



Operating Instructions

Puridest Bi Distillation Apparatus
PD 2 D, PD 4 D, PD 8 D



LAUDA Puridest Bi Distillation Apparatus models PD 2 D, PD 4 D, PD 8 D produce ultra-pure, bacteria and pyrogen-free distillate with a very low conductivity (approx 1.6 $\mu\text{S}/\text{cm}$ at 25 °C). The distillate is in conformity with DAB regulations and the regulations of international pharmacopoeia.



- I Main switch
- II Pilot lamp "Operation Mono stage"
- III Pilot lamp "Low water Mono stage"
- IV Pilot lamp "Clean"
- V Pilot lamp "Operation Bi stage"
- VI Pilot lamp "Low water Bi stage"

Before installing the appliance, please check the content of the delivery for completeness and integrity.
If you discover damage or have any complaints, please get in touch with your supplier or contact us directly.

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1 Using of the Bi Distillation Apparatus

1.1 Intended Use

In LAUDA Puridest Bi Distillation Apparatus models PD 2 D, PD 4 D and PD 8 D, electric heating elements serve to boil water in the mono stage boiler (left-hand side) and evaporate it. The steam is led to the steel condenser of the mono stage where it condenses on a water-cooled cooling coil. The produced distillate drips into the boiler of the bi stage (right-hand side) or can be withdrawn through a stop cock made of borosilicate glass. The electric heating elements in the bi stage bring the water in the right-hand side alembic to the boil. The steam is led into the condenser of the second distillation stage and condenses as bi distillate on a water-cooled cooling coil. The condenser of the bi stage, including the splash protection and cooling coil as well as the complete bi distillate outlet with dust cover are made of Duran® / borosilicate glass 3.3.

The filling level of both boilers is monitored by two float switches, the heating elements of both stages are additionally controlled by thermostatic low water cut-offs. After switching the Double Distiller on, it is automatically operated.

Depending on the model, the Double Distiller produces approx. 2 litres (PD 2 D), 4 litres (PD 4 D) or 8 litres (PD 8 D) bi distillate per hour.

Mono- and Bi-distillate is withdrawn through the two glass fittings at the front of the unit. Attention, the distilled water leaves the Distillation Apparatus with more than 90 °C! Danger of scaldings! Depending on the tap water quality, the produced mono distillate has a conductivity of approx. 2.2 µS/cm at 25°C. The produced bi distillate is dependent on the quality of the evaporated mono distillate and has a conductivity of approx. 1.6 µS/cm at 25°C. To feed the Distillation Apparatus, preferably use tap water of drinking quality. Please also observe the information in chapters 17.2 to 17.4 of these instructions on the possible use of filters and cartridges to pretreat the tap water.

The Bi Distillation Apparatus must be operated within the user's field of vision.



The information contained in these operating instructions must by all means be read and observed. Only then a perfect operation of the Bi Distillation Apparatus can be guaranteed. The units may only be installed and operated by persons who have made themselves familiar with these operating instructions.

tions.



Caution:

The accessible inner parts of the housing that can be reached after removing the outer white cover get strongly heated up during operation. These parts may only be touched after they have cooled down, or when wearing suitable safety gloves.

1.2 Improper Use

LAUDA Puridest Bi Distillation Apparatus, operated in a laboratory, are no Medical Devices. They fall neither under national nor international Medical Device Directives and had to be used and applied accordingly. The Distillation Apparatus must not be used in potentially explosive surroundings. The Distillation Apparatus must neither be set up nor operated in laboratory areas with aggressive or corrosive ambient conditions.

2 Warranty conditions

LAUDA offers a standard 12 month manufacturer's warranty from the date of purchase.

3 Before Initiation

Important informations are marked in bold letters in these instructions, safety indications are additionally marked by the following warning symbols and mandatory signs.



Read and observe the operating instructions



Warning of hot liquids and vapour



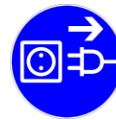
Warning of hot surfaces



Warning of dangerous electrical voltage



General warning



Before maintenance and repair disconnect the unit all-pole from the electrical mains (pull the plug from the socket).

4 Transport, Set-up and Location of the Distillation Apparatus



Protect yourself and the Distillation Apparatus during transport and setup by working carefully and avoid danger of e. g. shifting or tilting the unit as well as risk of injury by lifting heavy loads. Caution, Distillation Apparatus PD 2 D (net weight 20.4 kg), PD 4 D (net weight 27.5 kg) and PD 8 D (net weight 43,0 kg) must be lifted, carried and transported to the location by at least two persons.

The Distillation Apparatus can be held between the four stands of the unit and lifted for setup.

The unit is suitable for both bench and wall mounting. It is only suitable for indoor use. Table-top setting-up on solid, even and level surfaces only. Make sure to place the unit only on a watertight, temperature-resistant, non-flammable surface.

The location must provide sufficient space as well as the necessary carrying capacity for the total weight of the Distillation Apparatus (unit weight as per Technical Data of this manual, plus weight of the filling).

For setting-up on the wall check the carrying capacity of the wall in connection with the total weight of the unit (appliance plus water filling, see Technical Data). Make sure to check the on-site fixing elements in order to guarantee safe hold of the Distillation Apparatus. The fixing material must be suitable for the substrate. Use only tested and proven fixing material.

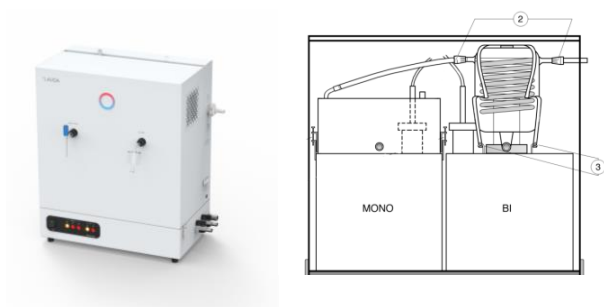
There are two keyholes for wall mounting at the back of the Distillation Apparatus. Place two fixing screws (not included in the scope of supply) in the wall, 40 cm apart, and nest the still on the keyholes. The Distillation Apparatus is delivered without fixing material.

5 Removing the Transport Protection of the Glass Condenser

When installing the glass condenser and the glass fittings, pay special attention due to danger of glass breakage.

The glass condenser and the glass fittings are placed beneath the hood of the Distiller. In order to be able to remove the hood, two each quick-release catches on each side of the unit as well as two hidden screws (see photo below) between the hood and the basic housing need to be loosened.

