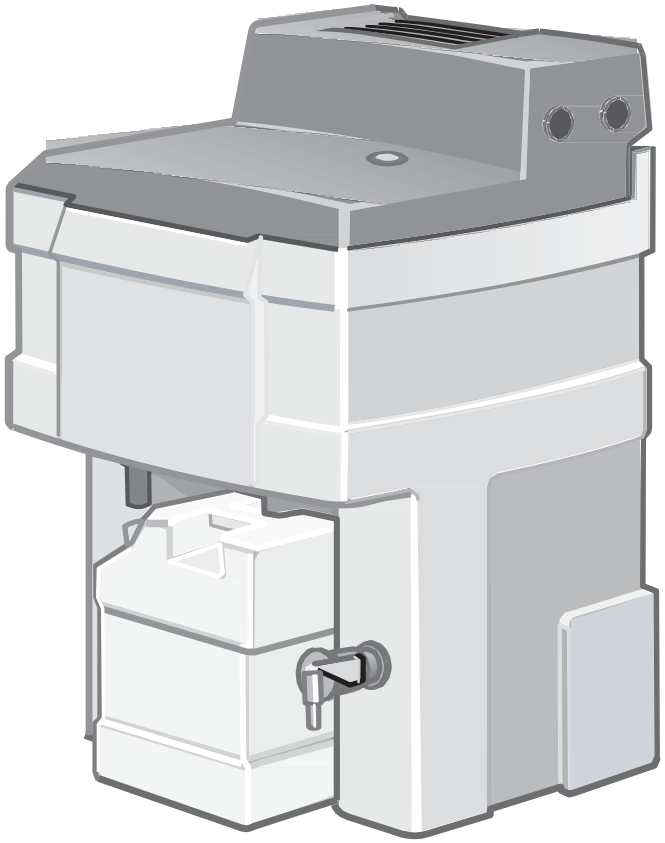
FST GmbH
Filtrations-Separations-Technik

