Electronic
Condensate Drain

Ecodrain ED

ED3002
ED3004
ED3007
ED3030
ED3100

Operating Manual

Revision 7 — 2012/ US

Manufacturer's Declaration

Parker Hannifin Manufacturing Germany GmbH & Co. KG

Hiross Zander Division,

Im Teelbruch 118, D-45219 Essen, Germany,

herewith declares that the products

electronic condensate drain models ED3002 to ED3100

- are ETL listed
- conform to ANSI/UL STD 508
- are certified to CAN/CSA STD C22.2 NO.14

ETL LISTED

CONFORMS TO

ANSI/UL STD 508

3104761

FCC Compliance

The condensate drain series ED3002 to ED3100 is, according to the manufacturer/applicant, primarily intended for use in industrial plants as "digital devices" and "unintentional radiators". Therefore the ED3002 to ED3100 series falls under the category of exempted devices, according to FCC, CFR 47, 915.103 b). Only the general requirement that a device must not emit electromagnetic disturbances are to be fulfilled, and fulfilment is confirmed through an EMC report according to the European EMC requirements for the CE mark.

Contents

General Information **5**

Technical Description **6**

Installation **8**

Startup of the Condensate Drain **13**

Monitoring of the Operation **14**

Maintenance **16**

Technical Data **17**

Dimension Drawings **18**

General Information

About this operating manual

Signs and symbols

- ► Procedures that must be completed in the indicated sequence are numbered.
- ■ Items in lists are highlighted with grey boxes.

> **Note:**
>
> **Always comply with these instructions to ensure safe and efficient operation of the machines and devices.**

Caution!

These safety notes help prevent damage to property and must thus always be adhered to.

Danger!

These danger notes with a grey background warn against personal injury and/or danger to life and limb; danger notes help you to avoid serious or life-threatening situations for yourself and/or third parties.

Target group of these operating instructions

This operating manual is intended for all persons who work with the condensate drain. We assume that these persons have technical qualifications, e.g. as metalworkers or electricians.

About your safety

Please observe the following general safety instructions:

Caution!

All maintenance work must be completed by suitably qualified and authorised specialist personnel.

Risk of injury from escaping compressed air!

Never remove any parts of the condensate drain, or manipulate the same in any way, as long as the unit is pressurised! Suddenly escaping compressed air might cause serious injuries.

Prior to any work, release all pressure from the unit.

Warning! Risk of injury from electrical voltage

All work on electrical components must be carried out by suitably qualified specialist personnel!

Proper use of the condensate drain

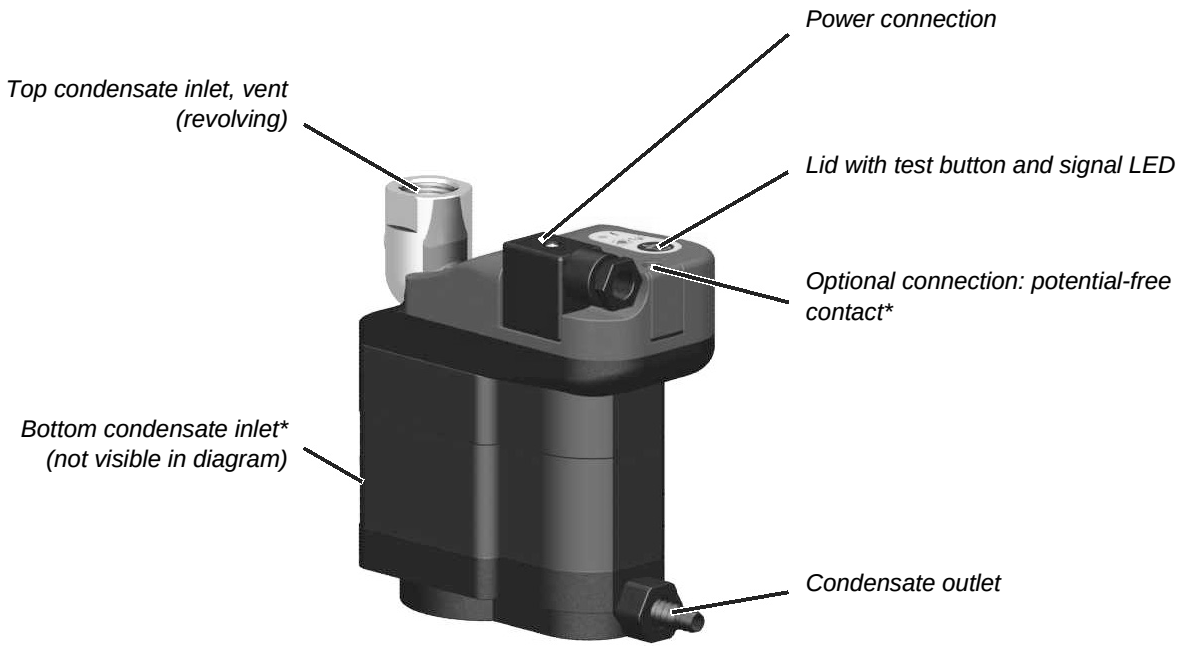
The condensate drain must only be used for the elminiation of standard condensates from compressed air systems. Any other use is deemed improper.

