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| Edition |
| 11/2010 |

**MIAS AB**  
I ÄNGELHOLM

**MAINTENANCE AND OPERATING MANUAL**  
**Electronic Condensate Drain**  
**ECD 15B / ECD 40B / ECD 90B / ECD 150B**



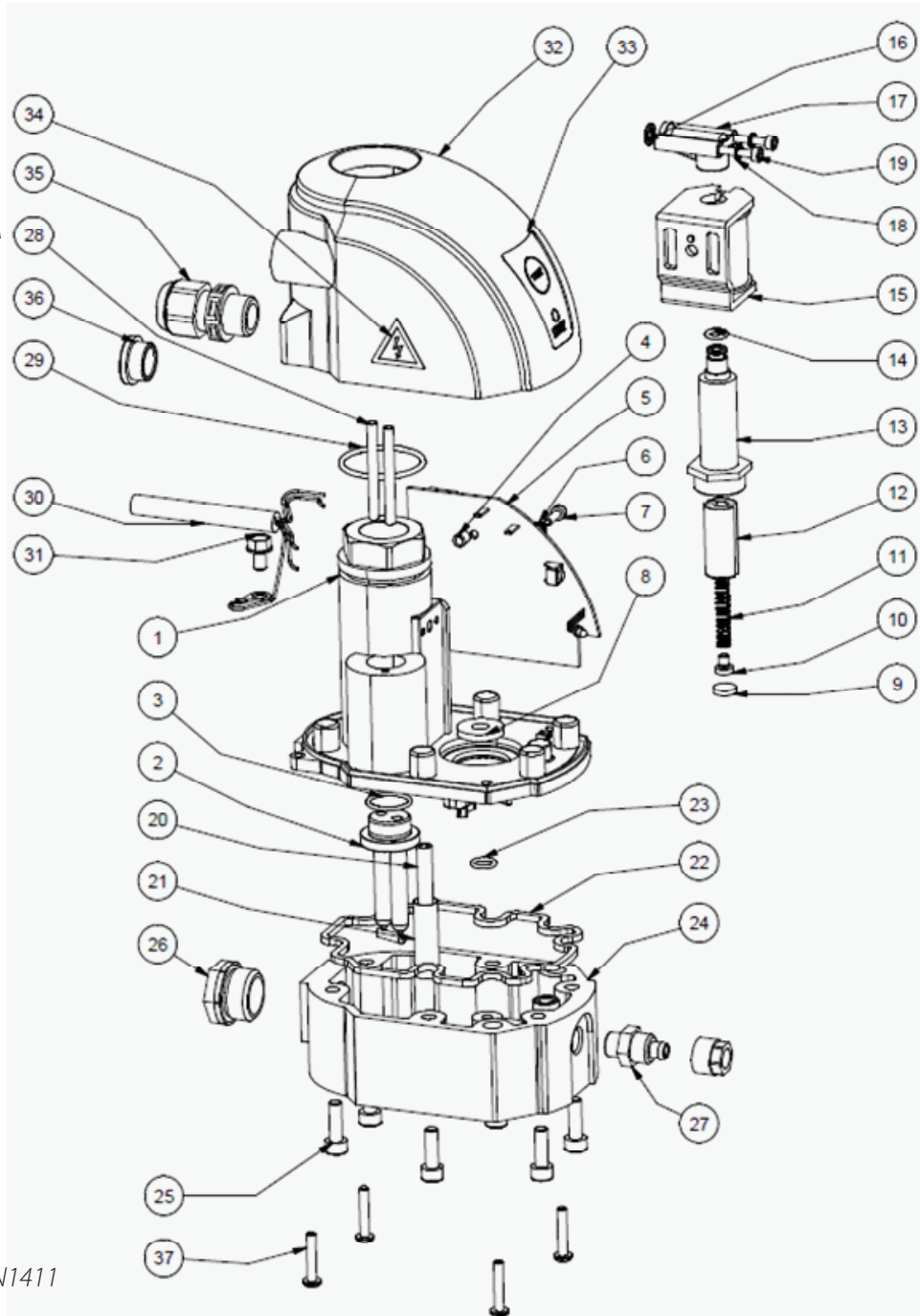
*Please read the following instructions carefully before installing electronic drain unit into service. Trouble free and safe operating of the unit can only be guaranteed if recommendations and conditions stated in this manual are respected.*

