CKD

SM－413380－A

INSTRUCTION MANUAL

SUPER DRAIN

DB3003-15-AC200V

- Please read this instruction manual carefully before using this product, particularly the section describing safety.
- Retain this instruction manual with the product for further consultation whenever necessary.

MAY-12
ＣＫＤ Corporation

WARRANTY

1. Warranty period

Warranty period of this product is one year after purchase.

2. Scope of warranty

If any malfunction or damage occurs on the CKD's own responsibility within above warranty period, we will repair the product immediately free of charge.

However, the following are excluded from warranty.

①When using the product under the conditions or environment deviating from this specification.

②When the malfunction or damage results from mishandling or improper control.

③When the malfunction is caused by factors other than CKD product.

④When the product is used improperly.

⑤ When the malfunction or damage results from the modification of functions, structures or specifications which CKD is not involved in, or repairs which is not designated by CKD after delivery.

⑥When the damage can be avoided if the machine and apparatus of your company which CKD product is installed in has functions and structures which commonly equipped with in the industry.

⑦When the malfunction or damage results from unforeseeable causes with the technology applied at the time of delivery.

⑧When the malfunction or damage results from fire, earthquake, flood, thunder, other natural disaster, pollution, salt hazard, gas hazard, abnormal voltage, abnormal water pressure or quality, congelation, or other external causes.

⑨In the case of repair parts which are used excessively.(filter element, dessicant etc.)

The warranty refers to only delivered products. We do not warrant for any secondary damage or loss caused by the faults of delivered products.

This product is premised on transaction and use in Japan.

As for the warranty of the product which is exported outside Japan, the following are applied.

①CKD will repair the products which returned to our factory freight prepaid. (We do not compensate transportation cost)

②After repairing the product we will deliver it to the designated domestic place in Japan with domestic packaging specifications.

CKD Corporation

2-250 Ouji Komaki,Aichi 485-8551,Japan

PHONE +81-(0)568-77-1111

<SM-413380-A>

Safety instructions

This manual is intended for personnel who are familiar with basic knowledge about electricity, compressed air, fluid, piping, and refrigerant. CKD shall not be held responsible for troubles or accidents that result from installation, operation or repairs made by personnel who are not qualified or trained for the above subjects.
Improper handling may cause the machine not to be operated at its maximum performance level or lead to accidents or personal injury.
Always confirm the machine specification and operate the machine in the correct manner designated by CKD.
This machine is equipped with various safety and other protective devices.
However, improper handling of the machine may cause personal injury and/or damage to the machine. Read this operation manual carefully and fully comprehend its contents before operation.
Read the contents of the following warning labels, as well as cautions stated in the operation manual, and follow the instructions contented therein.
Keep this operation manual near the machine where all concerned personnel have easy access to it.

FORWARD

Thank you very much for purchasing our SUPER DRAIN .
This manual explains basic points of installation, operation, etc. to have our SUPER DRAIN perform at their best. Be sure to read this manual before using your SUPER DRAIN.
Keep this booklet handy for quick reference.
Please be advised in advance that there may be some discrepancies between products and contents of this book due to improvement of specification after printing.

