# SERVICE MANUAL

## LDR 8 s Auto-Clean  Gas

**MODELS**

LDR 8s AC Gas

EMPTY PAGE

**fri-jado**

| Versions | | |
|---|---|---|
| Version | Issue date dd/mm/yy | Remarks |
| 20220210 | 10-02-2022 | First release |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

## INDEX

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## LDR 8S AC GAS, TECHNICAL DATA

Consult the identification plate to get the proper specifications of the rotisserie. The electrical data may vary from country to country.

All of the information, illustrations and specifications contained in this manual are based on the latest product information available at the time of printing.

**American models**

| Models | | | LDR 8 s AC Gas |
|---|---|---|---|
| Dimensions approx. | Width | inch | 52 |
| | Depth | inch | 38 ¼ |
| | Height | inch | 71½ |
| Weight | Gross | lbs. | 800 |
| | Net | lbs. | 690 |
| Maximum ambient temperature | | °F | 95 |
| Sound pressure | | dB (A) | < 70 |
| Electrical installation | Voltage | V | 1~ 208 |
| | Frequency | Hz | 50/60 |
| | Required power | kW | 0.9 |
| | Max. nominal current | A | 4.4 |
| Plug | NEMA | | 6 - 15P |
| Power cable | Length | inch | 75 |
| Water connection | Aerated | inch | ¾ (1x) |
| Water | pressure | kPa | 200 – 500 |
| | Acidity | pH | 7.0 - 8.0 |
| | Chlorides | ppm | <30 |
| | Hardness [1] | dH | <4 |
| Drain | Open connection | inch | min. 1⅝ |
| Gas System | | | Refer to data plate |
| | Power rating (max) | BTU / KW | 82.000 / 24 |
| | Connection | Inch NPT | ½ |

| Gas specification | Consumption [2] | Gas pressure min/max |
|---|---|---|
| | | |
| Natural gas | 2.2 m³/hr | 7"wc (17 mbar)/14"wc (35mbar) |

1) See chapter "water requirements" for detailed information

2) At sea level 1013 mbar 20°C

## REQUIRED TOOLS

For proper installation Fri-Jado recommend having the following list of tools available during installation:

- Standard set of tools.
- Metric wrenches, sockets and hex socket key wrenches.
- Multi-meter.
- AC current clamp tester.
- Temperature tester.
- Insulation value tester (Megger).
- Gas pressure meter.
- Gas consumption/flow meter.
- Field Service Grounding Kit.
- Flue gas analyzer (optional).

# INTRODUCTION

- Unpacking of the unit.
- Remove the pallet under the unit with the help of a fork lift.
- Put the unit on his location.
- Check if there is enough free space around the unit (see installation drawing).
- Check the electrical supply.
- Tethering of the unit.
- Connect the water.
- Connect drain.
- Grease collection.
- Make a test run on 220 °C (425°F).
- Give instructions to the operator.

# UNPACKING THE UNIT

Immediately after unpacking the oven, check for possible shipping damage. If the oven is found to be damaged, save the packaging material and contact the carrier.
The standard way to remove the oven from a pallet is with a fork lift.

The alternative way is explained on the next page.
Pictures may differ a little form reality and package might be from wood.
Do this with at least 2 people.

Dispose the packagaging according local legislation..

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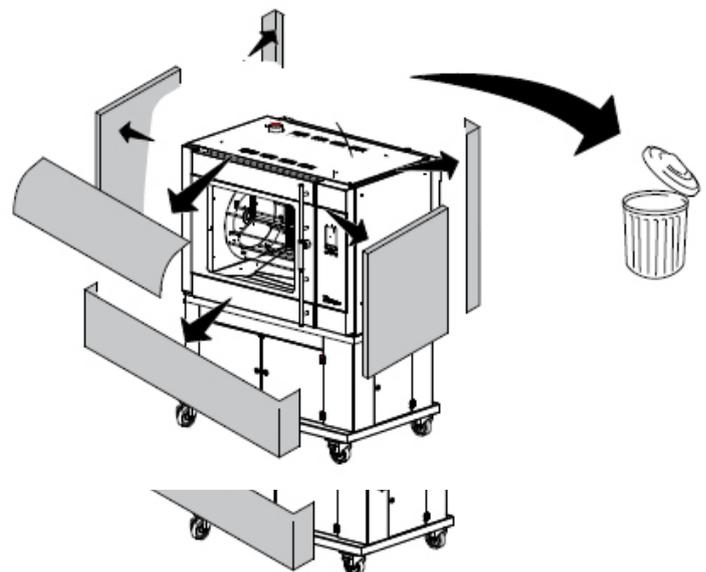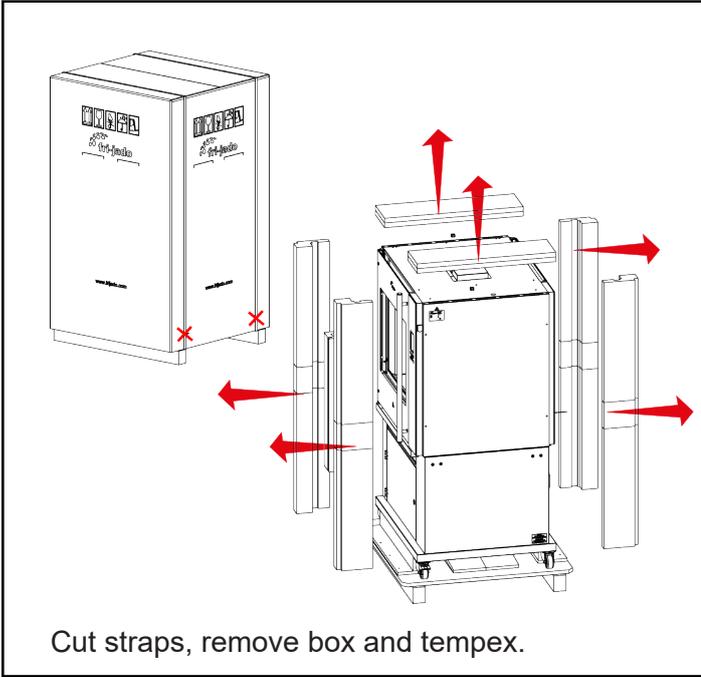
Cut straps, remove box and tempex.
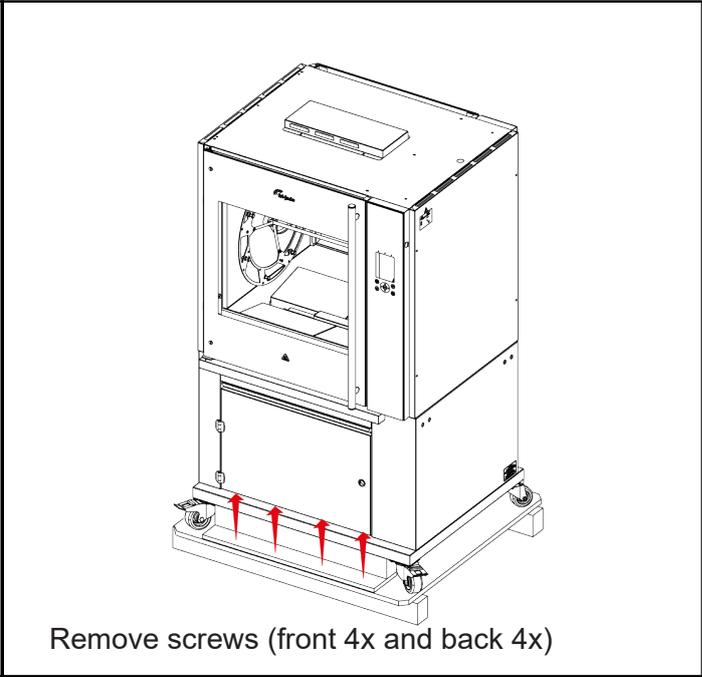
Remove screws (front 4x and back 4x)
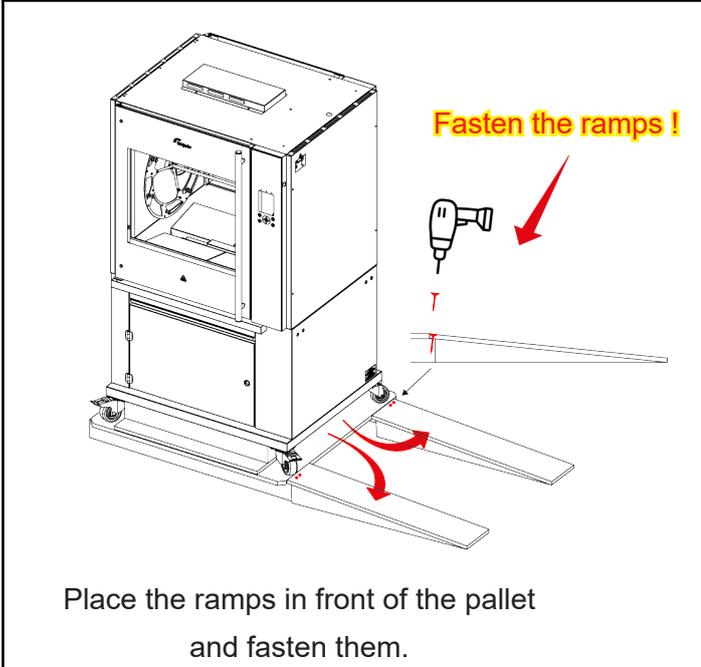
Fasten the ramps !

Place the ramps in front of the pallet
and fasten them.

Keep locked !
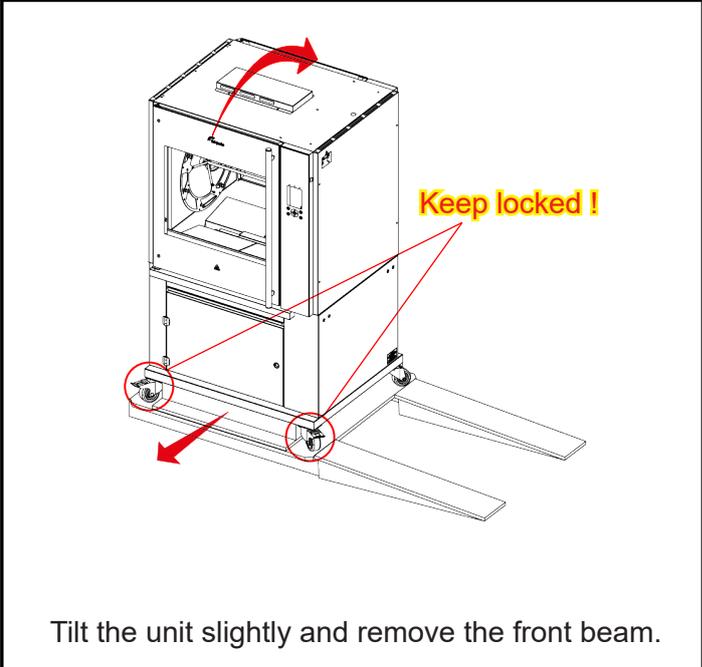
Tilt the unit slightly and remove the front beam.

Keep locked !
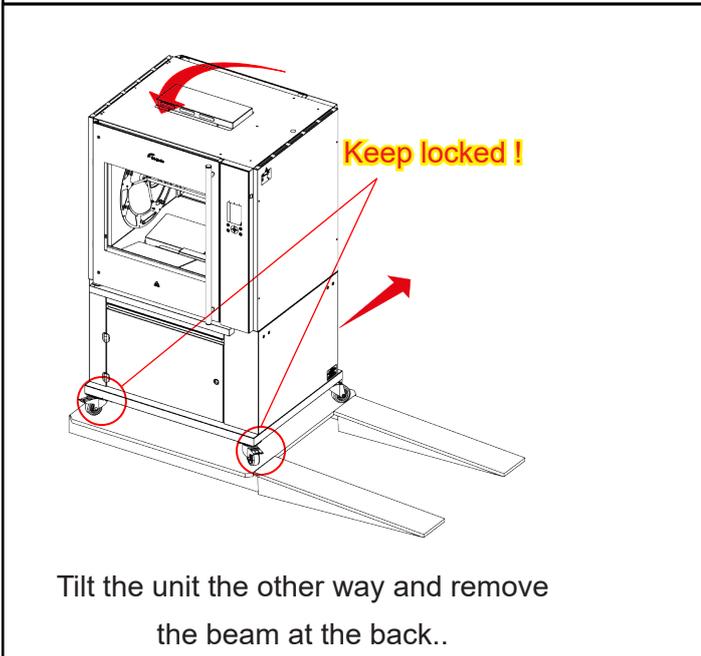
Tilt the unit the other way and remove
the beam at the back..

Unlock and rotate
backwards !
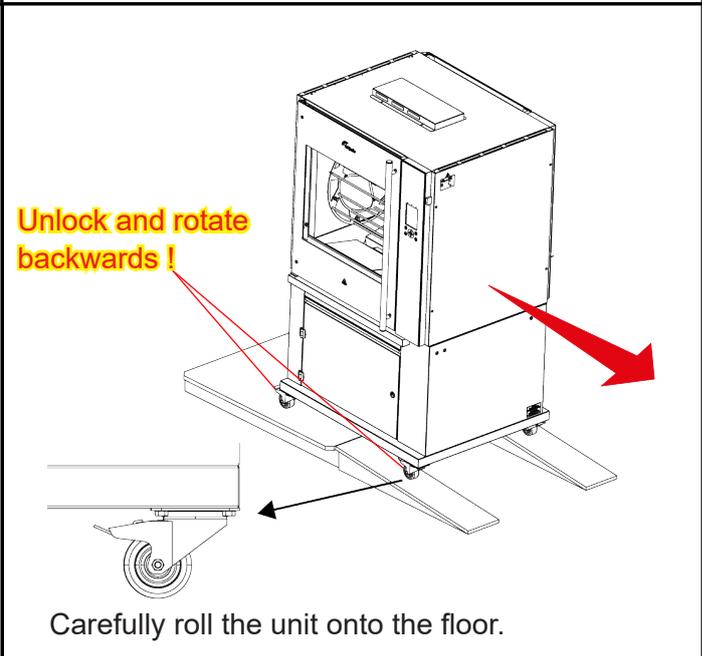
Carefully roll the unit onto the floor.

## LOCATION

The oven must be installed on a level surface. The installation location must allow adequate clearances for servicing and proper operation.

The oven must be protected against falling moisture !

The ambient temperature of the rotisserie must be between 10 and 30 °C (50 and 86 °F).
Place the rotisserie, using a spirit level, flat on a solid surface. Mind the weight of the rotisserie!
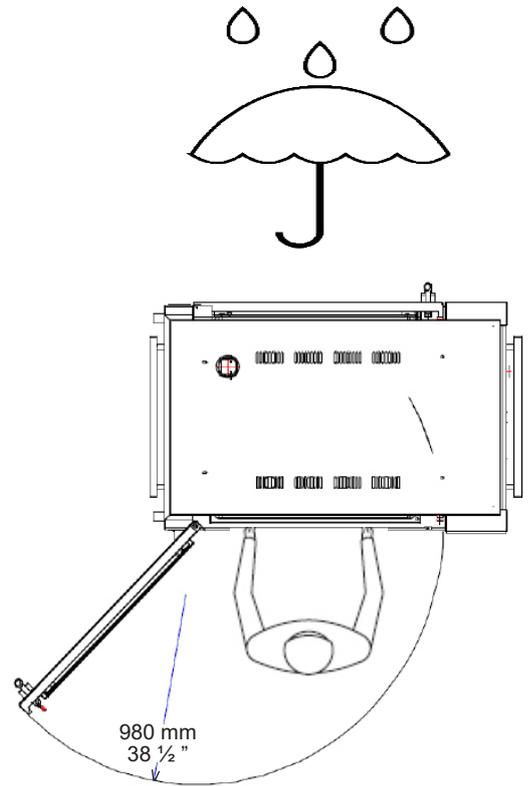
**IMPORTANT:** Make sure you leave sufficient space around the rotisserie to easily remove or insert the rotor. If the base has (rotating) wheels, the floor on which it rests must be level.

980 mm
38 ½ "

## ELECTRICAL SUPPLY

Prior to installation, test the electrical service to assure that it agrees with the specifications on the machine data plate located on the right side panel near the controls. The connecting cable for the unit must be equipped with an approved plug connection. If use is to be made of a permanent connection, the connecting cable must be connected to a manual on/off switch that is installed near the unit in a clear visible manner.

Supply voltage        208V~
Required power        0,9 kW
Max. nominal current 4,4 A

The unit is factory default equiped with a 75 inch cord with NEMA 6-15P plug.
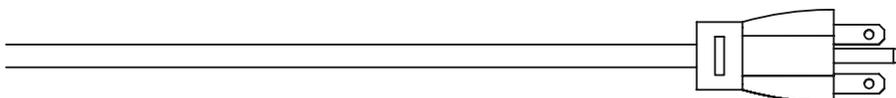
## LEGS / CASTORS

The LDR 8s AC is placed on a stand with 4 locking swivel castors.

## TETHERING OF THE UNIT

Warning: Safety standards require that, when this appliance is properly connected to the electrical power supply using flexible conduit, adequate means be provided to limit movement of the appliance without depending on or transmitting stress to the electrical conduit. This means that, as part of the installation, the base or bottom unit of stacked models must be secured to the building structure (typically either wall or floor) to limit the movement of the appliance and, thus, helping to prevent damage to the conduit during cleaning, maintenance and service operations.

A tether bracket, as shown on the drawing below, is provided with the stand. Based on the routing of the flexible conduit, the bracket must be installed along with the caster to one corner of the base using the hardware provided. The remaining open hole in the center of the tether bracket is to be used to secure one end of the tether (locally supplied chain, cable, etc.). The other end of the tether is to be secured to an anchoring point in the building structure.

**Note:** *Length of tether must be shorter than the flexible conduit to make sure that during appliance movement, no stress is transmitted to the conduit.*

## POWER, WATER AND DRAIN CONNECTIONS  LDR 8S AC

The Power (electric and gas), water and drain connections can be found below the controller side  of the unit.

See the labels 1 untill 5

1    208V Mains cable 75" with Nema 6-15P Plug

2    Gas supply connection 1/2" NPT

3    Water supply hose G 3/4", L= 1,1 mtr (43")
     **Flush the tap before connecting**

4    Drain hose Ø 33 x ø 25, L= 1,2 mtr
     (Ø 1 5/16 x ø 1", L= 47")
     **See chapter "connecting the drain tube"**
     **for further information.**

5    Grease outlet valve.

Side view

Tether bracket
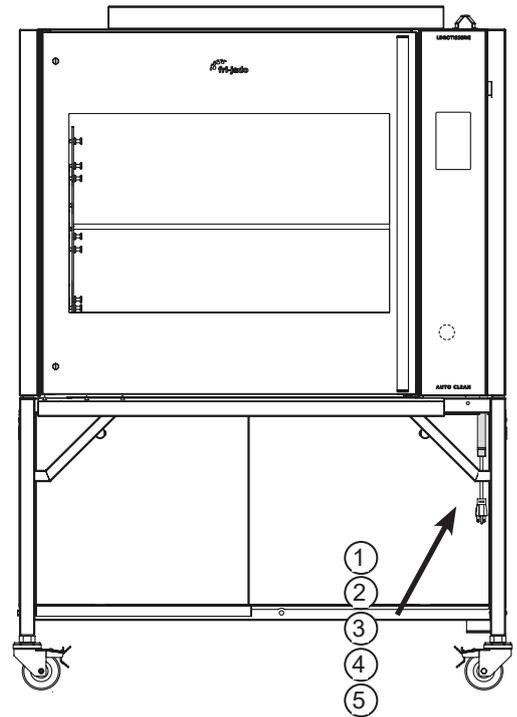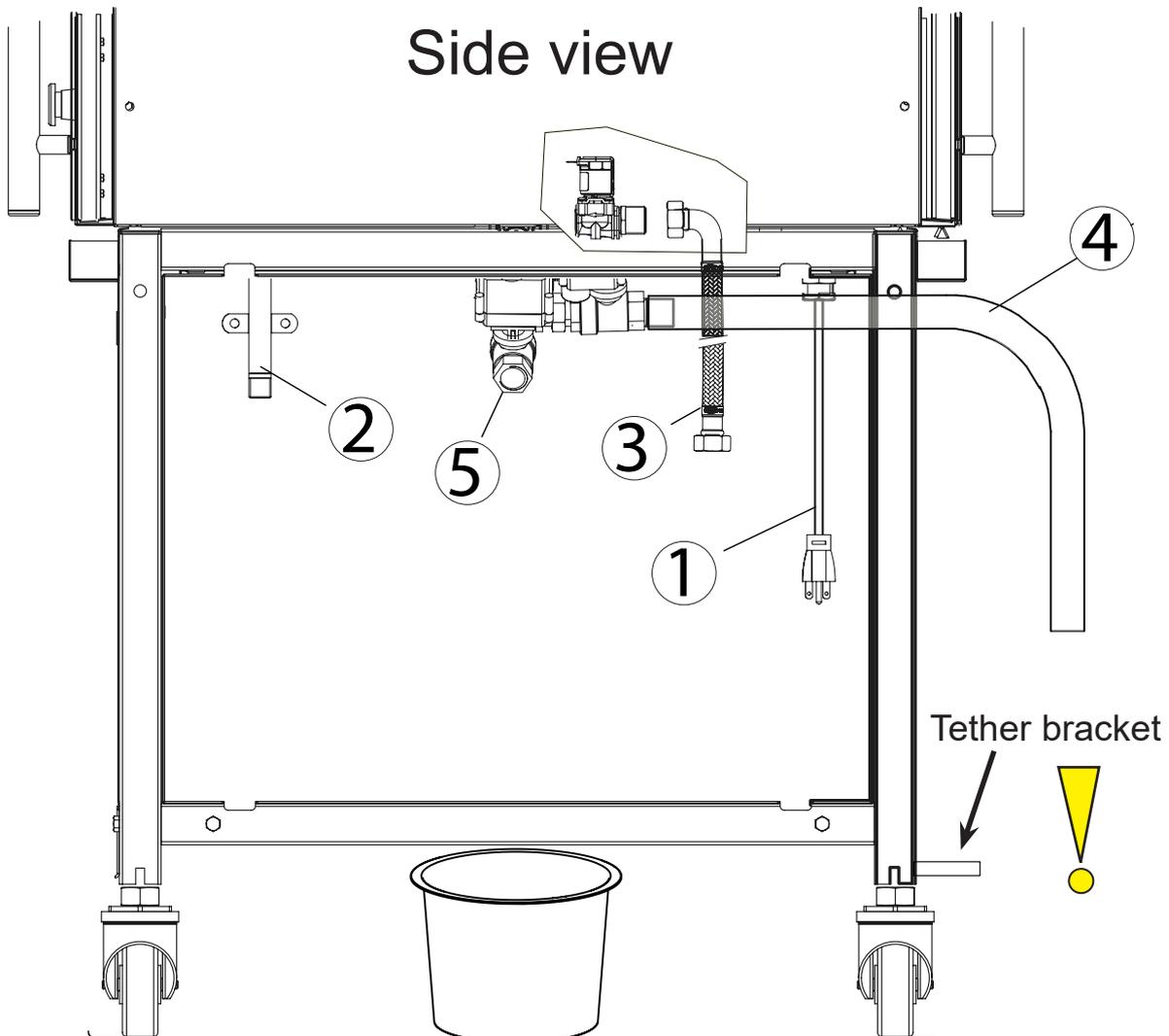
# WATER REQUIREMENTS

**The supplied tap water must have the following conditions:**

1. Minimum pressure 200 kPa (2 bar)
2. Maximum pressure 500 kPa (5 bar)
3. Maximum water temperature 55 °C (130 °F)
4. Acidity pH 7.0 - 8.0
5. Chlorides less than 30 ppm
6. Use a sediment pre-filter or a strainer for the reduction of silica and other non-dissolved sediments.

**Water hardness and descaling filters.**

7. A descaling filter is advised when the hardness of the water is > 4° dH (4 Grains/Gal).
8. A descaling filter is mandatory when the hardness of the water is > 20° dH (20 Grains/Gal).

**Note that the cleaning capacity of the cleaning tablets will decrease with harder water.**

*The by-pass of the descaling filter, if applicable,* **needs to be adjusted to zero.**
*Refer to the filters manual to determine the filter capacity. This filter capacity needs to be adjusted in the manager parameters.*

## GAS CONNECTION

1. All gas supply connections and any pipe joint compound used must be resistant to the action of propane gases. Codes require a gas shutoff valve be installed in the gas line ahead of the rotisserie.

2. With a gas conduit (not included) you can lead the gas connection to the main gas supply. Connect the rotisserie to the gas line after leveling. Gas supply line must be at least the equivalent of 1/2" (12.7 mm) iron pipe and capable of maintaining the required gas pressure during full power. Make sure the pipes are clean and free of obstructions, dirt, and piping compound.

Note: After the piping has been checked for leaks, fully purge gas pipes to remove air. Disconnect the rotisserie from the gas supply piping system during any pressure testing on the gas supply piping system.

Note: Check all joints in the gas supply line for leaks prior to start up the rotisserie. You can use a soap and water solution. Do not use an open flame.

3. The gas connection has an outside diameter of ½ inch. See position ② on the above chapter "Power connection. The gas connection must be mounted by a registered installer.

4. The rotisserie must be installed so that the flow of combustion and ventilation air will not be obstructed. Make sure there is an adequate supply of air in the room to allow for that required combustion of gas of the rotisserie chamber.

5. Keep the space around the bottom and the ventilation opening in the top of the rotisserie free from obstacles to guarantee a good air flow in the electrical compartment and combustion chamber.

6. Appliance is for use only with the specific legs or casters specified by the manufacturer.

7. North American rotisseries must be installed conform local codes, or in the absence of local codes, with the National Fuel Gas Code, ANSI Z223.1/NFPA 54, or the Natural Gas and Propane Installation Code, CSA B149.1, as applicable, including:

8. i) The appliance and its individual shutoff valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of ½ psi (3.5 kPa).

9. ii) The appliance must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than ½ psi (3.5 kPa).

10. North American rotisseries must when installed be electrically grounded in accordance with local codes, or in the absence of local codes, with the National Electric Code, NFPA 70, or the Canadian Electrical Code, CSA C22.2, as applicable.

11. North American rotisseries equipped with casters must be installed with connectors that comply with the Standard for Connectors for Movable Gas Appliances, ANSI Z21.69 • CSA 6.16. This connection must include a quick disconnect device that complies with the Standard for Quick Disconnect Devices for Use With Gas Fuel, ANSI Z21.41 • CSA 6.9.

12. Adequate means must be provided to limit the movement of the appliance without depending on the connector and quick-disconnect device or its associated piping to limit the appliance movement. See chapter "Thethering of the unit.

## GAS PRESSURE

The gas inlet pressure has to be according to the table on the technical data page. (Chapter 1)
The pressure can be checked on the gas block with a pressure meter like in the picture below.



Gas inlet:     Inlet of gas after gas pressure reduction valve (max. 22" H2O).

Pressure depending       of gas type.

Gas outlet:    Outlet of gas into gas mixture blower.


Coils:  2 Coils for the gas valves.


  Inlet pressure: Measuring tube for gas pressure after reduction valve.