# 1. Condensate drain Type ECD-B

## Functional elements

Poz. Part

- 1 Housing
- 2 Sensor husing
- 3 O-ring 15x1,5
- 4 Spacer 5x5
- 5 PCB
- 6 Washer M3 DIN6798A
- 7 Screw M3x10 DIN912
- 8 Damper
- 9 Plunger sealing
- 10 Spring base
- 11 Spring
- 12 Plunger
- 13 Valve housing
- 14 O-ring 5,8x1,5
- 15 Coil
- 16 O-ring 5,8x1,5
- 17 Valve connector
- 18 Screw M3 DIN912
- 19 Screw M3x30
- 20 Extension hose
- 21 Internal strainer
- 22 Sealing
- 23 O-ring 7x2
- 24 Bottom
- 25 Screw M5x16 DIN912
- 26 Screw plug 1/2"
- 27 Hose connector 6mm
- 28 Sensor
- 29 O-ring 30x2
- 30 Cable
- 31 Screw M5x8 DIN7500
- 32 Cover
- 33 Front panel label
- 34 High voltage label
- 35 Cable glant M16
- 36 Cap M16
- 37 Screw PT KA35x16 WN1411



| Type  |         | ECD 15B                  | ECD 40B                  | ECD 90B                  | ECD 150B                 |
|---|---------|--------------------------|--------------------------|--------------------------|--------------------------|
| Voltage   | 115 VAC | 115 V ± 10%              |                          |                          |                          |
|   | 230 VAC | 230 V ± 10%              |                          |                          |                          |
| Power   | 115 VAC | 24 VA                    |                          |                          |                          |
|   | 230 VAC | 24 VA                    |                          |                          |                          |
| Frequency   |         | 50-60 Hz                 |                          |                          |                          |
| Operating pressure                                |         | 0-16 bar (0 - 232 psi)   |                          |                          |                          |
| Drain capacity (at 7 bar/101 psi)                 |         | 15 l/h (0,0088 scfm)     | 40 l/h (0,023 scfm)      | 90 l/h (0,053 scfm)      | 150 l/h (0,088 scfm)     |
| Operating temperature range                       |         | 1,5 - 65°C (35-149°F)    |                          |                          |                          |
| Inlet connection                                  |         | R 1/2"                   | R 1/2"                   | R 1/2"                   | R 1/2"                   |
| Outlet connection                                 |         | R 1/8"                   | R 1/8"                   | R 1/8"                   | R 1/8"                   |
| Power interface                                   |         | 3 × 0,75 mm <sup>2</sup> | 3 × 0,75 mm <sup>2</sup> | 3 × 0,75 mm <sup>2</sup> | 3 × 0,75 mm <sup>2</sup> |
| Protection class                                  |         | IP54                     | IP54                     | IP54                     | IP54                     |
| Volume  |         | 0,15 l                   | 0,15 l                   | 0,20 l                   | 0,28 l                   |
| Mass [kg]   |         | 0,9                      | 0,9                      | 1,05                     | 1,15                     |
| Dimensions A × B × C [mm]                         |         | 120 × 82 × 125           | 120 × 82 × 125           | 120 × 82 × 135           | 120 × 82 × 150           |
| Peak compressor performance [m <sup>3</sup> /min] |         | 11,6                     | 29,4                     | 60,6                     | 111,6                    |
|   |         | 9,3                      | 23,5                     | 48,5                     | 89,3                     |
|   |         | 5,8                      | 14,7                     | 30,3                     | 55,8                     |
| Peak dryer performance [m <sup>3</sup> /min]      |         | 23,2                     | 58,8                     | 121,2                    | 223,2                    |
|   |         | 18,6                     | 47,0                     | 97,0                     | 178,6                    |
|   |         | 11,6                     | 29,4                     | 60,6                     | 111,6                    |
| Peak filter performance [m <sup>3</sup> /min]     |         | 116                      | 294                      | 606                      | 1116                     |
|   |         | 93                       | 235                      | 485                      | 893                      |
|   |         | 58                       | 147                      | 303                      | 558                      |
| Compressor motor power [kW]                       |         | up to 30                 | up to 75                 | up to 160                | up to 315*               |

\* Drains for higher motor power capacities available on request. Please contact supplier.