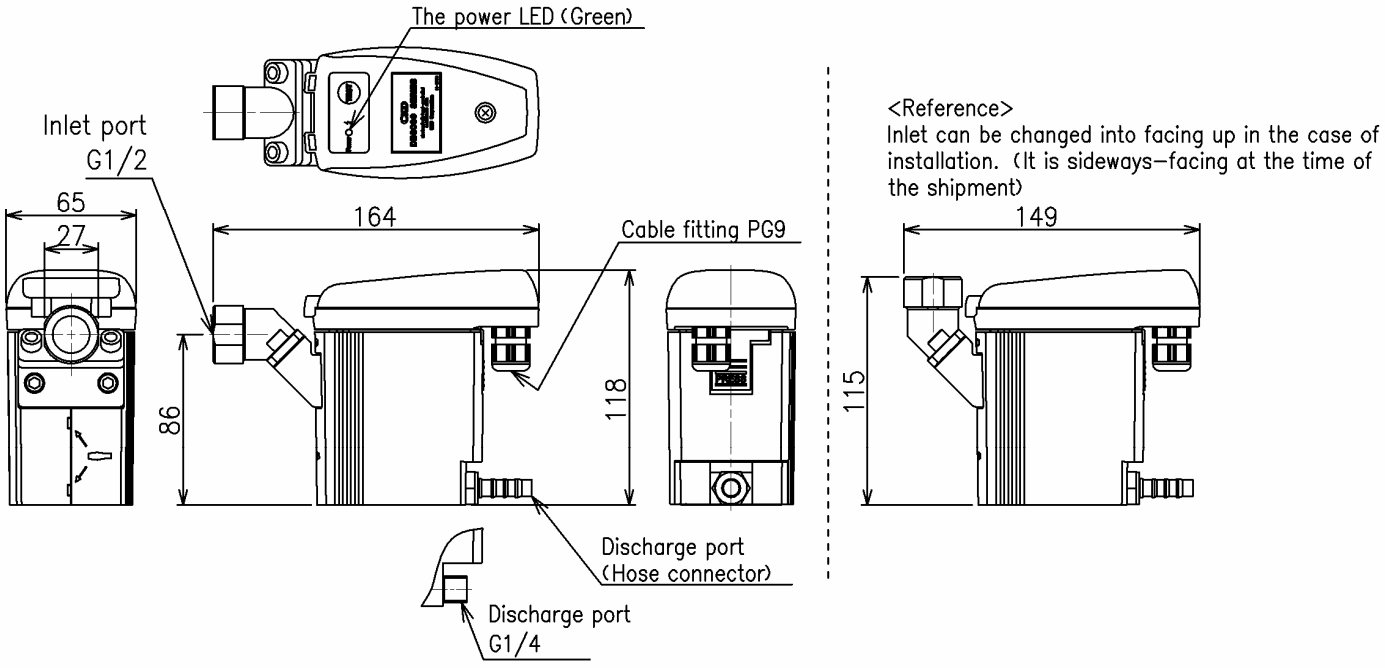
Table of Contents

1. PRODUCT

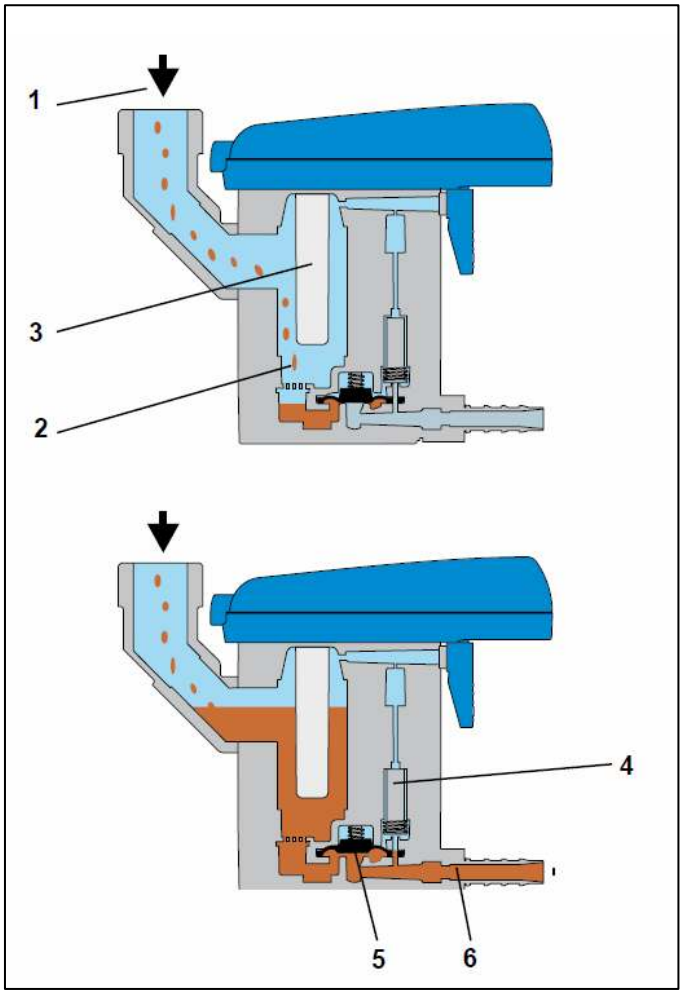
1-1. Specifications

Model			DB3003-15-AC200V
Port size	Drain inlet		G1/2
	Drain outlet		G1/4 or φ8～10mmHosejoint
Peak compressor performance		m^3/min(ANR)	2.5
Peak refrigeration dryer performance		m^3/min(ANR)	5
Peak filter performance (downstream of dryer)		m^3/min(ANR)	25
Working condition	Condensate		Oil-contaminated + Oil-free
	Ambient temperature	℃	1～60
	Working pressure range	MPa	0.08～1.6
Electrical specifications	Power supply		Single-phase AC200V±10% 50/60Hz
	Max. power consumption	VA	0.5
	Recommended cable jacket diamet	mm	φ5.8～8.5
	Recomm. cable cross-section	mm^2	0.75～1.5
	Fuse protection		0.5A time lag
	Recommended stripping of cable jacket	mm	PE:approx.60
			L/N:approx.50
	Recommended length of wire end ferrules	mm	approx.6
IP protection			IP54
Weight (empty)		kg	0.8