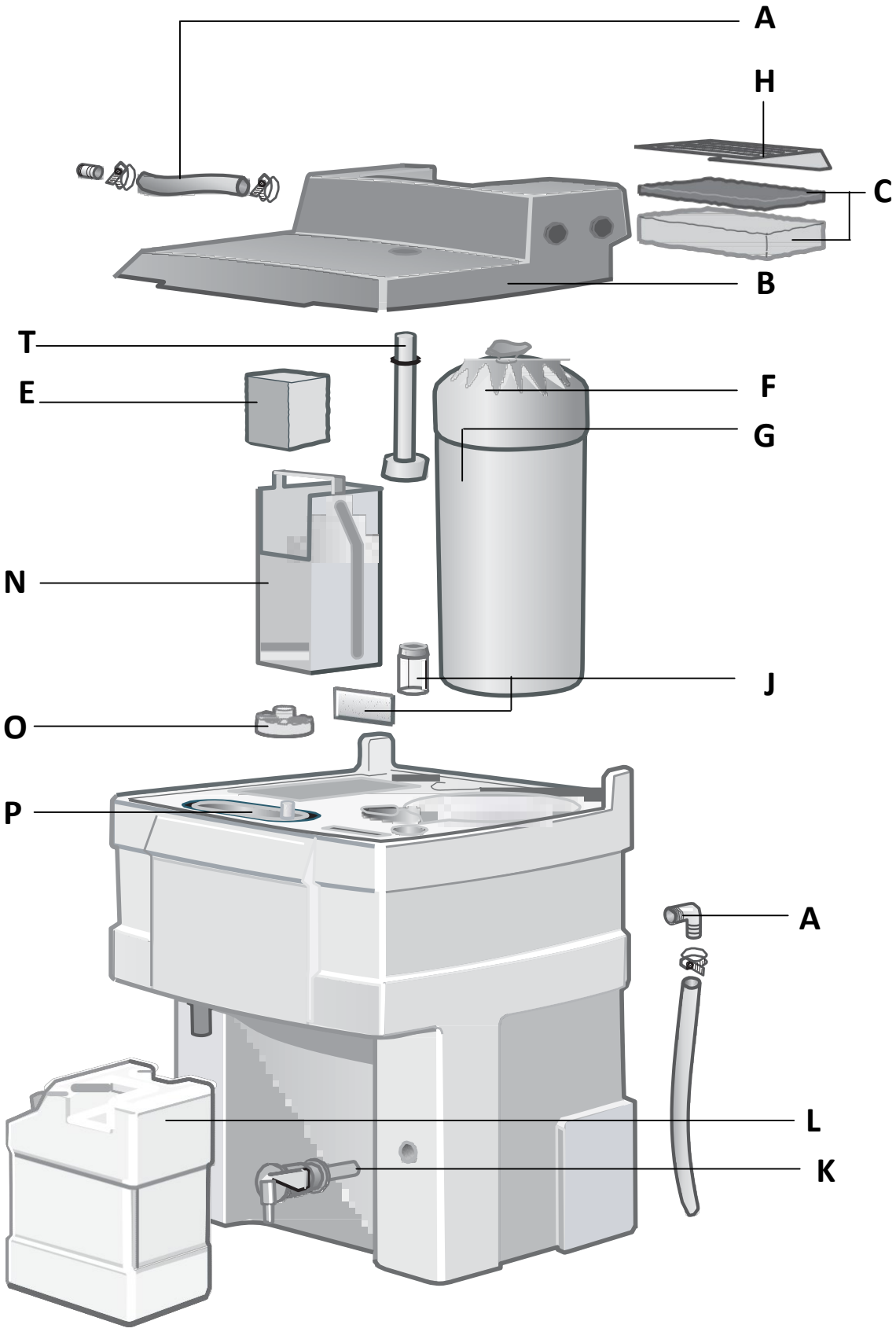


# Operating Manual
# Oil Water Separator
# CSD3 - CSD160

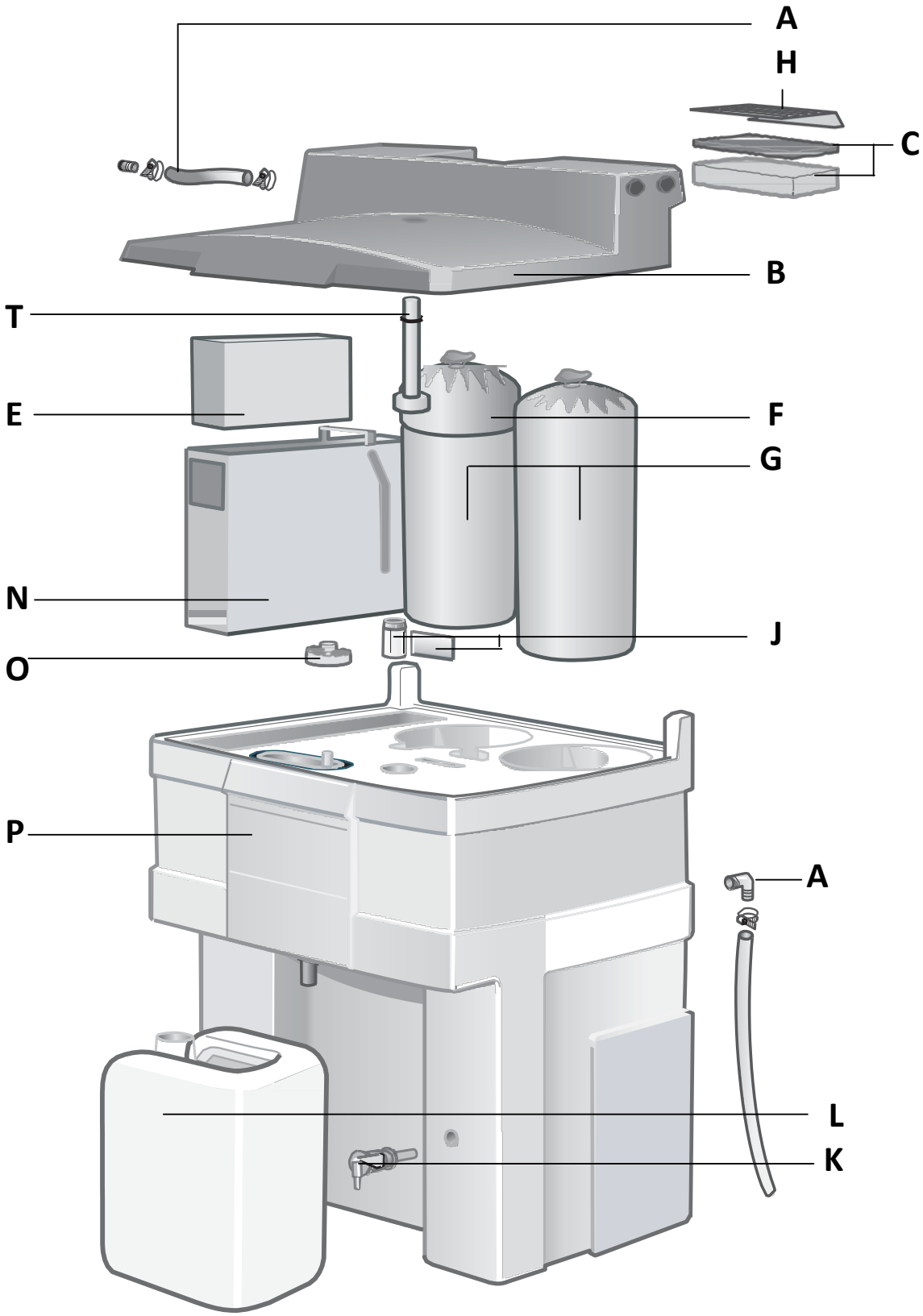
Version: 12/2013/DE

# Table of contents

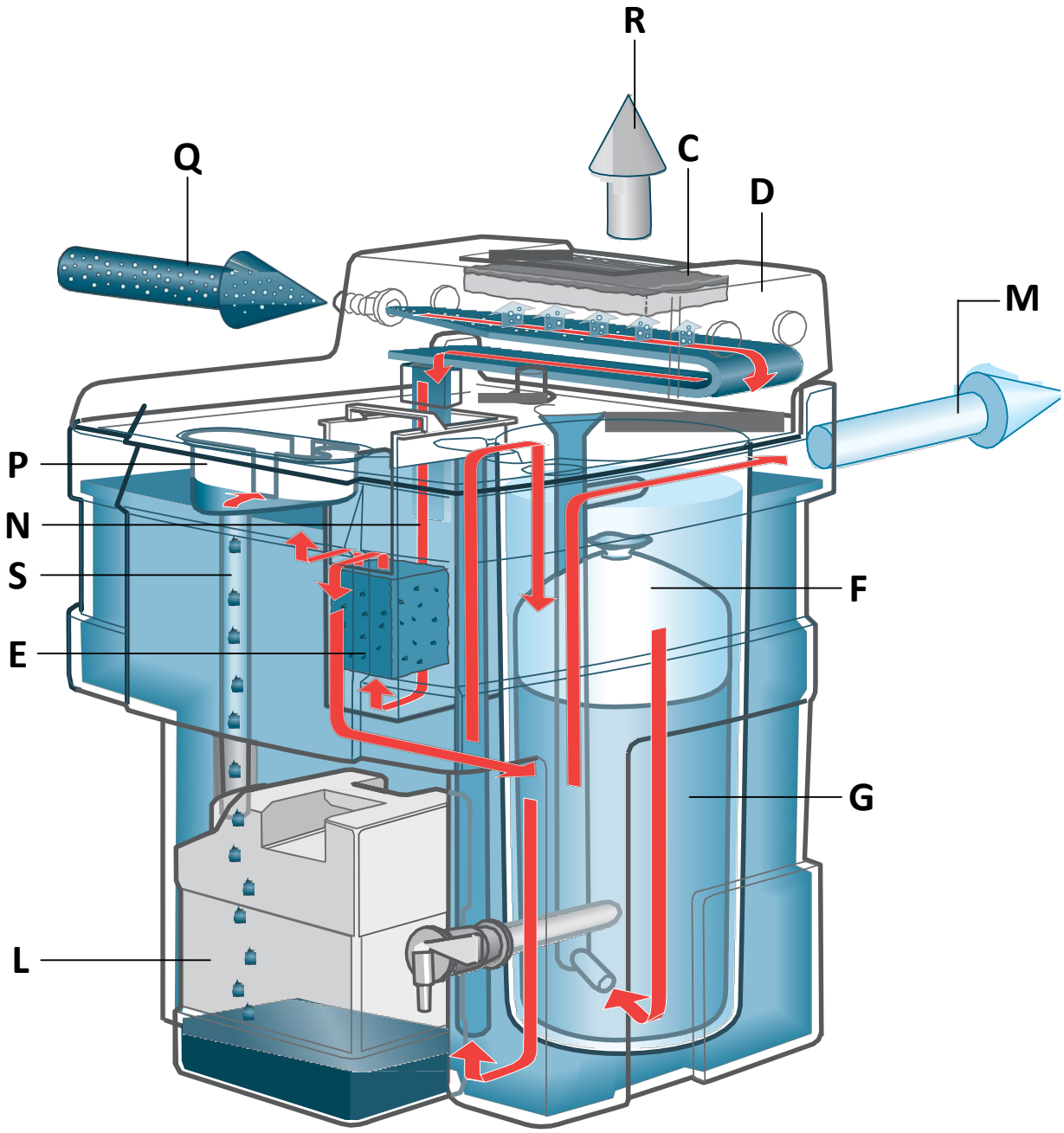
