

# SERVICE MANUAL

## LDR 8 s Auto-Clean Gas

### MODELS

LDR 8s AC Gas



- NOTICE -

This manual is prepared for the use of trained Service Technicians and should not be used by those not properly qualified. If you have attended a training for this product, you may be qualified to perform all the procedures in this manual.

This manual is not intended to be all encompassing. If you have not attended a training for this product, you should read, in its entirety, the repair procedure you wish to perform to determine if you have the necessary tools, instruments and skills required to perform the procedure. Procedures for which you do not have the necessary tools, instruments and skills should be performed by a trained technician.

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

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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)
	pressure	kPa	200 – 500
Water	Acidity	pH	7.0 - 8.0
	Chlorides	ppm	<30
	Hardness <sup>1</sup>	dH	<4
Drain	Open connection	inch	min. 1½
Gas System			Refer to data plate
	Power rating (max)	BTU / KW	82.000 / 24
	Connection	Inch NPT	½

Gas specification	Consumption <sup>2</sup>	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.

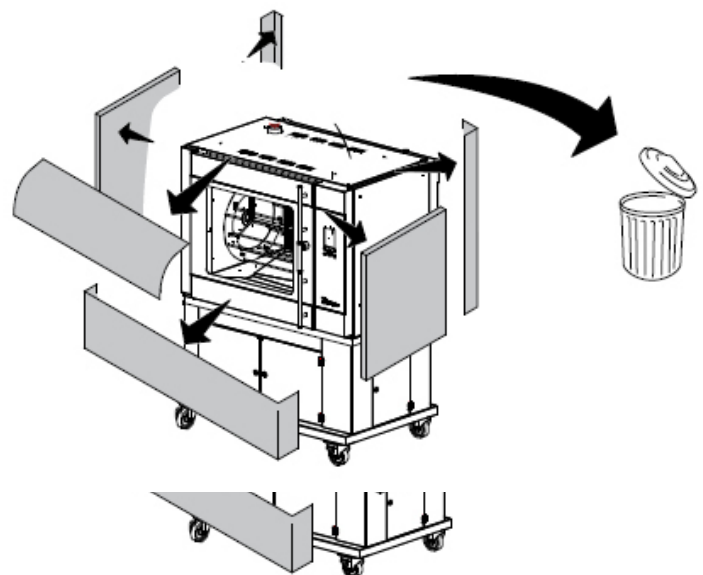
The standard way to remove the oven from a pallet is with a fork lift.

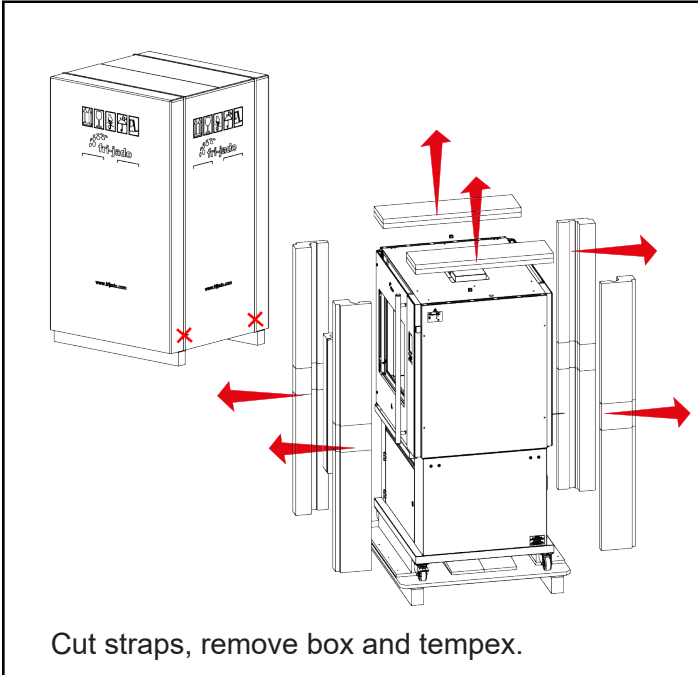
The alternative way is explained on the next page.

Pictures may differ a little form reality and package might be from wood.

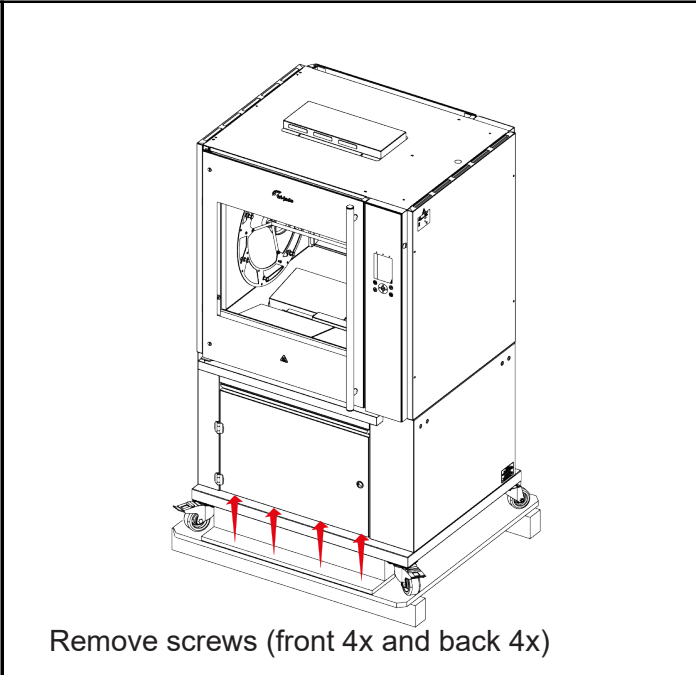
Do this with at least 2 people.

Dispose the packagaging according local legislation..

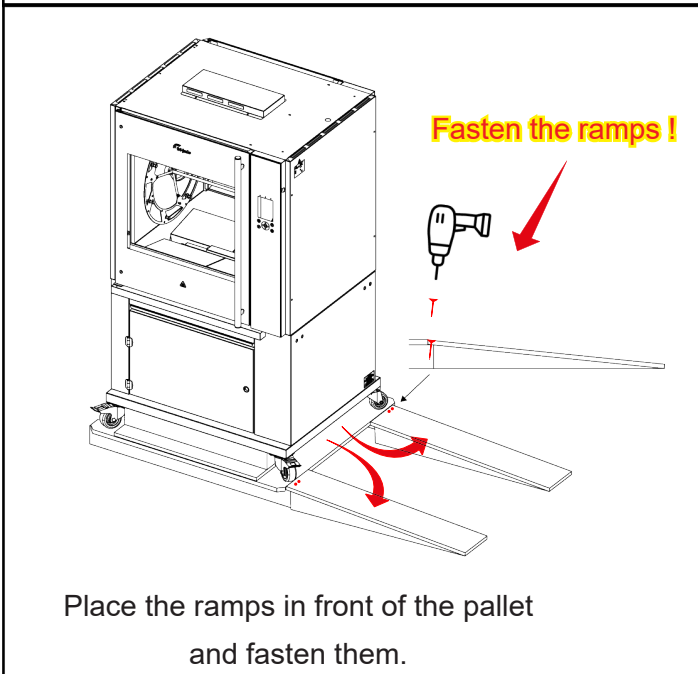




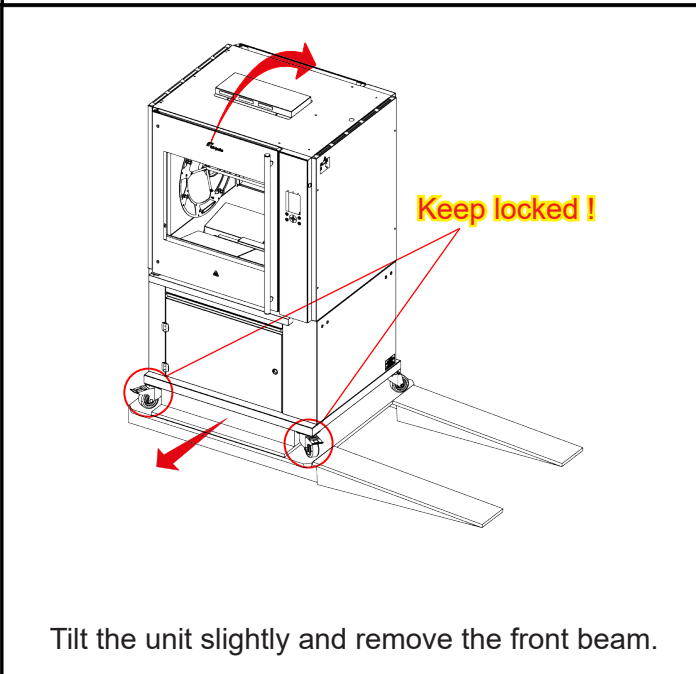
Cut straps, remove box and tempex.



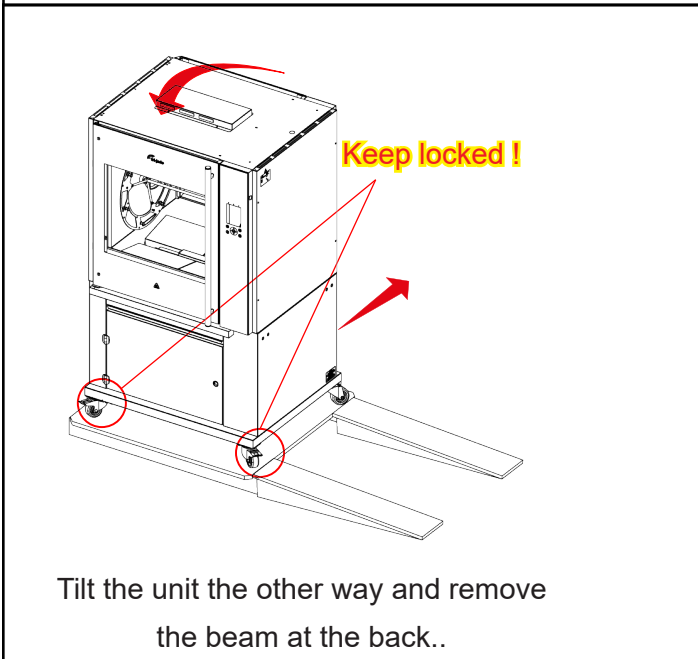
Remove screws (front 4x and back 4x)



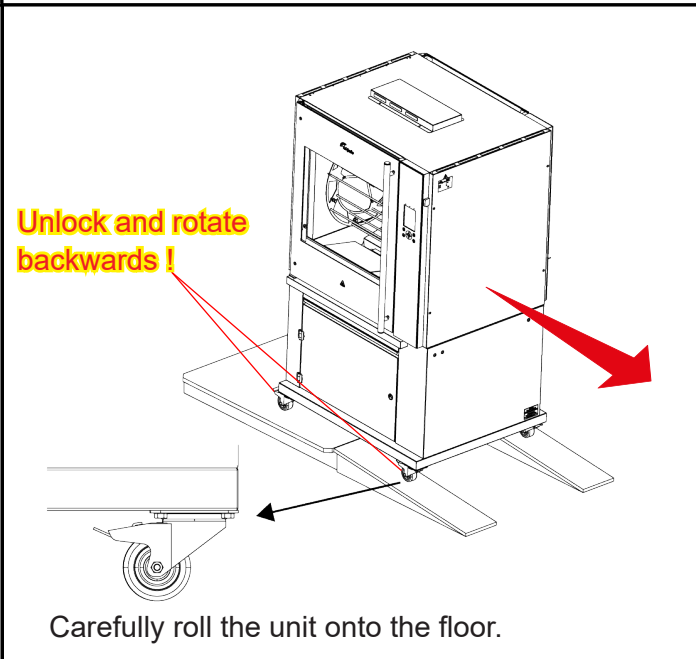
Place the ramps in front of the pallet and fasten them.



Tilt the unit slightly and remove the front beam.



Tilt the unit the other way and remove the beam at the back..



Carefully roll the unit onto the floor.

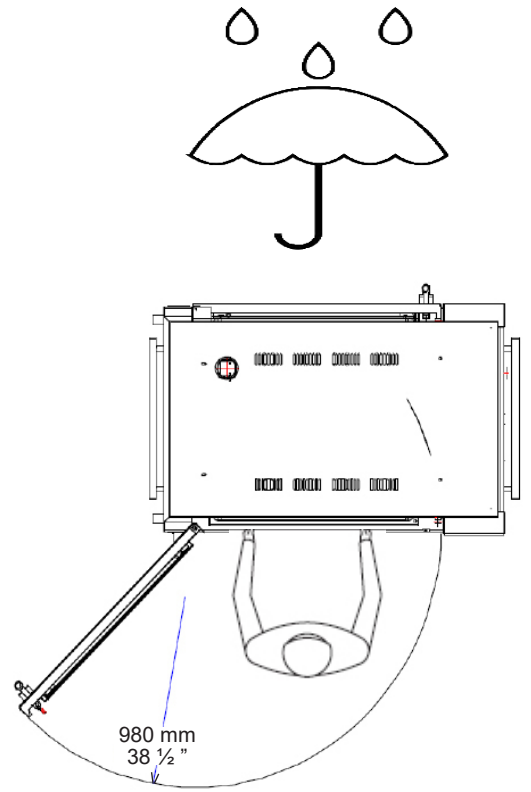
## LOCATION

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!



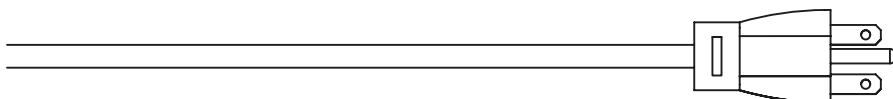
**IMPORTANT:** Make sure you leave sufficient space around the rotisserie to easily remove or insert the rotor. If the base has (rotating) wheels, the floor on which it rests must be level.

## 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 equipped 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.*

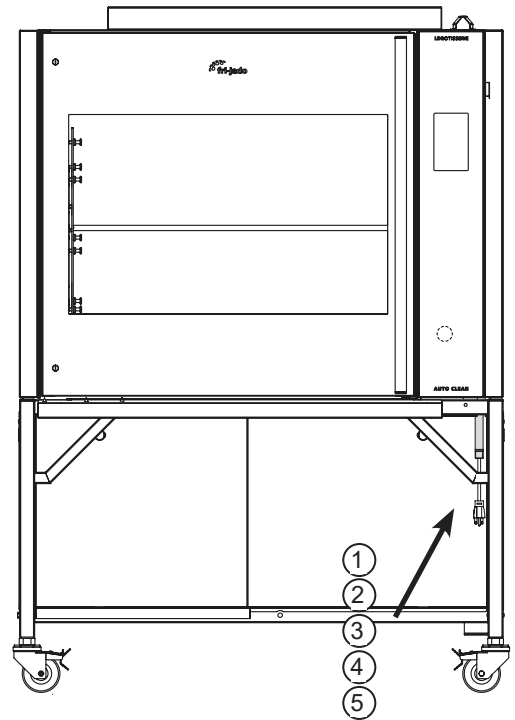


## POWER, WATER AND DRAIN CONNECTIONS LDR 8S AC

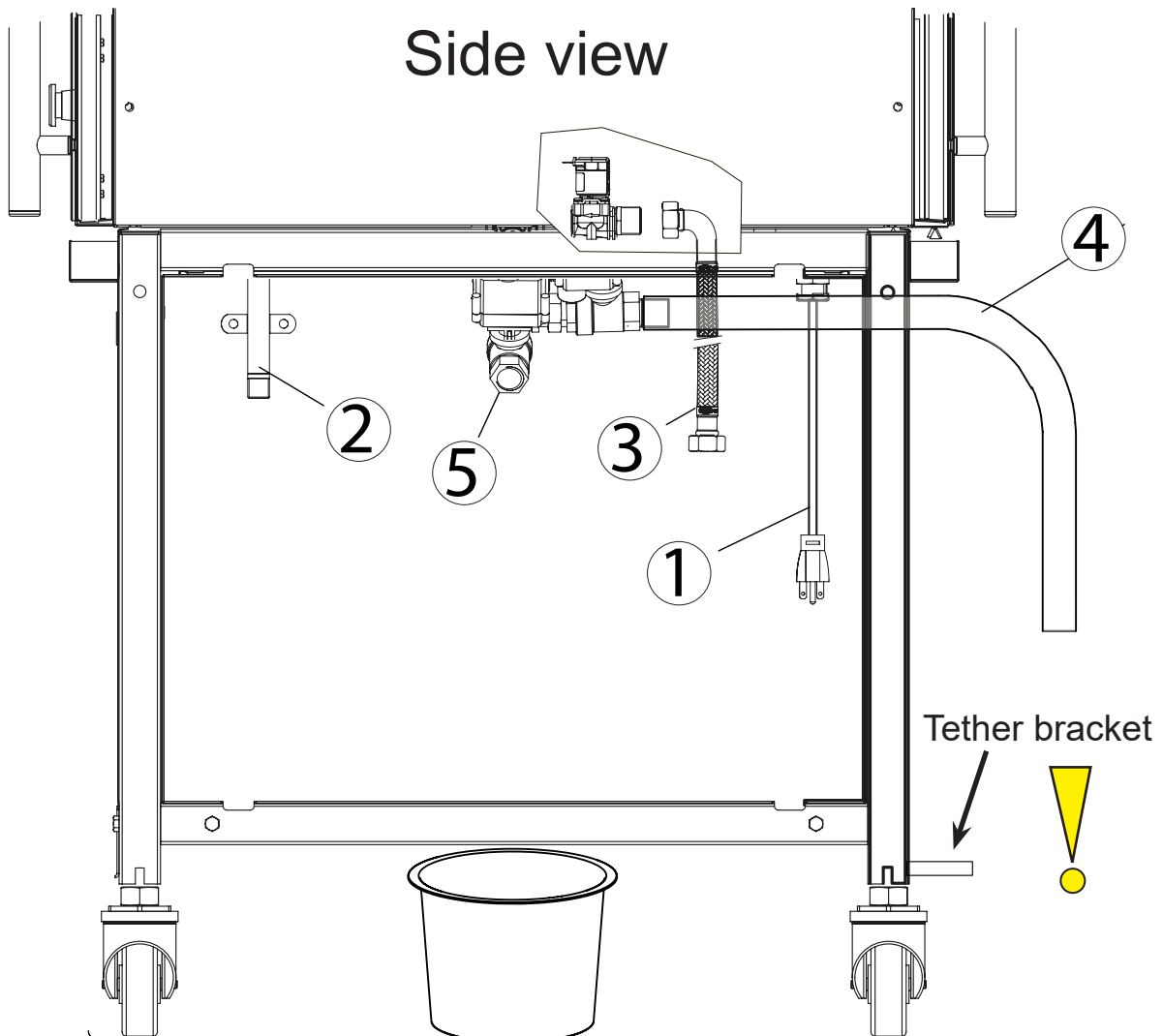
The Power (electric and gas), water and drain connections can be found below the controller side of the unit.

See the labels 1 until 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  $\varnothing$  33 x  $\varnothing$  25, L= 1,2 mtr  
( $\varnothing$  1 5/16 x  $\varnothing$  1", L= 47")  
**See chapter "connecting the drain tube" for further information.**
- 5 Grease outlet valve.



### Side view



## 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  $> 4^{\circ}$  dH (4 Grains/Gal).
8. A descaling filter is mandatory when the hardness of the water is  $> 20^{\circ}$  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 1/2 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 1/2 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 1/2 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" H<sub>2</sub>O).

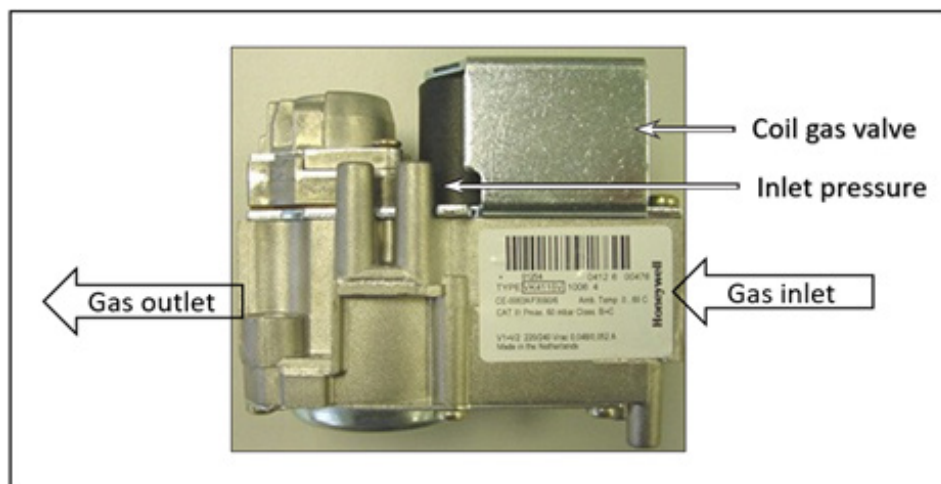
Pressure depending of gas type.

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.



