

Level switches



Float switch type RBJ54

Application and function

The float switch can be used as water level limiter for steam generators as per TRD 401, 402 or 602.

The product corresponds to the EU 2014/68/EU module B and has the CE-mark no. 0035 of the notified body. Applied standards as per EN 13445 / EN 12952 / EN 12953 / AD 2000 or ASME-Boiler.

Technical basic equipment

- Protection as per DIN VDE 0470: IP54
- Process connection flange DN 100 as per DIN
- Magnetic switch type M130-KG (D-07-D-16324-0) für 24VDC / 250Vac
- Cable gland as per DIN EN 50262: M20x1,5
- Test device

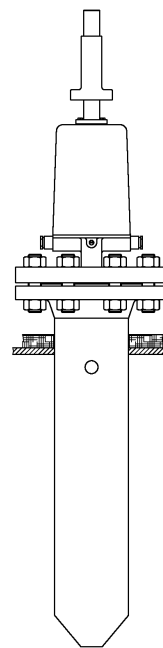
Available (optional) versions

- Level indication (signal lamps), data sheet D-07-D-16323-0

Technical data

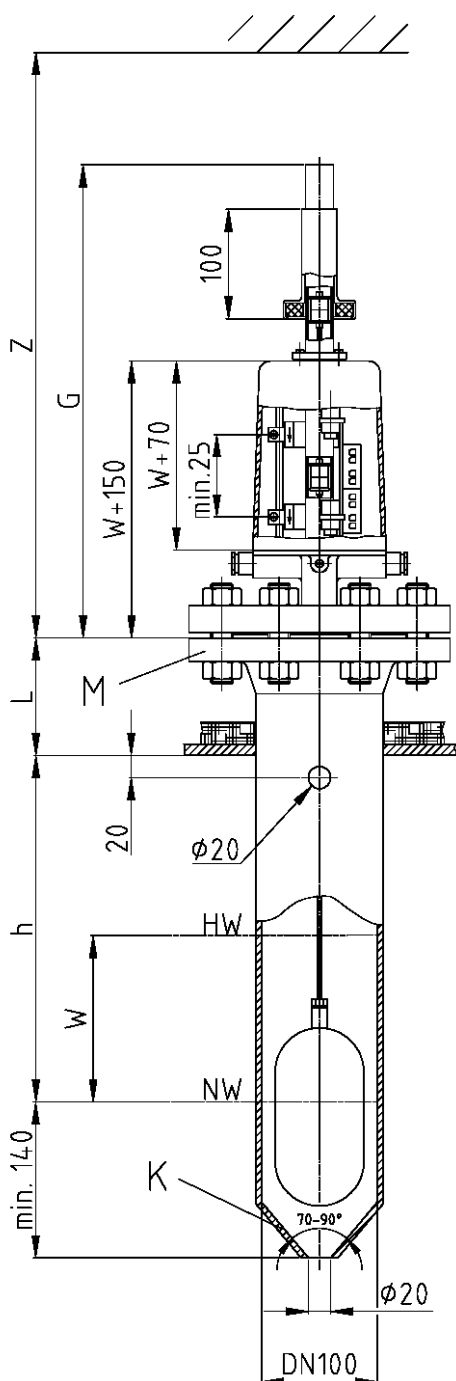
EG-component test	Certificate no.: Z-D-002-10441/14				
Allowable pressure	PS [bar]	13	32	50	80
Allowable temperature	TS [° C]	195	239	265	296

Range of adjustment	W [mm]	100	150
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Dimensions

- The component mark is only valid provided that the boiler connection corresponds to the drawing in the margin; see also leaflet D-07-D-16322-0 fig. 3
- Function test by dropping of the float device with the test magnet
- Protection tube K, flanges M, screws, nuts and gaskets are not in scope of supply, but available on request



W	G	Z
100	440	L+h+410
150	550	L+h+460

L+H max. 800 mm

Float switch type Typ RBJ64(63)

Application and function

The float switch can be used as water level limiter for steam generators as per TRD 401, 402 or 602.

The product corresponds to the EU 2014/68/EU module B and has the CE-mark no. 0035 of the notified body. Applied standards as per EN 13445 / EN 12952 / EN 12953 / AD 2000 or ASME-Boiler.

Technical basic equipment

- Protection as per DIN VDE 0470: IP54
- Process connection flange DN 100 as per DIN
- Magnetic switch type M130-KG (D-07-D-16324-0) für 250Vac
- Cable gland as per DIN EN 50262: M20x1,5
- Test device

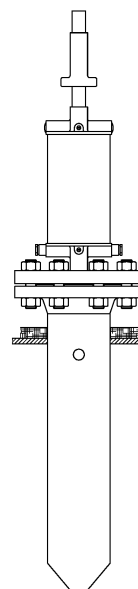
Available (optional) versions

- Level indication (signal lamps), data sheet D-07-D-16323-0
- Magnetic switch type M130-KS (D-07-D-16324-0) for 24Vdc

