

Submersible Waste Water Pump

Ama-Drainer N
301/302/303/358

Type Series Booklet



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Type Series Booklet Ama-Drainer N 301/302/303/358

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Building Services: Drainage

Drainage Pumps/Waste Water Pumps

Ama-Drainer N 301/302/303/358



Main applications

- Drainage
- Disposal
- Drainage systems
- Lowering groundwater levels
- Maintaining groundwater levels
- Drainage

Fluids handled

Pump for handling clean to turbid water not containing aggressive, abrasive or solid substances.

- Solid particles with a particle size of up to 10 mm (301, 302, 303)
- Solid particles with a particle size of up to 35 mm (358)
- Faecal-free waste water
- Grey water
- River, lake and groundwater

Ama-Drainer N C - Version for aggressive water

- Seawater
- Brackish water
- Water containing salt

Operating data

Operating properties

Characteristic		Value
Flow rate	Q	Up to 16.5 m³/h (4.6 l/s)
Head	H	Up to 12 m
Fluid temperature	t	50 °C max.

Designation

Example: Ama-Drainer N 301 S E / C

Key to the designation

Code	Description
Ama-Drainer N	Type series
301	Code number
301	
302	
303	
35	Free passage
35 ¹⁾	= 35 mm
8	Motor rating in kW x 10
8 ¹⁾	= 0.85 kW
S	Float switch
S	= with float switch
N	= without float switch
E	Motor
E	= single-phase a.c. motor
C	Material
C ²⁾	= version for aggressive water
- ³⁾	= version for waste water

Design details

Design

All parts which will come into contact with the fluid handled are made of rust-proof materials.

- Fully floodable submersible motor pump
- Close-coupled design
- Vertical installation
- Single-stage
- Integrated swing check valve (301, 302, 303)
- Pump controlled by integrated float switch
- Enclosure: IP68 (permanently submerged) to EN 60529 / IEC 529
- Max. immersion depth 2 m

Types of installation

- Transportable models

Drive

- Jacket-cooled single-phase AC motor
- Integrated temperature switch

1) Type series N 358 only
 2) For type series N 301/302/303 only
 3) Without material code = version for waste water (standard)

- With cable and shock-proof plug

Shaft seal

- Drive-end: 1 shaft seal ring
- Pump end: two shaft seal rings
- A lubricant reservoir in-between the seal elements ensures cooling and lubrication.

Bearing assembly

- Enclosed bearings, grease-packed for life

Materials

Material variant standard/C

Pump section	Standard material variant N 301/302/303	Material variant C N 301/302/303	Standard material variant N 358
Pump casing	Polypropylene, glass fibre reinforced (30 %)		
Discharge casing	Polypropylene, glass fibre reinforced (30 %)		
Casing cover	Noryl GNF3		
Impeller	Noryl GNF2	Noryl GNF2	Polyamide
Motor housing	Chrome nickel steel (1.4301)	Chrome nickel molybdenum steel (1.4571)	Chrome nickel steel (1.4301)
Shaft	1.4028	Chrome nickel molybdenum steel (1.4571)	1.4028
Float switch (float)	Polypropylene		

Product benefits

- Ready-to-connect, easy installation and commissioning
- Maintenance-free bearings grease-packed for life
- Low-weight, high-quality noise-absorbing plastic casing with sturdy handle, resistant to corrosion, impact and abrasion

Certification

Certification	Effective in:	Comment
 Von Profis. Für Qualität.	Germany	All sizes
	Europe	All sizes

Selection table

The table listing fluids handled is a selection tool for drainage duties. It should be used for orientation and is based on KSB's many years of experience. The data are reference values and should not be considered to be generally binding recommendations. They shall not be the basis for warranty claims. Please contact your nearest KSB sales branch and/or our technical departments for in-depth advice.

Ama-Drainer N

Fluids handled	Material variant	
	Standard	C
	301/ 302/ 303/ 358	301/ 302/ 303
Antifreeze agent	X	-
Antifrogen/water mixture	X	-
Beer	X	-
Buttermilk	X	-
Calcium acetate	X	-
Calcium carbonate	X	-
Calcium hydroxide	X	-
Castor oil	X	-
Cider	X	-
Coconut oil	X	-
Corn oil	X	-
Deionised water	X	-
Edible oil	X	-
Edible vinegar	-	X
Ethylene glycol	X	-
Evaporated milk	X	-
Glycerine	X	-
Glycol	X	-
Grisiron	X	-
Lemonades	X	-
Liquid fertiliser	X	-
Milk	X	-
Peanut oil	X	-
Polyglycols	X	-
Potassium hydroxide	X	-
Rapeseed oil	X	-
Silicon oil	X	-
Silo leachate	-	X
Sodium carbonate	X	-
Sodium chloride up to 3% concentration	-	X
Sodium hydrogen phosphate	X	-
Sodium nitrate	X	-
Sodium perborate	X	-
Sodium sulphate	X	-
Soy-bean oil	X	-
Spirits	X	-
Trisodium phosphate	X	-
Uric acid	X	-
Vaseline	X	-
Vinegar	-	X
Washing machine lye	X	-
Whey	X	-
Water		
Boiler water	X	-
Condensate	-	X
Cooling water	X	-
Drainage water	X	-
Fire-fighting water	X	-
Fully desalinated water	-	X
Heating water	X	-