1-2. External Dimensions

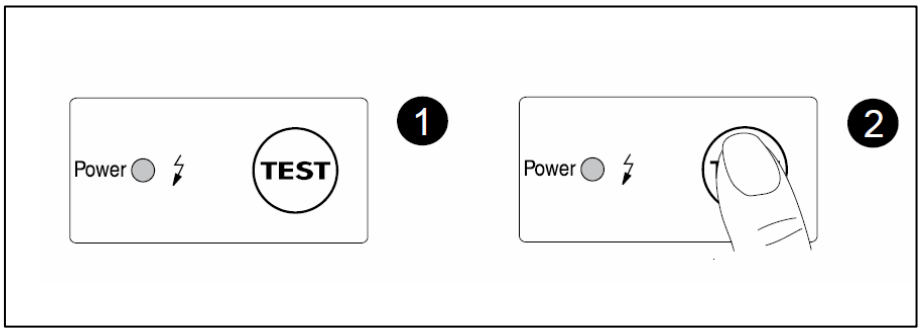


1-3. Function



The condensate flows through the feed line (1) into the SUPER DRAIN unit and accumulates in the container (2).
A capacitive sensor (3) continuously registers the liquid level and passes a signal to the electronic control as soon as the container is filled.
The pilot valve (4) is then activated and the diaphragm (5) opens the outlet line (6) for discharging the condensate.
When the SUPER DRAIN unit has been emptied, the outlet line is closed again quickly and tightly without wasting compressed air.

(Although inlet of a figure is upward, it is sideways at the time of factory shipments.)



The power LED is lit up green when operating voltage is being applied.

① Ready for operation

Power on

If the condensate discharge is not functioning properly, the valve will keep opening (about every 2 seconds) so as to clear the fault automatically, if possible.

② Test of valve function and manual drainage

Press button for approx. 2 seconds.
In response to longer pressing, the valve will keep opening.
Do not use this function for continuous draining!

2． CAUTIONS

Danger !
Compressed air !
In the case of contact with quickly or suddenly released compressed air or in the case of bursting plant components there is a risk of serious injury or death.

(1)Do not exceed max. operating pressure (see type plate) !
NOTE: Maintenance work must only be carried out when the device is not under pressure !

(2)Only use pressureproof installation material !
The feed line (½“) must be firmly fixed. Discharge line: short pressure hose to pressure-proof pipe. Please ensure that condensate cannot squirt onto persons or objects.

Danger !
Mains voltage!
In the case of contact with uninsulated parts carrying mains voltage there is a risk of electric shock including injury or death!

Measures:
The electrical installation must be carried out in compliance with the valid regulations !
IP protection does no longer apply to the removed control unit !
NOTE: Maintenance work is only allowed when the device is in a de-energized condition! Electrical work must always be performed by a qualified electrician.

Safety rules
(1) Installation and operation must also be in compliance with the valid national regulations and safety rules.
(2) Do not use the SUPER DRAIN device in hazardous areas (with potentially explosive atmospheres).
(3) Avoid using this product where vibration and impact are present.
(4) If conical connectors are used on the inlet side, avoid excessive tightening of the connectors(MAX 50Nm).
(5) For locking or holding in position **during installation, use spanner area** at inflow point (spanner size 27) !
(6) Do not operate the device when there is a danger of frost.
(7) The SUPER DRAIN will only function when voltage is being applied to the device.
(8) Do not use the test button for continuous draining.
(9) Only employ original spare parts, otherwise the guarantee will no longer be valid.
(10) The service unit must not be taken apart !
(11) Do not step onto this product.
(12) Do not use the dryer for pneumatic caisson shield or respiratory medical equipment.
*It could cause an accident includes injury.
(13) Do not use the dryer for transportation devices such as automobile, ship etc.
*Vibration could be a cause of break down of the internal components.

3． INSTALLATIONS

3-1. Piping method

Danger !
Compressed air !

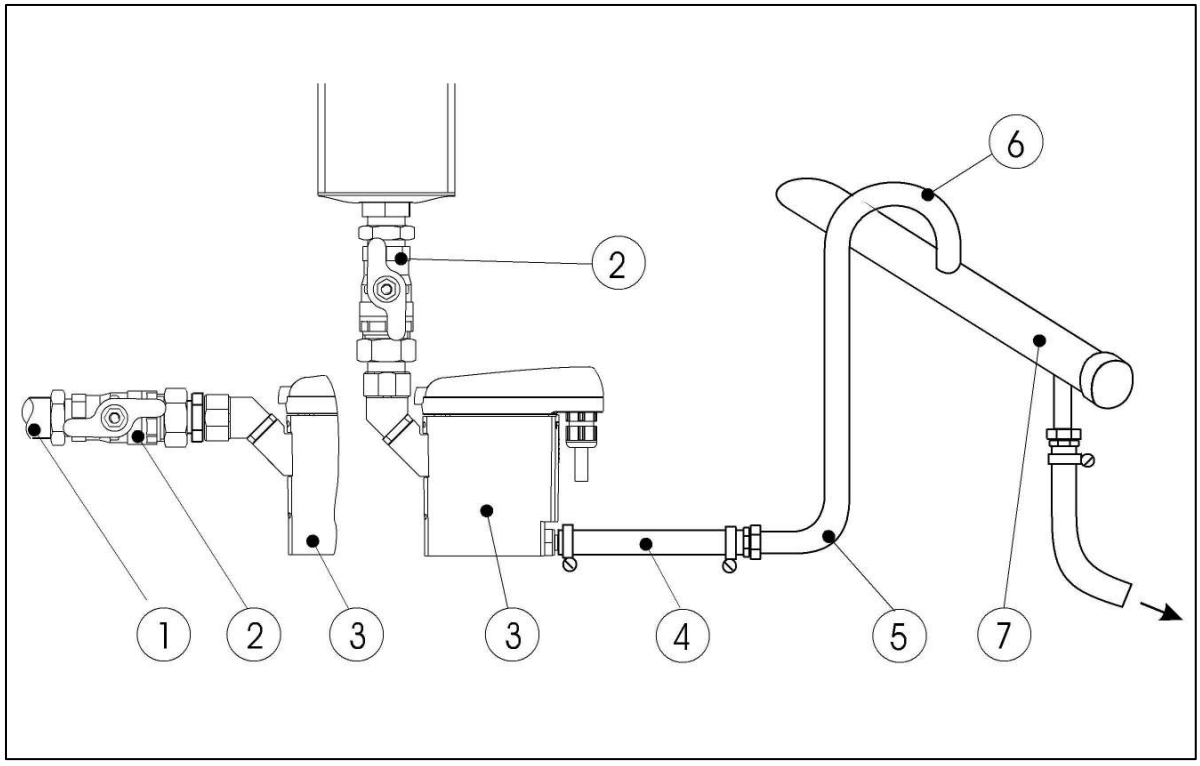
In the case of contact with quickly or suddenly released compressed air or in the case of bursting plant components there is a risk of serious injury or death.