Please take the relevant climate zone into account when dimensioning your specific ECD-B drain series application:

Northern Europe, Canada, Northern USA, Central Asia

Central and Southern Europe, Central America

South East Asian coastal regions, Oceania, Amazon and Congo regions

## Safety instructions



Operator/user of the unit should make himself familiar with the function, installation and start-up of the unit through these operating instructions. It is essential to follow these safety notes in order to ensure trouble-free operation of the unit. All the safety information is always intended to ensure your personal safety.

- Pressure and temperature of the medium must match the details given on the type plate of the unit.
- Installation work may only be carried out by trained and experienced specialists.
- Disconnect the power supply when carrying out electrical work!
- Only used enclosed connectors and accessories.
- Risk of explosion! It is not permitted to use this unit in areas at risk from explosion or with explosive or flammable media!
- It is forbidden to carry out any kind of work on pressure vessels and piping, this covering welding, constructional changes, installation work, etc. Breaking this rule means extreme danger for human life.
- Depressurize the system, before carrying out any work on the piping.
- Clean the piping before carrying out the installation work.
- Each vessel must have its own condensate drain.
- Make a visual check before the initial start up. There must be no external damage visible.
- Use the unit for the appropriate purpose.

## Appropriate use

The unit may only be used for its intended purpose. These units are intended exclusively for the following purpose:

- Draining condensate from compressed air systems (air compressors, air receivers/pressure vessels, air filters and air dryers).

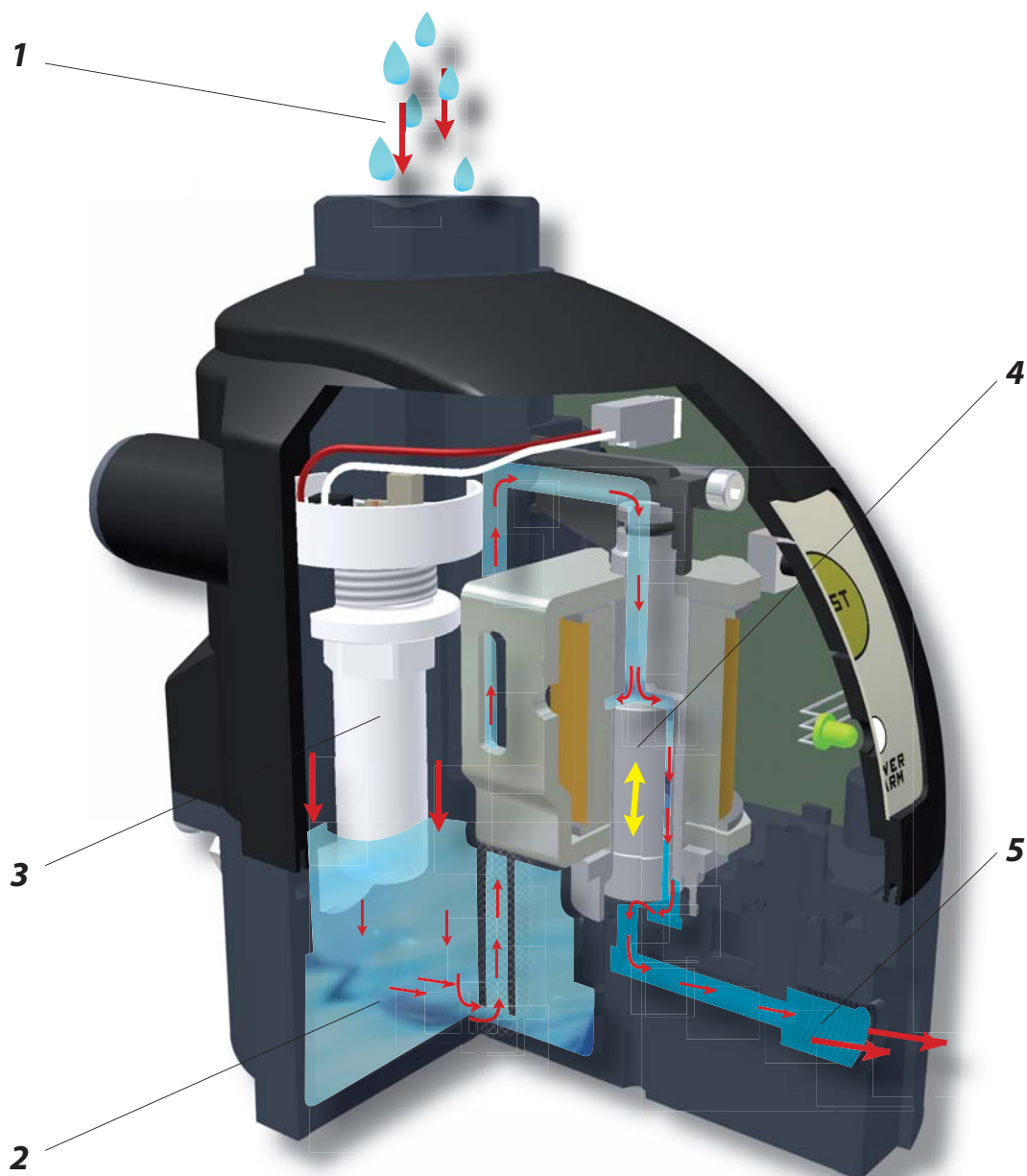
Any other form of use or one going beyond this shall be considered as inappropriate. We shall have no liability whatsoever for any damage incurred as a result.