Fluids handled	Material variant	
	Standard	C
	301/ 302/ 303/ 358	301/ 302/ 303
Lime water	-	X
Partly desalinated water	X	-
Raw water	X	-
Salt water	-	X
Seawater	-	X
Swimming pool water (DIN 19 643)	-	X

Technical data

Standard material variant

Code	ISO 7/1 Rp	Free passage max.	P ₁	P ₂	~ I _N	Power cable H 07 RN-F.G.		Mat. No.	[kg]
		[mm]	[kW]	[kW]	[A]	[m]	[mm ²]		
301 SE	Rp 1 1/4	10	0,43	0,18	1,9	5 ⁴⁾	3 x 0,75 ⁵⁾	39300070	4.5
302 SE	Rp 1 1/4	10	0,75	0,36	4,0	5 ⁴⁾	3 x 0,75 ⁵⁾	39300074	6
303 SE	Rp 1 1/4	10	1,05	0,50	4,9	5 ⁴⁾	3 x 0,75 ⁵⁾	39300078	6.2
301 SE/NE ⁶⁾	Rp 1 1/4	10	0,43	0,18	1,9	10	3 x 1,0	39300072	5.2
302 SE/NE ⁶⁾	Rp 1 1/4	10	0,75	0,36	4,0	10	3 x 1,0	39300076	6.7
303 SE/NE ⁶⁾	Rp 1 1/4	10	1,05	0,50	4,9	10	3 x 1,0	39300081	6.9
358 SE/NE ⁶⁾	Rp 1 1/2	35	0,85	0,43	4,0	10	3 x 1,0	39300083	6.8

Material variant C

Code	ISO 7/1 Rp	Free passage max.	P ₁	P ₂	~ I _N	Power cable H 07 RN8-F.G.		Mat. No.	[kg]
		[mm]	[kW]	[kW]	[A]	[m]	[mm ²]		
301 SE/NE/C ⁶⁾	Rp 1 1/4	10	0,43	0,18	1,9	10	3 x 1,0	39300073	5.2
302 SE/NE/C ⁶⁾	Rp 1 1/4	10	0,75	0,36	4,0	10	3 x 1,0	39300077	6.7
303 SE/NE/C ⁶⁾	Rp 1 1/4	10	1,05	0,50	4,9	10	3 x 1,0	39300082	6.9

Operating limits

Operating limits

Characteristic		Ama-Drainer N 301	Ama-Drainer N 302	Ama-Drainer N 303	Ama-Drainer N 358
Head		6.5 m max.	10 m max.	12.5 m max.	8.5 m max.
Flow rate		10 m ³ /h max.	12 m ³ /h max.	14 m ³ /h max.	16.5 m ³ /h max.
Immersion depth		2 m max.	2 m max.	2 m max.	2 m max.
Voltage/frequency		230 V/50 Hz	230 V/50 Hz	230 V/50 Hz	230 V/50 Hz
Starting current		4.1 A	9.5 A	11.5 A	9.5 A
Max. temperature, continuous		0 to 50 °C	0 to 50 °C	0 to 50 °C	0 to 50 °C
Particle size (max. diameter)		10 mm	10 mm	10 mm	35 mm
Residual water level (Type NE for manual operation)		15 mm min.	15 mm min.	15 mm min.	37 mm min.
Power input		430 W max.	750 W max.	1050 W max.	850 W max.
Enclosure		IP68	IP68	IP68	IP68
Power supply cable		H07RN8-F 3 x 1 ²	H07RN8-F 3 x 1 ²	H07RN8-F 3 x 1 ²	H07RN8-F 3 x 1 ²
	Type SE	H05RN8-F 3 x 0.75 ²	H05RN8-F 3 x 0.75 ²	H05RN8-F 3 x 0.75 ²	-
Frequency of starts [starts/hour]		30 maximum			