Technical data

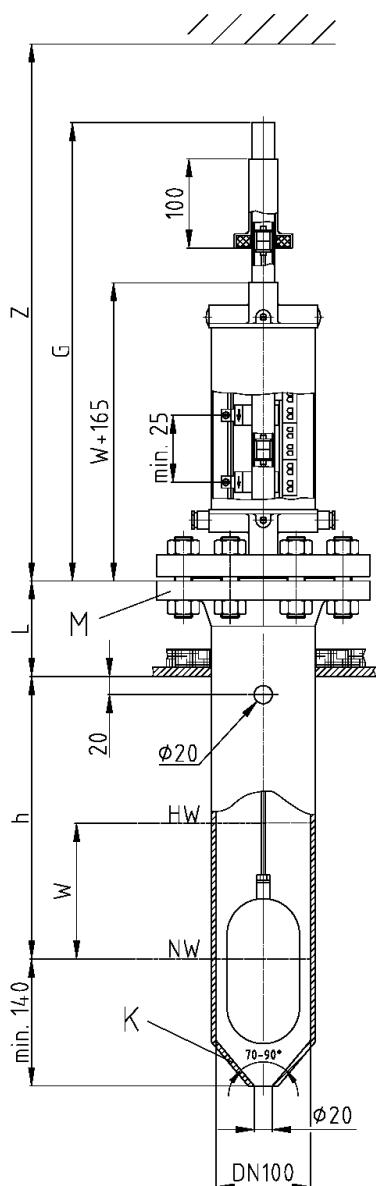
EG-component test	Certificate no.: Z-D-002-10441/14				
Allowable pressure	PS [bar]	13	32	50	80
Allowable temperature	TS [° C]	195	239	265	296

Range of adjustment	W [mm]	250
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Dimensions

- The component mark is only valid provided that the boiler connection corresponds to the drawing in the margin; see also leaflet D-07-D-16322-0 fig. 3
- Function test by dropping of the float device with the test magnet
- Protection tube K, flanges M, screws, nuts and gaskets are not in scope of supply, but available on request



W	G	Z
250	780	L+h+575

L+H max. 800 mm



Float switch type BA14

Application and function

The float switch can be used as water level limiter for steam generators as per TRD 401, 402 or 602.

The product corresponds to the EU 2014/68/EU module B and has the CE-mark no. 0035 of the notified body. Applied standards as per EN 13445 / EN 12952 / EN 12953 / AD 2000 or ASME-Boiler.

Technical basic equipment

- Material according to DIN or ASME
- Protection as per DIN VDE 0470: IP54
- Process connection: flanges as per DIN or ANSI
- Magnetic switch type M130-KG (D-07-D-16324-0)
- Cable gland according to DIN EN 50262: M20x1,5
- Drain plug G ½

Available (optional) versions

- Protection as per DIN VDE 0470: IP65
- Process connection: welding end, Socket Welding
- Level indication (signal lamps), data sheet D-07-D-16323-0
- Ventilation screw
- Drain valve AV 500 or 520

Technical data

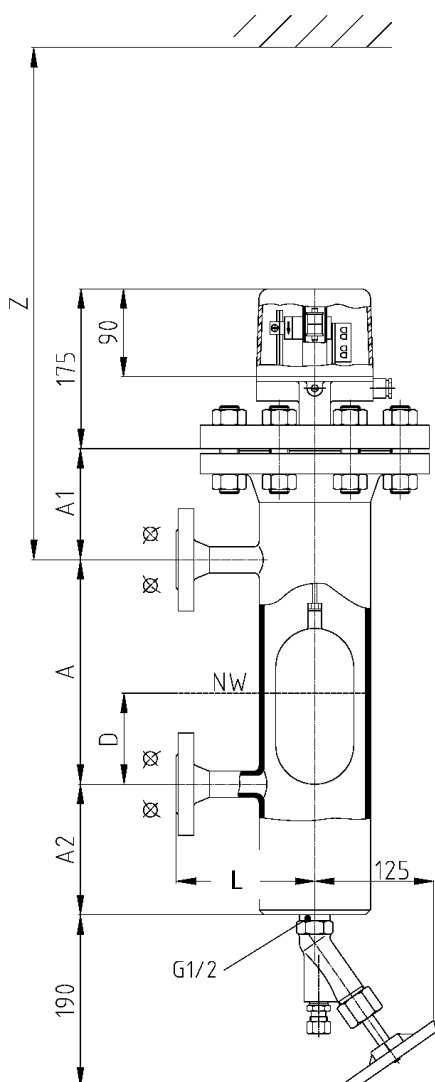
EG-component test	Certificate no.: Z-D-002-10441/14			
Allowable pressure	PS [bar]	32	50	80
Allowable temperature	TS [° C]	239	265	296
Drain valve	Type	AV500	AV520	
	Data sheet	D-09-D-16358-1		

Range of adjustment	W [mm]	40
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Dimensions

- The component mark is only valid if shutoff valves are installed between process connection and boiler studs. A drain valve is also required
- The functional test is made by lowering the water level in the standpipe



PS	A1	A2	L	Z
32	115	135	140	A-D+465
80	145	155	160	



Float switch type RBA24

Application and function

The float switch can be used as water level controller or limiter for steam generators as per TRD 401, 402 or 602.