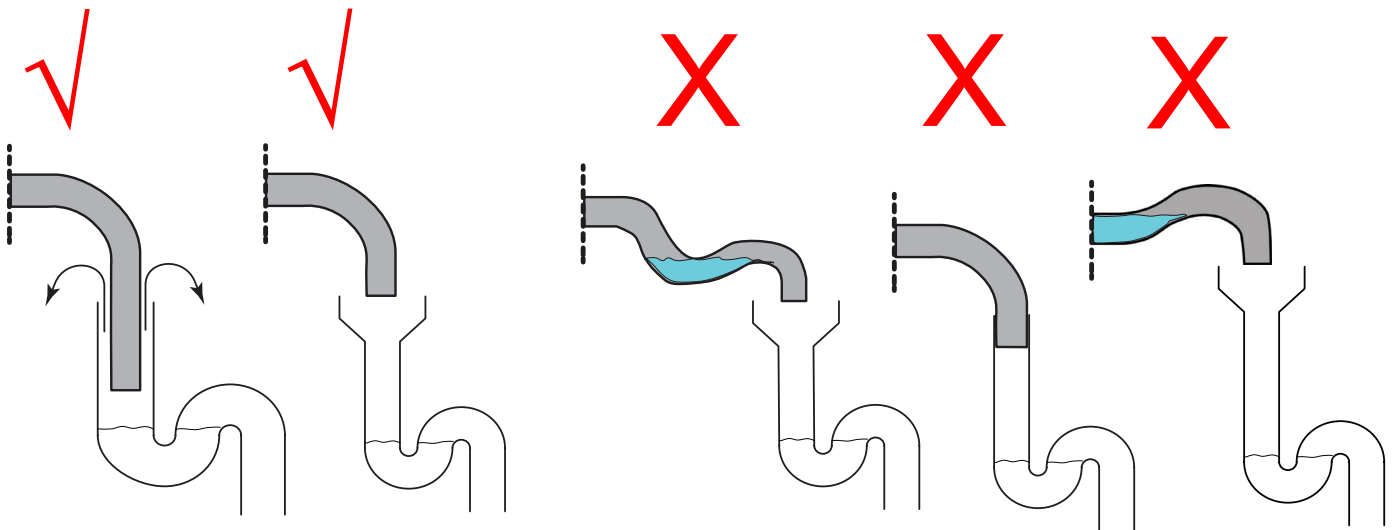
## CONNECTING THE DRAIN TUBE

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

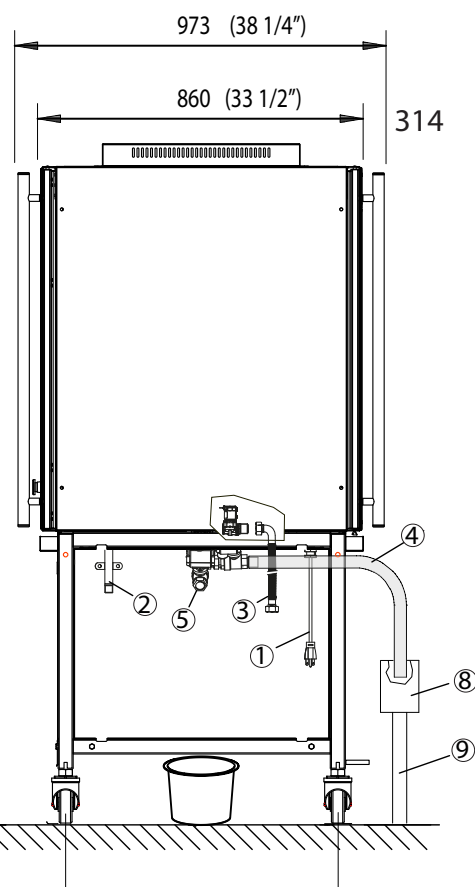
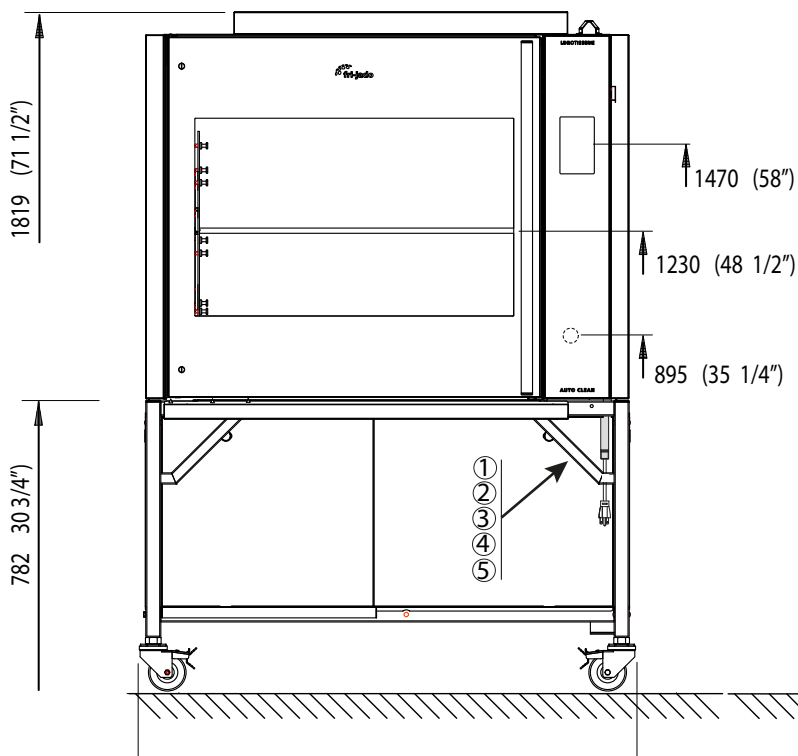
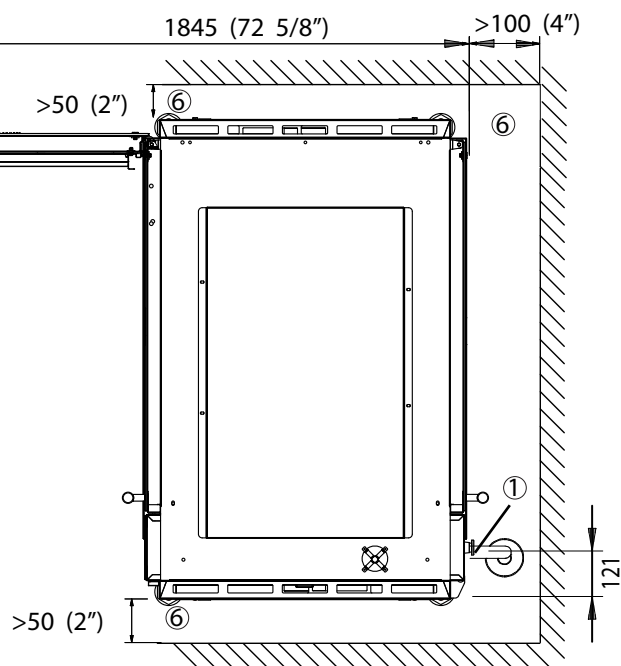
After installation of the rotisserie the operator of the unit has to be instructed.

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

- ① Location of mains connection
- ② Location of gas supply connection 1/2" NPT
- ③ Location of water connection G 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")



## SWITCHING ON

Touch the screen somewhere



Touch the ON / OFF symbol



Home screen



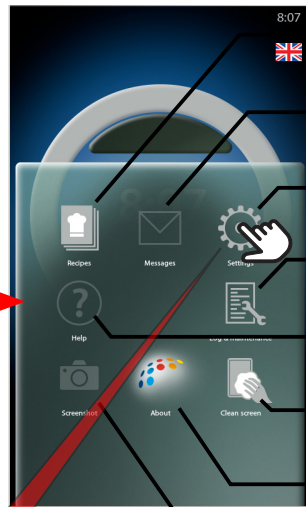
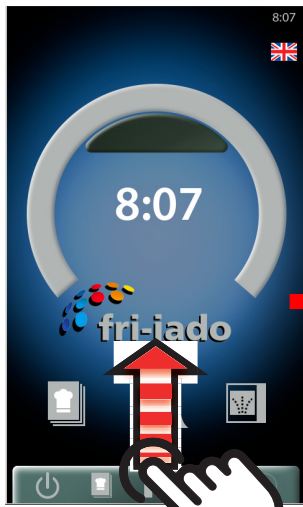
Main functions

- Language
- ON / OFF or stop program
- Recipes menu
- Home screen
- Cleaning program
- Help function
- Settings
- Wipe/clean touch screen (locks screen for 60s.)

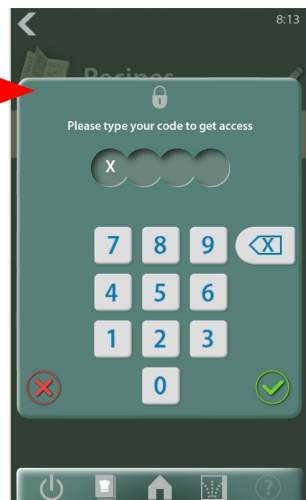
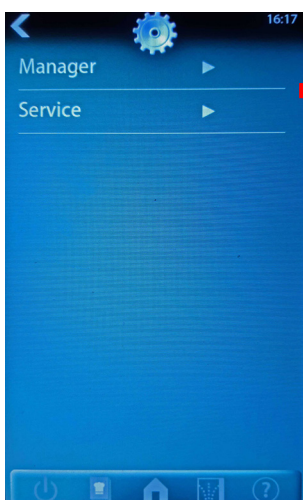
Other symbols

- Pause
- Extra time
- Continue
- Create recipe
- Edit recipe
- Confirm
- Step back
- Delete
- Tap screen
- Swipe

## MENU OVERVIEW SW VERSION 1.00.17



- 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 hardware.
- Screenshot. Only available with a wifi connection.



**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.

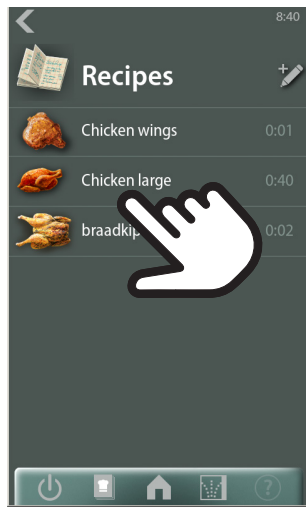
See parameter lists at the end of this chapter.

## RUNNING A COOKING PROGRAM

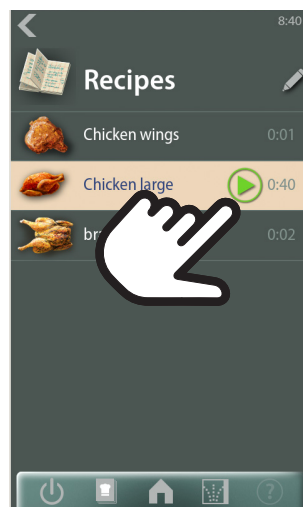
Push recipes icon



Choose program



Start program

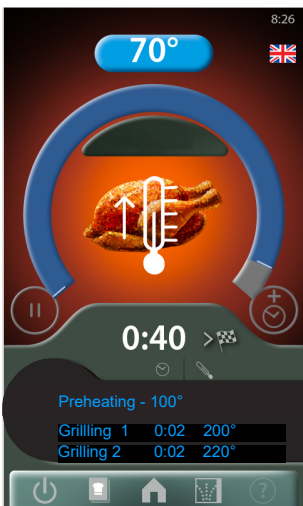


Check fat container and push "continue"

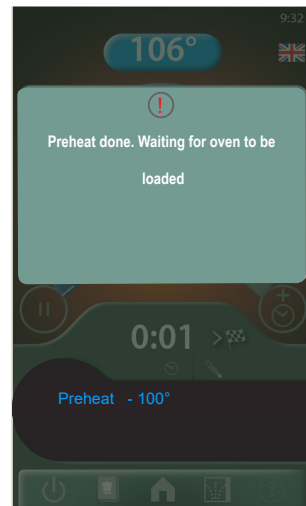


The below 4 steps are only applicable in case the cooking program has a pre-heat step.

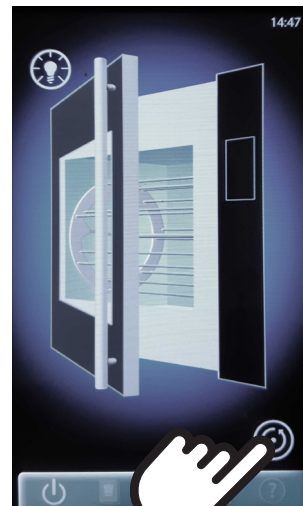
Preheat starts. Actual temperature shown.



Preheat done, open the door.



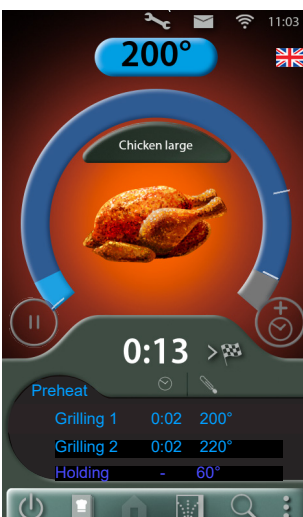
Load products and close the door.



Push



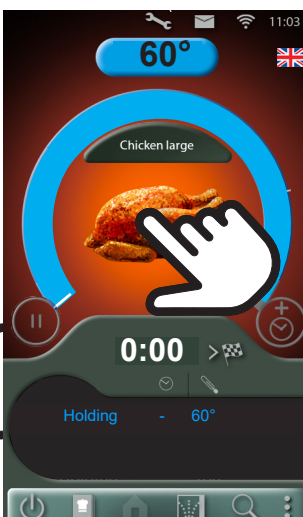
Program running. Push to see actual temperature. = Pause button



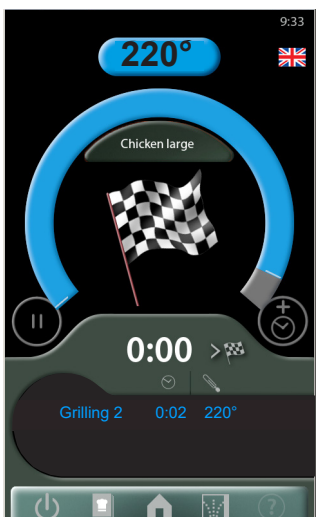
A short sound comes when going into the next step. Push "boost" icon for extra time, if desired.



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



End of program when no holding is programmed.

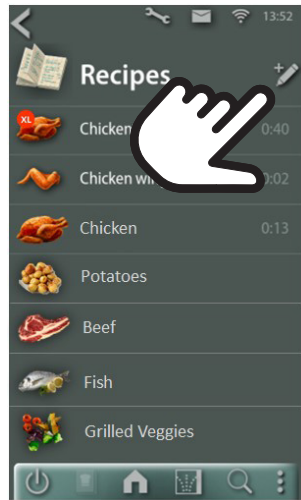


## CREATING A COOKING PROGRAM

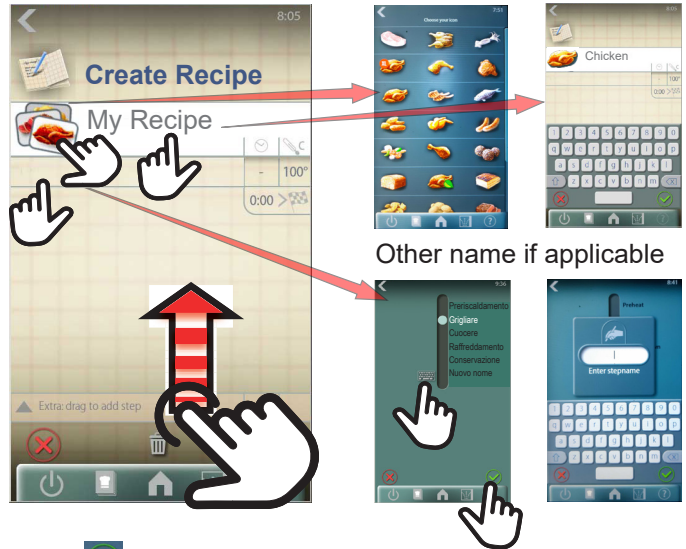
Push recipes icon



Push  icon

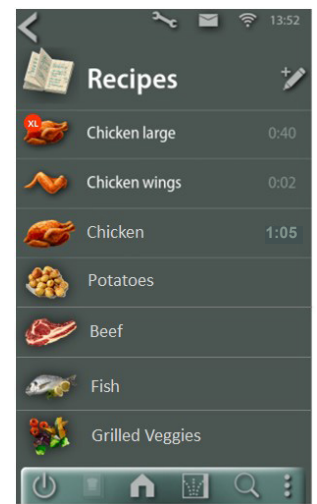


Chose product icon and fill in recipe name. Chose or change step name if applicable. Drag up for an extra cooking step.



Push time and temperature and adjust.

Push  when ready

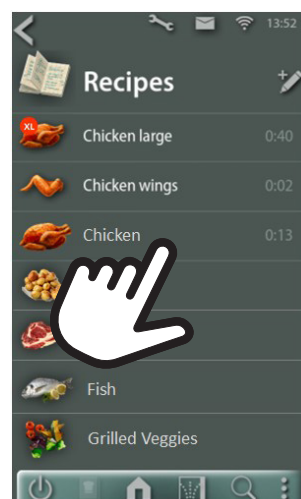



## EDITING A COOKING PROGRAM

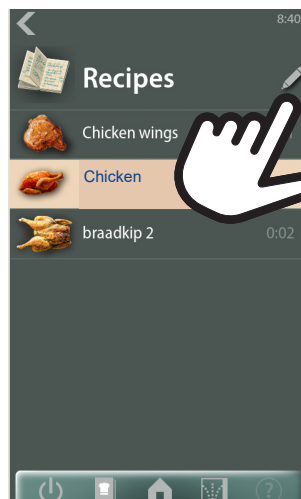
Push recipes icon



Choose program

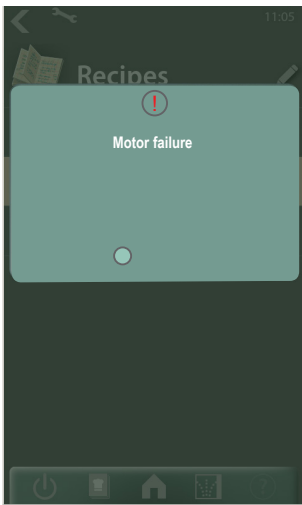


Push  icon to edit the highlighted recipe. Now follow the steps as described above.



## EXAMPLE OF ERROR MESSAGE

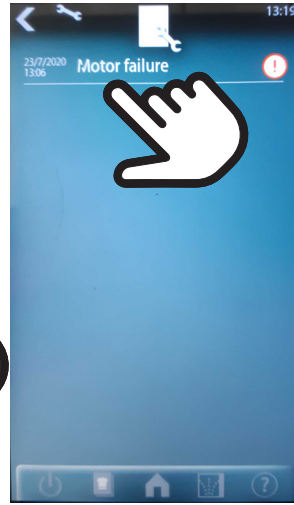
Example motor failure during cooking.



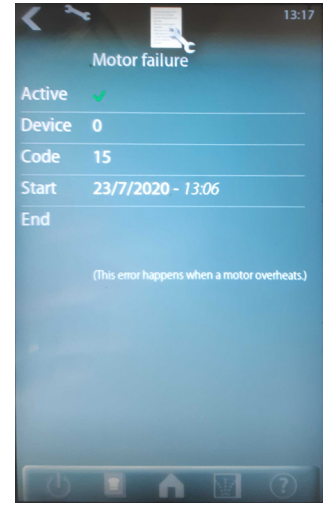
In the "log" menu the error can be found



Select the error



Meta data is shown

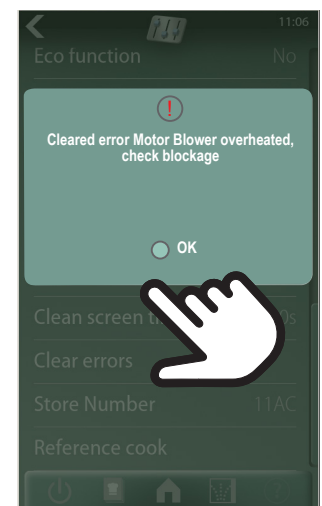
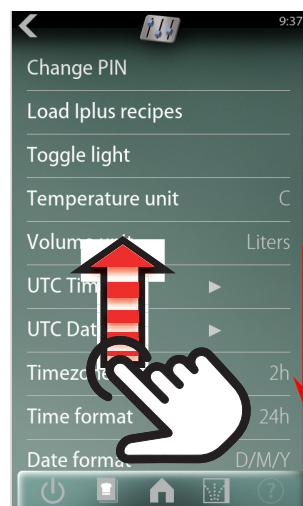
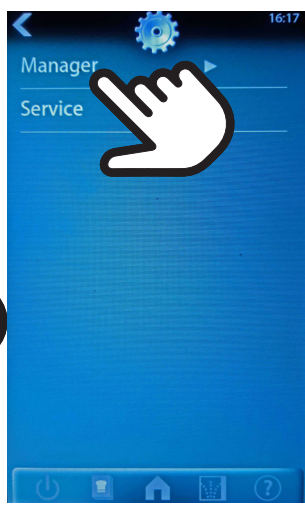


Go to the manager menu to clear the error.



In manager menu:

Scroll to "Clear errors" and push



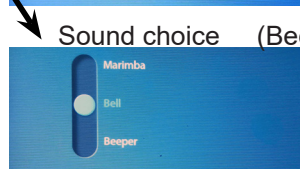
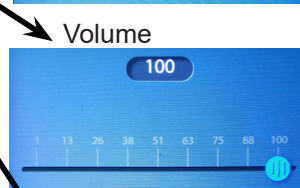
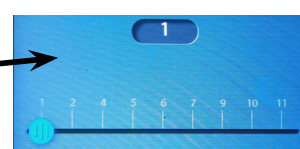
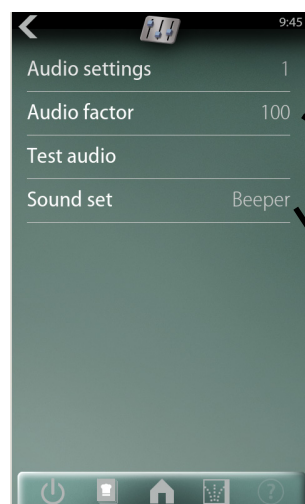
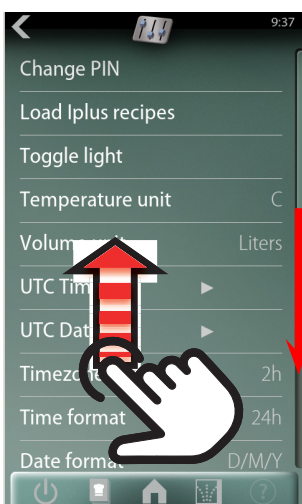
## AUDIO VOLUME AND SOUND SETTING

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".

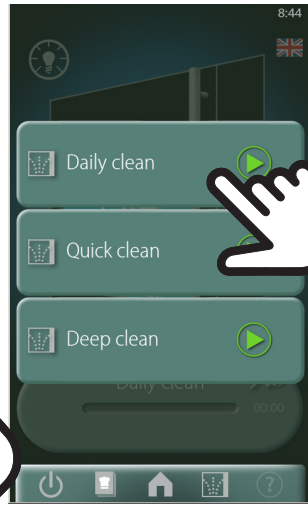
Sound choice (Beeper has highest volume)

THE CLEANING PROGRAM

Push cleaning icon



Choose program



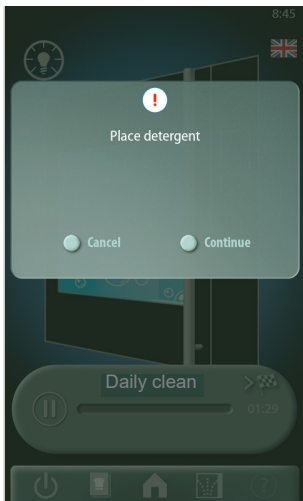
If unit is too hot, it will cool down first.



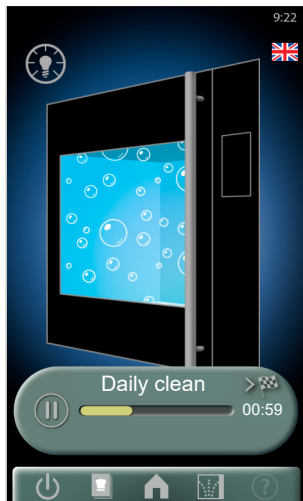
Now it is asked to place the detergent.

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

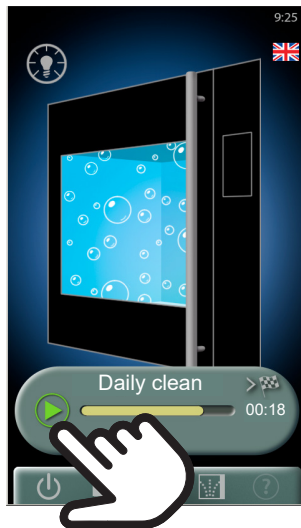
Place the detergent.



