Ama®-Drainer 80/100

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Submersible Waste Water Pumps

Ama-Drainer 80, 100

Fields of Application

- Automatic drainage of pits, shafts, yards and cellars at risk of flooding
- Lowering the surface water level
- Drainage of underground passages
- Extraction of water from rivers and reservoirs
- Drainage

Fluid Handled

Ama-Drainer - standard variant for waste water
Slightly contaminated water, also containing solid particles with a particle size of up to 12 mm.

Ama-Drainer B - variant for water containing sand

Operating Data

Q up to 130 m^3/h, 36 l/s
H up to 26 m
t up to 50 °C[1]), for max. 3 min. up to 90 °C
For pumps with smaller capacities and/or heads, please refer to Type Series Booklets 2331.51-10, 2331.52-10 and 2331.53-10.

[1]) Ama-Drainer B up to 40 °C.

Design / Variant

Vertical, fully floodable submersible motor pumps in close-coupled design, IP 68, single-stage, with or without level control.
Max. immersion depth 10 m.

Bearings

Maintenance-free deep-groove ball bearings, grease-lubricated for life.

Designation

Ama-Drainer B 80 - 40 N

Type series
Wear-resistant variant
Discharge nozzle DN in mm
Motor rating in kW x 10
N = without float switch
S = with float switch

Shaft Seals

Ama-Drainer	Impeller end	Motor end
80/100	1 mechanical seal	1 mechanical seal

An oil reservoir is fitted in-between the two seals.

Drive

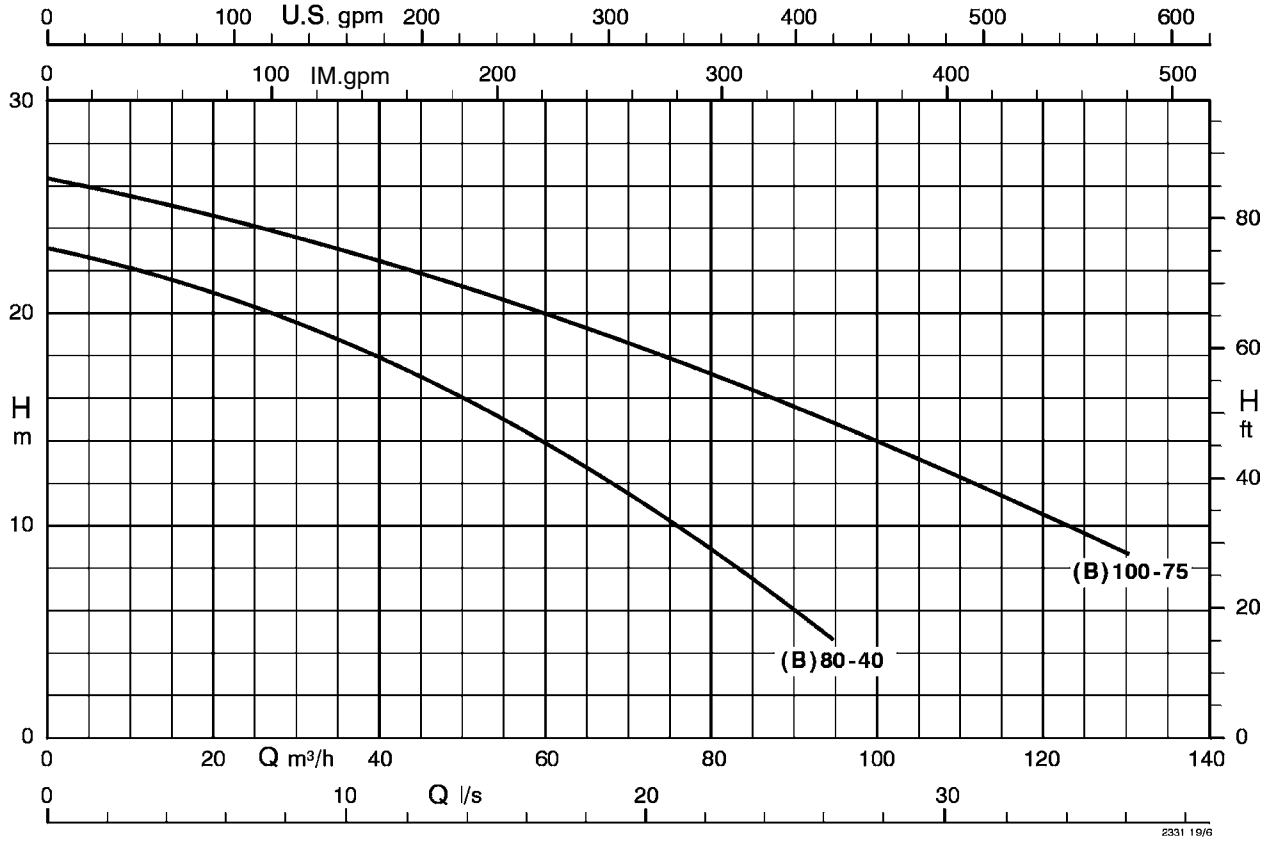
Ama-Drainer 80 N/S: surface-cooled three-phase motor with temperature switch, power supply cable and CEE plug with phase inverter, direction-of-rotation indication and over-current tripping device.
Ama-Drainer 100 N/S: surface-cooled three-phase motor with temperature switch and power supply cable without plug. Switchgear must be purchased separately.