Notes on compressor oils

Do not use compressor oils incompatible with polyamide. Such oils can damage pressurised components of the condensate drain, resulting in leaks and complete failure of the entire unit. Possible results are: damages to the drain and/or unit failure. The manufacturer's warranty will be void in case of damages caused by incompatible compressor oils.

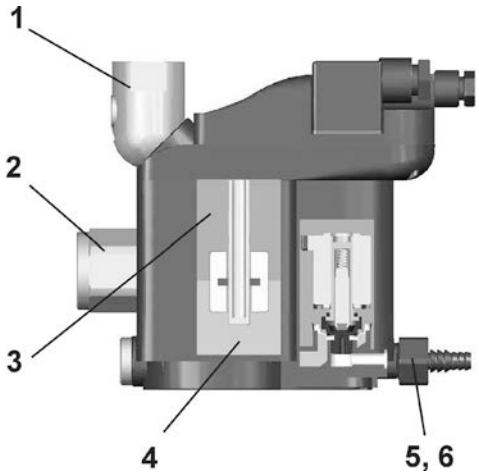
Technical Description

Overview



* not available in model ED3002 and ED3004

Function



The condensate enters the unit through the inlet (1 or 2) and collects in the collecting chamber (3). When the collecting chamber is completely filled with condensate (4), the condensate is drained through the outlet (5) until the chamber is emptied. An integrated flow regulator (6) prevents a pressure bang when the valve is opened, ensuring smooth and noise-free drainage of the condensate.

Depending on the size, a LED signals in the colors green, green/red flashing and red (ED3002 – ED3004) or green, orange and red (ED3007 - ED3100) the different conditions of the drain. A green LED indicates normal and trouble-free operation.

A red/green flashing (ED3002 – ED3004) or constantly orange LED (ED3007 - ED3100) indicates that no condensate has been drained for a period of 15 hours.

After condensate has been drained off, the LED changes to green.

The LED flashes slowly in red, if the condensate cannot be drained off within the set time and an internal cleaning program has been started. After successful cleaning the drain returns to normal operating mode. If the cleaning program cannot be completed successfully. an emergency program is started and an alarm signal is issued (LED flashing rapidly in red).

Installation

All work at the pipelines and on the electrical components must be carried out by authorised and suitably qualified technical personnel.

Notes on power supply with instable voltage:

We recommend that you use 24VDC units with appropriate power supplies in operating environments with heavily fluctuating mains voltages or high frequency interference (short voltage peaks or voltage drops). This will ensure reliable long-term operation even where unfavourable power conditions prevail.

Requirements for installation

For proper installation of the condensate drain, the operator must provide the following:

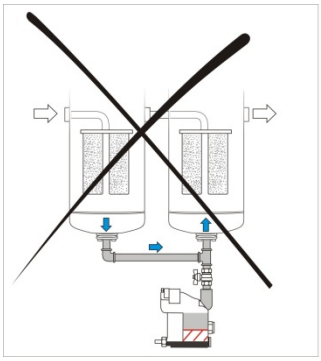
- Connections and lines for the infeed and outlet of the condensate.
- All lines and connections must be correctly dimensioned (diameter). For a list of correct connecting diameters, please refer to the technical data.
- All lines and connections must be adjusted to the actual operating pressure.
- Use only ball valves as shut-off valves.
- Ensure that the condensate drain is connected to the correct mains voltage.