Before initiation, remove the transport protection (bubble wrap and rigid foam parts) around the glass condenser, clear all connection openings that are covered by adhesive tape or plastic film and carefully empty the sand from the condenser. Rinse the condenser with clear water and re-assemble as shown below. Place the cone of the glass condenser into the plastic ring on the right-hand side boiler. The bi-distillate outlet must point to the front. Place the round felt washer on top of the glass condenser; it will prevent dislodging of the holding clamp which is connected with the unit through the four holding arms ③. Fit together those hose couplings ② having the same colour.



Place the hood back onto the unit and secure with the two screws and four quick-release catches. Then install the glass fittings. Screw together the glass valve with the mono-distillate outlet (left-hand front of the unit), and the outlet tube with the bi-distillate outlet.

6 Operating Voltage



The Distillation Apparatus must be connected to the mains supply through a correctly installed, on-site main switch, or, permanently connected, through a CEE plug in conformity with IEC standard 60309-2. The unit is a protection class I electrical appliance, a connection to the protective earth is to be ensured. For information on the value of the required mains fuse see Technical Data, chapter 12, of these instructions.



The electrical connection must ensure an all-pole separation from the mains at any time. Shock-proof sockets or main switches to separate the Distillation Apparatus from the mains must be installed in such a way as to ensure clear identifiability and easy accessibility at any time.

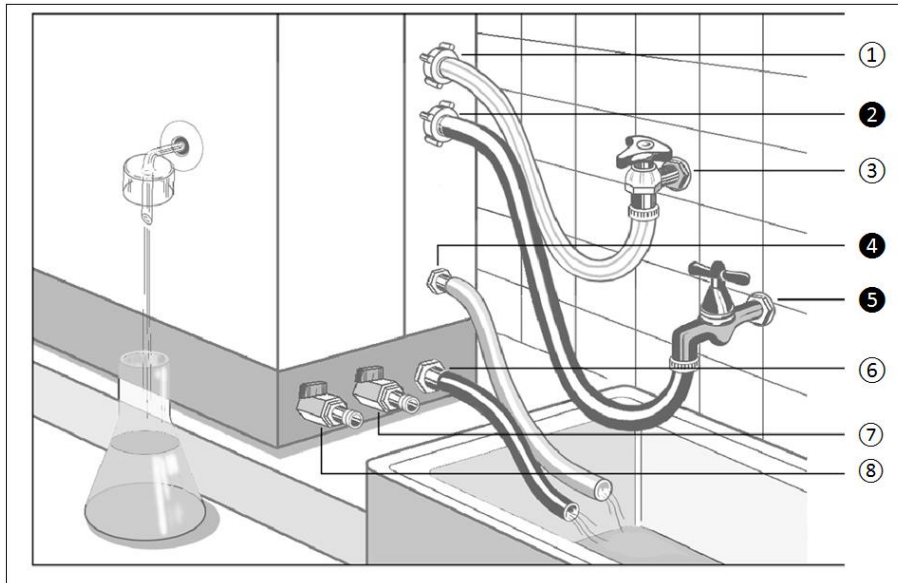


The mains connection cable must not touch any hot surfaces of the unit. It may not lead underneath the unit. The main switch of the Distillation Apparatus must be off (position O). The voltage on the nameplate (at the left-hand side of the unit) must be identical to the mains voltage. If they are identical, connect the unit to the mains.

Please also refer to chapter 14 of these operating instructions "Connection to the Mains"..

7 Water Connections

All water connections of the Distillation Apparatus, except the distillate withdrawals, are situated on the right-hand side of the unit. Hoses for water inlet and outlet are not included in the standard scope of supply.



7.1 Tap water inlet ①

The tap water inlet provides the Distillation Apparatus with water through a solenoid valve. The hose connection must be connected to the water mains supply with a ½" (inch, Ø inside 12.7 mm) pressure hose and a lockable water connection (③, cut-off valve). Both hose connections must by all means be secured with hose clips!

7.2 Inlet separate water supply ②



Part of an accessory. Only fitted if a separate water supply was ordered.

The water inlet for the separate water supply ② feeds pretreated water to the boiler of the Distillation Apparatus through a solenoid valve with built-in quantity regulator (0.5 l / min). The hose connection must be connected to the domestic water connection for pretreated water with a ½" pressure hose and a lockable water connection (⑤, cut-off valve). Both hose connections must by all means be secured with hose clips!

7.3 Outlet separate water supply ④



Part of an accessory. Only fitted if a separate water supply was ordered.

Connect a ½" hose to the out connection of the separate water supply ④ and lead it into a drain, imperatively on a lower level. It must not be longer than approx. 1.5 m. The hose must have a slope on the complete length, it must be ensured that the water flows off without causing backwater.

7.4 Cooling water outlet ⑥

Connect a ¾" temperature-resistant hose to the cooling water outlet. It must not be longer than approx. 1.5 m. The hose must be led into a drain on a lower level and must have a slope on its complete length. It must be ensured that the cooling water flows off without causing backwater.



Caution:

The cooling water leaves the Distillation Apparatus with temperatures of up to 70 °C.

Danger of scaldings!

7.5 Drain Bi-stage boiler ⑦

A ½" hose to drain the boiler for cleaning or maintenance can be connected.



Caution:

The water leaves the boiler of the Distillation Apparatus with temperatures of up to 100 °C.

Danger of scaldings!

7.6 Drain Mono stage boiler ⑧

A ½" hose to drain the boiler for cleaning or maintenance can be connected.



Caution:

The water leaves the boiler of the Distillation Apparatus with temperatures of up to 100 °C.

Danger of scaldings!



Water connections pos. ② and ④ are parts of an accessory. They are only fitted if a separate water supply was specifically ordered with the unit. The depicted supply valve pos. ⑤ is only required if the unit is equipped with a separate water supply.

8 Initiation

After assembly of all power and water connections, and to initiate the Distillation Apparatus, the stop valves of the water supply (③ and ⑤) must be open and the main switch (I) must be switched on. The first litres of produced distillate (mono and bi distillate) should not be used. Between switching the Distillation Apparatus off and then on again, always wait for approx. 10 seconds as the unit will otherwise be switched into "Clean" mode.

During down-times of the Distillation Apparatus, all cut-off valves of the water supply should always be closed.

9 Functional Description

9.1 Distillation Apparatus for double distillation

LAUDA Puridest Bi Distillation Apparatus models PD 2 D, PD 4 D und PD 8 D work fully automatically. After switching on the main switch of the Distillation Apparatus, the green pilot lamp in the main switch (I) will light up.