CE - EN 12 050-2

Materials

Please refer to page 3.

Ama-Drainer 80, 100 Standard Variant and Ama-Drainer B 80 and 100
n = 2800 1/min



Performance tolerance to ISO 2548, Class C (water under standard conditions)

Ama-Drainer – Standard Variant for Waste Water

Ama-Drainer	Connection	Particle size max.	P_1	P_2	50 Hz I_N 1~230 V	3~400 V	Power supply cable H 07 RN-F.G.		Level control H 07 RN-F.G.		Ident. No.	net
		mm	kW	kW	≈ A	≈ A	m	mm^2	m	mm^2		≈ kg
80-40 N	For special connection elbow see accessories	12	5.1	4.0	–	Y 8.5	10	7 x 1.5	–	–	29 117 702	60.5
80-40 S							10		0.5	3 x 1.0	29 117 703	61.0
100-75 N		12	9.1	7.5	–	Y Δ 15.4	2 x 10	7 x 1.5 and 4 x 1.5	–	–	29 117 706	94.5
100-75 S							2 x 10		10	3 x 1.0	29 117 707	96.0

Ama-Drainer B – Variant for Waste Water Containing Sand

Ama-Drainer	Connection	Particle size max.	P_1	P_2	50 Hz I_N 1~230 V	3~400 V	Power supply cable H 07 RN-F.G.		Level control H 07 RN-F.G.		Ident. No.	net
		mm	kW	kW	≈ A	≈ A	m	mm^2	m	mm^2		≈ kg
B 80-40 N	For special connection elbow see accessories	12	5.1	4.0	–	Y 8.5	20	7 x 1.5	–	–	29 117 722	65.0
B 80-40 S		12	5.1	4.0	–	Y 8.5	20	7 x 1.5	0.5	3 x 1.0	29 117 723	65.5
B 100-75 N		12	9.1	7.5	–	Y Δ 15.4	1 x 20	7 x 1.5 and 4 x 1.5	–	–	29 117 726	108.5
							1 x 20					
B 100-75 S		12	9.1	7.5	–	Y Δ 15.4	1 x 20	7 x 1.5 and 4 x 1.5	20	3 x 1.0	29 117 727	111.5
							1 x 20					

Selection Tool for Drainage Duties

The table below for your guidance is based on KSB's long-standing experience. The data are standard values and are not to be considered as 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.