(1) Do not exceed the max. operating pressure (see type plate)!

CAUTION ! Maintenance work must only be carried out when the device is not under pressure !

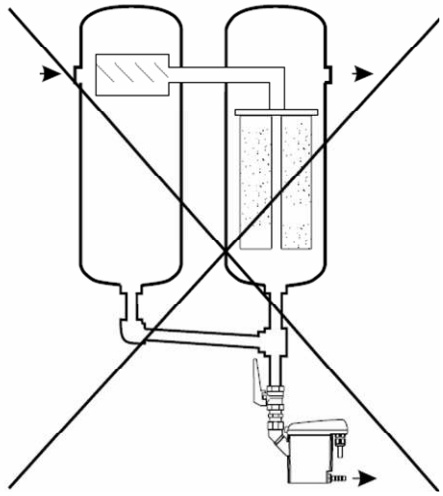
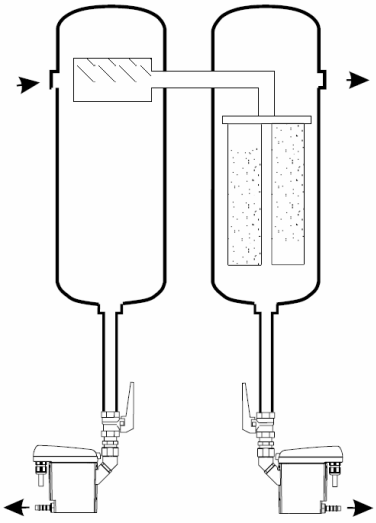
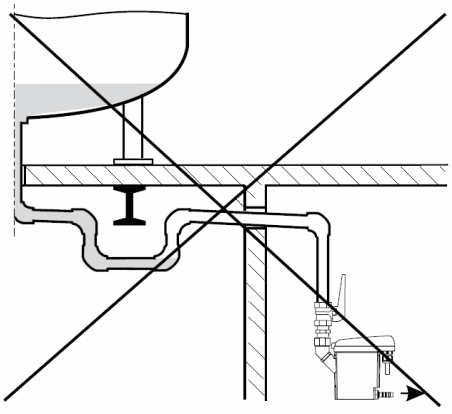
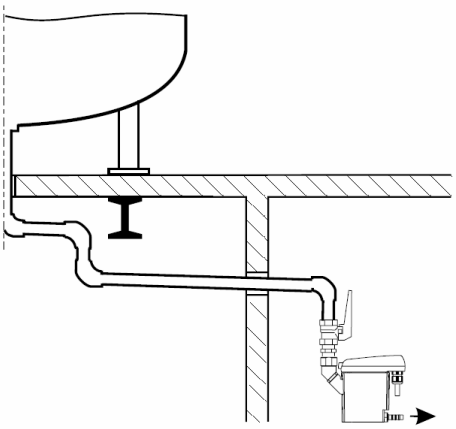
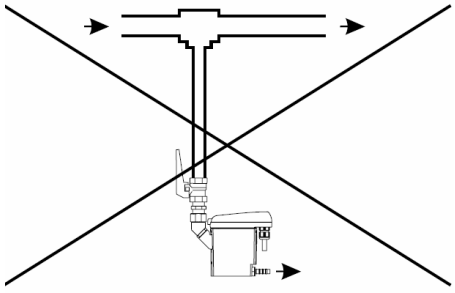
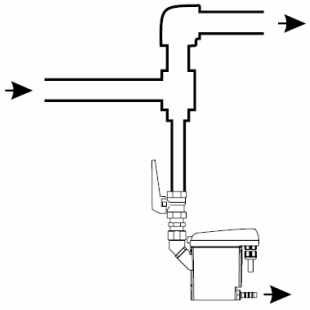
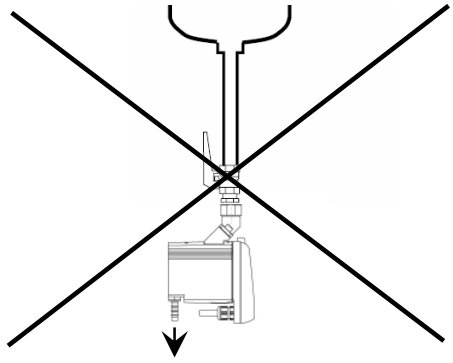
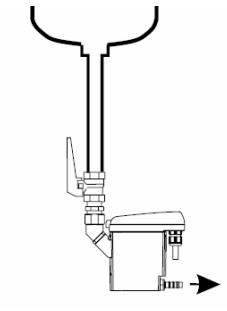
(2) Only use pressure-proof installation materials!