The float switch according to PED directive 97/23/EEC has the CE-mark no. 0035 of the notified body.

Applied rules as per TRD/AD2000 or ASME- Boiler.

Technical basic equipment

- Material according to DIN or ASME
- Protection as per DIN VDE 0470: IP54
- Process connection: flanges as per DIN or ANSI
- Magnetic switch type M130-K (D-07-D-16324-0)
- Cable gland according to DIN EN 50262: M20x1,5
- Drain plug G ½

Available (optional) versions

- Protection as per DIN VDE 0470: IP65
- Process connection: welding end, Socket Welding
- Level indication (signal lamps), data sheet D-07-D-16323-0
- Ventilation screw
- Drain valve AV 500 or 520

Technical data

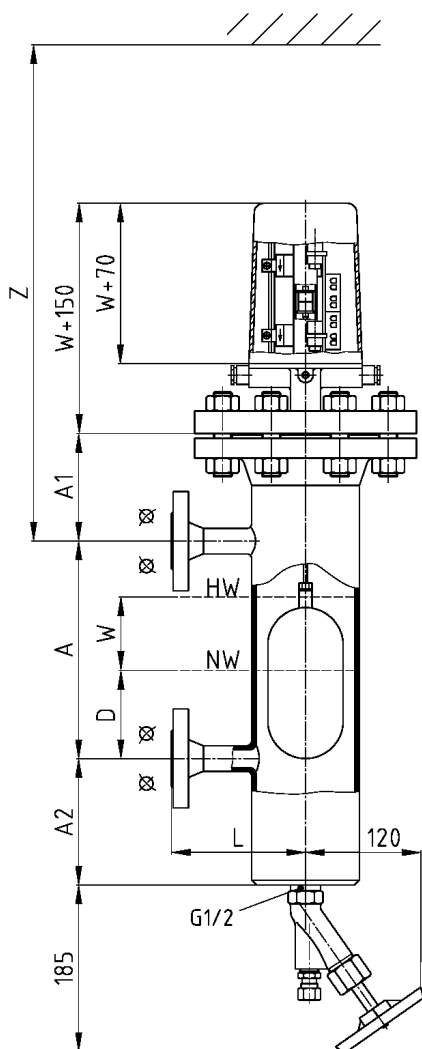
EG-component test	CE 0035-BN0106			
Allowable pressure	PS [bar]	32	50	80
Allowable temperatur	TS [° C]	239	265	296
Drain valve	Type	AV500	AV520	
	Data sheet	D-09-D-16358-1		

Range of adjustment	W [mm]	100	150
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Dimensions

- The component mark is only valid if shutoff valves are installed between process connection and boiler studs. A drain valve is also required
- The functional test is made by lowering the water level in the standpipe



PS	A1	A2	L	Z
32	135	115	140	A-D+550
80	145	155	160	



Float switch type RBA34

Application and function

The float switch can be used as water level controller or limiter for steam generators as per TRD 401, 402 or 602.

The float switch according to PED directive 97/23/EEC has the CE-mark no. 0035 of the notified body.

Applied rules as per TRD/AD2000 or ASME- Boiler.

Technical basic equipment

- Material according to DIN or ASME
- Protection as per DIN VDE 0470: IP54
- Process connection: flanges as per DIN or ANSI
- Magnetic switch type M130-K (D-07-D-16324-0)
- Cable gland according to DIN EN 50262: M20x1,5
- Drain plug G ½

Available (optional) versions

- Protection as per DIN VDE 0470: IP65
- Process connection: welding end, Socket Welding
- Level indication (signal lamps), data sheet D-07-D-16323-0
- Ventilation screw
- Drain valve AV 500 or 520

Technical data

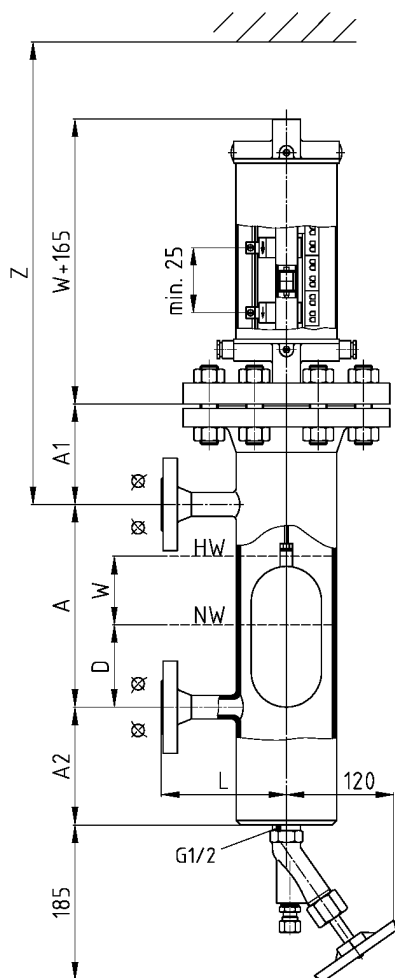
EG-component test	CE 0035-BN0106			
Allowable pressure	PS [bar]	32	50	80
Allowable temperature	TS [° C]	239	265	296
Drain valve	Type	AV500	AV520	
	Data sheet	D-09-D-16358-1		