## Functional elements - CSD3 / CSD5 / CSD10

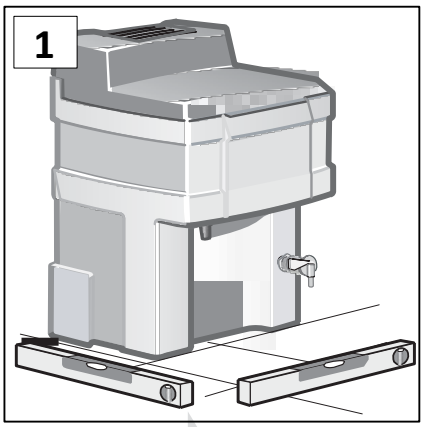


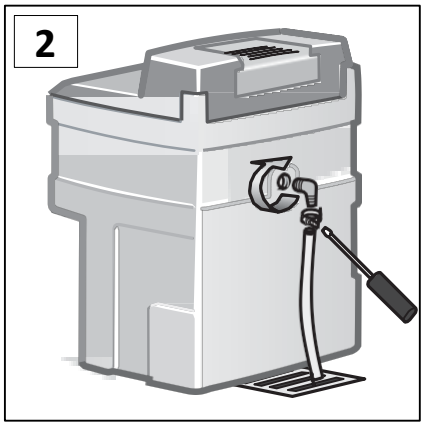
## Functional elements - CSD20 / CSD40

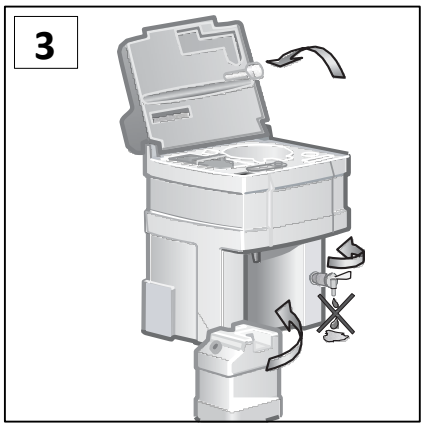


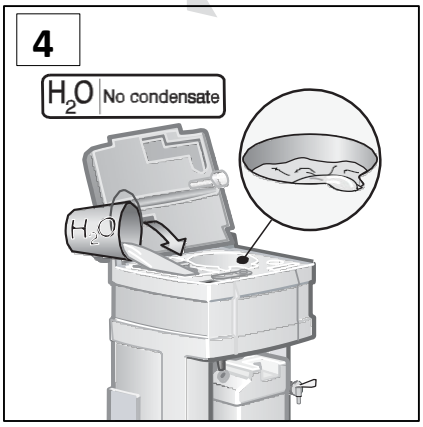
## Functional diagram CSD3 / CSD5 / CSD10