  In order to measure loosen  the screw on inside of the tube.
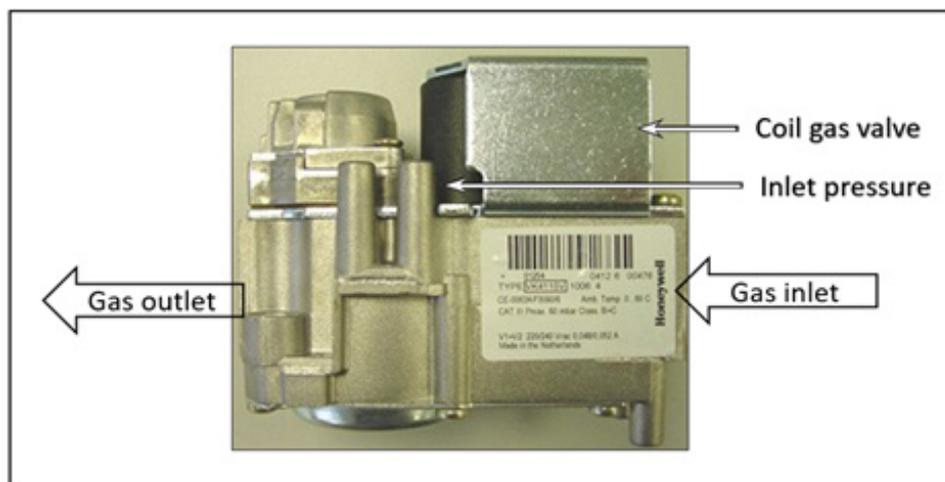


Measuring notes:
*       Inlet pressure: During operation you measure the pressure of the setting of the reduction
*       Outlet pressure: During operation you measure a pressure of zero.


You can use this measuring point also to check if the gas valves are opening. When you start up
the machine and the valve is not opened yet you measure a under pressure due to the suction of
the gas mixture blower and this pressure will be zero when the valve is opened.

## FLUE GAS ANALYSER

1. With the flue gas analyzer you can measure the exhaust gas on the rotisserie for toxicity. With the use of a Testo 330-1LL you get the following measurements:

2. Values below are references and factory defaults.

|  | RPM [min-1] | CO2 [%] | Power Hs in [kW] | Power Hs in [BTU] |
|---|---|---|---|---|
| High load | 6350 | 9,70 % | 24 | 82000 |
| Low load | 2500 | 9,20 % | 8,9 | 30368 |
| Start load | 4640 |  | 17,5 | 59030 |



## GAS CONSUMPTION

1. With a flow meter you can measure the gas consumption/flow. See table on page 4.

2. To get an accurate consumption you have to do a measurement of 3-5 minutes. During this period the rotisserie may not be turned off and no other gas device on the same gas line may be active.

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## CONNECTING THE DRAIN TUBE

An open draining system with a 110 mm (4 1/2") funnel is recommended. The drain tube has an outside diameter of 33 mm (1 5/16").

•   It is not allowed to make a closed connection!

•   Make sure that the tube is not kinked and is sloping downwards to the drain funnel.

•   The minimum inside diameter of the sewer pipe needs to be 40 mm (1 1/2").

•   A siphon in the customers sewer is highly recommended to prevent odors from coming out of the sewer.

•   See below examples.

Possible lay outs of drain                      **Faulty lay outs of drain**
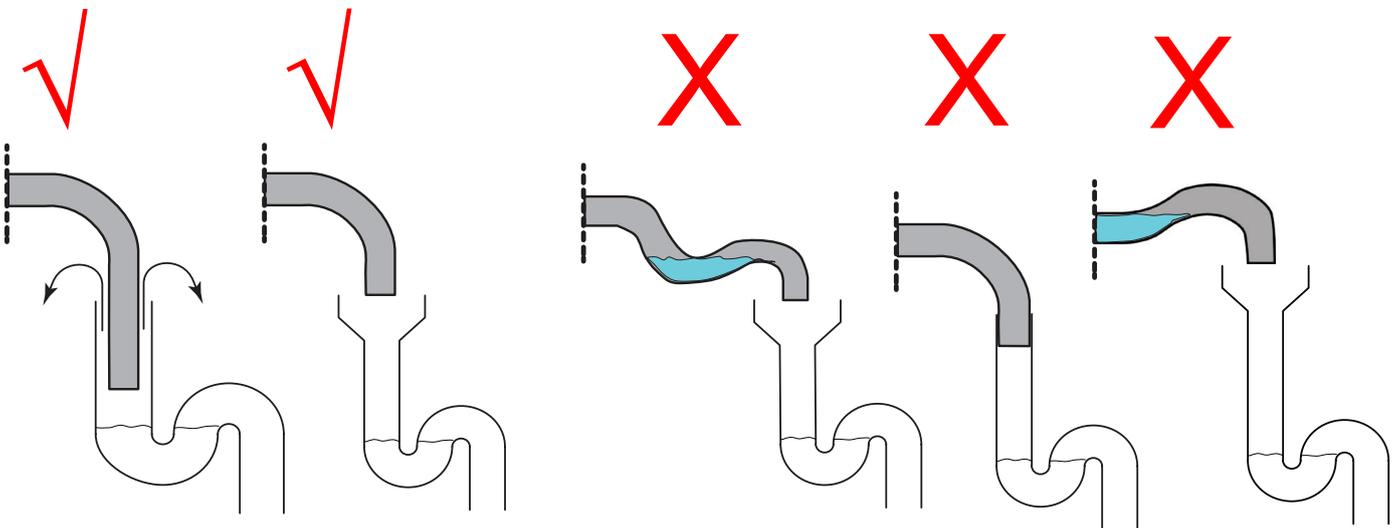


## EXTRACTION OF THE ROTISSERIE

The rotisserie must be located under an extraction hood which has adequate connection to an exhaust duct and extends 8" beyond the rotisserie sides.

Clearance above the rotisserie flue should be adequate for the products to escape so that there is no interference with the heat circulation in the rotisserie. Refer to ANSI/NFPA 96, " Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations" (latest edition). The LDR Gas produces about 600 cf water vapor per cycle.

Consider the following guidelines for the extraction hood:

•       The minimum capacity of the extraction hood has to be 900 cfm

•       The extraction hood has to extend minimum by 8" on all sides of the rotisserie

•       The extraction hood has to have a free height, above the rotisserie, of a minimum of 16"

•       The rotisserie has to be accessible for service purposes

•       Flue connections should never be made directly to the rotisserie.

## GREASE COLLECTION

Place the bucket, which is delivered with the unit, inside the stand under the drain pipe.

It is also possible to put other containers in the underframe to collect the grease.

Note 1: In one run, 6 liters (1.5 gallon) grease can come out.

Note 2: The temperature of the grease can go up to 80 °C (176 °F).

Make sure that the container meets the above requirements.

## TEST RUN

The oven must be burned in to release any odours that might result from heating the new oven surfaces. Operate the oven at maximum temperature setting of 220°C (425°F) for 30 minutes. Smoke with an unpleasant odour will normally be given off during this burn-in period.

## INSTRUCTIONS FOR OPERATORS

After installation of the rotisserie the operator of the unit has to be instructed.

The instruction has to cover the following subjects:

- Programming and options.
- Working of the unit.
- Free space of unit for cooling of drive motor and blowers.
- Run through the user manual.
- How to run the cleaning program and placing cleaning tablets.
- Cleaning of the tablet dispenser and bottom filters after the cleaning program has finished.
- Periodical maintenance:
    - o Cleaning of fan plate every 3 months.
    - o Yearly maintenance by service agent.
- How to react for information or service calls.

## LDR 8S AC  ON STAND

1845 (72 5/8")   >100 (4")

>50 (2")

(6)

(6)

(1)  Location of mains connection
(2)  Location of gas supply connection 1/2" NPT
(3)  Location of water connectionG 3/4" BSP
(4)  Location of drain hose OD Ø 33 mm (1 1/16")
(5)  Location of fat drain
(6)  Minimum required space
(8)  Example of funnel
(9)  Sewer pipe ID ≥ Ø 40 mm (1 5/8")

(1)

121

>50 (2")

(6)

1819 (71 1/2")

1470 (58")

1230 (48 1/2")

895 (35 1/4")

782   30 3/4"

(1)
(2)
(3)
(4)
(5)

973   (38 1/4")

860 (33 1/2")

314

(2)   (5)   (3)

(4)

(1)

(8)

(9)
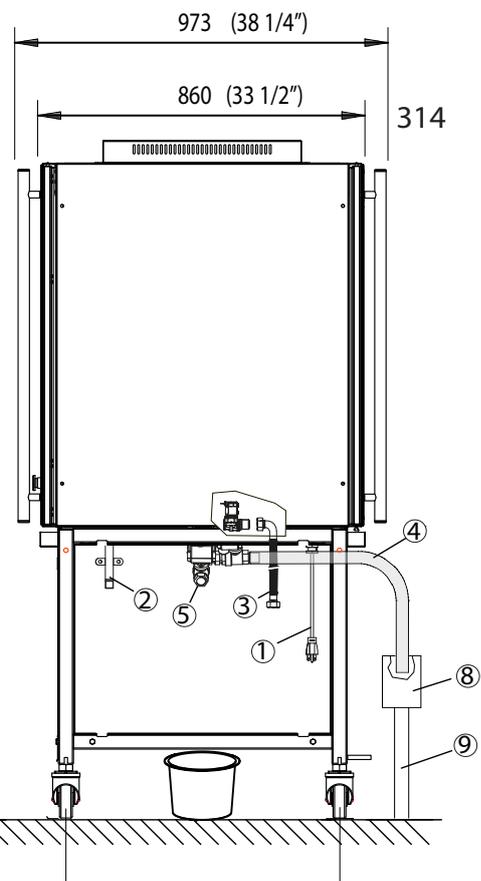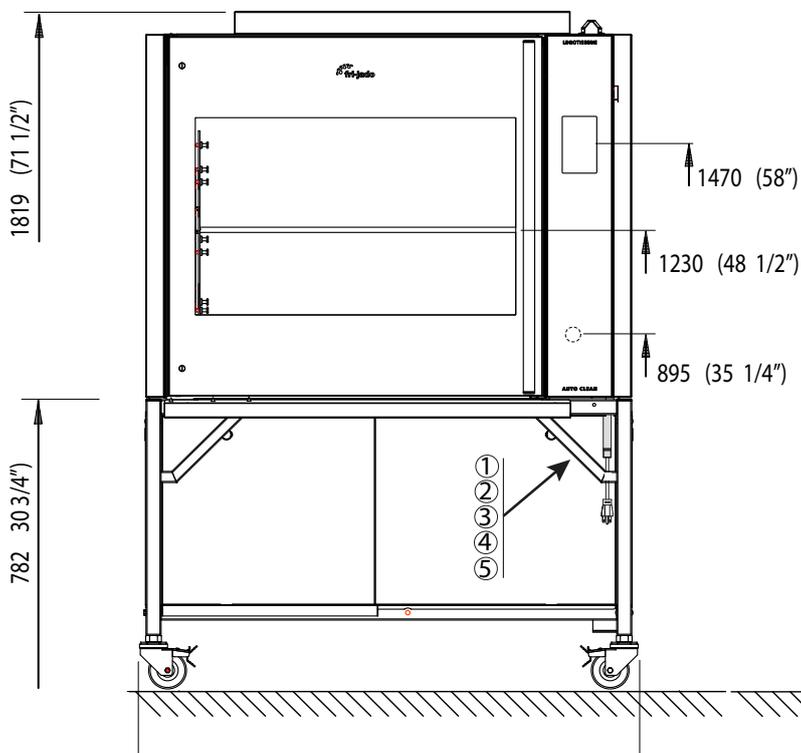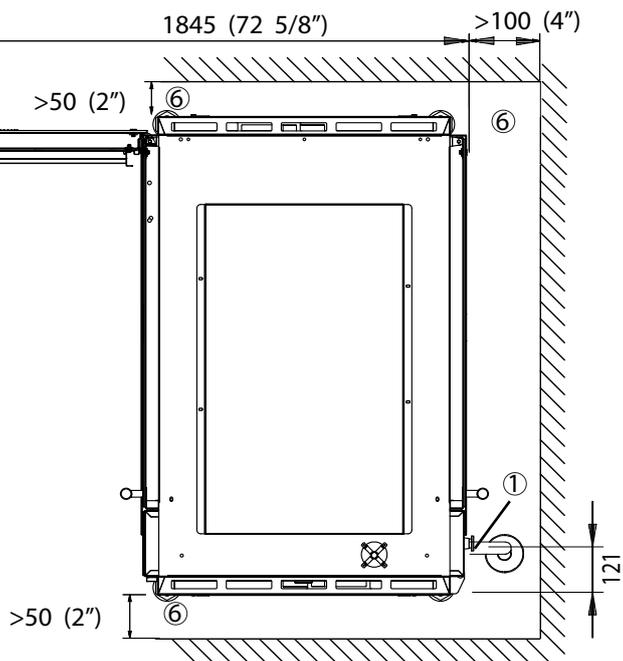
## SWITCHING ON

Touch the screen somewhere

Touch the ON / OFF symbol

Home screen

8:07

**Main functions**

Language

ON / OFF  or stop program

Recipes menu

Home screen

Cleaning program

Help function

Settings

Wipe/clean touch screen (locks screen for 60s.)

**Other symbols**

Pause

Extra time

Continue

Create recipe

Edit recipe

Confirm

Step back

Delete

Tap screen

Swipe

## MENU OVERVIEW  SW VERSION 1.00.17

8:07

Recipes menu

Messages (under construction)

Manager and service settings (see below)

Log & maintenance menu

Help menu (under construction)

Clean screen. Locks the touch screen for 60 seconds.
About. Gives information about soft- and hard-ware.
Screenshot. Only available with a wifi connection.

Manager ▶
Service ▶

Please type your code to get access
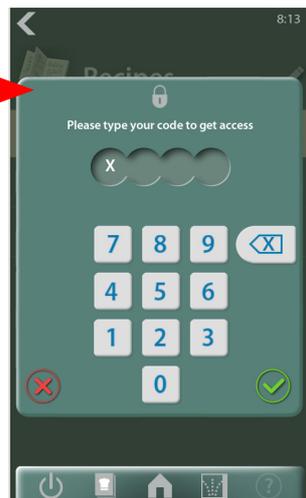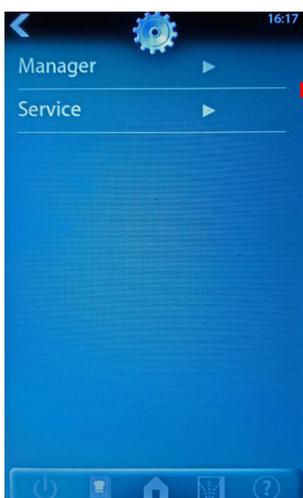
**The manager pin code** can be chosen freely. 0000 = free access.
**The service pin code is 4878**.

Once the service menu is entered, also the manager menu is unlocked.

Once the manager or service menu is opened, it stays unlocked for 30 minutes.

See parameter lists at the end of this chapter.

# RUNNING A COOKING PROGRAM

Push recipes icon



Choose program



Start program



Check fat container and push "continue"



The below 4 steps are only applicable in case the cooking program has a pre-heat step.

Preheat starts.
Actual temperature shown.
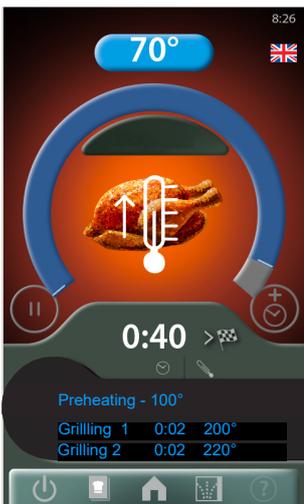


Preheat done, open the door.
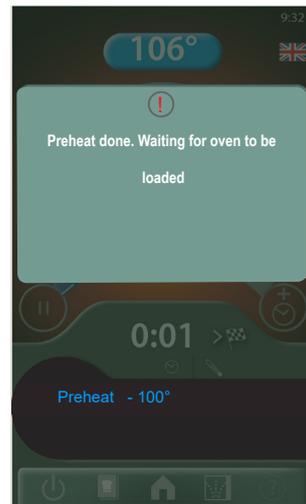


Load products and close the door.
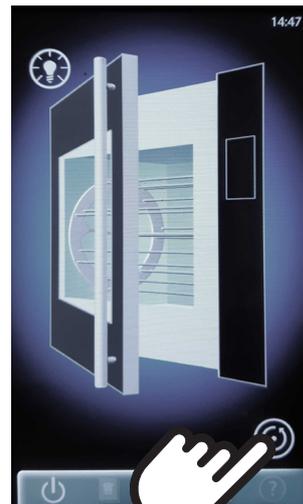


Push ▶



Program running.
Push to see actual temperature.
⏸ = Pause button
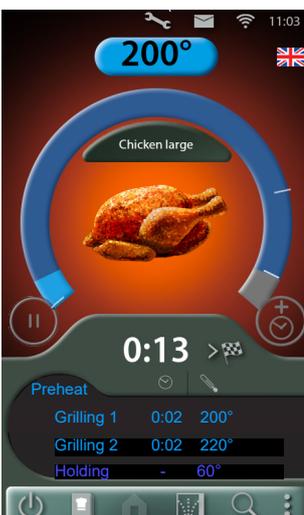


A short sound comes when going into the next step.
Push "boost" icon for extra time, if desired.
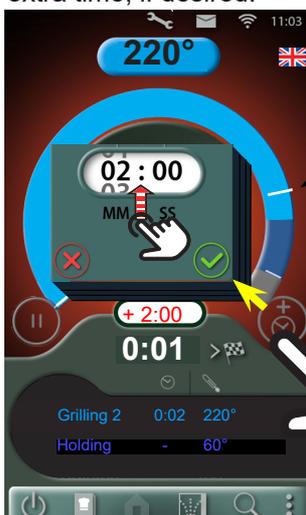


Program in holding step, if applicable. Touch the screen to stop the sound
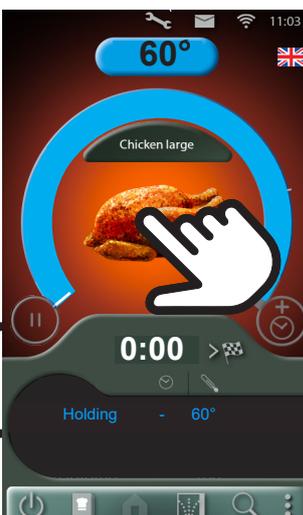


End of program when no holding is programmed.

## CREATING A COOKING PROGRAM

Push recipes icon

Push ✏ icon
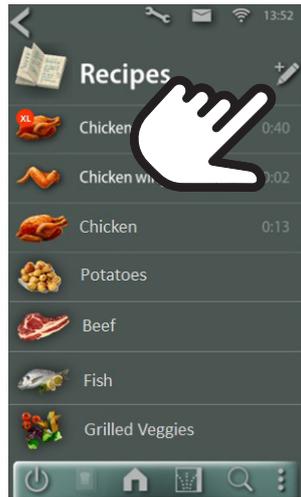
Chose product icon and fill in recipe name.
Chose or change step name if applicable.
Drag up for an extra cooking step.

Other name if applicable
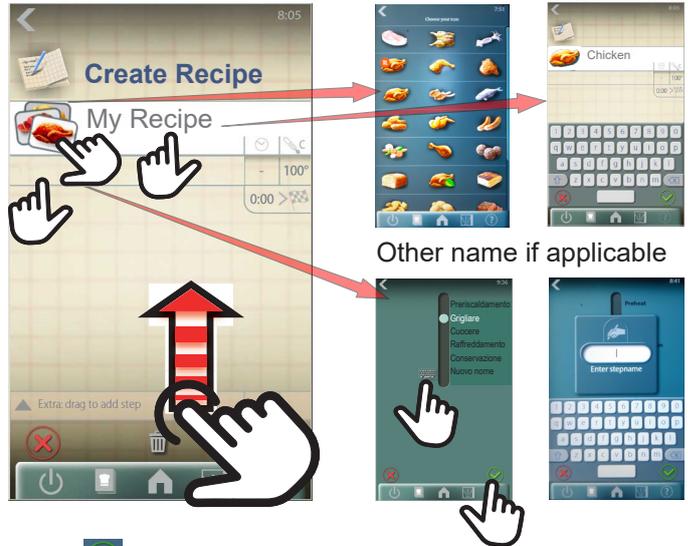
Push ✓ when ready

Push time and temperature and adjust.
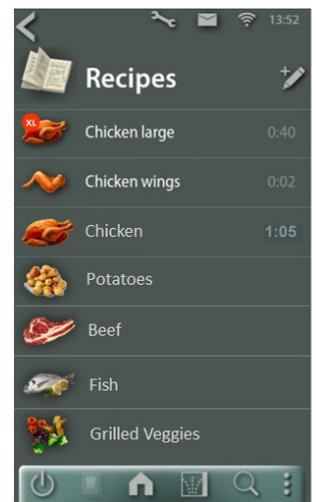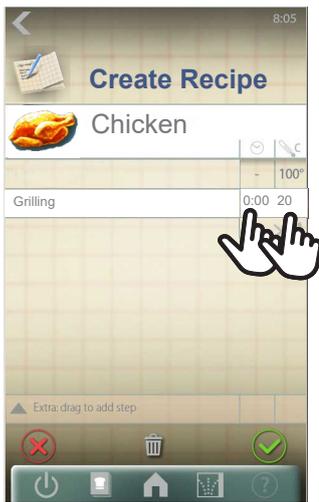
## EDITING A COOKING PROGRAM

Push recipes icon

Choose program
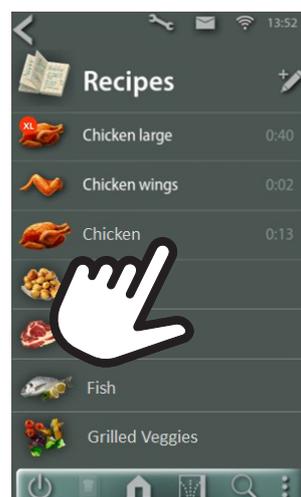
Push ✏ icon to edit the highlighted recipe. Now follow the steps as described above.

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## EXAMPLE OF ERROR MESSAGE

| Example motor failure during cooking. | In the "log" menu the error can be found | Select the error | Meta data is shown |
|---|---|---|---|
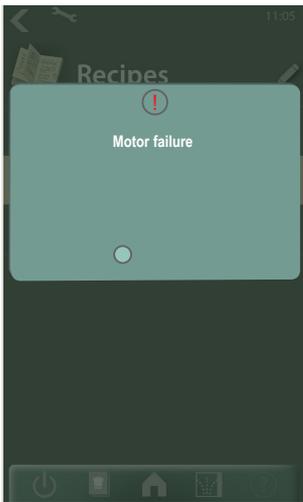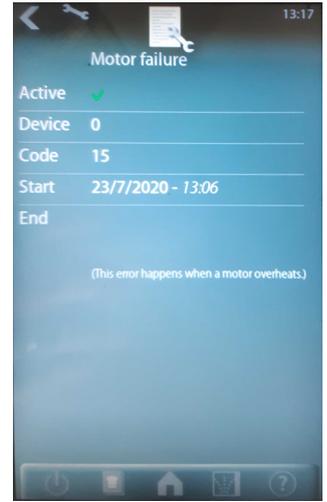
Go to the manager menu to clear the error.
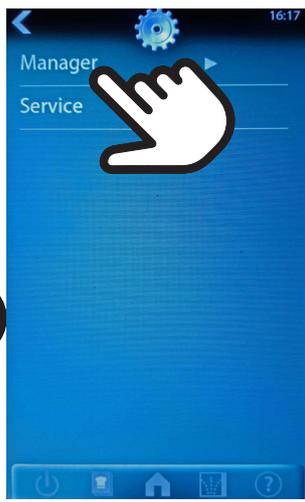
In manager menu:
Scroll to "Clear errors" and push ▶
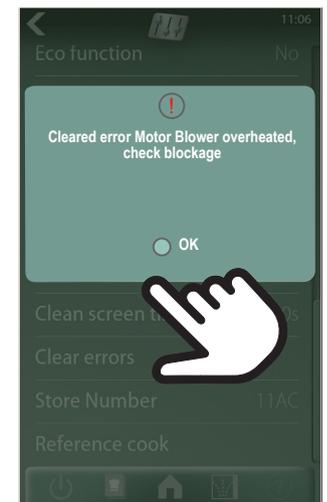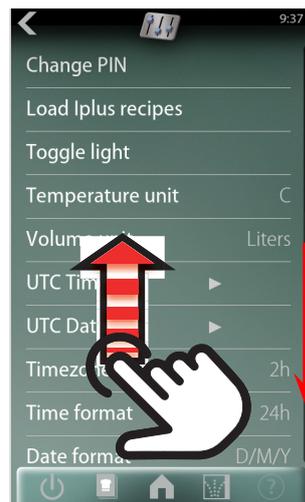
## AUDIO VOLUME AND SOUND SETTING

In manager menu:
Scroll to "Audio" and push ▶

4 options.
With "Test audio" the chosen volume or sound can be checked.
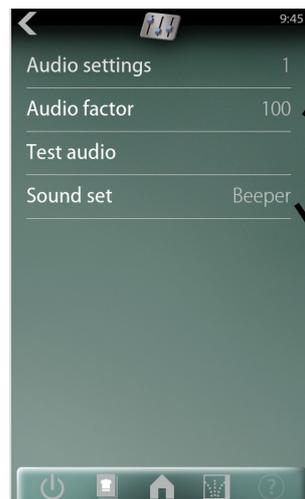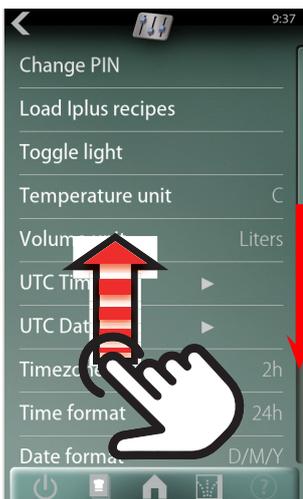
This is no setting.
Different sounds can be heard in combination with "Test audio".

Volume

Sound choice     (Beeper has highest volume)

## THE CLEANING PROGRAM

Push cleaning icon

Choose program

If unit is too hot, it will cool down first.

Now it is asked to place the detergent.

Follow the instructions that can be found in the container with detergent.





Place the detergent.
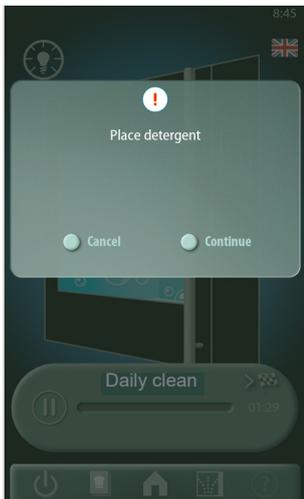
Push ⏸ to pause, if applicable.

Push ▶ to continue

Cleaning program has finished.






