoceramic signal transmitter, 85 dB(A) at a distance of 1 m and 4.1 kHz, green equipment-on lamp, volt-free contact for hook-up to a control station, self-charging power supply unit for 5 hours' operation in the event of power failure Plastic housing IP20, 140 x 80 x 57 mm. Use float switch (E60), F1 moisture sensor (item E64) or signal relay of control unit as contactor.	29128442	0.5

⁶⁾ Installation options must be processed via KSB EasySelect, otherwise they will be supplied with the unit but not fitted.

	Item	Description	Mat. No.	[kg]
	E53	<p>Alarm switchgear AS 5</p> <p>Mains-independent, with self-charging power supply unit for 10 hours' operation in the event of power failure, mains pilot LED, fault indicator light, horn-off push button, volt-free contact for hook-up to a control station, ready for connection with 1.8 m connection cable and plug.</p> <p>ISO housing IP41, 190 x 165 x 75 mm. Use float switch (E60) or signal relay of control unit as contactor.</p>	00530561	1.7
	E55	<p>Alarm switchgear AS 1</p> <p>In ISO plug housing IP30, mains-independent, with self-charging power supply unit for 5 hours' operation in the event of a power failure, acoustic signal 70 dB(A) with circuit breaker and integrated signal transmitter with 3-metre connection cable, max. 60 °C, not suitable for steam and condensate.</p> <p>1. High water alert by suspending the moisture sensor in a (pump) sump above the pump start-up point.</p> <p>2. Water alarm signal at a water level of only 1 mm (!), by placing the contactor on the floor of rooms at risk of flooding, e.g. the cellar or next to the washing machine in the kitchen or bathroom.</p>	00533740	0.9

Control unit/switchgear accessories

Item	Description	Ama-Porter								Mat. No.	[kg]	
		500	501	502	503	601	602	603	S 545			
E60	Float switch with free cable end (NO contact)	3 m	X	X	X	X	X	X	X	X	11037742	0.5
		5 m	X	X	X	X	X	X	X	X	11037743	0.8
		10 m	X	X	X	X	X	X	X	X	11037744	1.3
		15 m	X	X	X	X	X	X	X	X	11037745	1.8
		20 m	X	X	X	X	X	X	X	X	11037746	2.4
		25 m	X	X	X	X	X	X	X	X	11037747	2.9
		30 m	X	X	X	X	X	X	X	X	11037748	3.4
E62	Float switch with free cable end (NC contact)	5 m	X	X	X	X	X	X	X	X	11037756	0.8
		10 m	X	X	X	X	X	X	X	X	11037757	1.4
		20 m	X	X	X	X	X	X	X	X	11037758	2.6
E64	Leakage sensor F 1	3 m	X	X	X	X	X	X	X	X	19072366	0.2
E65	Open pressure bell set - pneumatic and bubbler control with polyamide tube 8 x 1 mm	Tube length 10 m	X	X	X	X	X	X	X	X	19071721	1.2
		Tube length 20 m	X	X	X	X	X	X	X	X	19071837	2
		Tube length 50 m	X	X	X	X	X	X	X	-	19074200	2.5
E66	Closed pressure bell set - pneumatic with polyamide tube 8 x 3 mm	Tube length 10 m	X	X	X	X	X	X	X	X	19071722	3.5
		Tube length > 10 m	X	X	X	X	X	X	X	X		
E70	Horn, 12 V DC, 105 dB, 150 mA, IP54, 2 strands of 0.45 m length		X	X	X	X	X	X	X	X	01086547	0.1
E71	Alarm combination, 12 V DC		X	X	X	X	X	X	X	X	01139930	0.1
E72	Yellow alarm strobe light, 12 V DC, 195 mA, IP65		X	X	X	X	X	X	X	X	01056355	0.3
E73	PC service tool		X	X	X	X	X	X	X	X	47121210	0.2
E90	Rechargeable battery retrofit kit for LevelControl Basic 2, for powering the electronics, the float switches of the level sensors or the internal pressure sensor and the alarm equipment (buzzer, horn, alarm combination), for single-pump and dual-pump stations	For type BC, includes 2 rechargeable batteries 6 V, 1.3 Ah and charging unit	X	X	X	X	X	X	X	X	19074194	0.8
		For type BS, consisting of 1 rechargeable battery 12 V, 1.2 Ah and charging unit	X	X	X	X	X	X	X	X	19074199	1

