

## Submersible Waste Water Pump

# Ama-Drainer 4../5..

## Type Series Booklet



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Type Series Booklet Ama-Drainer 4../5..

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## Building Services: Drainage

### Drainage Pumps / Waste Water Pumps

## Ama-Drainer 4../5..



#### Main applications

- Drainage
- Disposal
- Drainage systems
- Lowering groundwater levels
- Maintaining groundwater levels
- Draining of pits, shafts, etc.

#### Fluids handled

##### Variant A (standard variant)

- Chemically neutral waste water
- Slightly contaminated waste water (up to 40 °C max.)
- Wash water (up to 90 °C max. for short periods  $t \leq 3$  minutes)

Free passage 10/11 mm:

- Solid particles with a particle size of up to 10 or 11 mm

Free passage 35 mm:

- Waste water containing long fibres and stringy material
- Solid particles with a particle size of up to 35 mm

##### Variant C (for aggressive water)

In addition to standard variant:

- Swimming pool water<sup>1)</sup>
- Brackish water
- Seawater

- Water containing salt
- Aggressive fluids
- Condensate from heat recovery applications

##### Variant R (for water containing oil / oil emulsions)

In addition to standard variant:

- Oil emulsions and cutting oils
- Waste water containing oil

#### Operating data

Operating properties

Characteristic		Value
Flow rate	Q [m <sup>3</sup> /h]	≤ 50
	Q [l/s]	≤ 14
Head	H [m]	≤ 24
Fluid temperature	T [°C]	≤ +40 (continuous duty)
		≤ +90 (short-time duty, ≤ 3 minutes)
Immersion depth	ET [m]	≤ 7

#### Design details

##### Design

- Fully floodable submersible motor pump
- Close-coupled design
- Single-stage
- To EN 12050-2
- Vertical discharge nozzle
- With or without level control

##### Installation

- Vertical installation
- Wet-installed transportable model
- Wet-installed stationary model

##### Drive

- Motor winding to IEC 60038
- Motor design to EN 60043 T1/IEC 34-1
- Thermal class F
- DOL starting
- Enclosure IP68 (permanently submerged) to EN 60529 / IEC 529

Ama-Drainer NE/SE 10/35:

- AC motor
- Integrated temperature switch
- 10-metre power cable
- Shockproof plug

Ama-Drainer SD 10/11/35:

1) Swimming pool water (0.4 to 1.4 mg/l free chlorine, max. 0.6 mg/l combined chlorine, pH 6.9 to 7.7, water hardness 10 to 30 °dH, max. salt content 7 g/l)

- Three-phase motor
- Integrated temperature switch
- 10-metre power cable
- CEE plug (3L+PE+N) with motor contactor and phase inverter

Ama-Drainer ND 10/11/35:

- Three-phase motor
- Integrated temperature switch
- 10-metre power cable with free cable end and protective cap

#### Shaft seal

- Pump end, 1 bi-directional mechanical seal
- Drive end: 1 shaft seal ring
- Liquid reservoir between the seals for cooling and lubrication

#### Impeller type

- Open multi-vane impeller
- Free-flow impeller

#### Bearings

- Maintenance-free
- Grease-packed rolling element bearings sealed for life

### Designation

Example: Ama-Drainer A 4 22 S D / 10 K

Designation key

Code	Description	
Ama-Drainer	Type series	
A	Material variant	
	A	Standard variant
	C	Variant for aggressive water
	R	Variant for water containing oil / oil emulsions
4	Nominal discharge nozzle diameter	
	4	~ 40 mm (G 1 1/2)
	5	~ 50 mm (G 2)
22	Motor rating [kW x 10]	
	05	0.55 kW
	07	0.75 kW
	11	1.1 kW
	15	1.5 kW
	22	2.2 kW
S	Float switch	
	S	With float switch
	N	Without float switch
D	Motor	
	D	Three-phase motor
	E	Single-phase alternating current
10	Free passage [mm]	
	10	10 mm
	11	11 mm
	35	35 mm
K	Cooling jacket	
	K	With cooling jacket
	- <sup>2)</sup>	Without cooling jacket

2) Blank

**Materials**
**Variant A**

Component	4../10	4../35	5../10 K	522../11
Pump casing	Chrome nickel steel (1.4301)			Grey cast iron EN-GJL-250
Suction cover	Chrome nickel steel (1.4301)			Grey cast iron EN-GJL-250
Volute	Acrylonitrile butadiene styrene copolymer (ABS)			-
Impeller	Polyamide (PA)			
Pump foot	Polypropylene (PP)	Chrome nickel steel (1.4301)	Polypropylene (PP)	Polyethylene (PE)
O-rings	Acrylonitrile butadiene rubber (NBR)			
Mechanical seal	Silicon carbide (SiC/SiC)			
Stator case	Chrome nickel steel (1.4301)			
Rotor shaft	Chrome steel (1.4021)			
Motor power cable	Polychloroprene rubber (CR)			
Float	Polypropylene (PP)			
Cooling jacket	-	-	Polyoxymethylene (POM)	-
Oil supply	Liquid paraffin (environmentally friendly)			

**Variant C**

Component	4../35	5../10 K	522../11
Pump casing	Chrome nickel molybdenum steel (1.4401)		Chrome nickel molybdenum cast steel (1.4408)
Suction cover	Chrome nickel molybdenum steel (1.4401)		Chrome nickel molybdenum cast steel (1.4408)
Volute	Acrylonitrile butadiene styrene copolymer (ABS)		-
Impeller	Polyamide (PA)		
Pump foot	Polypropylene (PP)		Polyethylene (PE)
O-rings	Acrylonitrile butadiene rubber (NBR)		
Mechanical seal	Silicon carbide (SiC/SiC)		
Stator case	Chrome nickel molybdenum steel (1.4401)		
Rotor shaft	Chrome nickel molybdenum steel (1.4571)		
Motor power cable	Polychloroprene rubber (CR)		
Float	Polypropylene (PP)		
Cooling jacket	-	Polyoxymethylene (POM)	-
Oil supply	Liquid paraffin (environmentally friendly)		

**Variant R**


Component	5../10 K	522../11
Pump casing	Chrome nickel steel (1.4301)	Grey cast iron EN-GJL-250
Suction cover	Chrome nickel steel (1.4301)	Grey cast iron EN-GJL-250
Volute	Acrylonitrile butadiene styrene copolymer (ABS)	-
Impeller	Polyamide (PA)	
Pump foot	Polypropylene (PP)	
O-rings	Fluorocarbon rubber (FPM)	
Mechanical seal	Silicon carbide (SiC/SiC)	
Stator case	Chrome nickel steel (1.4301)	
Rotor shaft	Chrome steel (1.4021)	
Motor power cable	Polyurethane (PUR)	
Float	Polypropylene (PP)	
Cooling jacket	Polyoxymethylene (POM)	-
Oil supply	Liquid paraffin (environmentally friendly)	

**Product benefits**

- Ready-to-connect, easy installation and commissioning
- Reliable shaft sealing by SiC/SiC mechanical seal with good dry-running characteristics, with oil reservoir
- Maintenance-free with grease-packed bearings sealed for life

## Certification

### Overview

Label	Effective in:	Comment
	Europe	-

**Overview of product features / selection tables**
**Overview of fluids handled**

The table of fluids handled is a selection aid for different applications. It serves as guidance and is based on long-standing experience. The data are reference values and are not to be considered generally binding recommendations. They shall not be the basis for warranty claims. Please contact your nearest sales branch for in-depth advice.

Table of fluids handled

Fluids handled	Temperature	Percentage	Variant				
			A		C		R
	[°C]	[%]	Free passage				
			10/11	35	10/11	35	10/11
Ammonium chloride NH <sub>4</sub> Cl	-	10	-	-	X	-	-
Ammonium hydroxide NH <sub>4</sub> OH	≤ 30	10	X	X	-	-	-
Aluminium sulphate Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub>	≤ 40	10	-	-	X	-	-
Antifrogen-water mixture	-	-	X	X	-	-	-
Ethylene glycol	-	-	X	X	-	-	-
Alkaline cleaning agents	-	-	-	-	3)	3)	-
Barium nitrate	-	-	X	X	-	-	-
Drilling emulsion	-	-	-	-	-	-	X
Brackish water	-	-	-	-	X	X	-
Calcium hydroxide Ca (OH) <sub>2</sub>	≤ 30	5	X	X	-	-	-
Calcium chloride CaCl <sub>2</sub>	≤ 25	5	-	-	X	X	-
Calcium nitrate Ca (NO <sub>3</sub> ) <sub>2</sub>	-	10	X	X	-	-	-
Deionised water	-	-	X	X	-	-	-
Landfill leachate	-	-	-	-	3)	3)	-
Disinfecting lye	-	-	-	-	3)	3)	-
Iron(II) nitrate Fe (NO <sub>3</sub> ) <sub>2</sub>	-	5	-	-	X	-	-
Iron(II) sulphate Fe (SO <sub>4</sub> )	-	5	-	-	X	-	-
Photographic developers	-	-	-	-	3)	-	-
Vinegar	-	-	-	-	X	-	-
Degreaser	-	-	-	-	3)	3)	-
Liquid fertiliser	-	-	-	-	X	X	-
Antifreeze	-	-	X	X	-	-	-
Fibrous material	-	-	-	X	-	X	-
Fruit juice	-	-	-	-	X	X	-
Galvanic baths	-	-	-	-	3)	3)	-
Fermentation juice	-	-	-	-	-	X	-
Ethylene glycol	-	-	X	X	-	-	-
Potassium carbonate	-	-	X	X	-	-	-
Potassium chloride KCl	≤ 20	3	-	-	X	-	-
Potassium hydroxide KOH	≤ 30	10	X	X	-	-	-
Potassium nitrate KNO <sub>3</sub>	-	10	X	X	-	-	-
Calcium hydroxide (lime water) Ca(OH) <sub>2</sub>	≤ 30	5	X	X	-	X	-
Condensate (from condensing boiler applications)	-	-	-	-	3)	-	-
Waste water from laboratories	-	-	-	-	3)	3)	-
Lemonades	-	-	-	-	X	-	-
Magnesium chloride MgCl <sub>2</sub>	≤ 20	3	-	-	X	-	-
Magnesium sulphate MgSO <sub>4</sub>	-	10	X	X	-	-	-
Milk	-	10	X	X	-	-	-
Lactic acids	-	5	-	-	X	-	-
Whey	-	-	-	-	X	-	-
Sodium chloride NaCl	≤ 20	3	-	-	X	-	-
Sodium hydroxide NaOH	≤ 30	10	X	X	-	-	-
Sodium carbonate Na <sub>2</sub> CO <sub>3</sub>	-	10	X	X	-	-	-
Sodium nitrate	-	-	X	X	-	-	-
Sodium perborate	-	-	X	X	-	-	-
Sodium sulphate Na <sub>2</sub> SO <sub>4</sub>	-	10	X	X	-	-	-

3) Contact KSB and provide the relevant analysis as well as the data on temperature and mode of operation.