## CLEANING THE TOUCH SCREEN (WHILE IN OPERATION)

Push 🖐 icon

Push "yes"
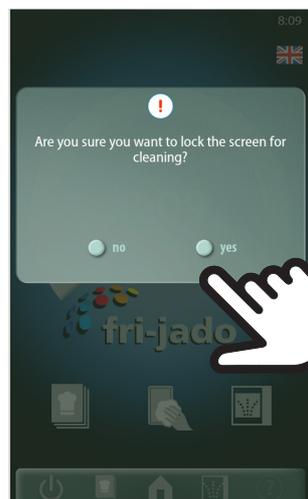
The screen is now locked for 60 seconds and counting down

fri-jado
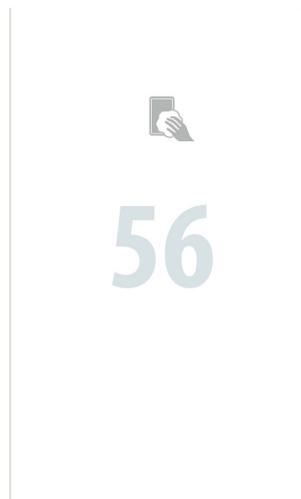
## CLEANING PROCESS    TDRAC  (3 CYCLES)

Descale –
Disabled / Full / Short

**Full Descale**

Daily clean – Enabled / Disabled

**Daily Clean**

Quick clean –
Enabled / Disabled

Short Descale

Clean start

Clean Cycles - 3

Soap safe temp - 75 °C

Soap cooling

Clean temp 2 - 60 °C

Add cleaner

Wait - Start delay

Cooling temp - 75 °C

Cooling

Quick Clean

Supply time 1 – 50 sec.

Clean temp 1 - 40 °C

Hot rinse time - 20 min.

Rinse time - 10 min.

Flush time – 10 sec.

Drain backflush time – 2 min.

Drain time - 3 min.

Supply time 2 – 50 sec.

Clean temp 3 - 55 °C

Shine rinse time - 5 min.

Drain time - 3 min.

Final time - 1 min.

Clean sanitation – Sanitation step – Yes / No

Sanitation temp - 110 °C

Sanitation time - 20 min.

Parameter setting

Operator action / delay

Proces stage

Proces cycle

# PUMP AND VALVES IN ACTION DURING CLEANING

Valve position during cooking          cooking

**The pictures below show each stage in the cleaning program.**

-Tubes in red, are flowing
-PumpS or valves in yellow are active / open.
-Soap has to be added after stage 1

-The first cycle is following stage 1 untill 10.
-The second cycle is following stage 2 untill 10.
-The third cycle is following 2 untill 9 and then 5 as last stage.

The stages 3 and 4 are rehearsing alternately, during 1 minute each, over a period of 20 minutes, with the heating on and after that, during 10 minutes with the heating off.
The third cycle has only heating on.

Standby

Cooling down
for cleaning

1

Filling 50 sec.

2

Rinse right 1 min.

3
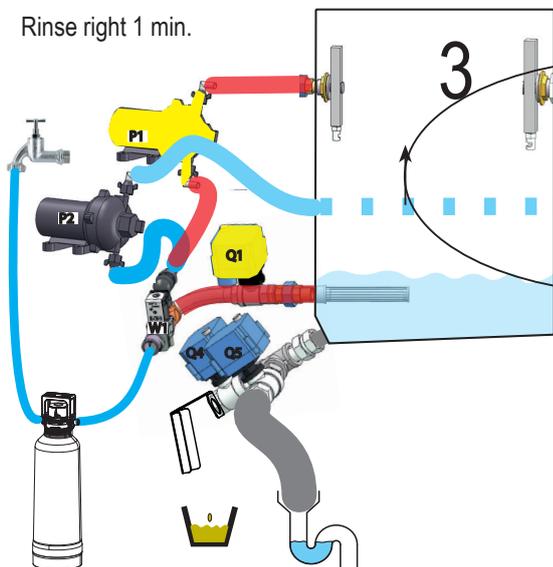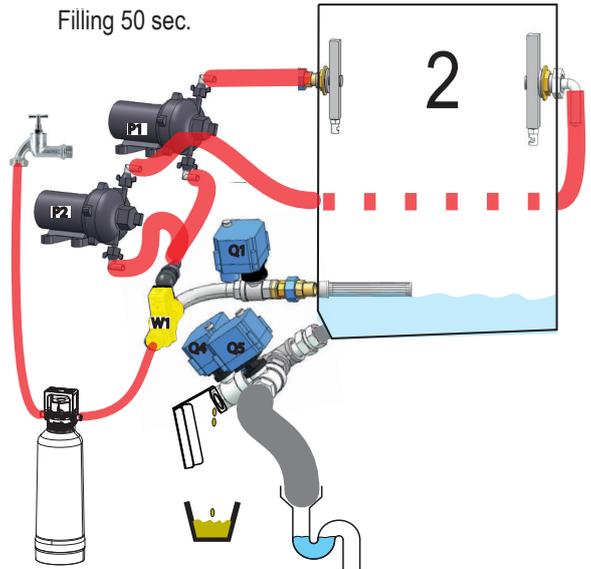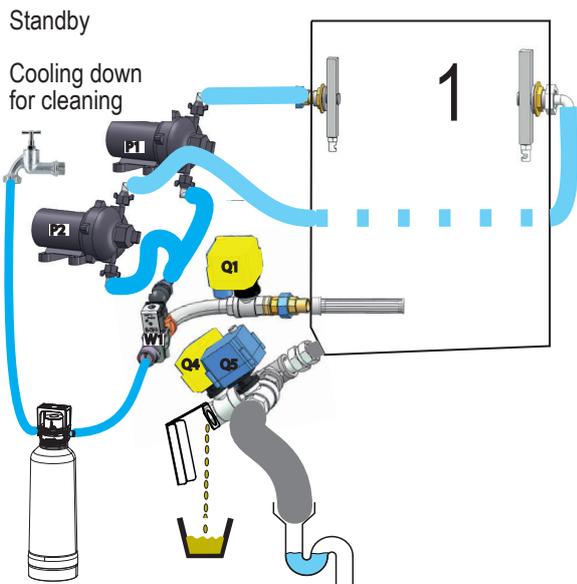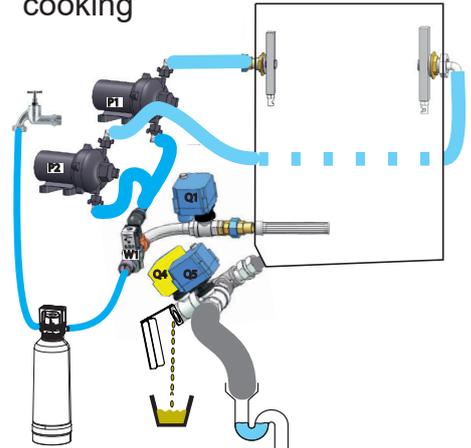
Hot 20 min.

Cold 10 min.

Rinse left 1 min.

4
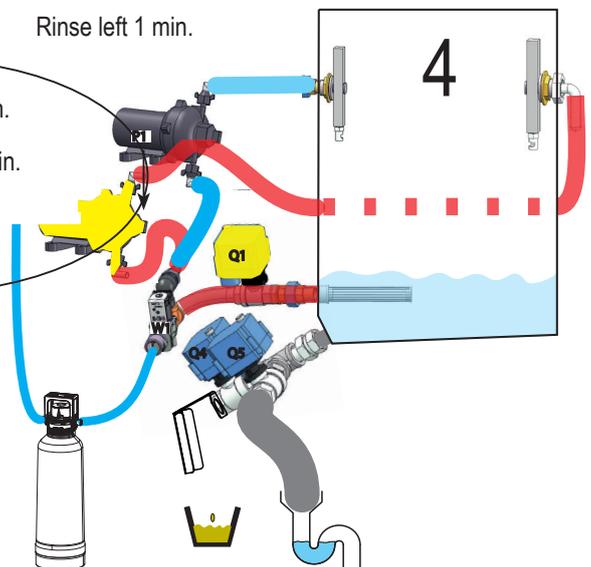
The stage 3 and 4 are rehearsing alternately, during 1 minute each, over a period of 20 minutes, with the heating on and after that, during 10 minutes with the heating off.

The third cycle has only heating on.

In case of a sanitation step, that will be like stage 10, but then only with the heating on.

Drain 180 sec

5

Rinse B left 10 sec

6

Rinse B right 10 sec

7

Drain B 10 sec

8

Drain B 120 sec

9

Pause 60 sec

10
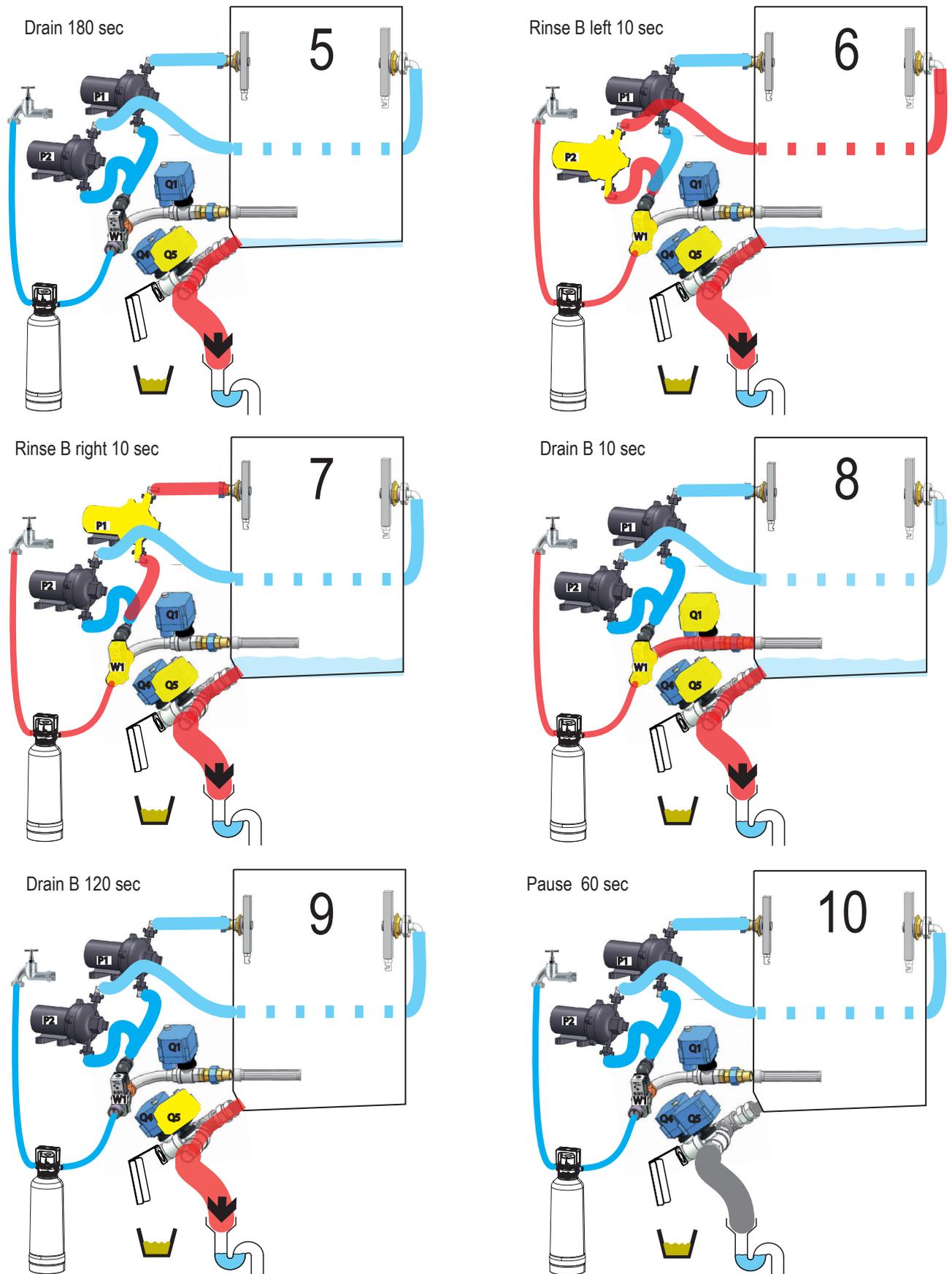
# I/O TEST

Gain access to the service menu                                                    4878
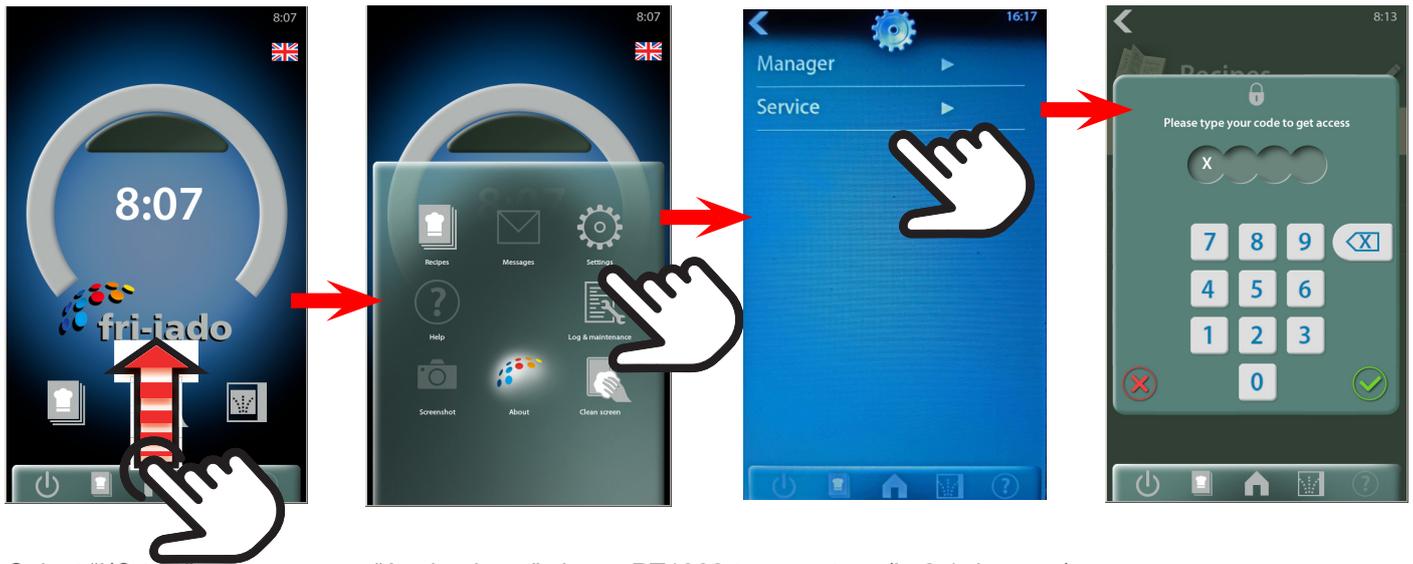


Select "I/O test"

"Analog input" shows PT1000 temperature (in 0,1 degrees)
Example below is 67°C
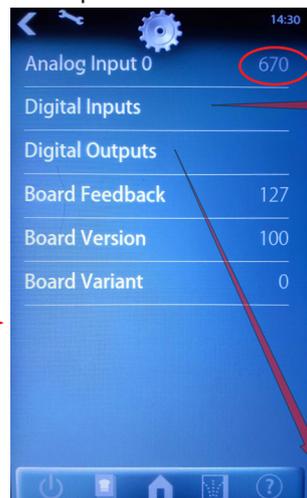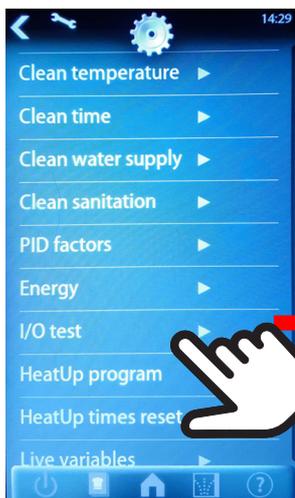


"Digital inputs" is showing the available inputs and also which contacts are closed.

The picture shows the all good situation

J13 Door is closed.

J14 Thermistor in the blower closed = OK

J17 Gas alarm contact open = OK

"Digital outputs" is showing the available outputs and also which are activated.

Push the button to activate or disactivate the output of your choice.

See chapter "software i-controller" (I/O test)  for a hardware overview of the outputs.

# EXCHANGING DATA WITH THE USB DRIVE
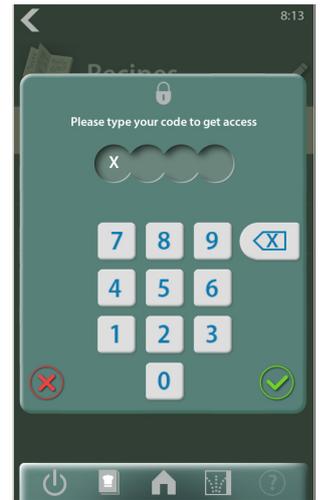
The password for service is 4878.
Once the service menu is entered, also the
manager menu is unlocked.
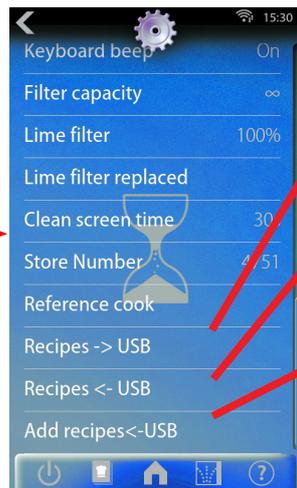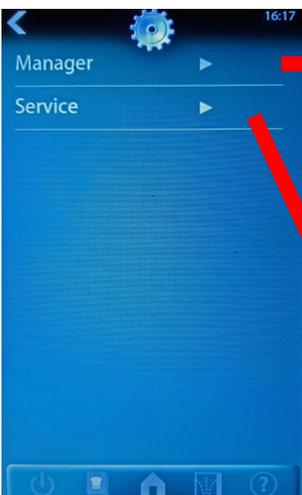
Copies recipes from the controller to the USB
drive

Copies recipes from the USB drive to the con-
troller. The existing recipes will be overwritten.

Copies recipes from the USB drive to the con-
troller. The recipes will be added to the current
recipes.
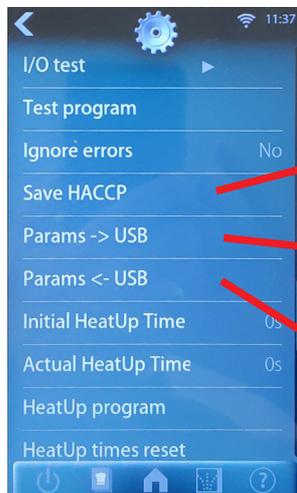
Copies HACCP files from the last 3 days to
the USB drive.

Copies the parameter list from the controller to
the USB drive.

Copies the parameter list from the USB drive
to the controller. The current parameters will
be overwritten.

| Device | Re-lay | Con-nec-tor |
|--------|--------|-------------|
| M1 Rotor | R1 | J2-4 |
| M2 Blower | R3 | J2-3 |
| K1 Heater | R2 | J2-1 |
| K2 Light | R4 | J2-6 |
| W1 Water Supply | R5 | J32 |
| W2 Water Supply | R6 | J31 |
| K6 Water Pump | R12 | J61 |
| Q1 Casco | R9 | J42 |
| Q2 Spray Right | R8 | J41 |
| Q3 Spray Left | R11 | J52 |
| Q4 Fat Drain | R10 | J51 |
| Q5 Drain Valve and/or pump | R7 | J33 |

M1

BROWN
WHITE
WHITE/A

R1 -> J2-4

Rotor motor

M2

R3 -> J2-3

Blower

R2 -> J2-1

K1 Heating

Heating

R4 -> J2-6

K2 Illumination

Illumination

WATER VALVE

W1 88 89

R5 -> J32

Water solenoïd

R6 -> J31

Water solenoïd

PUMP 24V=

P1/2

R BK

R12 -> J61

Water pump

SUCTION SIDE

Q1 Q1 CR03 42

R9 -> J42

Suction side

Q2

R8 -> J41

Rinse left /right

Q3 K6

R11 -> J52

Pump left/right

GREASE DRAIN

Q4 Q4 CR03 51

R10 -> J51

Grease drain

SEWER DRAIN

Q5 Q5 CR03 33

R7 -> J33

Water drain    Valve and/or pump

Hydraulic Overview

P2

P1

W1    Q1         Q4    Q5

OPTION

96 98    94  95

P2    K3

## UPDATING SOFTWARE  LDR AC   (S-CONTROL)

Preparing the software (firmware)

The software comes in a .zip file. The name corresponds with the version of the software. For example: *V1_00_3.zip.*

1. Extract the zip file
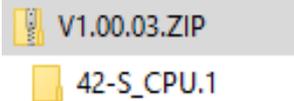


2. Copy or move the folder "*42-S_CPU.1*" to the USB drive.
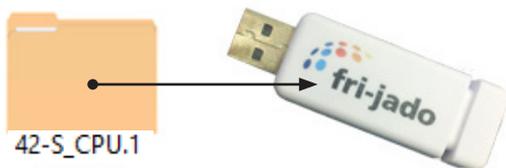


Updating the software (firmware)

1. Disconnect the mains supply
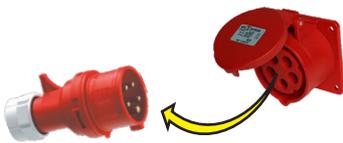


2. Connect the USB drive.



3.  Connect the mains supply
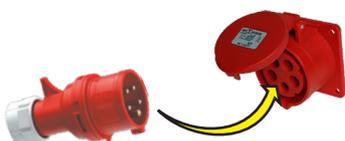


4.  The following messages appear

Bootloader version V4.03.04
-USB stick found
   starting upgrade

-Copying update.tar

-in progress .. %

-USB can be removed

-Removing current application

-Extracting archive .. %

-Please remove USB stick

5. Disconnect the USB drive and wait untill the screencomes back.



*Important first setting !!*
*In the service menu, the parameter* *"commision apply"* *needs to be set on "yes".*
*Otherwise, cooking programs will be lost after a power disconnection.*

*In case a new board has just been put into a unit, it has to be set to the right device type!  -> TDRac*

**fri-jado**

## AUTOMATIC COOK CORRECTION

The automatic cook correction facility will automaticly add or deduct time to the programmed cooking time in order to have constant cooking quality.
To activate it, the parameter "auto correct" has to be put on "time".

Go to the manager menu --> Reference cook and activate it.
Then select a (new)  program.

It is recommended to do that cook with a half  to 3/4 load.

Store Number
**Reference cook**
Recipes -> USB
Recipes <- USB

The program calculates the surface from the diagram below the curved line. (temperature * time). The result is the so called heat number. This heat number is stored into the cooking program.
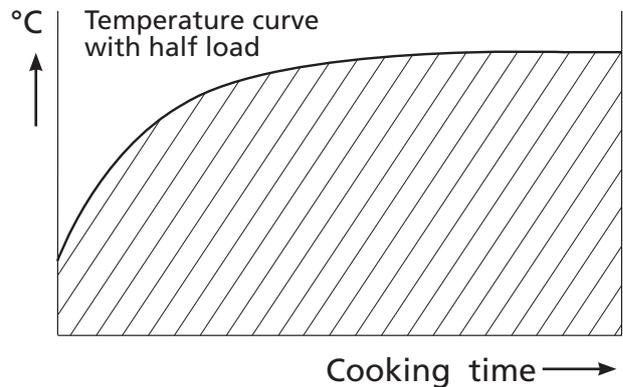
All further cooking programs will try to get the same heat number.

The second diagram shows an example with full load. It takes more time for the unit to reach the programmed cooking temperature. See dashed line. The surface above the dashed line represents the missing part of the heat number. The cook correction will put this missing part behind the normal cooking time. Therefore extra time is added in order to reach the desired heat number.
It is also possible that time is deducted in case a smaller load has been put into the oven.
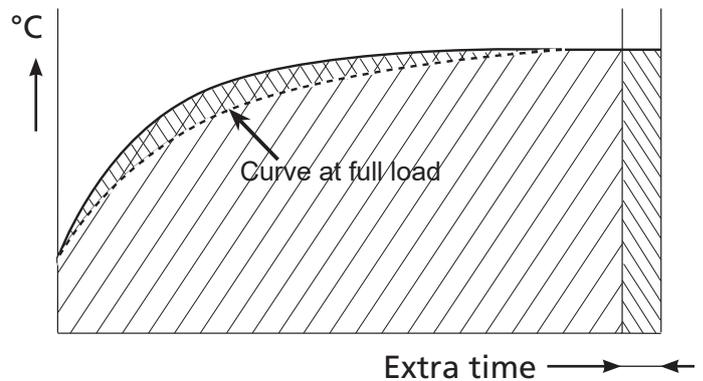
**Time will be added in case of:**
A bigger load.
A colder load. (straight from the freezer)
A lower mains voltage.
Somebody opened the door.

**Time will be deducted in case of:**
A smaller load.
A warmer load. (defrosted)
Higher mains voltage.

°C | Temperature curve with half load

Cooking  time →

°C | Curve at full load

Extra time →  ←

The heat number is stored in the cooking program. In case such a program is copied, the heat number goes with it.
It is possible that in case the program has changed a lot, the cook correction is not able to perform well anymore. In that case the program has to be deleted and reprogrammed with the good parameters.
It is possible to disable this auto cook correction feature in the service parameters. See "parameter listings" -> "auto correct.

**Note that:**
In case the time or temperature will be changed in the cooking program, the heat number will be adapted with this amount.