Basic requirements for installation

When installing the condensate drain, observe the following general instructions:

Avoid bypasses!

If condensation occurs at several points, each affected device must be drained through a separate drainage device. Otherwise, there is an undesired flow through the bypass line.



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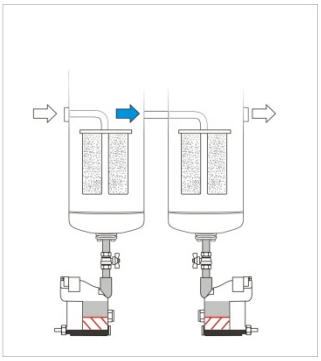
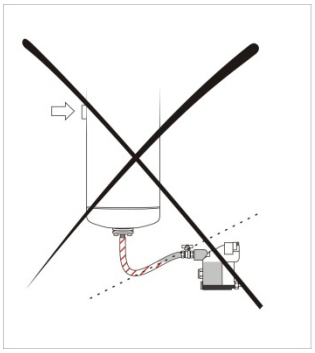


correct

Observe gradient in flow direction!

Ensure a proper gradient of the inlet line. Otherwise, air bubbles might prevent condensate from entering the drain.



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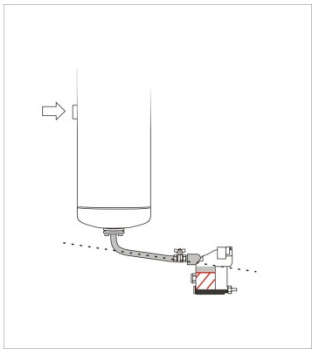
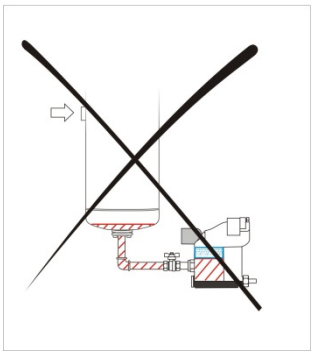


correct

Install vent line!

If the bottom condensate inlet is used, install a vent line. Otherwise, air bubbles trapped in the collecting chamber might prevent condensate from entering the chamber.



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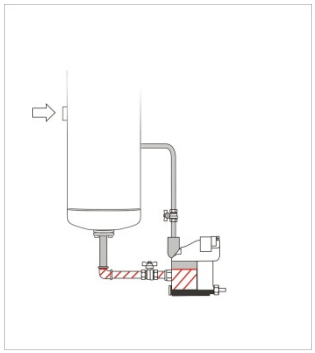
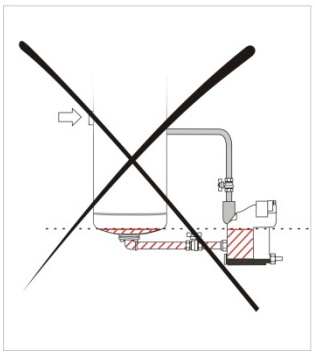


correct

Observe levels!

The switching level of the condensate drain must be lower than the vessel. Otherwise, condensate might be backed up in the vessel.



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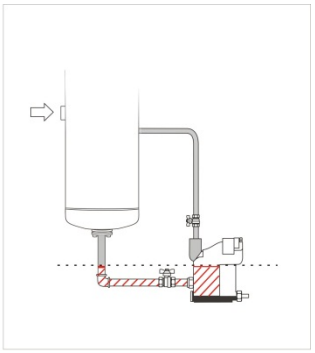
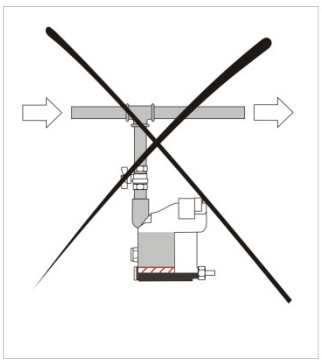


correct

Prevent carry-over of condensate!