The built-in solenoid valve will open. Water flows through the cooling coil of the glass condenser in the bi stage as well as the



cooling coil of the condenser in the mono stage, and fills the mono stage boiler with tap water, regulated by a mechanical water level regulator. The water level regulator determines the water level in the boiler. Water that is not used for evaporation will flow off through the cooling water outlet.

I II V

The water levels in the boilers are monitored by float switches (S2/S3), which switch on the heating element and protect them from running dry. Additionally, the heating elements of both distillation stages are controlled by thermostatic low water cut-offs (F1/F2), that protect the Distillation Apparatus from over-heating. Once the heating elements in the mono boiler are beneath water level, they are switched on and bring the water to the boil. The produced steam rises up and condenses on the cooling coil of the mono stage steel condenser. Mono distillate can be withdrawn through the borosilicate glass stop valve on the front of the unit. If the glass valve for withdrawal of mono distillate is closed, the mono-distilled water is led into the boiler of the bi stage. Once the heating elements in the bi stage are below water level, the heating elements are switched on. The mono distillate in the bi stage boiler is brought to the boil. The produced steam condenses in the glass condenser of the bi stage and flows off as bi distillate through the outlet tube with dust cover that is screwed to the condenser. The maximum water level in the bi stage boiler is limited by an overflow to the cooling water outlet. Operation mode of the heating elements in both stages is indicated by yellow pilot lamps (II and V). When the Bi Distillation Apparatus is operated for the first time, the procedure until production of bi-distillate will take approx. 2 hours.

9.2 Bi Distillation Apparatus with separate water supply

Only factory installation into models PD 2 D to PD 8 D is possible.

The separate water supply serves to feed the mono stage boiler with pretreated water and the cooling coils with phosphatized or normal tap water. Tap water is fed to the boiler through a solenoid valve (Y2) with approx. 0.5 litres per minute. Water that is not required flows off through the "outlet separate water supply". The condensers are fed with cooling water through a second solenoid valve (Y1). The cooling water flows off through the cooling water outlet.

Owing to the separation of cooling and tap water, the water fed to the boiler is not pre-heated, the efficiency of the still is therefore reduced by approx. 10-15 %.

9.3 Degassing

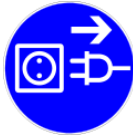
Carbon dioxide is released through the two exhaust tubes on the top of the unit.

10 Maintenance, Service and Trouble Shooting



Caution:

Before service and maintenance always let the Double Distiller cool down!
Danger of scaldings!



Caution:

Before opening the Distillation Apparatus and before cleaning always cut off power (pull the plug or switch the main switch off).
Danger of electrical shocks!

10.1 Descaling

Depending on the degree of hardness of the tap water, the Distillation Apparatus must be descaled in regular intervals. To do so, remove the glass fittings, the outer hood, the steel condenser of the mono stage and the deflector plate beneath the condenser (observe exact position for re-assembly).

A suitable descaling agent would be a mixture of 10 % formic acid, 10 % acetic acid and 80 % distilled water. Fill this solution into the boiler up to the top rim of the lime deposits and heat to maximum 70 °C. Make absolutely sure not to bring the solution to a boil. For this, close valves (③+⑤) and switch on the distiller until the temperature is reached. After approx. 30 minutes, drain the descaling agent/scale mixture through the drain cock "drain mono stage boiler" (⑧) and rinse the boiler with clear water several times.

Commercial descaling agents, suitable for use with stainless steel, can also be used according to the manufacturer's instructions (e.g. rea-calc® of M/s CHEMOTEC GmbH, 63486 Bruchköbel, Germany). Never use any products containing hydrochloric acid! These will lead to damages to heating element, boiler, temperature sensor and the ducts of the screw connections.

To re-install, fit all removed parts in reverse order, open the valves for water supply (③+⑤) and switch on the main switch of the unit. After descalings, the first few litres of distillate produced should not be used as they could contain traces of vaporized descaling agent. The contents of the bi stage boiler are to be discarded, as well as the first few litres of freshly produced mono distillate in the bi stage boiler (valve ⑦).

10.2 Sterilising

By closing the water supply valve for cooling water (③) during operation the clean water area (condensers) can be sterilised for a maximum of 3 minutes. The steam produced by the heating elements escapes through the exhaust tubes, through the opened glass valve for mono distillate withdrawal and the outlet tube for bi distillate.

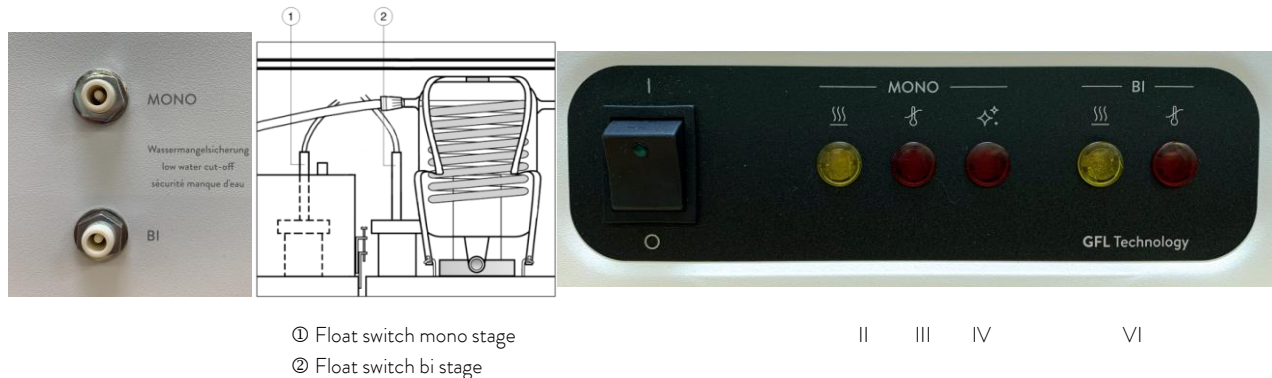
Sterilisation of the condensers may only be carried out under direct supervision.



Caution:

Heavy steam formation.
Danger of scaldings!

10.3 Water shortage in mono or bi stage



The heating elements of both distillation stages are monitored by thermostatic low water cut-offs that protect the unit from overheating. In case of water shortage, the relative distillation stage is cut off, and a red pilot lamp (III or VI) will light up.

The water level in the boilers is controlled by float switches (① and ②). After a water shortage, resulting in a power cut-off of the unit from the mains supply, and before restarting, their correct function must be checked by a skilled electrician.

Before re-initiation, let the Distillation Apparatus cool down.