Fluid Handled	Temperature	Percentage	Type series	Ama-Drainer Standard Variant	Ama-Drainer Variant B
Ammonium hydroxide	≤ 30 °C	10 %	NH_4OH	X	
Calcium hydroxide	≤ 30 °C	5 %		X	
Calcium hydroxide (lime water)	≤ 30 °C	5 %	$Ca(OH)_2$	X	
Calcium nitrate (non-acidic)		10 %	$Ca(NO_3)_2$	X	
Magnesium sulphate (non-acidic)		10 %	$MgSO_4$	X	
Potassium carbonate				X	
Potassium hydroxide	≤ 30 °C	10 %	KOH	X	
Potassium nitrate (non-acidic)		10 %	KNO_3	X	
Sodium carbonate		10 %	Na_2CO_3	X	
Sodium hydroxide	≤ 30 °C	10 %	NaOH	X	
Sodium nitrate (non-acidic)				X	
Sodium perborate				X	
Sodium sulphate (non-acidic)		10 %	Na_2SO_4	X	
Trisodium phosphate				X	
Washing machine lye				X	
Water					
– Boiler water				X	
– Cooling water				X	
– Drainage water				X	X
– Fire-fighting water				X	X
– Heating water				X	
– Partly desalinated water				X	X
– Pure water				X	
– Rainwater				X	X
– Raw water				X	
Waste water containing abrasive sand particles					X
Sand content – impeller material					X
– Cast iron ≤ 2 g/l					
– Norihard ≤ 10 g/l					
Drainage of construction sites					X
Drainage of excavations					X
Emergency service in case of floods					X
Wash water in sugar mills					X

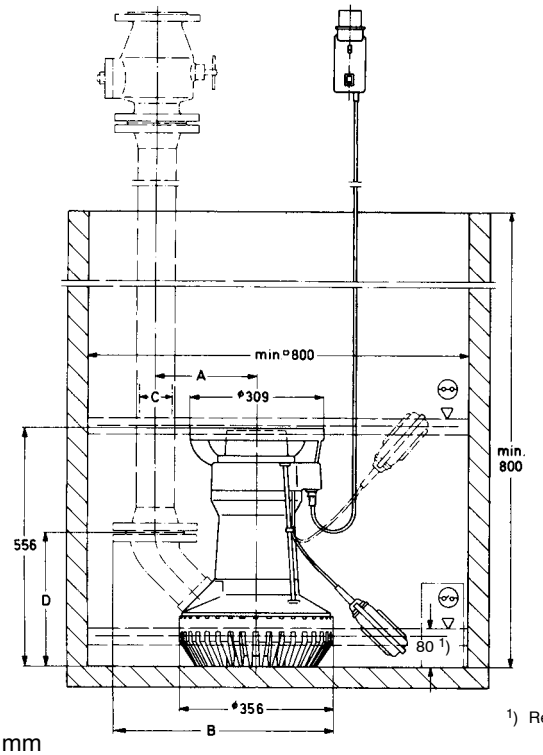
Special Programme (upon request)

For improved fire protection in building services applications
Variant: power supply cables free from halogen and noxious substances