Straight pipelines might lead to carrying over of condensate. Install suitable condensate traps.



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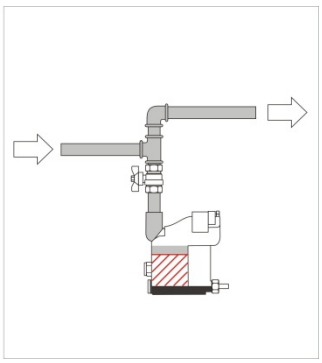


correct

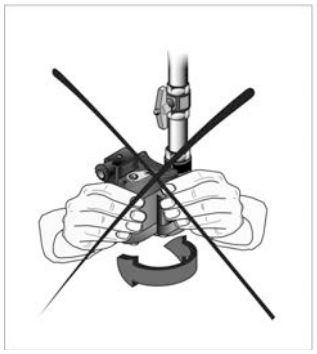
Connection of condensate inlet

ED3002 and ED3004 are equipped with a top condensate inlet only, while models ED3007, ED3030 and ED3100 have a revolving top inlet and a bottom inlet for condensate.

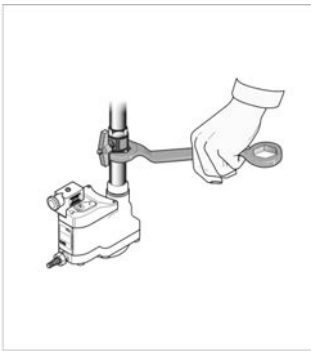
> **Note:**
>
> **For installation, we recommend using the appropriate installation kit consisting of a ball valve with fittings.**

Use open-ended spanner!

Never turn the condensate drain to install it into the pipeline! Always use an open-ended spanner to install the condensate drain.



wrong



right

Installation of ED3002

► Ensure that the drain is in vertical position (maximum permissible deviation from perpendicular: +/- 5 %).

The integrated vent ensures proper condensate inlet and outlet.

Installation of ED3004, ED3007, ED3030 and ED3100

► Turn the upper inlet piece to the desired position:
  — Pull pin.
  — Turn inlet piece.
  — Push back pin.
► Select the condensate inlet to be used.
► Ensure that the drain is in vertical position (maximum permissible deviation from perpendicular: +/- 5 %).
► Connect condensate inlet to feed line. Install vent line, if required.
► Check connections for leakage.

Connection of condensate outlet

The condensate drain delivery includes a 8-10 mm hose tail.

> **Note:**
>
> - **The water column in the condensate outlet should not exceed 2 m.**
> - **The condensate outlet lines should not be pressurized but open.**

► Connect the condensate outlet to the condensate drain line.

Connection to power supply/potential-free contact

Warning! Risk of injury from electrical voltage

All work on electrical components must be carried out by suitably qualified technical personnel!

Models ED3007, ED3030 and ED3100 are equipped with a potential-free contact, in addition to the power mains connection (not available for ED3002 and ED3004). Models ED3007 to ED3100 therefore feature two connections with matching adapters:

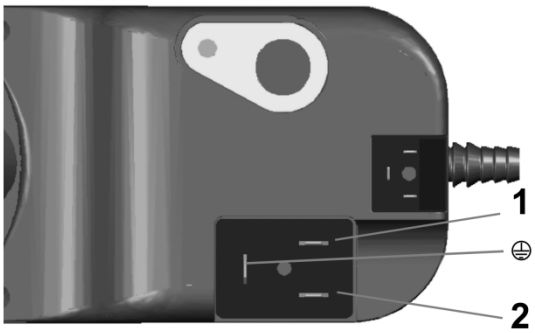
- Adapter for supply voltage: magnetic valve connector "type B plug" industrial standard (11 mm) 2 + PE (see figure, item 1)
- Adapter for potential-free contact: magnetic valve connector "type C plug" industrial standard (9,4 mm) 3 + PE (see figure, item 2)

Connection to supply voltage

Beware of electric shock in case of a fault!