The triggered low water cut-off of the disconnected stage must be reset. For this purpose, loosen the black cap nut at the bottom left-hand side of the Distillation Apparatus. Inside the thread a small

white plastic pin can be seen that has to be gently pressed inside (e.g. with a pen) until a clicking sound can be heard.

Re-initiate the unit as described in chapter 6.

10.4 Pilot lamp "Clean"

Depending on the degree of impurities in the tap and the growing contamination of the water in the boiler, caused by the distillation process in the mono stage boiler, foam will form during evaporation of water. Once the foam gets in contact with the electrode in the mono stage boiler, an electronic impurity detector will switch off the unit, and the red pilot lamp Clean (IV) will light up.

The boiler must now be emptied through the drain cock "drain boiler mono stage" (⑧) and be rinsed several times with clean water. The water required for the rinsing process can be fed to the unit by switching it on so that only the mono stage is active (yellow pilot lamp mono stage (II)).

The operational interruption "Clean" is reset by switching the unit's main switch off and then on again after 10 seconds.

The LAUDA Puridest Bi Distillation Apparatuses are produced of first classes materials. Nevertheless, the unit should only be subjected to mechanical strain within sensible limits.

10.5 Technical support

You can call our customer service at any time for technical support relating to LAUDA Puridest Bi Distillation Apparatus appliances.

Phone : +49 (0) 9343 / 503-350

Fax : +49 (0)9343 503-283

Email : service@lauda.de

Maintenance, repairs and modifications must be carried out by a qualified electrician (section 2 (3) DGUV Regulation 3) according to the General Rules of Technology (section 2 (2) DGUV Regulation 3). Only original spare parts may be used. Request that the person performing the work provides written confirmation of the type and scope of the work carried out (company, date, signature).

11 Disposal of Old Units

LAUDA will take responsibility, within the scope of the legal directives, for an environmentally sound handling and disposal of all used LAUDA units as of the production year 1995 that are returned to us free of charge and will have it materially recycled. Before the unit is returned, a legally binding declaration must be provided from the sender confirming that the unit is free from harmful and/or hazardous contaminations as well as from hazardous substances caused by the previous use of the unit.

LAUDA laboratory apparatuses are exclusively designed for industrial use and may not be disposed of through public waste disposal authorities.

EAR Registration Number WEEE-ID.NO.DE 67770231

12 Technical Data

12.1 Puridest Bi Distillation Apparatus models PD 2 D, PD 4 D

	PD 2 D	PD 4 D
Exterior dimensions (W x D x H)	530 mm x 260 mm x 495 mm	570 mm x 280 mm x 610 mm
Distillation capacity	2 l / h mono or bi distillate	4 l / h mono or bi distillate
Distillate quality	Mono distillate approx. 2.1 $\mu\text{S} / \text{cm}$ at 25 °C Bi distillate approx. 1.6 $\mu\text{S} / \text{cm}$ at 25 °C in conformity with DAB, bacteria and pyro- gen free, low gas content.	Mono distillate approx. 2.1 $\mu\text{S} / \text{cm}$ at 25 °C Bi distillate approx. 1.6 $\mu\text{S} / \text{cm}$ at 25 °C in conformity with DAB, bacteria and pyrogen free, low gas content.

The conductivity of the distilled water is directly related to the chemical composition of the raw water. Components of the raw water having the same or a lower evaporation point than water may deteriorate the conductivity.

Cooling water required	72 l / h	120 l / h
Low water cut-off	Electromechanical temperature limiter, with capillary tube sensor. Switch-off temperature 135 °C / -15 K	Electromechanical temperature limiter, with capillary tube sensor. Switch-off temperature 135 °C / -15 K
Water pressure min. / max.	> 3 bar / 7 bar > 43.5 psi / 101.5 psi	> 3 bar / 7 bar > 43.5 psi / 101.5 psi
Electrical connection	230 V +/- 10 %, 50 / 60 Hz, 3.5 kW	220 V / 3 ~ / PE +/- 10 % 50 / 60 Hz, 7.0 kW
Mains supply / On-site fuse	Mains connection cable for permanent con- nection to the mains, on-site 16 A inert	Mains connection cable for permanent connec- tion to the mains, on-site 3 x 20 A inert or 400 V / 3 ~ / N / PE +/- 10 %, 50 / 60 Hz, 7.0 kW Mains connection cable for permanent connec- tion to the mains, on-site 3 x 16 A inert

Caution! Mains voltage deviations, even with the mentioned limits, influence the quantity of distillate produced.

Protection class / - type	I / IP20	I / IP20
Surrounding conditions	Use only inside buildings (not in potentially explosive areas).	Use only inside buildings (not in potentially explosive ar- eas).
Height above MSL	up to 2000 m MSL	up to 2000 m MSL
Ambient temperature	+10 °C to +40 °C	+10 °C to +40 °C
Humidity	max. 80 % rel. humidity to 31 °C, decreasing to 40 % rel. humidity at 40 °C	max. 80 % rel. humidity to 31 °C, decreasing to 40 % rel. humidity at 40 °C
Net Weight	20.4 kg	27.5 kg
Weight with water filling	38.4 kg	49.5 kg

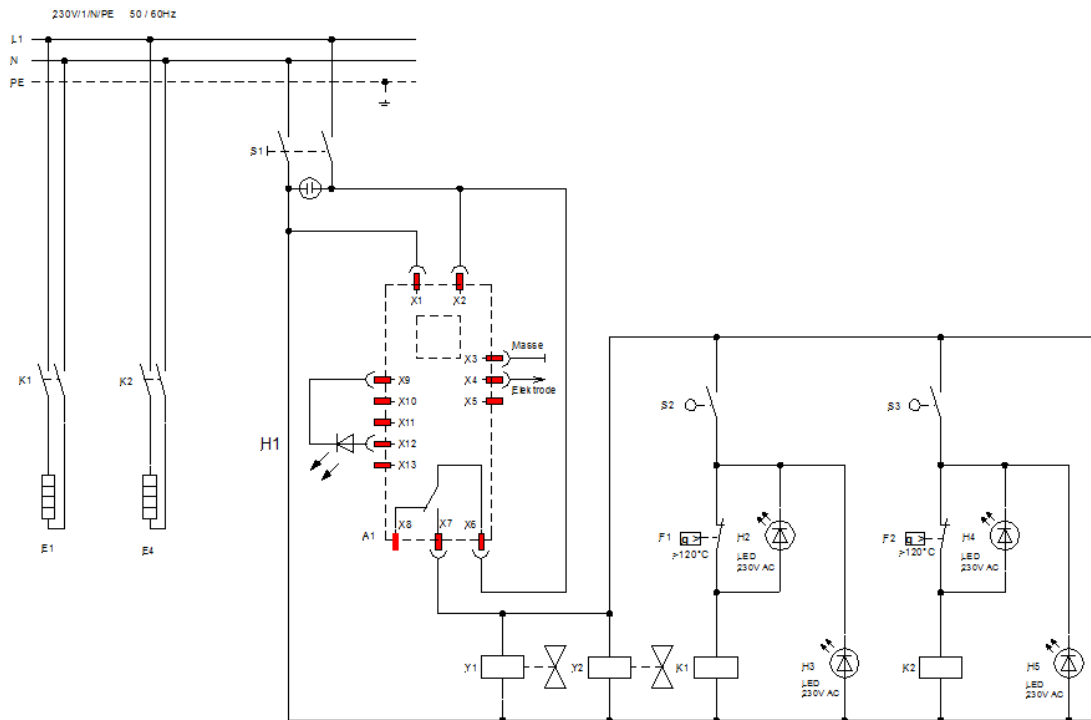
12.2 Puridest Bi Distillation Apparatus model PD 8 D