## DEFAULT PARAMETERS VERSION  1.00.34  LDR 8S-AC  208V

| | | | | |
|---|---|---|---|---|
| About / software version | | | 1.00.34 | |
| **Manager** | | | | |
| | Change Pin code | | 0 | 0000 - 9999 |
| | Toggle Light | | on | on - off |
| | Temperature unit | | °F | °C - °F |
| | Volume unit filter | | liters | liters-gallon |
| | UTC time | | Local time | |
| | UTC date | | Actual date | |
| | Time zone offset | | 0h | -12 / 12 |
| | Time format | | AM/PM | 24 hr - AM/PM |
| | Date format | | MDY | D/M/Y - M/D/Y |
| | Alarm signal | | on | on - off |
| | End-user recipe editing | | no | no - yes |
| | Ask weight | | no | no - yes |
| | Preheat mode | | continue | no - 1x - continue |
| | Preheat temp default | | 302 °F | 122 - 302°F (50 - 150°C) |
| | Eco function | | no | no - yes |
| | Audio | Audio setting | 1 | 1 -11 |
| | | Audio factor | 100 | 1-100 |
| | | Test audio | | |
| | | Sound set | Marimba | Marimba-Bell-Beeper |
| | key board beep | | on | on - off |
| | Filter capacity | | - | 50 - 30000 or "-" for infinite |
| | Lime filter | | | Remaining capacity of lime filter |
| | Lime filter replaced | | | no - yes |
| | Clean screen time | | 60 | 10-60 sec |
| | Store number | | | |
| | Reference cook | | | |
| | Recipes -> USB | | | |
| | Recipes <- USB | | | |
| | Add recipes <- USB | | | |
| **Service** | | | **4878** | |
| | device type | | LDR ac gas | TDR AC, TDR S, LDR ac gas |
| | Smart temperature | | off | on - off |
| | auto-correct | | off | off - on |
| | Correction factor | | 4 | 1 - 10 |
| | language | | english | englisch - deutsch - francais - nederlands - espanol - japanese - danish - italiano - russian |
| | Eco variable | | 2 | 1 - 9 |
| | save errors | | | save error history on usb |
| | clear error history | | | |
| | RS485 debugging | | off | on - off |
| | demo mode | | off | on - off |
| | demo parameters | Rinse time | 5 | 2-40 min |

**fri-jado**

| | | | | | |
|---|---|---|---|---|---|
| | | Drain time | | 5 | 2-40 min |
| | | Supply time 1 | | 40 | 1-120 sec |
| demo clean start | | | | no | no-yes |
| auto off time | | | | 60 min | no or 10 - 240 |
| change pin | | | | **** | read out of the manager pin code |
| Drain duration | | | | 40 sec. | 10 -40 |
| Fat drain | | | | open | open - programmed |
| Clean Cycles | | | | 3 | |
| Clean temperature | | temp 1 | | 113°F (45 °C) | 25 - 60 |
| | | temp 2 | | 140°F (60 °C) | 25 - 60 |
| | | temp 3 | | 131°F (55 °C) | 10 - 70 |
| | | Cool soap temp | | 167°F (75° C) | 25 - 100 |
| | | Cooling temp | | 167°F (75° C) | 25 - 100 |
| Clean Times | | Hot rinse time | | 30 min | 5 - 40 |
| | | Rinse time | | 10 min. | 5 - 40 |
| | | Drain time | | 3 min | 1 - 3 |
| | | Flush time | | 15 sec | 5 - 60 |
| | | Drain backflush time | | 2 min | 1 - 15 |
| | | Final time | | 1 min | 1 - 15 min |
| | | Shine rinse time | | 5 min | 1-30 min |
| Clean water supply | | supply time 1 | | 65 sec | 1 - 120 |
| | | supply time 2 | | 65 sec | 1 - 120 |
| | | add water interv. | | 20 min | 1 - 60 |
| | | add water time | | 5 sec | 1 - 30 |
| Clean sanitation | | sanitation step | | no | no - yes |
| | | sanitation time | | 20 | 0 - 30 min |
| | | sanitation temp | | 230°F (110°C) | 25-125 °C |
| Deep clean warning | | | | 0 | 0-30 |
| Daily clean warning | | | | 0 | 0-30 |
| Force cleaning | | | | on | on - off |
| Quick clean | | | | disabled | enabled - disabled |
| Daily clean | | | | enabled | enabled - disabled |
| Descale setting | | | | disabled | disabled-full-short |
| Delete all programs | | | | | no - yes |
| Hood | | | | off | on - off |
| PID factors | | P | | 100 | 0 - 100 |
| | | I | | 5 | 0 - 100 |
| | | D | | 100 | 0 - 500 |
| | | iMax | | 100 | 10 - 300 |
| | | Relay actions: | | 80 | 16 - 160 |
| Gas burner settings | | Gas T safety | | 338°F (170°C) | 212 - 392°F (100 - 200°C) |
| | | Gas P threshold | | 17 | 8 - 24 kW |
| | | Gas P minimum | | 8 | 8 - 24 kW |
| Energy | | Volts | | 208 | 1 - 260 |
| | | Machine model | | | not in use |

| | | | | |
|---|---|---|---|---|
| | I/O test | Analog input | 240 | |
| | | Digital inputs | | read the inputs and set the outputs |
| | | Digital outputs | | read the inputs and set the outputs |
| | | Board Feed-back | | read the inputs and set the outputs |
| | | Board Version | | read the inputs and set the outputs |
| | | Board Variant | | read the inputs and set the outputs |
| | Test program | | | no -yes |
| | Ignore errors | | no | no - yes |
| | save HACCP | | | save haccp log on usb |
| | HACCP days | | 10 | 1 - 99 |
| | save params on USB | | | save parameters on usb |
| | save params from USB | | | load parameters from usb |
| | Initial heat up time | | 0 sec | |
| | Actual heat up time | | 0 sec | |
| | Heat up program | | | no - yes |
| | Heat up time reset | | | no - yes |
| | Lights out | | Disabled | Disabled - enabled |
| | Wifi Smartphone | | Blocked | Blocked - Alowed |
| | Wifi  smart Cloud | | Disabled | Disabled - enabled |
| | Wifi RSSI | | | no - yes |
| | Wifi Auto Restart | | 60 | 0 - 240 |
| | Start Config | | | no - yes |
| | Reset Wifi Chip | | | no - yes |
| | Fact reset settings | | | no - yes |
| | Fact reset recipes | | | no - yes |
| | Fact reset data | | | no - yes |
| | Commision reset | | | no - yes |
| | Commission apply | | | no - yes |
| | Customer ID | | 0 | 0 - 10 |
| | Restart soft | | | no - yes |
| | Restart hard | | | no - yes |
| | Swipe sensitivity | | 25 | 0 - 100 |

| | | | | |
|---|---|---|---|---|
| Live variables | Status Counters | Active total | | |
| | | Operational total | | |
| | | Preheat total | | |
| | | Reset preheat total | | no - yes |
| | | Manually added | | |
| | | Reset manual total | | no - yes |
| | | Cook corrections | | |
| | | Reset correction | | no - yes |
| | Output Counters | Heater | | |
| | | Reset heater time | | no - yes |
| | | Blower | | |

| | | | Reset blower time | | no - yes |
|---|---|---|---|---|---|
| | | | Rotor | | |
| | | | Reset rotor time | | no - yes |
| | | | Light | | |
| | | | Reset light time | | no - yes |
| | | | Pump | | |
| | | | Reset Pump time | | no - yes |
| | | Start/End Counters | #started recipes | | |
| | | | #ended recipes | | |
| | | | #started quick clear | | |
| | | | #ended quick clean | | |
| | | | #started daily clean | | |
| | | | #ended daily clean | | |
| | | | #started full descale | | |
| | | | #ended full descale | | |
| | | | #started short descale | | |
| | | | #ended short descale | | |
| | | | Reset Start/Ends | | no - yes |
| | | UTC System time | | | |
| | | Commission time | | | |
| | | Limefilter time | | | |

## EXPLANATION OF PARAMETERS

| Level 1 | Level 2 | Level 3 |
|---------|---------|---------|
| Change Pin code | | Option to change the manager pin code |
| Toggle Light | | Option to switch on or off the interior light. |
| Temperature unit | | Change the temperature units from Fahrenheit to Celcius or from Clecius to Fahrenheit. |
| Volume unit filter | | Change the volulme units from Liters to Gallon or from Gallon to Liters. |
| UTC time | | Set to local time |
| UTC date | | Set to local date |
| Time zone offset | | Option to set a offset to the timezone (12 to +12 hours) |
| Time format | | Option to select the desired time format |
| Date format | | Option to select the desired date format |
| Alarm | | Switch alarms on or off |
| End-user recipe editing | | Enables the end user to change and save recipes |
| Ask weight | | Option to activate or deactivate the question at the start of a recipe for a low/middel of full load. |
| Preheat mode | | Option to deactivate or activate preheat. !x means once at the beginning of the day, continue means at each recipe start. |
| Preheat temp default | | Option to set the desired default preheat temperature |
| Eco function | | Option to enable or deactivate the Eco function. The eco mode saves enery to use latent heat at the end of the recipe. (this will increase the total recipe time) |
| Audio | Audio setting | Option to set the desired audio sound (tone) |
| | Audio factor | Option to adjust the audio volume |
| | Test audio | Function to test the set audio options |
| | Sound set | Option to set the desired sound/melodie |
| key board beep | | Option to activate or deactivate the beep at the touch of the key board. |
| Filter capacity | | Option to set the actual filter capacity of the used water filter system in relation to the water quality on site.  Set "-" if no filter is installed. |
| Lime filter | | Shows the remaining filter capacity of the lime filter. |
| Lime filter replaced | | When the lime filter is replaced set to yes so the counter will be reset to the start filter capacity. |
| Clean screen time | | Option to set the time for cleaning the screen without a response of the controller. |
| Store number | | Here you can enter the store number or other store references |
| Reference cook | | |
| Recipes -> USB | | Copy all recipes from the rotisserie to the USB key. |
| Recipes <- USB | | Copy all recipes from a USB key to the rotisserie. |
| Add recipes <- USB | | Copy selected recipes from a USB key to the rotisserie. |
| | | |
| device type | | Option te set the correct device type so the oven configuration will be active. |
| Smart temperature | | Do not change |
| auto-correct | | Option to activate or deactivate the auto correct function which adds time if neccasarry (Due to high product load or temperature loss) to the remaining time. |
| Correction factor | | With this setting you can change the effect of the auto-correct. |

| Level 1 | Level 2 | Level 3 |
|---------|---------|---------|
| language | | Option to select the desired language |
| Eco variable | | Option to set the influence of the Eco mode |
| save errors | | Option to save the error log/history to a USB key. |
| clear error history | | Option to clear the error log/history |
| RS485 debugging | | Option to activate or deactivate the RS485 debugging |
| demo mode | | Option to activate or deactivate the demo mode of the rotisserie on for instance during a trade show. (no power will be activated to the main high power components) |
| demo parameters | Rinse time | Option to set the rinse time when demo mode is activated |
| | Drain time | Option to set the drain time when demo mode is activated |
| | Supply time 1 | Option to set the (water) Supply time when demo mode is activated |
| demo clean start | | Option to start a demo clean cycle |
| auto off time | | Option to swith off the rotisserie automaticly after the set time when not operated. When set to "no" the rotisserie will not be switched off automatically. |
| change pin | | Option to change the manager pin code |
| Drain duration | | Sets the open time for the drain valve and backflush valve |
| Fat drain | | Option to controll the fat drain by the recipe or default open |
| Clean Cycles | | Sets the number of repeated clean cycles during cleaning |
| Clean temperature | temp 1 | Set clean temperature during cycle 1 |
| | temp 2 | Set clean temperature during cycle 2 |
| | temp 3 | Set clean temperature during cycle 3 |
| | Soap safe temp | Sets the "safe" temperature to cool down to before soap can be added to the oven at the beginning of the cleaning cycle. |
| | Cooling temp | Set temperature to cool down to before the cleaning starts |
| Clean Times | Hot rinse time | Set time for hot rinse step in cleaning cycle |
| | Rinse time | Set time for rinse step in cleaning cycle |
| | Drain time | Set time for drain open step in cleaning cycle |
| | Flush time | Set time for flush step in cleaning cycle |
| | Drain backflush time | Set time for drain backflush step in cleaning cycle |
| | Final time | Set time for final step in cleaning cycle |
| | Shine rinse time | Set time for shine rinse step in cleaning cycle |
| Clean water supply | supply time 1 | Set time 1 for filling the oven with clean water |
| | supply time 2 | Set time 2 for filling the oven with clean water |
| | add water interv. | Interval time for adding water during cleaning |
| | add water time | set time for water adding during cleaning |
| Clean sanitation | sanitation step | Option to able or enable a sanitation step |
| | sanitation time | Set time for sanitation step in cleaning cycle |
| | sanitation temp | Set temperature during the sanitation step |
| Deep clean warning | | Number of cook cycles after which you receive a deep clean warning |
| Daily clean warning | | Number of cook cycles after which you receive a daily warning |
| Force cleaning | | Option to enable a forced cleaning |
| Quick clean | | Option to enable a Quick clean cycle |
| Daily clean | | Option to enable a Daily clean cycle |
| Descale setting | | Option to set the Descale cycle in a full / short cycle or to disable the descale cycle |
| Delete all programs | | Option to delete all recipes from the controller |

| Level 1 | Level 2 | Level 3 |
|---------|---------|---------|
| Hood | | Option to activate the optional hood |
| PID factors | P | Temperature regulation setting (P= proportional) |
| | I | Temperature regulation setting (I= Integrating) |
| | D | Temperature regulation setting (D= Differentiating) |
| | iMax | Temperature regulation setting |
| | Relay acti-ons: | Controlls the amount of relay switches in time |
| Gas burner settings | Gas T safety | At this temperature or higher, the power in the burner will be decreased, to protect the burner. |
| | Gas P threshold | When the above temperature is reached, the burner will be switched back to this power value |
| | Gas P minimum | When less than this power value is needed, the burner will be switched off. |
| Energy | Volts | Set the actual voltage |
| | Machine model | |
| I/O test | Analog input | |
| | Digital inputs | read the inputs of; door (J13), Clickson Blower (J14), Hood filter placement (J15), Hood filter press diff (J16) |
| | Digital out-puts | Set the ouputs of; Rotor (M1), Blower (M2), Heater (K1), Light (K2), Water supply (W1), Backflush water (W2), Water pump (K6), Drain valve (Q5), Casco (Q1), Spray right (Q2), Spray left (Q3), Fat drain (Q4) |
| | Board Feed-back | Read feedback value |
| | Board Ver-sion | Read board version |
| | Board Variant | Read board variant |
| Test program | | Yes activates a cleaning cycle |
| Ignore errors | | If set to yes the controller does not show errors |
| save HACCP | | Option to save the HACCP log to a USB key |
| HACCP days | | Option to set the amount of days the HACCP log stores |
| save params on USB | | Copy parameters from the rotisserie to the USB key. |
| save params from USB | | Load parameters from a USB key to the rotisserie. |
| Initial heat up time | | Recorded heat up time during initial cook |
| Actual heat up time | | Recorded heat up time during last cook |
| Heat up program | | Yes activates the heat up program and shows the heatup time in seconds. Note: if the oven is to hot when the heatup is activated it will cool down first |
| Heat up time reset | | Resets the recorded heatup times |
| Lights out | | Option to disable or enable the interiour lights during the cook |
| Wifi Smartphone | | Optin to allow a connection to an Smartphone |
| Wifi  smart Cloud | | Option to enable a connection to the Fri-Jado Smart Connect website. |
| Wifi RSSI | | Shows the signal level of the WiFi connection. Values are between  -101dBm and -1dBm. In practice values are between -85dBm and -25dBm. A bad connection would give -85dBm, a very good connection would give -25dBm. |
| Wifi Auto Restart | | "If you set a time of >= 5 minutes here, the machine will regularly check whether the WiFi no longer receives messages during the set time interval. In case there was no communication during that time interval, the WiFi communication will be restarted. This is intended to be able to automatically recover any loss of the WiFi con-nection if there should be long-term problems." |
| Start Config | | "This allows you to force the machine to start a new cloud configuration. The old WiFi access point data will be deleted at that time and after a few seconds a smart-phone symbol will appear in the top right corner of the status bar on the screen. From the moment that smartphone symbol appears, the user can set the cloud configuration on the machine via the smartphone." |
| Reset Wifi Chip | | This option resets the wifi chip with an electronic reset signal and restarts the wifi communi-cation in the software. |
| Fact reset settings | | Reset to factory settings |

| Level 1 | Level 2 | Level 3 |
|---|---|---|
| Fact reset recipes | | Reset to factory recipes |
| Fact reset data | | Reset of factory data |
| Commision reset | | Reset of set commission date |
| Commission apply | | Option to apply the current date/time for commissioning |
| Customer ID | | By entering the a maching customer code the correct story boards and explanations are given in the help function |
| Restart soft | | This performs a 'soft' reboot of the entire S control software. This means that the entire software restarts internally without an external electrical reset signal being issued. |
| Restart hard | | This performs a 'hard' (electronic) reboot of the entire S control software, which is similar to turning the machine off and on again. |
| Swipe sensitivity | | This option alows you to adjust the sensitivity of the touch display. |
| Live variables | Status Counters | Total hours oven was active |
| | | Total hours oven was operational |
| | | Total hours of preheat |
| | | Yes resets the preheat total |
| | | Total hours added time |
| | | Yes resets the manually added total |
| | | Total hours of cook corrections |
| | | Yes resets the cook corrections total |
| | Output Counters | Shows hours of heater activation |
| | | Resets the heater counter |
| | | Shows hours of blower activation |
| | | Resets the blower counter |
| | | Shows hours of rotor activation |
| | | Resets the rotor counter |
| | | Shows hours of light activation |
| | | Resets the light counter |
| | | Shows hours of pump activation |
| | | Resets the pump counter |
| | Start/End Counters | Number of started recipes after last counter reset. |
| | | Number of ended recipes after last counter reset. |
| | | Number of started quick cleans after last counter reset. |
| | | Number of ended quick cleans after last counter reset. |
| | | Number of started daily cleans after last counter reset. |
| | | Number of ended daily cleans after last counter reset. |
| | | Number of started full descales after last counter reset. |
| | | Number of ended full descales after last counter reset. |
| | | Number of short descales after last counter reset. |
| | | Number of ended short descales after last counter reset. |
| | | Reset of all starts and ended counters |
| | UTC System time | Set time and date |
| | Commission time | Time and date of commissioning |
| | Limefilter time | Last installation time and date of the water filter |
| | | |
| | | |

## MEASURING THE  BLOWER MOTOR

**WARNING:** Disconnect the electrical power to the machine at the main circuit box. Place a tag on the circuit box indicating the circuit is being serviced.

Blower of rotisserie



PH1  208/240V  50/60Hz  1,8A
5uF 400V  Thermally protected

∞ Ω

500V !

5x !

0 Ω

64 Ω

37 Ω

27 Ω

Blue

White

Thermistor →

White

Red

37 Ω

27 Ω

Σ

Black

6uF

**6 µF**

**>50 MΩ**
Insulation test
500V !

500V !
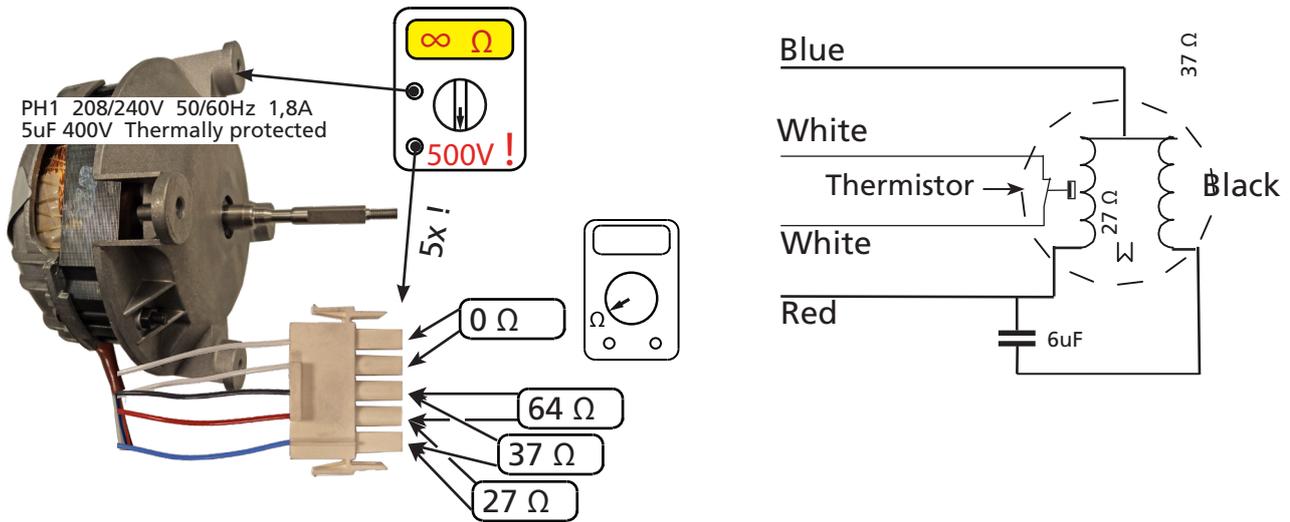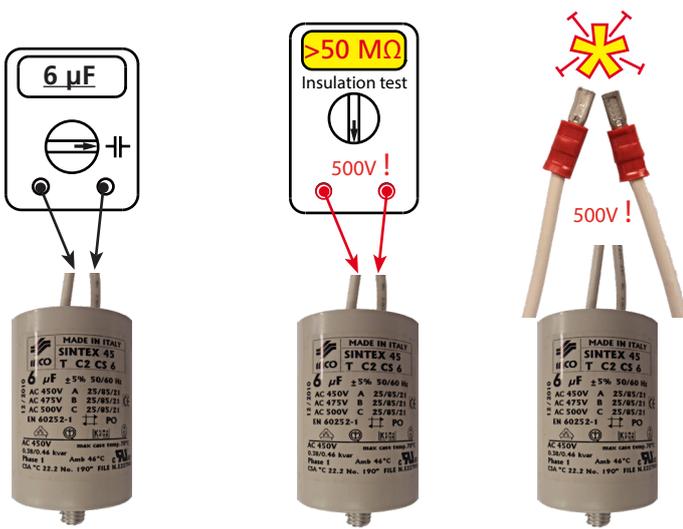
Charging with a test cable    Checking with Ω meter

1 sec.

0→∞ Ω

∞→0 Ω
0→∞ Ω
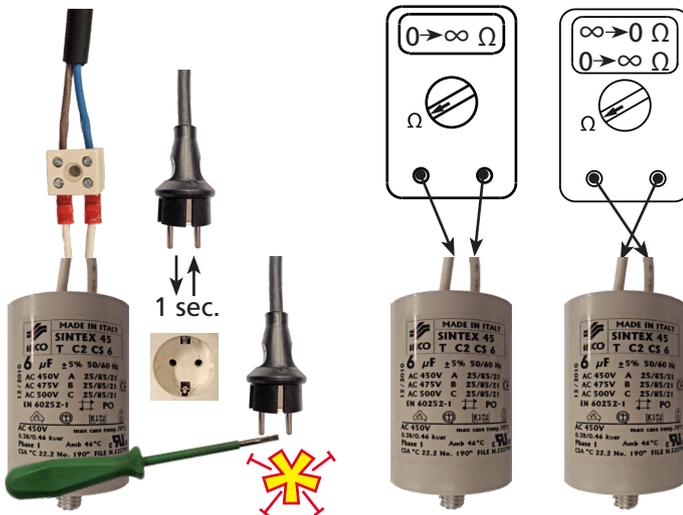
## The 6µF capacitor

General

Even with a capacitance meter it is impossible to determine for sure if the capacitor is ok or not, because it can be leaking when it is connected to mains power.

A quick optical check often tells more. Search for leaking oil and / or bulges (lumps).

**Measuring with an insulation tester** in 500V position.

Work under safe conditions according local legislation!

The value will not reach ∞ Ω, but will go up and down a little. When it is above 50MΩ it wil be ok. Disconnect the test leads while the value is at the highest position. The capacitor is now charged with ± 500VDC!!

Leave it for a few seconds and then put the wires together. A loud spark must arise. If not, the capacitor is leaking (loosing its charge).

**It is also possible to charge the capacitor** by shortly con necting it to the mains supply (208V~). The same spark must arise. Do this a few times. The capacitor will not

be charged when the leads are disconnected during the "zero crossing" of the mains sinus. It is ok when a spark arises once.

**Measuring with an Ω meter.**

Be sure that the capacitor is empty!

The value will go up until ∞ Ω is reached. Exchange the test leads. The value will go down, through "0" and up again.

If not, the capacitor is broken.

If ok, it is still not sure if the capacitor is ok. It might leak when it is connected to the mains power!

## MEASURING THE 160W LAMP



±8 Ω
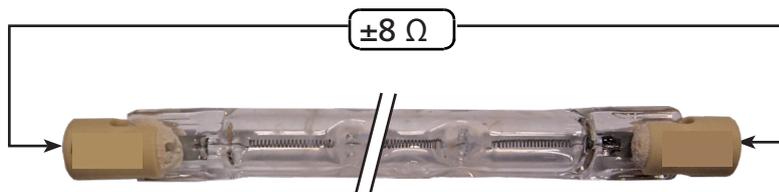
230V  160Watt

## MEASURING THE ROTOR (DRIVE) MOTOR
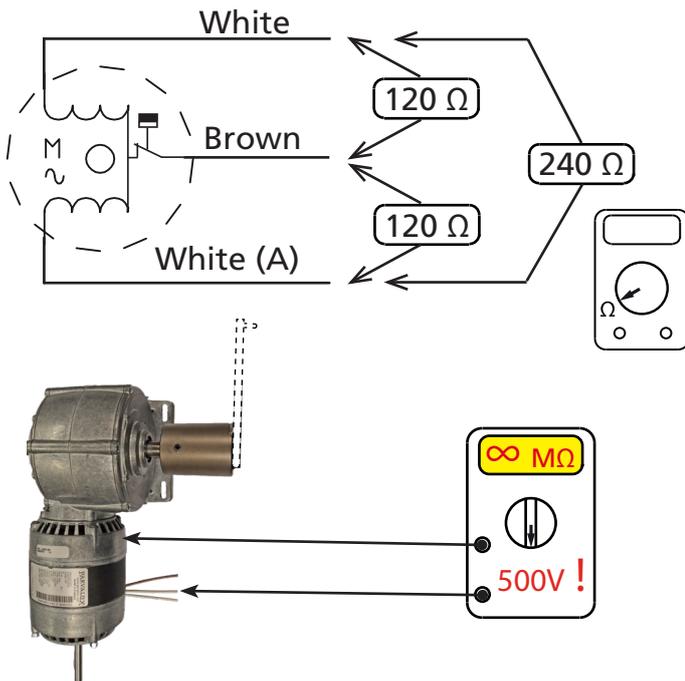


## MEASURING THE PT1000 SENSOR

The oven temperature is controlled by a PT1000 sensor, mounted in the top at the side.