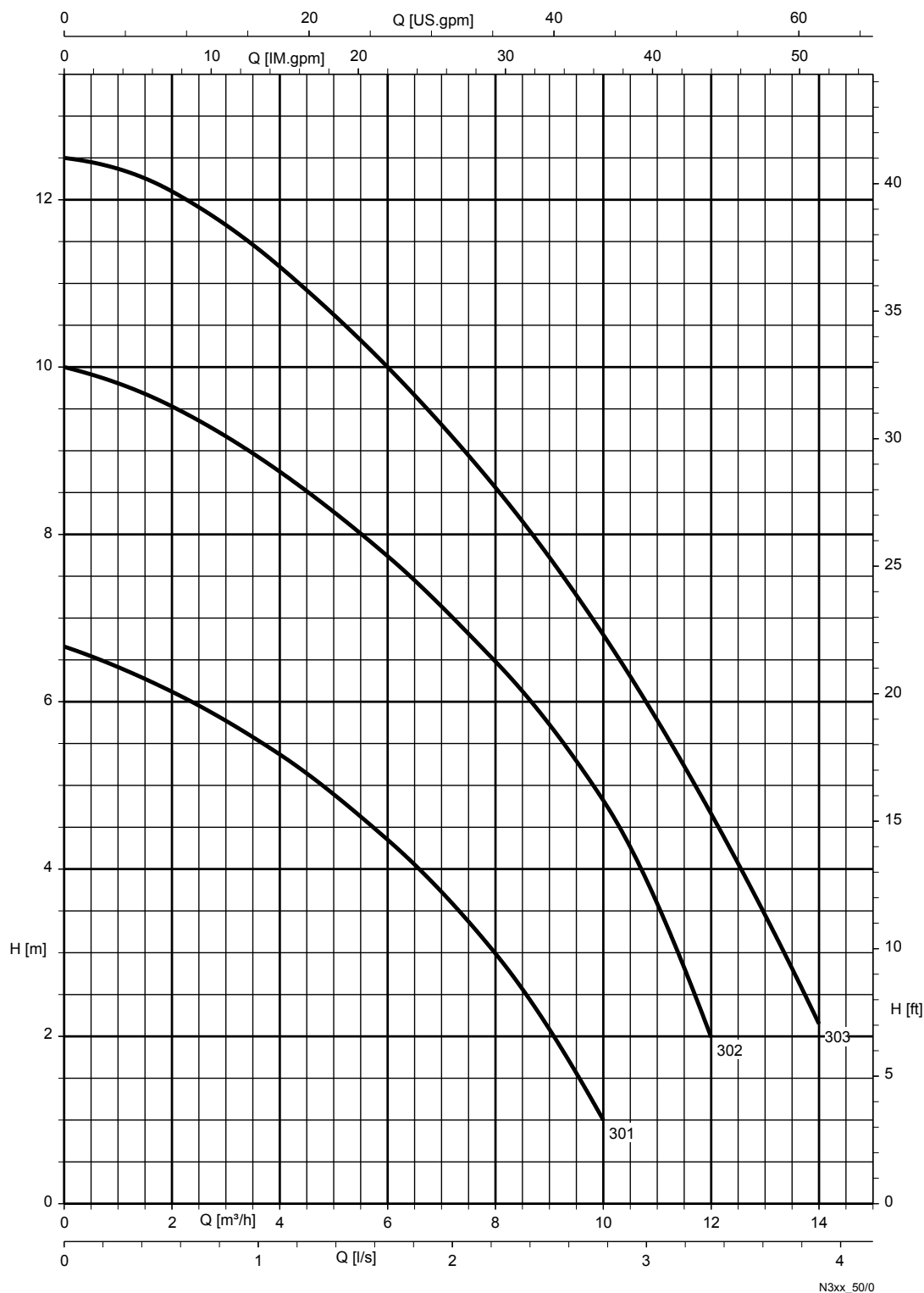
⁴⁾ Acc. to EN 60 335-2-41, submersible motor pumps used outdoors require a power cable of at least 10 m length.

⁵⁾ Power cable H 05 RN8-F.G.

⁶⁾ Note: If the pump set is controlled by external input or used in dual-pump stations, the float switch must be replaced by the locking disc supplied.

