

SERVICE MANUAL

TDR auto-clean

MODELS

TDR5s ac

TDR8i ac

TDR8+8s ac

TDR5s auto clean

TDR8i auto clean

TDR8s auto clean

TDR8+8s auto clean



- 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
1711	28/11/2017	First release
1803	07/03/2018	general update
1810	19/10/2018	Unpack instructions changed and minor changes in exploded views
1905	28/05/2019	Extended with TDR8+8 ac dimension drawing and electrical diagram + minor corrections in parts lists
1908	30/08/2019	Extended with TDR5 ac
2008	26-6-2020	Increased power connection. Extended with software S-control. Extended with TDR5ac on counter.
20210308	08-03-2021	Parameters cleaning program adapted
20210625	25-06-2021	Major overall update

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TDRAC, TECHNICAL DATA

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

European models

Model			TDR 5-AC	TDR 8-AC	TDR 8+8-AC
Dimensions	Width	mm	885	1050	1050
	Depth	mm	760	915	915
	Height	mm	1735	1795	2135
Weight	Gross	kg	250	300	480
	Net	kg	180	250	430
Maximum ambient temperature		°C	35	35	35
Sound pressure		dB (A)	< 70	< 70	< 70
Electrical installation	Voltage	V	3N ~ 400/230	3N ~ 400/230	3N ~ 400/230
	Frequency	Hz	50/60	50/60	50/60
Default units (TDR8-ac Hi Speed)	Required power	kW	6,6	13,6	27,2
	Max. nominal current	A	10	20	40
	Plug, CEE-form	A	16	32	63
Low power units	Required power	kW		10.5	21
	Max. nominal current	A		16	31
	Plug, CEE-form	A		16	32
Cable	Length	m	approx. 2.2	approx. 2.2	approx. 2.2
Water connection	Aerated	inch	$\frac{3}{4}$ (1x)	$\frac{3}{4}$ (1x)	$\frac{3}{4}$ (1x from serial nr. 100099813)
Water	pressure	kPa	200 – 500	200 – 500	200 – 500
	Acidity	pH	7.0 - 8.0	7.0 - 8.0	7.0 - 8.0
	Chlorides	ppm	<30	<30	<30
	Hardness ¹	dH	<4	<4	<4
Drain	Open connection	mm	min. ID 40mm / 1 1/2"	min. ID 40mm / 1 1/2"	min. ID 40mm / 1 1/2"

¹ See chapter "water requirements" for detailed information

American models

Models			TDR 7-AC	TDR 7+7-AC
Dimensions approx.	Width	inch	41	41
	Depth	inch	38½	38½
	Height	inch	70½	84
Weight	Gross	lbs	662	1059
	Net	lbs	552	948
Maximum ambient temperature		°F	95	95
Sound pressure		dB (A)	< 70	< 70
Electrical installation	Voltage	V	3 ~ 208	3 ~ 208
	Frequency	Hz	50/60	50/60
	Required power	kW	12	12 (2x)
	Max. nominal current	A	35.5	35,4 (2x)
	Plug	NEMA	15 - 50P	15 - 50P (2x)
	Length	inch	75	75 (2x)
Water connection	Aerated	inch	¾ (1x)	¾ (1x from serial nr. 100099813)
Water	pressure	kPa	200 – 500	200 – 500
	Acidity	pH	7.0 - 8.0	7.0 - 8.0
	Chlorides	ppm	<30	<30
	Hardness ¹	dH	<4	<4
Drain	Open connection	inch	min. 1 5/8	min. 1 5/8 (2x)

¹ See chapter “water requirements” for detailed information

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

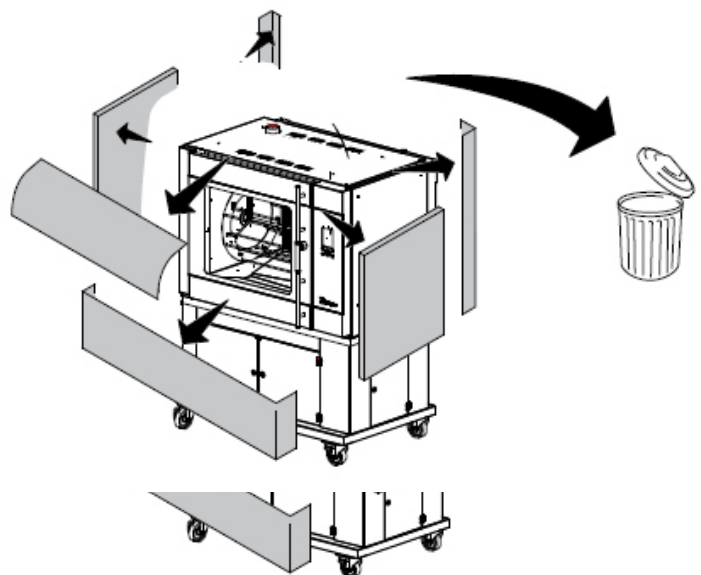
Immediately after unpacking the oven, check for possible shipping damage. If the oven is found to be damaged, save the packaging material and contact the carrier.

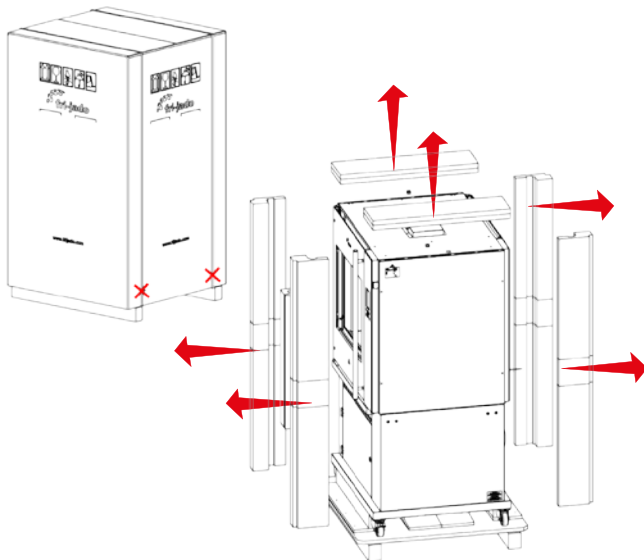
The standard way to remove the oven from a pallet is with a fork lift.

The alternative way is explained on the next page.

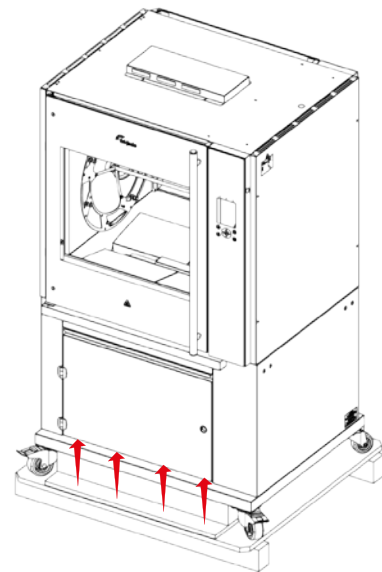
Do this with at least 2 people.

Dispose the packagaging according local legislation..