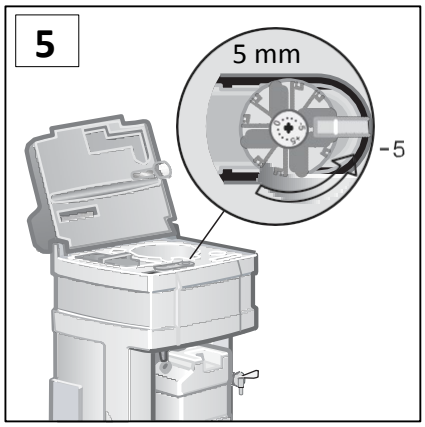


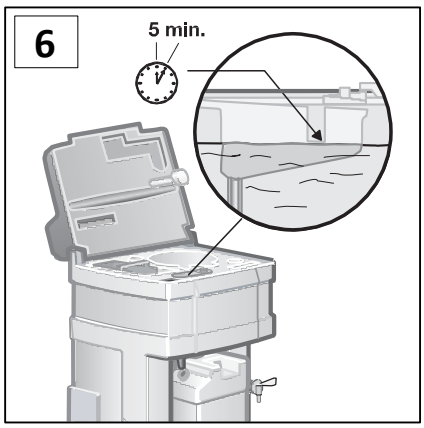

1

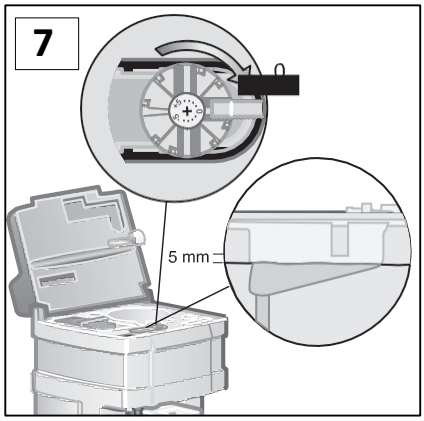

2

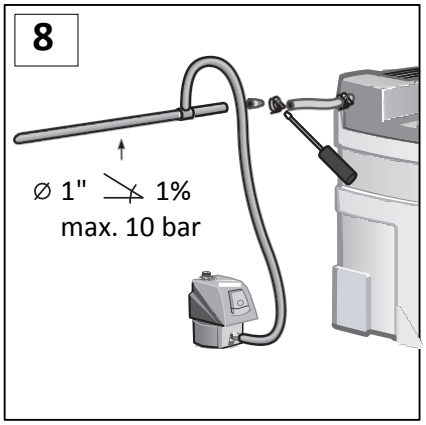

3

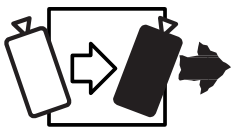

4
H2O No condensate
H2O

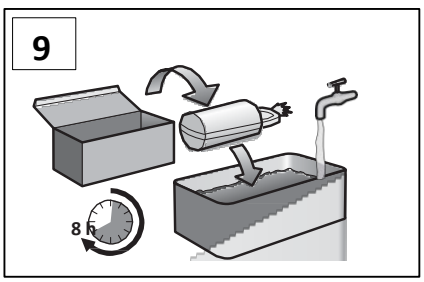

5
5 mm
5

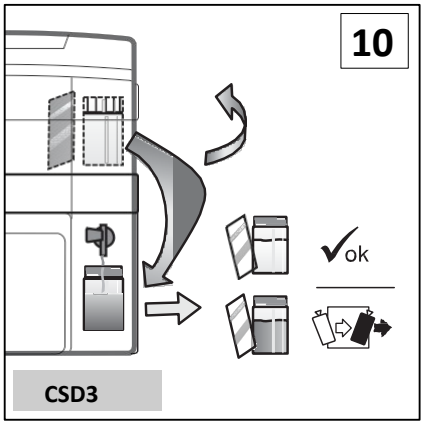

6
5 min.