Characteristic curves

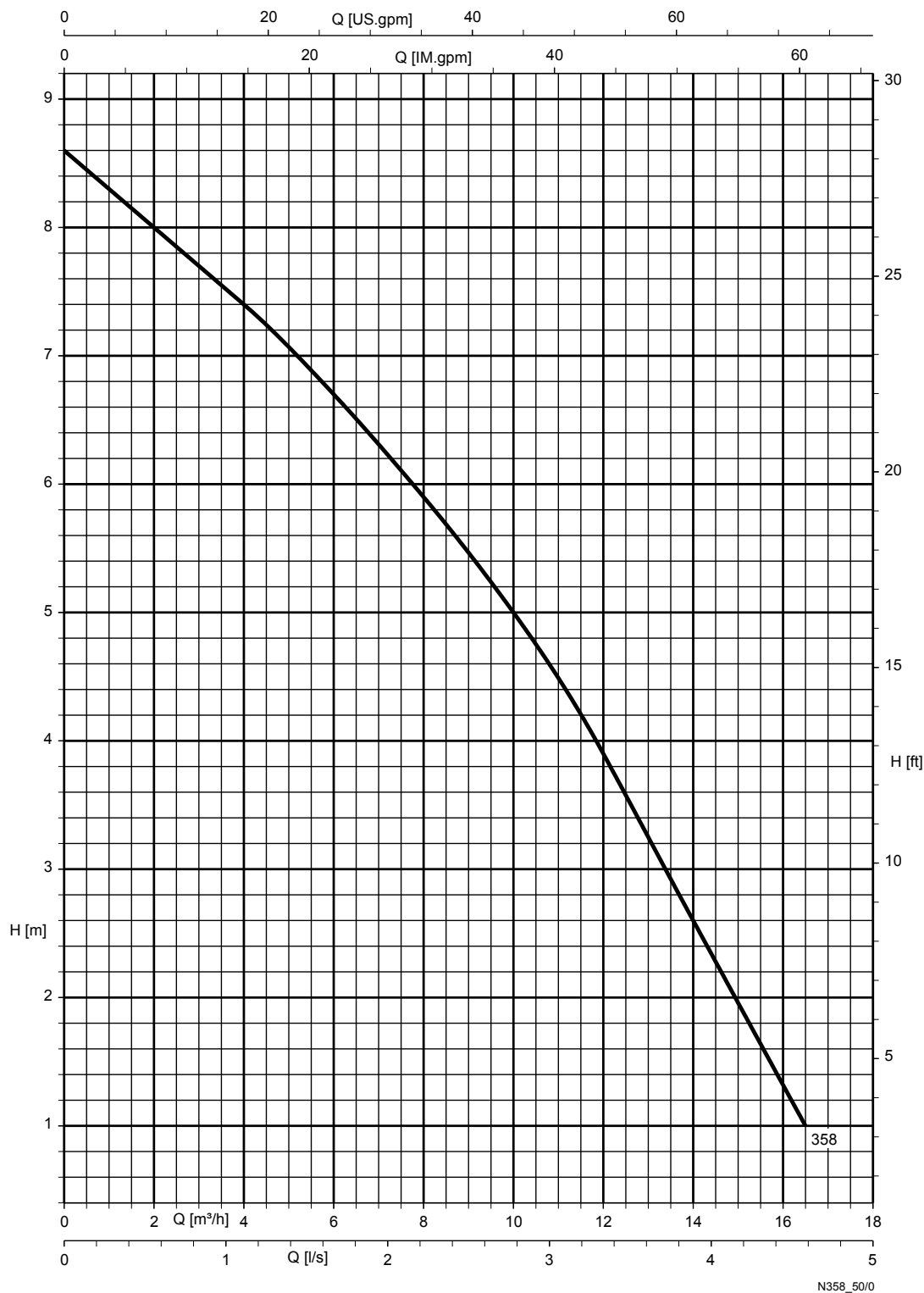
Ama-Drainer N 301, 302, 303; $n = 2800$ rpm, multi-vane impeller



Free passage: 301/302/303 = 10 mm

Performance tolerance to ISO 9906, Annex A (water under standard conditions)

Ama-Drainer N 358; n = 2800 rpm, F-impeller



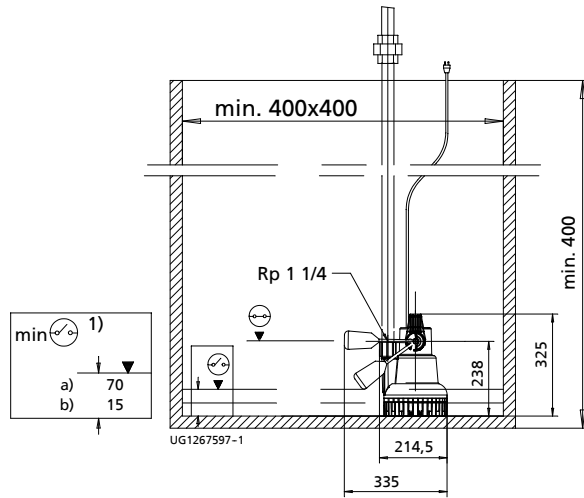
Free passage: 358 = 35 mm

Performance tolerance to ISO 9906, Annex A (water under standard conditions)