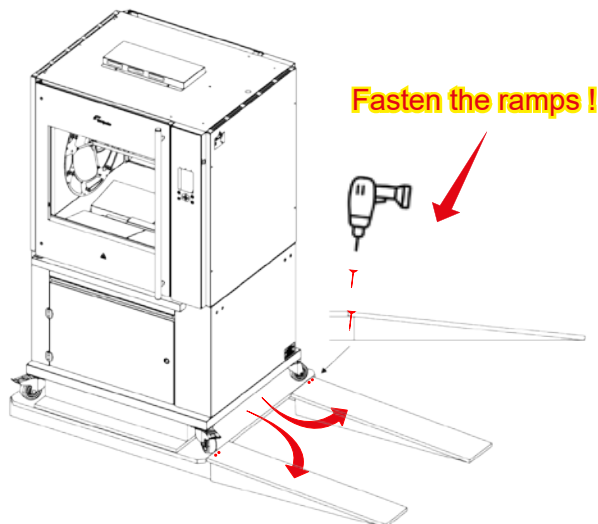




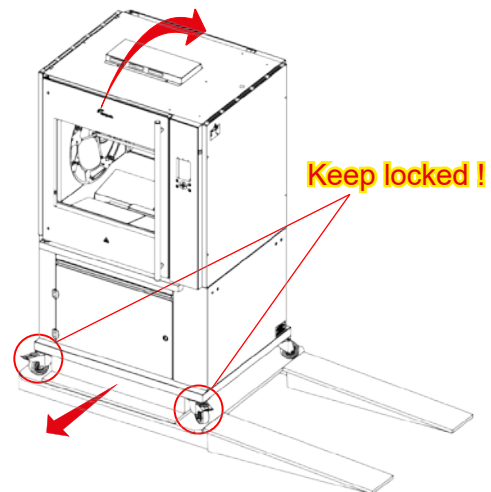
Cut straps, remove box and tempex.



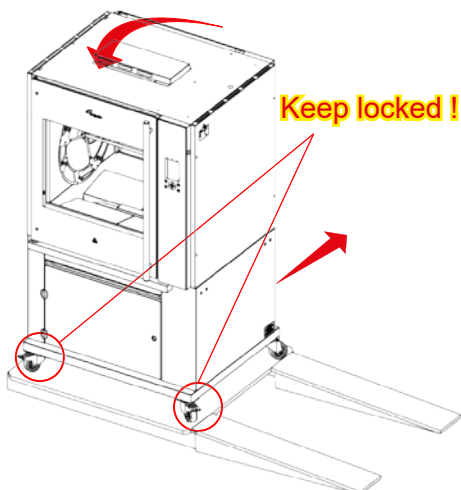
Remove screws (front 4x and back 4x)



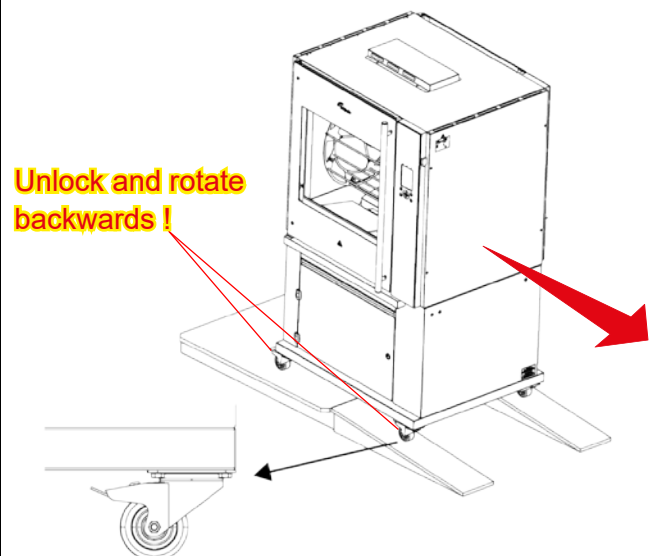
Place the ramps in front of the pallet and fasten them.



Tilt the unit slightly and remove the front beam.



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



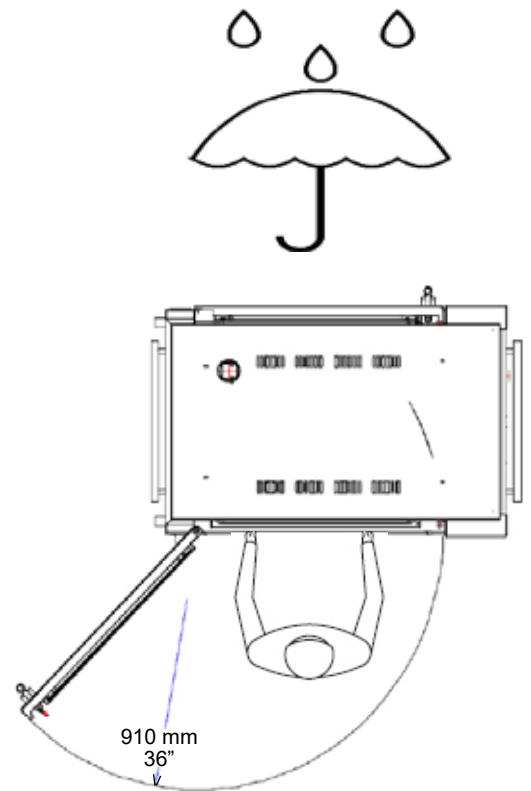
Carefully roll the unit onto the floor.

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 !

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.

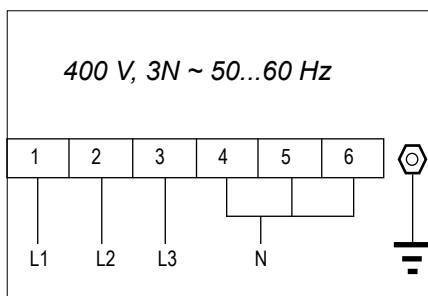


ELECTRICAL SUPPLY

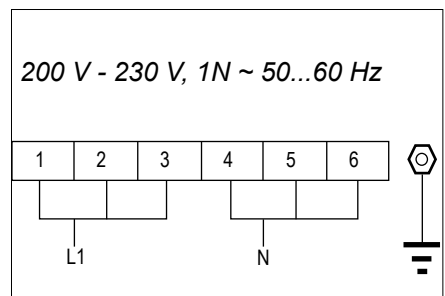
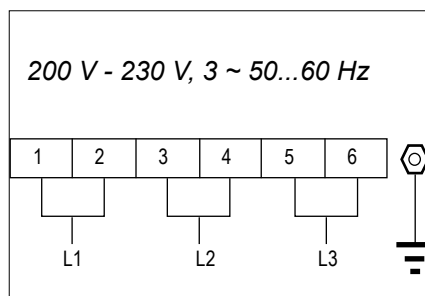
Prior to installation, test the electrical service to assure that it agrees with the specifications on the machine data plate located on the right side panel near the controls. The connecting cable for the unit must be equipped with an approved plug connection. If use is to be made of a permanent connection,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

The unit must be connected according to one of the the figures below.

Factory default !
European models



Factory default !
American models



LEGS / CASTORS

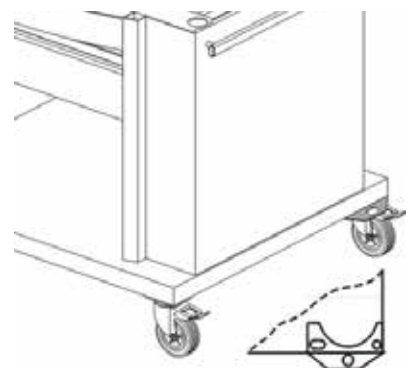
The TDR ac is placed on a stand with 2 swivel and 2 locking swivel castors.

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 TDR5 AC AND TDR7/8 AC

The Power, water and drain connections can be found on the back of the unit.