Feed line (G½) must be firmly fixed. Outlet line: short pressure hose to pressure-proof pipe.
Ensure that condensate cannot squirt onto persons or objects.



・Feed pipe (**1**) and ball valves (**2**) at least 1/2" !
・No filters in feed line
・Slope in feed line > 1% !
・Only use full bore ball valves (**2**) or gate valve (2) !
・Short pressure hose (**4**) ! Please fix the hose.
・For each metre of rising slope (**5**) in the outlet line, the required minimum pressure will increase by 0.01 MPa.
・The rise of the outlet line must not exceed 5 metres !
・Lay collecting line (min. 1/2") with 1% of slope.
・Lead discharge pipe (**6**) from the top into collecting line (**7**).

3-2. Installation method

wrong	correct	Installations
		**Pressure differences !** Each condensate source must be drained separately!
		**Continuous slope !** Water pockets must also be avoided when laying a feed pipe.
		**Deflector area !** If drainage is to take place directly from a line, it is advisable to arrange the piping so that the air flow is diverted.
		**Installation posture** Attach it with sideways-facing posture with a top cover as the top.

3-3. Wiring method

Danger !
Mains voltage!

In the case of contact with uninsulated parts carrying mains voltage there is a risk of electric shock including injury or death!

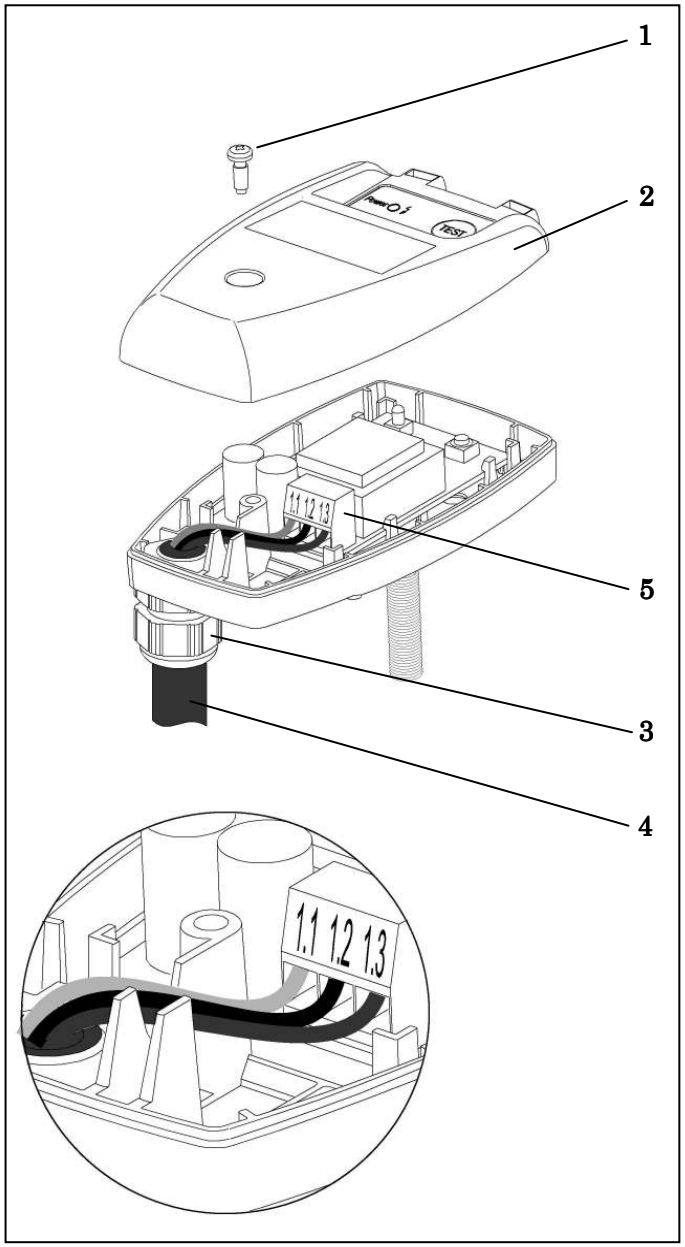
Measures:

Observe all the valid rules and regulations for electrical installation !