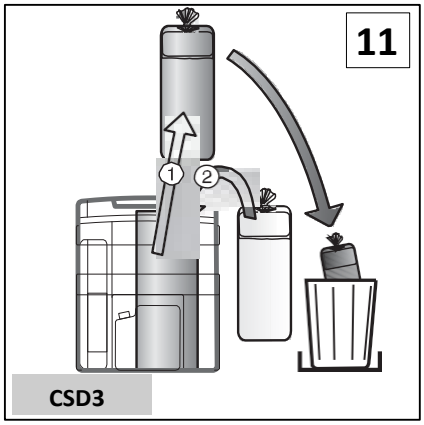

7
5 mm

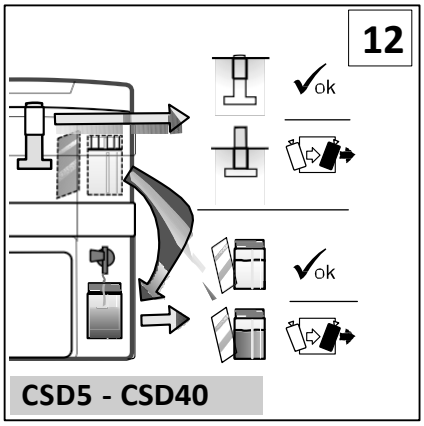

8
⌀ 1"
1%
max. 10 bar

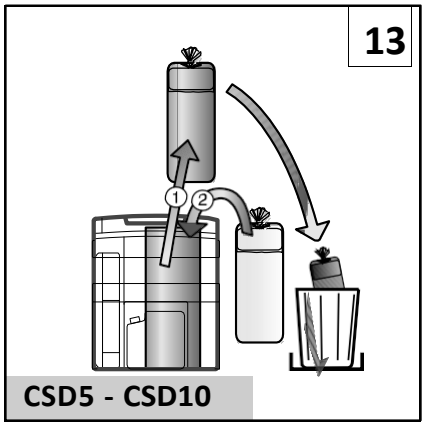


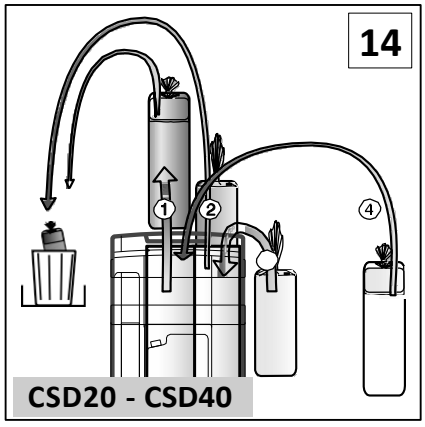

9
8 h


10
ok
CSD3

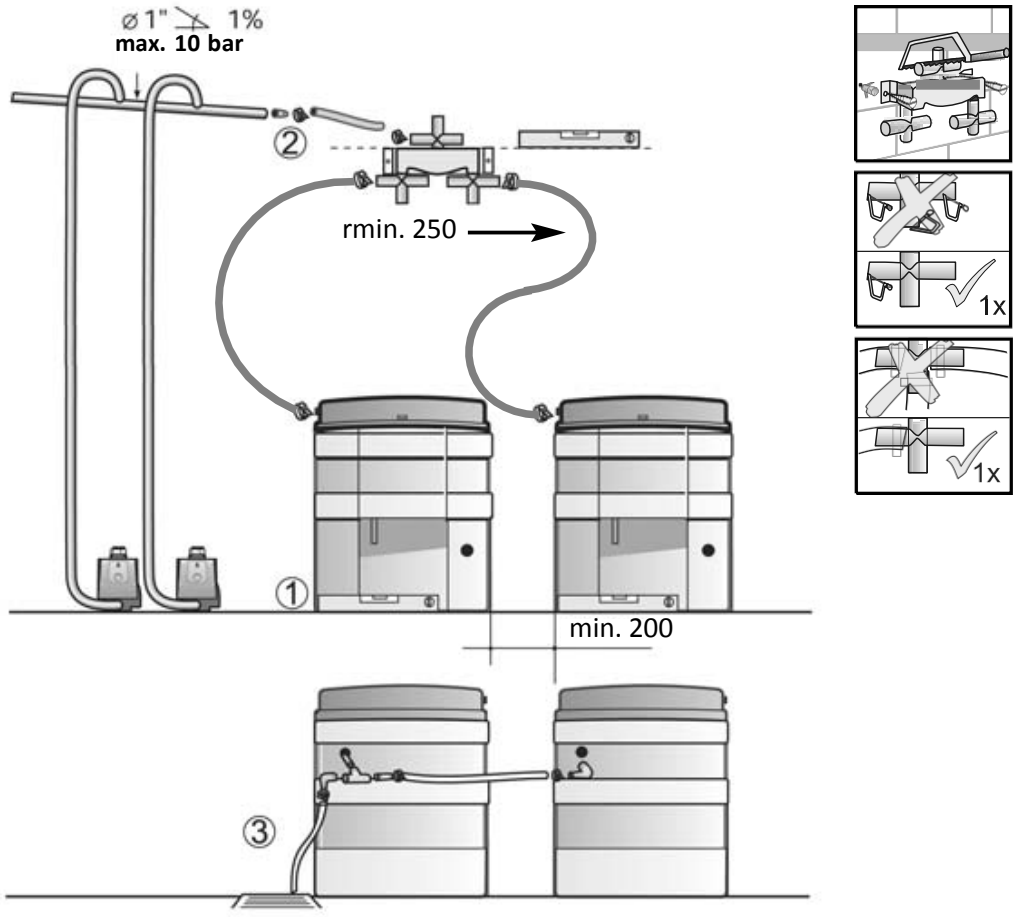

11
1
2
CSD3


12
ok
ok
CSD5 - CSD40

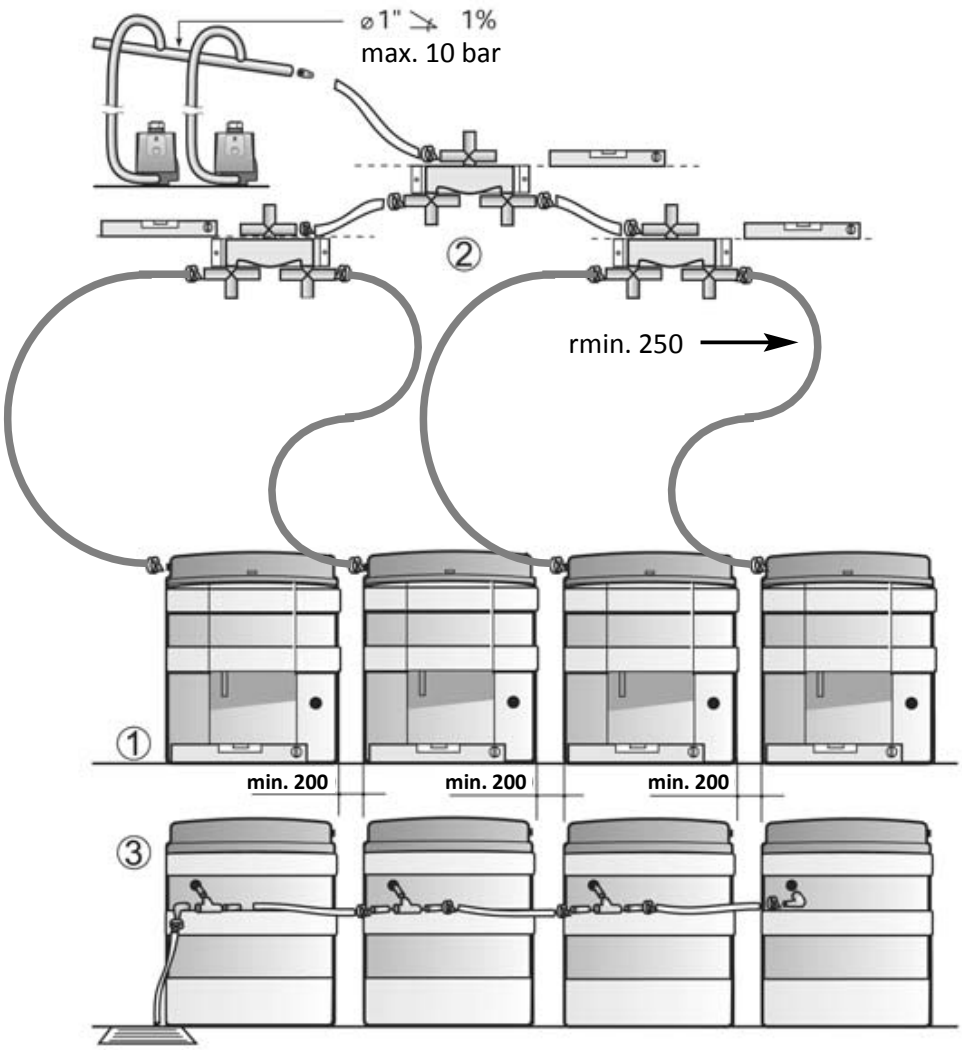

13
1
2
CSD5 - CSD10

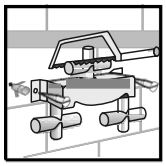

14
1
2
4
CSD20 - CSD40

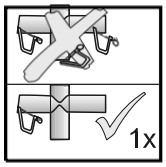
## 15 - CSD80

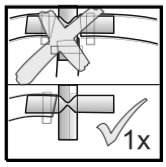

ø 1"
1%
max. 10 bar
2
rmin. 250
1
min. 200
3
1x
1x

**16 - CSD160**





# 1. Functional elements

**A** Installation set (optional)
**B** Cover
**C** Demister foam
**D** Pressure relief chamber
**E** Coalescence filter
**F** PP pre-scavenger set
**G** Scavenger replacement set[1]
Activated charcoal bag
**H** Demister screen[2]
**J** Test set
Reference glass
Sample bottle
**K** Sample tap 3/4“
**L** Oil canister set
**M** Water outlet
**N** Sedimentation insert[2]
**O** Control knob[2]
**P** Overflow bath[2]
**Q** Condensate input
**R** Air outlet
**S** Oil overflow
**T** Float

1: double with type CSD20/CSD40 2: not on type CSD3

# 2. For your safety


You as operator / user of the unit should make yourself familiar with the function, installation and start-up of the unit through these operating instructions.

It is essential that you follow these safety notes and this information in order to ensure trouble- free operation of the unit.

All the safety information is always intended to ensure your personal safety.

- The 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.
- Operate this unit only with one or several automatic condensate drain valves installed upstream in the pipeline system.
- Wear protective glasses when working with media under pressure.
- Danger of explosion! It is forbidden to smoke or use naked lights when working with inflammable/explosive media.
- Depressurize the system before carrying out any work on the piping.
- Clean the piping before carrying out the installation work.
- Make a visual check before the initial start- up. There must be no external damage visible.
- Use the unit for the appropriate purpose!