400 V European models

Power connection

Cee form 16 A (TDR5ac)

Cee form 32 A (TDR8ac)

L= 2,5 mtr (98")



Note: TDR8ac low power units have a 16A Cee form plug

Water supply hose

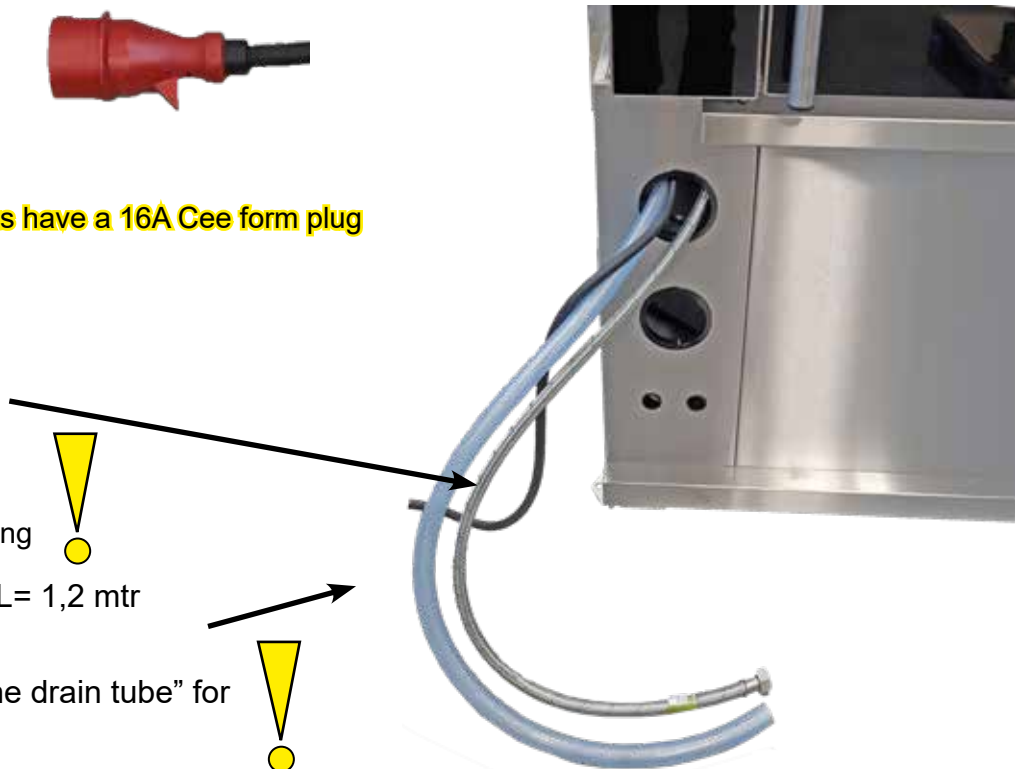
G 3/4", L= 1,1 mtr (43")

Flush the tap before connecting

Drain hose, Ø 33 x Ø 25, L= 1,2 mtr

(Ø 1 5/16 x Ø 1", L= 47")

See chapter "connecting the drain tube" for further information.



POWER, WATER AND DRAIN CONNECTIONS TDR7+7 AC / TDR8+8AC

The Power, water and drain connections can be found at the side of the unit.

400 V European models

Power connection

Cee form **63 A**,

L= 2,5 mtr (98")



Note: TDR8ac low power units have a 32A Cee form plug

1x Water supply hose (from serial nr. 100099813)

G 3/4", L= 1,1 mtr (43")

Flush the tap before connecting

2x Drain hose, Ø 33 x ø 25, L= 1,2 mtr

(Ø 1 5/16 x ø 1", L= 47")

See chapter "connecting the drain tube" for further information.



WATER REQUIREMENTS

The supplied tap water must have the following conditions:

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

Water hardness and descaling filters.

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

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

The by-pass of the descaling filter, if applicable, needs to be adjusted to zero.

Refer to the filters manual to determine the filter capacity. This filter capacity needs to be adjusted in the manager parameters.

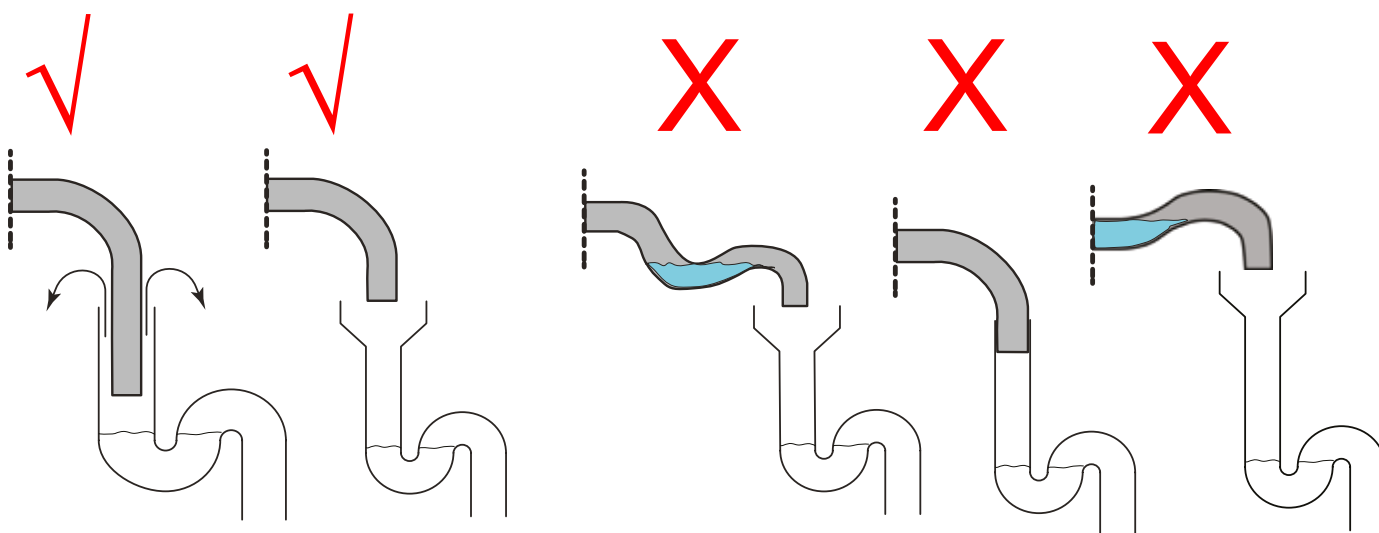
CONNECTING THE DRAIN TUBE

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

An extraction hood is prescribed when the unit is NOT delivered with the special Fri-Jado Exhaust Hood mounted on it.

The TDR5 produces about 6 m³ (210 cf) and TDR8 produces about 10 m³ (350 cf) vapour during a cooking cycle. When placing the rotisserie under an extraction hood, the following guide lines have to be considered:

- The minimum capacity of the extraction hood has to be 480 / 800 m³/h (15000 / 25000 cf/h).
- The extraction hood has to extend minimum by 20 cm (8") on all sides of the rotisserie.
- The extraction hood has to have a free height, above the rotisserie, of a minimum of 30 cm (12").
- The rotisserie has to be accessible for service purposes.
- The extraction hood has to have facilities to drain any condensation, down to a drain.

GREASE COLLECTION

For TDR5-ac and TDR7/8-ac:

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, 5 liters (1.3 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.

For TDR7+7-ac / 8+8-ac:

The stacked unit comes with a grease tray underneath.

The grease from both units will be collected in this tray.

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.