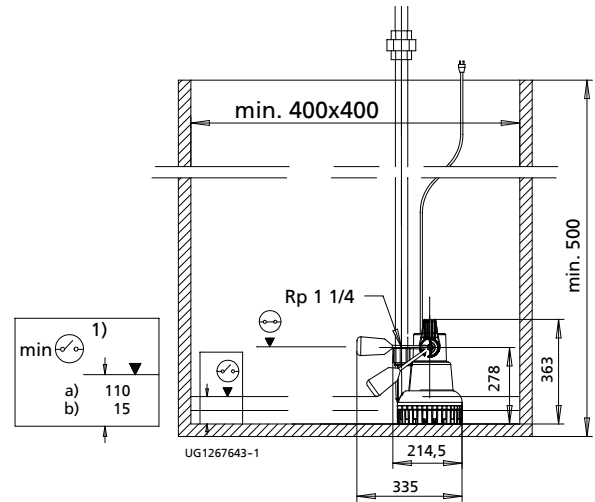
Dimensions

Outline drawings

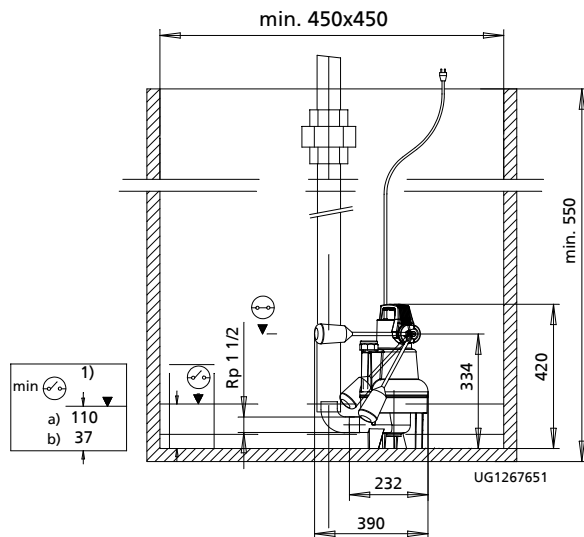
N 301 SE



N 302 SE/303 SE



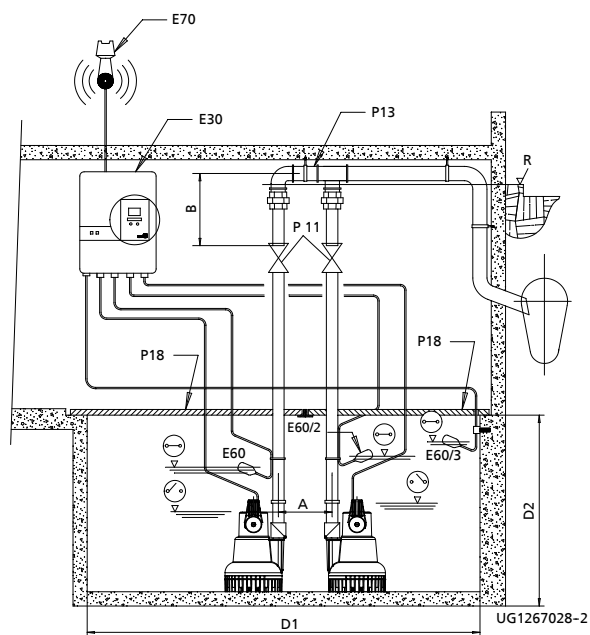
N 358



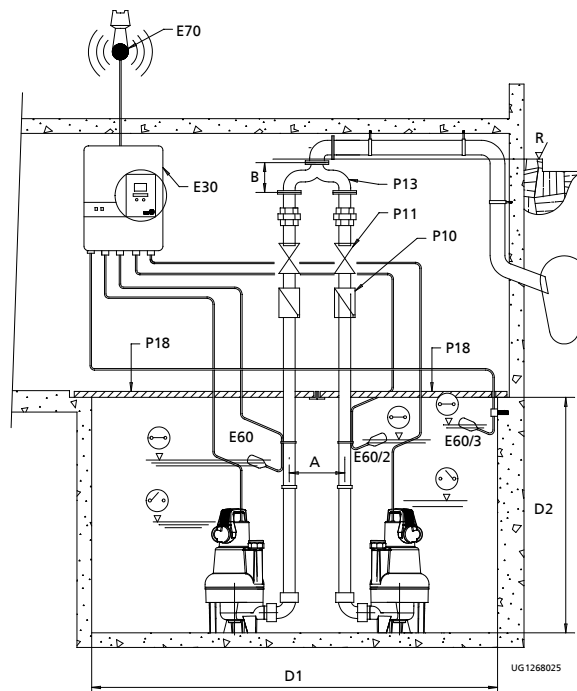
1)	Residual water level
a)	Automatic
b)	Manual

Installation example of a dual-pump station

N 301 NE/302 NE/303 NE



N 358 NE



1)	Residual water level	E30	Control unit
a)	Automatic	E60	Float switch base load
b)	Manual	E60/2	Float switch peak load
P10	Lift check valve (only 358)	E60/3	Float switch high water alert
P11	Gate valve	E70	Horn
P13	Y-pipe	R	Flood level
P18	Cover plate		