## Operation

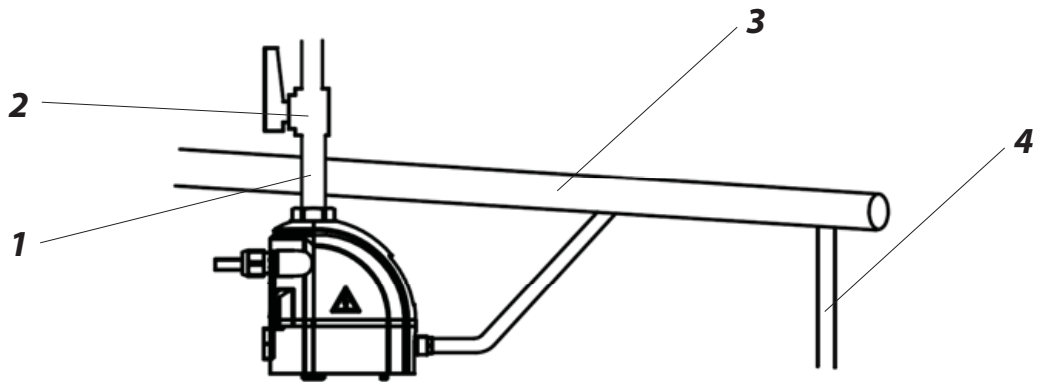
Condensate flows through inlet connection (1) and accumulates in the reservoir (2). Sensor (3) is measuring condensate level. When reservoir (2) is detected full sensor (3) sends signal to electronic board. Electromagnetic valve (4) is then opened to discharge accumulated condensate through outlet connection (5). When reservoir (2) has been emptied, the valve (4) closes back without any losses of compressed air.

Led signal is indicating status of the device (see Functions).

If microcontroller registers faulty operation, device goes to alarm mode. At the same time signal is sent through voltage free contact (see Functions).