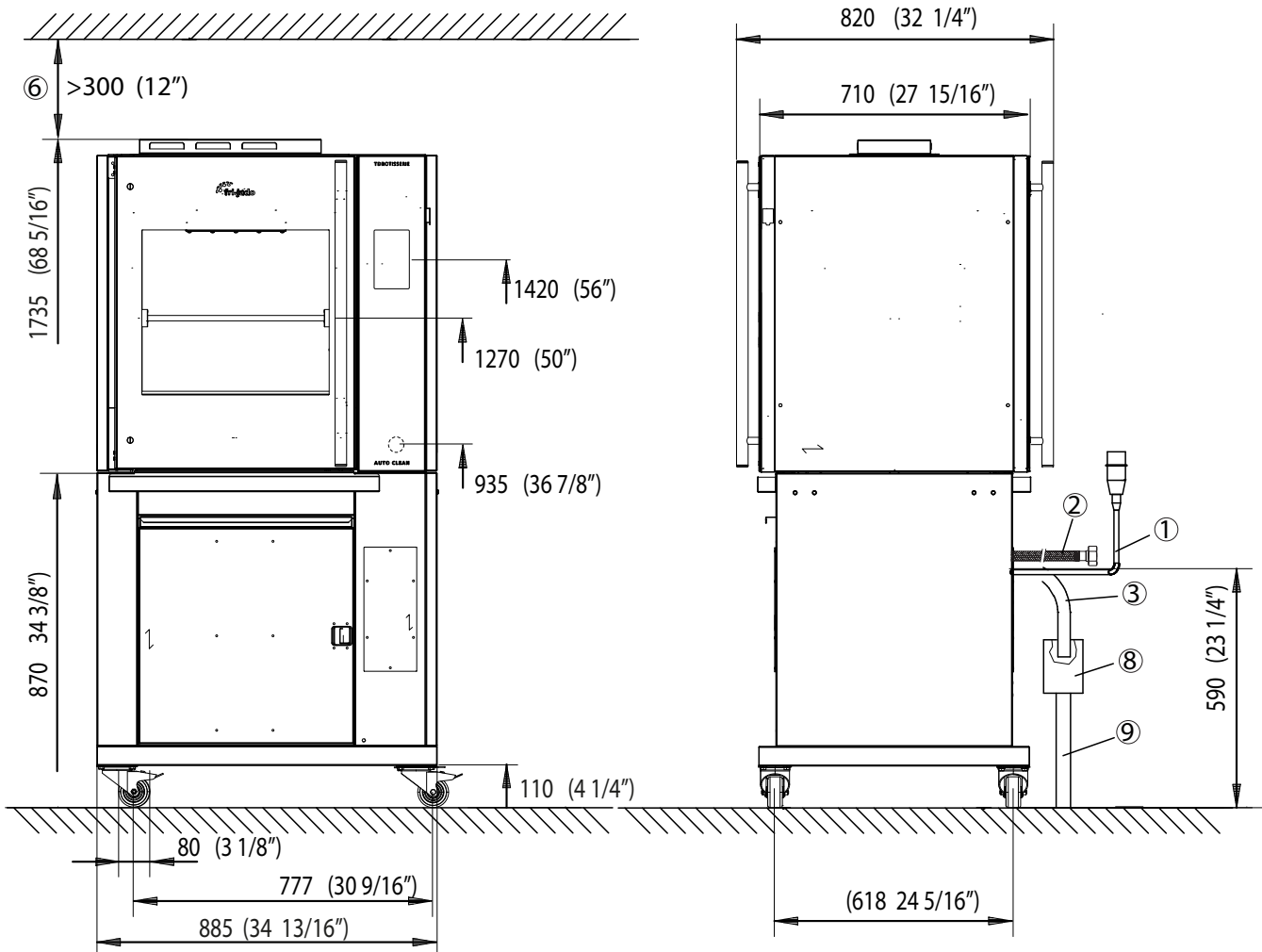
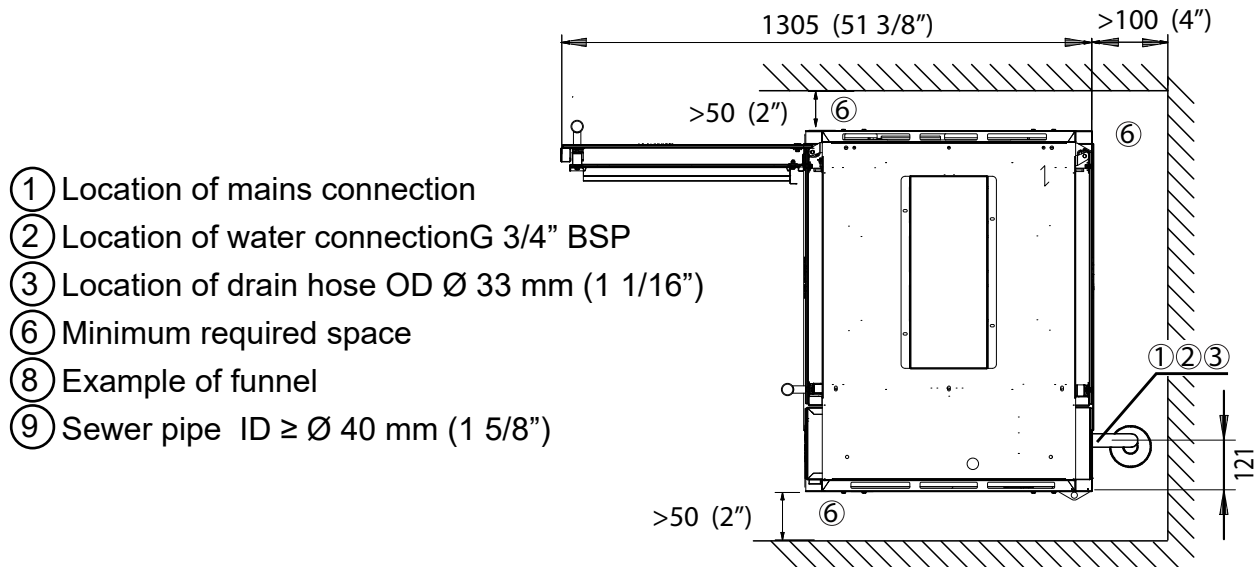
INSTRUCTIONS FOR OPERATORS

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

The instruction has to cover the following subjects:

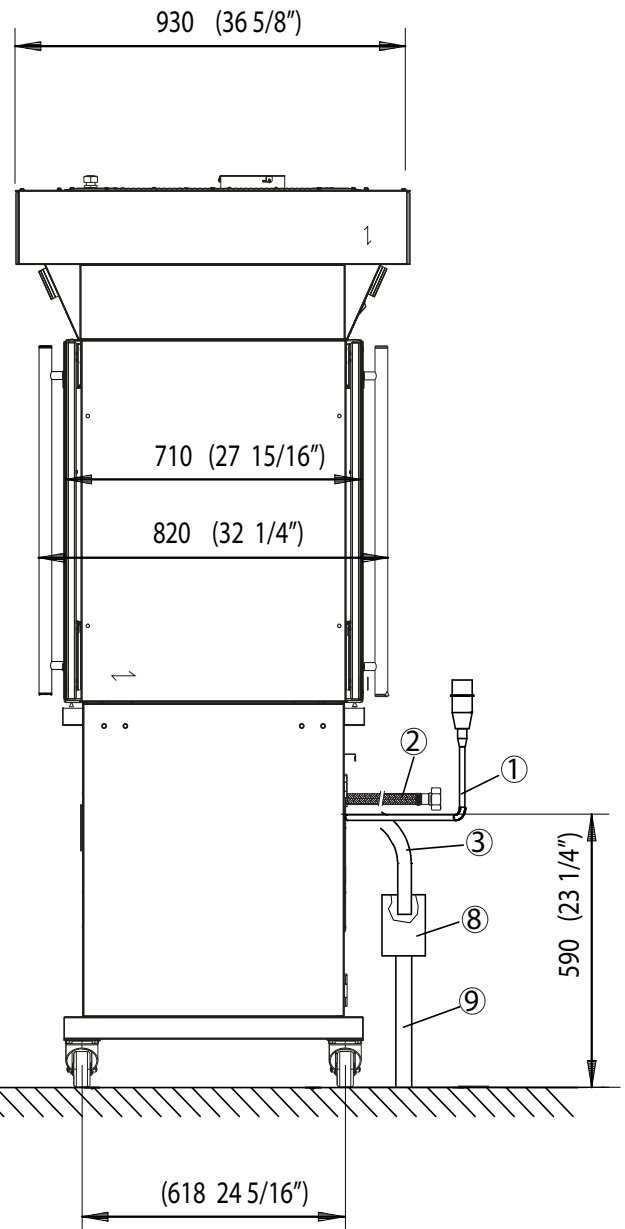
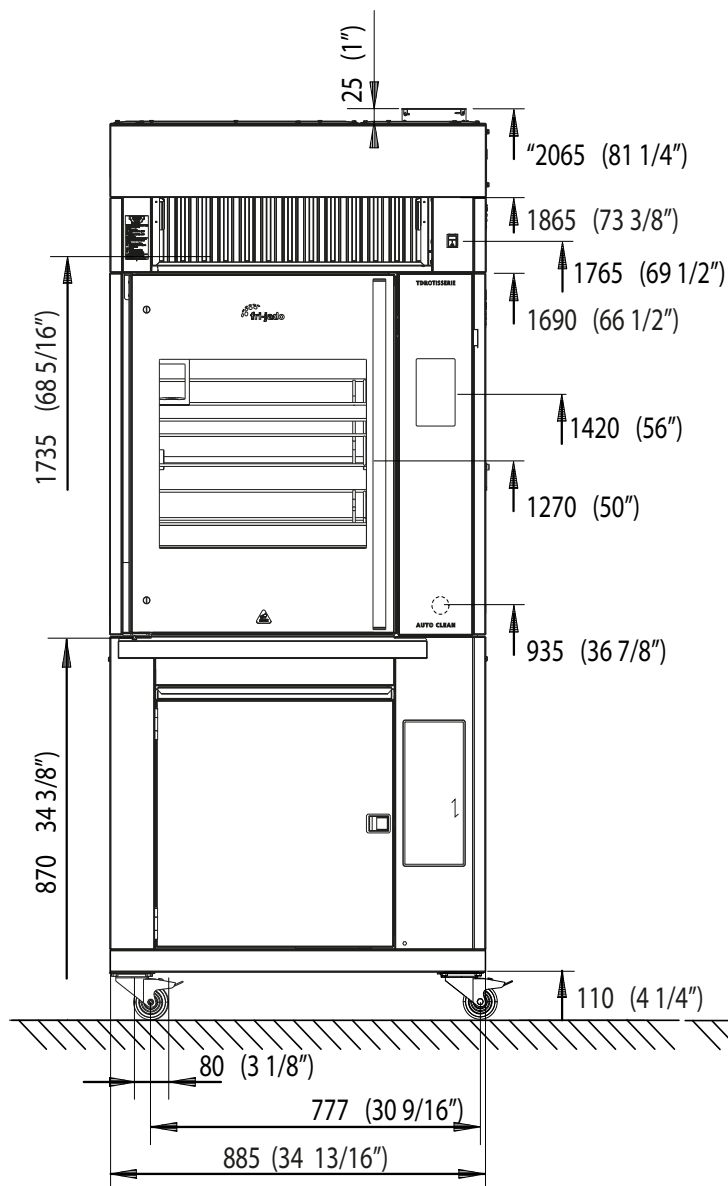
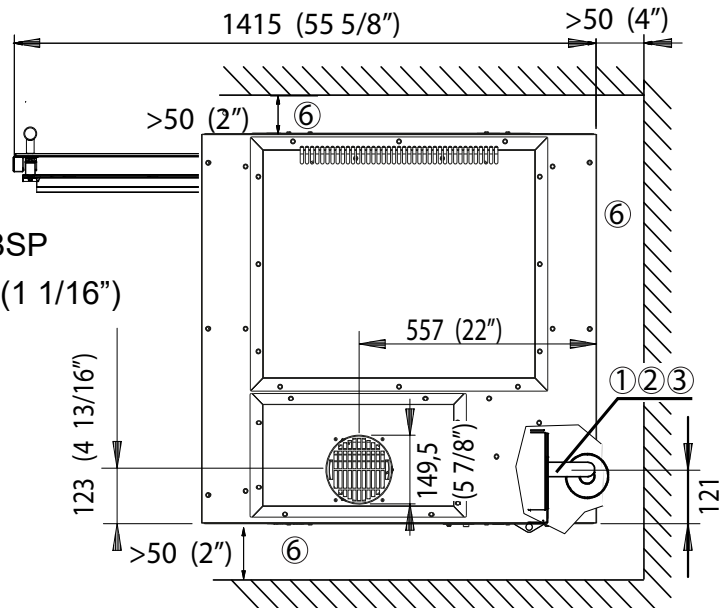
- Programming and options.
- Working of the unit.
- Free space of unit for cooling of drive motor and blowers.
- Run through the user manual.
- How to run the cleaning program and placing cleaning tablets.
- Cleaning of the tablet dispenser and bottom filters after the cleaning program has finished.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

TDR 5 AC ON STAND

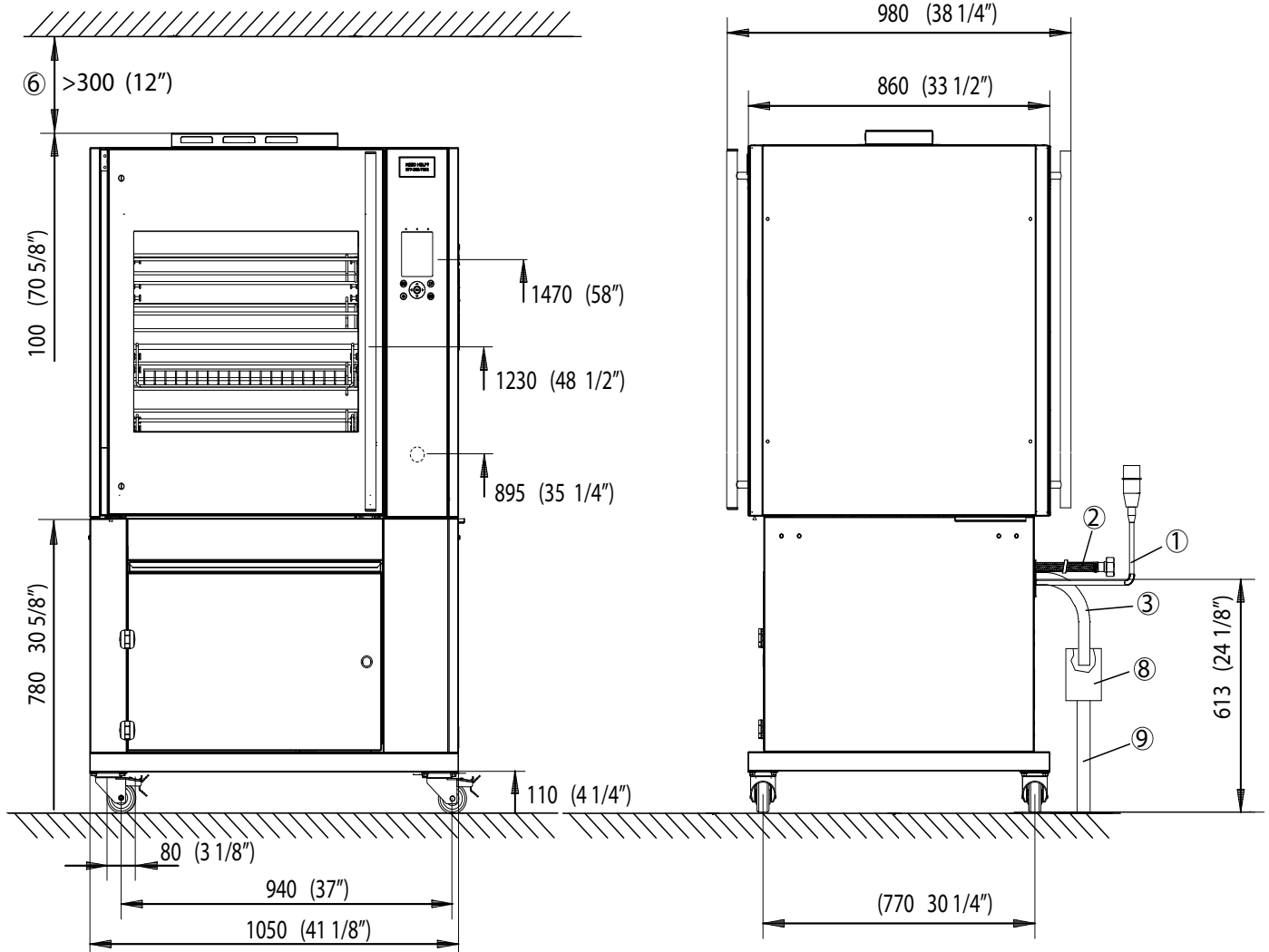
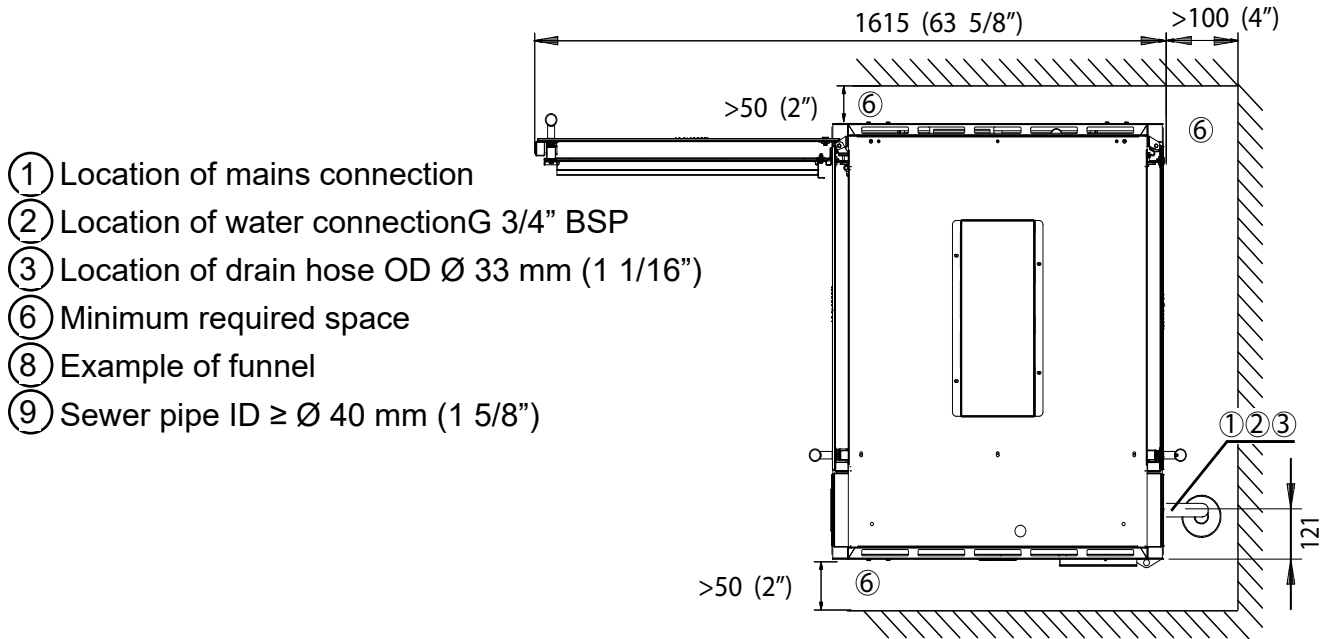