PD 8 D	
Exterior dimensions (W x D x H)	735 mm x 390 mm x 720 mm
Distillation capacity	8 l / h mono or bi distillate
Distillate quality	Mono distillate approx. 2.1 $\mu\text{S} / \text{cm}$ at 25 °C Bi distillate approx. 1.6 $\mu\text{S} / \text{cm}$ at 25 °C in conformity with DAB, bacteria and pyrogen free, low gas content.
The conductivity of the distilled water is directly related to the chemical composition of the raw water. Components of the raw water having the same or a lower evaporation point than water may deteriorate the conductivity.	
Cooling water required	198 l / h
Low water cut-off	Electromechanical temperature limiter, with capillary tube sensor. Switch-off temperature 135 °C / -15 K
Water pressure min. / max.	> 3 bar / 7 bar > 43.5 psi / 101.5 psi
Electrical connection	220 V / 3 ~ / PE +/- 10 %, 50 / 60 Hz, 11.5 kW
Mains supply /	Mains connection cable for permanent connection to the
On-site fuse	mains, on-site 3 x 35 A inert or 400 V / 3 ~ / N / PE +/- 10 %, 50 / 60 Hz, 11.5 kW Mains connection cable for permanent connection to the mains, on-site 3 x 20 A inert
Caution! Mains voltage deviations, even with the mentioned limits, influence the quantity of distillate produced.	
Protection class / - type	I / IP20
Surrounding conditions	Use only inside buildings (not in potentially explosive areas).
Height above MSL	up to 2000 m MSL
Ambient temperature	+10 °C to +40 °C
Humidity	max. 80 % rel. humidity to 31 °C, decreasing to 40 % rel. humidity at 40 °C
Net Weight	43.0 kg
Weight with water filling	68.4 kg

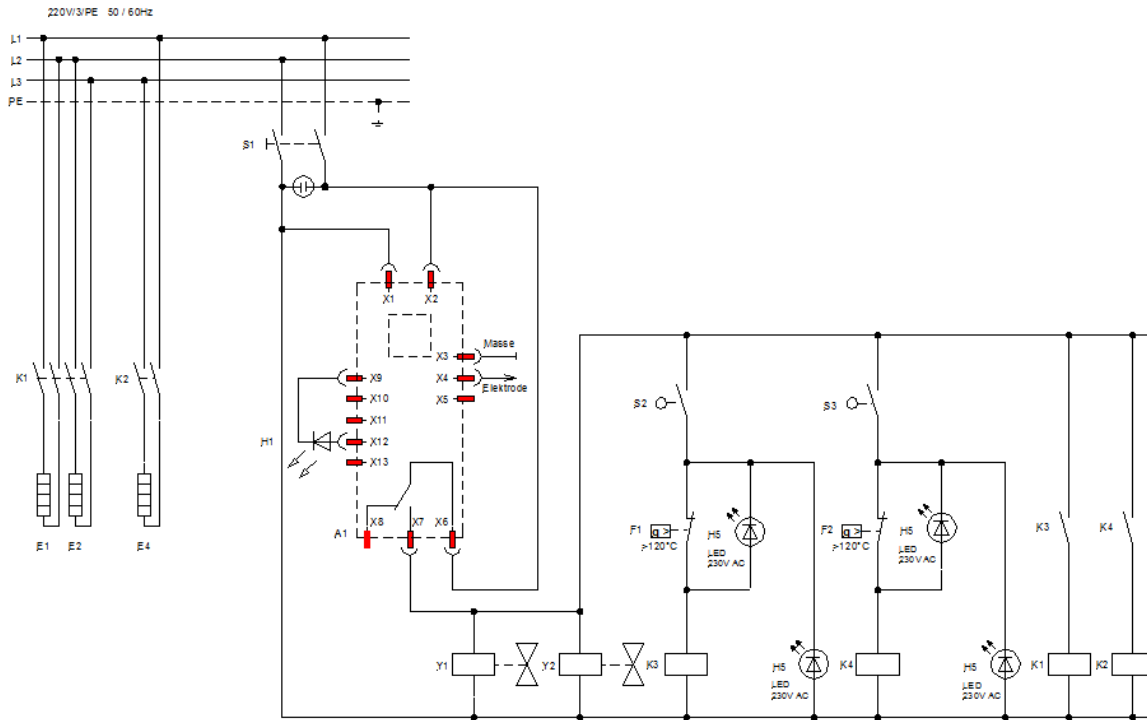
13 Circuit diagram

A1	Sensor board Clean	
E1	Heating element mono stage	
E2	Heating element mono stage	
E3	Heating element mono stage	
E4	Heating element bi stage	
E5	Heating element bi stage	
E6	Heating element bi stage	
F1	Low water cut-off mono stage	
F2	Low water cut-off bi stage	
H1	Pilot lamp Clean	LED 6 V DC
H2	Pilot lamp Low Water mono stage	LED 230 V AC
H3	Pilot lamp Operation mono stage	LED 230 V AC
H4	Pilot lamp Low Water bi stage	LED 230 V AC
H5	Pilot lamp Operation bi stage	LED 230 V AC
K1	Contactor heating element mono stage	
K2	Contactor heating element bi stage	
K3	Relay for K1 mono stage	
K4	Relay for K2 bi stage	
S1	Main switch	
S2	Float switch mono stage	
S3	Float switch bi stage	
Y1	Solenoid valve cooling and industrial water	
Y2	Solenoid valve for accessory separate water supply, industrial water	