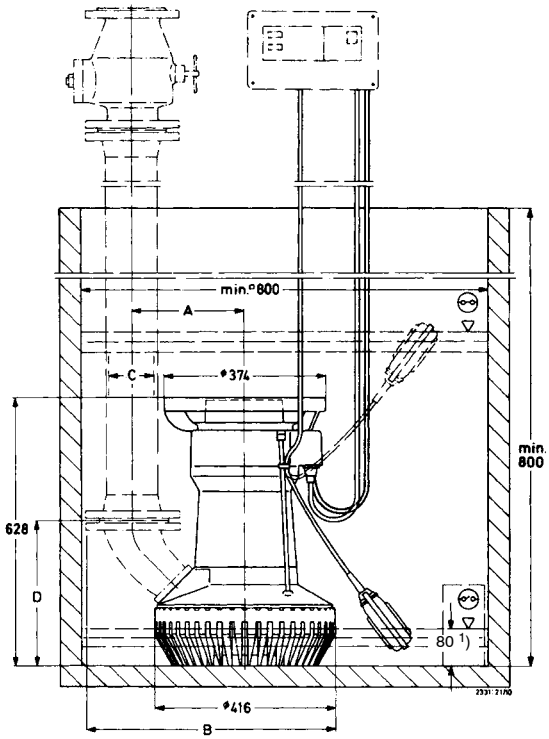
Materials

	Ama-Drainer – Standard Variant 80-40 100-75	Ama-Drainer B – Variant B 80-40 B 100-75
Pump casing	Cast iron	Rubber-lined cast iron
Suction cover	Steel, CK 45 N	Steel, CK 45 N
Foot	Polystyrene	Polystyrene
Impeller	Cast iron	Cast iron or Norihard
Profile joint, O-ring	Nitrile butadiene rubber	Nitrile butadiene rubber
Mechanical seal	Tungsten carbide	Tungsten carbide
Stator case, motor housing	Plastic-coated aluminium	Plastic-coated aluminium
Rotor shaft	Chrome steel (1.4021)	Chrome steel (1.4021)
Motor connection cable	Polychloroprene rubber	Polychloroprene rubber
Float switch (float)	Polypropylene	
Oil supply	Liquid paraffin	Liquid paraffin

Ama-Drainer 80 SD



Ama-Drainer 100 SD

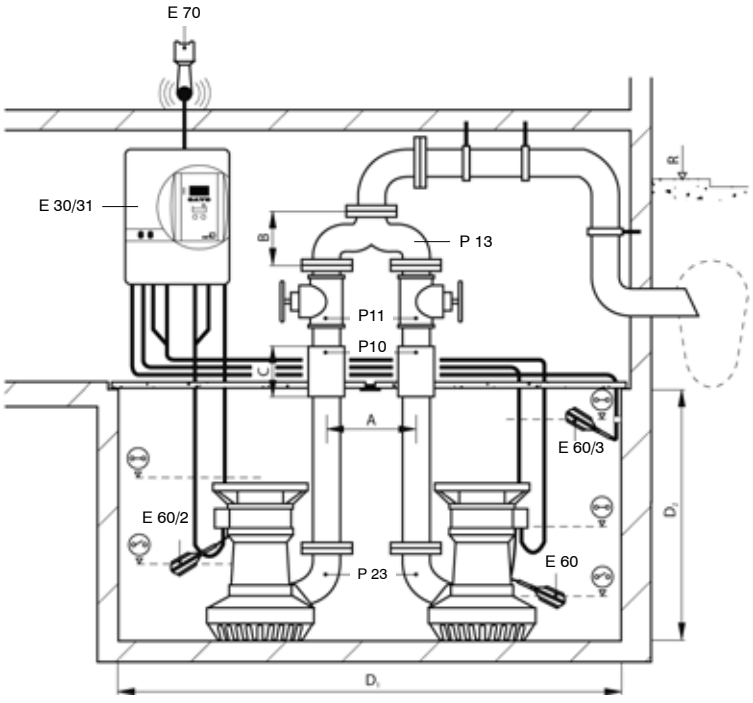


1) Residual water level

mm

		A		B		C		D	
	Ama-Drainer	80	100	80	100	80	100	80	100
Connection elbow with internal thread	Rp 2 $^1/_2$ Rp 4	223	275	445	546	Rp 2$^1/_2$	Rp 4	314	383
Connection elbow with flange	DN 80, PN 16 DN 100, PN 16	233	260	511	578	80	100	312	340

Installation example of duplex-pump station with Ama-Drainer 80, 100 ND



P 10 Check valve
P 11 Gate valve
P 13 Y-pipe
P 23 Connection elbow
E 30/31 Switchgear
E 60 "Base load" float switch
E 60/2 "Peak load" float switch
E 60/3 "High water alert" float switch
E 70 Horn
R Flood level

mm

Ama-Drainer	A	B	C	D_1	D_2
80	350	260	260	1690 (x 800)	1000
100	325	295	300	1690 (x 800)	1000