TDR 5 AC WITH HOOD

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

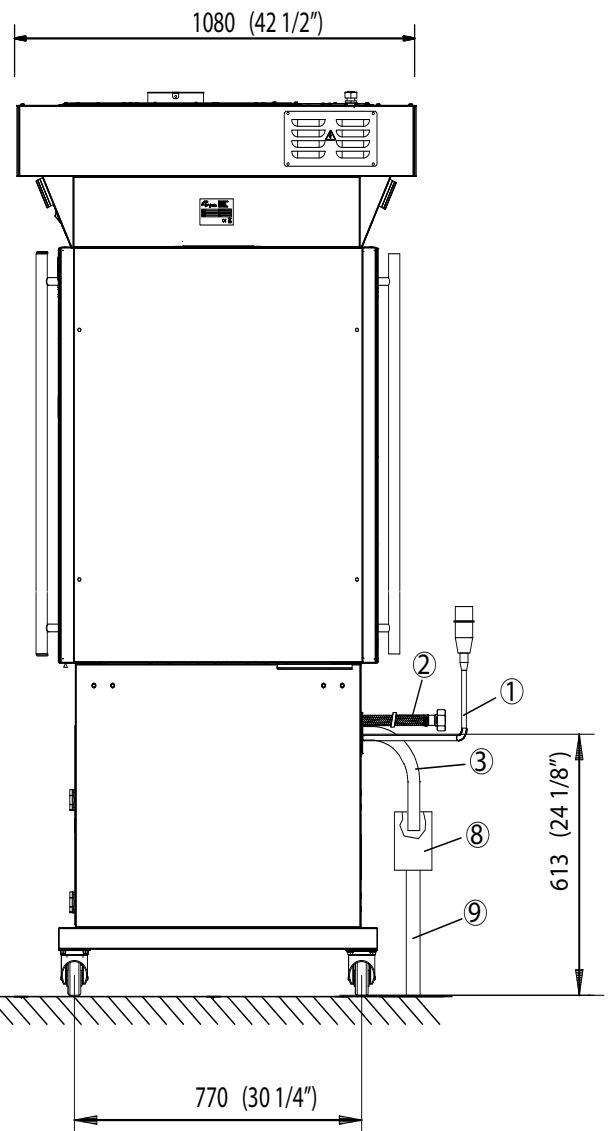
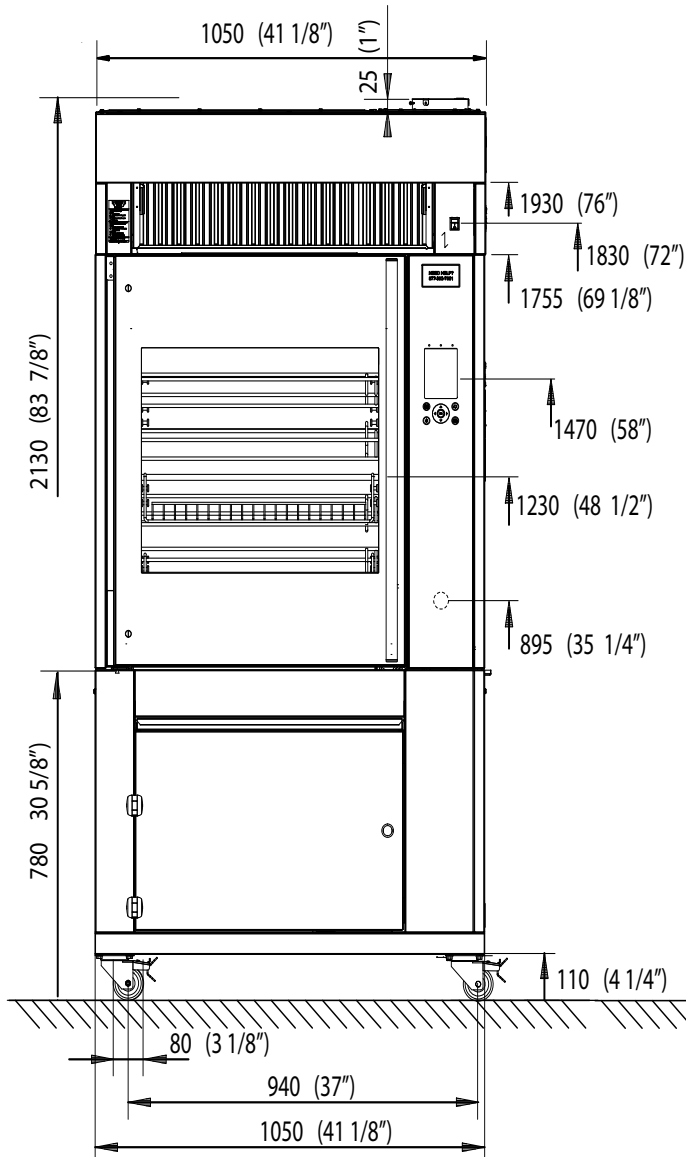
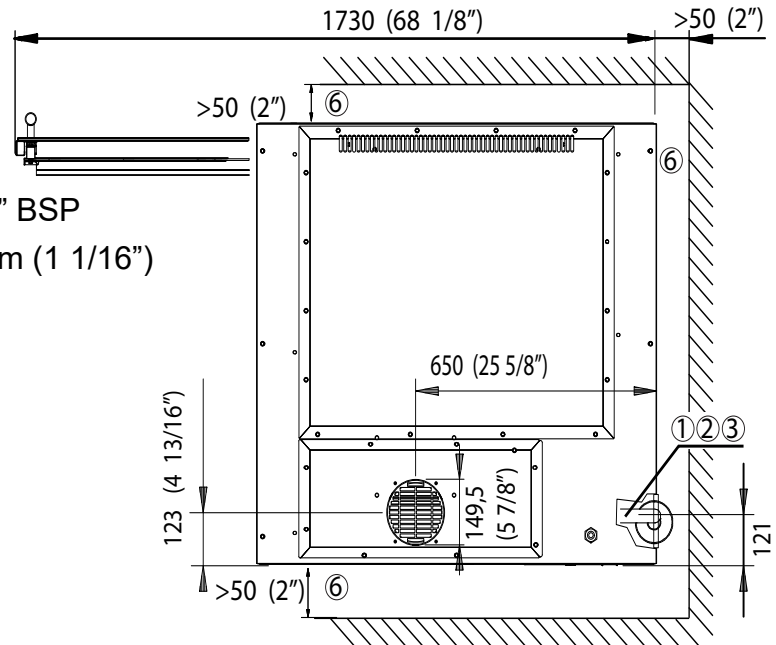