See the resistance overview for the PT1000 sensors.
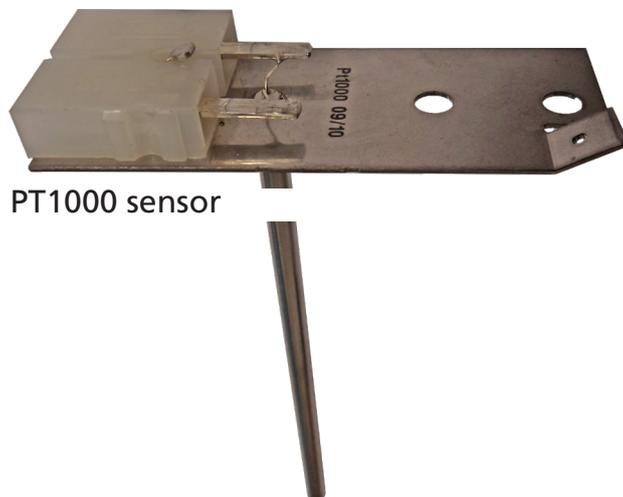


PT1000 sensor

| °C | PT1000 |
|----|--------|
| | |
| -20 | 921,60 |
| -10 | 960,90 |
| 0 | 1000,00 |
| 10 | 1039,00 |
| 20 | 1077,90 |
| 25 | 1097,40 |
| 30 | 1116,70 |

| °C | PT1000 |
|----|--------|
| 40 | 1155,40 |
| 50 | 1194,00 |
| 60 | 1232,40 |
| 70 | 1270,00 |
| 80 | 1308,90 |
| 90 | 1347,00 |
| 100 | 1385,00 |
| 110 | 1422,00 |

| °C | PT1000 |
|----|--------|
| 120 | 1460,60 |
| 130 | 1498,20 |
| 140 | 1535,80 |
| 150 | 1573,10 |
| 200 | 1758,43 |
| 250 | 1940,81 |
| 300 | 2120,30 |

## MEASURING THE MOTOR VALVE



>1MΩ

>1MΩ

>1MΩ

>1MΩ

1

1

Valve position.
closed in this view

Pull to open
manual.
Ccw = open
Cw= close

+ 1
−
−

0V= 24V=

V=

+ 1
+
−

24V= 24V=

V=
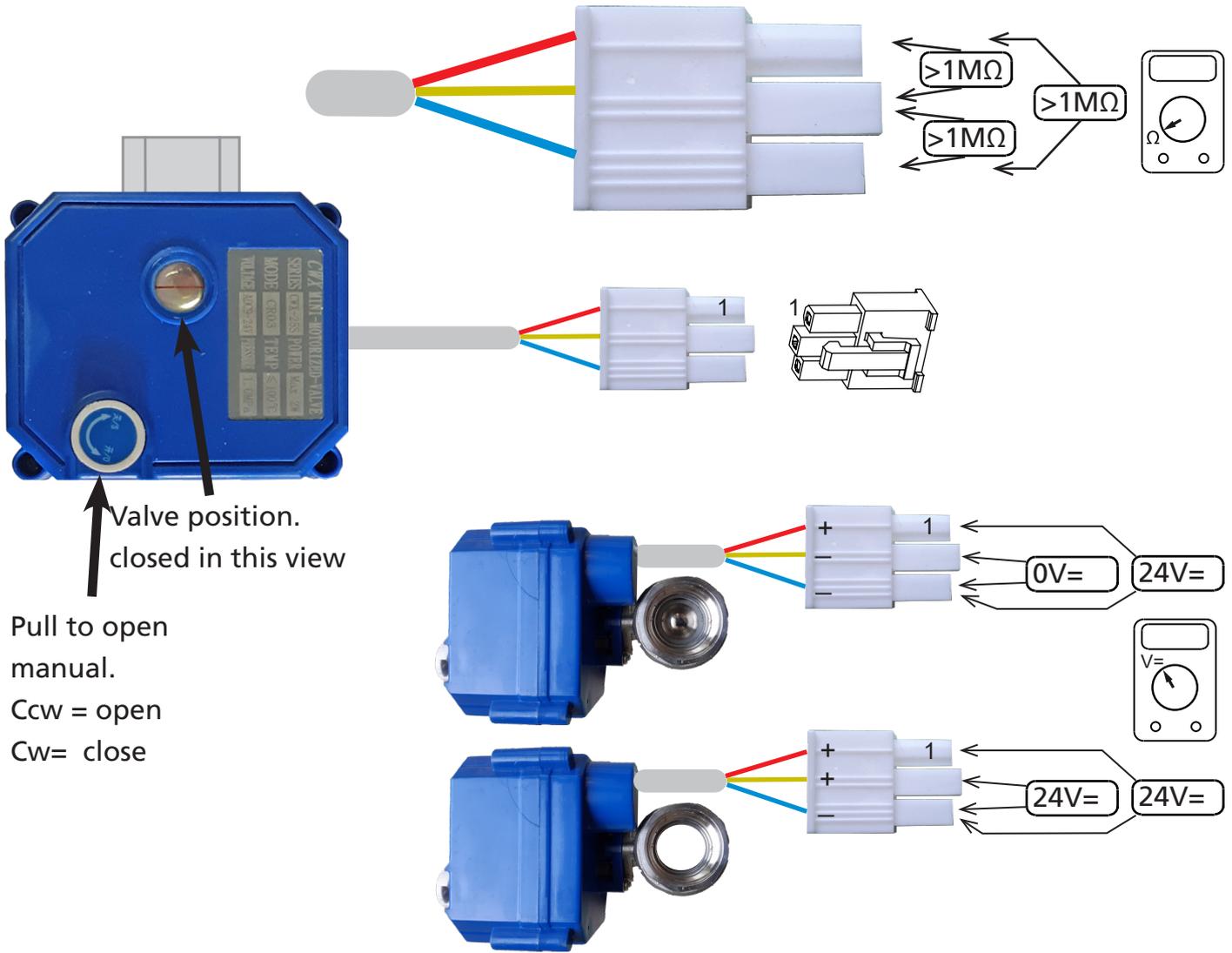
## MEASURING THE PUMP

2 Amp. at free run
5-6 Amp. at full load
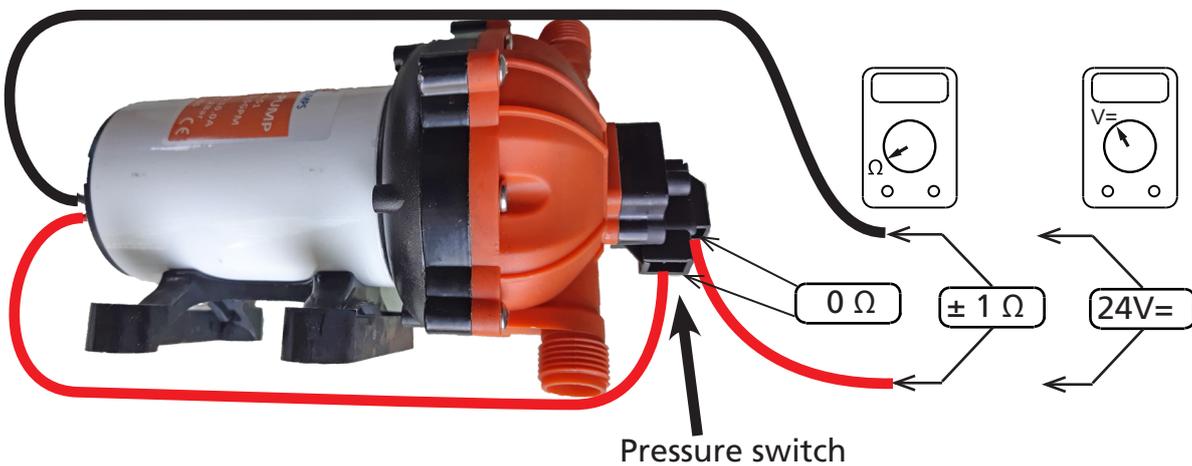


0 Ω ± 1 Ω 24V=

Pressure switch

**WARNING:** Disconnect the electrical power to the machine at the main circuit box. Place a tag on the circuit box indicating the circuit is being serviced.

## ACCESS TO SERVICE PARTS LDR 8S AC
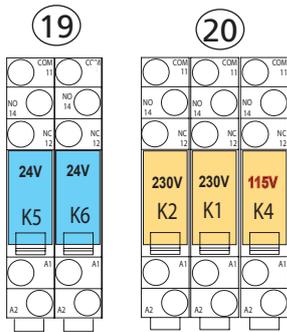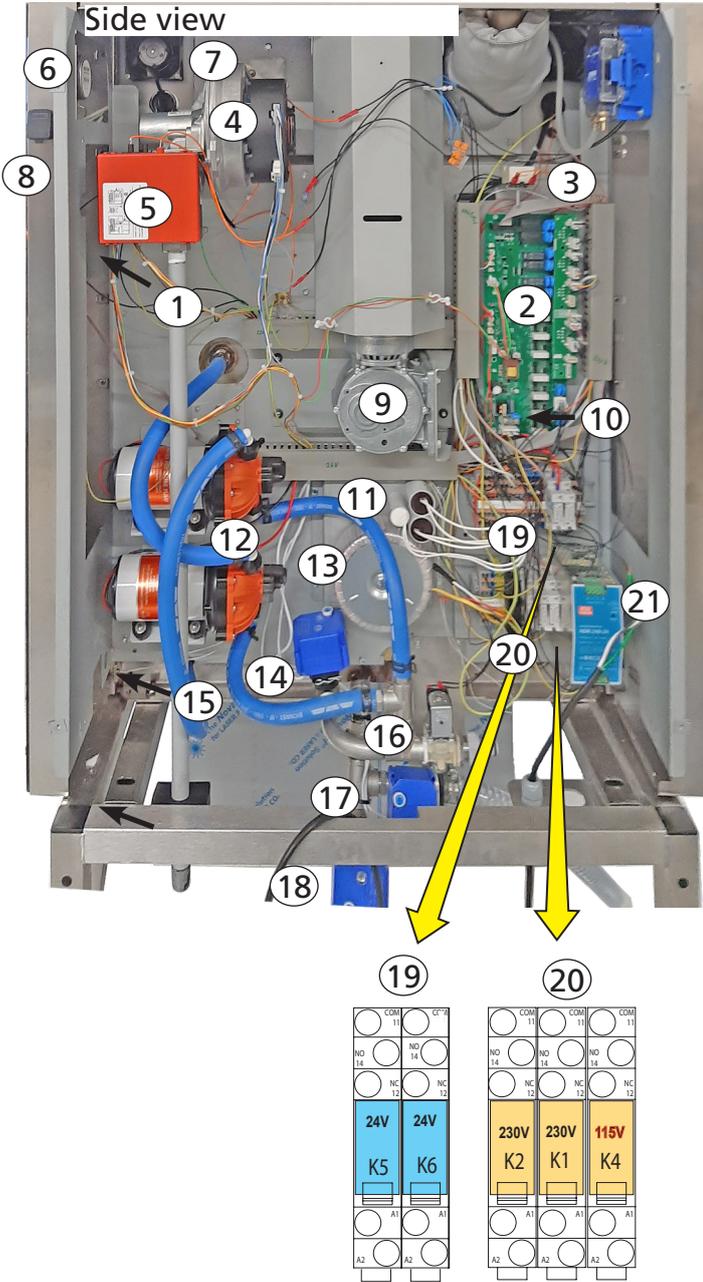
Side view



Opposite side view



Unscrew 4 screws and open the panel from the electric compartment .

The same for the panel on the oposite side to reach the wiring from the light and also to "unlock" the top panel.

Remove the top panel and the blower panel on the inside, to reach the blower motor and the heating element.

Placing of temperature sensors is at the top side

1. CPU & LCD board and key board
2. Power & I/O board.
3. Hi Limit thermostat
4. Gas mixture blower
5. Burner safety control and gasvalves (behind the red box)
6. Speaker
7. Cooling fan, also at opposite side.
8. USB socket
9. Rotor drive motor
10. Fuse on board (1A 5x20 slow acting).
11. Capacitors
12. Rinse pumps
13. 230V to 115V transformer for #4 and #5
14. Casco motor valve.
15. Door switch, also at opposite side.
16. Solenoid water inlet valve with reducer (10 ltr/min).
17. Sewer drain motor valve.
18. Grease drain motor valve.
19. Relays 24Vdc. Gas reset (L) and Pump selection (R)
20. Relays 230Vac (left = light, middle = heating).
    Relay at the right side is 115Vac for the error signal of the burner controller
21. Power supply 24Vdc 10 A.
22. Elbow connection left rinse arm.

Top view with removed top panel
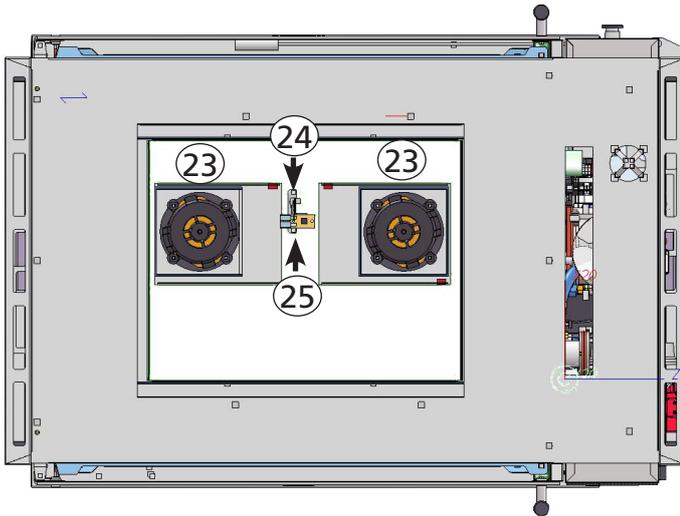
23. Blower motor.
24. Hi limit sensor.
25. PT1000 sensor.
26. Illumination.
27. Heat exchanger.
28. Turbine.

Inside view with removed blower panel
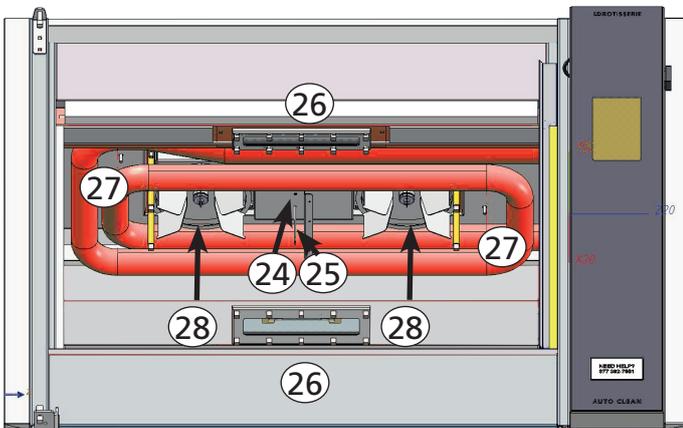
## BLOWER MOTOR
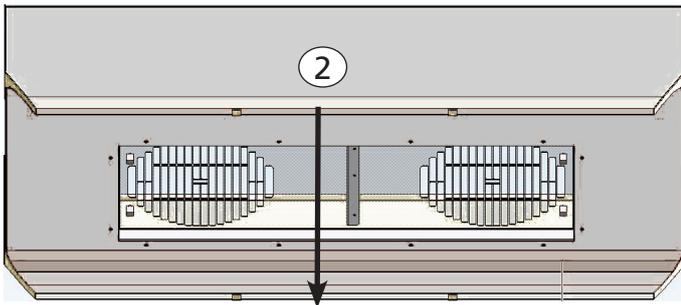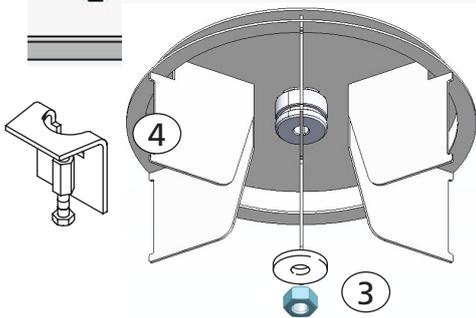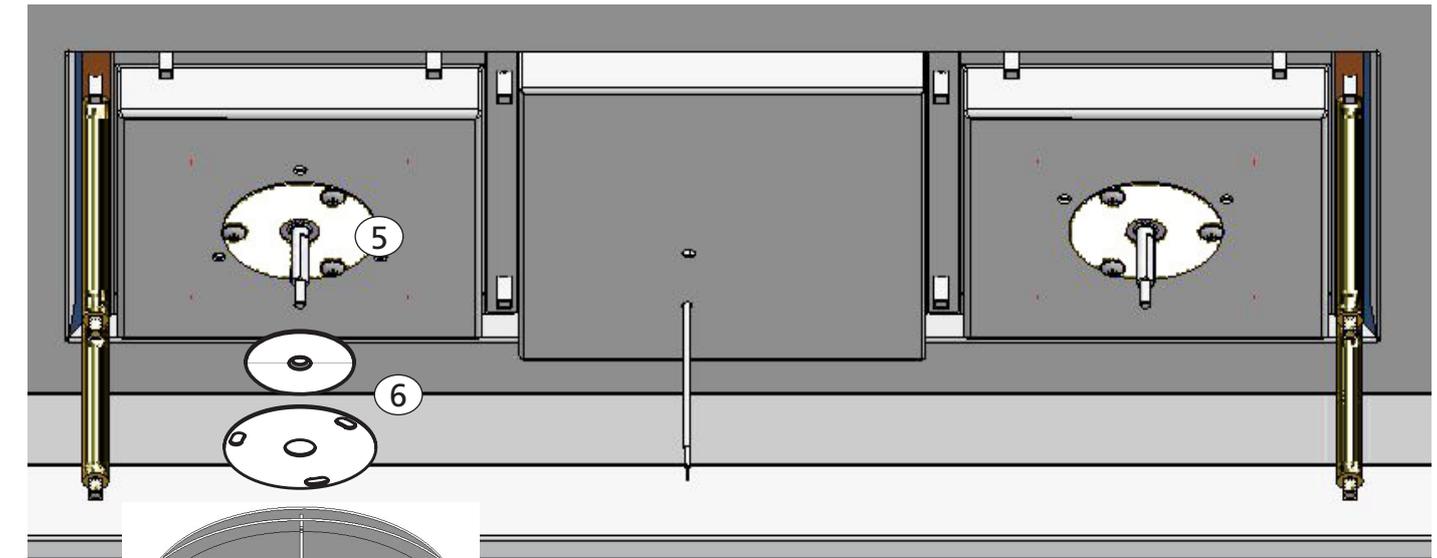
## Dismounting the blower assembly.

1. Remove both side panels and the top panel
2. Remove the blower panel
3. Remove the M5 nut and washer from the motor shaft
4. Pull the turbine from the shaft. A puller is delivered with the new blower kit.
5. Unscrew 3 screws.
6. Pull off the shaft seal with pressure plate.
7. Disconnect the blower wiring.
8. Unscrew 4 nuts.
9. Take out the motor.

## Mounting the blower assembly.

This has to be done in reversed order from disassembling.

**Very important!**
- First mount the motor and tighten the 4 nuts thorougly.
- Then mount the shaft seal.
- Never loosen or tighten, the 4 nuts from the motor afterwards.
- If this is necessary, then first loosen the shaft seal.
- Check the rotation direction.

## ROTOR DRIVE MOTOR



## Dismounting the rotor motor:

*Note, #4 and #5 are applicable from serial number 100075954.*

1. Remove the side panel at the operator-panel side.
2. Mark the position of the motor on the bracket.
3. Take the rotor shaft out of the cooking cavity.
4. Unscrew the 5 bolts from the shaft seal mounting plate.
5. Slide the mounting plate and lip-seal from the drive arm.
6. Put the drive arm (If applicable)in the position as shown. This can be done manually, if necessary, by turning the fan blade on the motor.
7. Disconnect the wiring of the motor.
8. Unscrew 4 screws and put the air guide aside.
9. Remove the (cooling) fan blade.
10. Unscrew 4 screws with nuts.
11. Take out the motor as shown.

fri-jado

① ②

Centering of
shaft in hole

## Mounting the rotor motor

1. Mount the motor on the bracket using the previous made mark (see #2 from disassembling).
2. The motor shaft should come through the center of the hole!!
3. Connect the wiring of the (new) motor. See previous page for position of wires.

*In case the wires have receptacles mounted, then these have to be cut off and the wires stripped.*

*Note that the white wire, marked "A" is longer*

③

3x

**A**

4. Hook in the rotor and check the axial play. This should be 2,5 -3mm (3/32-4/32)
5. Put power on the unit and test the rotation of the rotor. Interchange the two white wires if wrong. The air flow should go up!
6. Check if the drive arm in top position has the same distance to the side wall as in bottom position.
7. Mount the shaft seal when the position of the motor is ok and the screws are mounted tight.

④

2,5 -3mm
(3/32"-4/32")
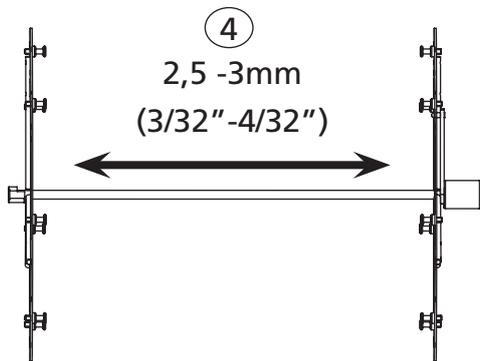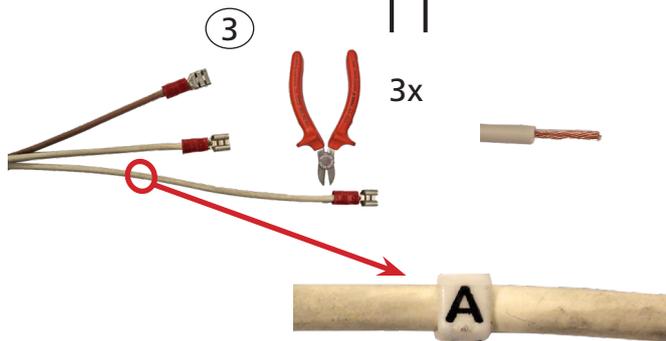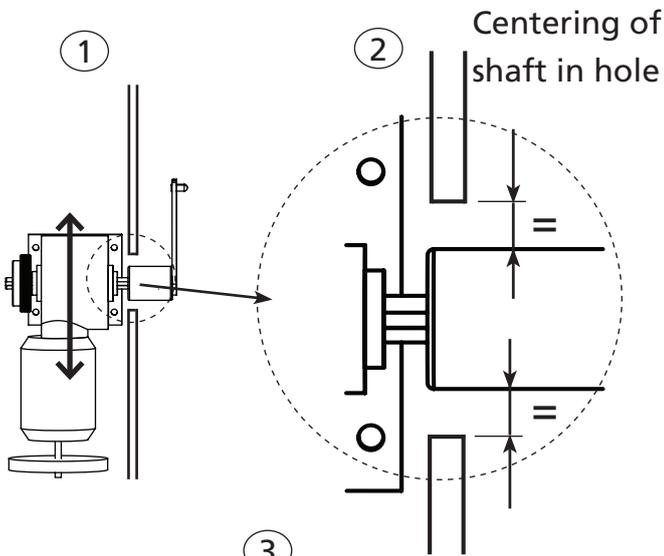
Checking
rotation
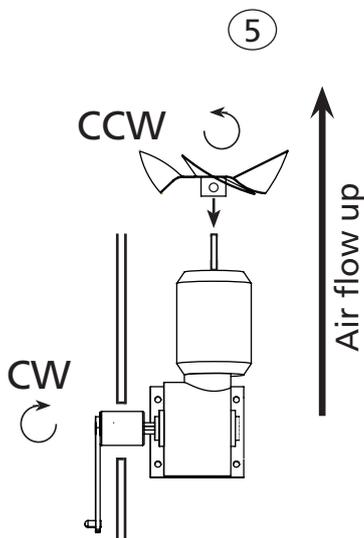
Aligning of
the drive arm

⑤　　　　　⑥　　　　　⑦　　5x

CCW

CW

Air flow up

Service  Manual LDR 8s AC    form 9120934 rev.  02/2022
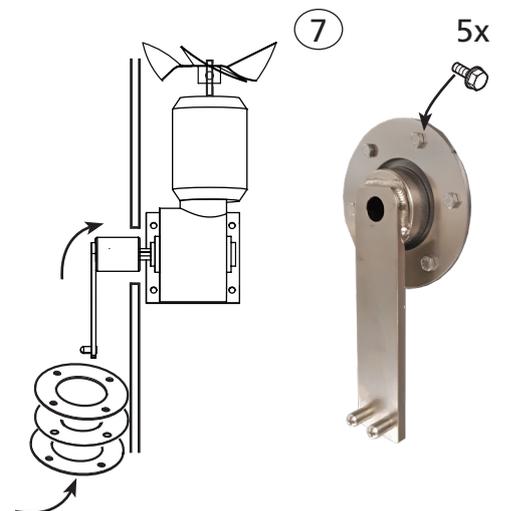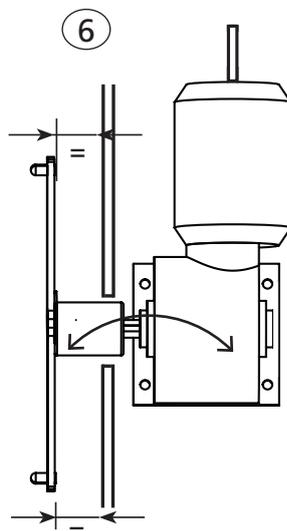
## OVERVIEW OF ERROR CODES TDRAC.

| Error message | Description | Possible causes |
|---|---|---|
| Top sensor open (i) Sensor overflow (s) | The temperature sensor input reads higher than 320°C (600°F). In resistance, this is higher than 2200Ω. | Wiring loose Broken sensor Broken I/O board |
| Top sensor shorted (i) Sensor underflow (s) | The temperature sensor input reads lower than 0°C (32°F). In resistance, this is lower than 1000Ω. | Wiring shorted Broken sensor Broken I/O board |
| Communication failure | Communication problem between the I/O board and the CPU board | Broken I/O board |
| | | Broken I/O extension board. (Multisserie only) |
| | | Broken Fan board. (Bake Star only) |
| | | Connection problem in ribbon cable. |
| Motor failure | Blower motor overheated | Cooling air blocked Broken capacitor Broken motor |
| "Door open" picture | De doorswitch signal is not detected | The door is open |
| | | Malfunction of doorswitch. |
| Lime filter full | The lime filter needs to be replaced and in the manager menu, the parameter "lime filter replaced" needs to be put on "yes" | The maximum amount of water has been used and a new filter cartridge needs to be placed. |
| | | The water hardness setting in the service menu is wrong. |
| | | No filter is connected. The water hardness setting has to be set to"-" in the service menu. |
| Please clean first | The cleaning program did not finish. Detergent remainings could be in the oven cavity. Start the cleaning program (in rinse) | The cleaning program has been stopped by the operator. |
| | | The cleaning program has been interrupted by a power supply failure, or the power supply has been switched off during the cleaning program (at night). |
| | | |
| The below messages are only possible when the USA hood is connected | | |
| Hood: not active (USA hood only) | | The ventless hood has not been switched on Power is disconnected |
| Activate hood (USA hood only) | Tells to switch on the Hood | |
| Hood: filter misplaced (USA hood only) | | One or more filters are not placed correct |
| | | One or more switches defect or disconnected |
| Hood: filter saturated (USA hood only) | | Filters need to be replaced |
| | | Malfunction of pressure switch |