Range of adjustment	W [mm]	250	350	450	550	650	750
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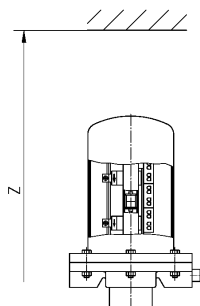


Dimensions

- The component mark is only valid if shutoff valves are installed between process connection and boiler studs. A drain valve is also required
- The functional test is made by lowering the water level in the standpipe



IP65



PS [bar]	A1 [mm]	A2 [mm]	L [mm]	Z _{IP54} [mm]	Z _{IP65} [mm]
32	135	115	140	A-D+550	A-D+600 ^{*)}
80	145	155	160		

^{*)} mind. Z = 2W+525



Float switch type RBA25

Application and function

The float switch can be used as water level controller or limiter for steam generators as per TRD 401, 402 or 602.

The float switch according to PED directive 97/23/EEC has the CE-mark no. 0035 of the notified body.

Applied rules as per TRD/AD2000 or ASME- Boiler.

Technical basic equipment

- Material according to DIN or ASME
- Protection as per DIN VDE 0470: IP54
- Process connection: flanges as per DIN or ANSI
- Magnetic switch type M130-KS (D-07-D-16324-0) for 24Vdc
- Cable gland according to DIN EN 50262: M20x1,5
- Drain plug G ½

Available (optional) versions

- Protection as per DIN VDE 0470: IP65
- Process connection: welding end, Socket Welding
- Level indication (signal lamps), data sheet D-07-D-16323-0
- Ventilation screw
- Drain valve AV 500 or 520

Technical data

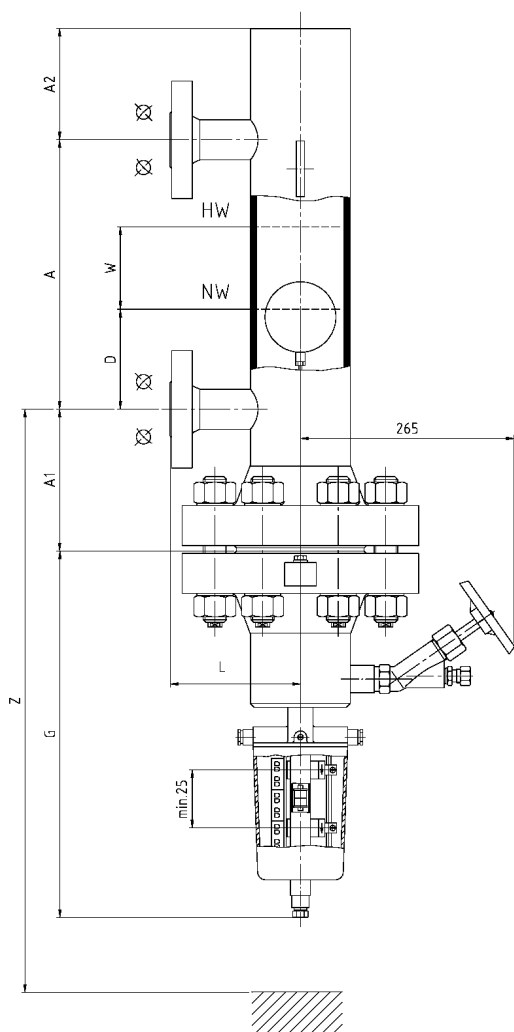
EG-component test	CE 0035-BN0106			
Allowable pressure	PS [bar]	100	160	200
Allowable temperature	TS [° C]	312	348	367
Drain valve	Type	AV520		
	Data sheet	D-09-D-16358-1		

Range of adjustment	W [mm]	100	150
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Dimensions

- The component mark is only valid if shutoff valves are installed between process connection and boiler studs. A drain valve is also required
- The functional test is made by lowering the water level in the standpipe
- The level switches contains mercury. For this reason, the level switches are not suitable for use on boiler plants, where the steam comes directly in contact to foods or similar, or where the steam is used on air conditioning for humidifying



PS	A1	A2	G	Z
100	152	140	W+375	W+D+685
160	177	140	W+390	W+D+755
200	213	140	W+430	W+D+865

Process connection

Welding end	Socket welding
<p>Diagram showing the welding end connection. It features a vertical pipe with a flange at the top. The dimensions $\phi d2$ and ϕdp are indicated for the pipe and flange respectively.</p>	<p>Diagram showing the socket welding connection. It features a vertical pipe with a flange at the top. The dimensions B and C are indicated for the pipe and flange respectively.</p>



Float switch type RBA35

Application and function

The float switch can be used as water level controller or limiter for steam generators as per TRD 401, 402 or 602.

The float switch according to PED directive 97/23/EEC has the CE-mark no. 0035 of the notified body.