Pump Accessories

				Ama-Drainer (B) 80	Ama-Drainer (B) 100	Ident. No.	≈ kg
P 10		**KSB check valve,** cast iron, with full port, lifting device with T-screw,	DN 65	X		48 829 253	20.0
			DN 80	X		48 829 254	20.0
			DN 100		X	48 829 255	29.0
		or					
		check valve of our choice (not illustrated), cast iron, with full port and lifting device, flanges drilled to DIN 2501, PN 16 *not approved for lifting units*	DN 65	X		01 056 711	16.0
			DN 80	X		01 056 712	21.0
			DN 100		X	01 056 713	24.0
P 11		**KSB gate valve,** cast iron, flanges to DIN 2501, PN 10	DN 65	X		48 829 249	13.5
			DN 80	X		48 829 250	15.5
			DN 100		X	48 829 251	20.5
		Gate valve of our choice (not illustrated), cast iron, flanges drilled to DIN 2501, PN 16	DN 65	X		01 056 707	17.0
			DN 80	X		01 056 708	19.0
			DN 100		X	01 056 709	26.0
P 12		**1 set of mounting accessories** (standard set) for flange connection, consisting of: 4 or 8 hex. head bolts with nuts and 1 gasket	DN 65	X		18 072 643	0.6
			DN 80	X	X	18 072 644	1.3
			DN 100		X	18 060 163	1.3
P 13		**Y-pipe** for duplex pump sets, made of cast iron, with 8 hex. head bolts, nuts and 2 gaskets, flanges drilled to DIN 2501, PN 16	DN 65	X		40 000 690	19.0
			DN 80	X		48 936 065	25.0
			DN 100		X	40 000 692	33.0
P 23		**Special cast iron connection elbow,** flanges drilled to DIN 2501, PN 16, internal thread to DIN 2999/1 (must be ordered with the pump)	with Rp 2 1/2 internal thread	X		11 150 456	2.7
			with DN 65 flange	X		11 150 457	5.8
			with DN 80 flange	X		11 150 458	5.8
			with Rp 4 internal thread		X	11 150 459	5.0
			with DN 100 flange		X	11 150 869	8.0
P 24		**Storz rigid coupling,** with external thread acc. to DIN ISO 228/1, aluminium alloy	B-G 2 1/2	X		00 524 371	0.4
			A-G 4		X	00 522 546	1.0
P 25		**Storz rigid flanged coupling,** aluminium alloy/steel, flanges drilled to DIN 2501, PN 16	DN 65/B	X		18 040 148	3.5
			DN 80/B	X		18 072 642	3.5
			DN 100/A		X	18 060 162	5.0
P 26		**Storz aluminium alloy hose coupling**	DIN 14322 B 75	X		00 520 454	0.7
			DIN 14323 A 110		X	00 522 313	1.5
P 27		**Hose clip,** chrome steel	DIN 3017 AS 70-90 B	X		01 063 363	0.1
			AS 100-120 A		X	00 520 853	0.1
		**DN 75 plastic hose,** with integrated B couplings	DIN 14811 B 75 20 m	X		00 522 265	10.0
		DN 75 plastic hose, without couplings (max. 30 m)	DIN 14811 B 75	X		00 540 104	0.25
		DN 100 plastic hose, without couplings (max. 30 m)	DIN 14811 A 110		X	00 523 966	0.5