Dimensions [mm]

Size	A	B	D ₁	D ₂
301	275	320	1060 (x500)	400
302, 303	275	320	1060 (x500)	500
358	275	180	1060 (x500)	550

Accessories

Pump accessories

	Item	Description	Connection /immersion depth	Ama-Drainer N				Mat. No.	[kg]
				301	302	303	358		
	P10	RK swing check valve Plastic, EN 12 050-4, with internal/internal thread ISO 7/1, full port and drain plug	Rp 1 1/4	X	X	X	-	01009771	0.1
			Rp 1 1/2	-	-	-	X	01009772	0.25
		Lift check valve, stainless steel (1.4401)	Rp 1 1/4	X	X	X	-	01084936	2.1
			Rp 1 1/2	-	-	-	X	01084935	2.2
	P11	Socket gate valve CuZn PN 16 with internal/internal thread and full port	Rp 1 1/4	X	X	X	-	01014219	0.6
			Rp 1 1/2	-	-	-	X	00411502	0.6
	P13	Y-pipe for dual-pump sets, with external thread, galvanised steel	Rp 1 1/4	X	X	X	-	18040311	4.1
		Y-pipes for dual-pump stations, grey cast iron, with hexagon head bolts, nuts and gaskets; flanges drilled to DIN 2501	DN 40	-	-	-	X	40000688	10.6
	P18	Cover plate, steel tread-proof, split, with profile joints and angle iron mounting frame (type A 560) for 500 x 500 mm pits (Dual-pump stations with P13 Y-pipe are equipped with 2 cover plates next to each other.)	Rp 1 1/4	X	X	X	X	18075627	13
	P21	A 25 B drain hose set (See P32) Comprising: rigid coupling with external thread, 6 m plastic hose DN 25, rapid-action hose coupling Rp 1 1/4, (free passage 21 mm)	Rp 1 1/4	X	X	X	-	18079719	3
		Drain hose set Comprising: plastic hose, DN 40 or DN 50 (with integrated C couplings, DIN14811) and Storz rigid coupling (with internal thread to ISO 228/1)	C 42	-	-	-	X	-	-
		Can be selected via P24 and P28							
	P24	Storz rigid coupling with internal thread to ISO 228/1 Aluminium alloy, for required piping components see P32	C-G 1 1/2	X	X	X	X	01002463	0.3
	P26	Storz hose coupling, aluminium alloy Required counterpart see P24	C 52 (DIN 14321)	X	X	X	-	00524551	0.3
	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 Required piping components see P32	C 52-5 m	X	X	X	X	00522262	2.3
			C 52-10 m	X	X	X	X	00522263	4.2
			C 52-20 m	X	X	X	X	00522264	5.7
	P29	Threaded flange for Y-pipe (P13), internal thread	DN 40/ Rp 1 1/2	-	-	-	X	00260478	1.8

	Item	Description	Connection /immersion depth	Ama-Drainer N				Mat. No.	[kg]
				301	302	303	358		
	P31	Bellmouth for draining residual water		X	X	X	-	39300101	0.2
	P32	Pipe extension for Storz rigid coupling C (P24) PVC hard, internal/external thread for use without swing check valve and union nut	IG Rp 1 1/4 / AG R 1 1/2 x 170	X	X	X	-	11035587	0.2
		90° elbow 1 1/2" with hose nozzle		-	-	-	X	42208023	0.3

Switchgear

 Valid for all countries except France.

	Item	Description		Type	Ama-Drainer N				Mat. No.	[kg]
			230 V		1~					
					301	302	303	358		
	E1	MSE motor protection switchgear	X	MSE 25.1	X	-	-	-	19070136	1
		Float switch	X	MSE 60.1	-	X	X	X	19070138	1
	E10	LevelControl Basic 2 control unit for single-pump station, IP54 DOL starting, with manual-0-automatic selector switch, indicator lamps and control panel, high water alert, integrated alarm buzzer 85 dB(A), optional mains-independent alarm via rechargeable battery, operating hours counter/start-stop cycles per pump, voltage measurement, phase monitoring, pneumatic level measurement, indication of water level, volt-free contact for general fault message, motor temperature warning (thermal circuit breaker) – with automatic reset/re-start function, motor leakage/moisture monitoring 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	19073760	4.5
	E30	LevelControl Basic 2 control unit for dual-pump station, IP54 Peak load operation function, 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, pneumatic: indication of water level, voltage measurement, phase monitoring, volt-free contact for general fault message, 230 V variant: with external socket, 400 V variant: with motor protection switch, mains-independent alarm via rechargeable battery optional 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	19073774	4.7

LevelControl Basic 2 installation options (processed via KSB EasySelect)⁷⁾

Item	Description	Ama-Drainer N				Mat. No.	[kg]
		1~					
		301	302	303	358		
O1	Master switch for LevelControl Basic 2, installed for type BC...	X	X	X	X	01143084	0.2
O200	Signalling module for type BC	X	X	X	X	19075182	0.2

⁷⁾ Installation options must be processed via KSB EasySelect, otherwise they will be supplied but not fitted.