The removed control unit does no longer have IP protection and must be protected from damp!

CAUTION! Maintenance work must only be carried out when the device is in a de-energized state! Any work involving electrical parts must only be performed by suitably qualified and authorized personnel.

Note before wiring:



- **Check type plate for permissible mains voltage and ensure conformity!**
- **The installation must be carried out according to the valid regulations.**
- **Assign terminals as indicated!**
- **Electrical power must be disconnected prior to installation!**
- Remove screw (**1**) and lift off top cover (**2**)
- Unscrew cable fitting (**3**) (where applicable),remove blanking plug and insert cable (**4**) for power supply (**1**).
- Connect cable (**4**) to terminals (**5**).

  Terminal assignment VAC

  KL1:1 PE-mains connection
  KL1:2 L- or N-mains connection
  KL1:3 N- or L-mains connection
- Lay cable (**4**) as depicted.
- Replace top cover (**2**) and tighten screw(**1**).
- Fasten the threaded cable connection (3) loosely.

4. MAINTENANCE

4-1. Exchange of the service unit

Danger !
Compressed air !

In the case of contact with quickly or suddenly released compressed air or in the case of bursting plant components there is a risk of serious injury or death.

Measures:

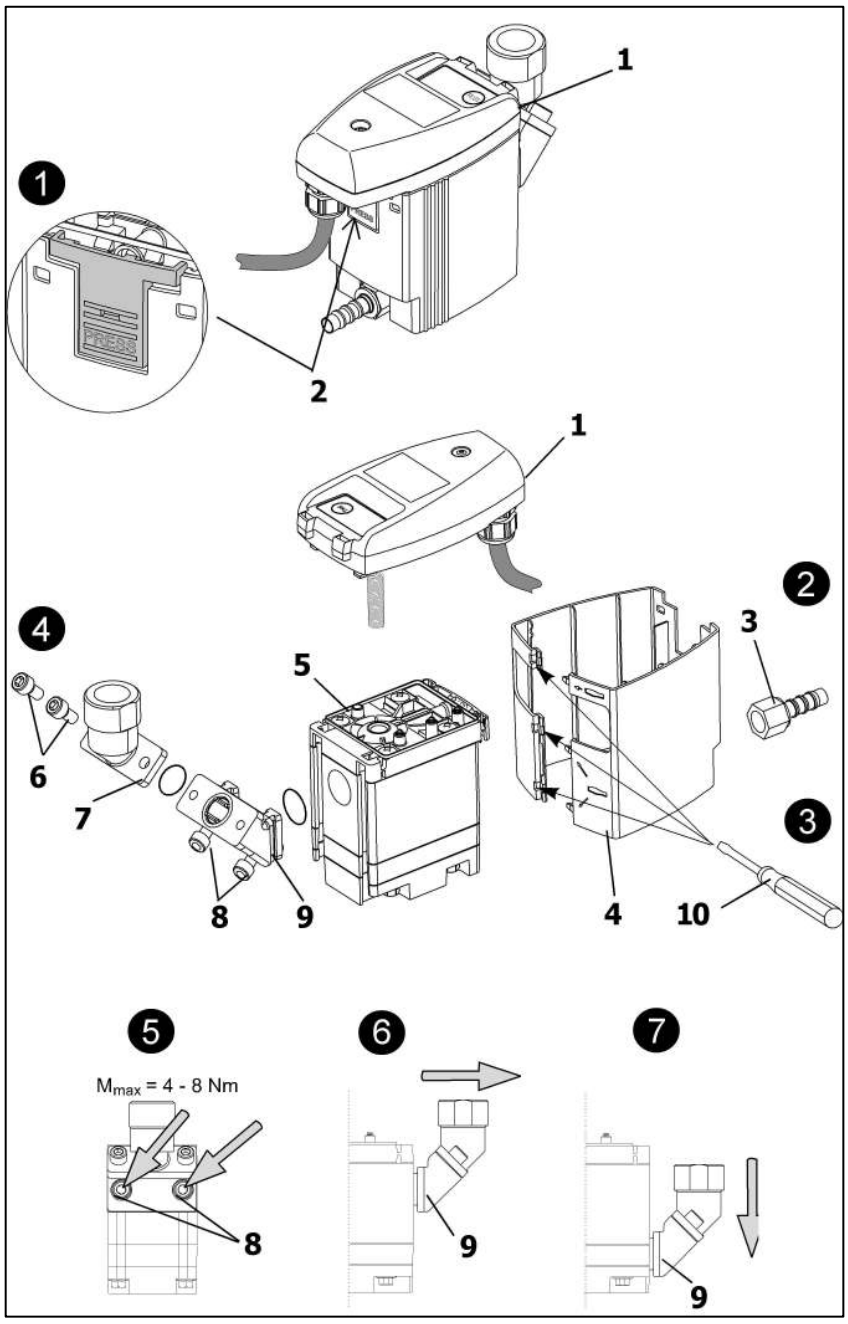
Depressurize the SUPER DRAIN unit!

Danger !
Mains voltage!