Fluids handled	Temperature	Percentage	Variant				
			A		C		R
			Free passage				
[°C]	[%]	10/11	35	10/11	35	10/11	
Oil-water emulsion	-	-	-	-	-	-	X
Osmosis	-	-	-	-	-	-	-
▪ Raw water (containing salt/chloride)	-	-	-	-	3)	3)	-
▪ Permeate (low salt content)	-	-	-	-	X	X	-
Paraffin oil	-	-	-	-	-	-	X
Rapeseed oil	-	-	-	-	-	-	X
Cleaning lye / washing lye	≤ 40	≤ 12 <sup>4)</sup>	-	-	X	X	-
Acids, diluted	≤ 20	≥ 5 <sup>4)</sup>	-	-	X	X	-
Silicone oil	-	-	-	-	-	-	X
Silage leachate	-	-	-	-	X	X	-
Soy-bean oil	-	-	X	X	-	-	X
Edible vinegar	-	-	-	-	X	-	-
Edible oil	-	-	-	-	-	-	X
Cutting oil	-	-	-	-	-	-	X
Trisodium phosphate	-	-	X	X	-	-	-
Vaseline	-	-	X	X	-	-	-
Washing machine lye	-	-	X	X	X	X	-
Lye for metal cleaning	-	-	-	-	3)	3)	-
Water	-	-	-	-	-	-	-
▪ Drainage water	-	-	X	X	-	-	-
▪ Fire-fighting water	-	-	X	X	-	-	-
▪ Heating water	-	-	X	X	-	-	-
▪ Boiler water	-	-	X	X	-	-	-
▪ Cooling water	-	-	X	X	-	-	-
▪ Seawater	≤15	-	-	-	X	X	-
▪ Raw water	-	-	-	-	3)	3)	-
▪ Salt water	-	-	-	-	3)	3)	-
▪ Swimming pool water (DIN 19643)	-	-	-	-	X	X	-
▪ Partly desalinated water	-	-	X	X	-	-	-
▪ Fully desalinated water	-	-	-	-	X	X	-
Waste water	-	-	-	-	-	-	-
▪ Electroplating shops	-	-	-	-	3)	3)	-
▪ Bottle washing, crate washing, keg washing	-	-	-	-	X	X	-
▪ Beverage industry, breweries	-	-	-	-	X	X	-
▪ Dairies, winegrowers' cooperatives	-	-	-	-	X	X	-
▪ Emergency pumping (floods)	-	-	-	X	-	X	-
▪ Containing salt (from fish-processing plants)	-	-	-	-	-	X	-
▪ Seawater and river water	-	-	-	X	-	X	-
▪ Car repair shops, car washes	-	-	-	-	-	-	X
▪ Petrol stations	-	-	-	-	-	-	X
▪ Pit drainage (raffinates)	-	-	-	-	-	-	X
▪ Pit drainage (chemically aggressive substances)	-	-	-	-	X	X	-
▪ Wash water containing long fibres and stringy material	-	-	-	X	-	X	-
Citric acid	≤ 10	-	-	-	X	-	-

4) pH

**Technical data**
**Variant A**

Designation	Nominal size	Free passage [mm]	P <sub>1</sub> [kW]	P <sub>2</sub> [kW]	1~ 220 - 240 V	3~ 380 - 415 V	Power cable 10 m		Level control		Mat. No.	[kg]
					≈ I <sub>N</sub> [A]	≈ I <sub>N</sub> [A]	H 07RN-F6G1	H 07RN-F3G1	H 07RN-F3G1			
									[m]			
<b>Ama-Drainer - variant A (standard variant), particle size 10 mm, without cooling jacket</b>												
A 405 NE/10	G 1 1/2	10	0,90	0,55	4,10	-	-	-	X	-	29128651	12,2
A 405 SE/10	G 1 1/2	10	0,90	0,55	4,10	-	-	-	X	0,5	29128650	12,7
A 405 ND/10	G 1 1/2	10	0,76	0,55	-	1,70	X	-	-	-	29128652	13,8
A 405 SD/10	G 1 1/2	10	0,76	0,55	-	1,70	X	-	-	10	29128742	15,1
A 407 NE/10	G 1 1/2	10	1,26	0,75	5,50	-	-	-	X	-	29128654	12,2
A 407 SE/10	G 1 1/2	10	1,26	0,75	5,50	-	-	-	X	0,5	29128653	12,7
A 407 ND/10	G 1 1/2	10	1,01	0,75	-	1,90	X	-	-	-	29128655	13,8
A 407 SD/10	G 1 1/2	10	1,01	0,75	-	1,90	X	-	-	10	29128743	15,1
A 411 NE/10	G 1 1/2	10	1,45	1,10	6,55	-	-	-	X	-	29128657	14,5
A 411 SE/10	G 1 1/2	10	1,45	1,10	6,55	-	-	-	X	0,5	29128656	15
A 411 ND/10	G 1 1/2	10	1,54	1,10	-	2,50	X	-	-	-	29128658	13,8
A 411 SD/10	G 1 1/2	10	1,54	1,10	-	2,50	X	-	-	10	29128744	15,1
A 415 NE/10	G 1 1/2	10	2,07	1,50	8,95	-	-	-	X	-	29128660	14,5
A 415 SE/10	G 1 1/2	10	2,07	1,50	8,95	-	-	-	X	0,5	29128659	15
A 415 ND/10	G 1 1/2	10	1,88	1,50	-	3,60	X	-	-	-	29128661	15,6
A 415 SD/10	G 1 1/2	10	1,88	1,50	-	3,60	X	-	-	10	29128745	16,9
A 422 ND/10	G 1 1/2	10	2,90	2,20	-	4,80	X	-	-	-	29128662	15,6
A 422 SD/10	G 1 1/2	10	2,90	2,20	-	4,80	X	-	-	10	29128746	16,9
<b>Ama-Drainer - variant A (standard variant), particle size 11 mm, without cooling jacket</b>												
A 522 ND/11	G 2	11	2,90	2,20	-	4,80	X	-	-	-	29128865	25
A 522 SD/11	G 2	11	2,90	2,20	-	4,80	X	-	-	10	29128866	27
<b>Ama-Drainer - variant A (standard variant), particle size 35 mm, without cooling jacket</b>												
A 405 NE/35	G 1 1/2	35	0,90	0,55	4,10	-	-	-	X	-	29128677	13,2
A 405 SE/35	G 1 1/2	35	0,90	0,55	4,10	-	-	-	X	0,5	29128676	13,7
A 405 ND/35	G 1 1/2	35	0,76	0,55	-	1,70	X	-	-	-	29128678	14,8
A 405 SD/35	G 1 1/2	35	0,76	0,55	-	1,70	X	-	-	10	29128752	16,1
A 411 NE/35	G 1 1/2	35	1,45	1,10	6,55	-	-	-	X	-	29128680	15,5
A 411 SE/35	G 1 1/2	35	1,45	1,10	6,55	-	-	-	X	0,5	29128679	16
A 411 ND/35	G 1 1/2	35	1,54	1,10	-	2,50	X	-	-	-	29128681	14,8
A 411 SD/35	G 1 1/2	35	1,54	1,10	-	2,50	X	-	-	10	29128753	16,1
A 422 ND/35	G 1 1/2	35	2,90	2,20	-	4,80	X	-	-	-	29128682	16,6
A 422 SD/35	G 1 1/2	35	2,90	2,20	-	4,80	X	-	-	10	29128754	17,9
<b>Ama-Drainer - variant A (standard variant), particle size 10 mm, with cooling jacket</b>												
A 505 NE/10K	G 2	10	0,90	0,55	4,10	-	-	-	X	-	29128664	14,2
A 505 SE/10K	G 2	10	0,90	0,55	4,10	-	-	-	X	0,5	29128663	14,7
A 505 ND/10K	G 2	10	0,76	0,55	-	1,70	X	-	-	-	29128665	15,8
A 505 SD/10K	G 2	10	0,76	0,55	-	1,70	X	-	-	10	29128747	17,1
A 507 NE/10K	G 2	10	1,26	0,75	5,50	-	-	-	X	-	29128667	14,2
A 507 SE/10K	G 2	10	1,26	0,75	5,50	-	-	-	X	0,5	29128666	14,7
A 507 ND/10K	G 2	10	1,01	0,75	-	1,90	X	-	-	-	29128668	15,8
A 507 SD/10K	G 2	10	1,01	0,75	-	1,90	X	-	-	10	29128748	17,1
A 511 NE/10K	G 2	10	1,45	1,10	6,55	-	-	-	X	-	29128670	16,5
A 511 SE/10K	G 2	10	1,45	1,10	6,55	-	-	-	X	0,5	29128669	17
A 511 ND/10K	G 2	10	1,54	1,10	-	2,50	X	-	-	-	29128671	15,8
A 511 SD/10K	G 2	10	1,54	1,10	-	2,50	X	-	-	10	29128749	17,1
A 515 NE/10K	G 2	10	2,07	1,50	8,95	-	-	-	X	-	29128673	16,5
A 515 SE/10K	G 2	10	2,07	1,50	8,95	-	-	-	X	0,5	29128672	17
A 515 ND/10K	G 2	10	1,88	1,50	-	3,60	X	-	-	-	29128674	17,6
A 515 SD/10K	G 2	10	1,88	1,50	-	3,60	X	-	-	10	29128750	18,9
A 522 ND/10K	G 2	10	2,90	2,20	-	4,80	X	-	-	-	29128675	17,6
A 522 SD/10K	G 2	10	2,90	2,20	-	4,80	X	-	-	10	29128751	18,9

**Variant C**

Designation	Nominal size	Free passage [mm]	P <sub>1</sub> [kW]	P <sub>2</sub> [kW]	1~ 220 - 240 V	3~ 380 - 415 V	Power cable 10 m		Level control	Mat. No.	[kg]
					≈I <sub>N</sub> [A]	≈I <sub>N</sub> [A]	H 07RN-F6G1	H 07RN-F3G1	H 07RN-F3G1		
									[m]		
<b>Ama-Drainer – variant C (for aggressive water), particle size 10 mm, with cooling jacket</b>											
C 505 NE/10K	G 2	10	0,90	0,55	4,10	-	-	X	-	29128697	14,2
C 505 SE/10K	G 2	10	0,90	0,55	4,10	-	-	X	0,5	29128696	14,7
C 505 ND/10K	G 2	10	0,76	0,55	-	1,70	X	-	-	29128698	15,3
C 505 SD/10K	G 2	10	0,76	0,55	-	1,70	X	-	10	29128755	17,1
C 507 NE/10K	G 2	10	1,26	0,75	5,50	-	-	X	-	29128700	14,2
C 507 SE/10K	G 2	10	1,26	0,75	5,50	-	-	X	0,5	29128699	14,7
C 507 ND/10K	G 2	10	1,01	0,75	-	1,90	X	-	-	29128701	15,3
C 507 SD/10K	G 2	10	1,01	0,75	-	1,90	X	-	10	29128756	17,1
C 511 NE/10K	G 2	10	1,45	1,10	6,55	-	-	X	-	29128703	16,5
C 511 SE/10K	G 2	10	1,45	1,10	6,55	-	-	X	0,5	29128702	17
C 511 ND/10K	G 2	10	1,54	1,10	-	2,50	X	-	-	29128704	15,3
C 511 SD/10K	G 2	10	1,54	1,10	-	2,50	X	-	10	29128757	17,1
C 515 NE/10K	G 2	10	2,07	1,50	8,95	-	-	X	-	29128706	16,5
C 515 SE/10K	G 2	10	2,07	1,50	8,95	-	-	X	0,5	29128705	17
C 515 ND/10K	G 2	10	1,88	1,50	-	3,60	X	-	-	29128707	17,6
C 515 SD/10K	G 2	10	1,88	1,50	-	3,60	X	-	10	29128758	19,5
C 522 ND/10K	G 2	10	2,90	2,20	-	4,80	X	-	-	29128708	17,7
C 522 SD/10K	G 2	10	2,90	2,20	-	4,80	X	-	10	29128759	19,6
<b>Ama-Drainer – variant C (for aggressive water), particle size 11 mm, without cooling jacket</b>											
C 522 ND/11	G 2	11	2,90	2,20	-	4,80	X	-	-	29128693	23,5
C 522 SD/11	G 2	11	2,90	2,20	-	4,80	X	-	10	29128694	25,5
<b>Ama-Drainer – variant C (for aggressive water), particle size 35 mm, without cooling jacket</b>											
C 405 NE/35	G 1 1/2	35	0,90	0,55	4,10	-	-	X	-	29128683	15,3
C 405 SE/35	G 1 1/2	35	0,90	0,55	4,10	-	-	X	0,5	29128684	15,8
C 405 ND/35	G 1 1/2	35	0,76	0,55	-	1,70	X	-	-	29128685	16,5
C 405 SD/35	G 1 1/2	35	0,76	0,55	-	1,70	X	-	10	29128686	18,2
C 411 NE/35	G 1 1/2	35	1,45	1,10	6,55	-	-	X	-	29128687	17,6
C 411 SE/35	G 1 1/2	35	1,45	1,10	6,55	-	-	X	0,5	29128688	18,1
C 411 ND/35	G 1 1/2	35	1,54	1,10	-	2,50	X	-	-	29128689	16,5
C 411 SD/35	G 1 1/2	35	1,54	1,10	-	2,50	X	-	10	29128690	18,3
C 422 ND/35	G 1 1/2	35	2,90	2,20	-	4,80	X	-	-	29128691	19
C 422 SD/35	G 1 1/2	35	2,90	2,20	-	4,80	X	-	10	29128692	20,8