Operation with mini control systems

For Ama-Drainer 301 SE/NE, 302 SE/NE and 303 SE/NE with 10 m power supply cable, the supplied locking disc must be mounted instead of the float switch (see operating instructions). Separate float switches are required for operation with mini control systems.

LevelControl with float switches

Single pump:

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

Two pumps:

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

Dual pump operation with two level switches at different levels

Two pumps installed in the same installation location should be operated via the LevelControl unit. This control unit enables automatic alternating, peak load and stand-by operation. An external alarm switchgear will not be required, as LevelControl features an integrated alarm function.

Connection to the control station

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

LevelControl Basic 2 control units

 Valid for all countries except France.

Feature	Single-pump station Float switch or 4...20 mA sensor	Dual-pump station Float switch or 4...20 mA sensor
230 V: 6.0 - 10 A	BC1 230 ^{DFNO} 100	BC2 230 ^{DFNO} 100
Functions		
Tank drainage	X	X
Tank filling via float switch	X	X
Stand-by pump: 1 pump redundant	-	X
Automatic pump changeover after every start	-	X
Automatic 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
Operation check run after idle period	X	X
Alert memory	X	X
Display and operation		
7-segment display	X	X
Indication of water level	Switching points	Switching points
For each pump: operation/fault/pump running	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	-	-
Phase monitoring	X	X
Change of switching level via control panel	X	X
Housing H x W x D, IP54		
Plastic 361 x 278 x 120 mm	X	X
Sheet steel 400 x 300 x 155 mm	-	-
Sheet steel 600 x 400 x 200 mm	-	-
Built-in components		
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	X	X
Motor protection		
Fuse per pump	X	X
Motor protection switch per pump (overcurrent and short-circuit protection)	-	-
Motor temperature warning input - self-acknowledging	X	X
Motor temperature alert input - manual acknowledgement	X	X
Pump		
Thermal circuit breaker (TCB) / bimetal switch per pump	Bimetal switch in the motor	Bimetal switch in the motor
Installation options		
Rechargeable battery for powering the electronics, sensors, alarm equipment	o	o
Alarm equipment		
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/operation message	X	X
Piezo buzzer 85 dB(A)	X	X
Horn 105 dB(A) / alarm combination / alarm strobe light 12 V DC	o	o
Inputs/outputs		
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 system with compressor up to 2 metres of water	-	-

Feature	Single-pump station Float switch or 4...20 mA sensor	Dual-pump station Float switch or 4...20 mA sensor
Remote acknowledgement	X	X
12 V DC connection for horn, alarm combination, alarm strobe light	X	X
Sensors		
Float switch (NO contact)	o	o
F1 moisture sensor	o	o
Tools		
KSB ServiceTool for Windows XP	o	o

Key to the symbols

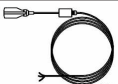
Symbol	Description
o	Optional
X	Available
-	Not available