Applied rules as per TRD/AD2000 or ASME- Boiler.

Technical basic equipment

- Material according to DIN or ASME
- Protection as per DIN VDE 0470: IP54
- Process connection: flanges as per DIN or ANSI
- Magnetic switch type M130-KS (D-07-D-16324-0) for 24Vdc
- Cable gland according to DIN EN 50262: M20x1,5
- Drain plug G ½

Available (optional) versions

- Protection as per DIN VDE 0470: IP65
- Process connection: welding end, Socket Welding
- Level indication (signal lamps), data sheet D-07-D-16323-0
- Ventilation screw
- Drain valve AV 520

Technical data

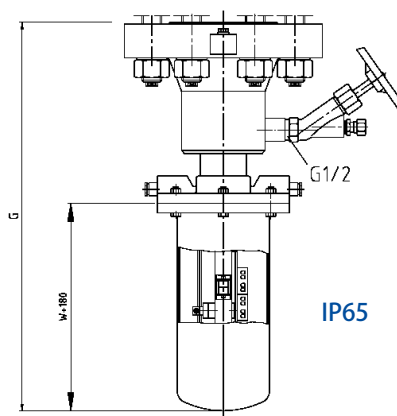
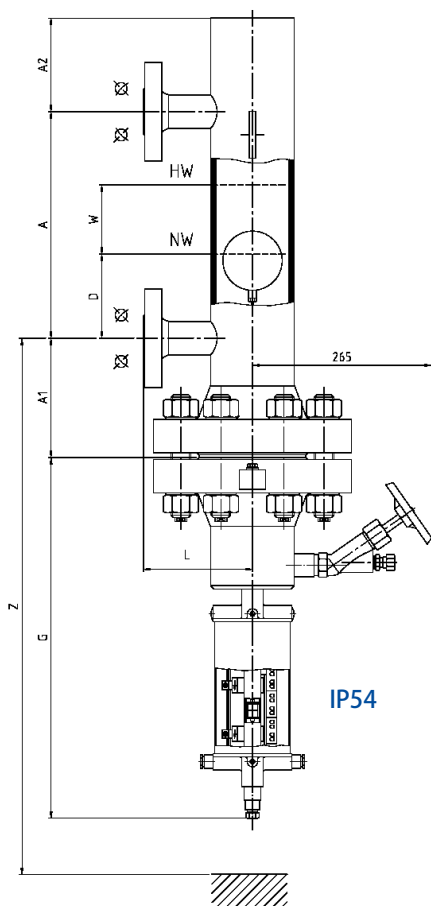
EG-component test	CE 0035-BN0106			
Allowable pressure	PS [bar]	100	160	200
Allowable temperature	TS [° C]	312	348	367
Drain valve	Type	AV520		
	Data sheet	D-09-D-16358-1		

Range of adjustment	W [mm]	250	350	450	550	650	750
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Dimensions

- The component mark is only valid if shutoff valves are installed between process connection and boiler studs. A drain valve is also required
- The functional test is made by lowering the water level in the standpipe
- The level switches contains mercury. For this reason, the level switches are not suitable for use on boiler plants, where the steam comes directly in contact to foods or similar, or where the steam is used on air conditioning for humidifying



PS	A1	A2	G	Z
100	152	140	W+375	W+D+685
160	177	140	W+390	W+D+755
200	213	140	W+430	W+D+865

Process connection

Welding end	Socket welding



Float switch type BA75-1

with controller SMFC1 as self monitoring water level limiter

Application and function

The SMFC1 (Self monitoring float control) in combination with the float switch BA75-1 is a failsafe self-monitoring low level limiter for steam generators according to TRD 602 or 604.

During the periodic and automatically controlled functional test the float device is lowered beneath LWL via a magnetic coil and the correct function of the LWL controller is tested.

Function BA75-1

The water level controller is a float actuated unit. The transmitter magnet connected with the float via the float rod actuates without direct contact the magnetic switch in the switch housing.

The float device is equipped with additional displacement elements to facilitate the buoyancy. These displacement elements move together with the transmitter magnet in a mercury filling.

The product according to PED directive 97/23/EEC annex VII (module B+D, Category IV), 89/336/EEG, 73/23/EEG has the CE-mark no. 0035 of the notified body.

Applied rules as per TRD/AD2000/Wasserstand 100 or ASME Boiler.