TDR 7/8 AC ON STAND



TDR 7/8AC WITH HOOD

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

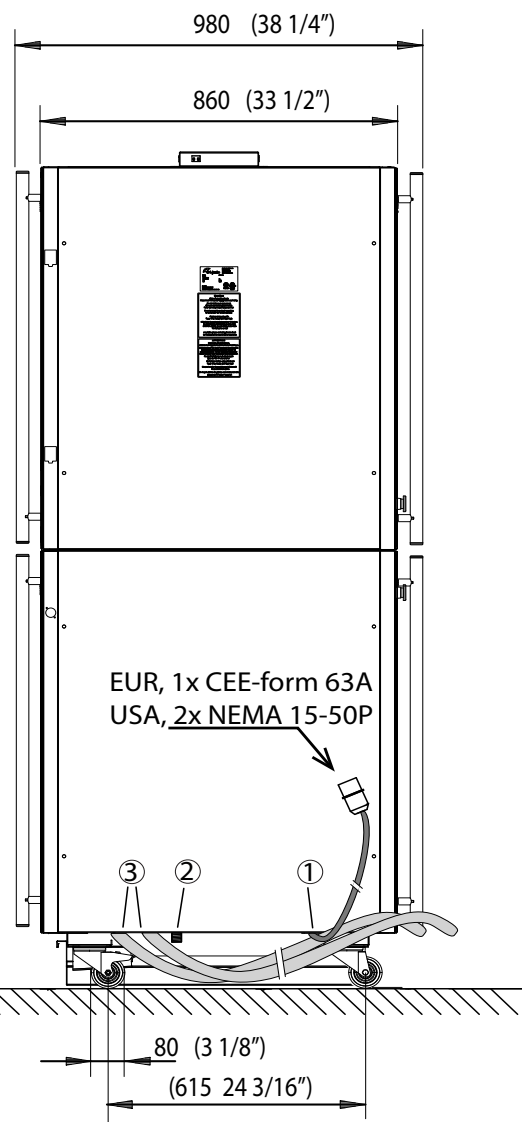
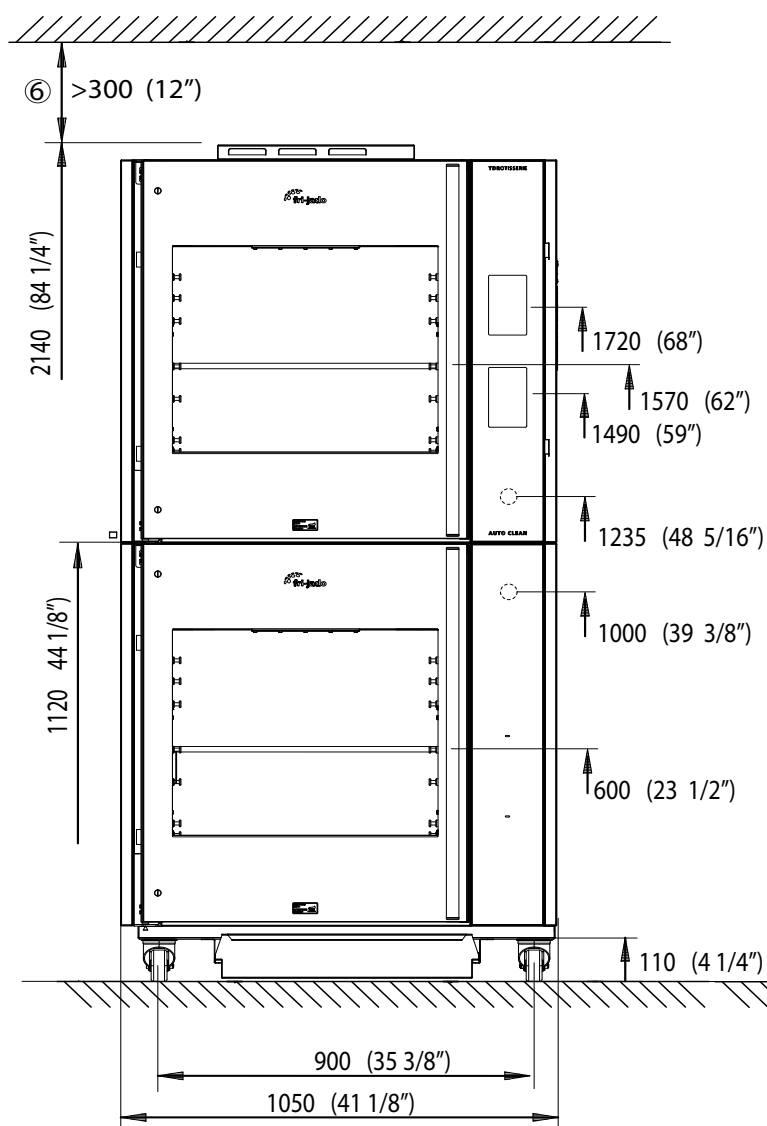
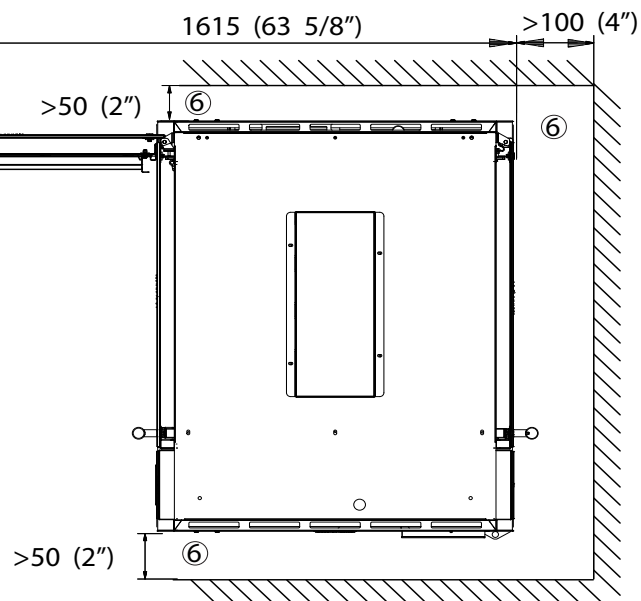