## TROUBLE SHOOTING BY SYMPTOM.

| Symptom | Possible cause | Caused by |
|---|---|---|
| Unit will not switch on. | Power disconnected | Power plug disconnected |
| | | Mains switch in OFF position. |
| | Mains breaker open | Short circuit or insulation problem |
| | Fuse(s) blown | Power surge<br>Check fuse(s) on the electric panel |
| | Wiring problem | Wiring loose of plugs or sockets inside and out-side of unit. |
| | | Ribbon cable loose between CPU and I/O board |
| | Control boards malfunction | Mains power surge. (fuse blown on I/O board) |
| | Keypad malfunction | Moist (condens)on the keypad |
| Unit does not heat up. | Contactor does not switch on | Defective contactor.<br>Defective temperature sensor.<br>Wiring problem.<br>Unit is put in "DEMO Mode" (check parameters)<br>Wrong cooking program. |
| | Hi Limit thermostat triggered | Hi limit thermostat triggered due to transport (hi vibrations). |
| | | Defective hi-limit thermostat. |
| | | Defective temperature sensor. (temp. too high) |
| Bad cooking results, uneven cooking | Air circulation problem | Fanblade loose |
| | | Blower defect (coil or bearing) or thermistor open (140°C) |
| | | Capacitor of blower defect |
| | | Suction grid of ventilator plate blocked |
| | Too much heat | Contactor hangs |
| | | PT1000 sensor malfunction , value too low |
| | | PT1000 Sensor to far out of cooking chamber |
| | Rotor motor stops | Cooling air flow blocked |
| | | Wrong rotation direction |
| Product not cooked, cooking takes more time | Short of heat | Heating element defect |
| | | Lost phase |
| | | Contactor defect |
| | | PT1000 sensor malfunction , value too high |
| | | PT1000 sensor too far into cooking chamber |
| | | Wire loose |
| | | High limit thermostat open |
| | | Suction grid of ventilator plate blocked |
| | Cooking program wrong | Wrong programming |
| | | Wrong product |
| | Missing inner door | Broken door |

| Symptom | Possible cause | Caused by |
|---|---|---|
| Beep functions missing | Buzzer / speaker not functioning | Loose connection |
| | | Broken buzzer / speaker |
| | | Parameter "key beep" switch off |
| Mains fuse or breaker switched off | Short circuit or insulation problem | Mains plug burned, or wet |
| | | Heating element broken |
| | | Wiring shorted or wet |
| Rotor drive motor does not stop | Power stays on the motor | Rotor switch, if applicable in pass through units, pushed in. (unit is placed with the back to the wall.) |
| | | Malfunction of I/O board |
| Less or no lighting | One or more lamps defect | Lamp defect |
| | No power on the lamps | Contactor malfunction |
| | | Wiring loose |
| | | Lighting switched off in manager menu |
| | | Contactor malfunction |
| Door does not close well. | Door not right adjusted | Unit not placed level, uneven floor. |
| Leakage of steam at the door | Door not right adjusted | Abuse by transport / operator. Hinge loose |
| Light does not switch off | Power stays on the lamps | Contactor malfunction, contacts sticking. |
| Oven cavity fills up with grease | Drain grid clogged | Cleaning instructions neglected. |
| | Grease drain blocked | Unit is cooking porc meat and in cold environment. The grease gets solid, drain heating required. |
| | Drain valve malfunction | Wiring loose |
| | | Broken valve |
| Controls malfunction | Leakage of steam through rotor shaft. | Worn out shaft seal. |
| | Excessive leakage of steam at door. | Wrong adjustment of door |
| | Controller overheated. | Cooling air flow blocked |
| | Fuses blown | Power surge |
| Water on the floor | Sewage clogged Water stays in the unit during cleaning and when the cleaning program has finished, the grease drain opens and the water falls in the grease container. | Sewer drain hose not installed properly |
| | | Sewer drain hose clogged |
| | | Malfunction of Sewer drain valve. |
| | Too much water in unit | Water inlet valve  (W1) broken |
| | | Water inlet valve (W1) polluted |
| | Pump defect | Pump is leaking |

| Symptom | Possible cause | Caused by |
|---|---|---|
| Bad cleaning result. Check parameter settings! | Water issue | Water tap closed |
| | | Descale filter saturated |
| | | No descaling filter applied while the water hardness is high |
| | Detergent issue | Cleaning cartridge not placed on the right place |
| | | Wrong (amount) detergent |
| | Drain issue | Sewer drain malfunction  (Q5) |
| | | Drain hose not installed properly |
| | | Grease drain malfunction (Q4) (cleaning proces started while unit is still loaded with oil) |
| | Rinse issue | Suction filter blocked |
| | | Malfunction of rinse valves  (Q2, Q3) |
| | | Malfunction of pump |
| | | Malfunction of valve at suction side  (Q1) |
| Black/ brown spots on the bottom / filter screens | Detergent not dissolved fast enough | Instructions not followed. Detergent and cartridge placed before the unit has cooled down. See storyboard. |
| | | |

## TROUBLE SHOOTING BY PART / FUNCTION.

| Description of part / function | Symptoms | Possible cause | Action |
|---|---|---|---|
| Inside door | Broken glass | Slamming of door. | Give instruction to operator. |
| | | Fastening bolts and nuts are loose. | Tighten all fastenings. |
| | | No PTFE ring between steel and glass. | Mount new door. |
| | Door does not properly open / close | Door not well adjusted. | Adjust outside and inside door |
| Outside door | Broken glass | Slamming of door. | Give instruction to operator. |
| | | Fastening bolts and nuts are loose. | Tighten all fastenings. |
| | Door adjustment | Door not well adjusted. | Adjust outside and inside door |
| Heating element | Rotisserie doesn't reach adjusted temperature | Wiring. | Check the wiring. Check the power on the element. |
| | | Contactor | Check the contactor |
| | | Element malfunction. | Check the current with AC current tester. |
| | Duration of grilling time is too long | Wiring. | Check the wiring. |
| | | Element malfunction. | Check the current with AC current tester. |
| Safety thermostat | Contactor does not switch on after starting of program | Wiring. Thermostat malfunction. | Check the wiring. Check if the thermostat is making contact. |
| | Contactor switches off before reaching the adjusted temperature in program | Thermostat malfunction. | Check if the thermostat is turned fully clockwise (contact closed). |
| | | Thermostat probe not in right position. | Check the position of the thermostat probe. |
| Contactor | Contactor doesn't switch on | Wiring. | Check the wiring. |
| | | Coil malfunction. | Check resistance of the coil. This should be ± 600Ω. |
| | Contactor switches on, but no power on lamp or heating element. | Contact burned. | Check the wiring. Check the power on al contacts. Check the contacts of the contactor. |
| Capacitor | Drive motor or blower don't work | Wiring. | Check the wiring. |
| | | Capacitor malfunction. | Check function after connecting a new capacitor. *Checking of capacitor: See chapter "electrical tests"* |

| Descrip-tion of part / function | Symptoms | Possible cause | Action |
|---|---|---|---|
| Drive motor | Motor doesn't run | Wiring. | Check the wiring. |
| | | | Check the power to the motor. |
| | and / or main fuse burned | Coil malfunction. | Check insulation value of coil with Megger on 500V. Minimum value is 0.5 MΩ. Check resistance of the coils. See chapter Electrical tests. Between whiteA and white wire 234Ω. |
| | | | Between whiteA and brown wire 117Ω. |
| | | | Between white and brown wire 117Ω. |
| | | Gearbox. | Check if gearbox is blocked. |
| | Motor runs after starting it up by hand | Capacitor malfunction. | Check capacitor (see chapter electrical tests) |
| | Motor stops du-ring process and comes in again after a period of time | Coil overheated, thermis-tor switches off (105°C – 221°F). | Check rotation direction. Air should be flo-wing upwards over the motor. |
| | | | Check cooling circuit of motor. |
| | | | Check if rotisserie is close to another heat source. |
| | | | Measure temperature motor during process. |
| | | Broken capacitor | Check / repace capacitor |
| Seal of drive motor shaft | Grease leaking | Seal deteriorated | Replace seal. |
| | | Seal not properly moun-ted | Be sure that the motor shaft comes through the center of the hole,properly alligned and thorougly fastened. **After that,** mount the seal. Refer to chapter "service procedures". |
| Blower | Blower doesn't run | Wiring. | Check the wiring. |
| | | | Check the power on the blower. |
| . | and / or Main fuse burned | Coil malfunction. | Check insulation value of coil with a  Megger on 500V. Minimum value is 0.5 MΩ. Check resistance of the coils. *See chapter Electrical tests.* Replace motor if not ok |
| | Blower runs after starting it up by hand | Capacitor malfunction. | Check capacitor (see capacitor) or connect new capacitor. |
| | Blower stops du-ring process and comes in again after a period of time | Coil overheated, thermis-tor switches off (140°C – 284°F). | Check cooling circuit of blower. Check rotation direction of rotor motor Check if rotisserie is close to another heat source. Measure temperature blower during process. |
| | Temperature indication on display runs up very fast (180°C - 355°F after 5 minutes) | Blower doesn't rotate and heat stays in top of cavity. | See above. |

| Descrip-tion of part / function | Symptoms | Possible cause | Action |
|---|---|---|---|
| PT-sensor | Temperature inside rotisserie higher than set temperature | Resistance of sensor lower, caused by moist inside | Replace sensor |
| | | Short circuit in sensor. | Replace sensor |
| | | Sensor not in right positi-on. Too far out the cook-ing chamber | Check / adjust position of sensor |
| | Rotisserie does not reach adjus-ted temperature | Resistance of sensor too high | Replace sensor |
| | | Sensor not in right po-sition. Too far into the cooking chamber | Check / adjust position of sensor |
| | Error message -PT1000 under-flow -Sensor shorted | PT sensor, or wiring shor-ted | Check in I/O test Temperature 0°C / 32°F This is lower than 1000Ω |
| | Error message -PT1000 overflow -Sensor open | PT sensor, or wiring dis-connected | Check in I/O test. Temperature 317°C / 603°F This is higher than 2200Ω |
| Keypad(s) / touch screen do not react | No possibility to make a program | One or more keys don't function. | Check flat cable connection between CPU board and keypad / touch screen |
| | | | Do a hard reset |
| | | | Replace key pad or CPU board |
| Keypad / touch-screen has bad reaction | Difficult to ope-rate | Wrong parameter setting | Check parameter setting in Service menu |
| Keypad(s) / touch screen-react strange / automatic | Automatic stop-ping of program. | Moist on / or running over the keypad | 1. Check for condensation. When the unit is cold and the environment is heating up, condensation can be expected. 2. Check for water, dripping on the top of the unit and running down. |
| Display/CPU on operation pa-nel and power I/O board | No illumination on display | Wiring. | Check the wiring. |
| | | | Check the power on the CPU board by the 2 flashing red LED's just near the flatcable on the power and I/O board. |
| | | Fuse burned. | Check the fuse on the power I/O board. |
| | | | Check other fuses. |
| | | Flat cable. | Check grey flat cable connection. |
| | | Display/CPU malfunction. | Replace the CPU board with display. |
| | | Power board malfunction. | Replace the power I/O board. |
| | Display shows strange things. | Parameters not on right settings. | Check parameters. |
| | | Wrong software or loss of data. | Check software version or upload latest software. |

| Description of part / function | Symptoms | Possible cause | Action |
|---|---|---|---|
| Pump<br><br>See below overview<br><br>**P1** | Not pumping | Suction valve Q1 (9311008s) malfunctioning | Check the valve if it is closed while the waterinlet valve is opened and the unit is being filled. |
| | | Suction filter clogged | Check / clean the filter |
| | | Suction filter clogged | Check / clean the filter |
| | | Wiring problem | Check function of pump in I/O test<br>Check the connection on the pressure switch on the pump and other wiring |
| | | Voltage dropped | Check the 24V power supply |
| | Leaking | swivel coupling loose, broken | Check / replace |
| | | Pump membrane broken | Replace pump |
| Water inlet (solenoíd) valve<br><br>See below overview<br><br>**W1** | Too much water in unit | Valve polluted by dirty water | Clean valve |
| | | Broken valve | Replace valve |
| | | Missing reducer (10 ltr/min) | Replace valve by the right one |
| | No Water | Wiring loose | Check wiring |
| | | Broken valve | Replace wiring |
| Motor valve suction side<br><br>**Q1** | Not rinsing during cleaning | Valve does not close during filling of water | Check function of valve in I/O test<br>Check wiring and plugs / sockets on the I/O board |
| | | Valve does not open durng rinsing | |
| Motor valves left and right rinse<br><br>See below overview<br><br>**Q2 / Q3** | No water comes out of the sprayers | Both valves stay closed | Check function of valve in I/O test<br>Check wiring and plugs / sockets on the I/O board |
| | Water comes out of both sprayers all the time | Both valves stay open | Check function of valve in I/O test<br>Check wiring and plugs / sockets on the I/O board |
| | Water alternately flows from both nozzles for 1 minute and at full pressure from 1 nozzle for the other minute.. | One of the valves stays open | Check function of valve in I/O test<br>Check wiring and plugs / sockets on the I/O board |
| Motor valve grease drain<br><br>See below overview<br><br>**Q4** | Oil stays on the bottom. | Valve does not open | Check function of valve in I/O test<br>Check wiring and plugs / sockets on the I/O board |
| | Water comes in the grease container (bucket) and probably on the floor | Valve does not close | |
| Motor valve sewer drain<br><br>See below overview<br><br>**Q5** | Water comes in the grease container (bucket) and probably on the floor | Valve does not open | Check function of valve in I/O test<br>Check wiring and plugs / sockets on the I/O board |
| | Soap and grease still in unit after cleaning program | Valve does not close and water goes straight out, into the sewer | |
| | | | |

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## HYDRAULIC OVERVIEW

P1

P2

Q1

W1

Q4    Q5

Suction filter

Descaling filter
**By-pass on zero!!**

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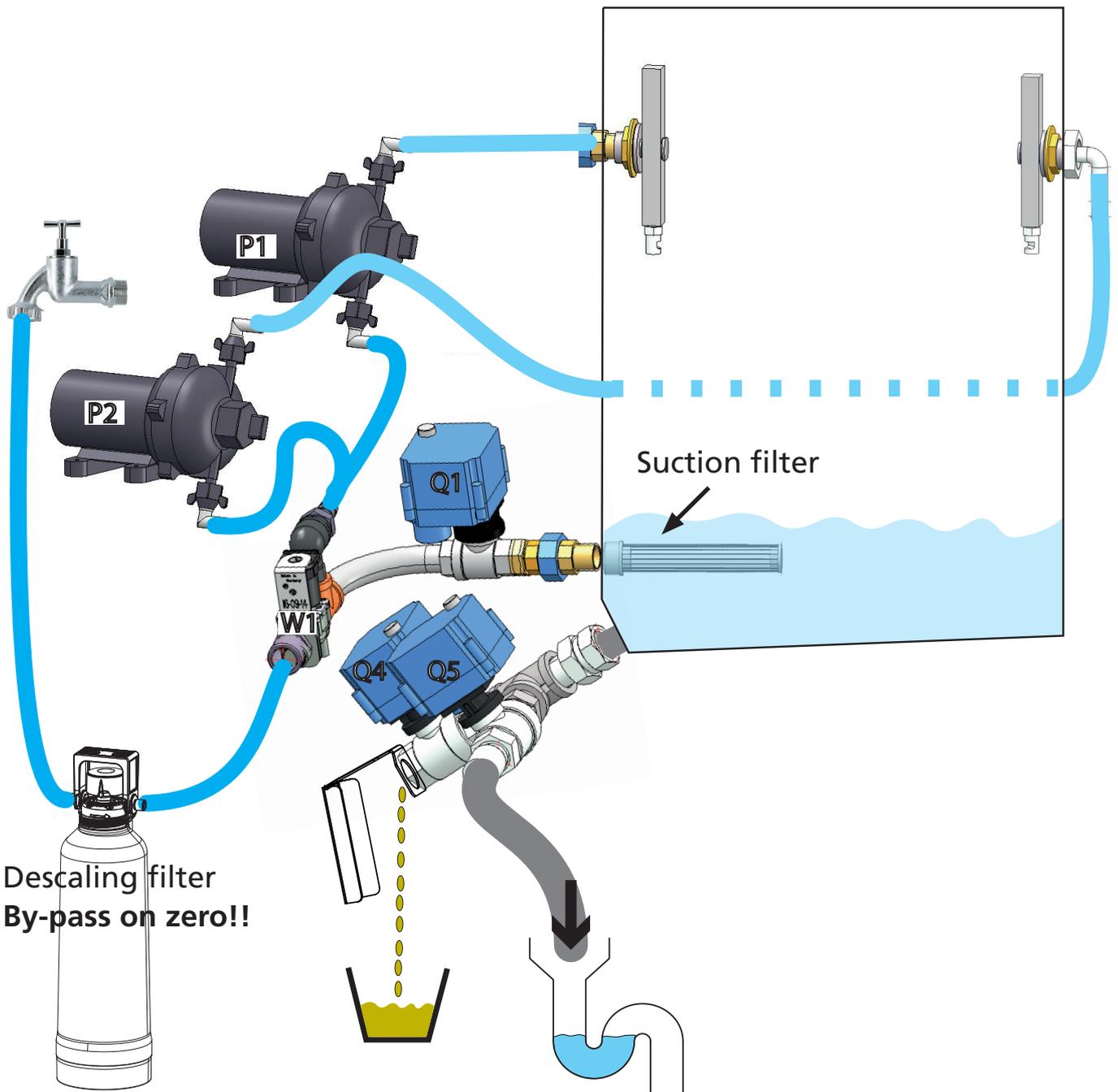
# LDR 8S AC GAS, ELECTRICAL PARTS
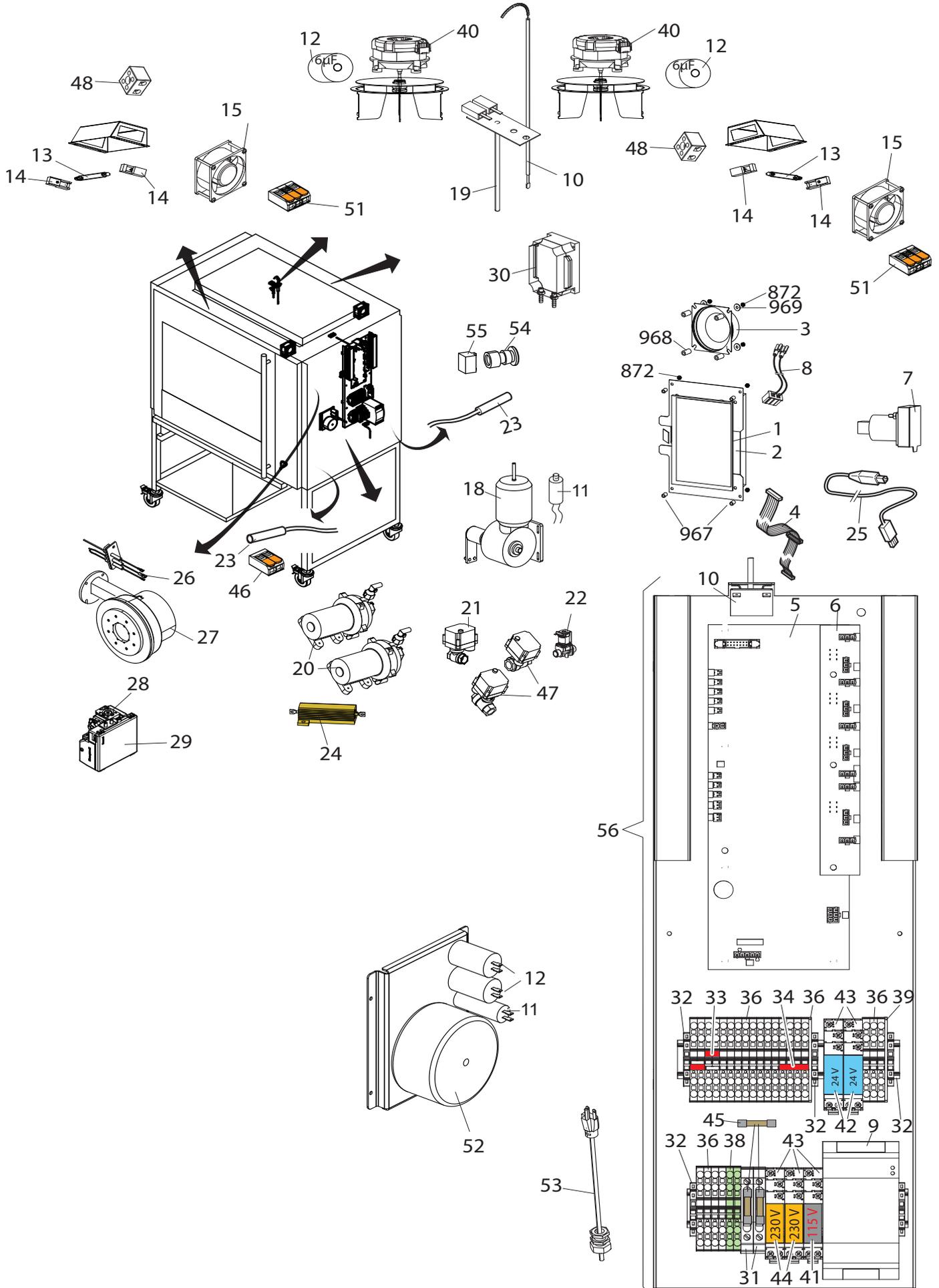
## LDR 8S AC GAS, PARTSLIST ELECTRICAL PARTS

| Pos | Part nr. | Description | Qty | Pri | Comment |
|---|---|---|---|---|---|
| 1 | 9292280s | CPU + LCD board s-control | 1 | 1 | |
| 2 | 9292282s | CPU + LCD board s-control (without WIFI) | 1 | 1 | |
| 3 | 9311046s | Speaker | 1 | 1 | |
| 4 | 9172314 | Ribbon cable 14p | 1 | 2 | |
| 5 | 9192400s | Power & I/O board | 1 | 1 | |
| 6 | 9192401s | Interface board | 1 | 1 | |
| 7 | 9310161 | USB socket, ass. | 1 | | |
| 8 | 9311047 | Cable, speaker s-control | 1 | | |
| 9 | 9311016 | Power Supply 24V 10A | 1 | 1 | |
| 10 | 9040970 | Thermostat 122-608° | 1 | 2 | |
| 11 | 3701228 | Capacitor 2,5µF | 1 | 2 | |
| 12 | 9192034 | Capacitor 6µF | 2 | 2 | |
| 13 | 9351020s | Lamp 160W | 2 | 1 | |
| 14 | 9311015 | Lamp holder R7s ceramic | 4 | 2 | |
| 15 | 8091005 | Fan | 2 | 1 | |
| 18 | 9340105s | Gearmotor, complete with drive head | 1 | 1 | |
| 19 | 9172310s | Temperature sensor PT 1000 | 1 | 1 | |
| 20 | 9311006s | Pump | 1 | 1 | |
| 21 | 9311008s | Motor valve -2/2 1/2"  CR03 | 1 | 1 | |
| 22 | 9311007s | Solenoïd valve E 2/2 - 1/2" (reduced 9 ltr/min) | 1 | 1 | |
| 23 | 3500020 | Reed switch | 2 | 2 | |
| 24 | 9311075 | Resistor  0,5 Ω 50Watt | 1 | 2 | |
| 25 | 9291012 | USB cable | 1 | | |
| 26 | 9292113s | Ignition set, gasket included | 1 | 1 | |
| 27 | 9221075 | Gasmixture blower | 1 | 1 | |
| 28 | 9291022s | Gas valve | 1 | 1 | |
| 29 | | Burner safety controller, G20 natural gas | 1 | 1 | |
| 30 | 9291111 | Pressure switch | | | |
| 31 | 9191218 | Fuse holder Euro ABB | 2 | | |
| 32 | 9191222 | End Clamp Clipfix 35-5 PHX | 10 | | |
| 33 | 9191238 | Plug-in bridge FBS 2-6 PHX | 3 | | |
| 34 | 9191236 | Plug-in bridge FBS 4-6 PHX | 1 | | |
| 36 | 9191240 | Terminal PT 4 (GY) 4 qmm PHX | 13 | | |
| 37 | 9191241 | Terminal PT 4 (BU) 4 qmm PHX | 7 | | |
| 38 | 9191239 | Terminal PT 4 PE (GN/YE) 4 qmm PHX | 1 | | |
| 39 | 9191223 | End Cover  D-PT 4 PHX | 1 | | |
| 40 | | Blower, ass. TDR 8s ac gas | 1 | 2 | |
| 41 | 9341005 | Relay, 120V Allen Bradley | 1 | 1 | |
| 42 | 9311044 | Relay, 24V Allen Bradley (blue) | 2 | 1 | |
| 43 | 9291141 | Socket, relay Allen Bradley | 5 | 2 | |
| 44 | 9291140 | Relay, 230V Allen Bradley (yellow) | 2 | 1 | |
| 45 | 3701279 | Fuse 3,15A, ceramic 32x6,3 | 2 | 1 | |
| 46 | 9291122 | Connector, 2 pole | 6 | | |
| 47 | 9311013s | Motor valve -2/2 3/4"  CR03 | 2 | 1 | |
| 48 | 9171110 | Connector, 2 pole ceramic | 4 | 2 | |
| 49 | 9312083 | Drain pump | 1 | 1 | |
| 50 | 9312085 | Solenoïd double valve 1/2" (reduced 9 ltr/min) | 1 | 1 | |
| 51 | 9291123 | Connector, 3 pole | 2 | | |
| 52 | 9171056 | Transformer 115 / 230V  500VA | 1 | 2 | |
| 53 | 9340155s | Mains cable with plug and strain relief | 1 | | |
| 54 | 9291002 | Pedestal button | 1 | | |
| 55 | 9291003 | Switch block | 1 | | |
| 56 | 9340140 | Electric panel | 1 | | |
| | | | | | |

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## LDR 8S AC GAS, ELECTRICAL PARTS



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60 1050 mm (41 1/4") 2x

67 1 950 mm (37 3/8")

68 9310852s 1x

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<--2   38
<--3   37
<--4   34
<--5   39
<--6   35
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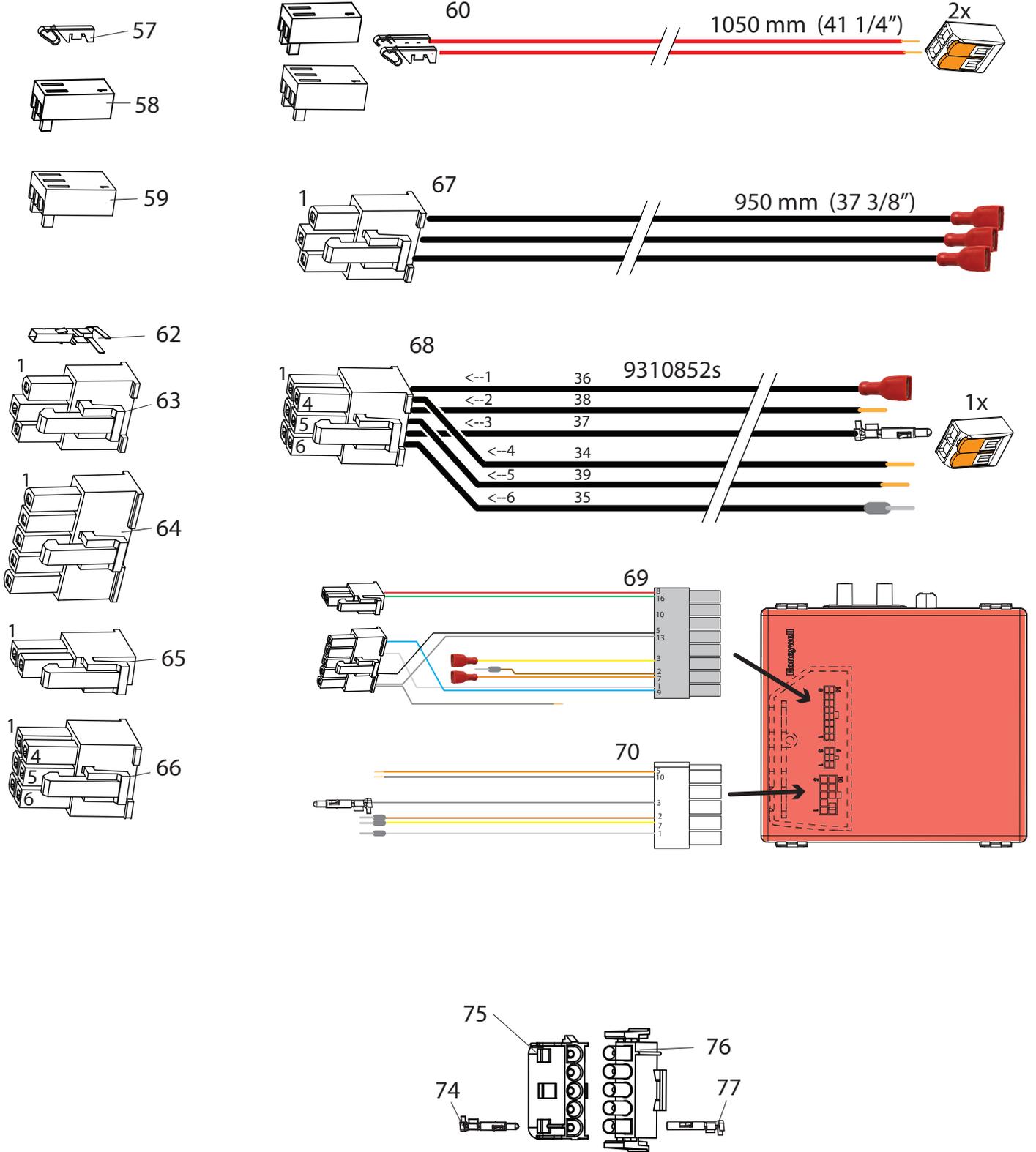
## LDR 8S AC GAS, PARTSLIST ELECTRICAL PARTS

| Pos | Part nr. | Description | Qty | Priority | Comment |
|-----|----------|-------------|-----|----------|---------|
| 57 | 9291176 | Crimp contact, inputs | | | |
| 58 | 9291175 | Socket, 2 p, inputs | | | |
| 59 | 9291177 | Socket, 3 p, inputs | | | |
| 60 | 9310850s | Wire repair set inputs | | 2 | |
| 62 | 3701231 | Crimp contact, outputs | | | |
| 63 | 9291179 | Plug, 3p, outputs | | | |
| 64 | 9291170 | Plug, 5p, power | | | |
| 65 | 9291174 | Plug, 2p, output | | | |
| 66 | 9291173 | Plug, 6p, outputs | | | |
| 67 | 9310851s | Wire repair set 24V outputs | | 2 | |
| 68 | 9310852s | Wire repair set 208V outputs | | 2 | |
| 69 | 9340804 | Wiring harness, gas mixture blower control | 1 | 2 | |
| 70 | 9340805 | Wiring harness, burner control | 1 | 2 | |
| 74 | 0601466 | Crimp contact male, M-N-L | | | |
| 75 | 9291014 | Socket, 5p, Mate-N-Lock | | | |
| 76 | 3701272 | Plug, 5p,  Mate-N-Lock | | | |
| 77 | 0601458 | Crimp contact female, M-N-L | | | |
| 79 | 9311054s | Pedal switch | | | |
| | | | | | |
| | | | | | |