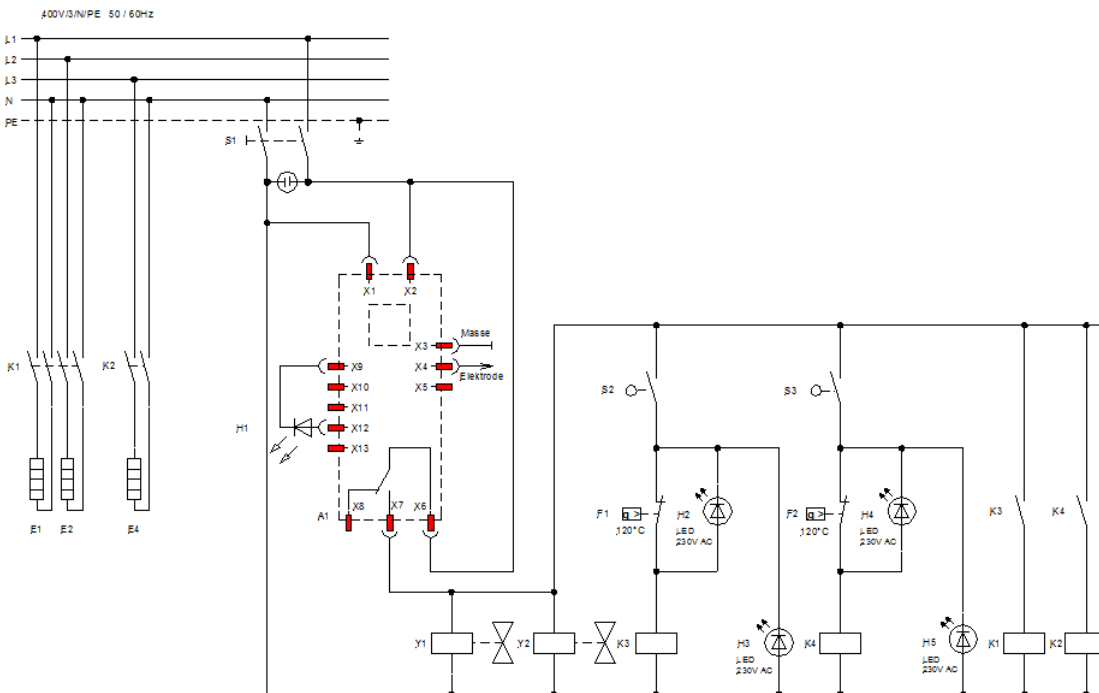
13.1 PD 2 D



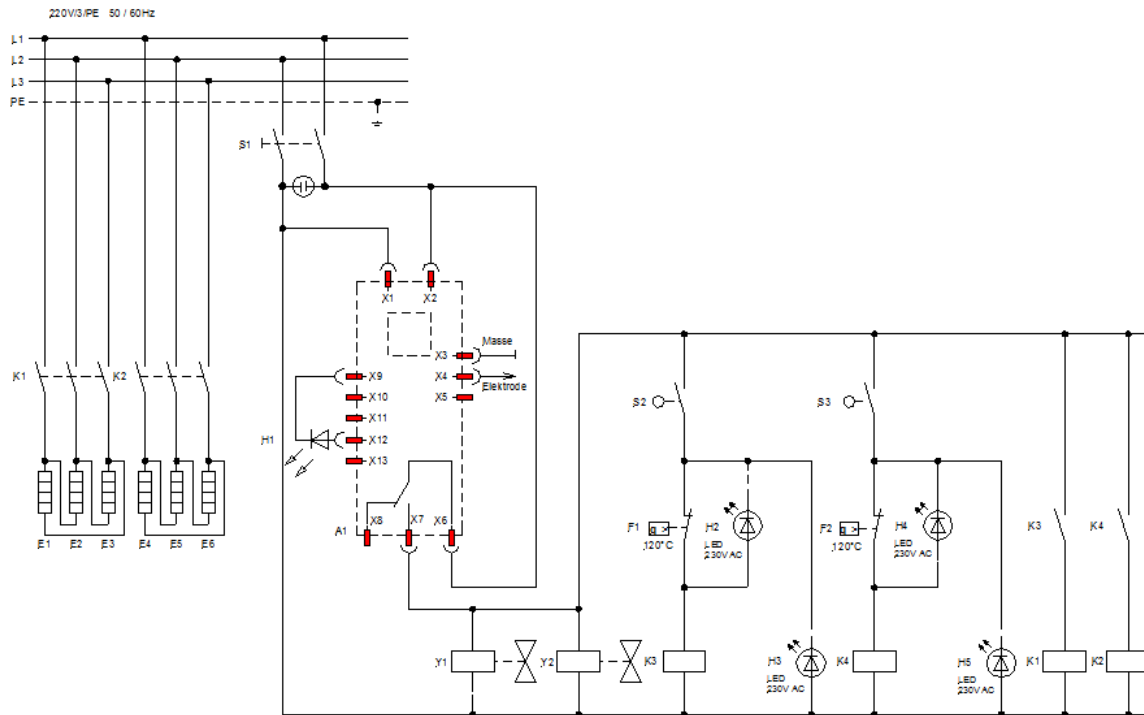
13.2 PD 4 D - version 220 V / 3 ~



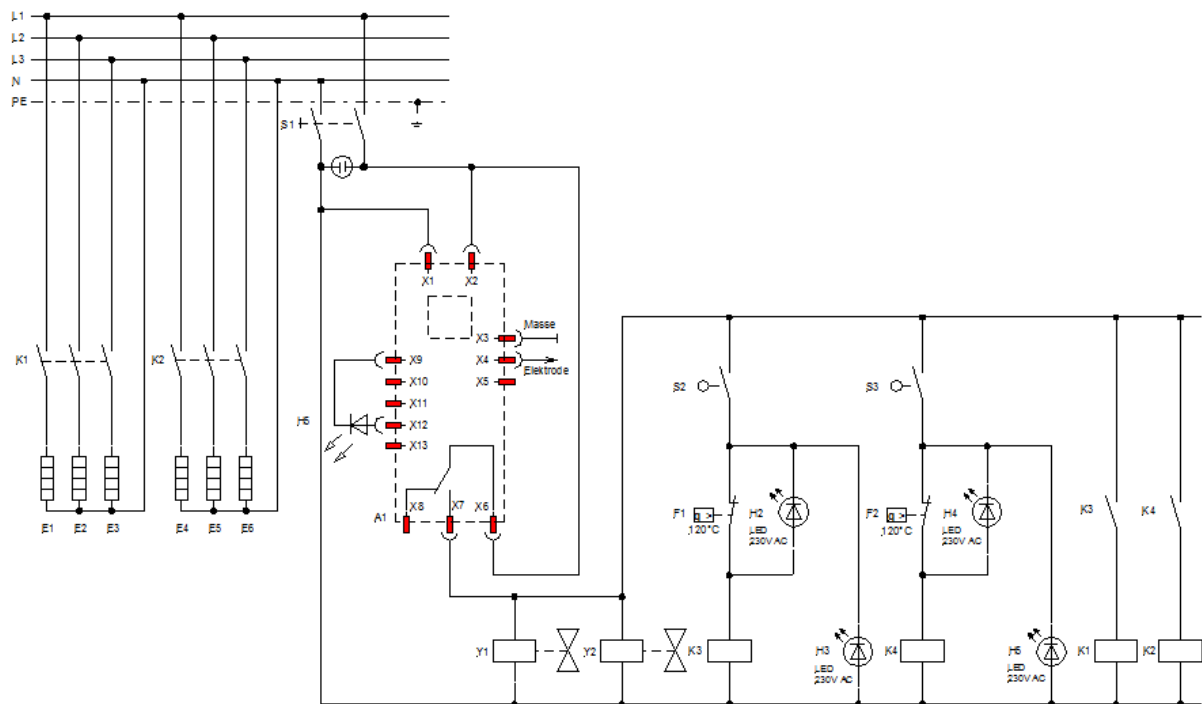
13.3 PD 4 D - version 400 V / 3 ~



13.4 PD 8 D - version 220 V / 3 ~



13.5 PD 8 D - version 400 V / 3 ~



14 Connection to the mains supply

The electrical connection must ensure an all-pole separation of the Bi Distillation Apparatus from the mains supply. Installed assembly parts, such as CEE shock-proof sockets or main switches, must be installed so as to ensure clear identification and they must be within easy reach in an emergency case. All Bi Distillation Apparatus must have a permanent connection with the mains. This may only be implemented through an on-site main switch or through a CEE plug in conformity with IEC standard 60309-2 (see examples for connection to the mains in chapter 14).

Colour decoding of the individual leads of the mains connection cables for Bi Distillation Apparatus.

Colour decoding	Model PD 2 D Mains supply 230 V / 1 ~ / N / PE 50 / 60 Hz	Model PD 4 D, PD 8 D Mains supply 220 V / 3 ~ / N / PE 50 / 60 Hz	Model PD 4 D, PD 8 D Mains supply 400 V / 3 ~ / N / PE 50 / 60 Hz
ge/gr – yellow/green	PE (Protective earth)	PE (Protective earth)	PE (Protective earth)
bl – blue	N		N
sw – black		L1	L1
br – brown	L	L2	L2
gra – grey		L3	L3