The drain features a ground connection. Its purpose is to provide a safety cut-out of the condensate drain in case of an error, provided a ground fault circuit interrupter has been installed upstream of the condensate drain.
Otherwise there is the risk of an electric shock in case of moisture penetration.
We absolutely recommend that you install a ground fault circuit interrupter in the power supply line upstream of the condensate drain.

► Attach type B plug to the cable. Observe pin assignment (see figure).



230 V/115 V (all sizes)

1 = L

2 = N

⏚ = *PE*

24 V DC (ED3007 – ED3100 only)

1 = +

2 = -

⏚ = *PE*

Type B plug supply voltage

► Push plug with seal into the power adapter of the drain and screw it tight. Make sure the seal is correctly seated!

► Install a ground fault circuit interrupter.

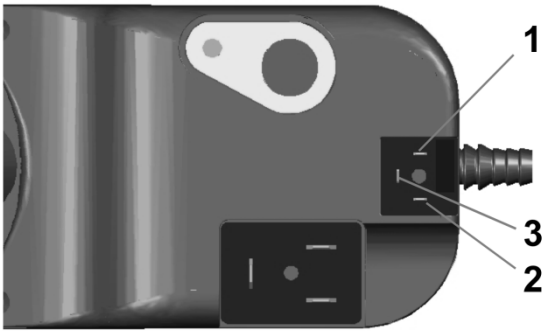
Connection of potential-free contact

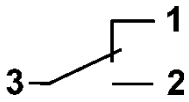
The connecting socket of the potential-free contact is protected by a cover.

- ► Remove the cover (1) (see figure to the right).
- ► Attach type C plug to the cable. Observe pin assignment (see figure below).

Note:

The internal relay for the floating contact is picked up during normal operation. The relay drops out in the alarm mode and when power fails.





Type C plug: potential-free contact

- ► Push plug with seal into the adapter of the potential-free contact and screw tight. Make sure the seal is correctly seated!

24 V connection

- ► Use a class 2 transformer to generate the low voltage for the 24 V power supply.

This will exempt the unit from a safety inspection in line with ANSI/UL or CAN/CSA.

Startup of the Condensate Drain

► Power the unit.

The system initialisation program is started. This is indicated by the green LED flashing fast for approx. 3. Seconds (ED3002 - ED3004) or sequential flashing of the LED in green, yellow and red (ED3007 - ED3100). When the process is completed the green LED is constantly on.

► Pressurise unit.

► Ensure that condensate enters the drain.

► Inspect connections for leakage.

► Press the test button to open the valve. If you can hear a low flowing noise, your drain is working properly.

The condensate drain is now ready for operation.

If the potential-free contact is used: complete function test

The potential-free contact is a standard integrated feature of the condensate drain (not in model ED3002 and ED3004). To complete a function check at the contact, proceed as follows:

► Disconnect the unit from the power supply.
If there is an alarm signal, the potential-free contact is working properly.

► Reconnect the unit to the power supply.

Monitoring of the Operation

> **Note:**
>
> **The unit is not equipped with an ON/OFF switch and it must be constantly connected to the power supply, also over weekends. Disconnection is only permitted for maintenance purposes. When the power supply is interrupted, the condensate drain issues an alarm signal.**

The condensate drain is a fully automated device. Its operation and status can be monitored by observing the LED, so that disruptions and malfunctions are immediately detected. The LED signals and their significance are listed in the table below.

ED3002 - ED3004		
LED colour	**LED signal**	**Description**
green	flashing at short intervals for 3 seconds	System initialisation
	flashing at long intervals	Valve active, condensate is being drained
	permanently on	Drain ready for operation
green/ red	flashing	Warning signal (*not* an alarm signal): No condensate drained off for 15 hours
red	flashing at long intervals	Cleaning program activated
	flashing at short intervals	Emergency program activated (alarm)

ED3007 - ED3100		
LED colour	**LED signal**	**Description**
green/ yellow/ red	flashing	System initialisation
green	slowly flashing	Valve active, condensate is being drained
	permanently on	Drain ready for operation
orange	permanently on	Warning signal (*not* an alarm signal): No condensate drained off for 15 hours
red	flashing at long intervals	Cleaning program activated
	flashing at short intervals	Emergency program activated (alarm)
	permanently on	System error (alarm), drain defective

Test button

The test button is used to

- open the valve manually;
- release the pressure from the condensate drain.