# 3. Appropriate use

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

- Separation of oil and water from a compressed air condensate.
- Only use original filter sets as replacement filters. The approved filters are identified by their test seal and approval-no.

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.

# 4. Function

(see functional diagram)
The condensate is fed into the pressure relief chamber (D). Condensate and compressed air separate from each other. The relieved compressed air escapes (R) through a noise insulated demister foam with activated char-coal inlay (C), free of oil and dry into the environment. The relieved condensate is fed into the sedimentation insert (N), solid particles deposit.
The condensate then flows through a coalescence filter (E). With its additional oil separation this filter relieves the downstream scavengers. The free floating oil is drawn through a height-adjustable overflow bath (P) into a canister (L). The pre-separated condensate flows via a pre-scavenging process (F). This prolongs the lifetime of the following activated charcoal scavengers (G). After this process and with correct operation of the system, the water is so clean, that it can be directly discharged into the sewage system (M).

# 5. Notes on starting up

(see diagrams 1 - 8, 15 - 16)

- Install the unit horizontally on a dry, level and firm base (1).
- Oil and oil containing wastes can cause damage to the environment. As a measure to avoid damage to the environment you should place the unit into a collecting basin.
- Check all screw connection for tight fit (2).
- Fill the tank only with clear, clean water (4).
- First set the adjustment wheel (5) to “-5”, after filling has been effected set to “0” (7).
- Do not fill in condensation water!
- If the unit is subjected to temperatures below 0°C, a thermostat controlled heater (optional) must be retrofitted.
- Connect the unit to the pipeline system (8).
- The pipe cross section should be 1”, the descent should be 1%. The max. pressure in the pipeline at the condensate input must not exceed 10 bar.
- The connection of equipment series CSD80 or CSD160 resp. is additionally shown in illustration (15) or (16) respectively.