Alarm switchgears for pumps without ATEX

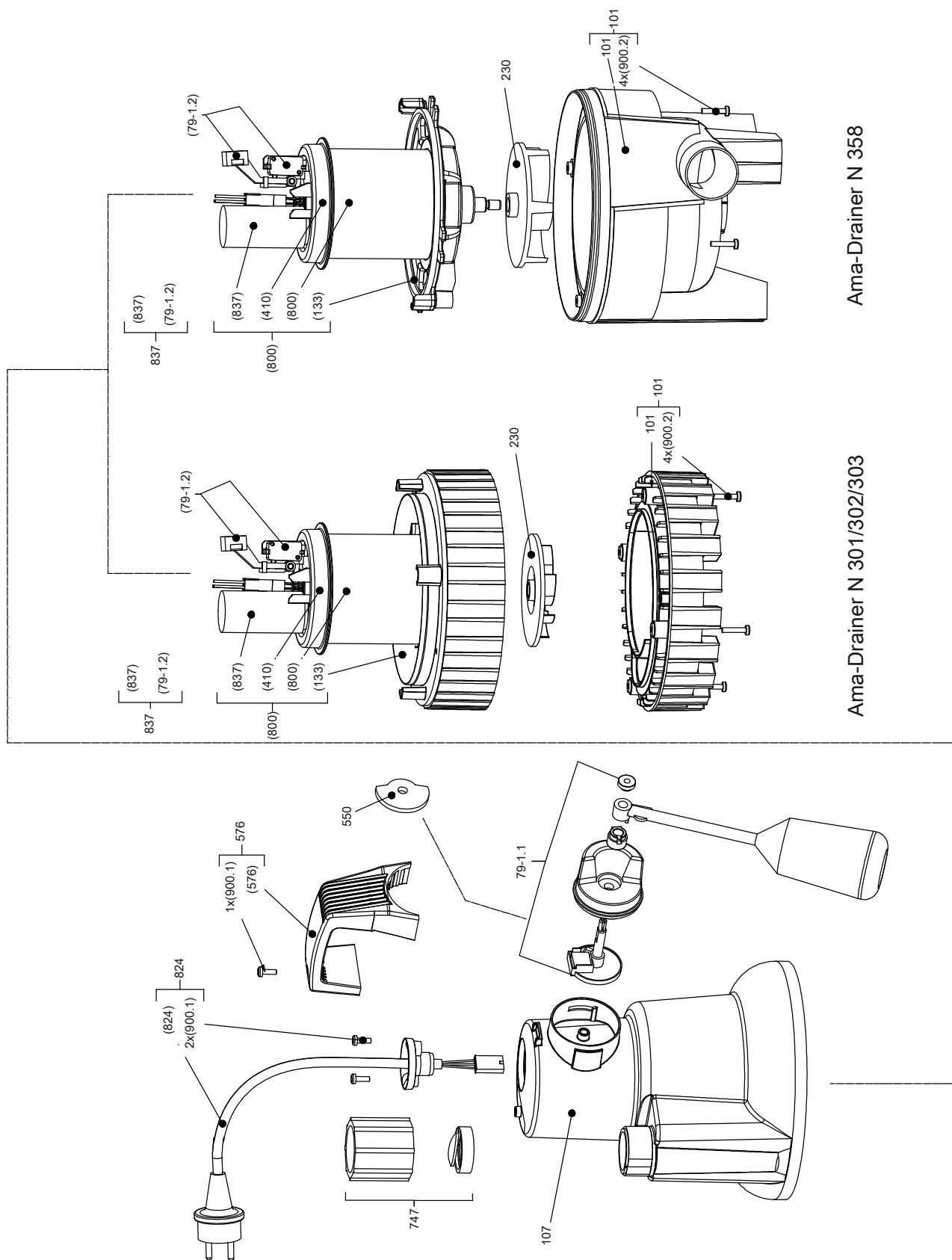
AS 0/AS 1/AS 2/AS 4/AS 5

	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 dBA 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 IP20, 140 x 80 x 57 mm. Use float switch, F1 moisture sensor (item E64) 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
	E53	Alarm switchgear AS 5 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. ISO housing IP41, 190 x 165 x 75 mm. Use float switch (E60) or signal relay of control unit as contactor.	00530561	1.7
	E55	Alarm switchgear AS 1 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. 1. High water alert by suspending the moisture sensor in a (pump) sump above the pump start-up point. 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.	00533740	0.9

Accessories for control units/switchgears

	Item	Description		Ama-Drainer N				Mat. No.	[kg]
				1 ~					
				301	302	303	358		
	E60	Float switch with free cable end (NO contact)	3 m	X	X	X	X	11037742	0.5
			5 m	X	X	X	X	11037743	0.8
			10 m	X	X	X	X	11037744	1.3
			15 m	X	X	X	X	11037745	1.8
			20 m	X	X	X	X	11037746	2.4
			25 m	X	X	X	X	11037747	2.9
			30 m	X	X	X	X	11037748	3.4
	E61	Float switch with free cable end, oil resistant (NO contact)	5 m	X	X	X	X	11037753	0.8
			10 m	X	X	X	X	11037754	1.2
			20 m	X	X	X	X	11037755	2
	E62	Float switch with free cable end (NC contact)	5 m	X	X	X	X	11037756	0.8
			10 m	X	X	X	X	11037757	1.4
			20 m	X	X	X	X	11037758	2.6
	E64	Leakage sensor F 1	3 m	X	X	X	X	19072366	0.2
	E70	Horn, 12 V DC, 105 dB(A), 1.2 W		X	X	X	X	01086547	0.1
	E80	Safety switch STECKMAT		X	X	X	X	00534217	0.5
	E90	Rechargeable battery retrofit kit for LevelControl Basic 2, for powering the electronics, the float switches or 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	19074194	0.8

Exploded view and list of components



Ama-Drainer N 358

Ama-Drainer N 301/302/303

Ama-Drainer N – Exploded view

List of components

Part No.	Description
101	Pump casing
107	Discharge casing
230	Impeller
550	Locking disc for float
576	Handle
747	Swing check valve and inspection hole
79-1.1	Automatic switch (external)
800	Motor
824	Cable



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