In the case of contact with uninsulated parts carrying mains voltage there is a risk of electric shock including injury or death!

Measures:

De-energize the SUPER DRAIN unit!



Maintenance recommendations

Replace service unit (**5**) annually.

①Remove control unit (**1**) by pressing latching hook (**2**).
②Detach SUPER DRAIN from outlet (**3**).
③Remove design shell (**4**) (where applicable) using a screw driver (**10**).
④Remove service unit (**5**) from pipe at inlet by undoing union nut **or** by undoing screws (**6**) at elbow connector (**7**)
⑤By undoing screws (**8**) at intermediate adapter (**9**) which is then detached from the service unit by downward movement.

・ Check if new service unit (**5**) matches control unit (**1**)
– type designation and colour of latching hook (**2**)
・ Fit new service unit (**5**) in reverse order.

4-2. Attachment means of the control unit

Danger !
Compressed air !

In the case of contact with quickly or suddenly released compressed air or in the case of bursting plant components there is a risk of serious injury or death.

Measures:

Depressurize the SUPER DRAIN unit!

Danger !
Mains voltage!

In the case of contact with uninsulated parts carrying mains voltage there is a risk of electric shock including injury or death!

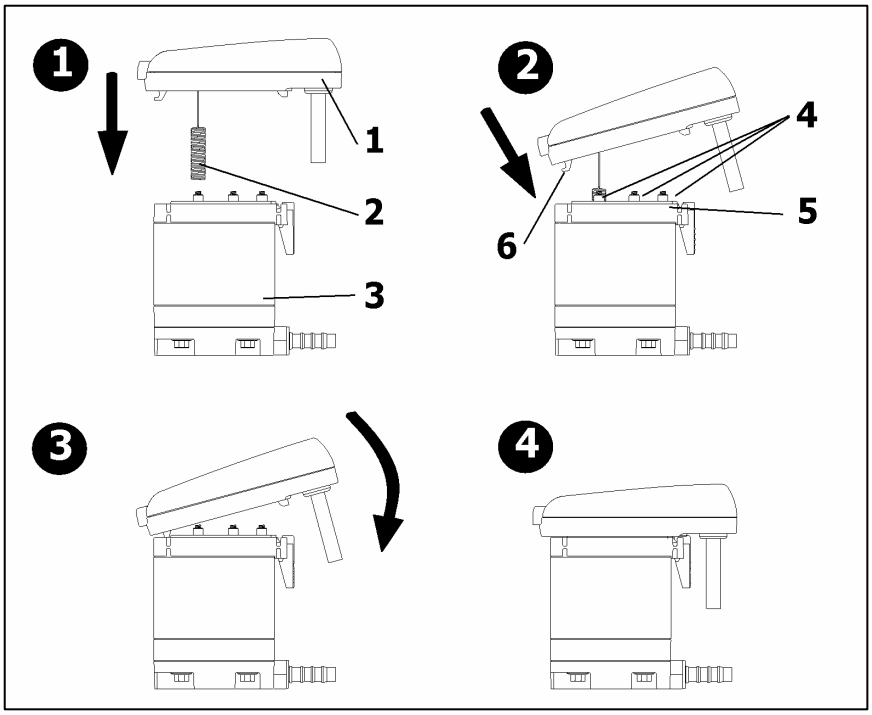
Measures:

De-energize the SUPER DRAIN unit!

Assembly

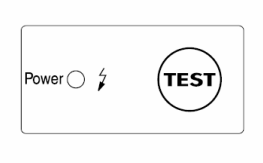
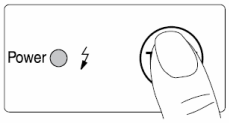
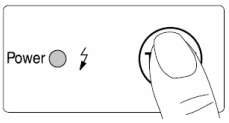
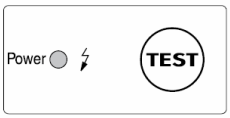
Control unit onto service unit:

Check if service unit (**3**) matches control unit (**1**) (type designation and colour of latching hook)