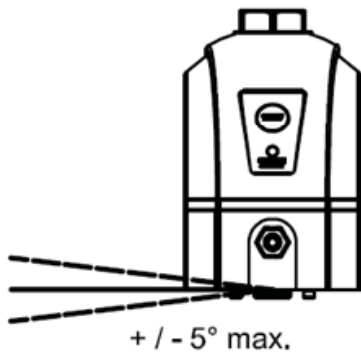


## Installation

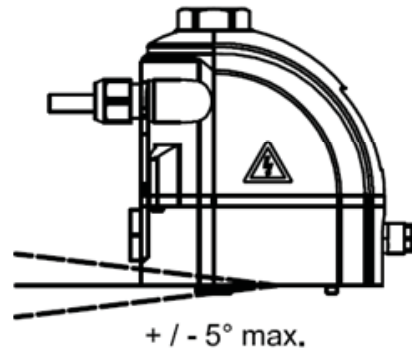


- Inlet pipe (1) size at least  $\frac{1}{2}$ " (inner diameter > 13mm).
- Collecting condensate line (3) size at least  $\frac{3}{4}$ ".
- At least 1% inlet pipe slope recommended.
- Install ball valves (2) only.
- Recommended connection (4) to water/oil separator.

1.

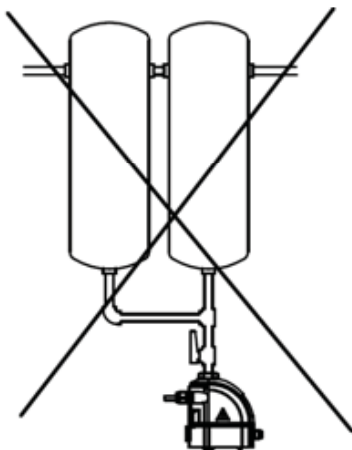


2.

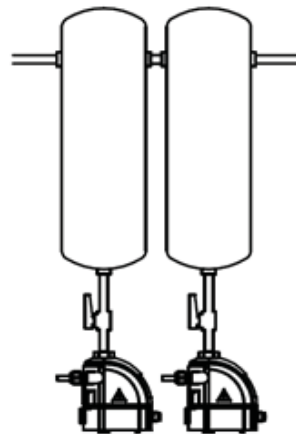


The inclination of the unit must not exceed + / - 5° in both axes. If device is not installed correctly it could cause faulty detecting of condensate level.

3.

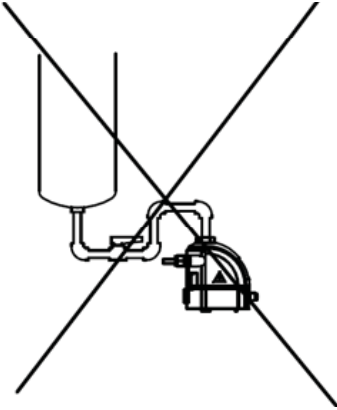


4.

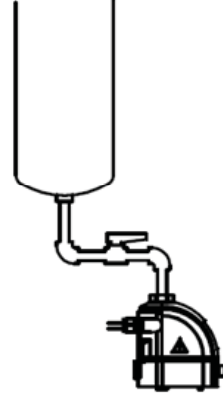


Connecting several condensate sources to one drain device causes operating problems (3). Make sure that each drain source has its own drain device (4).

5.

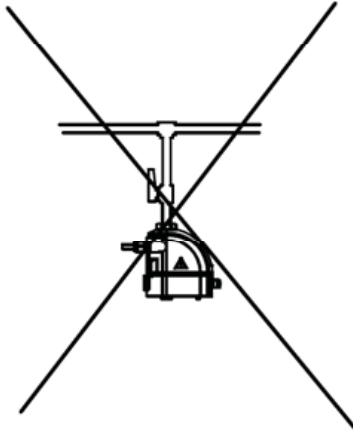


6.

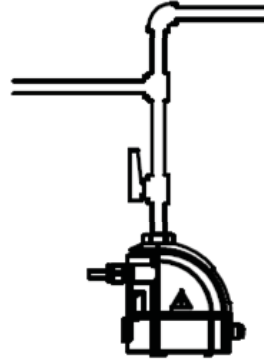


Trapped air prevents the condensate being purged from drain (5). During installation ensure that no water pockets are formed in the piping (6).