Technical basic equipment BA75-1

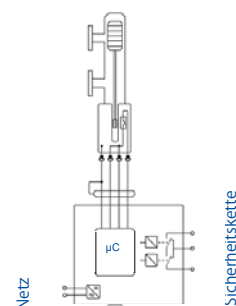
- Material according to DIN or ASME
- Protection as per DIN VDE 0470: IP54
- Process connection: flanges as per DIN or ANSI
- Magnetic switch type M130-K... (D-07-D-16324-0)
- Cable gland according to DIN EN 50262: M20x1,5
- Drain plug G ½

Available (optional) versions

- Protection as per DIN VDE 0470: IP65
- Process connection: welding end, Socket Welding
- Drain valve AV 520 (other drain valve on request)

Technical data

EG-component test	CE 0035-BN0107				
Allowable pressure	PS [bar]	80	100	160	200
Allowable temperature	TS [° C]	296	312	348	367
Drain valve	Type	AV520			
	Data sheet	D-09-D-16358-1			

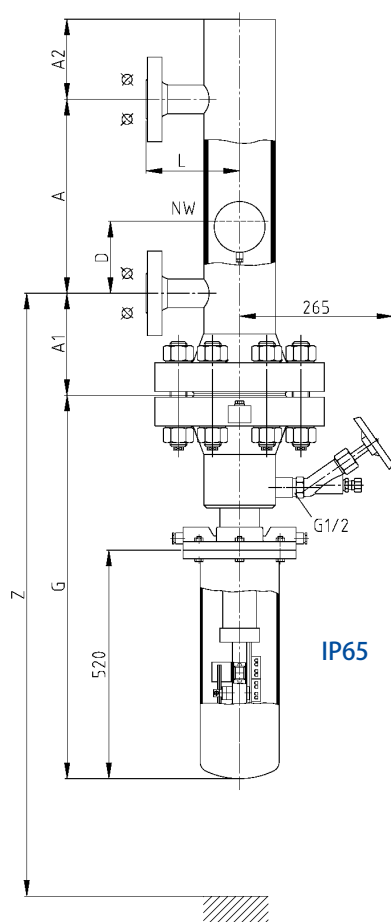
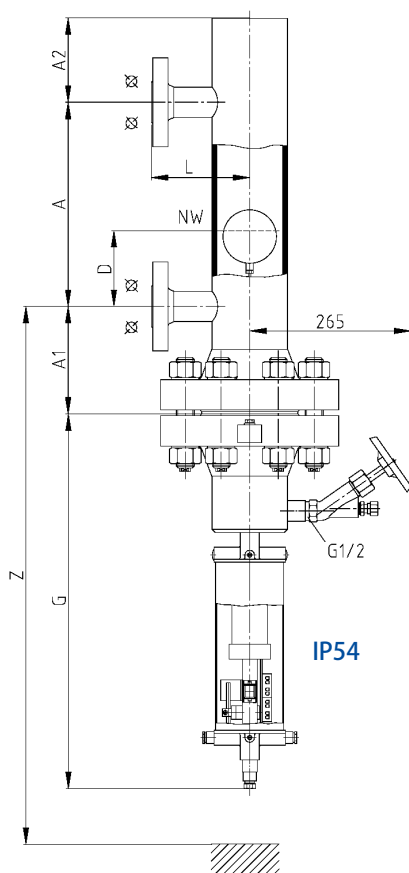


Dimensions

- The component mark is only valid if shutoff valves are installed between process connection and boiler studs. A drain valve is also required
- The level switches contains mercury. For this reason, the level switches are not suitable for use on boiler plants, where the steam comes directly in contact to foods or similar, or where the steam is used on air conditioning for humidifying

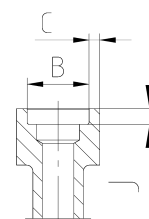
PS [bar]	A1 [mm]	A2 [mm]	G [mm]	Z [mm]
80	152	165	715	D+1040
100			765	D+1105
160	177		780	D+1180
200	213		820	D+1300

Magnetic switch M130-K... nach VDE 0660		
Magnetic coil	Power	400W
	Supply voltage	230Vdc
	Current consumption	2,6VA

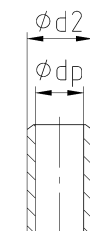


Process connection

Socket Welding



Welding end



Function SMFC1

The green LED "UB" is lit when the SMFC1 is connected to the mains and it indicates the general function of the controller.

Three special processes of failure detection are running continuously. The "1st level test", checking the proper behaviour of the output circuit, is performed every 40 ms.

The "2nd level test", checking the connection cable between the SMFC1 and the BA75-1 for breaks and short circuits, is performed every 240 seconds and additionally indicated by the yellow LED "TEST" being lit. A successful test is confirmed by a short flash of the red LED "STÖRUNG".

The "3rd level test", checking the proper function of the float device by lowering the float beneath LWL via a magnetic coil, is performed every 12 hours. Normally the lowering of the float is completed after a given time of 1 second. Because of dirt in the transmitter tube or damage of the float device, the lowering of the float can take more time. In this case the LED "STÖRUNG" is lit and the next test will be performed already in 30 seconds to remedy the failure. If this failure still remains, the safety contacts will be powered down after 15 minutes and a burner cut-off will be forced. This malfunction refers to a fatal failure of the BA75-1 and the SMFC1 locks internally. To unlock the controller, the SMFC1 has to disconnect temporary from the mains.

Under normal conditions, only the green LED "UB" is lit permanently and the yellow LED "TEST" is lit every 240 seconds for about 0.8 seconds followed by a short flash of the red LED "STÖRUNG". The safety contact is kept energised to maintain the burner protection circuit.