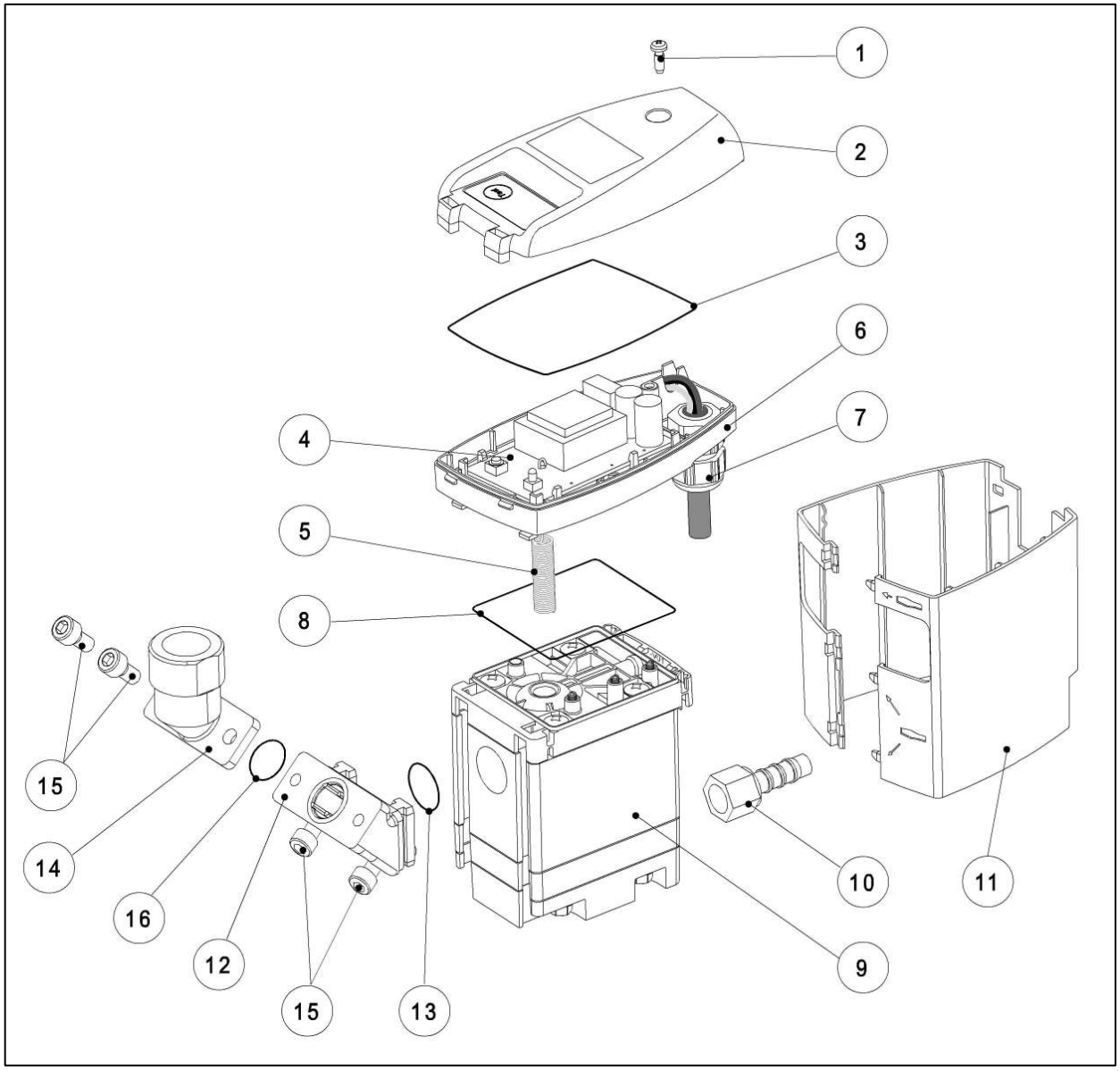


① Check if sensor tube plate (**5**) with contact springs (**4**) is clean, dry and free from foreign matter.
② Insert sensor (**2**) into sensor tube plate (**5**).
③Fit latching hook (**6**) of control unit (**1**) into sensor tube plate (**5**).
④Press control unit (**1**) against service unit (**3**) and snap into place.

4-3. Trouble Shooting

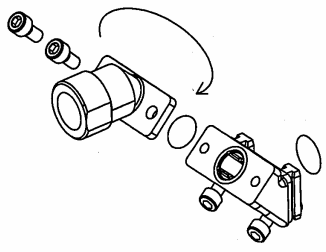
Situation	Possible causes	Check
 LED not lighting up	・Power supply faulty ・Power supply board defective	– Check voltage on type plate. – Check connections – Check printed circuit boards for possible damage
 Pressing of test button, but no condensate discharge	・Feed and/or outlet line shut off or blocked ・Worn parts ・Power supply board defective ・Service unit defective ・Dropping below necessary minimum pressure	– Check feed line and outlet line – Check if valve opens audibly (press test button several times) – Check printed circuit board for possible damage – Check operating pressure
 Condensate discharge only when test button is being pressed	・Feed line with insufficient slope; crosssection too small. ・Excessive condensate quantities ・Service unit extremely dirty	– Lay feed line with adequate slope – Replace service unit
 Device keeps blowing off air	・Service-Unit defective or dirty	– Replace service unit

4-4. Components



① Screw (3.5×10)
② Top of cover
③ Cord packing (2×207)
④ Board
⑤ Sensor
⑥ Bottom of cover
⑦ Cable fitting (PG9)
⑧ Cord packing (2.5×216)
⑨ Service unit
⑩ Hose connector (G1/4)
⑪ Design shell
⑫ Intermediate adapter
⑬ O-ring (20×2)
⑭ Elbow adapter
⑮ Screw (M6×12)
⑯ O-ring (14×1.78)

(Direction of inlet piping can be horizontally changed by reversing 180 degrees of elbow adapters ⑭.)



Available sets of spare parts	Content	Order reference
Service unit	9,13	DB3003-KFL-413298
Set of seals	3,8,13,16	DB3003-KFL-413300