Push to pause, if applicable.



Push to continue



Cleaning program has finished.

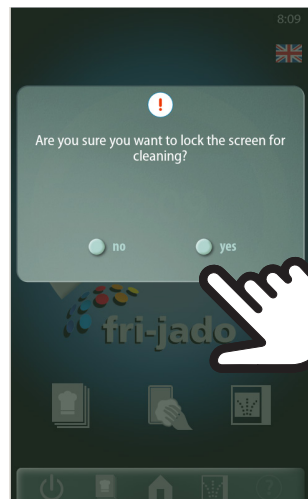


CLEANING THE TOUCH SCREEN (WHILE IN OPERATION)

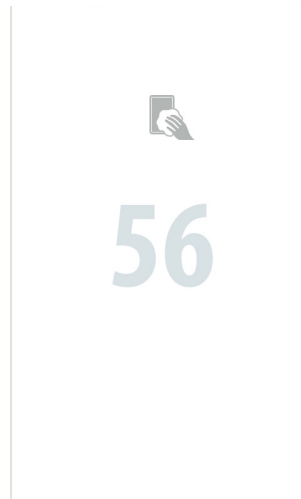
Push icon



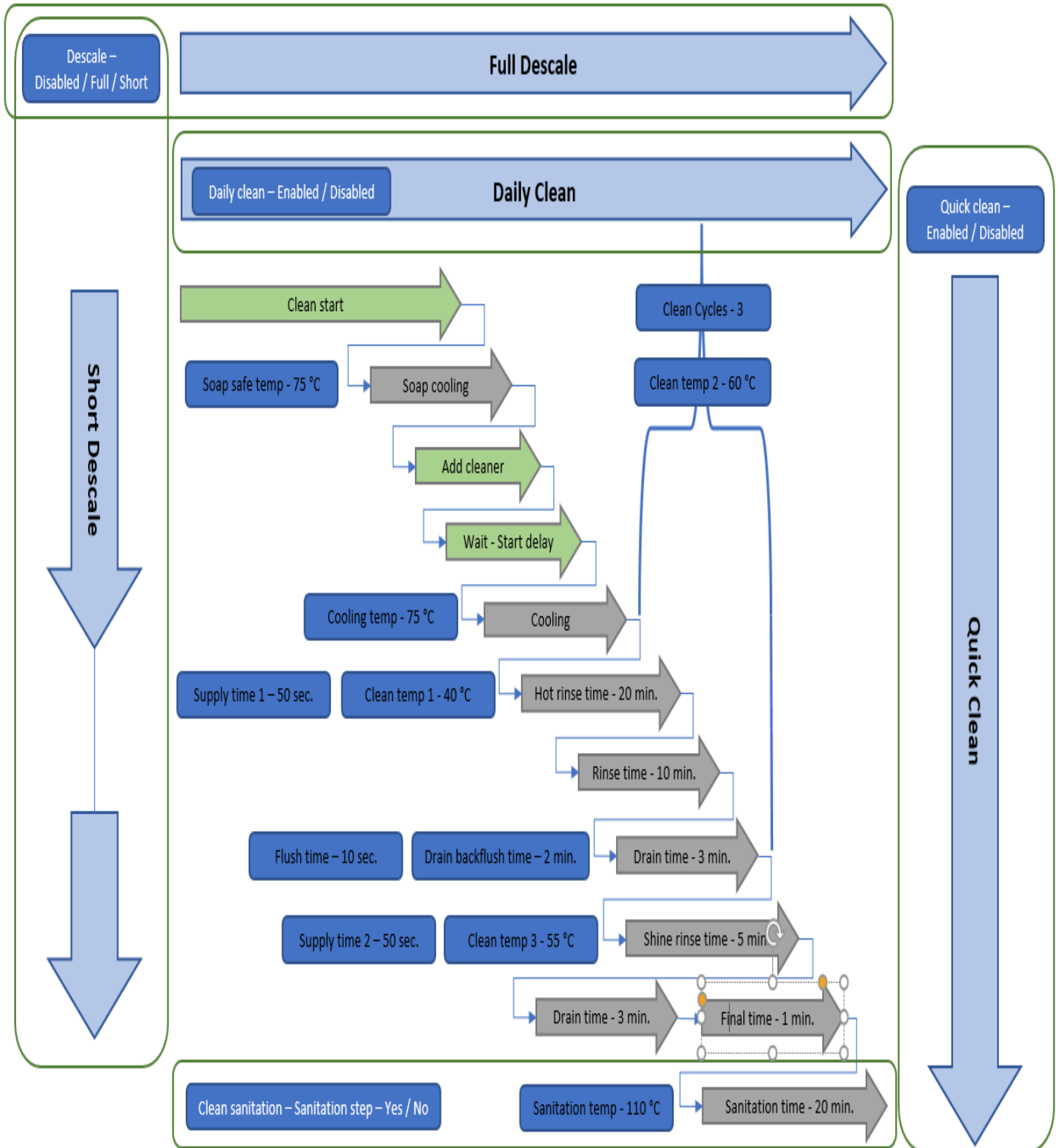
Push "yes"



The screen is now locked for 60 seconds and counting down



**CLEANING PROCESS TDRAC (3 CYCLES)**



- Parameter setting** (Blue arrow)
- Operator action / delay** (Green arrow)
- Proces stage** (Grey arrow)
- Proces cycle** (Blue arrow)

**PUMP AND VALVES IN ACTION DURING CLEANING**

Valve position during cooking

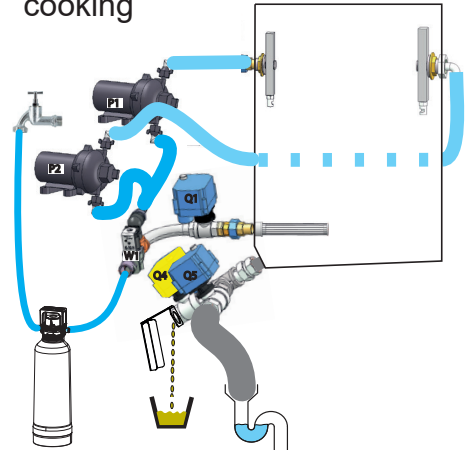
cooking

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

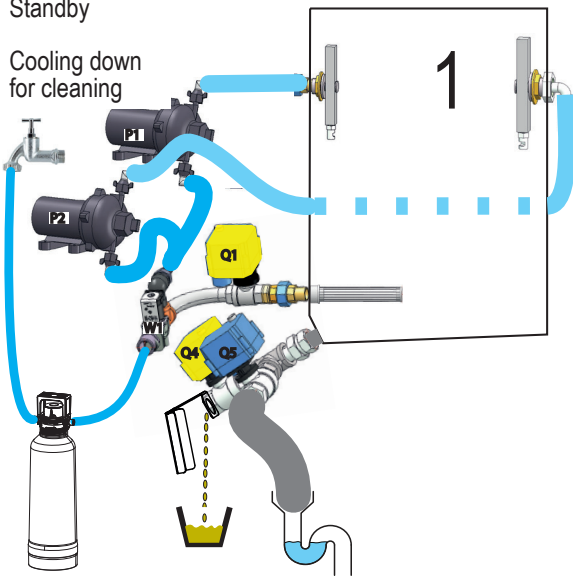
- The first cycle is following stage 1 until 10.
- The second cycle is following stage 2 until 10.
- The third cycle is following 2 until 9 and then 5 as last stage.

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.

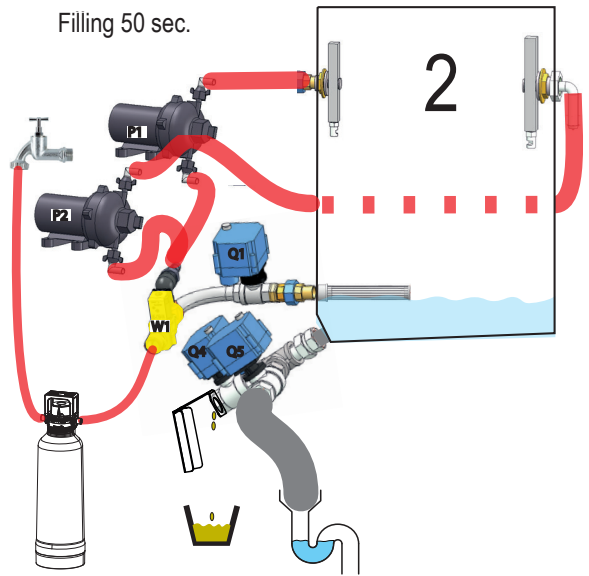


Standby

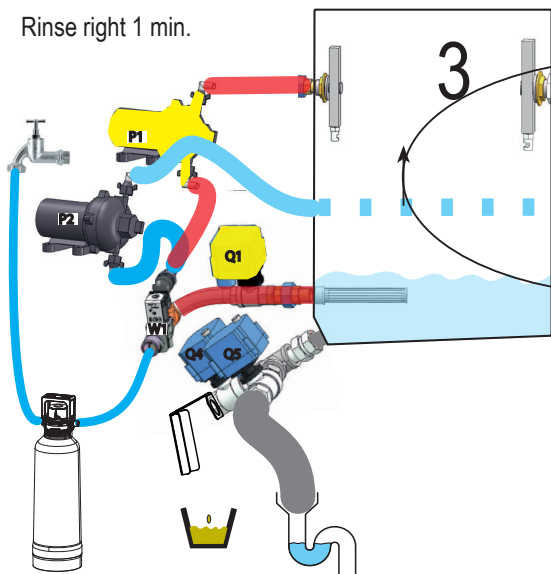
Cooling down for cleaning



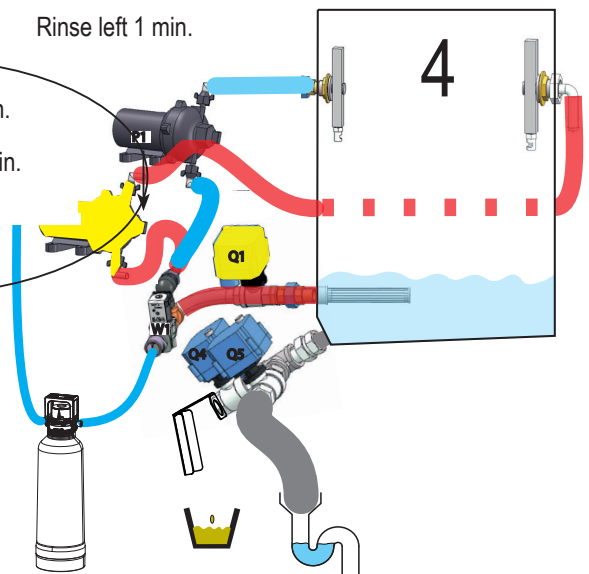
Filling 50 sec.



Rinse right 1 min.



Rinse left 1 min.

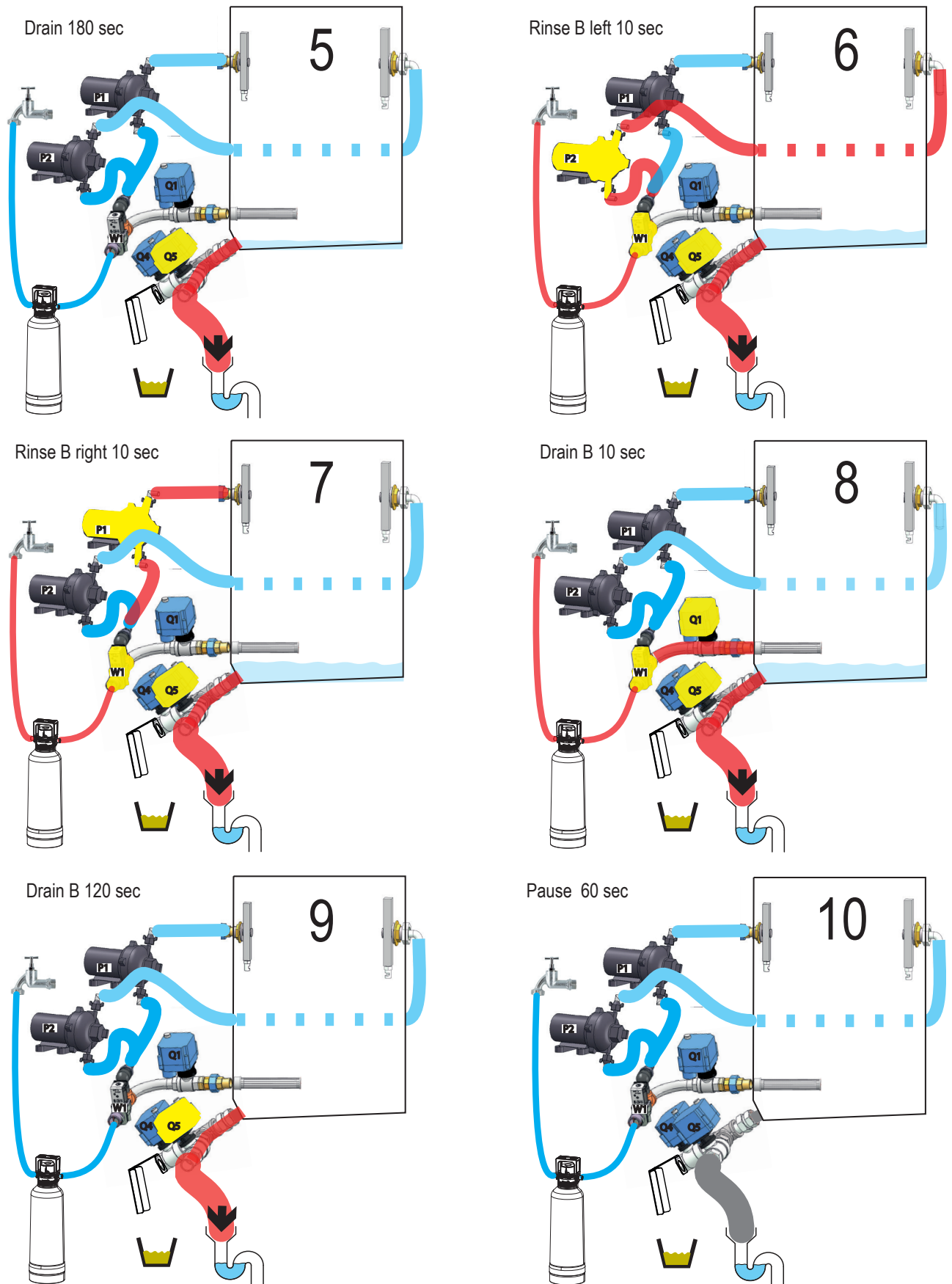


Hot 20 min.  
Cold 10 min.

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.

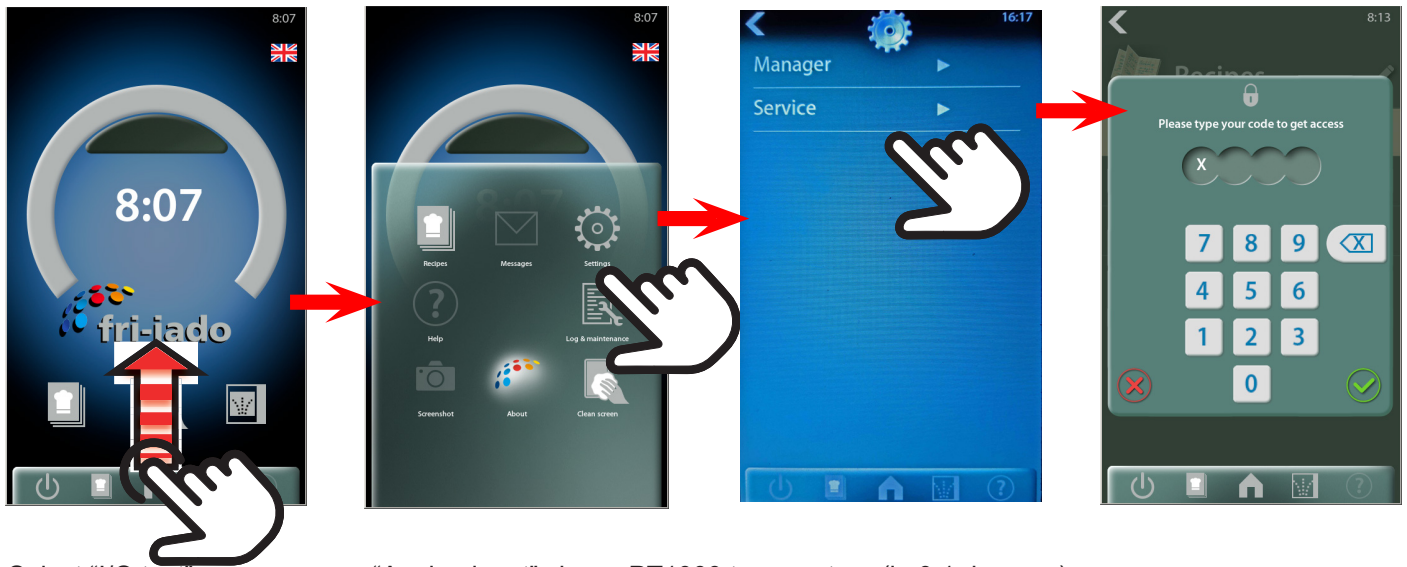
In case of a sanitation step, that will be like stage 10, but then only with the heating on.



I/O TEST

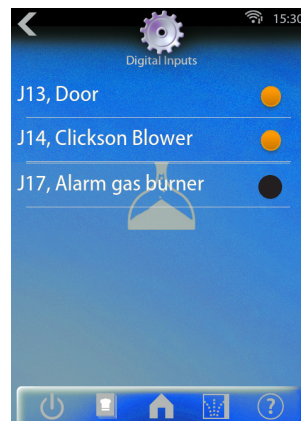
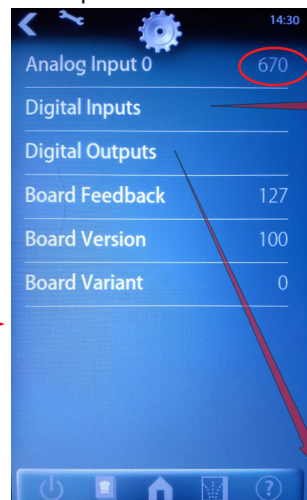
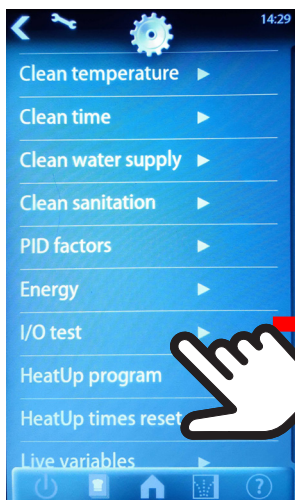
Gain access to the service menu

4878



Select "I/O test"

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



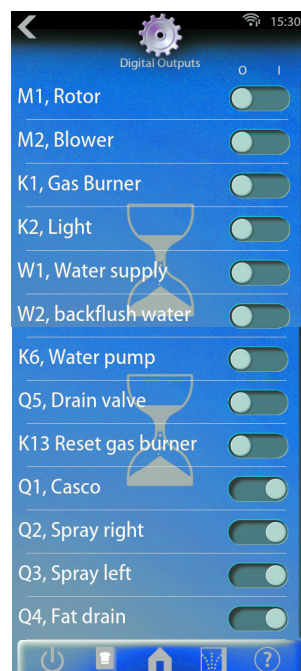
"Digital inputs" is showing the available inputs and also which contacts are closed.

The picture shows the all good situation

J13 Door is closed.

J14 Thermistor in the blower closed = OK

J17 Gas alarm contact open = OK

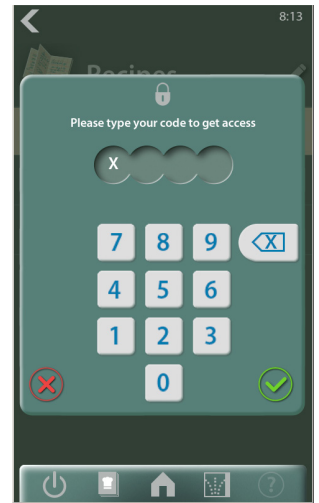


"Digital outputs" is showing the available outputs and also which are activated.

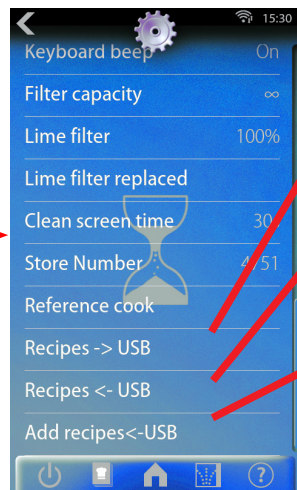
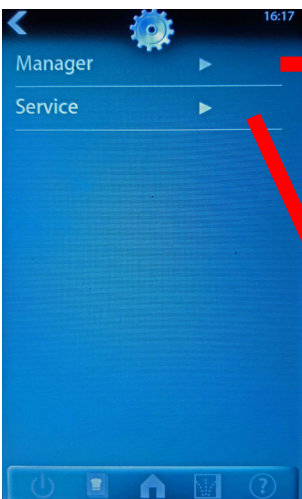
Push the button to activate or deactivate the output of your choice.

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

## EXCHANGING DATA WITH THE USB DRIVE



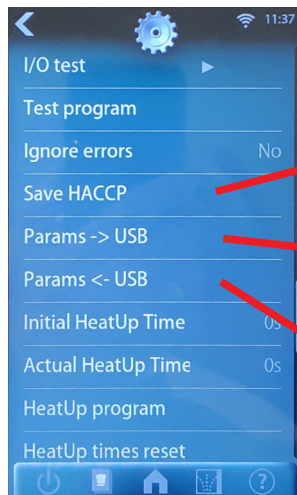
The password for service is 4878. Once the service menu is entered, also the manager menu is unlocked.



Copies recipes from the controller to the USB drive

Copies recipes from the USB drive to the controller. The existing recipes will be overwritten.

Copies recipes from the USB drive to the controller. The recipes will be added to the current recipes.