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## LDR 8S AC GAS, CONTROL PANELS

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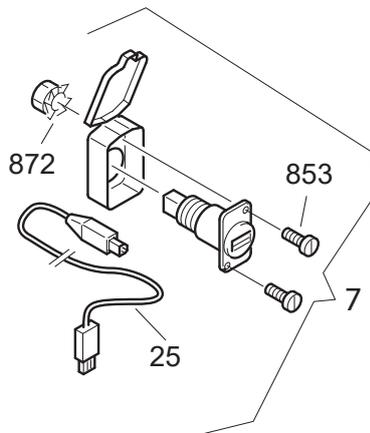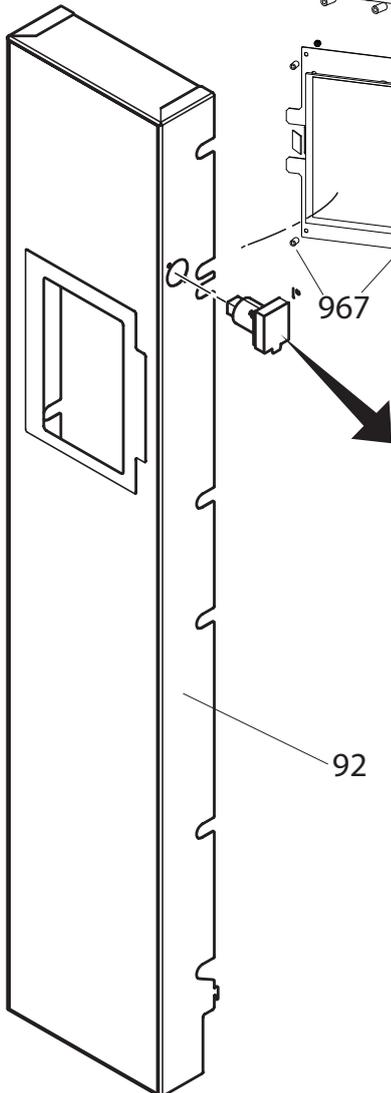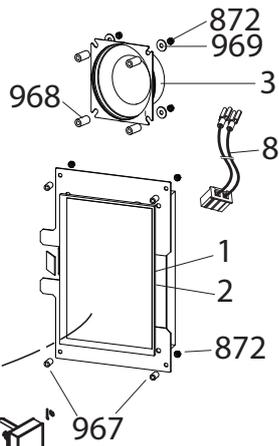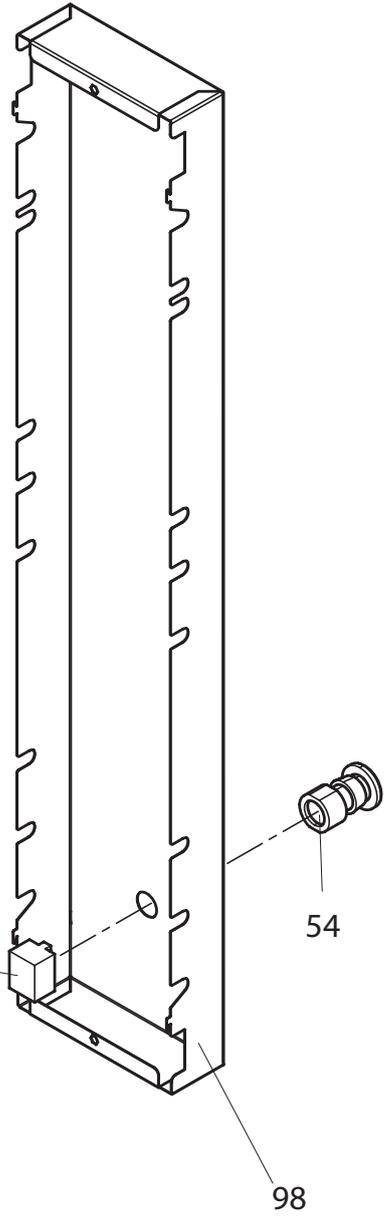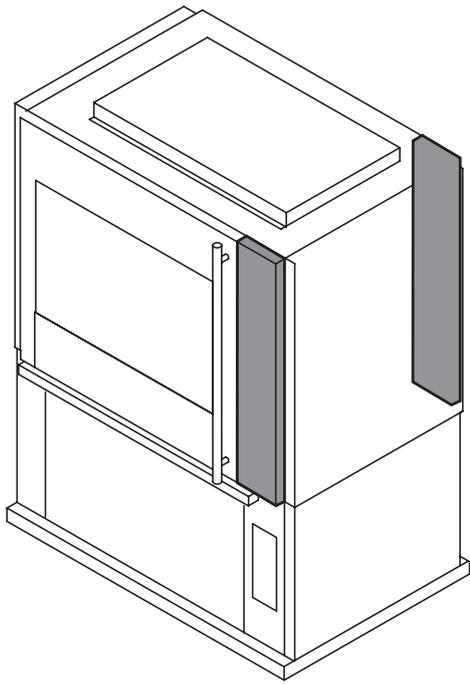
## LDR 8S AC GAS, PARTSLIST CONTROL PANELS

| Pos | Part nr. | Description | Qty | Priority | Comment |
|-----|----------|-------------|-----|----------|---------|
| 1 | 9292280s | CPU + LCD board s-control | 1 | 1 | |
| 2 | 9292282s | CPU + LCD board s-control (without WIFI) | 1 | 1 | |
| 3 | 9311046s | Speaker | 1 | 1 | |
| 7 | 9310161 | USB socket, ass. | 1 | | |
| 8 | 9311047 | Cable, speaker s-control | 1 | | |
| 25 | 9291012 | USB cable | 1 | | |
| 54 | 9291002 | Pedestal button | 1 | | |
| 55 | 9291003 | Switch block | 1 | | |
| | | | | | |
| 92 | | Operator panel, ass.LDR8s  AC Right-contr | 1 | 2 | |
| 98 | 9314170s | Panel, customer side L+R, ass. LDR8s AC, for rotor button | 1 | | |
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## LDR 8S AC GAS, DOORS

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(3x)
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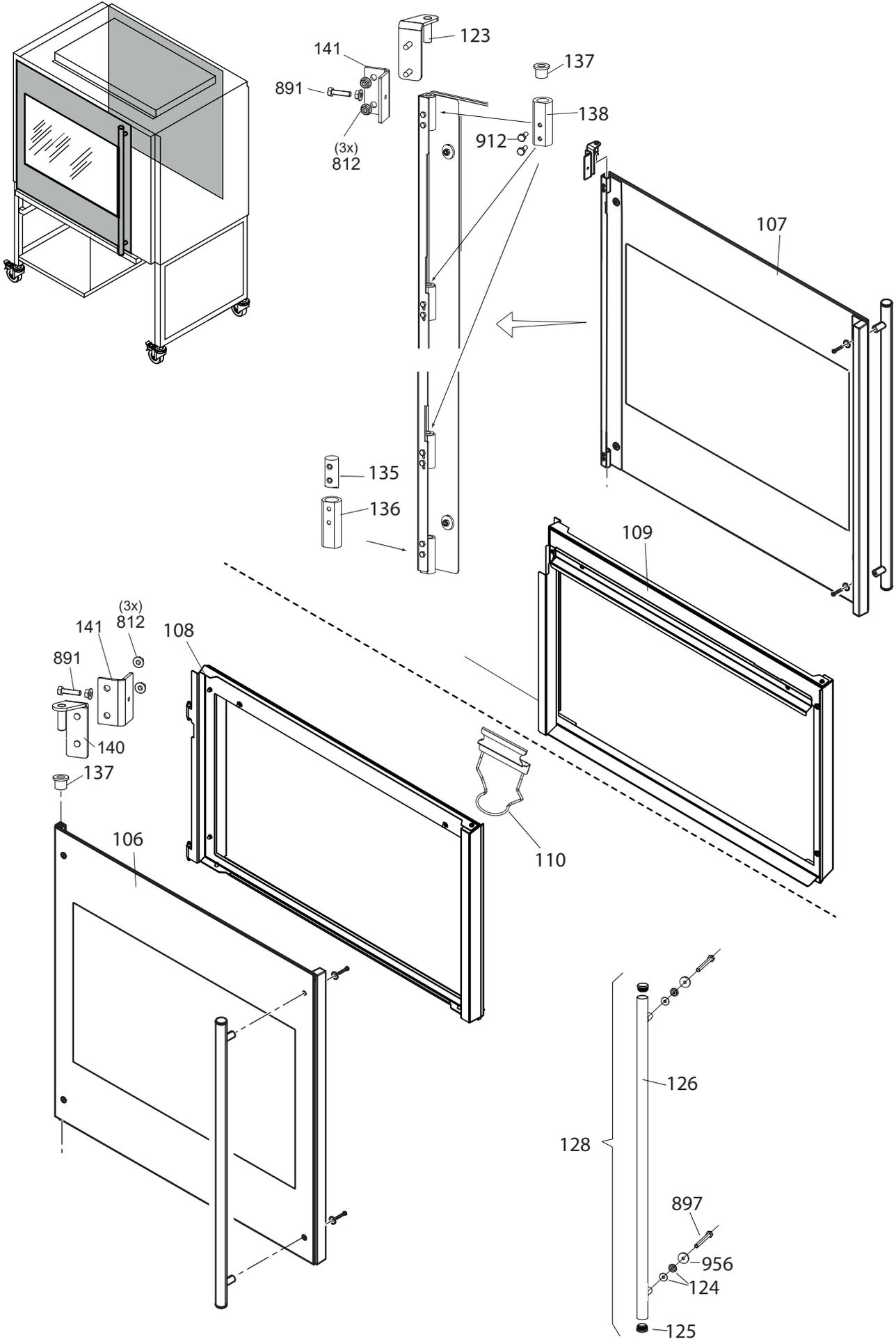
## LDR 8S AC GAS, DOORS

| Pos | Part nr. | Description | Qty | Priority | Comment |
|-----|----------|-------------|-----|----------|---------|
| 106 | 9348510s | Ass. Outer door Left turning LDR8s  AC | 1 | 2 | |
| 107 | 9348512s | Ass. Outer door Right turning LDR8s  AC | 1 | 2 | |
| 108 | 9348513s | Ass. Inner door Left turning LDR8s  AC | 1 | 2 | |
| 109 | 9348511s | Ass. Inner door Right turning LDR8s  AC | 1 | 2 | |
| 110 | 9312163 | Soap cartridge holder | 1 | 1 | |
| 123 | 9310411 | hinge, top right | 1 | | |
| 124 | 3702342 | Collar bush 10x5x3,5 | 16 | | |
| 125 | 2103209 | Plug Ø 30mm | 4 | | |
| 126 | 9293008 | Door handle | 2 | | |
| 128 | 9298101s | Doorhandle set TDR7/8 | | | |
| 135 | 9312014 | Positioning pin, door hinge | 2 | | |
| 136 | 9312112 | Bearing bush, lower hinge | 2 | | |
| 137 | 9172054 | Collar bearing, bronze | 2 | | |
| 138 | 9312111 | Bearing block, upper hinge | 2 | | |
| 140 | 9310410 | hinge, top left | 1 | | |
| 141 | 9314318 | Bracket door adjustment | | | |

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## LDR 8S AC GAS, LIGHTING AND SENSORS
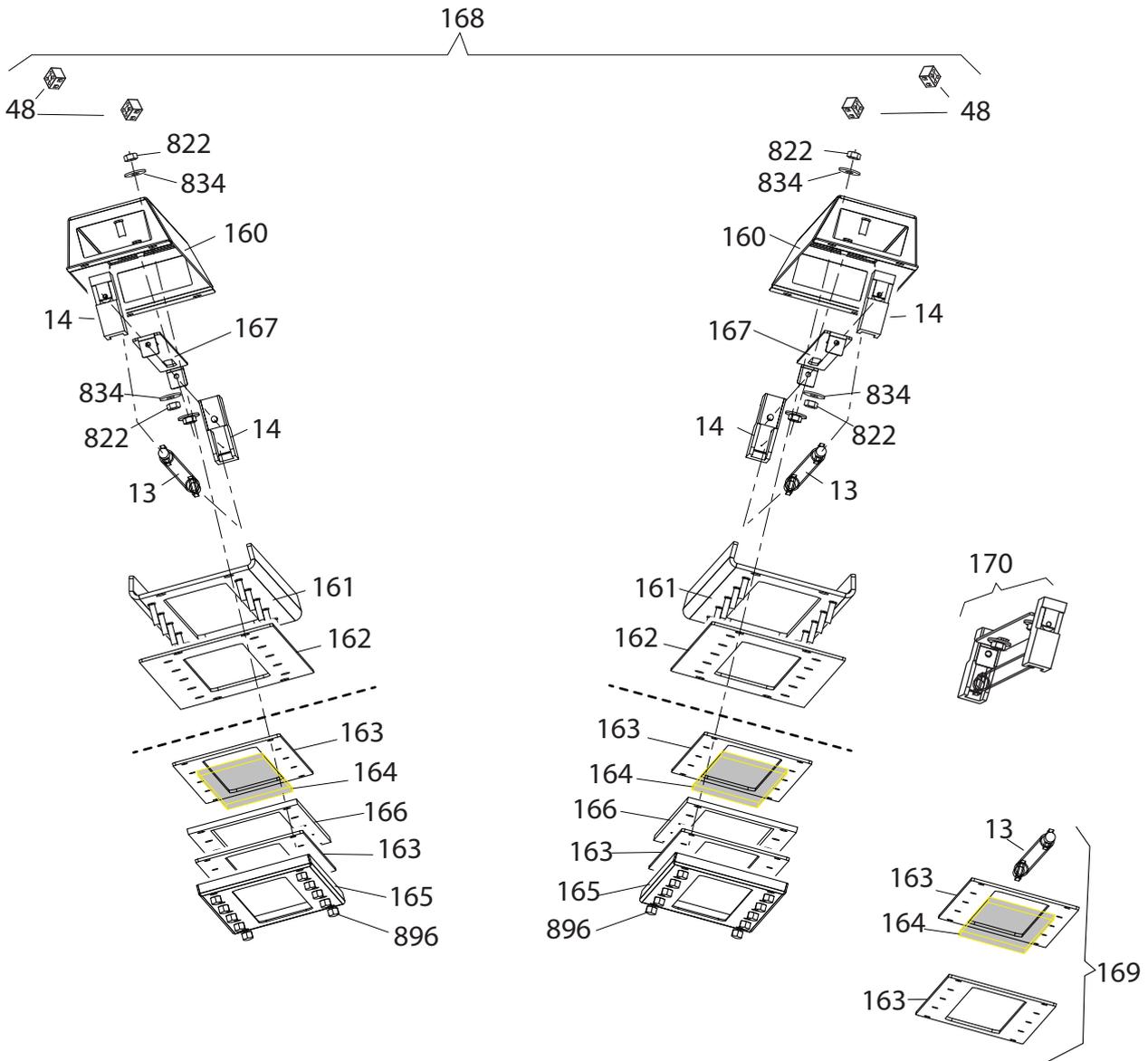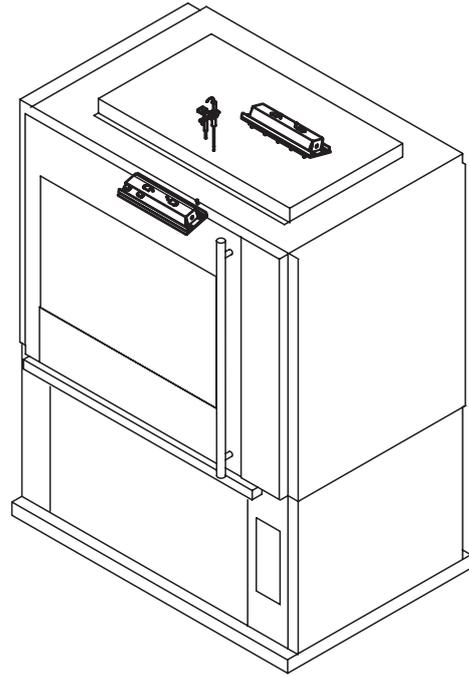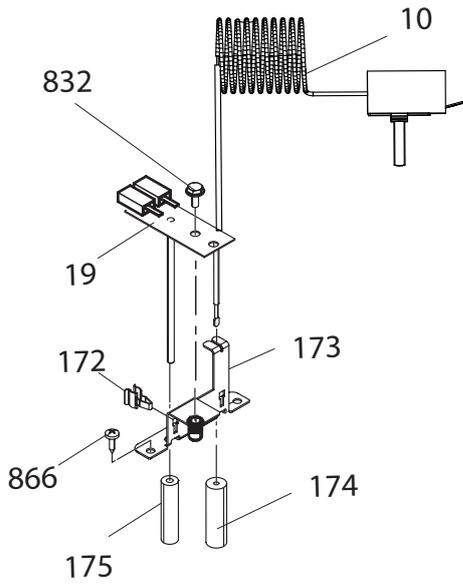
## LDR 8S AC GAS, LIGHTING AND SENSORS

| Pos | Part nr. | Description | Qty | Priority | Comment |
|-----|----------|-------------|-----|----------|---------|
| 10 | 9040970 | Thermostat 122-608° | 1 | 2 | |
| 13 | 9351020s | Lamp 160W | 2 | 1 | |
| 14 | 9311015 | Lamp holder R7s ceramic | 4 | 2 | |
| 19 | 9172310s | Temperature sensor PT 1000 | 1 | 1 | |
| | | | | | |
| 160 | 9314113 | Cover, lamp | 2 | | |
| 161 | 9314114 | Mounting bracket, lamp fixture. | 2 | | |
| 162 | 9312054 | Seal, top | 2 | | |
| 163 | 9312055 | Seal light (for lamp 500W) | 2 | 1 | |
| 164 | 9312020 | Glass, oven illumination | 2 | 1 | |
| 165 | 9314330 | Cover profile, oven illumination | 2 | | |
| 166 | 9314331 | Spacer plate | 2 | | |
| 167 | 9314334 | Bracket, lamp holder. | 2 | | |
| 168 | 9310071s | Service kit, 2 lamp fixtures | | | |
| 169 | 9312055s | Lamp replacement kit | | 1 | |
| 170 | 9311029s | Lamp holder kit | | | |
| 172 | 9110072 | Clamp | 2 | | |
| 173 | 9344062s | Bracket, sensors | 1 | | |
| 174 | 9313022 | Silicon hose Ø12xø3, L=43 | 1 | 1 | |
| 175 | 9313023 | Silicon hose Ø10xø4, L=43 | 1 | 1 | |
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## LDR 8S AC GAS ROTOR

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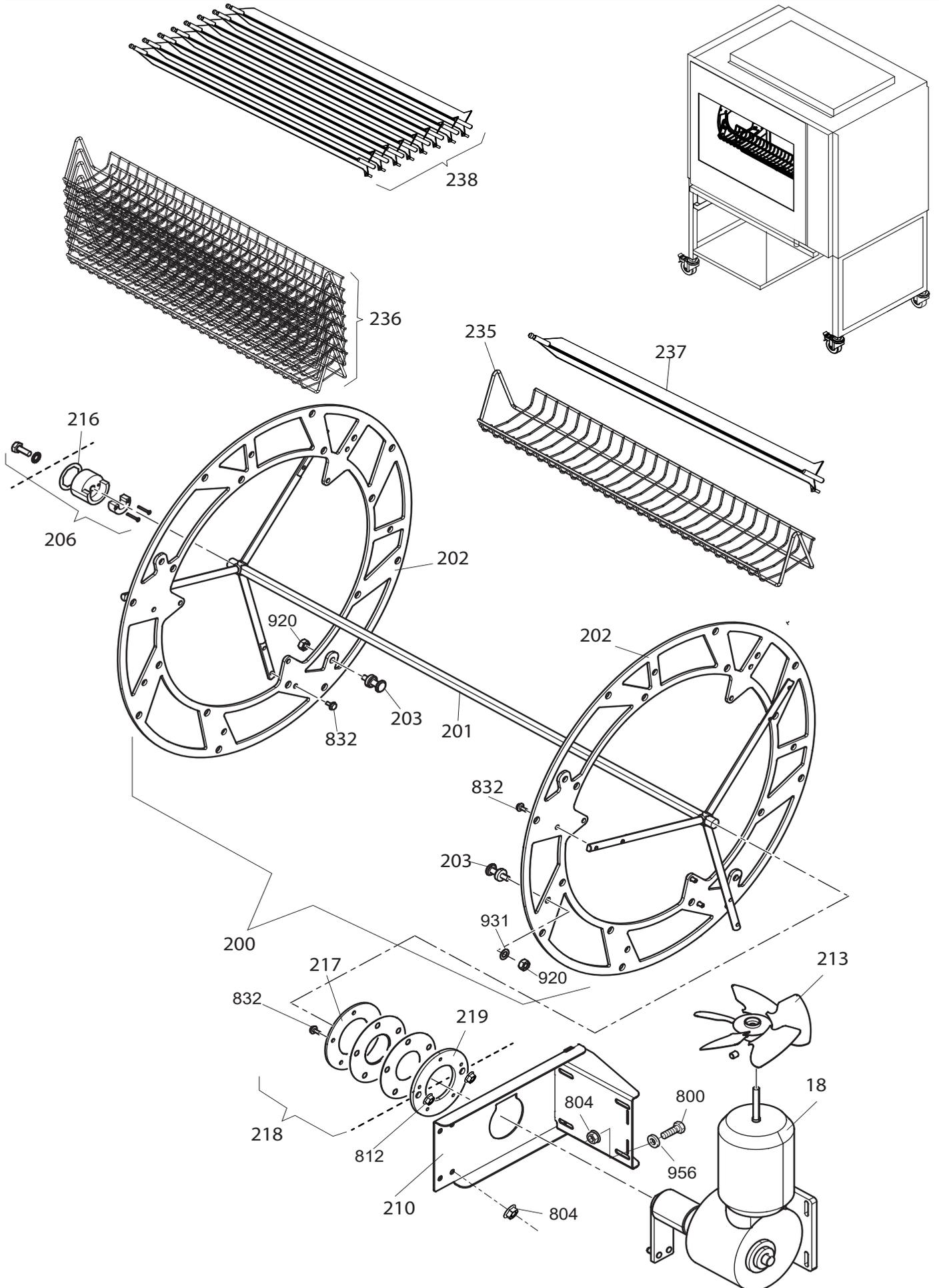
## LDR 8S AC GAS, PARTSLIST ROTOR

| Pos | Part nr. | Description | Qty | Priority | Comment |
|-----|----------|-------------|-----|----------|---------|
| 18 | 9340105s | Gearmotor, complete with drive head | 1 | 1 | |
| | | | | | |
| 200 | | Ass. Rotor LDR8 ac | 1 | | |
| 201 | 9340416 | Rotor shaft | 1 | | |
| 202 | 9314220 | Rotor disk | 2 | | |
| 203 | 9302027 | Support pin, meat baskets | 16 | | |
| 206 | 9310180s | Bearing ass., rotor TDR7/8ac | 1 | 2 | |
| 210 | 9290444 | Suspension plate, rotor motor | 1 | | |
| 213 | 9172078 | fan blade 150mm | 1 | | |
| 216 | 9312019 | Seal | 3 | 2 | |
| 217 | 9314126 | Pressure ring, 5 holes | 1 | | |
| 218 | 9312002s | Shaft seal, 5 holes | 1 | | |
| 219 | 9314125 | Reinforcement ring, 5 holes | 1 | | |
| 235 | 9342007 | Meat basket | | | |
| 236 | 9340201 | Meat basket, set of 7 | | | |
| 237 | 9342011 | V-spit | | | |
| 238 | 9340200 | V-spit, set of 8 | | | |
| | | | | | |
| | | | | | |

# LDR 8S AC GAS, BLOWER & HEATING

## LDR 8S AC GAS, PARTSLIST BLOWER & HEATING

| Pos | Part nr. | Description | Qty | Priority | Comment |
|-----|----------|-------------|-----|----------|---------|
| 26 | 9292113s | Ignition set, gasket included | 1 | 1 | |
| 27 | 9221075 | Gasmixture blower | 1 | 1 | |
| 28 | 9291022s | Gas valve | 1 | 1 | |
| 29 | | Burner safety controller, G20 natural gas | 1 | 1 | |
| 30 | 9291111 | Pressure switch | | | |
| 40 | | Blower, ass. TDR 8s ac gas | 1 | 2 | |
| 52 | 9171056 | Transformer 115 / 230V  500VA | 1 | 2 | |
| | | | | | |
| 251 | 9293020s | Blower motor | | | |
| 255 | 9298600 | Turbine puller | | | |
| 256 | 3702325 | Shaft seal | 2 | 1 | |
| 257 | 9294007 | Pressure ring | 2 | | |
| 258 | 9341004 | Turbine, Ø190x75 | 2 | | |
| 259 | 9340410 | Blower panel LDR8 ac | 1 | | |
| 260 | 9340113 | Blower grid | 1 | | |
| 261 | 9340115 | Blower panel & grid ass. | | | |
| 262 | 9340409 | Suspension , blower panel | 2 | | |
| 263 | 9342008s | Heat exchanger | 1 | | |
| 264 | 9342017 | Insulation | 1 | | |
| 265 | 9342018 | Insulation | 1 | | |
| 266 | 9344038 | Cover, insulation R | 1 | | |
| 267 | 9344039 | Cover, insulation L | 1 | | |
| 268 | 9291106 | Clamp | 1 | | |
| 269 | 9342010 | Elbow ass. | 1 | | |
| 270 | 9292107 | Insulation, elbow | 1 | | |
| 271 | 9291018 | Spring for insulation exhaust pipe | 2 | | |
| 272 | 9342019 | Gasket, burner | 1 | 1 | |
| 273 | 9340412 | Burner | 1 | | |
| 274 | 9292103 | Gasket, gasmixture blower | 2 | | |
| 275 | 9344034 | Orifice Ø 21 | 1 | | |
| 276 | 9341001 | Venturi + gasket | 1 | | |
| 278 | 9292108 | Gasket , ignition set | 1 | 1 | |
| 279 | 9340412s | Burner ass. with ignition | | | |
| 280 | 9344027 | Motor support | 1 | | |
| 281 | 9344030 | Top plate casco | 1 | | |
| 282 | 9312075 | Spacer 20,5 mm | 8 | | |
| 283 | 9342014 | Gasket, blower suspension | 2 | | |
| 284 | 9344032 | Heat shield | 1 | | |
| 285 | 9344025 | Top plate, insulation | 2 | | |
| 286 | 9344024 | Blower suspension | 2 | | |
| 287 | 9342022 | Tube 1/2" | 1 | | |
| 288 | 9291029 | Clamp | 1 | | |
| 289 | 9344119 | Clamp | 1 | | |