**Variant R**

Designation	Nominal size	Free passage [mm]	P <sub>1</sub> [kW]	P <sub>2</sub> [kW]	1~ 220 - 240 V	3~ 380 - 415 V	Power cable 10 m		Level control	Mat. No.	[kg]
					≈I <sub>N</sub> [A]	≈I <sub>N</sub> [A]	PUR 6x1	PUR 3x1	PUR 3x1		
									[m]		
<b>Ama-Drainer – variant R (for water containing oil / oil emulsions), particle size 10 mm, with cooling jacket</b>											
R 505 NE/10K	G 2	10	0,90	0,55	4,10	-	-	X	-	29128723	14,2
R 505 SE/10K	G 2	10	0,90	0,55	4,10	-	-	X	0,5	29128722	14,7
R 505 ND/10K	G 2	10	0,76	0,55	-	1,70	X	-	-	29128724	15,3
R 505 SD/10K	G 2	10	0,76	0,55	-	1,70	X	-	10	29128760	17,1
R 507 NE/10K	G 2	10	1,26	0,75	5,50	-	-	X	-	29128726	14,2
R 507 SE/10K	G 2	10	1,26	0,75	5,50	-	-	X	0,5	29128725	14,7
R 507 ND/10K	G 2	10	1,01	0,75	-	1,90	X	-	-	29128727	15,3
R 507 SD/10K	G 2	10	1,01	0,75	-	1,90	X	-	10	29128761	17,1
R 511 NE/10K	G 2	10	1,45	1,10	6,55	-	-	X	-	29128729	16,5
R 511 SE/10K	G 2	10	1,45	1,10	6,55	-	-	X	0,5	29128728	17
R 511 ND/10K	G 2	10	1,54	1,10	-	2,50	X	-	-	29128730	15,3
R 511 SD/10K	G 2	10	1,54	1,10	-	2,50	X	-	10	29128762	17,1
R 515 NE/10K	G 2	10	2,07	1,50	8,95	-	-	X	-	29128732	16,5
R 515 SE/10K	G 2	10	2,07	1,50	8,95	-	-	X	0,5	29128731	17
R 515 ND/10K	G 2	10	1,88	1,50	-	3,60	X	-	-	29128733	17,6
R 515 SD/10K	G 2	10	1,88	1,50	-	3,60	X	-	10	29128763	19,5
R 522 ND/10K	G 2	10	2,90	2,20	-	4,80	X	-	-	29128734	17,7
R 522 SD/10K	G 2	10	2,90	2,20	-	4,80	X	-	10	29128764	19,6

Designation	Nominal size	Free passage [mm]	P <sub>1</sub> [kW]	P <sub>2</sub> [kW]	1~ 220 - 240 V	3~ 380 - 415 V	Power cable 10 m		Level control	Mat. No.	[kg]
					≈I <sub>N</sub>	≈I <sub>N</sub>	PUR 6x1	PUR 3x1	PUR 3x1		
					[A]	[A]			[m]		
<b>Ama-Drainer – variant R (for water containing oil / oil emulsions), particle size 11 mm, without cooling jacket</b>											
R 522 ND/11	G 2	11	2,90	2,20	-	4,80	✗	-	-	29128867	23,5
R 522 SD/11	G 2	11	2,90	2,20	-	4,80	✗	-	10	29128868	25,5

Characteristic curves

Ama-Drainer 4../5..; n = 2800 rpm; multi-vane impeller

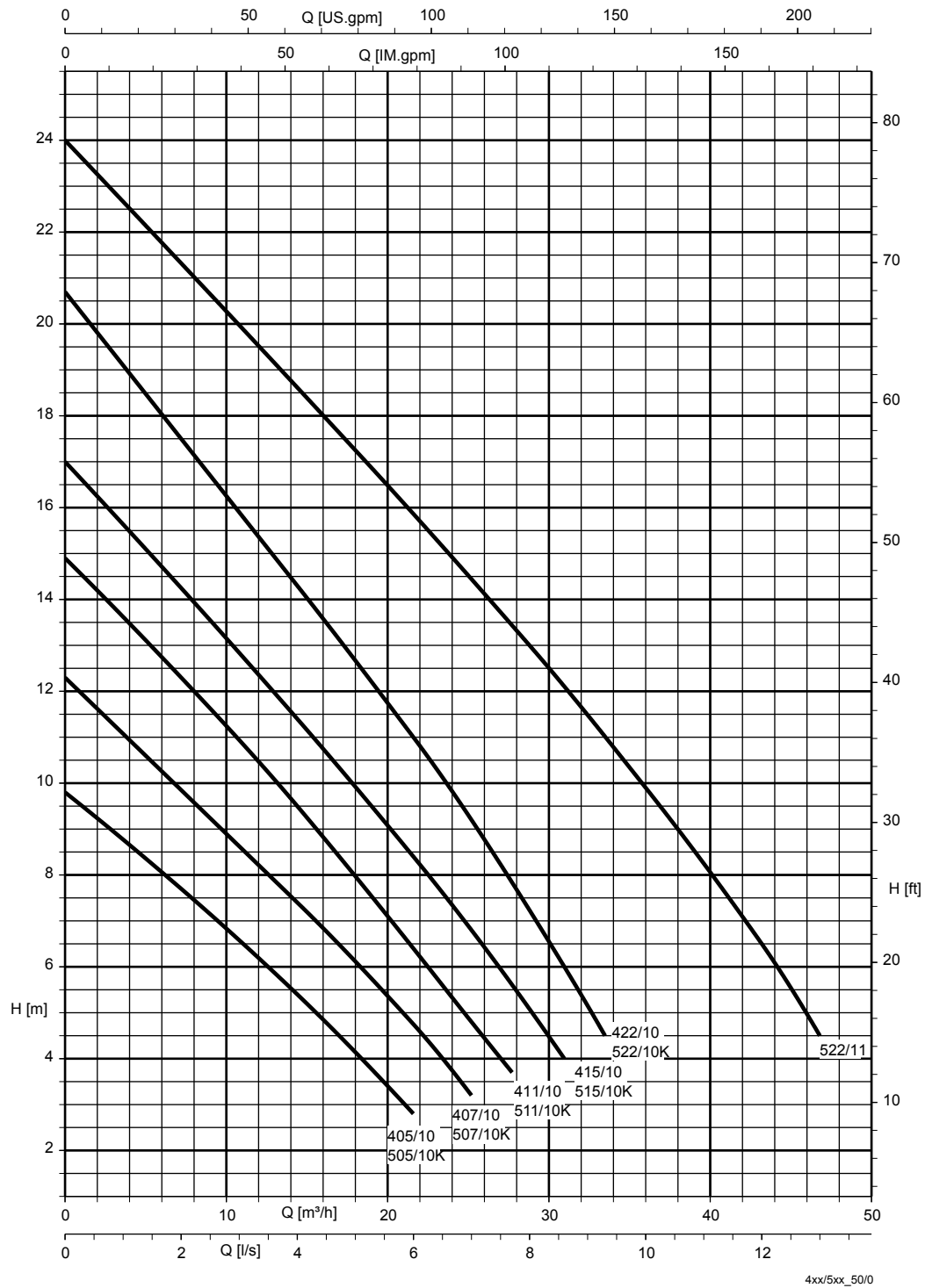


Fig. 1: Free passage: 405/407/411/415/422/505/507/511/515 = 10 mm, 522 = 11 mm  
Performance tolerance to ISO 2548 Class C (water under standard conditions)

Ama-Drainer 4..; n = 2800 rpm; F impeller

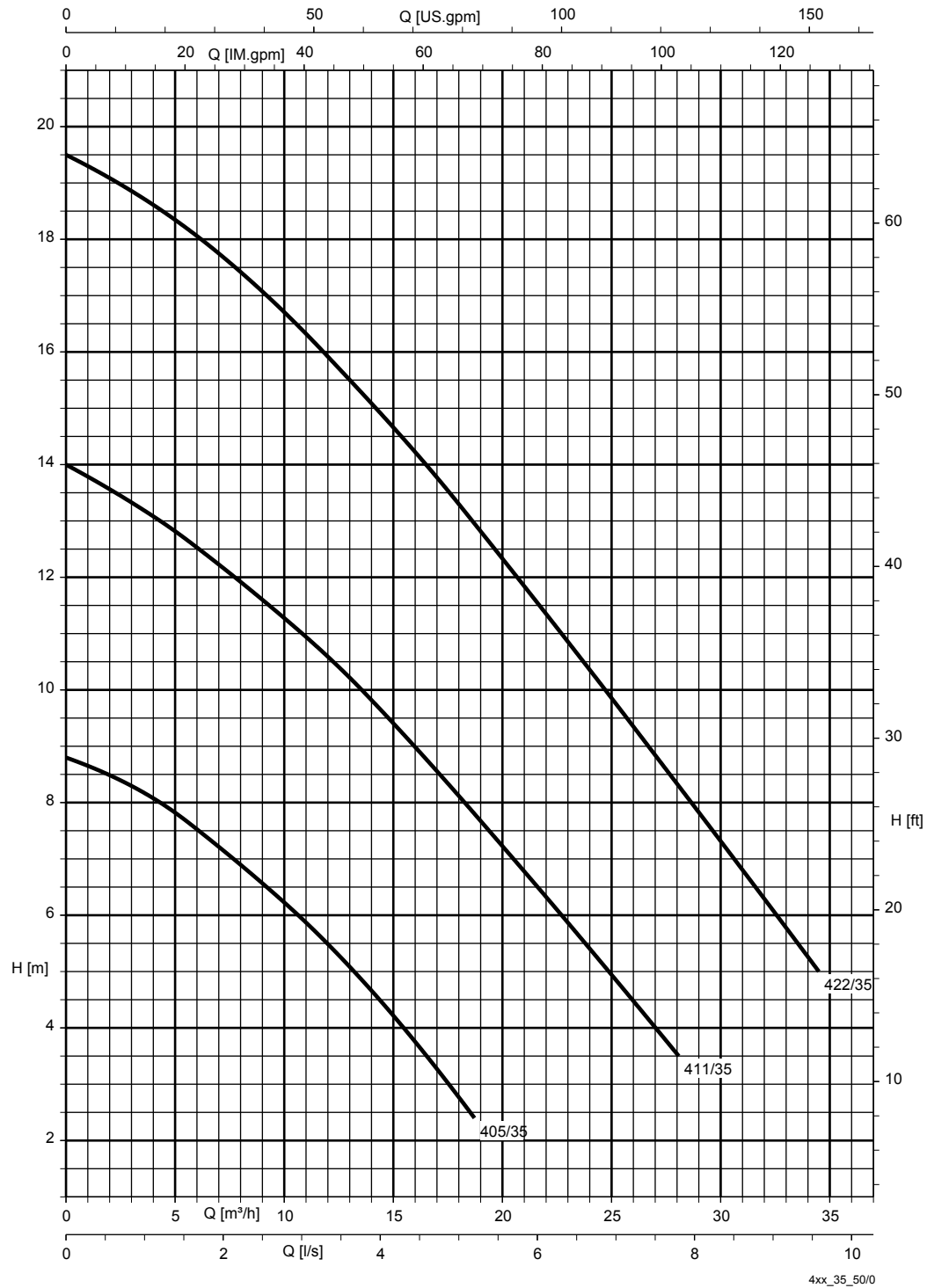
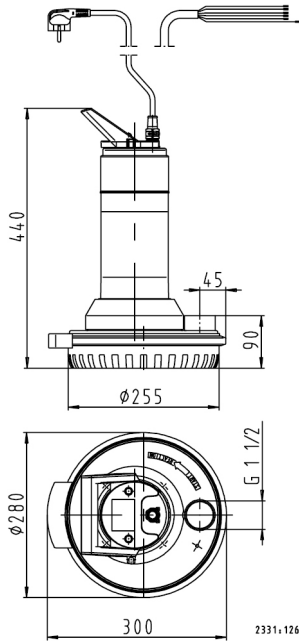


Fig. 2: Free passage: 405/411/422 = 35 mm  
Performance tolerance to ISO 2548 Class C (water under standard conditions)