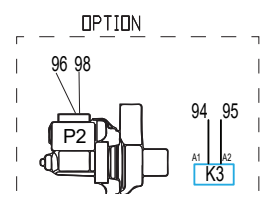
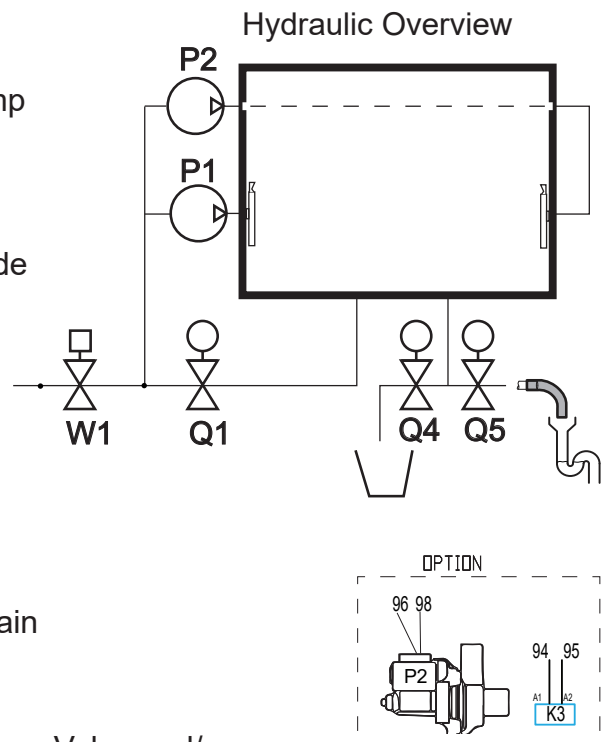
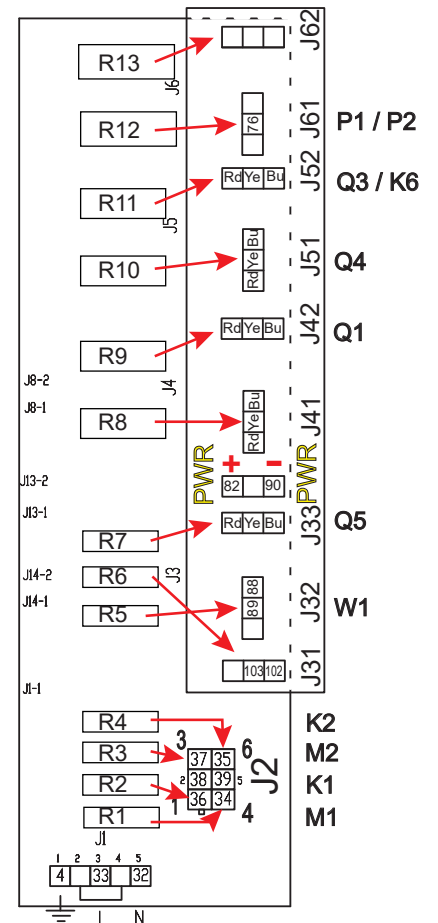
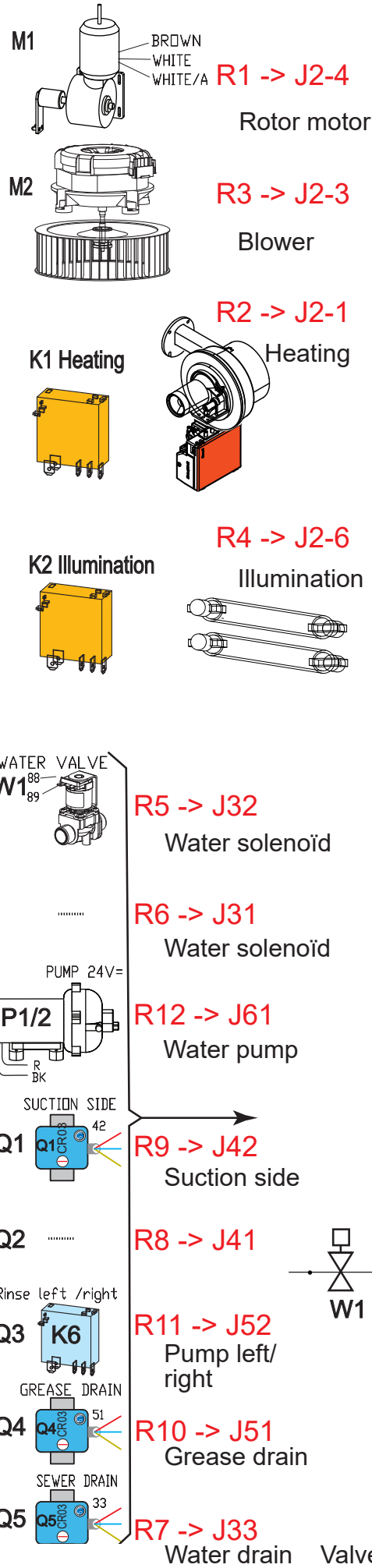


Copies HACCP files from the last 3 days to the USB drive.

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

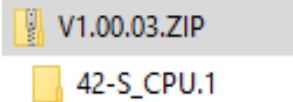


## UPDATING SOFTWARE LDR AC (S-CONTROL)

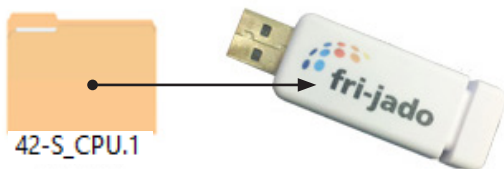
### Preparing the software (firmware)

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

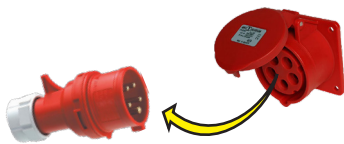


#### 2. Copy or move the folder "42-S\_CPU.1" to the USB drive.



### Updating the software (firmware)

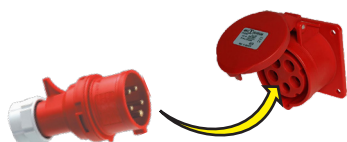
#### 1. Disconnect the mains supply



#### 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 until the screen comes 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.*

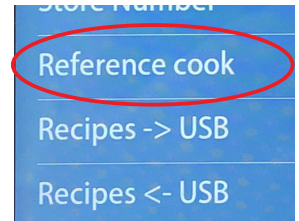
*In case a new board has just been put into a unit, it has to be set to the right device type! -> TDRac*

## AUTOMATIC COOK CORRECTION

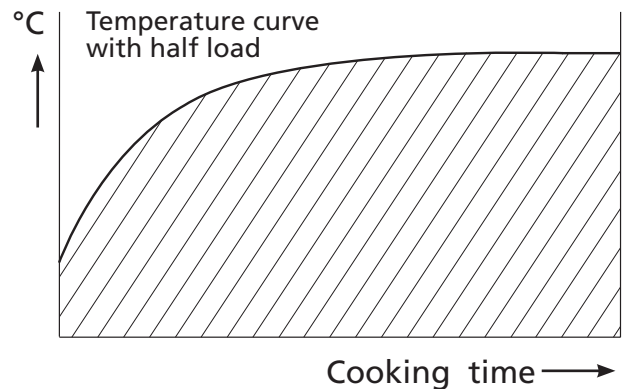
The automatic cook correction facility will automatically add or deduct time to the programmed cooking time in order to have constant cooking quality. To activate it, the parameter "auto correct" has to be put on "time".

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.

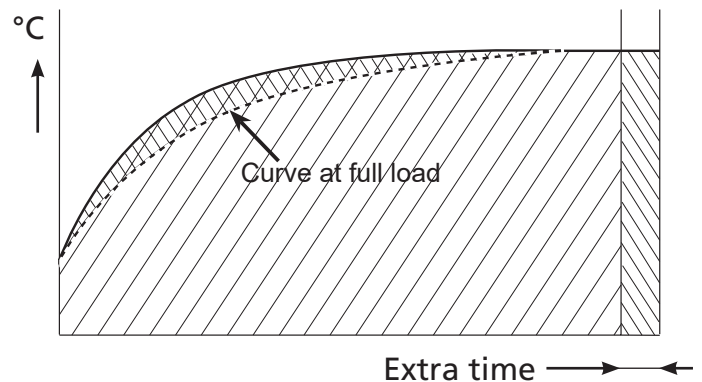


The program calculates the surface from the diagram below the curved line. (temperature \* time). The result is the so called heat number. This heat number is stored into the cooking program.



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.

**Note that:**

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

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".

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

About / software version			1.00.34	
<b>Manager</b>				
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				
<b>Service</b>			<b>4878</b>	
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

		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 - Allowed
	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 Celcius to Fahrenheit.
Volume unit filter		Change the volume 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 back-flush 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 warn- ing		Number of cook cycles after which you receive a deep clean warning
Daily clean warn- ing		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 pro- grams		Option to delete all recipes from the controller

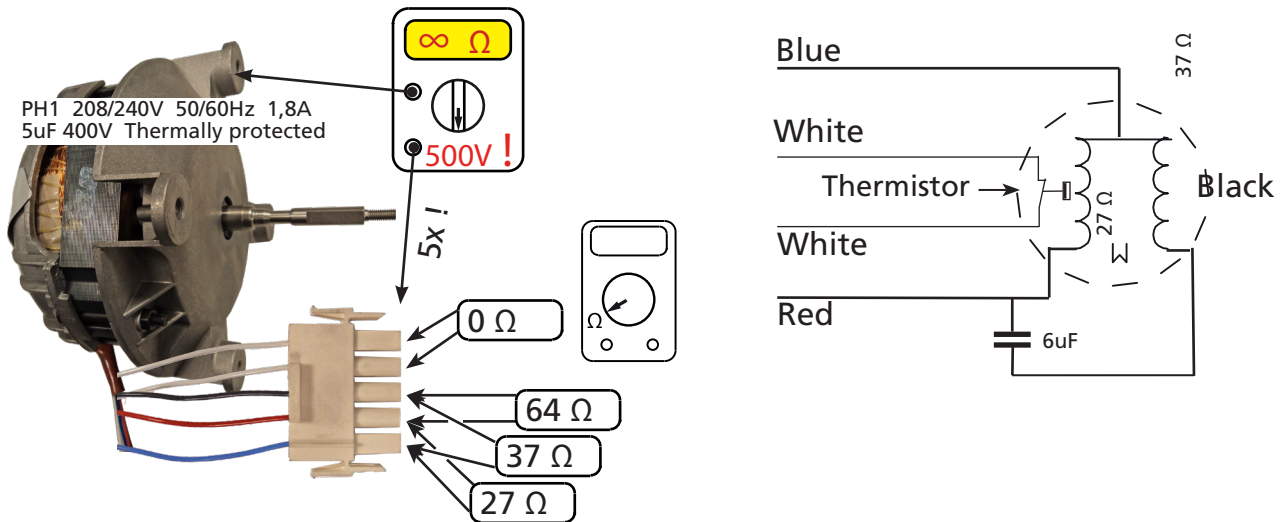
Level 1	Level 2	Level 3
Hood		Option to activate the optional hood
PID factors	P	Temperature regulation setting (P= proportional)
	I	Temperature regulation setting (I= Integrating)
	D	Temperature regulation setting (D= Differentiating)
	iMax	Temperature regulation setting
	Relay actions:	Controls the 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 outputs	Set the outputs 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 Feedback	Read feedback value
	Board Version	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 too 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 interior lights during the cook
Wifi Smartphone		Option to allow a connection to a 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 $\geq 5$ 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 connection 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 smartphone 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 communication in the software.
Fact reset settings		Reset to factory settings

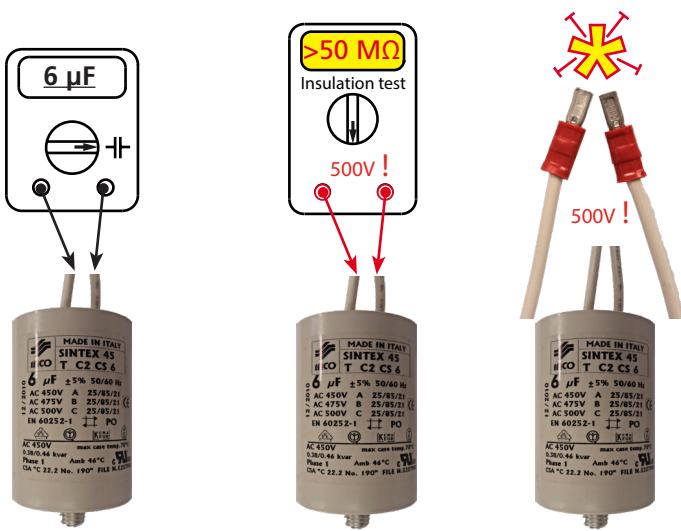
Level 1	Level 2	Level 3
Fact reset recipes		Reset to factory recipes
Fact reset data		Reset of factory data
Commision reset		Reset of set commission date
Commission apply		Option to apply the current date/time for commissioning
Customer ID		By entering the a maching customer code the correct story boards 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 soft-ware 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 allows you to adjust the sensitivity of the touch display.
Live variables	Status Coun- ters	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 Coun- ters	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.

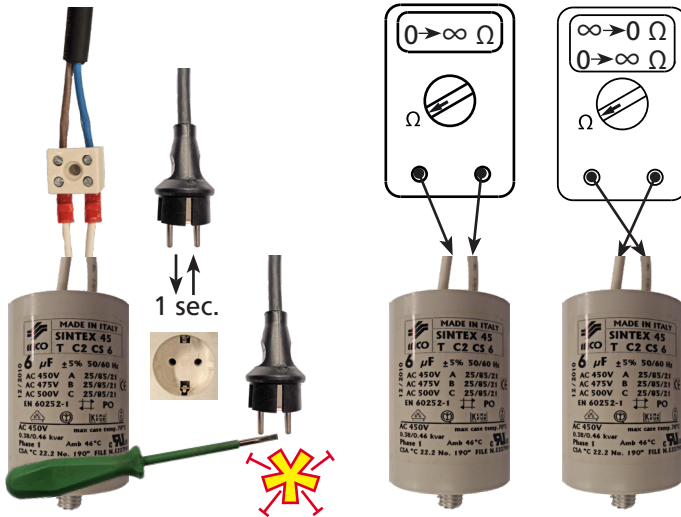
Blower of rotisserie





Charging with a test cable

Checking with  $\Omega$  meter



The 6 $\mu$ F 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  $\infty \Omega$ , but will go up and down a little. When it is above 50M $\Omega$  it will be ok. Disconnect the test leads while the value is at the highest position. The capacitor is now charged with  $\pm 500\text{VDC}!!$

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

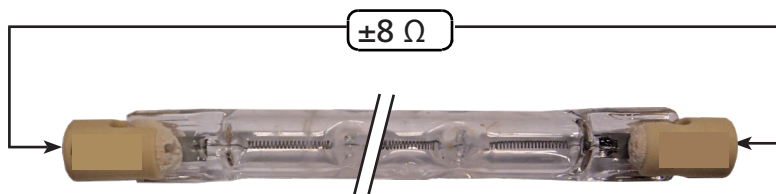
**It is also possible to charge the capacitor by shortly connecting it to the mains supply (208V~).** The same spark must arise. Do this a few times. The capacitor will not be charged when the leads are disconnected during the "zero crossing" of the mains sinus. It is ok when a spark arises once.

**Measuring with an  $\Omega$  meter.**

Be sure that the capacitor is empty!

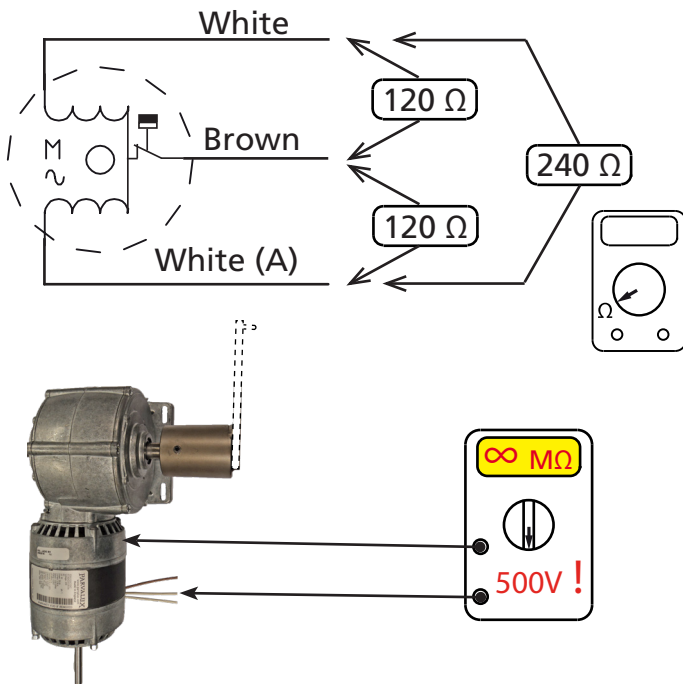
The value will go up until  $\infty \Omega$  is reached. Exchange the test leads. The value will go down, through "0" and up again. If not, the capacitor is broken. If ok, it is still not sure if the capacitor is ok. It might leak when it is connected to the mains power!

**MEASURING THE 160W LAMP**



230V 160Watt

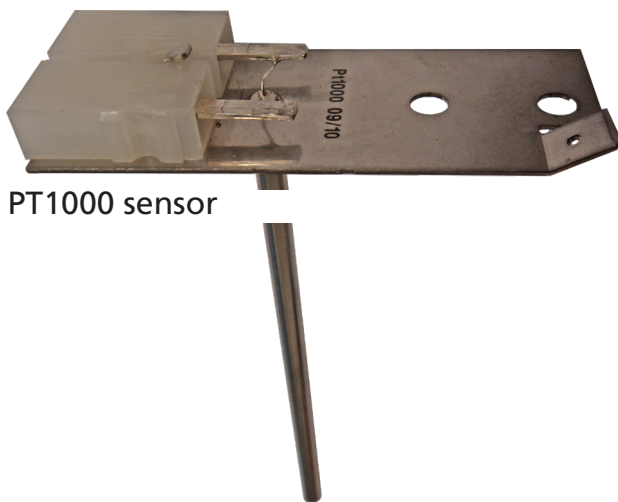
## MEASURING THE ROTOR (DRIVE) MOTOR



## 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.



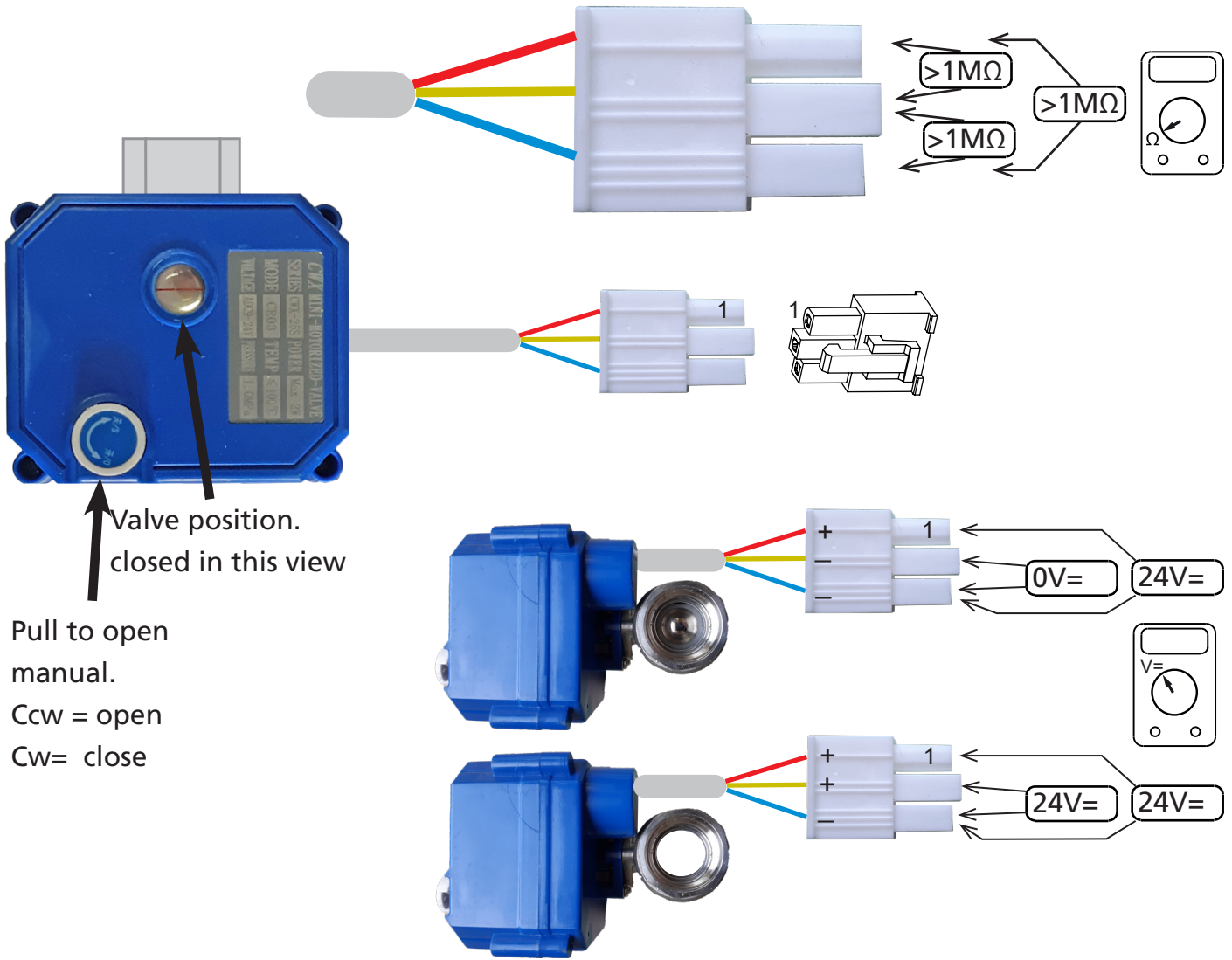
PT1000 sensor

°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

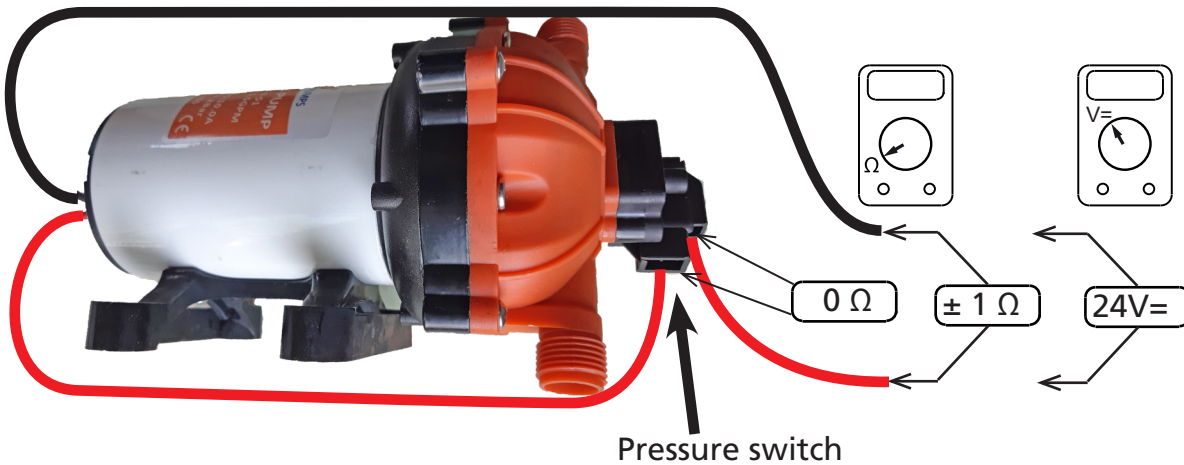
°C	PT1000
120	1460,60
130	1498,20
140	1535,80
150	1573,10
200	1758,43
250	1940,81
300	2120,30