Interval and action	Response
Press the test button and keep it pressed	Valve opens and closes automatically after 3 seconds
Press and hold test button for 5 seconds (alarm reset)	Valve opens and closes automatically after 3 seconds, LED flashes fast in green: all alarms are reset.

Malfunction of the condensate drain

Malfunctions or failure of the drain are indicated by

- red LED, flashing at long intervals
- red LED, flashing at short intervals
- red LED, permanently only (ED3007 – ED3100)

If the condensate drain does not work properly, it is automatically cleaned. During cleaning, the red LED flashes slowly, indicating that the program tries to remove any dirt or clogging with compressed air. After successful cleaning, the drain is emptied and is then automatically reset to normal operation.

If cleaning is not succcessful, the drain is switched to the emergency program, which is indicated by the red LED flashing at short intervals (alarm).

If the red LED is permanently on, there is a system error. The condensate drain is defective and must be replaced[1].

[1] Note: Too fast influx of condensate can result in an error message by the magnetic level sensor due to inertia. To remedy this error, please disconnect the drain from the voltage supply and re-initialise. The alarm reset is not functional in this case.

Maintenance

Caution!

Maintenance work may only be carried out by authorised and suitably qualified technical staff. Prior to any maintenance work, switch off the unit and release all pressure.

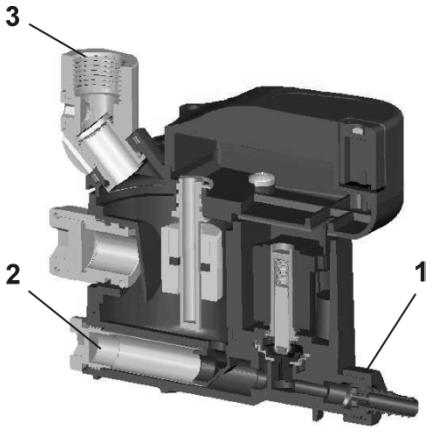
Cleaning of dirt screen (only necessary with highly contaminated condensate)

If condensate that is contaminated more than usual is drained, regularly clean the dirt screen.

- ► For this purpose, close the compressed air line and the condensate inlet.
- ► Repeatedly press the test button until no flow noise is audible (depressurising the drain).
- ► Disconnect the power supply (remove the plug from the adapter).
- ► Dismantle condensate outlet by loosening nut (1) and pulling off the hose tail.
- ► Disconnect the drain:
  - — *ED3002:*
    remove the condenate drain with complete filter base. The condensate inlet can be turned.
  - — *ED3004, ED3007, ED3030, ED3100:*
    Loosen optional screw connections and remove the drain.
- ► Loosen the screw of the dirt screen (2) and pull it out of the unit.
- ► Clean dirt screen.
- ► Rinse drain with water through the top condensate inlet (3) to remove any other dirt

In this way, all dirt can be removed without having to completely dismantle the entire condensate drain.

- ► Insert and secure dirt screen.
- ► Reinstall condensate drain in the system
- ► Reconnect condensate outlet and power supply. Open the compressed air line and the condensate inlet.
- ► Restart the drain.



Sectional drawing of condensate drain

Annual maintenance

Once very 12 months, and irrespective of the actual operating hours, a number of parts in the condensate drain must be replaced as a precaution. For this purpose, Zander has assembled the **SKED3000** service kit containing these replacement parts (seals, springs,etc.). When replacing these parts, strictly follow the instructions in the maintenance manual included in the service kit.