7.

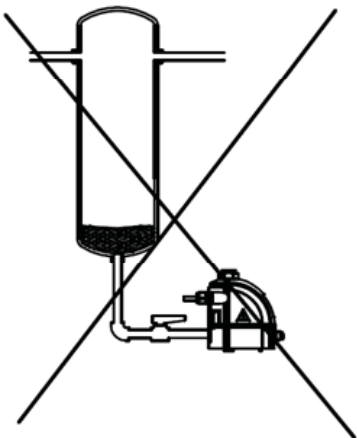


8.

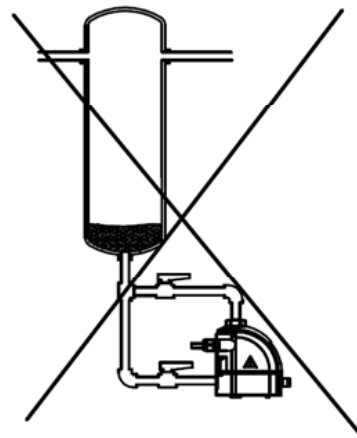


When drainage is to take place directly from a pipeline it is recommended to arrange the piping so that air flow is diverted (8).

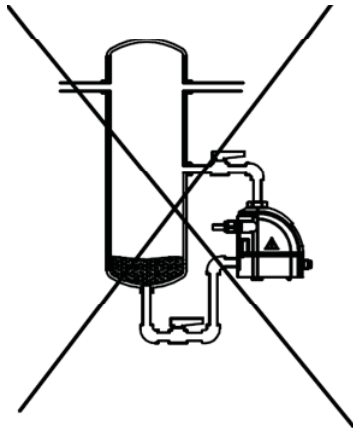
9.



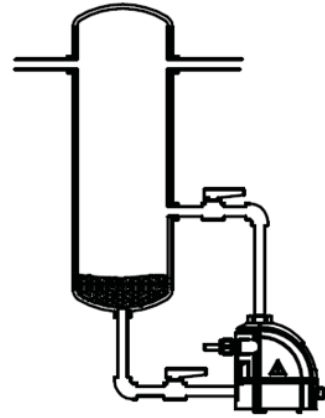
10.



11.



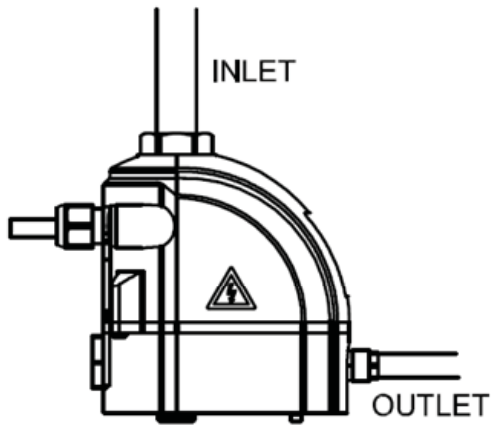
12.



In case there are problems with inflow, it is necessary to install a venting line (12). In this case back connection is used as inlet and upper connection is used as air ventilation. Venting line must never be installed as it is on pictures 9, 10 and 11.

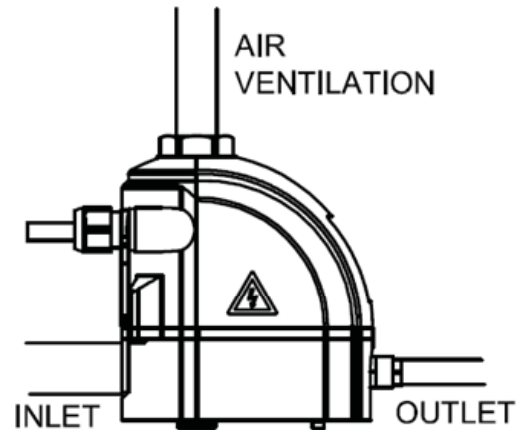
**Warning: Upper and back connections cannot be used as condensate inlet at the same time.**

13.