MEASURING THE MOTOR VALVE



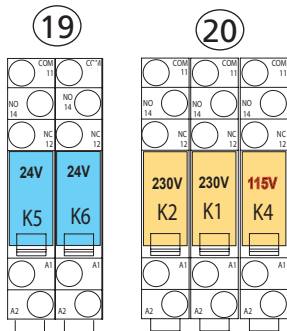
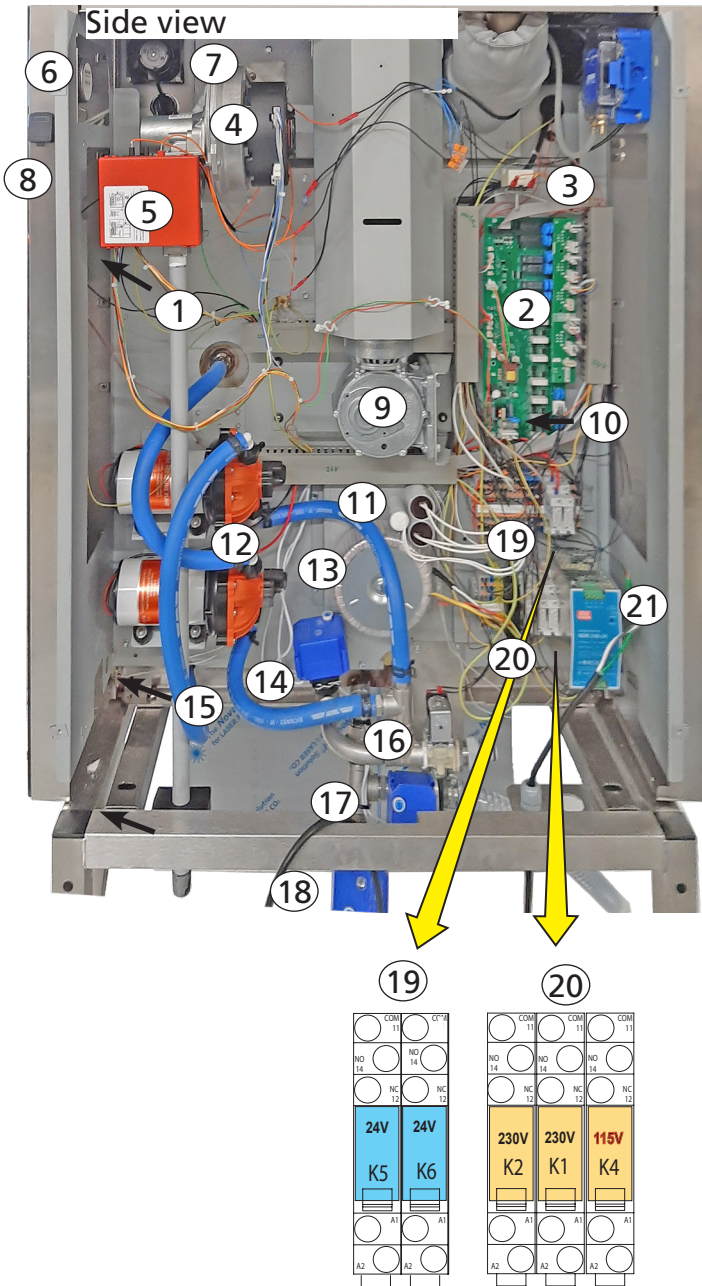
MEASURING THE PUMP

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



**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**



Opposite side view

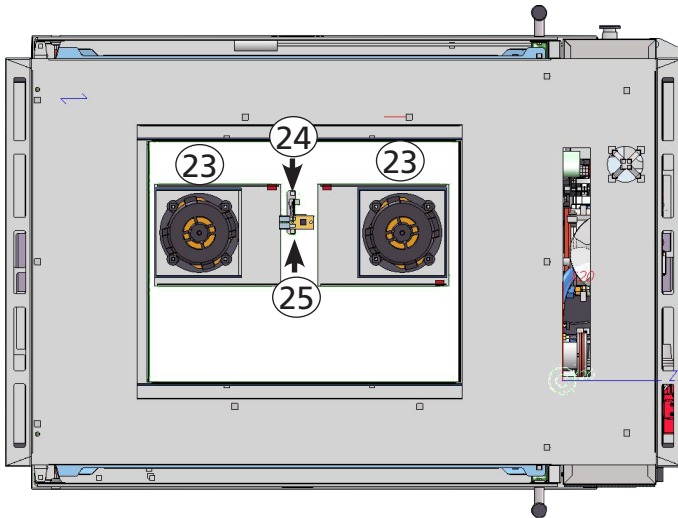


Unscrew 4 screws and open the panel from the electric compartment .  
 The same for the panel on the oposite side to reach the wiring from the light and also to "unlock" the top panel.  
 Remove the top panel and the blower panel on the inside, to reach the blower motor and the heating element.

Placing of temperature sensors is at the top side

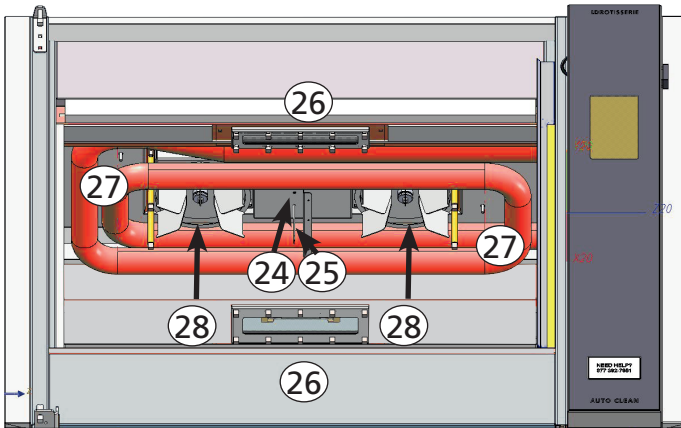
1. CPU & LCD board and key board
2. Power & I/O board.
3. Hi Limit thermostat
4. Gas mixture blower
5. Burner safety control and gasvalves (behind the red box)
6. Speaker
7. Cooling fan, also at opposite side.
8. USB socket
9. Rotor drive motor
10. Fuse on board (1A 5x20 slow acting).
11. Capacitors
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

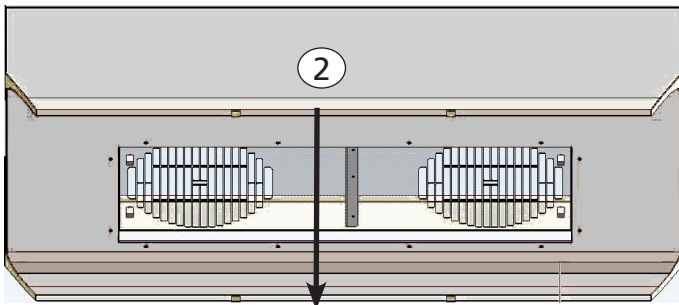
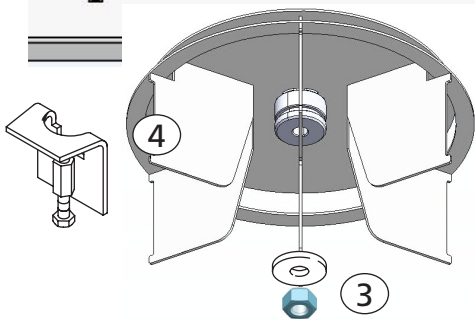
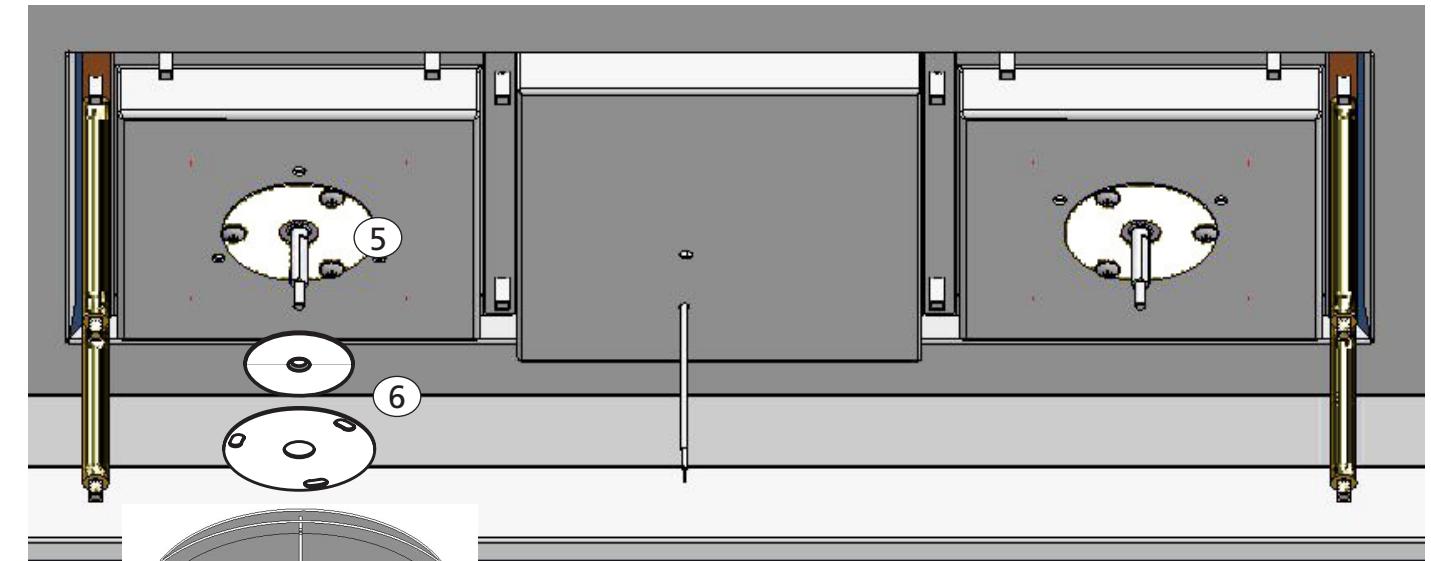


- 23. Blower motor.
- 24. Hi limit sensor.
- 25. PT1000 sensor.
- 26. Illumination.
- 27. Heat exchanger.
- 28. Turbine.

Inside view with removed blower panel



## BLOWER MOTOR



### Dismounting the blower assembly.

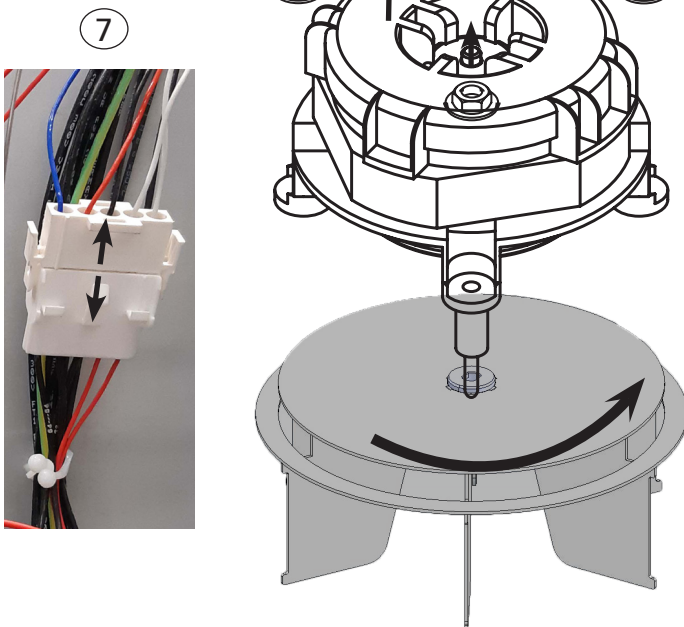
1. Remove both side panels and the top panel
2. Remove the blower panel
3. Remove the M5 nut and washer from the motor shaft
4. Pull the turbine from the shaft. A puller is delivered with the new blower kit.
5. Unscrew 3 screws.
6. Pull off the shaft seal with pressure plate.
7. Disconnect the blower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

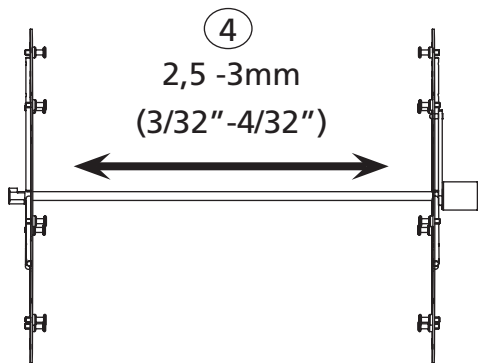
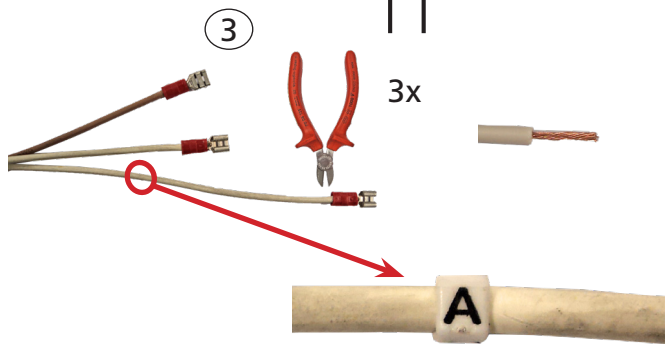
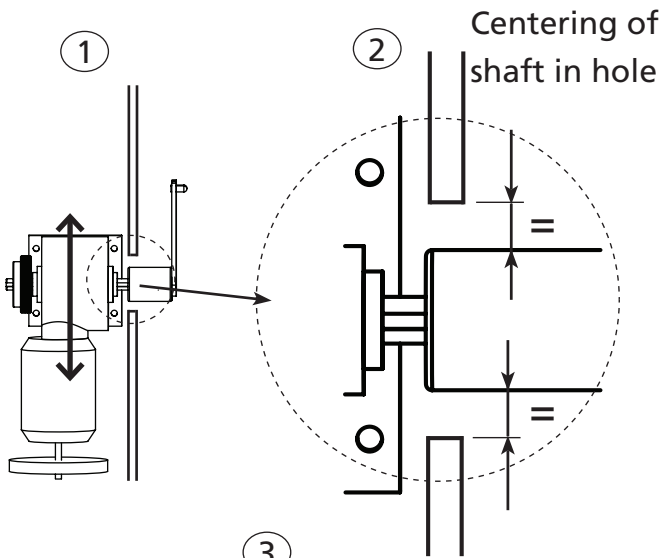
- First mount the motor and tighten the 4 nuts thoroughly.
- Then mount the shaft seal.
- Never loosen or tighten, the 4 nuts from the motor afterwards.
- If this is necessary, then first loosen the shaft seal.
- Check the rotation direction.



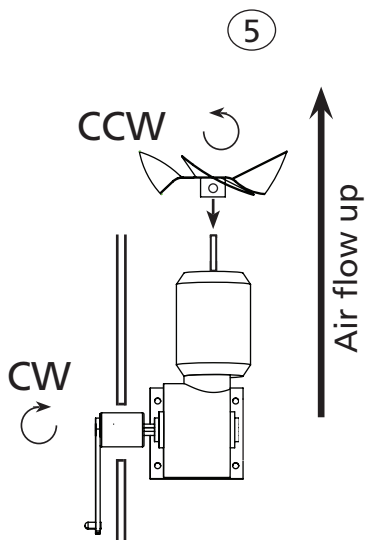


## Mounting the rotor motor

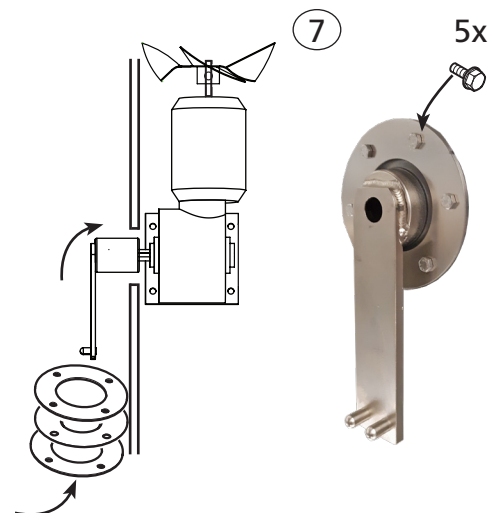
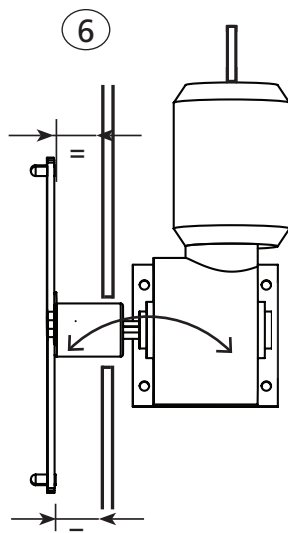
1. Mount the motor on the bracket using the previous made mark (see #2 from disassembling).
2. The motor shaft should come through the center of the hole!!
3. Connect the wiring of the (new) motor. See previous page for position of wires. *In case the wires have receptacles mounted, then these have to be cut off and the wires stripped.* *Note that the white wire, marked "A" is longer*
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.



Checking rotation



Aligning of the drive arm





**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. (Multiserie 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 Check fuse(s) on the electric panel	
	Wiring problem	Wiring loose of plugs or sockets inside and outside 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. Defective temperature sensor. Wiring problem. Unit is put in "DEMO Mode" (check parameters) 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)
	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	
Bad cooking results, uneven cooking	Too much heat	Contactor hangs PT1000 sensor malfunction , value too low PT1000 Sensor too far out of cooking chamber	
		Rotor motor stops	Cooling air flow blocked Wrong rotation direction
	Short of heat	Heating element defect	
		Lost phase	
		Contactator 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	Contactors malfunction
		Wiring loose
		Lighting switched off in manager menu
Contactors 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	Contactors 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.**

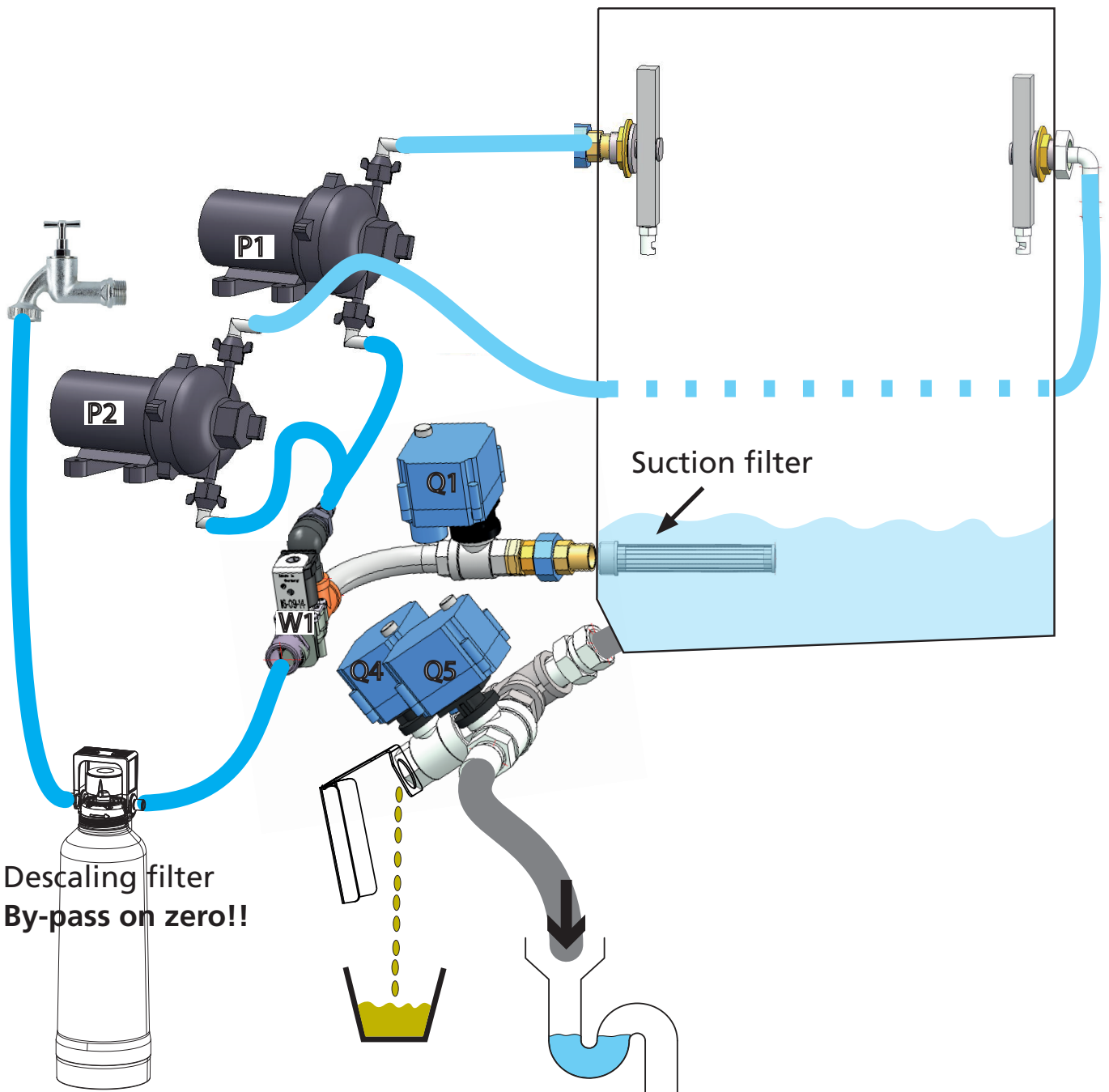
Description of part / function	Symptoms	Possible cause	Action
Inside door	Broken glass	Slamming of door.  Fastening bolts and nuts are loose.  No PTFE ring between steel and glass.	Give instruction to operator.  Tighten all fastenings.  Mount new door.
	Door does not properly open / close	Door not well adjusted.	Adjust outside and inside door
Outside door	Broken glass	Slamming of door.  Fastening bolts and nuts are loose.	Give instruction to operator.  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.
		Contactors Element malfunction.	Check the contactor Check the current with AC current tester.
	Duration of grilling time is too long	Wiring. Element malfunction.	Check the wiring. Check the current with AC current tester.
Safety thermostat	Contactors does not switch on after starting of program	Wiring. Thermostat malfunction.	Check the wiring. Check if the thermostat is making contact.
	Contactors 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.
Contactors	Contactors doesn't switch on	Wiring. Coil malfunction.	Check the wiring. Check resistance of the coil. This should be $\pm 600\Omega$ .
	Contactors switches on, but no power on lamp or heating element.	Contact burned.	Check the wiring. Check the power on all contacts. Check the contacts of the contactors.
Capacitor	Drive motor or blower don't work	Wiring. Capacitor malfunction.	Check the wiring. Check function after connecting a new capacitor. <i>Checking of capacitor: See chapter "electrical tests"</i>