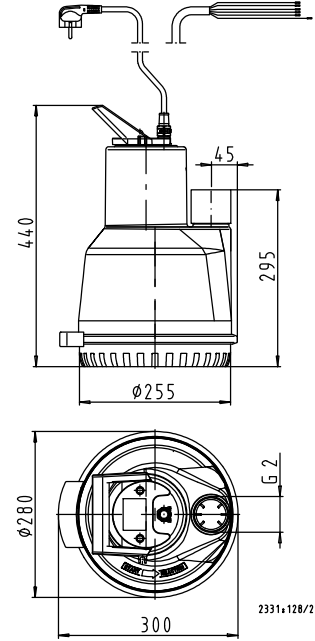
Dimensions and connections

Outline drawings

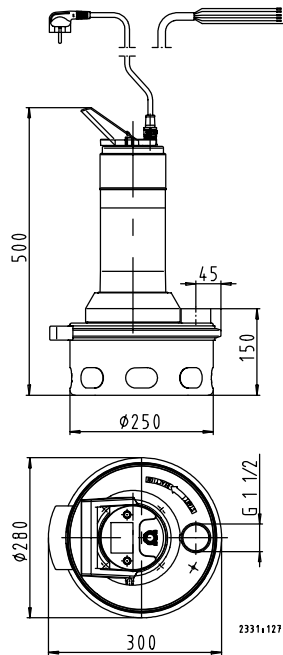
4../10 without cooling jacket



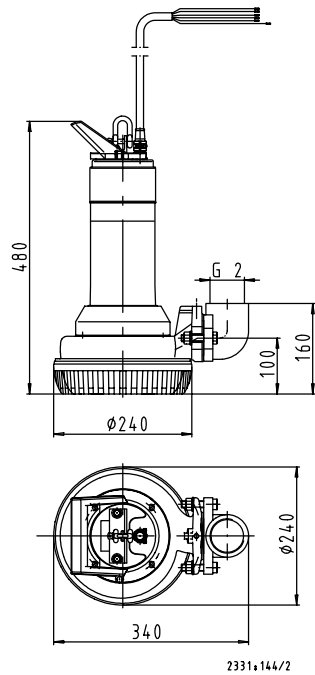
5../10K with cooling jacket



4../35 without cooling jacket



522/11 without cooling jacket



Single pumps

Ama-Drainer 4..SE/10

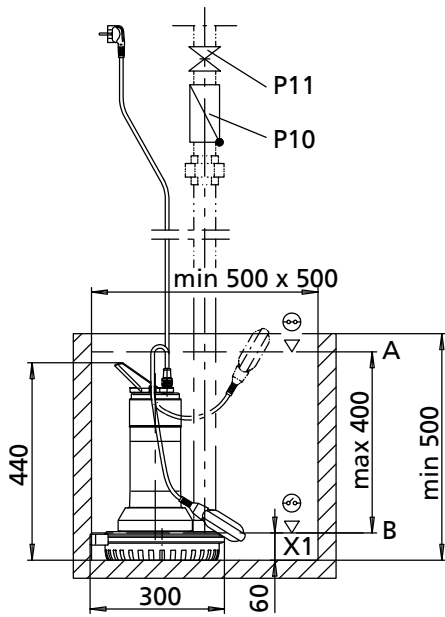


Fig. 3: Outline drawing Ama-Drainer 4..SE/10 without cooling jacket

A	Start-up level
B	Stop level
P 10	Swing check valve
P11	Gate valve
X1	Residual water level

Ama-Drainer 5..SD/10 K

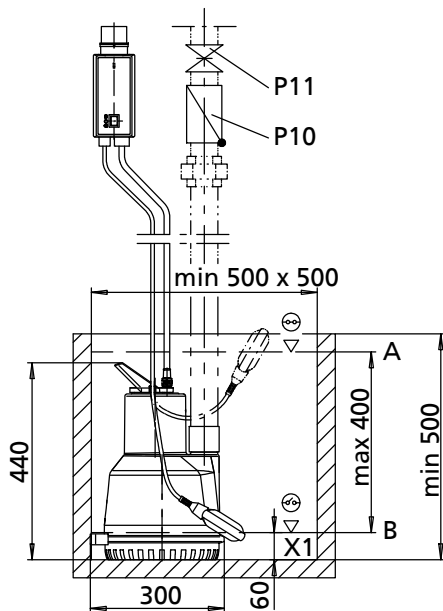


Fig. 4: Outline drawing Ama-Drainer 5..SD/10 K with cooling jacket

A	Start-up level
B	Stop level
P 10	Swing check valve
P11	Gate valve
X1	Residual water level

Ama-Drainer 4..SD/35

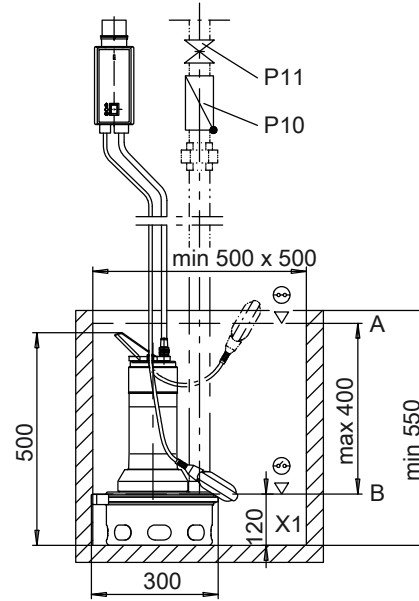


Fig. 5: Outline drawing Ama-Drainer 4..SD/35 without cooling jacket

A	Start-up level
B	Stop level
P 10	Swing check valve
P11	Gate valve
X1	Residual water level

Ama-Drainer 522/11

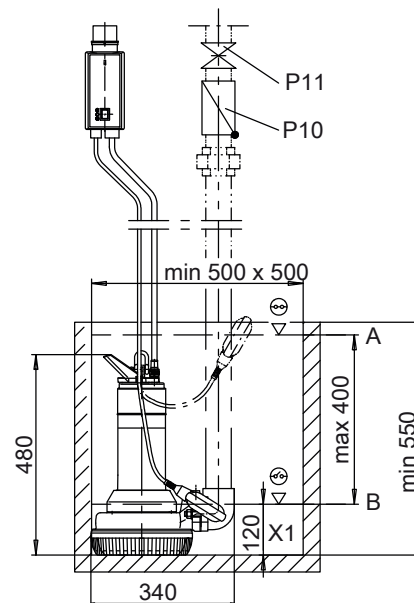


Fig. 6: Outline drawing Ama-Drainer 522/11 without cooling jacket

A	Start-up level
B	Stop level
P 10	Swing check valve
P 11	Gate valve
X1	Residual water level



Examples of transportable models

Ama-Drainer 4..NE/10

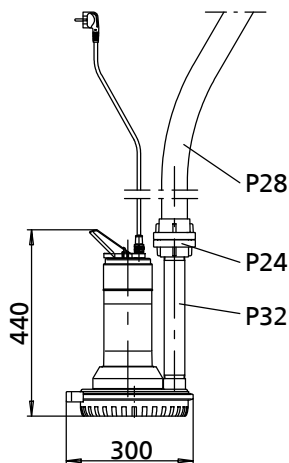


Fig. 7: Outline drawing Ama-Drainer 4..NE/10 without cooling jacket

P 24	Storz rigid coupling
P 28	Plastic hose
P 32	Pipe extension

Ama-Drainer 5..NE/10 K

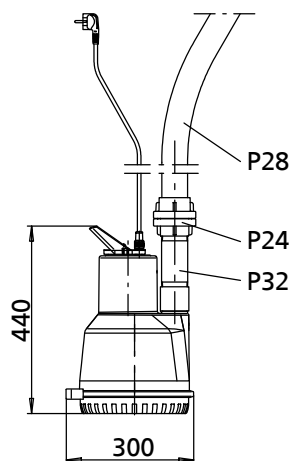


Fig. 8: Outline drawing Ama-Drainer 5..NE/10 K with cooling jacket

P 24	Storz rigid coupling
P 28	Plastic hose
P 32	Pipe extension

Ama-Drainer 522 ND/11

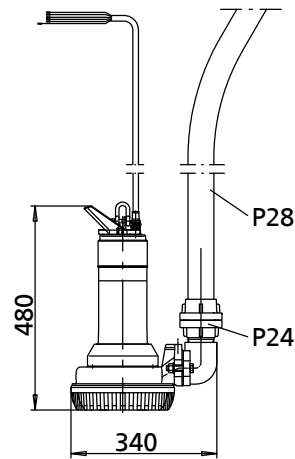


Fig. 9: Outline drawing Ama-Drainer 522 ND/11 without cooling jacket

P 24	Storz rigid coupling
P 28	Plastic hose

Examples of stationary installation

Ama-Drainer 522 ND/11 with guide hoop

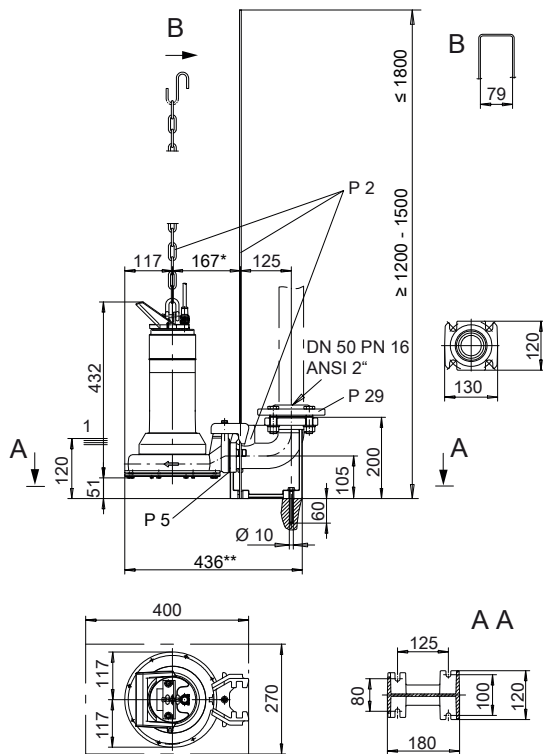


Fig. 10: Outline drawing Ama-Drainer 522 ND/11 with guide hoop

*	When using flange adapter P 5: 217 mm
**	When using flange adapter P 5: 486 mm

Overview of connections

Connection	Description
1	Lowest stop level for automatic operation
P 2	Guide hoop arrangement
P 5 <sup>5)</sup>	Flange adapter for stabilising the pump position during start-up
P 29	Threaded flange

Ama-Drainer 522 ND/11 with guide wire

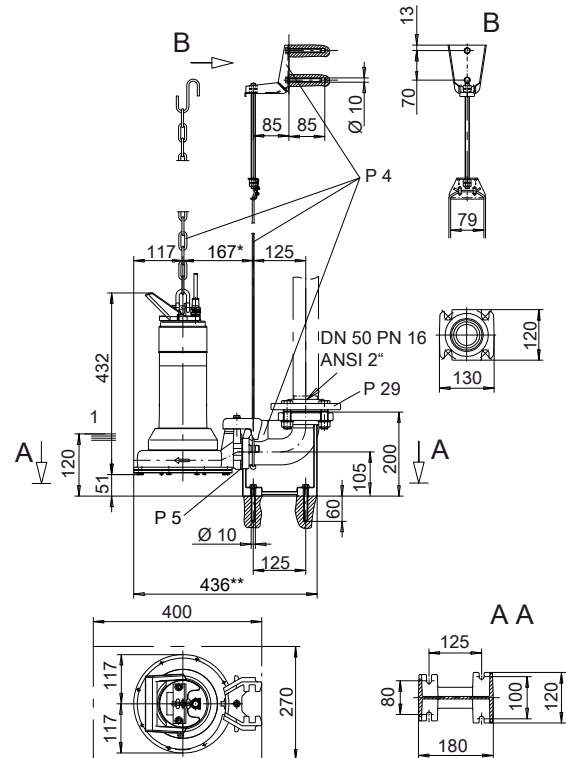


Fig. 11: Outline drawing Ama-Drainer 522 ND/11 with guide wire

*	When using flange adapter P 5: 217 mm
**	When using flange adapter P 5: 486 mm

Overview of connections

Connection	Description
1	Lowest stop level for automatic operation
P 4	Guide wire arrangement
P 5 <sup>6)</sup>	Flange adapter for stabilising the pump position during start-up
P 29	Threaded flange