Technical Data

	Ecodrain model				
	ED3002	**ED3004**	**ED3007**	**ED3030**	**ED3100**
Flow rate[1]					
Compressor aftercooler (m^3/h)	—	240	420	1.800	6.000
Refrigeration dryer (m^3/h)	—	480	840	3.600	12.000
Filter[2] (SCFM)	424	1410	2470	10590	35310
Nominal flow rate (ft^3/h)	0.035				
Operating pressure range	3–232 psi				
Temperature range	35–140 °F				
pH-range condensate	4 – 10				
Temperature range (nominal)	+ 1 °C – + 60 °C				

Electrical voltage and power overview

	Supply voltage[3] (selectable)			**Potential-free contact[4]**
	24 V DC	**115 V AC**	**230 V AC**	
Model	**standby / active**			
ED3002 ED3004	—	1,9 VA / 6,1 VA	7,5 VA / 8,1 VA	—
ED3007 ED3030 ED3100	1 W / 10 W	1,5 VA / 10,5 VA	1,5 VA / 11,5 VA	110 V DC 250 V AC 1 A
Protection class	IP 65			

1 at 1 bar(a) and 20 °C, operating pressure 7 bar, suction: compressor 25 °C at 60 % rel. humidity, compressed air outlet temperature at aftercooler 35 °C; refrigeration dryer dewpoint 3 °C

2 Main condensate already drained from aftercooler or refrigeration dryer; only for resdidual oil or low condensate volumes arising from aftercondensation

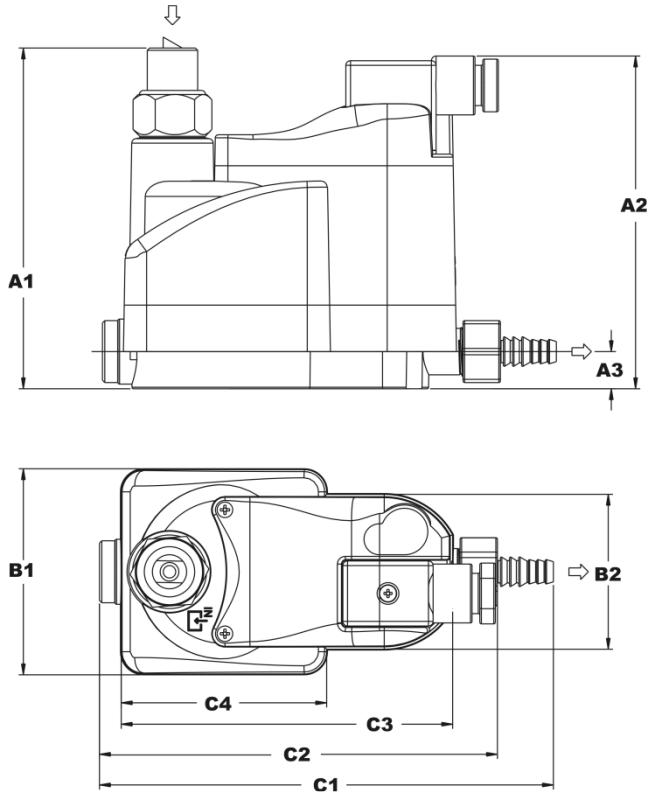
3 Magnetic valve connector type B industrial standard (11 mm) 2+PE

4 Magnetic valve connector type C industrial standard (9,4 mm) 3+PE

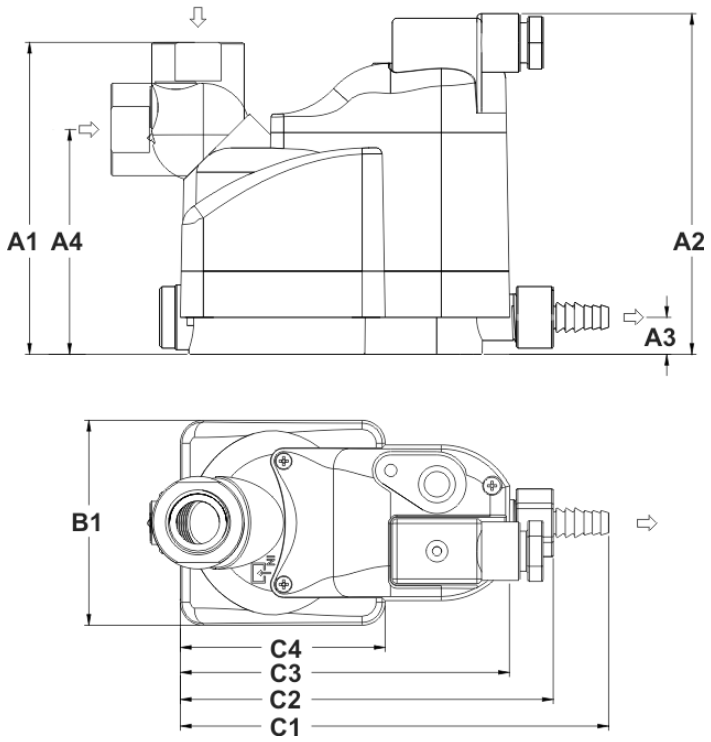
For dimensions and connecting diameters, see dimensional drawings.