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

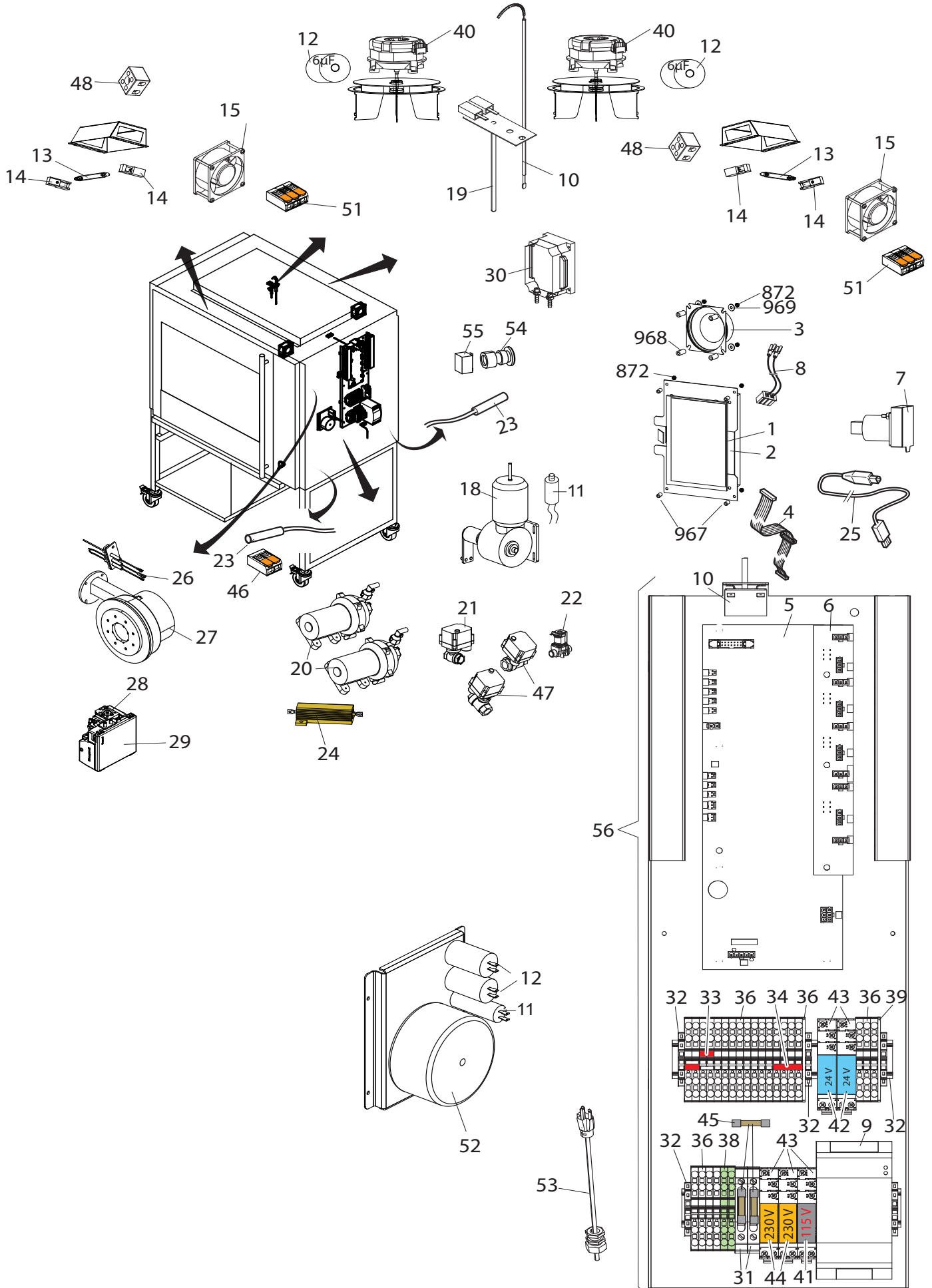
Description of part / function	Symptoms	Possible cause	Action
PT-sensor	<p>Temperature inside rotisserie higher than set temperature</p> <p>Rotisserie does not reach adjusted temperature</p> <p>Error message -PT1000 underflow -Sensor shorted</p> <p>Error message -PT1000 overflow -Sensor open</p>	<p>Resistance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

Description of part / function	Symptoms	Possible cause	Action
Pump See below over-view <b>P1</b>	Not pumping	Suction valve Q1 (9311008s) malfunctioning	Check the valve if it is closed while the water inlet 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 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 (solenoid) valve See below over-view <b>W1</b>	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 <b>Q1</b>	Not rinsing during cleaning	Valve does not close during filling of water Valve does not open during rinsing	Check function of valve in I/O test Check wiring and plugs / sockets on the I/O board
Motor valves left and right rinse See below over-view <b>Q2 / Q3</b>	No water comes out of the sprayers	Both valves stay closed	Check function of valve in I/O test 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 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 Check wiring and plugs / sockets on the I/O board
Motor valve grease drain See below over-view <b>Q4</b>	Oil stays on the bottom.	Valve does not open	Check function of valve in I/O test 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 See below over-view <b>Q5</b>	Water comes in the grease container (bucket) and probably on the floor	Valve does not open	Check function of valve in I/O test 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	

# HYDRAULIC OVERVIEW



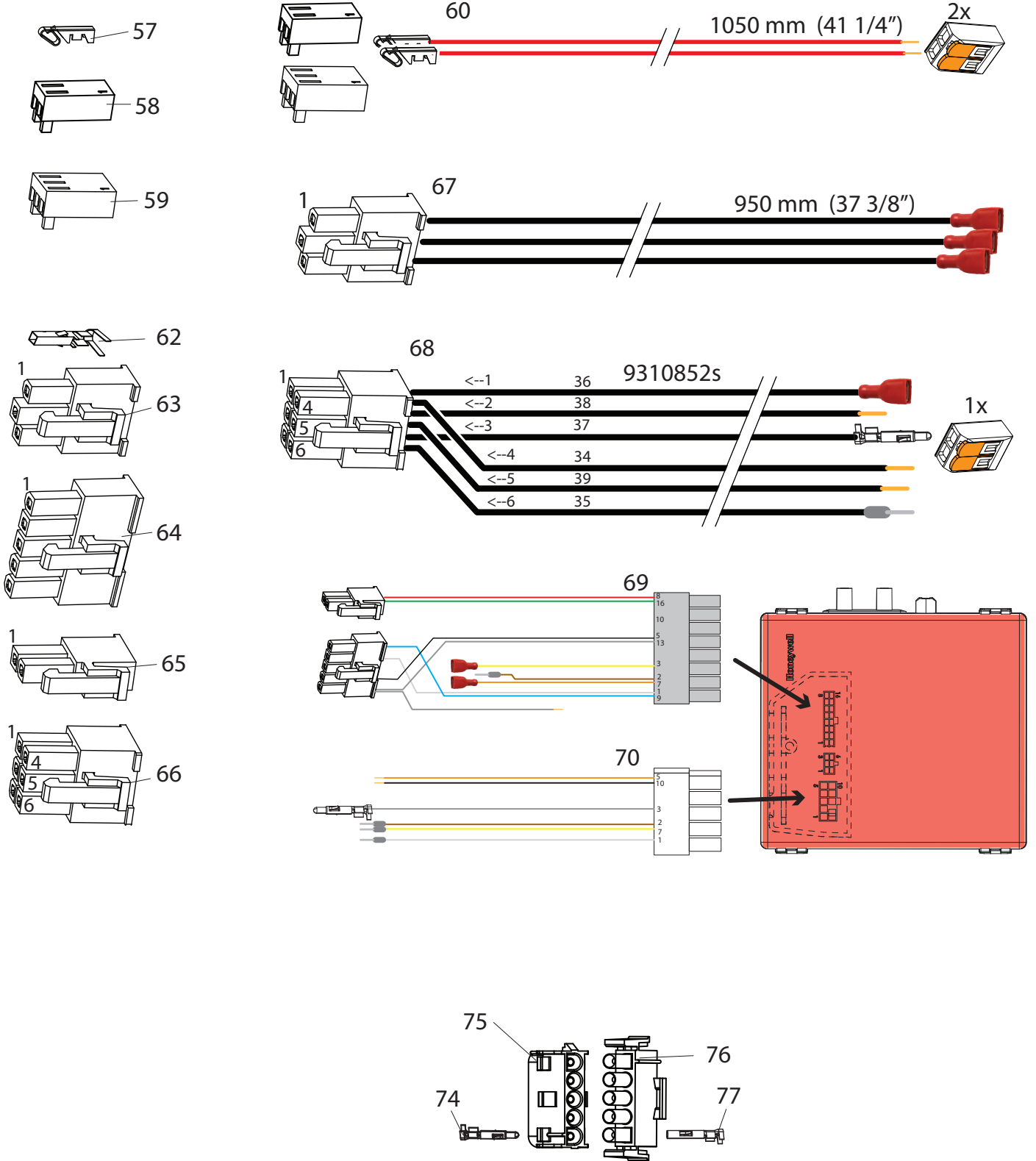
LDR 8S AC GAS, ELECTRICAL PARTS



## LDR 8S AC GAS, PARTSLIST ELECTRICAL PARTS

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

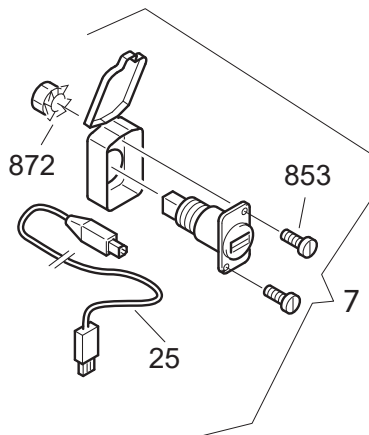
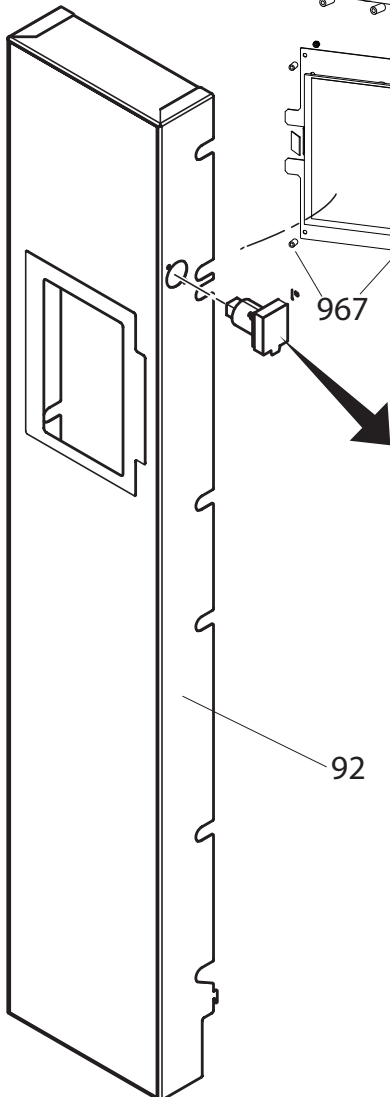
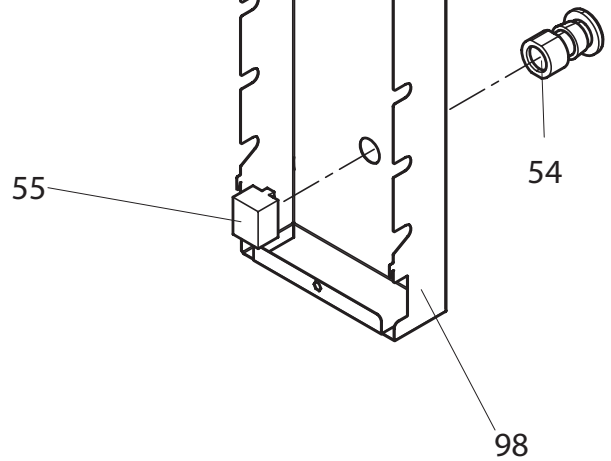
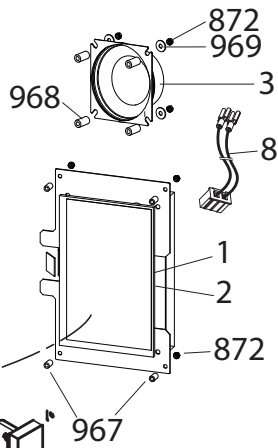
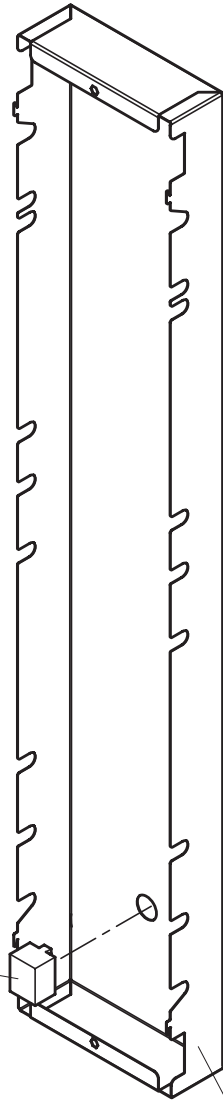
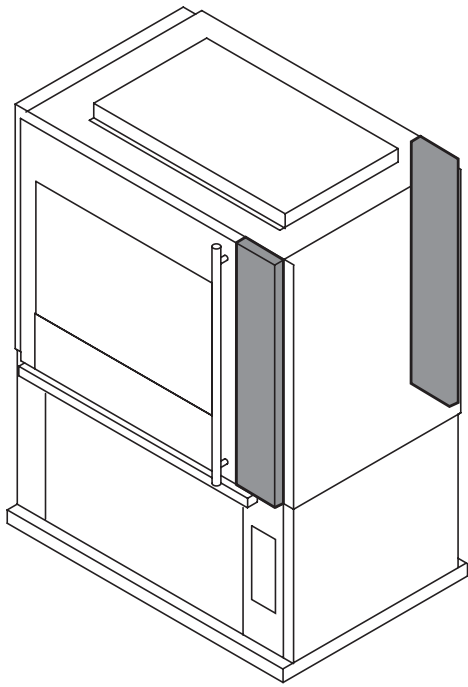
LDR 8S AC GAS, ELECTRICAL PARTS



**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	<a href="#">0601466</a>	Crimp contact male, M-N-L			
75	<a href="#">9291014</a>	Socket, 5p, Mate-N-Lock			
76	3701272	Plug, 5p, Mate-N-Lock			
77	<a href="#">0601458</a>	Crimp contact female, M-N-L			
79	9311054s	Pedal switch			

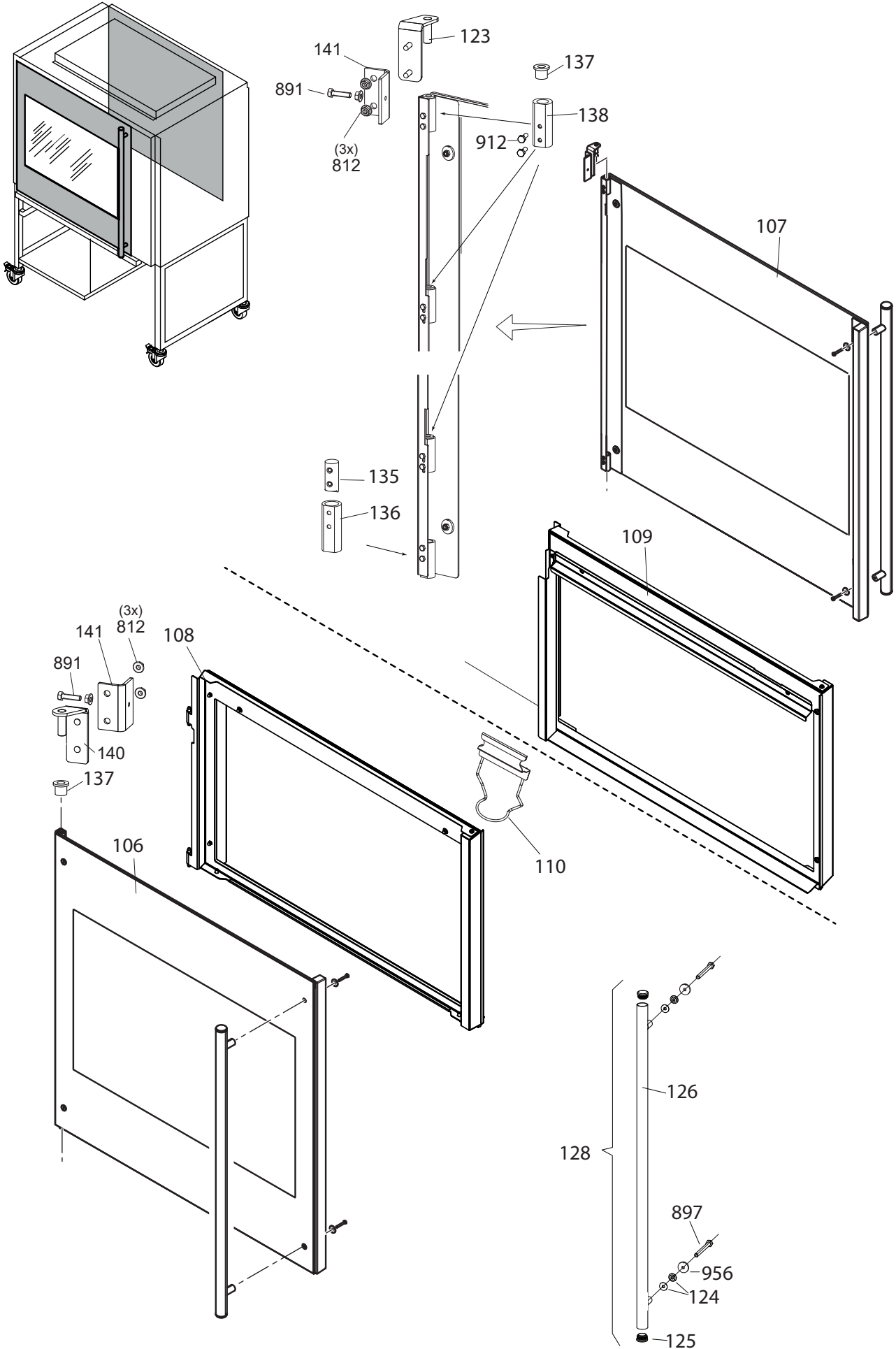
LDR 8S AC GAS, CONTROL PANELS



### LDR 8S AC GAS, PARTSLIST CONTROL PANELS

Pos	Part nr.	Description	Qty	Priority	Comment
1	<a href="#">9292280s</a>	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	<a href="#">9291012</a>	USB cable	1		
54	<a href="#">9291002</a>	Pedestal button	1		
55	<a href="#">9291003</a>	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		

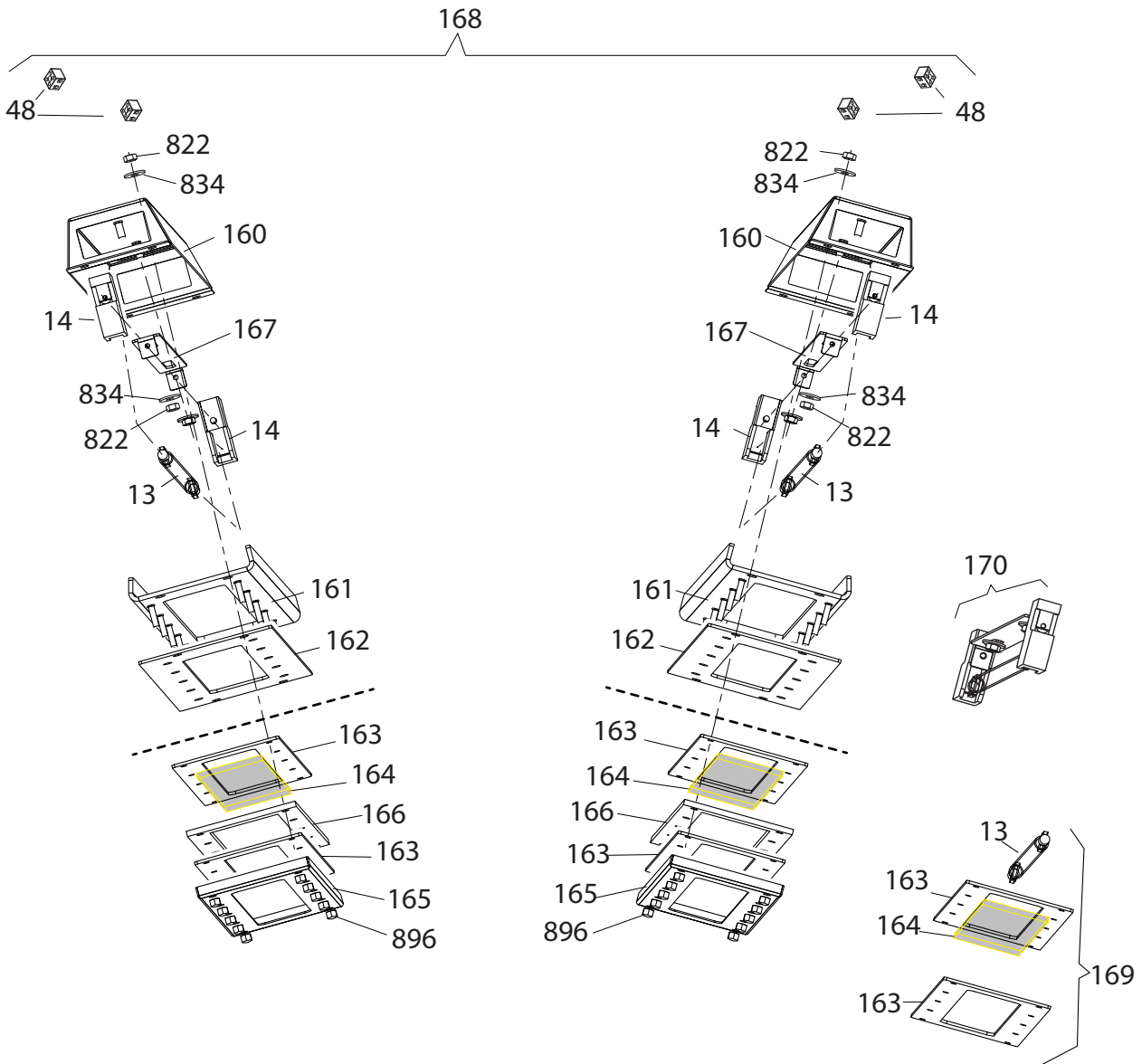
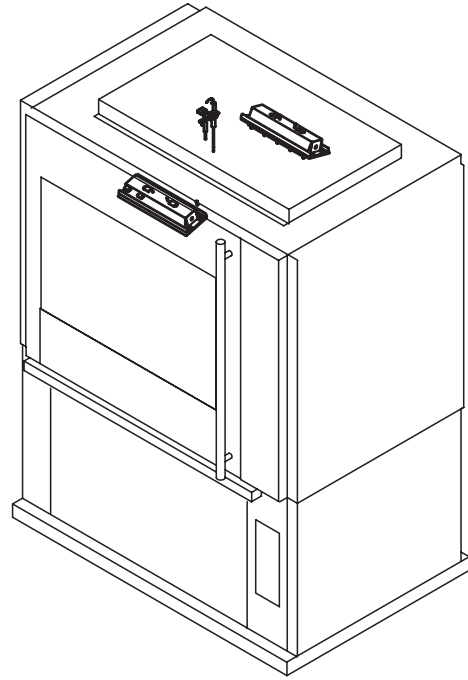
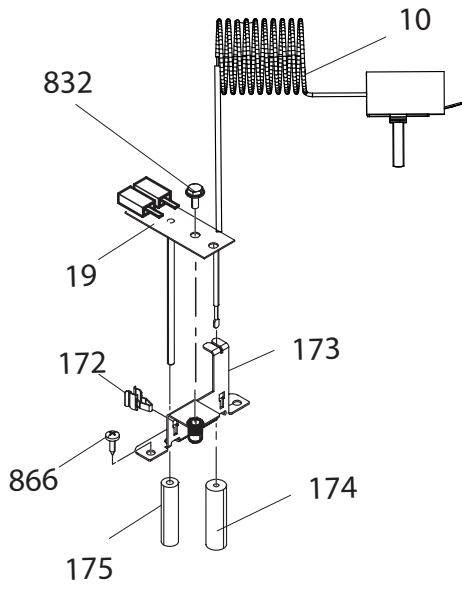
LDR 8S AC GAS, DOORS