**Note!**
Information on commissioning of other components can be found in the corresponding operating instructions.

# 6. Maintenance

(see diagrams 9 - 14)

- Pre-scavenger bag (F), scavengers (G), sedimentation insert (N) as well as coalescence filter (E) must be replaced or cleaned at regular intervals.
- A new scavenger assembly must be soaked in clear, clean water 8 hours prior to commissioning (9).

## 6.1 Maintenance every 14 days

Check the condition of the unit every 14 days.

- For this purpose take a waste water sample via the sample tap (K).
- Perform a turbidity comparison (10/12).
- In case of a turbid sample you must change the scavenger set.
- Scavenger change
  Type CSD3, Fig. (11)
  Type CSD5/CSD10, Fig. (13)
  Type CSD20/CSD40, Fig. (14)
- Check the filling level of the oil canister at regular intervals. The oil canister can only be removed after shutting off the oil supply. To do this turn the height-adjustable overflow up to “+5”. After replacing the canister you must readjust the overflow. Information concerning the correct disposal can be found in the chapter "Protection of the Environment”.

## 6.2 Annual maintenance

Clean sedimentation insert (N) and coalescence filter (E) and the white container (inner) every year.

**Note!**

- Please observe the legal regulations in your country pertaining to the use and handling of filters, particularly with regard to keeping a spare filter set.
- Only use original filter sets as replacement filters. The approved filters are identified by their test seal and approval-no.
- In the case of substantial deviations from the generally approved building authorities, e.g. with the use of non-original filters, the usability of the building product is not proven by the permission.
- For these cases an agreement by the responsible authority on site is necessary in the individual case.
- Shut the condensate supply off.
- Take the sedimentation insert (N) carefully out.
- Remove the coalescence filter (E) and press the foam body out and clean with clear warm water.
- Clean insert (N). Press the coalescence filter (E) back in. Reinsert the insert with the filter.

# 7. Technical data

| | Nominal Volume flow Turbine-/VDL Oil | Nominal Volume flow VCL-/Synthetic Oil |
|---|---|---|
| | V [m³/h]* | V [m³/h]* |
| **CSD 3** | 150 | 150 |
| **CSD 5** | 300 | 300 |
| **CSD 10** | 600 | 450 |
| **CSD 20** | 1.200 | 900 |
| **CSD 40** | 2.400 | 1.800 |
| **CSD 80** | 4.800 | 3.600 |
| **CSD 160** | 9.600 | 7.200 |

* = refers to 1 bar(a) and 20°C, at operating conditions of
- 7 bar operating pressure
- suction air compressor 25°C at 60% relative humidity
- 35°C compressed air temperature
- for non-emulsifying oils
- operation of screw compressors
- at deviating operating conditions for suction air conditions, operating pressure or lower compressed air temperatures, e.g. when operating a refrigerant dryer, conversion factors must be applied.

| | |
|---|---|
| Classification acc. to PED 97/23/EC | --- |
| Min. / Max. operating pressure (PS) | 10 bar (short-term at condensate inlet) |
| Min. / Max. allowable temperature (TS) | Standard: +1 to +60°C<br>With heating: -25°C to 60°C |

# 8. Fault

| *Fault* | *Cause* | *Remedy* |
|---|---|---|
| Water in oil canister. | Excessive fluctuation in condensate supply. | Raise oil overflow. |
| Float comes up. | Clogging of scavengers by emulsion. | Check the adsorber and replace it, if necessary. |
| Clotting of oil at the surface. | Bacterial invasion. | Clean, disinfect the container.<br>Replace all PUR foams and scavengers. |

# 9. Protection of the environment

Oil and oil containing wastes can cause environmental damage and must therefore disposed of properly by specialised companies. Addresses can be found in the branch directory or you can enquire at your local authorities about proper waste disposal procedures.

**Waste codes:**

| | |
|---|---|
| Old oil | 54102 |
| Oil containing activated charcoal | 31435 |
| Oil sediment | 54704 |

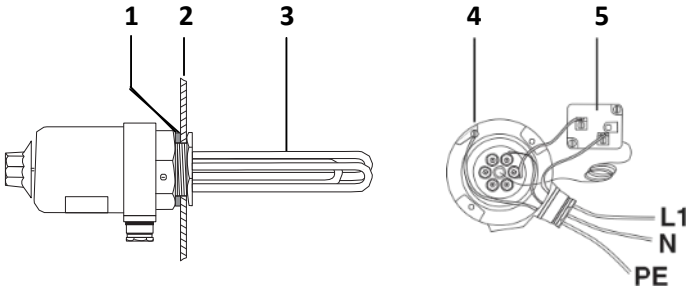
- Packaging material as well as equipment and accessories are made of recyclable materials.
- Separate and environmental disposal of material rests promotes recycling of valuable materials.

Always state the type designation of your unit when ordering accessories/spare parts (see type plate).

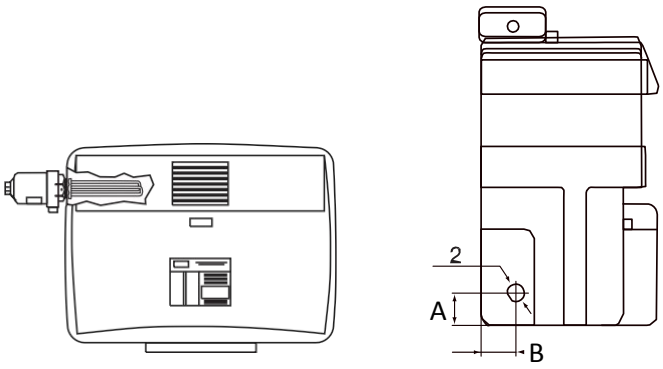
# 10. Installation of heater (optional)

The heater is available as an accessory and must be installed in compliance with the installation information shown below.