Alarm switchgear models

Alarm switchgear models for single-pump stations

Feature	Design			
	Float switch	Pneumatic	Bubbler control	BC bubbler control
230 V: 6,0 - 10,0 A	BC1 230 ^{DFNO} 100	BC1 230 ^{DPNO} 100	BS1 230 ^{DLNO} 100	BC1 230 ^{DLNO} 100
400 V: 2,5 - 4,0 A	BC1 400 ^{DFNO} 040	BC1 400 ^{DPNO} 040	BS1 400 ^{DLNO} 040	BC1 400 ^{DLNO} 040
400 V: 4,0 - 6,3 A	BC1 400 ^{DFNO} 063	BC1 400 ^{DPNO} 063	BS1 400 ^{DLNO} 063	BC1 400 ^{DLNO} 063
Functions				
Tank drainage	X	X	X	X
Tank filling via float switch	X	-	-	-
Peak load operation function	-	-	-	-
Stand-by pump: 1 pump redundant	-	-	-	-
Automatic pump changeover after every start	-	-	-	-
Automatic pump changeover in the case of a pump fault	-	-	-	-
Runtime limitation	X	X	X	X
OFF via after-run time	X	X	X	X
OFF via level	X	X	X	X
Operation check run after idle period	X	X	X	X
Alert memory	X	X	X	X
Display and operation				
7-segment display	X	X	X	X
Indication of water level	Switching points	X	X	X
For each pump: operation/fault/pump running	Multicolour LED	Multicolour LED	Multicolour LED	Multicolour LED
General fault (traffic light)	LED	LED	LED	LED
High water	LED	LED	LED	LED
Mains voltage	X	X	X	X
Mains frequency	-	-	-	-
Motor current per pump	-	-	-	-
Operating hours of each pump	X	X	X	X
Operating hours of the system	-	-	-	-
Starts per pump	X	X	X	X
Effective power per pump	-	-	-	-
Rotary field recognition of mains power supply	X	X	X	X
Phase monitoring	X	X	X	X
Change of switching level via control panel	-	X	X	X
Housing H x W x D, IP 54				
Plastic 400 x 278 x 120	X	X	-	X
Sheet steel 400 x 300 x 155	-	-	X	-
Built-in components				
Master switch (lockable)	o	o	X	-
Manual-0-automatic selector switch per pump	X	X	X	X
DOL starting	X	X	X	X
Shockproof socket 230 V	At 230 V	At 230 V	At 230 V	At 230 V
Motor protection				
Fuse per pump	At 230 V	At 230 V	At 230 V	At 230 V
Motor protection switch per pump (overcurrent and short-circuit protection)	At 400 V	At 400 V	At 400 V	At 400 V
Motor temperature warning input - self-acknowledging	X	X	X	X
Motor temperature alert input - manual acknowledgement	X	X	X	X
Pump				
Thermal circuit breaker (TCB) / bimetal switch per pump	7)	7)	7)	7)
Installation options				
Rechargeable battery for powering the electronics, sensors, alarm equipment	o	o	o	o
Control cabinet heating, type BS	-	-	o at 400 V	-
Alarm equipment				

7) Ama-Porter NE 1 ~ 230 V: bimetal switch in the motor; Ama-Porter ND 3 ~ 400 V: no bimetal switch

Feature	Design			
	Float switch	Pneumatic	Bubbler control	BC bubbler control
1 free alarm input	X	X	X	X
1 digital high water alert input (e.g. for float switch)	X	X	X	X
Volt-free contact (changeover contact) for general fault/operation message	X	X	X	X
Piezo buzzer 85 dB(A)	X	X	X	X
Horn 105 dB(A) / alarm combination / alarm strobe light 12 V DC	o	o	o	o
Inputs/outputs				
Inputs for float switches	4	-	-	-
4...20 mA analog input	X	-	-	-
Integrated pneumatic pressure sensor up to 3 metres of water - up to 10 metres on request	-	X	-	-
Bubbler system with compressor up to 2 metres of water	-	-	X	X
Remote acknowledgement	X	X	X	X
12 V DC connection for horn, alarm combination, alarm strobe light	X	X	X	X
Sensors				
Float switch (NO contact)	o	-	-	-
Redundant float switch (NO contact) for high water	-	o	o	o
Pressure bell (open system) for pneumatic and bubbler control system	-	o	o	o
Pressure bell (closed system) for pneumatic system	-	o	-	-
F1 moisture sensor	-	o	o	o
Tools				
KSB Service Tool for Windows XP	o	o	o	o