X Pump model/standard nominal diameter combination

Electrical Accessories

			Current A	Ama-Drainer 3~ (B) 80	Ama-Drainer 3~ (B) 100	Ident. No.	≈kg
E 2		**MSD motor protection switchgear, IP 54** with integrated motor protection relay, manual-0-automatic selector switch and motor contactor, indicator lamps for operation and fault. Max. back-up fusing 20 A **MSD 100.1** Dimensions (W x H x D) 100 x 170 x 112 mm	10.0	X		19 070 119	1.0
		**Control unit for single-pump station, IP 54** **LevelControl Basic 2** 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 Voltage measurement, phase monitoring Volt-free contact for general fault message Motor protection switch Optional: Rechargeable battery for mains-independent alert BC: 361 x 278 x 120 mm BS: 400 x 300 x 155 mm					
E 10		**for float switch** incl. 4…20 mA input D.o.l. starting, with optional master switch **BC1 400** DFNO **100**	10.0	X		19 073 765	3.0
E 11		Star-delta starting, master switch **BS1 400** SFNO **180**	18.0		X	19 073 795	14.0
		**Control unit for duplex-pump station, IP 54** **LevelControl Basic 2** Peak load operation 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 Voltage measurement, phase monitoring Volt-free contact for general fault message Motor protection switch Optional: Rechargeable battery for mains-independent alert BC: 361 x 278 x 120 mm BS: 600 x 400 x 200 mm					
E 30		for **float switch** incl. 4…20 mA input D.o.l. starting, with optional master switch **BC2 400** DFNO **100**	10.0	X		19 073 779	3.0
E 31		Star-delta starting, master switch **BS2 400** SFNO **180**	18.0		X	19 073 837	14.0
Installation options for LevelControl [1]							
O 1		**Master switch,** installed for type BC, 3-pole, 20 A, lockable		X		01 143 084	0.2
O 2		**Control cabinet heating**, with 20 W thermostat, for type BS			X	19 074 269	0.3

Installation options are not EDI-compatible (configurable range)

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

LevelControl with float switches:

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

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

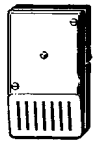
Twin operation with two level switches at different levels:

- 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.

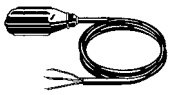
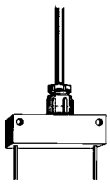
Connection to the control station

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

Alarm switchgears

			Ama-Drainer (B) 80	Ama-Drainer (B) 100	Ident. No.	≈kg
	 **Alarm switchgear AS 0, AS 2, 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 Plastic housing IP 20, 140 x 80 x 57 mm Use float switch (E 60) or moisture sensor F 1 (E 64) as contactor.	230 V~/ 12 VA= 1.2 VA				
E 50	**mains-dependent**	**AS 0**	**X**	**X**	29 128 401	0.5
E 51	**mains-dependent** with volt-free signalling contact	**AS 2**	**X**	**X**	29 128 422	0.5
E 52	**mains-independent** with volt-free signalling contact, self-charging power supply unit for 5 hours' operation in case of a mains failure	**AS 4**	**X**	**X**	29 128 442	1.2
E 53	 **Alarm switchgear AS 5, mains-independent,** with self-charging power supply unit for 10 hours' operation in case of a mains failure, mains pilot LED, fault indicator lamp, horn-off push button, volt-free contact for hook-up to a control station, ready to be plugged in, with 1.8 m cable and plug. ISO housing IP 41, 190 x 165 x 75 mm Use float switch (E 60) as contactor. **Horn** see accessories	230 V~/ 12 V = 5 VA	**X**	**X**	00 530 561	1.7
E 55	 **Alarm switchgear AS 1,** in ISO plug housing IP 30, **mains-independent**, with self-charging power supply unit for 5 hours' operation in case of a mains 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, and 2 possible applications for alarm transmission: **1. High water alert by suspending the moisture sensor in a (pump) sump above the pump start-up level.** **2. Water alert signal at a water level of only 1 mm (!), by placing the transmitter on the floor of rooms at risk of flooding, e.g. the cellar or next to the washing machine in the kitchen or bathroom.**	230 V~/ 9 V = 1.5 VA	**X**	**X**	00 533 740	0.9