STANDARD INSTALLATION  
Upper connection = Inlet  
Back connection = Closed

14.



VENTING LINE INSTALLATION  
Upper connection = Air ventilation  
Back connection = Inlet

15.



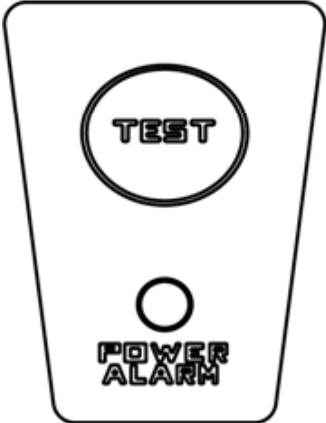
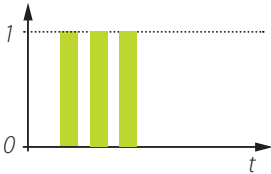
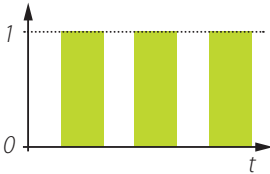
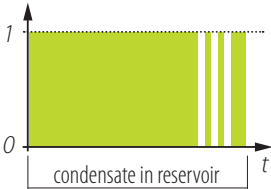
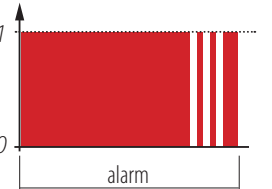
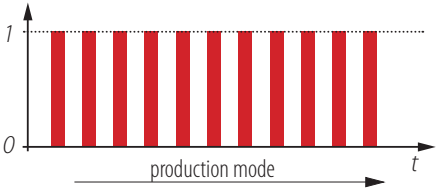
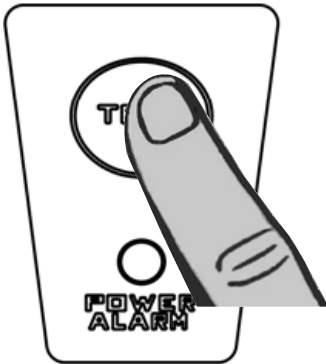
**Electrical wiring**

**Please ensure that the installation is carried out according to the valid regulations.**



## Functions

### LED indicator / TEST button

|  |  |   |  |
|--|--|---|--|
|   | <p><b>Power on</b><br/>At power on there are few short green flashes. These are indication of ECD - B type.</p> <ol style="list-style-type: none"> <li>1. One flash: ECD 15B</li> <li>2. Two flashes: ECD 40B</li> <li>3. Three flashes: ECD 90B</li> <li>4. Four flashes: ECD 150B</li> </ol> <p><b>Operating</b><br/>LED indicates a condensate sensor output.</p> <ol style="list-style-type: none"> <li>1. Green FLASHES: Sensor detects no water</li> <li>2. Green ON: Condensate is detected</li> <li>3. Red ON: Alarm mode</li> </ol> |   |  |
| <p style="text-align: center;">Power ON</p>  | <p style="text-align: center;">Indication of empty reservoir-<br/>medium green LED signals</p>   | <p style="text-align: center;">Condensate detected-<br/>green LED signals</p>  | <p style="text-align: center;">Condensate detected-<br/>red LED signals</p>  |
|   | <p>Short flashes of red light indicate a production mode.<br/><i>In this case, please contact producer.</i></p>  |   |  |
|   | <p>By pressing TEST button valve opens.</p>  |   |  |

## Operating modes

### NORMAL

When sensor detects condensate the valve opens up to one second to discharge. Minimal time between two discharges is 5 seconds.

### OVERLOAD

If sensor detects condensed water continuously for 90 seconds, drain enters overload mode. In this mode, the valve is opened for two seconds and closed for one second. This cycle repeats for five minutes. In case the reservoir empties during overload mode, device enters normal mode again.