Bi Distillation Apparatus can be supplied in different versions for connection to different mains supplies.

Model PD 2 D is only available for connection to 230 V AC (see nameplate) and can be connected to all mains supplies with 220 V or 230 V.

Models PD 4 D and PD 8 D for connection to 220 V / 3 ~ (see nameplate) can only be connected to mains supplies with 220 V / 3 ~ / PE.

Models PD 4 D and PD 8 D for connection to 400 V / 3 ~ (see nameplate) can only be connected to mains supplies with 400 V / 3 ~ / N / PE.

On-site electrical fuses

Model	Power	Power consumption at mains voltage	On-site mains fuse (F2 – F4)
PD 2 D	3.5 kW	15.2 A at 230 V	16 A
PD 4 D	7.0 kW	18.0 A at 220 V / 3 ~ / PE 13.0 A at 400 V / 3 ~ / N / PE	20 A 16 A
PD 8 D	11.0 kW	30.2 A at 230 V / 3 ~ / PE 16.6 A at 400 V / 3 ~ / N / PE	35 A 20 A

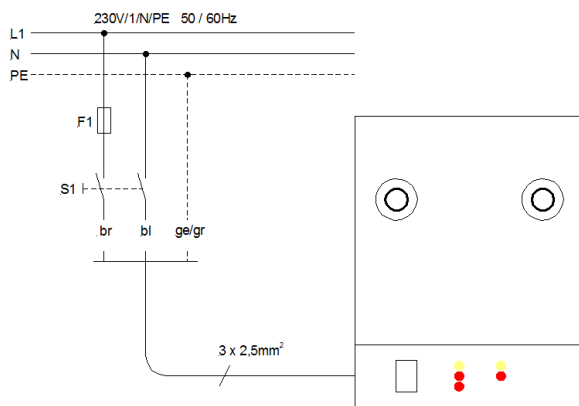
* see nameplate

14.1 Connection to the mains supply (examples)

Components

- B1 Shock-proof socket, on-site
- B2 CEE plug, not assembled, according to IEC standard 60309-2
- F1 Mains fuse (on-site, by customers)
- F2 Mains fuse (on-site, by customers)
- F3 Mains fuse (on-site, by customers)
- S1 Main switch (on-site, by customers)

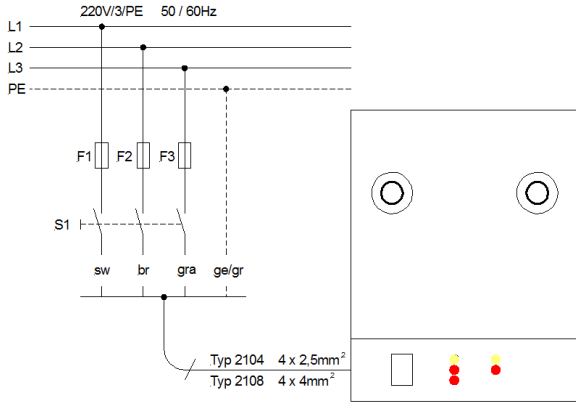
14.1.1 PD 2 D for 230 V



PD 2 D

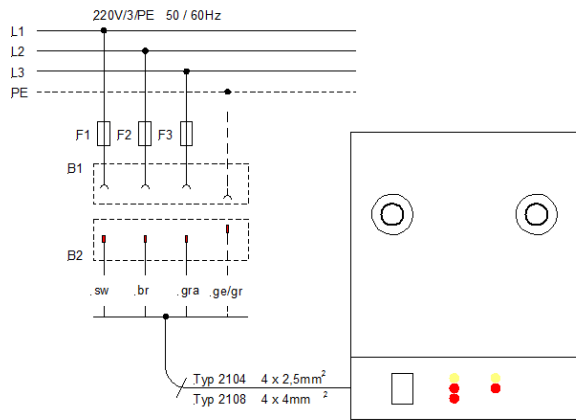
Mains connection through on-site switch S4, all-pole separation from the mains possible.