### 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	<a href="#">3702342</a>	Collar bush 10x5x3,5	16		
125	<a href="#">2103209</a>	Plug Ø 30mm	4		
126	9293008	Door handle	2		
128	<a href="#">9298101s</a>	Doorhandle set TDR7/8			
135	9312014	Positioning pin, door hinge	2		
136	9312112	Bearing bush, lower hinge	2		
137	<a href="#">9172054</a>	Collar bearing, bronze	2		
138	9312111	Bearing block, upper hinge	2		
140	9310410	hinge, top left	1		
141	9314318	Bracket door adjustment			

LDR 8S AC GAS, LIGHTING AND SENSORS



## LDR 8S AC GAS, LIGHTING AND SENSORS

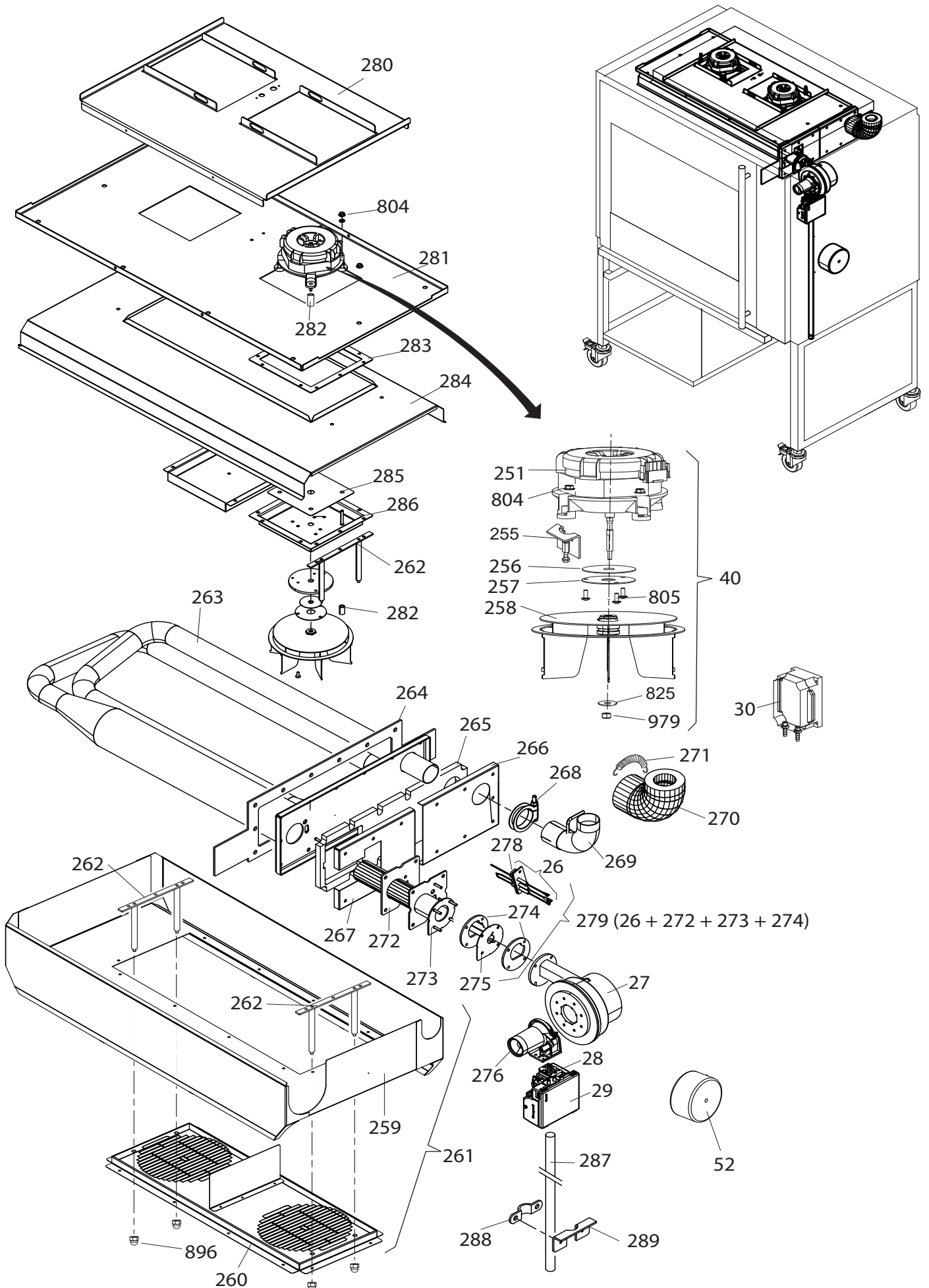
Pos	Part nr.	Description	Qty	Priority	Comment
10	<a href="#">9040970</a>	Thermostat 122-608°	1	2	
13	9351020s	Lamp 160W	2	1	
14	<a href="#">9311015</a>	Lamp holder R7s ceramic	4	2	
19	<a href="#">9172310s</a>	Temperature sensor PT 1000	1	1	
160	9314113	Cover, lamp	2		
161	9314114	Mounting bracket, lamp fixture.	2		
162	9312054	Seal, top	2		
163	9312055	Seal light (for lamp 500W)	2	1	
164	<a href="#">9312020</a>	Glass, oven illumination	2	1	
165	9314330	Cover profile, oven illumination	2		
166	9314331	Spacer plate	2		
167	9314334	Bracket, lamp holder.	2		
168	<a href="#">9310071s</a>	Service kit, 2 lamp fixtures			
169	<a href="#">9312055s</a>	Lamp replacement kit		1	
170	<a href="#">9311029s</a>	Lamp holder kit			
172	<a href="#">9110072</a>	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	



### 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	<a href="#">9302027</a>	Support pin, meat baskets	16		
206	9310180s	Bearing ass., rotor TDR7/8ac	1	2	
210	<a href="#">9290444</a>	Suspension plate, rotor motor	1		
213	<a href="#">9172078</a>	fan blade 150mm	1		
216	<a href="#">9312019</a>	Seal	3	2	
217	9314126	Pressure ring, 5 holes	1		
218	<a href="#">9312002s</a>	Shaft seal, 5 holes	1		
219	9314125	Reinforcement ring, 5 holes	1		
235	9342007	Meat basket			
236	<a href="#">9340201</a>	Meat basket, set of 7			
237	9342011	V-spit			
238	<a href="#">9340200</a>	V-spit, set of 8			

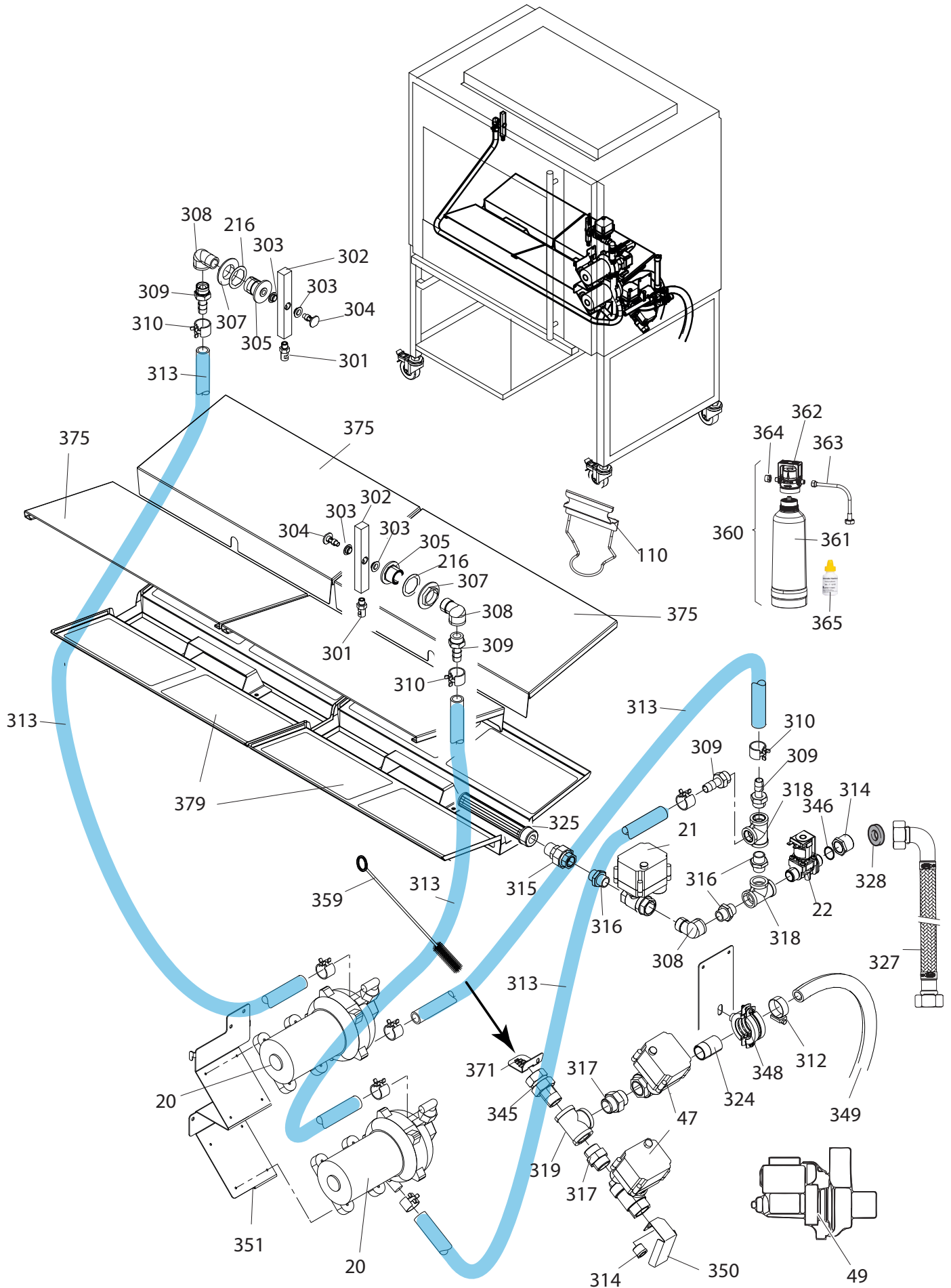
LDR 8S AC GAS, BLOWER & HEATING



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

Pos	Part nr.	Description	Qty	Priority	Comment
26	<a href="#">9292113s</a>	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	<a href="#">9291111</a>	Pressure switch			
40		Blower, ass. TDR 8s ac gas	1	2	
52	<a href="#">9171056</a>	Transformer 115 / 230V 500VA	1	2	
251	<a href="#">9293020s</a>	Blower motor			
255	<a href="#">9298600</a>	Turbine puller			
256	<a href="#">3702325</a>	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	<a href="#">9292107</a>	Insulation, elbow	1		
271	<a href="#">9291018</a>	Spring for insulation exhaust pipe	2		
272	9342019	Gasket, burner	1	1	
273	9340412	Burner	1		
274	<a href="#">9292103</a>	Gasket, gasmixture blower	2		
275	9344034	Orifice Ø 21	1		
276	9341001	Venturi + gasket	1		
278	<a href="#">9292108</a>	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	<a href="#">9291029</a>	Clamp	1		
289	9344119	Clamp	1		

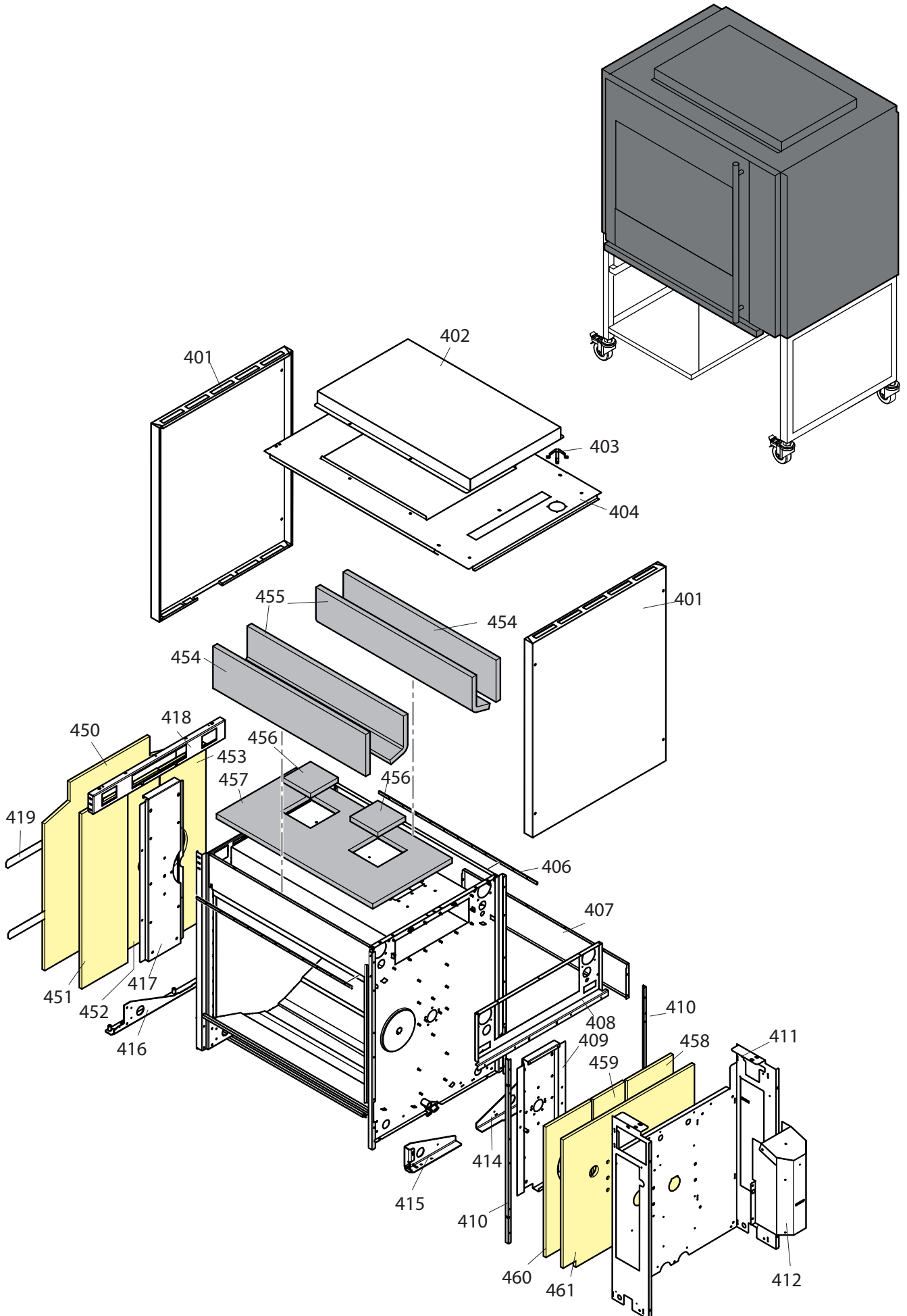
LDR 8S AC GAS, CLEANING SYSTEM



**LDR 8S AC GAS, PARTSLIST CLEANING SYSTEM**

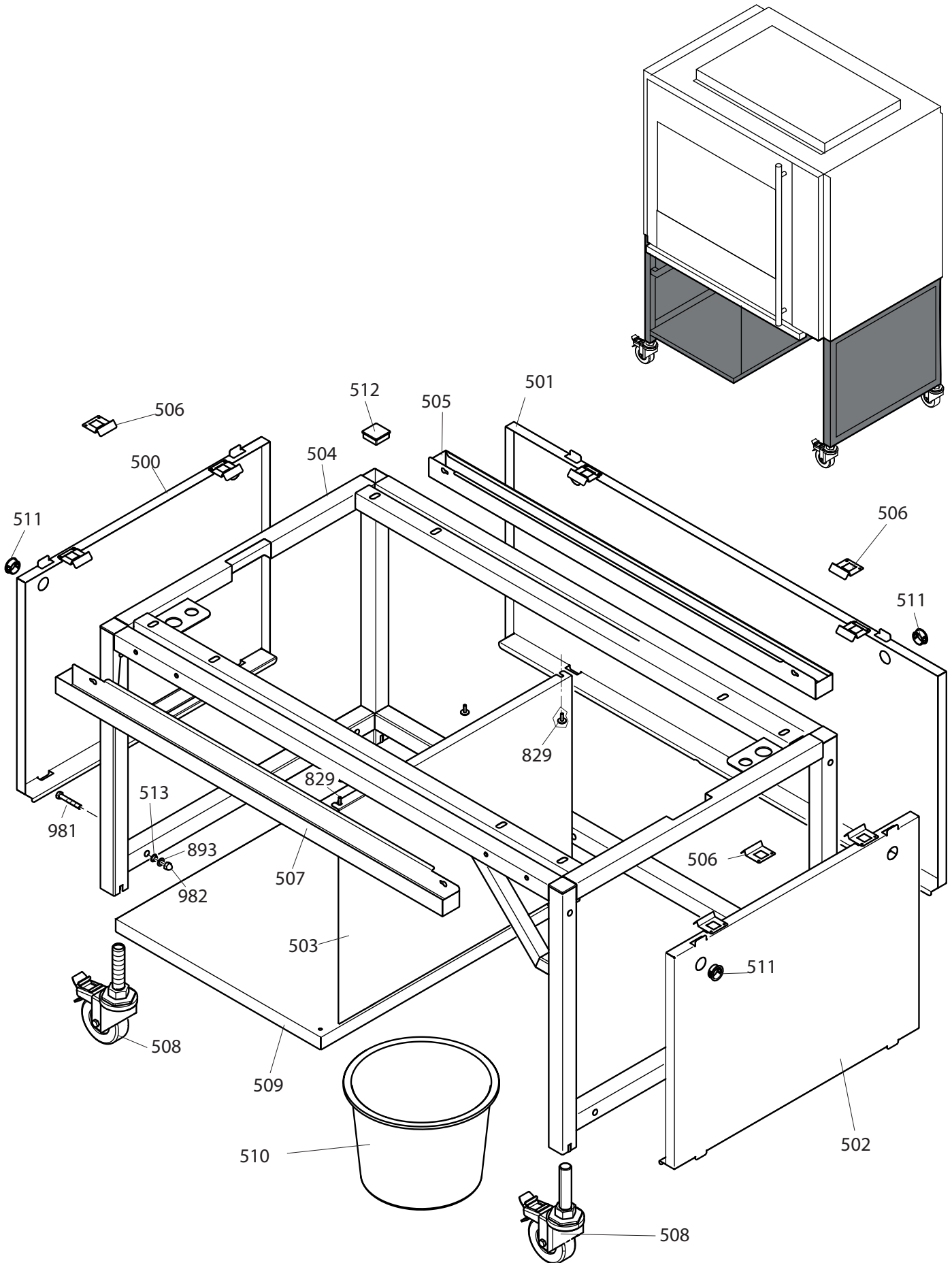
Pos	Part nr.	Description	Qty	Pri- ority
20	<a href="#">9311006s</a>	Pump	1	1
21	<a href="#">9311008s</a>	Motor valve -2/2 1/2" CR03	1	1
22	<a href="#">9311007s</a>	Solenoid valve E 2/2 - 1/2" (reduced 9 ltr/min)	1	1
47	<a href="#">9311013s</a>	Motor valve -2/2 3/4" CR03	2	1
49	<a href="#">9312083s</a>	Drain pump	1	1
216	<a href="#">9312019</a>	Seal	3	2
301	<a href="#">9301007</a>	Nozzle, spoon shape	2	
302	9312117	Spray arm TDR5ac and 7/8ac	2	
303	<a href="#">9311014</a>	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	<a href="#">3721050</a>	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	<a href="#">9311028</a>	Reducing bushing 3/4"x1/2", SS	1	
315	9311009	Union conicle 1/2" (M-F) SS	3	
316	<a href="#">3721047</a>	Hexagon nipple threaded 1/2" (M-M) BSP	7	
317	<a href="#">3721029</a>	Hexagon nipple threaded 3/4" (M-M) BSP	2	
318	<a href="#">3721046</a>	Tee threaded 1/2" (F-F-F) BSP	3	
319	<a href="#">9301028</a>	Tee threaded 3/4" (F-F-F) BSP	1	
324	<a href="#">9301006</a>	Welding nipple, 3/4"	1	
325	9310401	Suction filter	1	2
327	9191203	Water supply hose	1	
328	<a href="#">9191227</a>	Gasket Ø24xØ16x2	1	1
345	<a href="#">9301027</a>	Union conicle 3/4" (M-F) SS	1	
346	<a href="#">9311033</a>	O-ring	1	
348	<a href="#">2650217</a>	Clamp, suspension, 32-38	1	
349	9301059	Hose, Ø25xØ33	1,5mtr	
350	9314070	Splash guard	1	
351	9314117	Suspension, pumps	1	
359	<a href="#">9191136</a>	Pipe brush	1	
360	<a href="#">9308010</a>	Water filtration system		
361	<a href="#">9301073</a>	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	

LDR 8S AC GAS, SHEET METAL





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	Drip tray	1		
506	9314604	Spring	2		
508	<a href="#">9190177</a>	Swivel castor with brake	1		
509	9344115	Bottom plate	1		
510	<a href="#">9191099</a>	Bucket, plastic 11.3 ltr	1		
511	<a href="#">9070840</a>	Grommet ø24xØ28	1		
512	2103244	Square plug 40mm	1		
513	<a href="#">9191102</a>	Collar bearing	1		