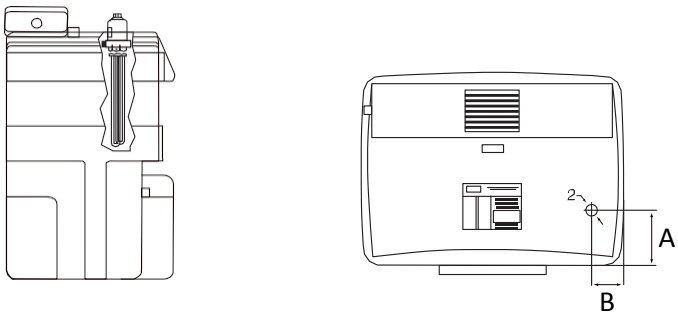
**1** Gasket
**2** Container wall
**3** Heater element
**4** Earth connection
**5** Thermostat




| Type | mm | |
|---|---|---|
| | A | B |
| CSD3 | 90 | 155 |
| CSD5, CSD10 | 155 | 100 |



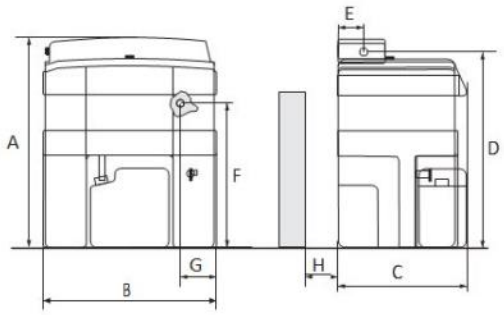

| Type | mm | |
|---|---|---|
| | A | B |
| CSD20 | 160 | 95 |
| CSD40 | 210 | 130 |



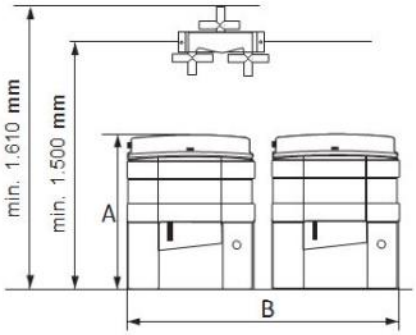
# 11. Dimensions

| | Dimensions | | | | | | | | Volumes | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Type** | **A** | **B** | **C** | **D** | **E** | **F** | **G** | **H** | **Vessel** | **Activated carbon** | **Pre.adsorber** | **Oil can** | **Freight weight** |
| | **mm** | **mm** | **mm** | **mm** | **mm** | **mm** | **mm** | **mm** | **Litre** | **Litre** | **Litre** | **Litre** | **kg** |
| CSD3 | 555 | 345 | 320 | 505 | 100 | 380 | 145 | 100 | 25 | 3,1 | 0,9 | 2,5 | 8,5 |
| CSD5 | 655 | 445 | 430 | 610 | 60/120 | 400 | 250 | 170 | 50 | 8 | 3,2 | 5 | 19,5 |
| CSD10 | 735 | 495 | 460 | 670 | 60/120 | 465 | 275 | 170 | 75 | 12 | 3,8 | 10 | 23,5 |
| CSD20 | 840 | 680 | 510 | 790 | 60/120 | 555 | 145 | 170 | 150 | 2x11 | 4,9 | 20 | 35,0 |
| CSD40 | 985 | 790 | 660 | 960 | 70/130 | 690 | 167 | 250 | 300 | 2x15 | 5,7 | 20 | 67,0 |
| CSD80 | 985 | 1780 | 660 | 960 | 70/130 | 690 | 167 | 250 | 600 | 4x15 | 2x5,7 | 2x20,0 | 136,0 |
| CSD160 | 985 | 3760 | 660 | 960 | 70/130 | 690 | 167 | 250 | 1200 | 8x15 | 4x5,7 | 4x20,0 | 272,0 |

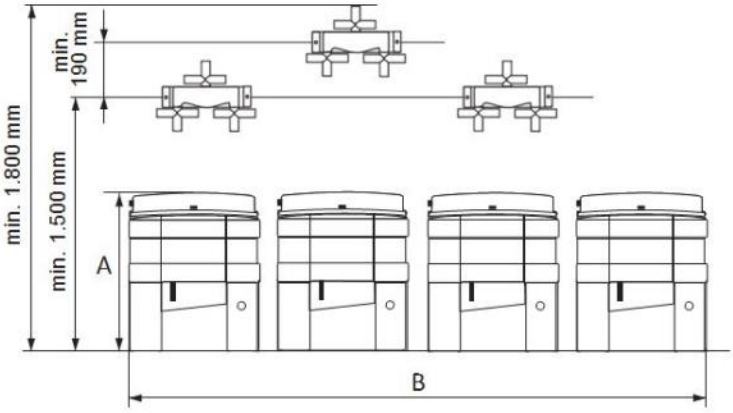
**CSD3 / CSD5-40**




**CSD80**




**CSD160**



# 12. Maintenance Control

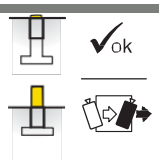
**Interval: 14 days**

**Control:**

- Float submerged, sample clear = oK
- Float on top, sample clear = change pre-scavenger
- Float on top, sample turbid = change scavenger
- Sample turbid = change scavenger

Company

Year

| Date |   Float |   Sample | Signature |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**Notes:**