If the limiter has either detected a failure or the float is on LWL for more than one second, the LED "STÖRUNG" is lit. After a total adjustable delay of 1 or 16 seconds, the relays of the safety contact are deactivated and the burner is cut-off. The preset for the time delay is 1 second. A circuit to keep the burner from restart is not implemented in the SMFC1 and shall be installed by the customer.

Working principle SMFC1

The increasing or decreasing water level in the steam boiler will move the float up or down. The transmitter magnet, which is mounted on the float rod is moved in the same way. If the water level reaches the LWL-mark the magnetic switch will be actuated by the transmitter magnet. This signal is processed by a µ-Controller



- SMFC1 is delivered in a plastic plug-in housing for installation in control panels.
- Attachment SMFC1: mounted on a 35 mm standard rail according to DIN EN 50022 or directly screwed to a chassis plate

EG-component test	CE0035-BN0107	
CE-mark	0035	
Power supply	230V ± 15%/50-60 Hz ¹⁾	
Input	ca. 4,5VA	
Fuse	80 mA/T	
Protection acc. DIN EN 60529	IP40 ²⁾	
All. ambient temperature	0-60° C	
Max. operating data of potential free contacts		
Safety contact	Unblocking potential	max. 250Vac
	Current on contact	max. 4A ohmsch
		max. 0,75A induktiv cos φ 0,5

¹⁾ other values on request

²⁾ according to the German Standards VdTÜV-Wasserstand 100, 4.90 a protection of IP54 has to be maintained in the boiler area



Standpipe and nozzles type AG-07x

Application and function

The standpipe acc. to fig. 1+2 and the nozzles acc. to fig. 3 are planned acc. to TRD as well as "Wasserstand 100".

They belong to the water level controllers and limiters with component mark.

Shutoff and drain installations have to be provided in connection with the standpipes acc. to fig. 1 for a boiler operation acc. to TRD (see leaflets of group 9).

Technical basic equipment

- Process connection M1: flanges DN 100 as per DIN
- Process connection M2: flanges as per DIN
- Material according as per DIN:
- Flanges 1.0460, tubes 1.0305 or 1.5415 (depending on pressure stage)

Available (optional) version

- Material according to ASME
- Process connection: welding end, Socket Welding

Technical data

PS [bar]	DN / process connection		DIN	Contact face DIN
	M1	M2		
32	100	20	2635	2526 Form C
50		25	2637	
80			2638	2526 Form E
100				
160			2628	
200			2629	



Fig. 2

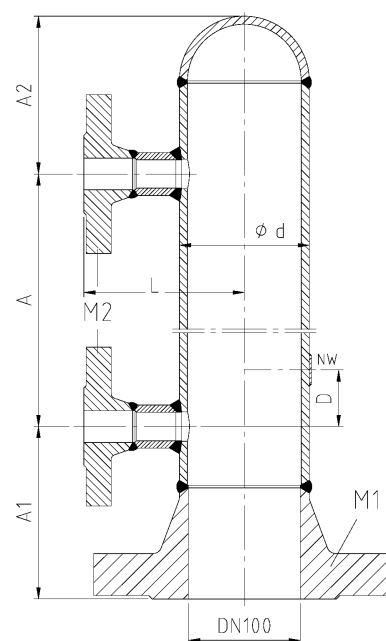
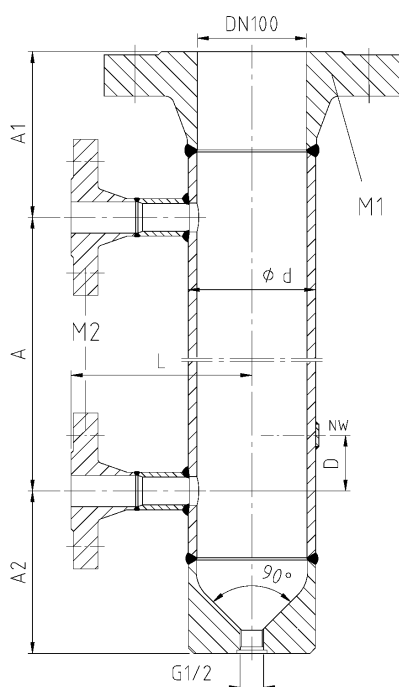


Fig. 3

Dimensions min. [mm]

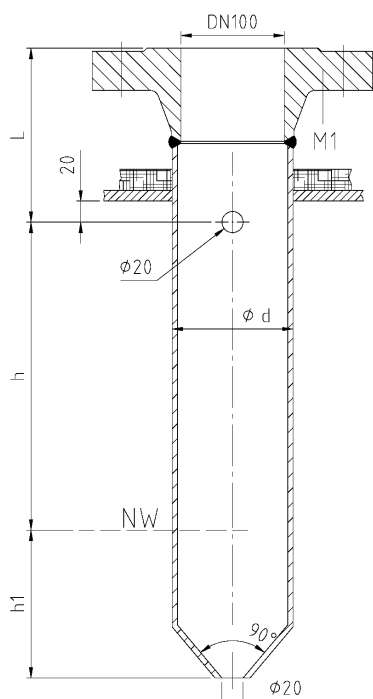


Fig.	PS [bar]	ø d	L	D	A1	A2
1	32	114,3	140	35	115	150
	50		160		140	160
	80				155	
	100				165	
2	50	114,3	140	35	142	165
	80				152	
	100				177	
	160	127	160		213	175
	200	133	180			
Fig.	PS [bar]	ø d			h1	
3	13	114,3			140	
	20					
	32					
	50					
	80					
	100					



Level indication

Signal lamps for water level indication

Application and function

For indication of standard water levels on steam boilers and hot water installation.