**FASTENERS**

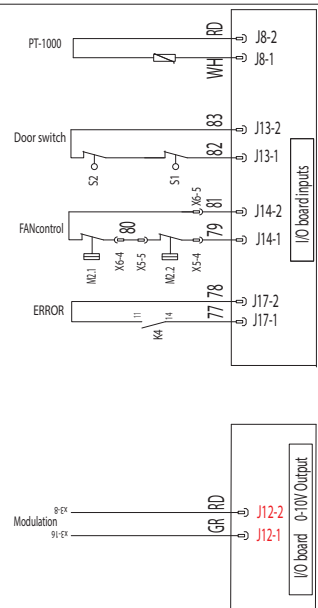
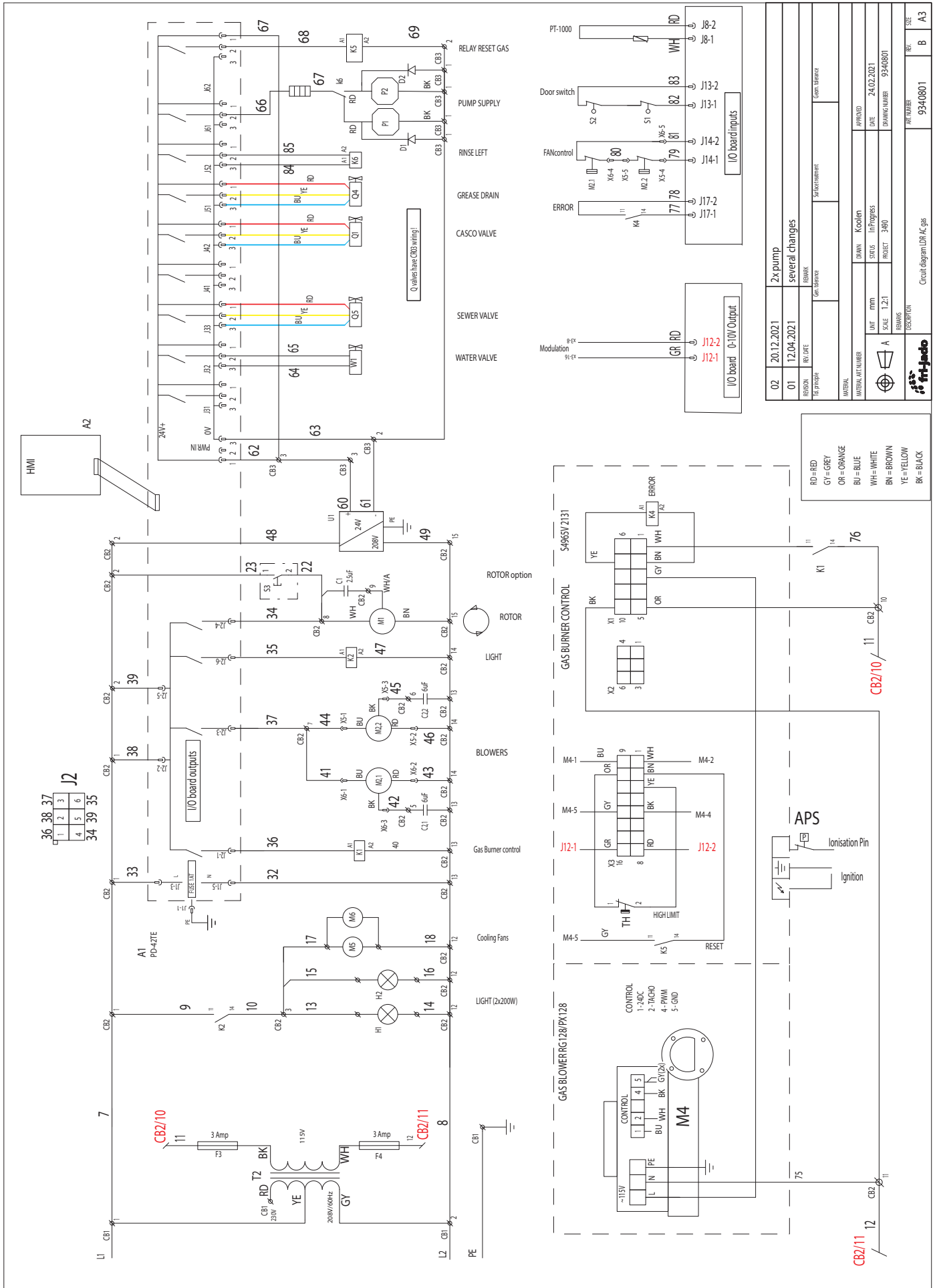
Pos	Part nr	Description
800	4280107	Bolt M6x20 ZP
801	4289559	Lockwasher M6, serrated ZP
802	<a href="#">4288321</a>	Screw M5x16, SS socket button head.
804	4285092	Nut M6, black serrated
805	4288232	Screw M5x12, SS cross recess, wide button head
806	4286713	Bolt M6x16, ZP threadforming
810	4288325	Screw M5x12, SS socket, wide button head
812	9087570	Nut M5, black serrated
814	4289787	Bolt M6x30 ZP
817	4287549	Washer M8, ZP
819	<a href="#">0196673</a>	Bolt M8x25, ZP
820	<a href="#">0141149</a>	Screw M5x16, SS Cross recess pan head
822	<a href="#">0142315</a>	Nut M5, SS hexagonal
824	9191050	Bolt, SS M5x18
825	<a href="#">0142103</a>	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	<a href="#">0142129</a>	Washer M4, SS
832	4288231	Bolt M5x10, SS serrated
833	<a href="#">0142307</a>	Nut M4, SS
834	<a href="#">4311110</a>	Washer M5, SS ø5xØ15
835	0142111	Washer M6, SS
836	<a href="#">4285035</a>	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	<a href="#">0141075</a>	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	<a href="#">9057347</a>	Spacer 10mm, Ø5,2x10 Nylon
876	0141165	Screw M5x25, SS Cross recess pan head
877	<a href="#">4285135</a>	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	<a href="#">9172053</a>	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	<a href="#">0144359</a>	Locknut M5, SS
896	<a href="#">4285408</a>	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	<a href="#">9070793</a>	Connection nut M6x18, ZP

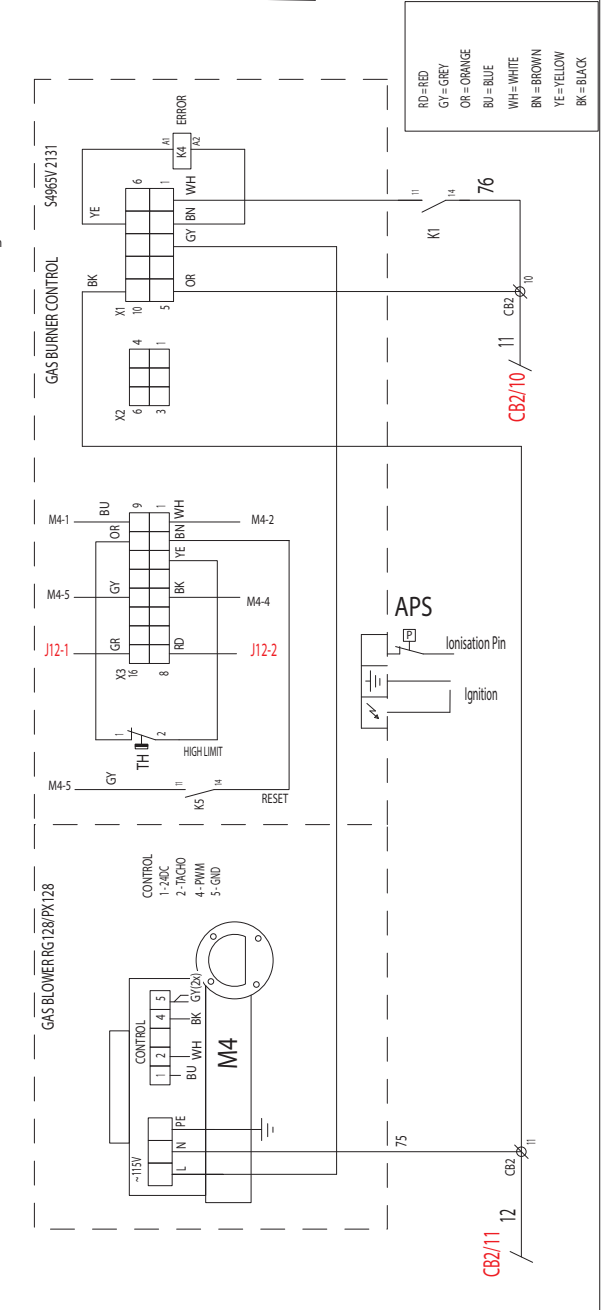
Pos	Part nr	Description
929	0197378	Washer M12, Zp
930	9008056	Nut M12, ZP
931	0142056	Lockwasher M8, SS
933	9077004	Socket set screw M4x6, SS
934	<a href="#">9301049</a>	Circlips external ø25
935	4287557	Washer M10
936	9073149	Wingnut M6, SS
937	2800082	Wingnut M6, Brass Nickle plated
939	4312027	Connection 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	<a href="#">8071043</a>	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	<a href="#">9174680</a>	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	<a href="#">6390168</a>	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

## CIRCUIT DIAGRAM LDR 8S AC

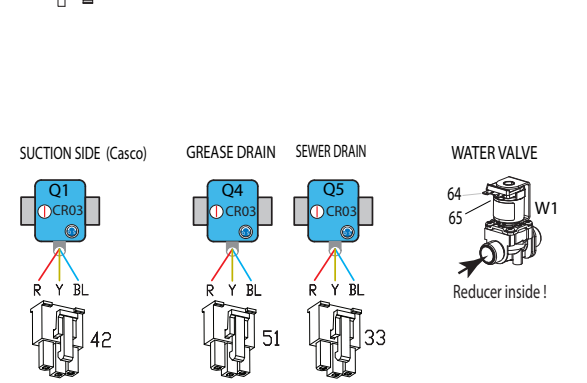
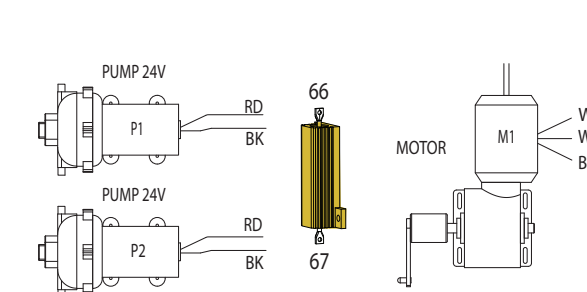
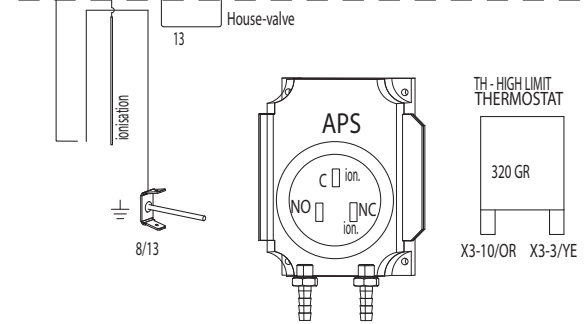
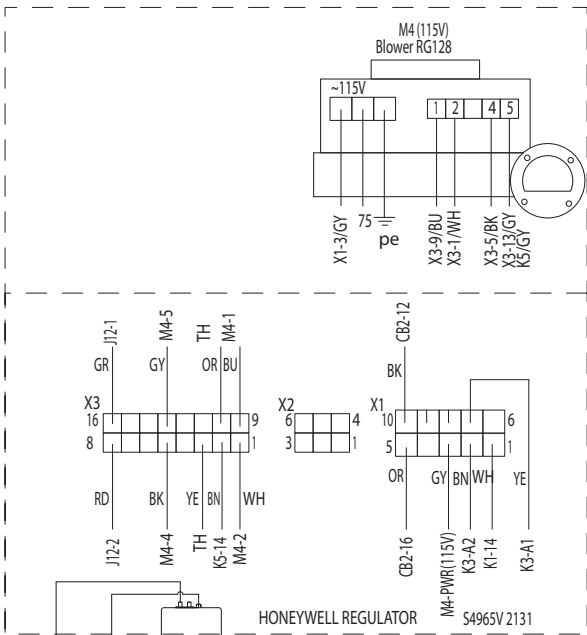


02	20.12.2021	2x pump	several changes
01	12.04.2021	REVISION	REVISION
Top project		Subcontract	
Gen. reference		Gen. reference	
MATERIAL		MATERIAL	
DRAWN: Kocaeli		APPROVED: Kocaeli	
DATE: 24.02.2021		DATE: 24.02.2021	
PROJECT: 9340801		PROJECT: 9340801	
SCALE: 1:21		SCALE: 1:21	
PROJECT NUMBER: 9340801		PROJECT NUMBER: 9340801	
DESCRIPTION: Circuit diagram LDR AC gas		DESCRIPTION: Circuit diagram LDR AC gas	
REV.	NO.	DATE	DESCRIPTION
B	1		
A3	2		

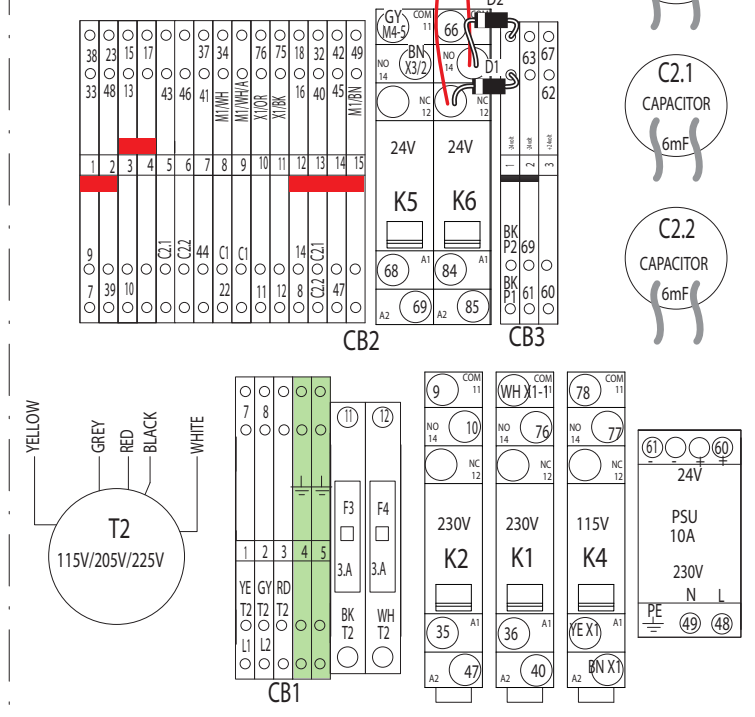
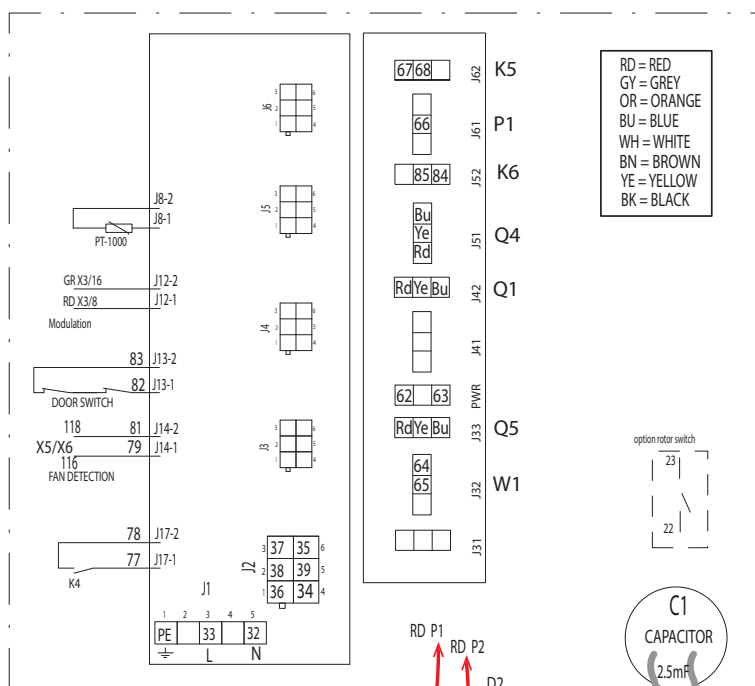
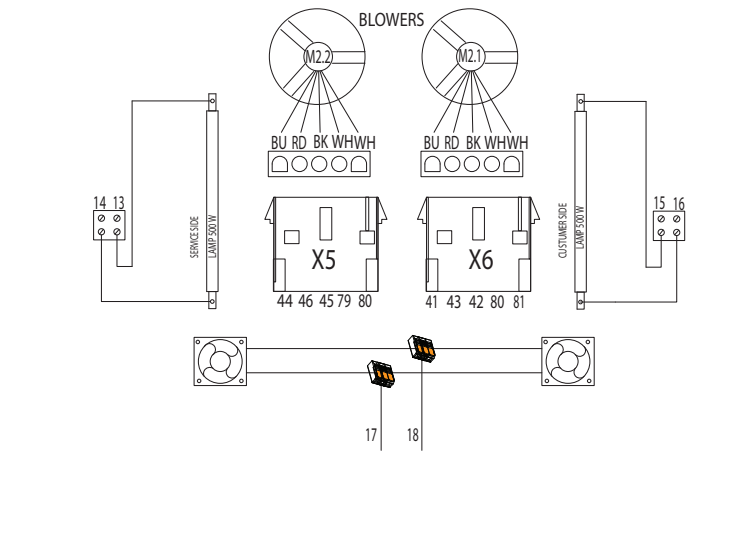


RD = RED	GY = GREY
OR = ORANGE	BU = BLUE
WH = WHITE	BN = BROWN
YE = YELLOW	BK = BLACK

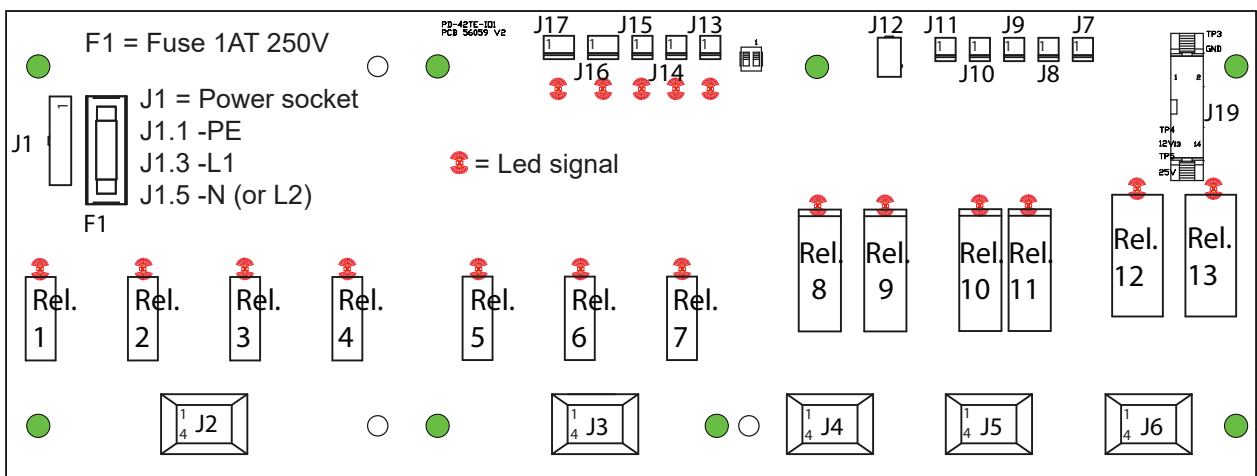
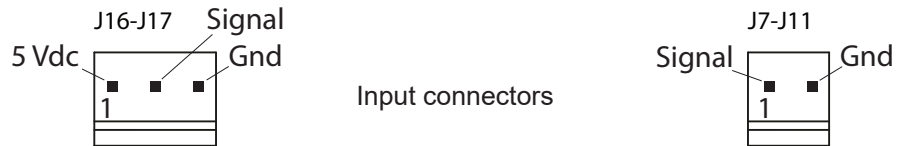
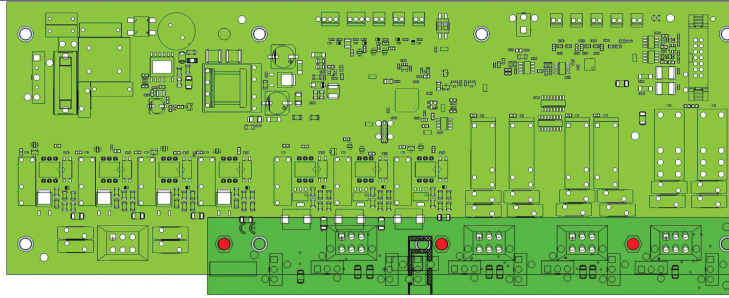
# WIRING DIAGRAM LDR 8S AC



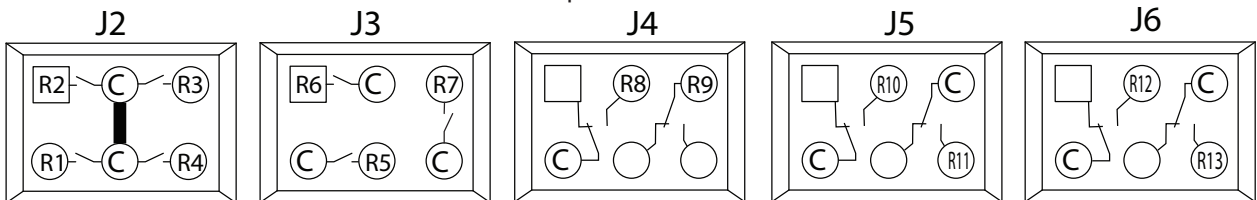
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01	13.04.2021	several changes
REVISION	REV. DATE	REMARK
Tol. principle		Gen. tolerance
		Surface treatment
		Geom. tolerance
MATERIAL		
MATERIAL ART. NUMBER	DRAWN	Koolen
UNIT	mm	STATUS
SCALE	1:1	In Progress
PROJECT	3493	DATE
		24.02.2021
REMARKS		
DESCRIPTION	ART. NUMBER	REV.
Wiring diagram LDR gas	9340802	B
	SIZE	A3



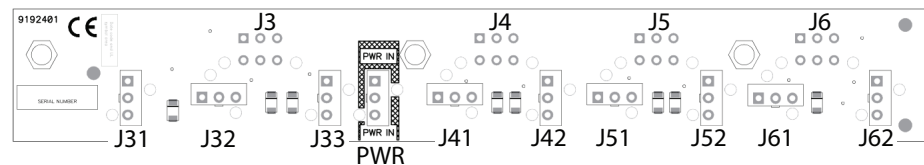
# OVERVIEW OF I/O BOARD WITH INTERFACE BOARD



Output connectors



Overview of interface board (Jx to Jxx sockets)



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