5) Not shown in drawing  
6) Not shown in drawing

Installation example of a dual-pump station

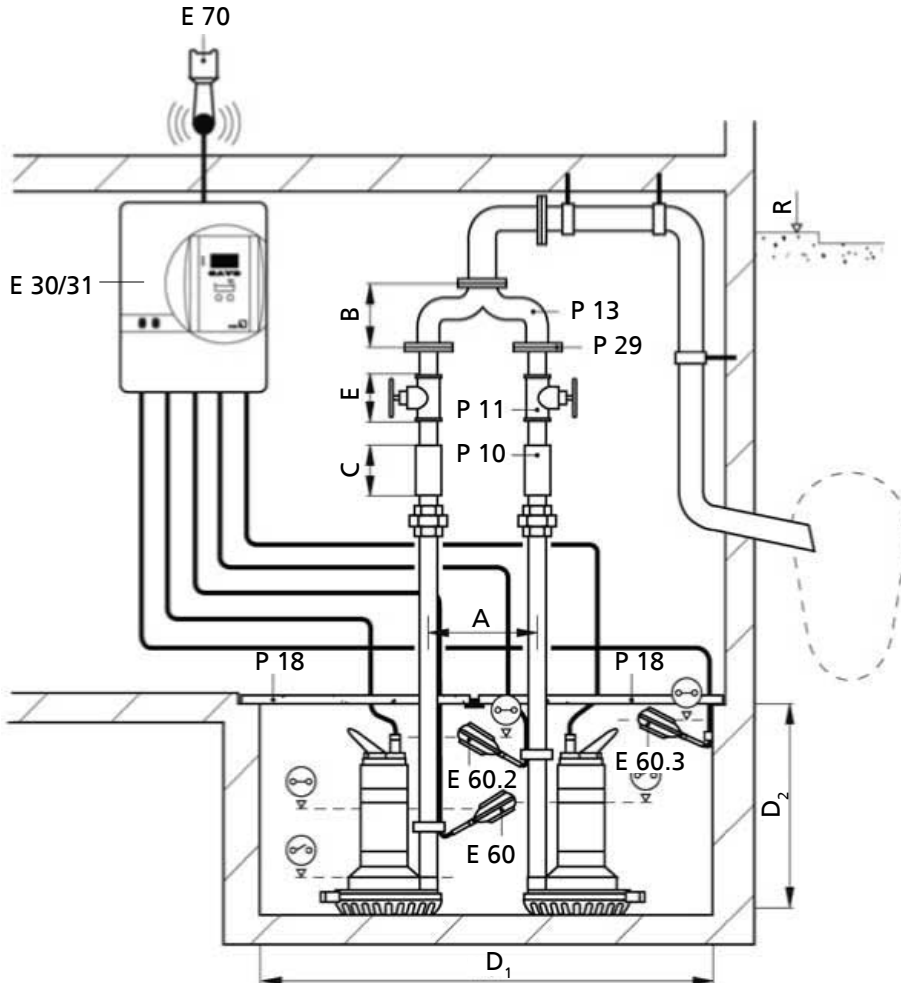


Fig. 12: Position of float switches in a dual-pump station

P 10	Swing check valve
P 11	Gate valve
P 13	Y-pipe
P 18	Cover plate
P 29	Threaded flange
E 5	AS 5 alarm switchgear
E 5/2	Horn
E 12 / E13	Control unit
E 14	Float switch, normal water level
E 14/2	Float switch, high water level
E 14/3	Alarm contactor
R	Flood level













Dimensions and weights

Size	A	B	C	D <sub>1</sub>	D <sub>2</sub>	E	[kg]
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	
Ama-Drainer 4../10	275	190	130	1060 x 500	500	55	16
Ama-Drainer 4../35	275	190	130	1060 x 500	500	60	17
Ama-Drainer 5../10 K	300	210	130	1060 x 500	500	55	17
Ama-Drainer 522/11	300	210	130	1060 x 500	500	55	24

**Accessories**
**Pump accessories**
**Overview of pump accessories**

Item	Description	Connection	Immersion depth [m]	Ama-Drainer				Mat. No.	[kg]
				4../10	4../35	5../10K	522/11		
P2 + P5	Installation parts for stationary wet installation (guide hoop arrangement)	-	1,5	-	-	-	X	39020769	11
	Grey cast iron, consisting of: DN 50 flanged duckfoot bend, guide hoop, claw with stainless steel screws/bolts	-	1,8	-	-	-	X	39020770	12
		-	2,1	-	-	-	X	39020771	13
	Flange adapter, grey cast iron (must be ordered separately)	DN 50	-	-	-	-	X	19075508	4,2
P4 + P5	Installation parts for stationary wet installation (guide wire installation)	-	4,5	-	-	-	X	39021023	10,6
	Grey cast iron, consisting of: flanged duckfoot bend, suspension bracket, mounting bracket, 10 m guide wire, claw with stainless steel screws/bolts	DN 50	-	-	-	-	X	19075508	4,2
	<b>Installation parts for stationary pump sets, material variant C, stainless steel 1.4571/1.4571</b>								
Installation parts for stationary wet installation (guide wire installation)	-	4,5	-	-	-	X	19552258	11,83	3
Consisting of: duckfoot bend, suspension bracket, mounting bracket, 10 m guide wire, screws/bolts and anchor bolts									
Flange adapter, stainless steel (must be ordered separately)	DN 50	-	-	-	-	X	19075509	4,2	
P7	Chain 1.0038+Z, hook 1.4571 and shackle 1.4401	2 m, B5 x 35	-	-	-	-	X	19141819	1,5
		5 m, B5/6	-	-	-	-	X	19141820	2,8
	Chain (1.4404), short-linked, tested and duly labelled to Directive 2006/42/EC, shackle (1.4404), hook (1.4301)	2 m, 4 x 16	-	-	-	-	X	01236267	0,9
	Chain (1.4404), short-linked, tested and duly labelled to Directive 2006/42/EC, shackle (1.4404), hook (1.4301)	3/4 x 16	-	-	-	-	X	01236268	1,089
	Chain (1.4404), short-linked, tested and duly labelled to Directive 2006/42/EC, shackle (1.4404), hook (1.4301)	5 m, 4 x 16	-	-	-	-	X	01236269	1,688
	Polypropylene lifting rope, material variant C	5 m	-	-	-	-	X	11185207	2
P8	Flange for pipe coupling PN 10, at the flanged elbow, mating dimensions to PN 16	DN 50/R2	-	-	-	-	X	19551111	1,2
P10	RK swing check valve	Rp 1 1/4	-	X <sup>7)</sup>	-	X <sup>7)</sup>	-	01009771	0,1
	plastic, EN 12 050-4, with internal thread ISO 7/1, with full port and drain plug For additional parts see P32 and P33	Rp 1 1/2	-	X	X	X <sup>7)</sup>	-	01009772	0,25
		Rp 2	-	X <sup>7)</sup>	X <sup>7)</sup>	X	X	01009773	0,5
P10	Lift check valve, stainless steel (1.4401)	Rp 1 1/4	-	X <sup>7)</sup>	-	X <sup>7)</sup>	-	01084936	2,1
	For additional parts see P32 and P33	Rp 1 1/2	-	X	X	X <sup>7)</sup>	-	01084935	2,2
		Rp 2	-	X <sup>7)</sup>	X <sup>7)</sup>	X	X	01084937	0,444
P11	Socket gate valve	Rp 1 1/4	-	X <sup>7)</sup>	-	X <sup>7)</sup>	-	01014219	0,627
	Material: CuZn PN 16, with internal thread, with full port For additional parts see P32 and P33	Rp 1 1/2	-	X	X	X <sup>7)</sup>	-	00411502	0,8
		Rp 2	-	X <sup>7)</sup>	X <sup>7)</sup>	X	X	00411503	1,287
P11	Ball valve	Rp 1 1/4	-	X <sup>7)</sup>	-	X <sup>7)</sup>	-	01067465	1,213
	Stainless steel (1.4408), PN 10	Rp 1 1/2	-	X	X	X <sup>7)</sup>	-	01087276	1,821
		Rp 2	-	X <sup>7)</sup>	X <sup>7)</sup>	X	X	01064013	2,1
P13	Y-pipe	Rp 1 1/4	-	X <sup>7)</sup>	-	-	-	18040311	4,1
	for dual-pump sets, with external thread, galvanised steel For additional parts see P32 and P33								
P13	Y-pipe for dual-pump sets, grey cast iron, with hexagon head bolts, nuts and gaskets; flanges drilled to DIN 2501	DN 40	-	X	X	X <sup>7)</sup>	-	40000688	10,6
	Additional part – see P29	DN 50	-	X <sup>7)</sup>	X <sup>7)</sup>	X	X	40000689	13,5
P18	Cover plate	Rp 1 1/4	-	X	X	X	X	18075627	13
Tread-proof, split, with profile seals and angle iron mounting frame (type A 560) for 500 x 500 mm pits (Dual-pump sets with P13 Y-pipe are equipped with 2 cover plates next to each other.)									

7) Increasing adapter or reducing adapter required

Item	Description	Connection	Immersion depth [m]	Ama-Drainer				Mat. No.	[kg]
				4../10	4../35	5../10K	522/11		
P21	 A 25 B drain hose set Comprising: rigid coupling with external thread, 6 m plastic hose DN 25, rapid-action hose coupling Rp 1 1/4, (free passage 21 mm) Additional part – see P32	Rp 1 1/4	-	X <sup>n)</sup>	-	X <sup>n)</sup>	-	18079719	3
		C 42	-	-	-	-	-	42209411	1,7
P22	 Hose connection set Consisting of: 1 hose nozzle with external thread (PVC), 1 hose clamp (CrNiMo steel) For additional parts see P32 and P33	C 52-G 1 1/2	-	X	X	-	-	19072025	0,2
		C 52-G 2	-	-	-	X	X <sup>n)</sup>	18040259	0,2
		B 75-G 2	-	-	-	X	X <sup>n)</sup>	18040205	0,2
P24	 Storz rigid coupling with internal thread to DIN ISO 228/1 Aluminium alloy, for required piping components see P32	C-G 1 1/2	-	X	X	-	-	01002463	0,3
		C-G 2	-	-	-	X	X	00520120	0,3
		B-G 1 1/2	-	X	X	-	-	01062591	0,1
		B-G 2	-	-	-	X	X	00133084	0,4
	Storz rigid coupling with external thread to DIN ISO 228/1 Aluminium alloy	C 52/G 2 A	-	-	-	-	X	00524370	0,2
P26	 Storz hose coupling, aluminium alloy	C 52 (DIN 14321)	-	X	X	-	-	00524551	0,3
		B 75 (DIN 14322)	-	-	-	X	X	00520454	0,7
P27	 Hose clip DIN 3017, chrome steel	AL 40-60 C (DIN 3017)	-	X	X	-	-	00114522	0,01
		AL 70-90 B (DIN 3017)	-	-	-	X	X	01063363	0,032
P28	 Plastic hose DN 40, with integrated C couplings, DIN 14811	C 42-5 m	-	X	X	X	X	01062592	1,7
		C 42-10 m	-	X	X	X	X	01062593	2,8
		C 42-20 m	-	X	X	X	X	01062594	5
	Plastic hose DN 50, DIN 14811, with integrated C couplings	C 52	-	X	X	X	X	00522262	2,3
		C 52	-	X	X	X	X	00522263	4,2
		C 52	-	X	X	X	X	00522264	5,7
	Plastic hose DN 75, with integrated B couplings, DIN 14811	B 75-20 m	-	-	X	X	X	00522265	10
Plastic hose DN 75, supplied by the metre, without couplings (max. 30 m), DIN 14811	B 75 per m	-	-	X	X	X	00540104	0,3	
P29	 Threaded flange for Y-pipe (P13), internal thread  Threaded flange for guide hoop arrangement (P2) and guide wire arrangement (P4) Consisting of: flange, 4 hexagon head bolts with nuts and washers and 1 sealing element	DN 40/Rp 1 1/2	-	X	X	X <sup>n)</sup>	X <sup>n)</sup>	00260478	1,8
		DN 50/Rp 2	-	X <sup>n)</sup>	X <sup>n)</sup>	X	X	00260479	2,5
		DN 50/Rp 2	-	-	-	-	X	19551353	2
P32	 Hexagon nipple for Storz rigid coupling C (P24), EN 10242 Galvanised steel, external/external thread  Hexagon nipple for Storz rigid coupling C and B (P24) and for hose connection set (P22) Galvanised steel, external/external thread	R 1 1/2	-	X	X	-	-	00240874	0,5
		R 2	-	-	-	-	X	00240876	0,6
		AG 1 1/2 / AG R 1 1/2 x 310	-	X	X	-	-	11037771	1
P32	 Pipe extension for Storz rigid coupling B (P24) 1.4401, external/external thread  Pipe extension for Storz rigid coupling C and B (P24) Galvanised steel, external/external thread	AG 2 / AG R 2 x 150	-	-	-	X	-	00250494	0,6
		AG R 1 1/2 / IG Rp 1 1/4	-	X <sup>n)</sup>	-	-	-	00240679	0,2
P33	 Reducer DN 32 EN 10242, galvanised steel, external/internal thread for A 25 B drain hose set (P21)  Reducer DN 40 EN 10242, galvanised steel, external/internal thread for A 25 B drain hose set (P21)	AG R 2 / IG Rp 1 1/4	-	-	-	X <sup>n)</sup>	X <sup>n)</sup>	00240680	0,4
		AG R 2 / IG Rp 1 1/2	-	-	-	X <sup>n)</sup>	X <sup>n)</sup>	00240686	0,5
		AG R 1 1/2 / IG Rp 2	-	X <sup>n)</sup>	X <sup>n)</sup>	-	-	00241778	0,38
P33	 Nominal diameter increase, socket DN 50, EN 10242, galvanised steel For additional parts see P32 and P33  Nominal diameter increase, socket DN 65, EN 10242, galvanised steel For additional parts see P32 and P33	IG Rp 2 / IG Rp 2 1/2	-	-	-	X <sup>n)</sup>	X <sup>n)</sup>	40982361	1,3
		-	-	X	-	-	-	18040775	0,5
P35	 Cooling jacket retrofit kit Consisting of: cooling jacket, connection socket with internal thread Rp2 and two O-rings, to retrofit Ama-Drainer 4../10 to the same design, Ama-Drainer 5../10 K The piping of pumps already installed must be adjusted accordingly.	-	-	X	-	-	-	18040775	0,5


**Control units and switchgear**

Not valid for France.