Accessories

				Ama-Drainer (B) 80	Ama-Drainer (B) 100	Ident. No. Component No.	≈kg
E 60	 **Float switch,** Switch housing made of polypropylene (Max. fluid temperature 70 °C) **with free cable end, (NO contact)** circuit closed in upper float position Connection cable (H 07 RN-F3G1)	230 V AC or 24 V AC/24 V DC max. 8 A min. 20 mA	3 m	X	X	11 037 742	0.5
			5 m	X	X	11 037 743	0.8
			10 m	X	X	11 037 744	1.4
			15 m	X	X	11 037 745	1.8
			20 m	X	X	11 037 746	2.6
			25 m	X	X	11 037 747	2.9
			30 m	X	X	11 037 748	3.4
E 62	**with free cable end, (NC contact)** [1] circuit open in upper float position (H 07 RN-F3G1)		5 m	X	X	11 037 756	0.8
			10 m	X	X	11 037 757	1.4
			20 m	X	X	11 037 758	2.6
E 64	 **Moisture sensor F 1,** as contactor for alarm switchgear AS 0, AS 2 or AS 4, with 3-metre connection cable, max. 40 °C, not suitable for steam and condensate. Possible applications for alarm transmission: **1. High water alert by suspending the moisture sensor in a (pump) sump above the pump start-up level.** **2. Water alert signal at a water level of only 1 mm (!), by placing the transmitter on the floor of rooms at risk of flooding, e.g. the cellar or next to the washing machine in the kitchen or bathroom.** 52 x 21 x 20 mm			X	X	19 072 366	0.9
E 70	 **Horn** suitable for indoor and outdoor installation, mount in a position where it is protected against direct rain, enclosure IP 33	12 V= 105 dB(A) 1.2 W		X	X	01 086 547	0.1
E 90	**Rechargeable battery retrofit kit for type BC,** for powering the electronics, the float switches or internal pressure sensor and the alarm equipment (buzzer, horn, alarm combination), for single-pump and duplex-pump stations (consisting of 2 rechargeable batteries 6 V, 1.3 Ah)			X		19 074 194	0.5
E 91	**Rechargeable battery for type BS** for powering the electronics, the float switches or internal pressure sensor and the alarm equipment (buzzer, horn, alarm combination), for single-pump and duplex-pump stations (consisting of 1 rechargeable battery 12 V, 1.2 Ah)				X	19 074 199	0.5

[1]) Not suitable for LevelControl

LevelControl Basic 2

Features o optional x Control unit features	**Single-pump station** **Float switches** **incl. 4…20 mA**		**Duplex-pump station** **Float switches** **incl. 4…20 mA**	
400 V: 6.0 – 10 Ampere	BC1 400 DFNO 100	–	BC2 400 DFNO 100	–
400 V: 13 – 18 Ampere	–	BS1 400 SFNO 180	–	BS2 400 SFNO 180
Features				
Tank drainage	X		X	
Tank filling via float switches	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	-		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 memory	-		-	
Display and operation				
7-segment display	X		X	
Indication of water level	**Switching levels**		**Switching levels**	
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 for 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 levels via control panel	-		-	
Housing H x W x D, IP 54				
Plastic 361 x 278 x 120	X	-	X	-
Sheet steel 400 x 300 x 155	-	X	-	-
Sheet steel 600 x 400 x 200	-	-	-	X
Built-in components				
Master switch (lockable)	O	X	O	X
Manual-0-automatic selector switch for each pump	X		X	
D.o.l. starting	X	-	X	-
Star-delta starting	-	X	-	X
Motor protection				
Motor protection switch per pump (over-current and short-circuit protection)	X		X	
Motor temperature warning input – self-acknowledging	X		X	
Motor temperature alert input – manual acknowledgement	X		X	
Pump				
Thermal circuit breaker (TCB) / bimetal per pump	X		X	
Installation options				
Rechargeable battery for powering the electronics, sensors, alarm equipment	O		O	
Control cabinet heating, type BS	-	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 / flashlight 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	-		-	
Remote acknowledgement	X		X	
12 V DC connection for horn, alarm combination, flashlight	X		X	
Sensors				
Float switch (NO contact)	O		O	
F1 moisture sensor	O		O	
Tools				
KSB ServiceTool for Windows XP	O		O	

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