Dimension Drawings

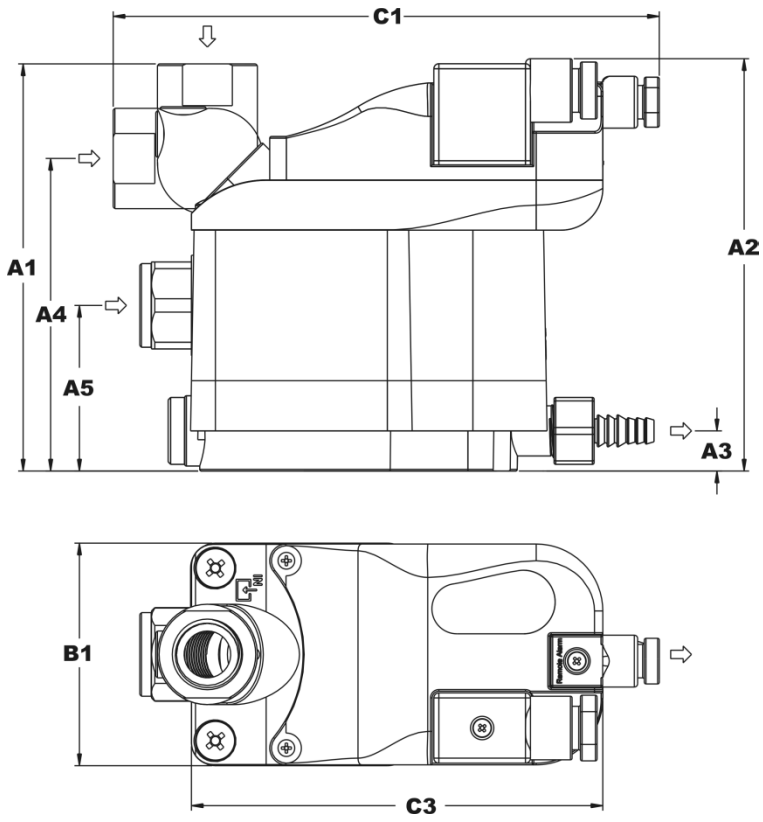
ED3002



ED3004



ED3007–3100



	Ecodrain				
	ED3002	**ED3004**	**ED3007**	**ED3030**	**ED3100**
Maße (mm) ***Dimensions (mm)***					
A1	110	101	122	137	197
A2	107	111	123	138	198
A3	12	12	12	12	12
A4	—	73	93	108	168
A5	—	—	49,5	49,5	49,5
B1	67	67	67	67	67
B2	50	—	—	—	—
C1	146	139	164	164	164
C2	128	121	—	—	—
C3	106	107	124	124	124
C4	44	67	—	—	—
Gewicht (kg) ***Weight (kg)***	0,5 0.5	0,6 0.6	1,0 1.0	1,1 1.1	1,5 1.5

Anschluss Kondensateinlass BSP/NPT			***BSP/NPT connections at condensate inlet***
oben ***top inlet***	G 3/8	G 1/2	
zus. Entlüftung ***vent***	im Anschluss integriert *integrated in connection*	G 1/8	
unten ***bottom vent***	—	—	G 1/2
Anschluss Kondensatauslass			***Connection at condensate outle***
	G 3/8 bzw. Schlauchtülle 8–10 mm		*G 3/8 or 8–10 mm hose tail*

Parker Hannifin Manufacturing Germany GmbH & Co. KG
Hiross Zander Division

Im Teelbruch 118
D-45219 Essen
Internet: www.parker.com/hzd
E-Mail: zander@parker.com

Telefon: 0049 (0)2054/934-0
Fax: 0049 (0)2054/934-164

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