**Overview of control units and switchgear**

Item	Description	230 V	400 V	Type	Current Min. / Max. [A]	Ama-Drainer										Mat. No.	[kg]
						1~					3~						
						.05.E	.07.E	.11.E	.15.E	.05.D	.07.D	.11.D	.15.D	.22.D	522/11		
E 1 	Motor protection switchgear MSE	X	-	60.1	4,0 - 6,0	X	X	-	-	-	-	-	-	-	-	19070138	1
	With integrated motor protection relay, manual-0-automatic selector switch and motor contactor, operation and fault indicator lamps	X	-	80.1	5,5 - 8,0	-	-	X	-	-	-	-	-	-	-	19070139	1
	Dimensions (W x H x D) 100 x 170 x 112 mm	X	-	100.1	8,0 - 11,5	-	-	-	X	-	-	-	-	-	-	19070140	1
E2 	Motor protection switchgear MSD	-	X	16.1	1,2 - 1,8	-	-	-	-	X	-	-	-	-	-	19070114	1
	Float switch	-	X	25.1	1,8 - 2,6	-	-	-	-	-	X	X	-	-	-	19070115	1
	With integrated motor protection relay, manual-0-automatic selector switch and motor contactor, operation and fault indicator lamps	-	X	40.1	2,5 - 4,0	-	-	-	-	-	-	-	X	-	-	19070116	1
	Dimensions (W x H x D) 100 x 170 x 112 mm	-	X	60.1	3,7 - 5,5	-	-	-	-	-	-	-	-	X	X	19070117	1
E 3 	CEE motor protection plug, type Hyper® 3/N/PE 16 A, IP X4 Phase inverter, contactor up to 4 kW, manual-0-automatic selector switch, connections for three-phase motor, thermal circuit breaker and float switch	-	X	Hyper CEE	-	-	-	-	X	X	X	X	X	X	X	18040512	0,8
E 4 	Multi-functional plug, type Hyper, with motor protection relay	-	X	Hyper 18.1	1,2 - 1,8	-	-	-	-	X	-	-	-	-	-	19071490	1
		-	X	Hyper 26.1	1,8 - 2,6	-	-	-	-	-	X	X	-	-	-	19071491	1
		-	X	Hyper 37.1	2,6 - 3,7	-	-	-	-	-	-	-	X	-	-	19071492	1
		-	X	Hyper 55.1	3,7 - 5,5	-	-	-	-	-	-	-	-	X	X	19071493	1
E10 	LevelControl Basic 2 control unit for single-pump station, IP54	X	-	BC1 230 <sup>DFNO</sup> 100	Up to 10	X	X	X	X	-	-	-	-	-	-	19073760	4,5
	DOL starting, with manual-0-automatic selector switch, indicator lamps and control panel, high water alert	-	X	BC1 400 <sup>DFNO</sup> 025	1,6 - 2,5	-	-	-	-	X	X	-	-	-	-	19073762	4,5
E11 	integrated alarm buzzer 85 dB(A), operating hours counter/start-stop cycles per pump, voltage measurement, phase monitoring, indication of water level, volt-free contact for general fault message, motor temperature warning (thermal circuit breaker) – self-acknowledging; motor leakage/moisture monitoring, optional mains-independent alarm via rechargeable battery (E90)	-	X	BC1 400 <sup>DFNO</sup> 040	2,5 - 4,0	-	-	-	-	-	-	X	X	-	-	19073763	4,5
	For float switch or 4 - 20 mA sensor, optionally with master switch, 400 x 281 x 135 mm 400 V variant with motor protecting switch 230 V variant with external socket	-	X	BC1 400 <sup>DFNO</sup> 063	4,0 - 6,3	-	-	-	-	-	-	-	-	X	X	19073764	4,5

8) Required for Ama-Drainer ND only

Item	Description	230 V	400 V	Type	Current Min. / Max. [A]	Ama-Drainer										Mat. No.	[kg]
						1~				3~							
						.05.E	.07.E	.11.E	.15.E	.05.D	.07.D	.11.D	.15.D	.22.D	522/11		
E30 	LevelControl Basic 2 control unit for dual-pump station, IP54	X	-	BC2 230 <sup>DFNO</sup> 100	Up to 10	X	X	X	X	-	-	-	-	-	-	19073774	4,7
		-	X	BC2 400 <sup>DFNO</sup> 025	1,6 - 2,5	-	-	-	-	X	X	-	-	-	-	19073776	4,7
	Peak load operation, stand-by pump, DOL starting, with manual-0-automatic selector switch, indicator lamps and control panel, high water alert, integrated alarm buzzer 85 dB(A), operating hours counter/start-stop cycles per pump	-	X	BC2 400 <sup>DFNO</sup> 040	2,5 - 4,0	-	-	-	-	-	-	X	X	-	-	19073777	4,7
	Voltage measurement, phase monitoring, volt-free contact for general fault message Optional mains-independent alarm via rechargeable battery with charging unit (E90) For float switch or 4...20 mA sensor, optional master switch, 400 x 281 x 135 mm 400 V variant: with motor protection switch 230 V variant: with external socket	-	X	BC2 400 <sup>DFNO</sup> 063	4,0 - 6,3	-	-	-	-	-	-	-	-	X	X	19073778	4,7
<b>Optional components for LevelControl<sup>9)</sup></b>																	
O1	Master switch for LevelControl Basic 2 BC, fitted 3-pole, 20 A, lockable	-	-	-	-	X	X	X	X	X	X	X	X	X	X	01143084	0,2

 Optional components are not EDI-compatible (configurable range)

### Operation with mini control system

Order separate float switches and appropriate cable lengths with Ama-Drainer 405 NE to 415 NE and 505 NE to 515 NE.

### LevelControl with float switch(es)

Single pump:

- At least 1 float switch for pump On/Off
- At least 2 float switches for pump On/Off and high water alert

Dual pump:

- At least 2 float switches for pump On/Off
- At least 3 float switches for pump On/Off and high water alert

### Twin operation with two level switches at different levels

If two pumps are used in the same location, we recommend operating them via the LevelControl unit. This enables automatic alternating, peak load and stand-by operation. External alarm switchgear will not be required as LevelControl features an integrated alarm function.

### Connection to the control station

With the exception of MSE, MSD and Hyper, each control unit features a volt-free contact for transmitting the general fault message to the control station.

9) Process via KSB EasySelect to avoid supply as unmounted item.

**Control units and switchgear for France**


Only valid for France.

**Overview of control units and switchgear for France**

Item	Description	230 V	400 V	Type	Current Min. / Max. [A]	Ama-Drainer										Mat. No.	[kg]
						1~				3~							
						.05.E	.07.E	11.E	.15.E	.05.D	.07.D	.11.D	.15.D	.22.D	522/11		
E10 	LevelControl Basic 2 control unit for single-pump station, IP 54	X	-	BC1 230 <sup>DFNM</sup> 040 02	2,5 - 4,0	X	X	-	-	-	-	-	-	-	-	19073873	4,5
	In compliance with NF C 15-100	X	-	BC1 230 <sup>DFNM</sup> 100 02	6,3 - 10,0	-	-	X	X	-	-	-	-	-	-	19073875	4,5
	DOL starting With manual-0-automatic selector switch, indicator lamps and control panel	-	X	BC1 400 <sup>DFNO</sup> 025 02	1,6 - 2,5	-	-	-	-	X	X	-	-	-	-	19073877	4,5
	High water alert	-	X	BC1 400 <sup>DFNO</sup> 040 02	2,5 - 4,0	-	-	-	-	-	-	X	X	-	-	19073878	4,5
	Integrated alarm buzzer, 85 dB(A) Operating hours counter / counter for start-stop cycles per pump Voltage measurement, phase monitoring Volt-free contact for general fault message Optional mains-independent alarm via rechargeable battery Master switch 361 x 278 x 120 mm Float switch or 4..20 mA sensor	-	X	BC1 400 <sup>DFNO</sup> 063 02	4,0 - 6,3	-	-	-	-	-	-	-	-	X	X	19073879	4,5
E30 	LevelControl Basic 2 control unit for dual-pump station, IP54	X	-	BC2 230 <sup>DFNM</sup> 040 02	2,5 - 4,0	X	X	-	-	-	-	-	-	-	-	19073883	4,7
	In compliance with NF C 15-100	X	-	BC2 230 <sup>DFNM</sup> 100 02	6,3 - 10,0	-	-	X	X	-	-	-	-	-	-	19073885	4,7
	Peak load operation function DOL starting With manual-0-automatic selector switch, indicator lamps and control panel	-	X	BC2 400 <sup>DFNO</sup> 025 02	1,6 - 2,5	-	-	-	-	X	X	-	-	-	-	19073887	4,7
	High water alert	-	X	BC2 400 <sup>DFNO</sup> 040 02	2,5 - 4,0	-	-	-	-	-	-	X	X	-	-	19073888	4,7
	Integrated alarm buzzer, 85 dB(A) Operating hours counter / counter for start-stop cycles per pump Voltage measurement, phase monitoring Volt-free contact for general fault message Optional mains-independent alarm via rechargeable battery Master switch 361 x 278 x 120 mm Float switch or 4..20 mA sensor	-	X	BC2 400 <sup>DFNO</sup> 063 02	4,0 - 6,3	-	-	-	-	-	-	-	-	X	X	19073889	4,7
E 3 	CEE motor protection plug, type Hyper <sup>10)</sup> 3/N/PE 16 A, IP X4	-	X	Hyper CEE	-	-	-	-	-	X	X	X	X	X	X	18040512	0,8
E 4 	Multi-functional plug, type Hyper, with motor protection relay	-	X	Hyper 18.1	1,2 - 1,8	-	-	-	-	X	-	-	-	-	-	19071490	1
		-	X	Hyper 26.1	1,8 - 2,6	-	-	-	-	-	X	X	-	-	-	19071491	1
	3/N/PE 16 A, IP X4, phase inverter, motor monitoring, contactor up to 4 kW, motor protection relay, manual-0-automatic selector switch, reset key, indicator lamps for direction of rotation, operation and fault, connections for three-phase motor, thermal circuit breaker and float switch	-	X	Hyper 37.1	2,6 - 3,7	-	-	-	-	-	-	-	X	-	-	19071492	1
		-	X	Hyper 55.1	3,7 - 5,5	-	-	-	-	-	-	-	-	X	X	19071493	1

10) Required for Ama-Drainer ND only



 Optional components are not EDI-compatible (configurable range)

### Operation with mini control system

Order separate float switches and appropriate cable lengths with Ama-Drainer 405 NE to 415 NE and 505 NE to 515 NE.

### LevelControl with float switch(es)

Single pump:

- At least 1 float switch for pump On/Off
- At least 2 float switches for pump On/Off and high water alert

Dual pump:

- At least 2 float switches for pump On/Off
- At least 3 float switches for pump On/Off and high water alert


### Twin operation with two level switches at different levels

If two pumps are used in the same location, we recommend operating them via the LevelControl unit. This enables automatic alternating, peak load and stand-by operation. External alarm switchgear will not be required as LevelControl features an integrated alarm function.

### Connection to the control station

With the exception of MSE, MSD and Hyper, each control unit features a volt-free contact for transmitting the general fault message to the control station.

**LevelControl Basic 2 control units**

 Not valid for France.