Subsidiary level indication for the following types:

RBA24/34, RBA25/35 und RBJ 54/64

Versions

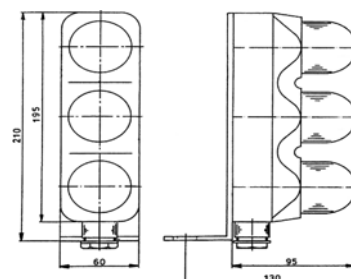
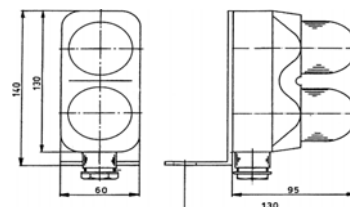
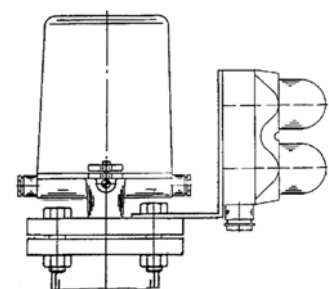
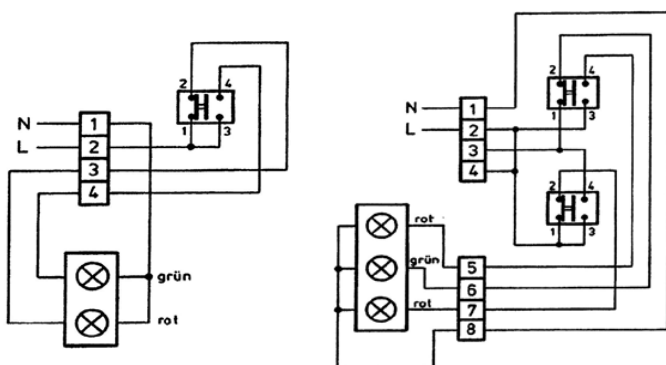
Indication	Article no.	Designation	see
2 Signal lamps	15-00331	Lamp housing complete red-green	Fig. 1
3 Signal lamps	15-00482	Lamp housing compl. red-green-red	Fig. 2

Technische Daten

Material of housing		Duroplast
Material of cups		Glass
Material of connection angle		Steel
Protection as per DIN EN 60529		IP65
Bulb	Power	15W
	Voltage	230V
	Socket	E14
	Insulation connection cable	Silicon

Electrical connection

for 2 signal lamps	for 3 signal lamps
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Magnetic switch type M130-K..

Application and function

The magnetic switch functions as controller or limiter in float switches.

At operation with inductive charges (e.g. contactor coil), we suggest to switch a varistor (e. g. 0,1 mF/100 Ohm), adapted to the operating voltage, in parallel with the contact.

Use acetic acid-free silicon cable in the internal part of switch housing.

The magnetic switch may not be opened.
Each warranty claim expires if the test seal is damaged.



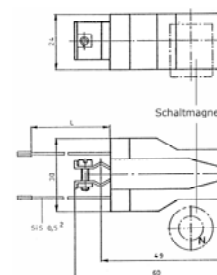
Technical data

Kind of contact	bistabil
Contacts	1 breaker / 1 maker
Connection wire	1 x 0,5 mm ² (16 x ø 0,2) Cu tinned / Silicon
Wire length L	200 mm
Allowable ambient temperature	-70° C bis +120° C
Protection	IP68

Type	Switching voltage U	Switching current I	Maximum power U x I
M130-K	≤ 250 Vac	≤ 1 A	≤ 150 VA

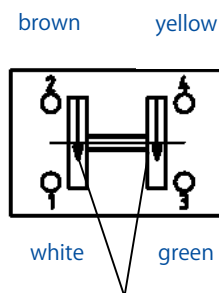
Type	Switching voltage U	Switching current I	Maximum power U x I
M130-KS	≥ 24 Vac/dc	≥ 0,065 A	≥ 1,05 VA
	≤ 24 Vdc	≤ 0,6 A	≤ 15 VA
M130-KG	≤ 24 Vdc	≤ 0,008 A	≤ 0,12 VA

Type	Article no.	Contact material
M130-K	15-01122	Silver-palladium AgPd 70/30 massiv
M130-KS	15-05769	Silver-palladium AgPd 70/30 massiv
M130-KG	15-01197	Silver-palladium AgPd 70/30 massiv, hard-gold plated AuCo 4-6µm



Assembly

Contact wires are marked with 1 – 4 on base



Arrow must show downwards

Contact position

Primary magnet is below secondary magnet