# LDR 8S AC GAS, CLEANING SYSTEM

## LDR 8S AC GAS, PARTSLIST CLEANING SYSTEM

| Pos | Part nr. | Description | Qty | Pri-ority |
|-----|----------|-------------|-----|-----------|
| 20 | 9311006s | Pump | 1 | 1 |
| 21 | 9311008s | Motor valve -2/2 1/2"  CR03 | 1 | 1 |
| 22 | 9311007s | Solenoïd valve E 2/2 - 1/2" (reduced 9 ltr/min) | 1 | 1 |
| 47 | 9311013s | Motor valve -2/2 3/4"  CR03 | 2 | 1 |
| 49 | 9312083s | Drain pump | 1 | 1 |
| 216 | 9312019 | Seal | 3 | 2 |
| | | | | |
| 301 | 9301007 | Nozzle, spoon shape | 2 | |
| 302 | 9312117 | Spray arm TDR5ac and 7/8ac | 2 | |
| 303 | 9311014 | Collar bearing, Ø12xø10 | 4 | 1 |
| 304 | 9312012 | Shaft , spray arm | 2 | 2 |
| 305 | 9312011 | Adapter, spray arm | 2 | |
| 307 | 9311021 | Nut, 3/4" | 2 | |
| 308 | 3721050 | Elbow threaded 1/2" (F-M) BSP | 4 | |
| 309 | 9311011 | Hose Pillar 1/2" (M) SS | 4 | |
| 310 | 9311038 | Hose clamp,23 mm | 8 | |
| 312 | 6000032 | Hose clamp, 26-38 mm | 2 | |
| 313 | 9313016 | Hose 13x23 | 3 m | |
| 314 | 9311028 | Reducing bushing 3/4"x1/2", SS | 1 | |
| 315 | 9311009 | Union conicle 1/2" (M-F) SS | 3 | |
| 316 | 3721047 | Hexagon nipple threaded 1/2" (M-M) BSP | 7 | |
| 317 | 3721029 | Hexagon nipple threaded 3/4" (M-M) BSP | 2 | |
| 318 | 3721046 | Tee threaded 1/2" (F-F-F)  BSP | 3 | |
| 319 | 9301028 | Tee threaded 3/4" (F-F-F)  BSP | 1 | |
| 324 | 9301006 | Welding nipple, 3/4" | 1 | |
| 325 | 9310401 | Suction filter | 1 | 2 |
| 327 | 9191203 | Water supply hose | 1 | |
| 328 | 9191227 | Gasket Ø24xø16x2 | 1 | 1 |
| 345 | 9301027 | Union conicle 3/4" (M-F) SS | 1 | |
| 346 | 9311033 | O-ring | 1 | |
| 348 | 2650217 | Clamp, suspension, 32-38 | 1 | |
| 349 | 9301059 | Hose, ø25xØ33 | 1,5mtr | |
| 350 | 9314070 | Splash guard | 1 | |
| 351 | 9314117 | Suspension, pumps | 1 | |
| 359 | 9191136 | Pipe brush | 1 | |
| 360 | 9308010 | Water filtration system | | |
| 361 | 9301073 | Replacement filter cartridge | | |
| 362 | 9301070 | Filter head | | |
| 363 | 9301071 | Hose 3/8"x 3/4" x 1,5 Mtr | | |
| 364 | 9301061 | Reducing ring 3/4" x 3/8" | | |
| 365 | 9301074 | Carbonate hardness test kit | | |
| 375 | 9344054 | Grease cover LDR8ac | 4 | |
| 379 | 9340134 | Filter screen LDR8ac | 2 | |
| | | | | |
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# LDR 8S AC GAS, SHEET METAL

## LDR 8S AC GAS, PARTSLIST SHEET METAL

| Pos | Part nr. | Description | Qty | Priority | Comment |
|-----|----------|-------------|-----|----------|---------|
| 401 | 9344090 | Side panel L/R | 2 | | |
| 402 | 9344092 | Cover, fan | 1 | | |
| 403 | 9174485 | Drop-in guard, exhaust | 1 | | |
| 404 | 9344091 | Top panel | 1 | | |
| 408 | 9344018 | Reinforcement R top | 1 | | |
| 409 | 9344017 | Reinforcement R | 1 | | |
| 410 | 9314166 | Magnet profile | 2 | | |
| 411 | 9344012 | Machine room | 1 | | |
| 412 | 934400 | Air guide rotor motor | 1 | | |
| 414 | 9310442 | Support casco, rear | 1 | | |
| 415 | 9310441 | Support casco, front | 1 | | |
| 416 | 9340408 | Suspension, doors | 1 | | |
| 417 | 9344015 | Reinforcement L | 1 | | |
| 418 | 9344016 | Reinforcement L top | 1 | | |
| 419 | 9314188 | Strip, insulation | 2 | | |
| 450 | 9313003 | Insulation L | 1 | | |
| 451 | 9313007 | Insulation L front | 1 | | |
| 452 | 9313005 | Insulation L middle | 1 | | |
| 453 | 9313008 | Insulation L rear | 1 | | |
| 454 | 9343010 | Insulation top front/rear | 2 | | |
| 455 | 9343013 | Insulation top middle vertical | 2 | | |
| 456 | 9343012 | Insulation under blower motor | 2 | | |
| 457 | 9343011 | Insulation top middle | 2 | | |
| 458 | 9343008 | Insulation R rear | 1 | | |
| 459 | 9343006 | Insulation R middle | 1 | | |
| 460 | 9343009 | Insulation R front | 1 | | |
| 461 | 9343004 | Insulation R | 1 | | |
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## LDR 8S AC GAS, UNDERFRAME

# LDR 8S AC GAS, PARTSLIST UNDERFRAME

| Pos | Part nr. | Description | Qty | Priority | Comment |
|-----|----------|-------------|-----|----------|---------|
| 500 | 9314603s | Side panel L, ass. | 2 | | |
| 501 | 9344114s | Rear panel, ass. | 1 | | |
| 502 | 9344603s | Side panel R ass. | 1 | | |
| 503 | 9344117 | Panel, box | 1 | | |
| 504 | 9340430 | Casco | 1 | | |
| 505 | 9344108 | Driptray | 1 | | |
| 506 | 9314604 | Spring | 2 | | |
| 508 | 9190177 | Swivel castor with brake | 1 | | |
| 509 | 9344115 | Bottom plate | 1 | | |
| 510 | 9191099 | Bucket, plastic 11.3 ltr | 1 | | |
| 511 | 9070840 | Grommet ø24xØ28 | 1 | | |
| 512 | 2103244 | Square plug 40mm | 1 | | |
| 513 | 9191102 | Collar bearing | 1 | | |
| | | | | | |
| | | | | | |
| | | | | | |

## FASTENERS

| Pos | Part nr | Description |
|-----|---------|-------------|
| 800 | 4280107 | Bolt M6x20 ZP |
| 801 | 4289559 | Lockwasher M6, serrated ZP |
| 802 | 4288321 | Screw M5x16, SS socket button head. |
| 804 | 4285092 | Nut M6, black serrated |
| 805 | 4288232 | Screw M5x12, SS cross recess, wide button head |
| 806 | 4286713 | Bolt M6x16, ZP threadforming |
| 810 | 4288325 | Screw M5x12, SS socket, wide button head |
| 812 | 9087570 | Nut M5, black serrated |
| 814 | 4289787 | Bolt M6x30 ZP |
| 817 | 4287549 | Washer M8, ZP |
| 819 | 0196673 | Bolt M8x25, ZP |
| 820 | 0141149 | Screw M5x16, SS Cross recess pan head |
| 822 | 0142315 | Nut M5, SS hexagonal |
| 824 | 9191050 | Bolt, SS M5x18 |
| 825 | 0142103 | Washer M5, SS |
| 826 | 4280218 | Screw M5x45, SS Cross recess pan head |
| 827 | 4280208 | Screw M4x8, SS Cross recess pan head |
| 828 | 4280215 | Screw M5x8, SS Cross recess pan head |
| 829 | 4280558 | Screw M5x16, SS Slotted wide head |
| 830 | 9192065 | Capnut M4, ZP |
| 831 | 0142129 | Washer M4, SS |
| 832 | 4288231 | Bolt M5x10, SS serrated |
| 833 | 0142307 | Nut M4, SS |
| 834 | 4311110 | Washer M5, SS ø5xØ15 |
| 835 | 0142111 | Washer M6, SS |
| 836 | 4285035 | Nut M6, Brass |
| 837 | 0195910 | Capnut M6, BNP |
| 838 | 4285076 | Bolt M8x16, SS |
| 841 | 0147017 | Screw M2,5x16, SS Slotted pan head |
| 842 | 0142293 | Nut M2,5, SS hexagonal |
| 843 | 9191130 | starlock washer, 3mm black |
| 845 | 0141081 | Screw pan head, Philips M5x35, A2 |
| 846 | 4288323 | Screw M5x20 mushroom head, with flange, 10 pcs |
| 847 | 9070688 | Bolt M8x12, SS |
| 848 | 9008518 | Lockwasher, M8 SS serrated |
| 849 | 0142292 | Nut M3 |
| 853 | 0141050 | Screw M3x10, SS Cross recess pan head |
| 854 | 0141076 | Screw M3x20, SS Cross recess pan head |
| 855 | 0141078 | Screw M3x30, SS Cross recess pan head |
| 856 | 0141035 | Screw M3x5, SS Cross recess pan head |
| 858 | 0141075 | Screw M3x16, SS Cross recess pan head |
| 859 | 4312810 | Socket set screw M3x6, SS |
| 861 | 4285151 | starlock washer, 6mm |
| 862 | 9191041 | Circlips, E type for 6mm shaft |
| 863 | 4287540 | Screw M4x10, BNP |

| Pos | Part nr | Description |
|-----|---------|-------------|
| 864 | 4285319 | Screw 4,8x13,  ZP Self drilling and tapping. |
| 866 | 4287620 | Screw 4,2x12, NP self tapping |
| 868 | 4285078 | Nut 1/4" bsw ZP |
| 871 | 9191049 | Set screw M5x5, black |
| 872 | 4285010 | Nut M3, ZP with lockwasher |
| 873 | 3701248 | Spacer 7mm, Ø3,2x6 NP |
| 874 | 0149296 | Spacer 10mm, Ø4,2x8 Nylon |
| 875 | 9057347 | Spacer 10mm, Ø5,2x10 Nylon |
| 876 | 0141165 | Screw M5x25, SS Cross recess pan head |
| 877 | 4285135 | Bolt M5x10, ZP thread forming |
| 878 | 0137344 | Screw M5x30, SS Cross recess pan head |
| 879 | 4287610 | Screw, ZP selftapping 3,5x13 |
| 880 | 9008178 | Bolt M5x8, SS |
| 881 | 0141246 | Bolt M6x12, SS |
| 882 | 0141117 | Screw M4x45, SS Cross recess pan head |
| 883 | 0142365 | Locknut M6, ZP |
| 885 | 4288324 | Screw M4x8, SS Cross recess pan head |
| 888 | 6962153 | Washer M6, ZP ø6xØ25 |
| 889 | 6802013 | Rivet nut, M5, ZP |
| 890 | 9172053 | Nut M5, for sheet metal |
| 891 | 4288058 | Bolt M5x20, ZP |
| 892 | 0141521 | Nut M6, SS |
| 893 | 0146987 | Washer M8, SS |
| 894 | 0211520 | Bolt M5x12, SS |
| 895 | 0144359 | Locknut M5, SS |
| 896 | 4285408 | Capnut M5, BNP |
| 897 | 4288320 | Screw M5x50, SS hexagonal |
| 898 | 9073987 | Washer M8, SS ø8xØ25 |
| 900 | 9008869 | Bolt M8x50, ZP |
| 902 | 4288319 | Screw 6x20, ZP CR threadforming |
| 903 | 4289402 | Lockwasher M8, ZP |
| 904 | 3701280 | Lockwasher, starlock for 10mm shaft |
| 905 | 0141393 | Screw M4x10, SS countersunk |
| 906 | 0141084 | Screw M4x10, SS Cross recess pan head |
| 907 | 4288327 | Screw M5x25, SS Socket pan head |
| 908 | 9006930 | Lockwasher M4, countersunk SS serrated |
| 909 | 0141092 | Screw M4x12, SS Cross recess pan head |
| 910 | 4287520 | Washer M4, Brass |
| 911 | 4285020 | Nut M4, Brass |
| 912 | 4280128 | Bolt M4x12, SS |
| 914 | 0144347 | Locknut M4, ZP |
| 915 | 8047381 | Washer M6, SS ø6xØ25 |
| 920 | 0141547 | Nut M8, SS |
| 922 | 2800066 | Connection nut M8x24, ZP |
| 923 | 4285051 | Connection nut M10x30, ZP |
| 925 | 0195596 | Bolt M8x10, ZP Socket head |
| 926 | 9070793 | Connection nut M6x18, ZP |

| Pos | Part nr | Description |
|-----|---------|-------------|
| 929 | 0197378 | Washer M12, Zp |
| 930 | 9008056 | Nut M12, ZP |
| 931 | 0142056 | Lockwasher M8, SS |
| 933 | 9077004 | Socket set screw M4x6, SS |
| 934 | 9301049 | Circlips external ø25 |
| 935 | 4287557 | Washer M10 |
| 936 | 9073149 | Wingnut M6, SS |
| 937 | 2800082 | Wingnut M6, Brass Nickle plated |
| 939 | 4312027 | Connection nut M5x15, ZP |
| 940 | 4280540 | Screw M5x6, SS countersunk |
| 941 | 4311215 | Screw , socket head  M6 x 30 |
| 942 | 0141123 | Screw pan head, Philips M5x10, SS |
| 943 | 0149299 | Spacer, Ø8xø4,2, H15, black |
| 944 | 0139142 | Screw hexagon head M6x40, SS |
| 945 | 4285410 | Capnut M12 SS low profile |
| 946 | 4286728 | Set screw M8x40, socket |
| 947 | 4280239 | Screw M12x20, hexagon ZP |
| 948 | 0197380 | Washer M12, SS |
| 949 | 0142975 | Screw socket head cap M6x20, A2 |
| 950 | 4285120 | Screw M4x20, thread rolling |
| 951 | 8071043 | Nut M4, serrated ZP |
| 952 | 6962187 | Washer M8x1,5 ø8xØ30 ZP |
| 953 | 0197807 | Screw M4x30, slotted ZP |
| 954 | 4285084 | Screw 4,8x19,  ZP Self drilling and tapping. |
| 955 | 9008217 | Blind rivet 4x8,6 |
| 956 | 9174680 | Washer ø5,2xØ20x2mm |
| 957 | 4285047 | nut M8 hexagon, thin DIN 439B |
| 958 | 0195783 | Screw M10x30 sock button head |
| 959 | 9191108 | Wing screw M6x10 SS |
| 960 | 0141204 | Screw M4x16, Pan head SS |
| 961 | 0149210 | Screw M5x6, Pan head |
| 962 | 0141539 | Screw M5x10, SS countersunk |
| 963 | 4288233 | Screw M8x16, ZP serrated |
| 965 | 4288330 | Screw M8x12, SS button head, wide flange |
| 966 | 4285414 | Capnut, M4 ss |
| 967 | 0149298 | Spacer 10mm, Ø3,4x6 Nylon |
| 968 | 0149299 | Spacer 15mm, Ø4,2x8 Nylon |
| 969 | 0251473 | Washer M4, ZP ø4xØ16 |
| 970 | 9087575 | Nut M5 hexagon, tensilock A4 |
| 971 | 4280555 | Screw M6x16, Brass nickel plated |
| 972 | 6390168 | Rivet nut, M6 ss |
| 973 | 9261029 | Wing screw M5x10 SS |
| 974 | 0141131 | M5x12 kruiskop |
| 975 | 9008543 | Nut M12, SS |
| 976 | 4280110 | Bolt M6x20, SS hexagon head |
| 977 | 4286723 | Hex. screw M8x20 flange thread forming |

| Pos | Part nr | Description |
|-----|---------|-------------|
| 978 | 0211521 | Screw M5x16, SS hex. Head |
| 979 | 4285041 | Lock nut M5, SS |
| 980 | 4280181 | Screw M8x60, hexagon |
| 981 | 4280187 | Screw M8x55, hexagon |
| 982 | 4285045 | Capnut M8, SS |
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# CIRCUIT DIAGRAM LDR 8S AC



Circuit diagram LDR 8S AC gas

# WIRING DIAGRAM LDR 8S AC

M4 (115V)
Blower RG128

~115V   1 2 4 5

X1-3/GY   75   pe   X3-9/BU   X3-1/WH   X3-5/BK   X3-13/GY   K5/GY

BLOWERS

M2.2   M2.1

BU RD BK WHWH    BU RD BK WHWH

14 13    SERVICE SIDE   LAMP 500 W    X5    X6    CUSTOMER SIDE   LAMP 500 W   15 16

44 46 45 79 80    41 43 42 80 81

17   18

J12-1   M4-5   TH   M4-1    CB2-12
GR   GY   OR BU    BK

X3    X2    X1
16                   6      5   10        6
8          1    3        4     1            1

RD   BK   YE BN   WH    OR   GY BN WH   YE

J12-2   M4-4   TH   M4-2    CB2-16   M4-PWR(115V)   K3-A2   K1-14   K3-A1
K5-14

HONEYWELL REGULATOR    S4965V 2131

House-valve
13

ionisation

8/13

APS
C    ion.
NO    NC
ion.

TH - HIGH LIMIT THERMOSTAT
320 GR
X3-10/OR   X3-3/YE

J6    K5   67 68   J62
J5    P1   66   J61
J4    K6   85 84   J52
J3    Q4   Bu Ye Rd   J51

J8-2
J8-1   PT-1000

GR X3/16   J12-2
RD X3/8   J12-1   Modulation   Q1   Rd Ye Bu   J42
J41
83   J13-2
82   J13-1   DOOR SWITCH   PWR   62 63
118   81   J14-2   Q5   Rd Ye Bu   J33
X5/X6   79   J14-1   64 65   J32   W1
116   FAN DETECTION

78   J17-2   37 35   J31
77   J17-1   38 39
K4   36 34   J2

J1    PE   33   32
L   N

RD = RED
GY = GREY
OR = ORANGE
BU = BLUE
WH = WHITE
BN = BROWN
YE = YELLOW
BK = BLACK

option rotor switch
23
22

PUMP 24V   P1   RD BK
66
MOTOR   M1   WH WH/A BN
PUMP 24V   P2   RD BK
67

RD P1   RD P2

C1 CAPACITOR 2.5mF

C2.1 CAPACITOR 6mF

C2.2 CAPACITOR 6mF

38 23 15 17    37 34   76 75 18 32 42 49
33 48 13   43 46 41   M1/WH   16 40 45   M1/BN
M1/WH/A   X1/OR   X1/BK

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

GY M4-5  COM 11   66   D2   GY 63 67
NO X3/2  14   NO 14   D1   BN
NC 12   NC 12   62

9           44 C1 C1        14          24V   24V
C2.1 C2.2       C2.2 C2.1        K5   K6   BK P2 69
7 39 10     22   11 12 8   47        68   84   BK P1 61 60
A2 69   A2 85

CB2    CB3

SUCTION SIDE (Casco)   GREASE DRAIN   SEWER DRAIN   WATER VALVE
Q1 CR03   Q4 CR03   Q5 CR03   64 65 W1
R Y BL   R Y BL   R Y BL   Reducer inside !
42   51   33

YELLOW GREY RED BLACK WHITE

T2
115V/205V/225V

7 8   11   12
F3   F4
3.A   3.A
1 2 3 4 5
YE GY RD   BK   WH
T2 T2 T2   T2   T2
L1 L2       CB1

9 COM 11   WH X1-1' COM 11   78 COM 11   61   60
NO 10   76 NO 14   NO 77   24V
NC 12   NC 12   NC 12   PSU 10A

230V   230V   115V   230V
K2   K1   K4   N L
35 A1   36 A1   YE X1   PE   49 48
A2 47   A2 40   BN X1

| 02 | 24.08.2021 | Relay |
|----|------------|-------|
| 01 | 13.04.2021 | several changes |
| REVISION | REV. DATE | REMARK |

| Tol. principle | Gen. tolerance | Surface treatment | Geom. tolerance |
|----------------|----------------|-------------------|-----------------|

MATERIAL
MATERIAL ART. NUMBER    DRAWN Koolen    APPROVED
UNIT mm   STATUS In Progress   DATE 24.02.2021
A   SCALE 1:1   PROJECT 3493   DRAWING NUMBER 9340802
REMARKS
DESCRIPTION   Wiring diagram LDR gas   ART. NUMBER 9340802   REV. B   SIZE A3

## OVERVIEW OF I/O BOARD WITH INTERFACE BOARD



J16-J17  Signal

5 Vdc — Gnd

Input connectors

J7-J11

Signal — Gnd

F1 = Fuse 1AT 250V

J1 = Power socket
J1.1 -PE
J1.3 -L1
J1.5 -N (or L2)

🔴 = Led signal

Rel. 1  Rel. 2  Rel. 3  Rel. 4  Rel. 5  Rel. 6  Rel. 7  Rel. 8  Rel. 9  Rel. 10  Rel. 11  Rel. 12  Rel. 13

J2   J3   J4   J5   J6
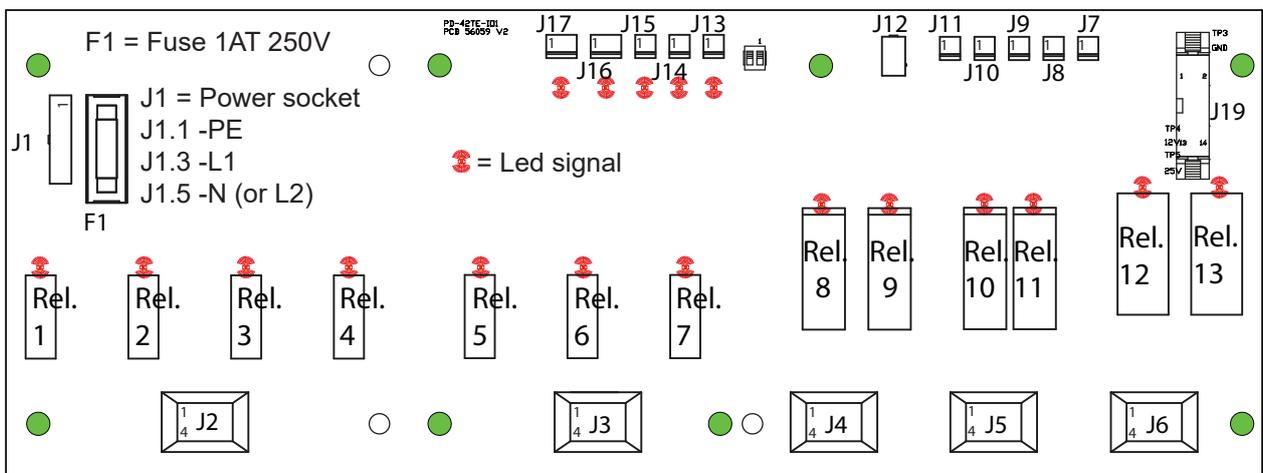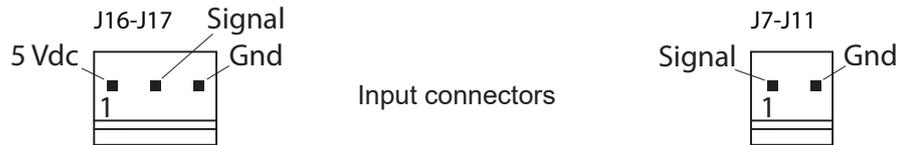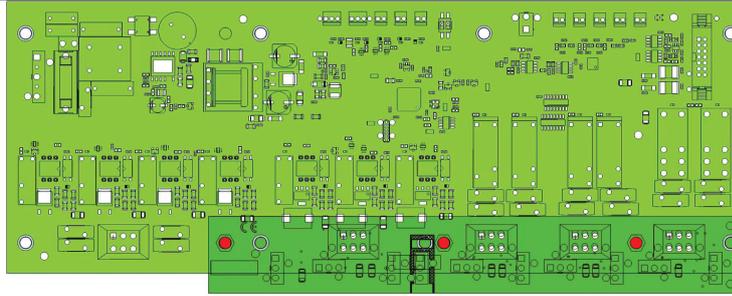
Output connectors

J2 | J3 | J4 | J5 | J6
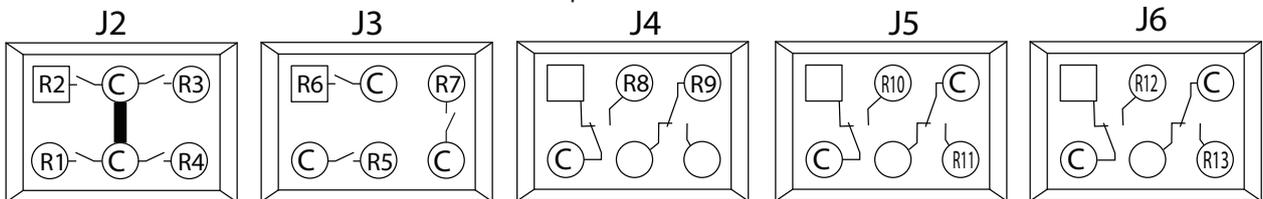
Overview of interface board        (Jx to Jxx sockets)
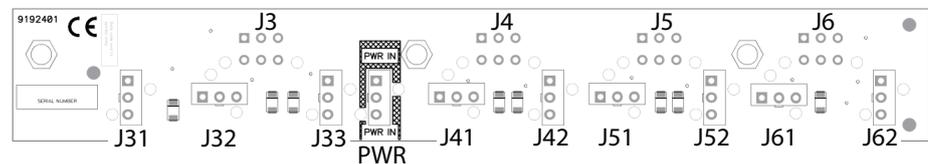


Electric diagram of relay contacts on I/O board to sockets on interface board



24Vdc

PWR in   J32   J31   J33   J41   J42   J51   J52   J61   J62

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