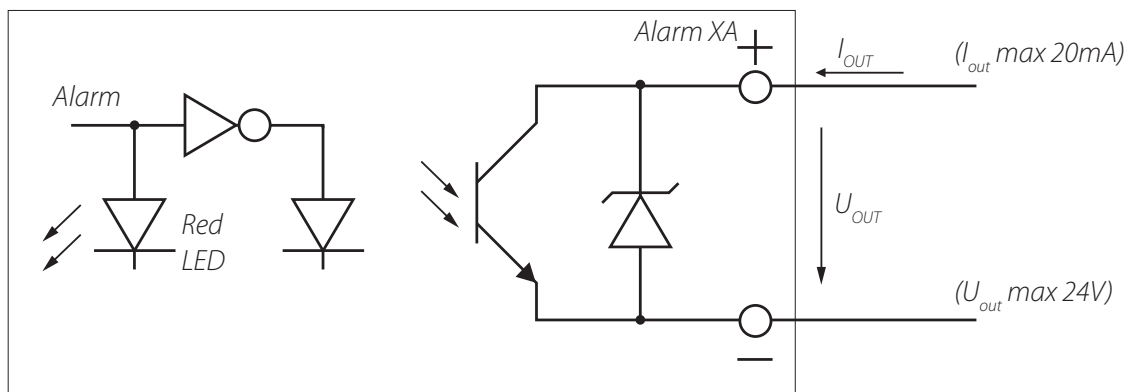
### ALARM

If drain was still not able to discharge all condensate it enters alarm mode. In this mode, the valve is opened for five seconds every half minute. In case the reservoir empties during alarm mode, drain enters normal mode again.

### BLOCKED VALVE DETECTION

Because of debris in condensate, a plunger in the valve may block opened. That is why plunger position is being tested 0,5 s after the valve closes. If a blocked plunger is detected during this test, valve would vibrate for one second. This procedure of testing and vibrating repeats until the plunger is released. Additionally, alarm is reported after ten cycles.

### Alarm output



The ECD-B comprises an alarm output that is voltage free. The output is connected to the red signal logically. The output is in high impedance state when the red LED is on or when ECD-B electric supply is off.

## Maintenance

### Small service:

It is recommended to clean/change internal strainer and clean reservoir at least once a year. Sealing elements are subject to wear, which depends on various operating parameters such as pressure, temperature, dirt content, etc. It is also recommended to change sealings.

### Complete service:

Every 8000 operating hours (see compressor operating hours) it is recommended to make complete service and change electromagnetic valve, internal strainer and all sealings.

### Attention

**Before beginning maintenance work take the drain out of operation, cut off the power supply and depressurize the unit.**

## Service kit

| Service Kit type             | Order number | Description |
|------------------------------|--------------|-------------|
| Service kit 1 - ECD 15B, 40B | 3400330      | Service kit |
| Service kit 1 - ECD 90B      | 3400331      | Service kit |
| Service kit 1 - ECD 150      | 3400332      | Service kit |

### Operating data download

Electronic condensate drain ECD-B series stores operating data into EEPROM. Operating data can be downloaded to determine condition of the device. For data reader please contact supplier.

## Trouble shooting

|   |   |   |
|---|---|---|
| No LED signal   | - Faulty or no power supply<br>- PCB defective  | - Check power supply<br>- Replace PCB   |
| Pressing TEST button has no effect                          | - Blocked valve<br>- System pressure above 16bar / 232psi   | - Clean the valve<br>- Check system pressure  |
| Condensate discharge only when TEST button is being pressed | - Faulty installation<br>- Condensate inlet line with insufficient slope<br>- Sensor extremely dirty  | - Check if device is installed in accordance with installation recommendations<br>- Install venting line<br>- Clean sensor housing                        |
| Air keeps blowing out                                       | - Blocked valve<br>- Wear   | - Clean the valve<br>- Replace worn parts   |
| Device is vibrating in intervals                            | High amount of dirt is blocking the valve. Microcontroller has detected faulty plunger movement and "blocked plunger release procedure" has been triggered. | - Vibrating is a result of device trying to release blocked valve. Device should recover itself.<br>- Check if intense corrosion is present in the system |
| Permanent red LED flashes                                   | - Device is in one of production modes  | - Contact supplier  |



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