Key to the symbols

Symbol	Description
o	Optional
x	Available
-	Not available

Overview of LevelControl Basic 2 control units

Feature	Single-pump station Float switches incl. 4-20 mA	Dual-pump station Float switches incl. 4-20 mA
230 V, up to 10.0 A	BC1 230 <sub>DFNO</sub> 100	BC2 230 <sub>DFNO</sub> 100
400 V: 1.6 - 2.5 A	BC1 400 <sub>DFNO</sub> 025	BC2 400 <sub>DFNO</sub> 025
400 V: 2.5 - 4.0 A	BC1 400 <sub>DFNO</sub> 040	BC2 400 <sub>DFNO</sub> 040
400 V: 4.0 - 6.3 A	BC1 400 <sub>DFNO</sub> 063	BC2 400 <sub>DFNO</sub> 063
<b>Functions</b>		
Draining	x	x
Filling via float switch(es)	x	x
Stand-by pump: 1 pump redundant	-	x
Pump switchover after each start	-	x
Pump changeover in the case of a pump fault	-	x
Peak load operation function	-	x
Runtime limitation	x	x
OFF via after-run time	x	x
OFF via level	x	x
Functional check run after idle period	x	x
Alert history	-	-
<b>Display and operation</b>		
7-segment display	x	x
Indication of water level	Switching points	Switching points
Operation / fault / pump running (displayed for each pump)	Multicolour LED	Multicolour LED
General fault (traffic light)	LED	LED
High water	LED	LED
Mains voltage	x	x
Mains frequency	-	-
Motor current per pump	-	-
Operating hours of each pump	x	x
Operating hours of the system	-	-
Starts per pump	x	x
Effective power per pump	-	-
Rotary field recognition of mains power supply	x	x
Phase monitoring	x	x
Change of switching level via control panel	-	-
<b>Housing H x W x D [mm], IP54</b>		
Plastic 400 x 281 x 135	x	x
Sheet steel 400 x 300 x 155	-	-
Sheet steel 600 x 400 x 200	-	-
<b>Built-in components</b>		
Master switch (lockable)	o	o
Manual-0-automatic selector switch per pump	x	x
DOL starting	x	x
Star-delta starting	-	-
Shockproof socket 230 V	For 230 V	For 230 V
<b>Motor protection</b>		
Overcurrent protective device per pump	For 230 V	For 230 V
Motor protection switch per pump (overcurrent protection and short-circuit protection)	For 400 V	For 400 V
Motor temperature warning input	x	x
Motor temperature alert input	x	x

Feature	Single-pump station Float switches incl. 4-20 mA	Dual-pump station Float switches incl. 4-20 mA
<b>Pump</b>		
Thermal circuit breaker (TCB) / bimetal switch per pump	400 V: brought out	400 V: brought out
<b>Installation options</b>		
Rechargeable battery for powering the device	o	o
<b>Alarm equipment</b>		
1 free alarm input	X	X
1 digital input for high water alert	X	X
Volt-free contact (changeover contact) for general fault message / "in operation" message	X	X
Piezo buzzer 85 dB(A)	X	X
Horn / alarm combination / alarm strobe light 12 V DC	o	o
<b>Inputs/outputs</b>		
Inputs for float switches	4	4
4-20 mA analog input	X	X
Integrated pneumatic pressure sensor up to 3 metres of water - up to 10 metres on request	-	-
Bubbler control with compressor up to 2 metres of water	-	-
Remote acknowledgement	X	X
12 V DC connection for horn, etc.	X	X
<b>Sensors</b>		
Float switch (NO contact)	o	o
F1 leakage sensor	o	o
<b>Tools</b>		
KSB Service Tool for Windows XP	o	o

**LevelControl Basic 2 control units for France**

 Only valid for France.

Key to the symbols

Symbol	Description
o	Optional
x	Available
-	Not available






**Overview of LevelControl Basic 2 control units for France**

Feature	Single-pump station Float switch(es) incl. 4...-20 mA	Dual-pump station Float switch(es) incl. 4...-20 mA
230 V: 2.5 - 4.0 A	BC1 230 <sup>DFNM</sup> 040 02	BC2 230 <sup>DFNM</sup> 040 02
230 V, 6.3 - 10.0 A	BC1 230 <sup>DFNM</sup> 100 02	BC2 230 <sup>DFNM</sup> 100 02
400 V: 1.6 - 2.5 A	BC1 400 <sup>DFNO</sup> 025 02	BC2 400 <sup>DFNO</sup> 025 02
400 V: 2.5 - 4.0 A	BC1 400 <sup>DFNO</sup> 040 02	BC2 400 <sup>DFNO</sup> 040 02
400 V: 4.0 - 6.3 A	BC1 400 <sup>DFNO</sup> 063 02	BC2 400 <sup>DFNO</sup> 063 02
<b>Functions</b>		
Draining	x	x
Filling via float switch(es)	x	x
Stand-by pump: 1 pump redundant	-	x
Pump switchover after each start	-	x
Pump changeover in the case of a pump fault	-	x
Peak load operation function	-	x
Runtime limitation	x	x
OFF via after-run time	x	x
OFF via level	x	x
Functional check run after idle period	x	x
Alert history	-	-
<b>Display and operation</b>		
7-segment display	x	x
Indication of water level	Switching points	Switching points
Operation / fault / pump running (displayed for each pump)	Multicolour LED	Multicolour LED
General fault (traffic light)	LED	LED
High water	LED	LED
Mains voltage	x	x
Mains frequency	-	-
Motor current per pump	-	-
Operating hours of each pump	x	x
Operating hours of the system	-	-
Starts per pump	x	x
Effective power per pump	-	-
Rotary field recognition of mains power supply	x	x
Phase monitoring	x	x
Change of switching level via control panel	-	-
<b>Housing H x W x D [mm], IP54</b>		
Plastic 400 x 281 x 135	x	x
Sheet steel 400 x 300 x 155	-	-
Sheet steel 600 x 400 x 200	-	-
<b>Built-in components</b>		
Master switch (lockable)	x	x
Manual-0-automatic selector switch per pump	x	x
DOL starting	x	x
Star-delta starting	-	-
Shockproof socket 230 V	For 230 V	For 230 V
<b>Motor protection</b>		
Motor protection switch per pump (overcurrent protection and short-circuit protection)	x	x
Motor temperature warning input	x	x
Motor temperature alert input	x	x








Feature	Single-pump station Float switch(es) incl. 4...-20 mA	Dual-pump station Float switch(es) incl. 4...-20 mA
<b>Pump</b>		
Thermal circuit breaker (TCB) / bimetal switch per pump	400 V: brought out	400 V: brought out
<b>Installation options</b>		
Rechargeable battery for powering the device	o	o
<b>Alarm equipment</b>		
1 free alarm input	X	X
1 digital high water alert input (e.g. for float switch)	X	X
Volt-free contact (changeover contact) for general fault message / "in operation" message	X	X
Piezo buzzer 85 dB(A)	X	X
Horn / alarm combination / alarm strobe light 12 V DC	o	o
<b>Inputs/outputs</b>		
Inputs for float switches	4	4
4-20 mA analog input	X	X
Integrated pneumatic pressure sensor up to 3 metres of water - up to 10 metres on request	-	-
Bubbler control with compressor up to 2 metres of water	-	-
Remote acknowledgement	X	X
12 V DC connection for horn, etc.	X	X
<b>Sensors</b>		
Float switch (NO contact)	o	o
F1 leakage sensor	o	o
<b>Tools</b>		
KSB Service Tool for Windows XP	o	o

### Alarm switchgears for pumps, non-ATEX-compliant




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

Item	Description	Mat. No.	[kg]
E50	 <p>Alarm switchgear AS 0</p> <p>With circuit breaker, acoustic signal transmitter with 85 dB(A), green equipment-on lamp</p> <p>Plastic housing, IP20, H x W x D = 140 x 80 x 57 [mm]. Use float switch, F1 leakage sensor (item E64), M1 alarm contactor or signal relay of control unit as contactor.</p>	29128401	0,5
E51	 <p>Alarm switchgear AS 2</p> <p>With circuit breaker, acoustic signal transmitter with 85 dB(A), green equipment-on lamp, volt-free contact for hook-up to a control station</p> <p>Plastic housing, IP20, H x W x D = 140 x 80 x 57 [mm]. Use float switch, F1 leakage sensor (item E64) or signal relay of control unit as contactor.</p>	29128422	0,5
E52	 <p>Alarm switchgear AS 4</p> <p>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</p> <p>Plastic housing, IP20, H x W x D = 140 x 80 x 57 [mm]. Use float switch (E60), F1 leakage sensor (item E64) or signal relay of control unit as contactor.</p>	29128442	0,5
E53	 <p>Alarm switchgear AS 5</p> <p>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, horn-off pushbutton, 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, H x W x D = 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 IP30 ISO plug housing, mains-independent, with self-charging power supply unit for 5 hours of operation in the event of a power failure, acoustic signal transmitter 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> <ol style="list-style-type: none"> <li>High water alert by suspending the sensor in a (pump) sump above the pump start-up point.</li> <li>Water alarm signal at a water level of only 1 mm (!), by placing the sensor on the floor in areas with a flooding or leakage risk, e.g. the cellar or next to the washing machine in the kitchen or bathroom.</li> </ol>	00533740	0,9

**Control unit/switchgear accessories**

Item	Description	Cable / hose length [m]	Ama-Drainer										Mat. No.	[kg]
			1~				3~							
			.05.E	.07.E	.11.E	.15.E	.05.D	.07.D	.11.D	.15.D	.22.D	522/11		
 E60 Float switch with free cable end Switch housing made of polypropylene (fluid temperature 70 °C max.) 230 V AC or 24 V AC/DC, 8 A max., 20 mA min. Function: circuit closed in upper float position (NO contact) Power cable: H07RN-F3G1	3	X	X	X	X	X	X	X	X	X	X	X	11037742	0,5
	5	X	X	X	X	X	X	X	X	X	X	X	11037743	0,8
	10	X	X	X	X	X	X	X	X	X	X	X	11037744	1,3
	15	X	X	X	X	X	X	X	X	X	X	X	11037745	1,8
	20	X	X	X	X	X	X	X	X	X	X	X	11037746	2,4
	25	X	X	X	X	X	X	X	X	X	X	X	11037747	2,9
	30	X	X	X	X	X	X	X	X	X	X	X	11037748	3,4
 E60.1 Float switch for draining, with shockproof plug (NO contact)	3	X	X	X	-	-	-	-	-	-	-	11037749	1,1	
	5	X	X	X	-	-	-	-	-	-	-	11037750	1,3	
	10	X	X	X	-	-	-	-	-	-	-	11037751	1,6	
	20	X	X	X	-	-	-	-	-	-	-	11037752	2,7	
 E61 Float switch with free cable end, oil-resistant Function: circuit closed in upper float position (NO contact) Power cable: PUR 3x1.0 mm <sup>2</sup>	5	X	X	X	X	X	X	X	X	X	X	11037753	0,8	
	10	X	X	X	X	X	X	X	X	X	X	11037754	1,2	
	20	X	X	X	X	X	X	X	X	X	X	11037755	2	
 E62 Float switch with free cable end <sup>11)</sup> Function: circuit open in upper float position (NC contact) (H07RN-F 3G1)	5	X	X	X	X	X	X	X	X	X	X	11037756	0,8	
	10	X	X	X	X	X	X	X	X	X	X	11037757	1,4	
	20	X	X	X	X	X	X	X	X	X	X	11037758	2,6	
 E62.1 Float switch for filling, with shockproof plug (NC contact), circuit open in upper float position, 230 V AC, 50 Hz, max. 8 A (H 07 RN-F3G1), not suitable for drinking water	3	X	X	X	-	-	-	-	-	-	-	11037759	0,6	
	5	X	X	X	-	-	-	-	-	-	-	11037760	0,9	
	10	X	X	X	-	-	-	-	-	-	-	11037761	1,5	
	20	X	X	X	-	-	-	-	-	-	-	11037762	2,7	
 E64 F1 leakage sensor Contactor for alarm switchgears AS 0, AS 2, AS 4 or as alarm transmitter for LevelControl Basic 2 Alarm transmission options: High water alert by suspending the sensor in a (pump) sump above the pump start-up point. Warning at a water level of 1 mm in areas with a flooding or leakage risk (e.g. in the cellar or next to the washing machine in the kitchen or bathroom) Dimensions [mm]: 52 x 21 x 20 (H x W x D)	3 m	X	X	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	10	X	X	X	X	X	X	X	X	X	X	19071721	1,2	
	20	X	X	X	X	X	X	X	X	X	X	19071837	2	
 E66 Closed pressure bell set, pneumatic With polyamide tube 8 x 3 mm	10	X	X	X	X	X	X	X	X	X	X	19071722	3,5	

11) Not suitable for LevelControl

Item	Description	Cable / hose length [m]	Ama-Drainer										Mat. No.	[kg]
			1~				3~							
			.05.E	.07.E	.11.E	.15.E	.05.D	.07.D	.11.D	.15.D	.22.D	522/11		
E70	 Horn, 12 V DC, 105 dB, 150 mA, IP54 Suitable for indoor installation and outdoor installation. Protect against moisture.	-	X	X	X	X	X	X	X	X	X	X	01086547	0,1
E80	 Safety switch STECKMAT Trips in approx. 0.03 seconds, from approx. 0.03 A 230 V / 10 A	-	X	X	X	X	-	-	-	-	-	-	00534217	0,5
E90	 Rechargeable battery retrofit kit for LevelControl Basic 2, type BC Scope of supply: 2 rechargeable batteries (6 V, 1.3 Ah) and charging unit	-	X	X	X	X	X	X	X	X	X	X	19074194	0,8