14.1.2 PD 4 D and PD 8 D for 220 V / 3 ~ at Mains supply 230 V / 3 ~ / PE 50 / 60 Hz
 (see nameplate)



PD 4 D and PD 8 D
 Mains connection through on-site switch S4, all-pole separation from the mains possible.

14.1.3 PD 4 D and PD 8 D for 220 V / 3 ~ at Mains supply 230 V / 3 ~ / PE 50 / 60 Hz
 (see nameplate)



PD 4 D and PD 8 D
 Mains connection through CEE plug according to IEC standard 60309-2, all-pole separation from the mains possible.

15 Accessories and Options

Separate Water Supply, to feed the boiler with softened or desalinated water (pressure > 1 bar / 14.5 psi) and the cooling coil with phosphatised or normal tap water (pressure > 3 bar / 43.5 psi). Accessory must be installed in our works. When a separate water supply is installed, the hourly capacity of distilled water is reduced by approx. 10-15 %.

Separate Water Supply

Only factory installation into models PD 2 D to PD 8 D is possible.

When the storage is full, the inlet of pretreated water is not automatically switched off. Part-No. is depending on the Model of the Distillation Apparatus (without illustration).

Separate Water Supply with solenoid valve

Only factory installation into models PD 2 D to PD 8 D is possible.

When the storage tank is full, the solenoid valve switches off pretreated water automatically. Part-No. is depending on the Model of the Distillation Apparatus (without illustration).

Dechlorite Filter, eliminates chlorine particles in tap water added by the local waterworks. Complete with connections for pressure hose ½ inch, with first filling.



Dechlorite-Filter
Part-No. A000129



Spare filling
Part-No. A000130

Phosphate cartridge, prevents scale formation in the condenser by phosphatising of tap water. Can be used from 4 to 15 °dH (German hardness), equivalent to approx. 0.7 to 2.7 mMol / l. With connection for pressure hose ½ inch, with first filling.



Phosphate cartridge
Part-No. A000131



Spare filling
Part-No. A000132

Pre-Filter 1 µm, for pre-cleaning the tap water, and to protect the unit from premature contamination. Complete with connections for pressure hose ½" (inner diameter 12.7 mm), including filter candle. The candle should be replaced at least every six months.



Pre-Filter with candle
Part-No. A000133



Spare candle
Part-No. A000134

Wall bracket, for one filter or for filter combinations of two or three filters, including sleeves to connect the filters as well as screws to fix the filters to the wall bracket.

A data sheet on possible connection variants of articles A000129, A000131 and A000133 can be supplied on request.



Wall bracket for one filter
Part-No. A000136



Set of all 3 filters, incl. wall bracket
and fillings, mounted completely
Part-No. A000135

Hose Set, consisting of hoses for water inlet and outlet (length 1.5 m), including hose clips.



Hose Set
Part-No. A000138



Hose Set
for separate water supply
Part-No. A000142

Level Control Switch

Only factory installation into models PD 2 D to PD 8 D is possible.

When connecting an external storage tank (not included in the scope of supply) to the Distillation Apparatus, it is recommended to equip the unit with a Level Control Switch which controls the water level in the external storage tank and switches off power and water when the external storage tank is full. When using an external storage tank in connection with Level Control Switch, the internal storage tank is only usable to a limited extent due to different levels of the internal and external tanks. Part-No. is depending on the Model of the Distillation Apparatus.



Level Control Switch

17 Ordering spare parts / LAUDA Service

When ordering spare parts, please state the serial number (type plate) to avoid queries and wrong deliveries.

Your partner for maintenance and competent service support:

LAUDA Service
Phone: +49 (0)9343 503-350
Fax: +49 (0)9343 503-283
Email: service@lauda.de

We are always at your disposal for questions and suggestions!

LAUDA DR. R. WOBSE GMBH & CO. KG
Laudaplatz 1
97922 Lauda-Königshofen
Germany
Phone: +49 (0)9343 503-0
Fax: +49 (0)9343 503-222
Email info@lauda.de
Internet: <http://www.lauda.de/>

18 Product Returns and Clearance Declaration



Product Returns and Clearance Declaration

Product Returns

Would you like to return a LAUDA product you have purchased to LAUDA? For the return of goods, e.g. for repair or due to a complaint, you will need the approval of LAUDA in the form of a *Return Material Authorization (RMA)* or *processing number*. You can obtain the RMA number from our customer service department at +49 (0) 9343 503 350 or by email service@lauda.de.

Return address

LAUDA DR. R. WOBSEER GMBH & CO. KG

Laudaplatz 1

97922 Lauda-Königshofen

Deutschland/Germany

Clearly label your shipment with the RMA number. Please also enclose this fully completed declaration.

RMA number	Product serial number
Customer/operator	Contact name
Contact email	Contact telephone
Zip code	Place
Street & house number	
Additional explanations	

Clearance Declaration

The customer/operator hereby confirms that the product returned under the above-mentioned RMA number has been carefully emptied and cleaned, that any connections have been sealed to the farthest possible extent, and that there are no explosive, flammable, environmentally hazardous, biohazardous, toxic, radioactive or other hazardous substances in or on the product.

Place, date	Name in block letters	Signature

Version 02 - EN



EC DECLARATION OF CONFORMITY

Manufacturer: LAUDA DR. R. WOBSE GMBH & CO. KG
Schulze-Delitzsch-Straße 4+5, 30938 Burgwedel, Germany

We hereby declare under our sole responsibility that the machines described below

Product Line: Puridest **Serial number:** from 220_____

Types: PD 2, PD 4,
PD 2 D, PD 4 D, PD 8 D,
PD 2 G, PD 2 DG, PD 4 G, PD 4 DG, PD 8 G,
PD 2 R, PD 4 R, PD 8 R and PD 12 R

comply with all relevant provisions of the EC Directives listed below due to their design and type of construction in the version brought on the market by us:

Machinery Directive	2006/42/EC
EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU in connection with (EU) 2015/863

The protective objectives of the Machinery Directive with regard to electrical safety are complied with in accordance with Annex I Paragraph 1.5.1 in conformity with the Low Voltage Directive 2014/35/EU.


Applied standards:

- EN 61326-1:2013
- EN 61010-1:2010/A1:2019/AC:2019-04
- EN IEC 61010-2-010:2020

Authorized representative for the composition of the technical documentation:

Dr. Jürgen Dirscherl, Head of Research & Development

Burgwedel, 05.06.2023



Dr. Alexander Dinger,
Head of Quality and Environmental Management

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