Key to the symbols

Symbol	Description
o	Optional
X	Available
-	Not available

Alarm switchgear models for dual-pump stations

Feature	Design			
	Float switch	Pneumatic	Bubbler control	BC bubbler control
230 V: 6,0 - 10,0 A	BC2 230 ^{DFNO} 100	BC2 230 ^{DPNO} 100	BS2 230 ^{DLNO} 100	BC2 230 ^{DLNO} 100
400 V: 2,5 - 4,0 A	BC2 400 ^{DFNO} 040	BC2 400 ^{DPNO} 040	BS2 400 ^{DLNO} 040	BC2 400 ^{DLNO} 040
400 V: 4,0 - 6,3 A	BC2 400 ^{DFNO} 063	BC2 400 ^{DPNO} 063	BS2 400 ^{DLNO} 063	BC2 400 ^{DLNO} 063
Functions				
Tank drainage	X	X	X	X
Tank filling via float switch	X	-	-	-
Peak load operation function	X	X	X	X
Stand-by pump: 1 pump redundant	X	X	X	X
Automatic pump changeover after every start	X	X	X	X
Automatic pump changeover in the case of a pump fault	X	X	X	X
Runtime limitation	X	X	X	X
OFF via after-run time	X	X	X	X
OFF via level	X	X	X	X
Operation check run after idle period	X	X	X	X
Alert memory	X	X	X	X
Display and operation				
7-segment display	X	X	X	X
Indication of water level	Switching points	X	X	X
For each pump: operation/fault/pump running	Multicolour LED	Multicolour LED	Multicolour LED	Multicolour LED
General fault (traffic light)	LED	LED	LED	LED
High water	LED	LED	LED	LED
Mains voltage	X	X	X	X
Mains frequency	-	-	-	-
Motor current per pump	-	-	-	-
Operating hours of each pump	X	X	X	X
Operating hours of the system	-	-	-	-
Starts per pump	X	X	X	X
Effective power per pump	-	-	-	-
Rotary field recognition of mains power supply	X	X	X	X
Phase monitoring	X	X	X	X
Change of switching level via control panel	-	X	X	X
Housing H x W x D, IP 54				
Plastic 400 x 278 x 120	X	X	-	-
Sheet steel 400 x 300 x 155	-	-	X	X
Built-in components				
Master switch (lockable)	o	o	X	-
Manual-0-automatic selector switch per pump	X	X	X	X
DOL starting	X	X	X	X
Shockproof socket 230 V	At 230 V	At 230 V	At 230 V	At 230 V
Motor protection				
Fuse per pump	At 230 V	At 230 V	At 230 V	At 230 V
Motor protection switch per pump (overcurrent and short-circuit protection)	At 400 V	At 400 V	At 400 V	At 400 V
Motor temperature warning input - self-acknowledging	X	X	X	X
Motor temperature alert input - manual acknowledgement	X	X	X	X
Pump				
Thermal circuit breaker (TCB) / bimetal switch per pump	8)	8)	8)	8)
Installation options				
Rechargeable battery for powering the electronics, sensors, alarm equipment	o	o	o	o
Control cabinet heating, type BS	-	-	o at 400 V	-
Alarm equipment				
1 free alarm input	X	X	X	X

8) Ama-Porter NE 1 ~ 230 V: bimetal switch in the motor; Ama-Porter ND 3 ~ 400 V: no bimetal switch

Feature	Design			
	Float switch	Pneumatic	Bubbler control	BC bubbler control
1 digital high water alert input (e.g. for float switch)	X	X	X	X
Volt-free contact (changeover contact) for general fault/operation message	X	X	X	X
Piezo buzzer 85 dB(A)	X	X	X	X
Horn 105 dB(A) / alarm combination / alarm strobe light 12 V DC	o	o	o	o
Inputs/outputs				
Inputs for float switches	4	-	-	-
4...20 mA analog input	X	-	-	-
Integrated pneumatic pressure sensor up to 3 metres of water - up to 10 metres on request	-	X	-	-
Bubbler system with compressor up to 2 metres of water	-	-	X	X
Remote acknowledgement	X	X	X	X
12 V DC connection for horn, alarm combination, alarm strobe light	X	X	X	X
Sensors				
Float switch (NO contact)	o	-	-	-
Redundant float switch (NO contact) for high water	-	o	o	o
Pressure bell (open system) for pneumatic and bubbler control system	-	o	o	o
Pressure bell (closed system) for pneumatic system	-	o	-	-
F1 moisture sensor	o	o	o	o
Tools				
KSB ServiceTool for Windows XP	o	o	o	o

Key to the symbols

Symbol	Description
o	Optional
X	Available
-	Not available



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