General assembly drawings with list of components

General assembly drawing of Ama-Drainer .../10, .../10K, .../35

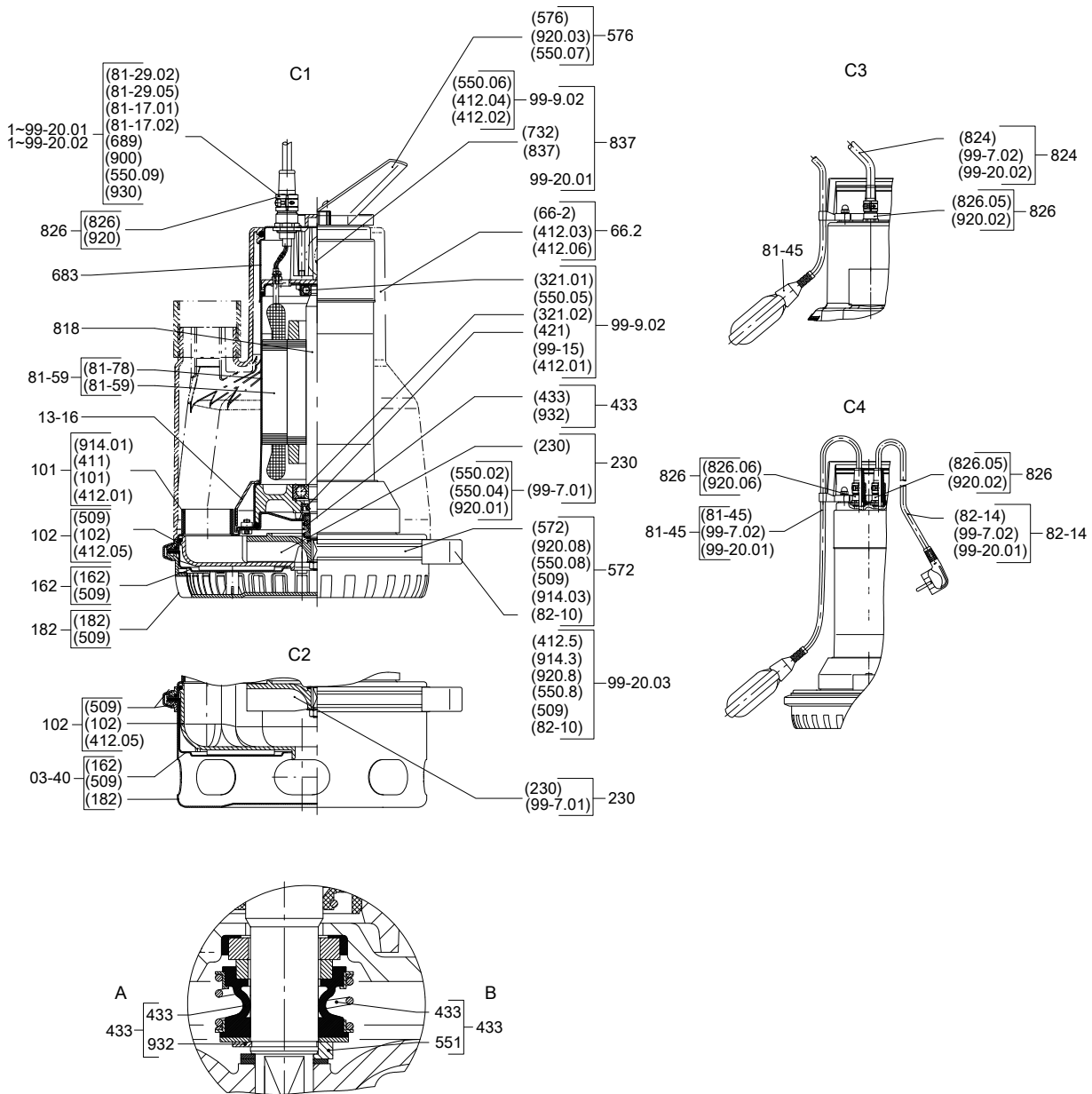


Fig. 13: General assembly drawing of Ama-Drainer .../10, .../10K, .../35

A	Ama-Drainer A / R	B	Ama-Drainer C
C1	Ama-Drainer .../10, .../10K, ... /35	C2	Ama-Drainer SD
C3	Ama-Drainer .../35	C4	Ama-Drainer SE

List of components

Part No.	Description	Comprises:
03-40	Foot / suction cover assembly (for .../35)	Suction cover 162 Foot 182 Intermediate ring 509
101	Pump casing, complete	Pump casing [101] Joint ring 411 O-ring 412.01 Hexagon socket head cap screw 914.01
102	Volute casing	Volute casing 102 O-ring 412.05

Part No.	Description	Comprises:
102	Volute casing	Intermediate ring 509
13-16	Protective casing	Protective casing 13-16
162	Suction cover	Suction cover 162 Intermediate ring 509
182	Pump foot	Foot 182 Intermediate ring 509
230	Impeller, complete	Impeller 230 Impeller installation kit 99-7.01
433	Mechanical seal, complete	Mechanical seal (433) Spacer disc 551 (for variant C only) Circlip 932
572	Clamp, complete	Clamp 572 Intermediate ring 509 Disc 550.08 Cover strip 82-10 Hexagon socket head cap screw 914.03 Nut 920.08
576	Handle, complete	Handle 576 Disc 550.07 Nut 920.03 Plate 970
66-2	Cooling jacket, set of accessories	Cooling jacket 66-2 O-ring 412.03/06
683	Hood	Hood 683
81-45	Float switch (single-phase units)	Float switch (6 A / 0.5 m) 81-45 Float switch (10 A / 0.5 m) 81-45 Repair kit for cable (single-phase) 99-20.01 Installation kit for hood 99-7.02
81-45	Float switch (three-phase units)	Float switch (6 A / 10 m) 81-45
81-59	Stator, complete	Stator [81-59] Stator case 81-78
818	Pump rotor	Pump rotor 818
82-14	Cable with plug (single-phase units)	Cable with plug (3x1 mm <sup>2</sup> , length 10 m) 82-14 Repair kit for cable (single-phase) 99-20.01 Installation kit for hood 99-7.02
824	Cable (three-phase units)	Cable (6x1 mm <sup>2</sup> , length 10 m) 824 Repair kit 99-20.02 Installation kit for hood 99-7.02
826	Cable gland	Cable gland 826 Nut (M20x1.5) 920.05
837	Capacitor (single-phase units only)	Capacitor 837 Capacitor holder 732 Repair kit for cable (single-phase) 99-20.01 Installation kit for hood 99-7.02
99-7.01	Impeller installation kit	Adjusting washer 550.02 Disc 550.04 Nut 920.01
99-7.02	Installation kit for hood	O-ring 412.02/04 Disc 550.06
99-11	Bearing	Deep groove ball bearing 321.01/02 O-ring 412.01 Shaft seal ring 421 Disc 550.05 Lubricating oil 99-15
99-20.01/02	Cable repair kit	Insulation tube 689 Disc 550.09 End connector 81-17.01/02 Terminal 81-29.02 Screw 900

Part No.	Description	Comprises:
99-20.01/02	Cable repair kit	Serrated lock washer 930
99-20.03	Hydraulic system repair kit	O-ring 412.05
		Intermediate ring 509
		Disc 550.08
		Cover strip 82-10
		Hexagon socket head cap screw 914.03
		Nut 920.08

General assembly drawing Ama-Drainer 522/11

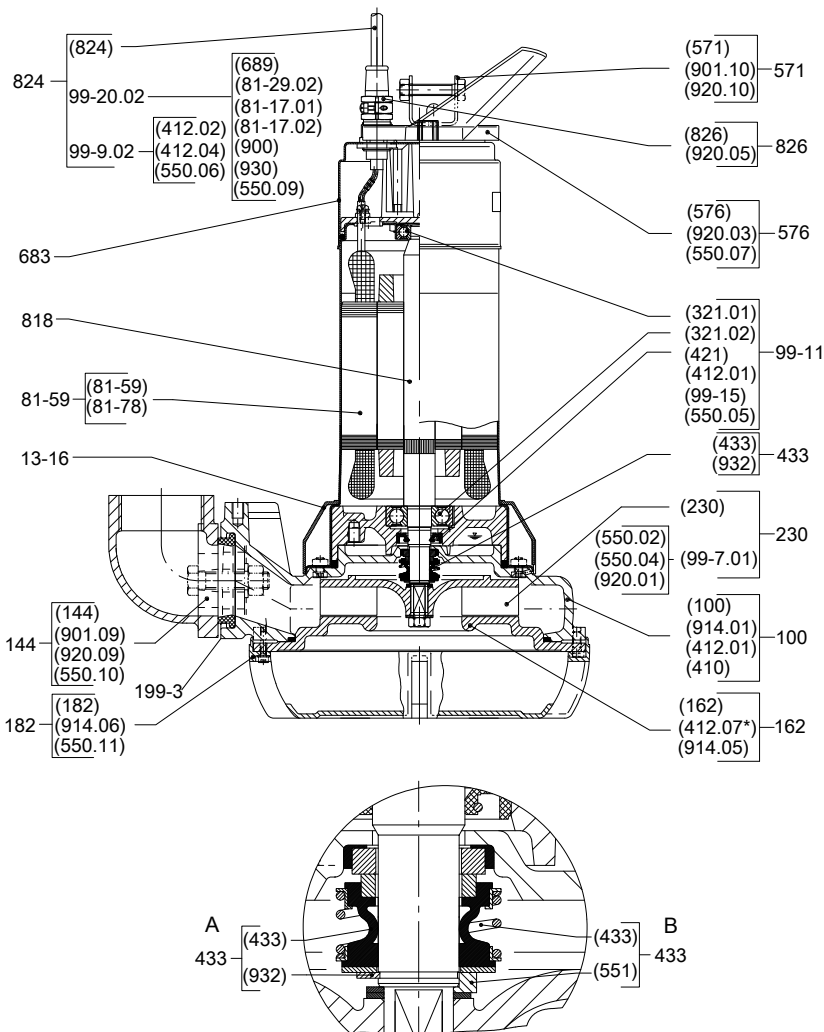


Fig. 14: General assembly drawing of Ama-Drainer 522/11

A	Ama-Drainer A / R	B	Ama-Drainer C
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List of components

Part No.	Description	Comprises:
100	Casing, complete	Casing 100 Profile seal 410 O-ring 412.01 Hexagon socket head cap screw 914.01
144	Discharge elbow, complete	Discharge elbow 144 Disc 550.10 Hexagon head bolt 901.09 Nut 920.09
13-16	Protective casing	Protective casing 13-16
162	Suction cover	Suction cover 162

Part No.	Description	Comprises:
162	Suction cover	O-ring 412.07 Hexagon socket head cap screw 914.05
182	Pump foot	Foot 182 Disc 550.11 Hexagon socket head cap screw 914.06
199-3	Flange adapter <sup>12)</sup>	Flange adapter (DN 50) 182.5 Profile seal 410.02 Disc 550.12 Stud 902.01
230	Impeller, complete	Impeller 230 Impeller installation kit 99-7.01
433	Mechanical seal, complete	Mechanical seal 433 Spacer disc 551 (for variant C only) Circlip 932
571	Bracket, complete	Bracket 571 Hexagon head bolt 901.10 Hexagon nut 920.10
576	Handle, complete	Handle 576 Disc 550.07 Nut 920.03
683	Hood	Hood 683
81-45	Float switch (three-phase units)	Float switch (6 A / 10 m) 81-45
81-59	Stator, complete	Stator 81-59 Stator case 81-78
818	Pump rotor	Pump rotor 818
824	Cable (three-phase units)	Cable (6×1mm <sup>2</sup> , length 10 m) 824 Installation kit for hood 99-7.02 Repair kit 99-20.02
826	Cable gland	Cable gland 826 Nut (M20×1.5) 920.05
99-7.01	Impeller installation kit	Adjusting washer 550.02 Disc 550.04 Nut 920.01
99-7.02	Installation kit for hood	O-ring 412.02/.04 Disc 550.06
99-11	Bearing	Deep groove ball bearing 321.01/.02 O-ring 412.01 Shaft seal ring 421 Disc 550.05 Lubricating oil 99-15
99-20.02	Cable repair kit	Insulation tube 689 Disc 550.09 End connector 81-17.01/.02 Terminal 81-29.02 Screw 900 Serrated lock washer 930
99-20.03	Hydraulic system repair kit	O-ring 412.05 Intermediate ring 509 Disc 550.08 Cover strip 82-10 Hexagon socket head cap screw 914.03 Nut 920.08

12) Not shown in drawing









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