TDR 7+7 AC / 8+8 AC

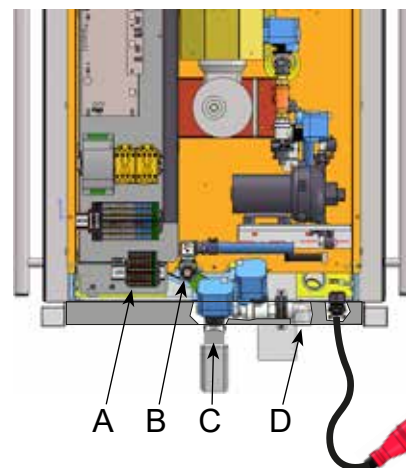
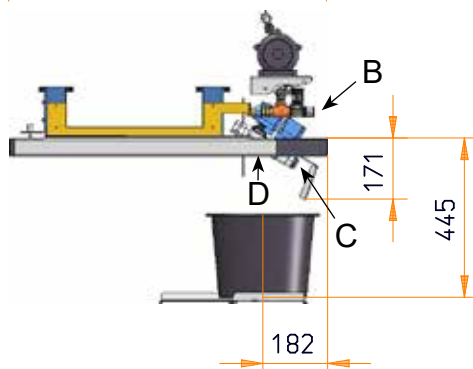
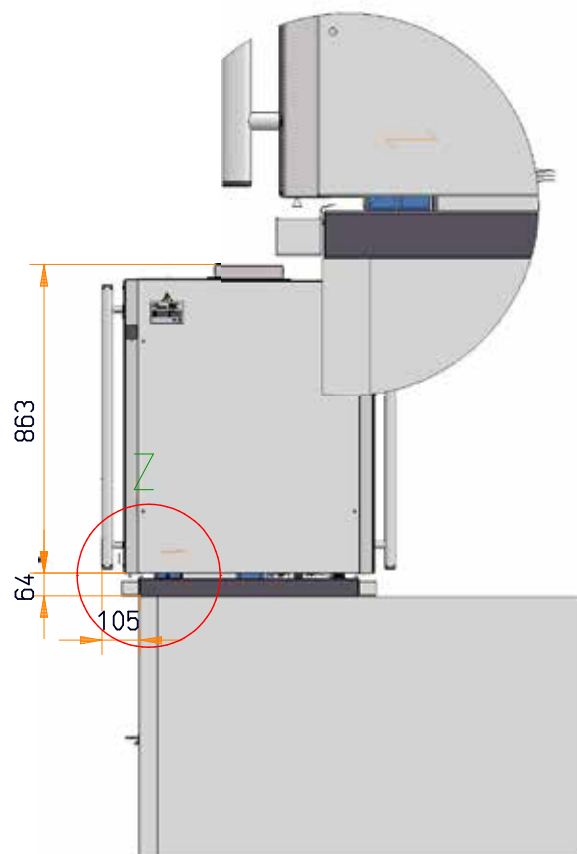
- ① Location of mains connection
- ② Location of water connection G 3/4" BSP
- ③ Location of drain hose OD Ø 33 mm (1 1/16")
- ⑥ Minimum required space

Delivered water hose G3/4", 1,5 mtr (5ft)

Sewer pipe ID ≥ Ø 40 mm (1 5/8")

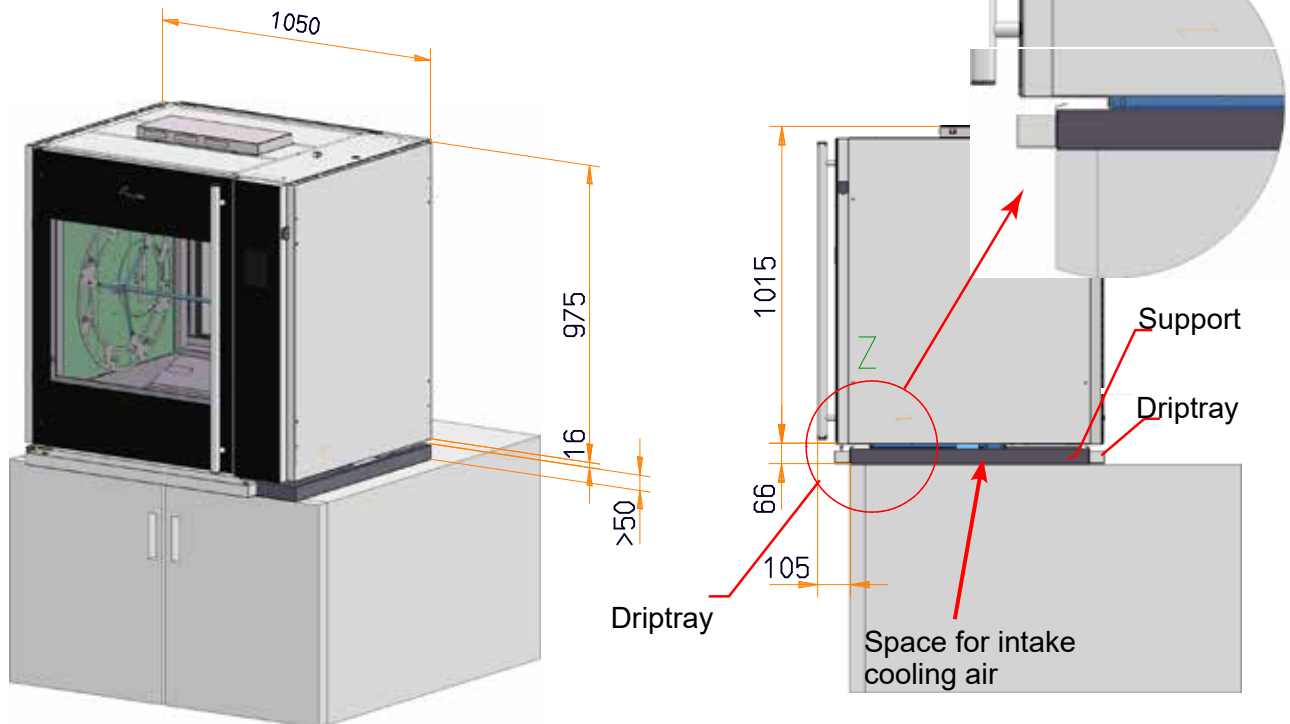


TDR 5AC ON COUNTER

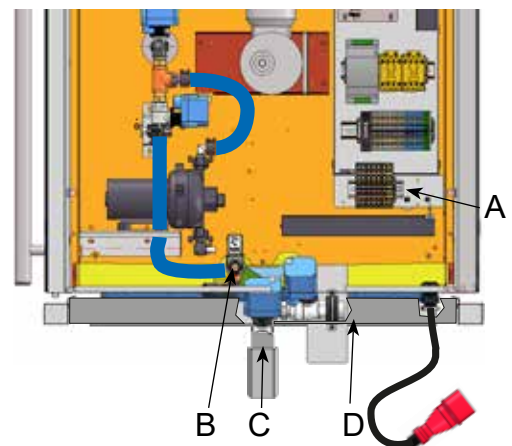
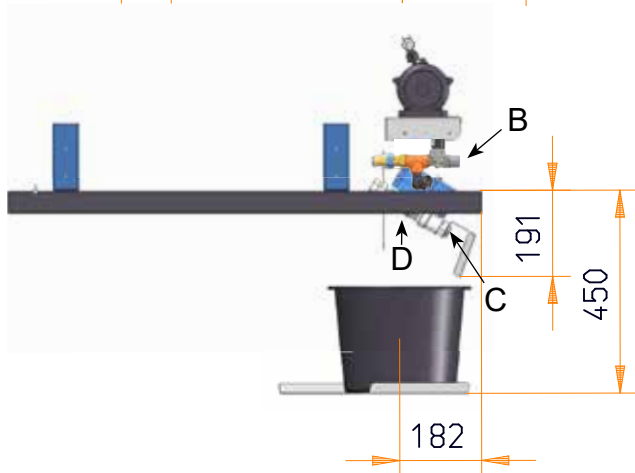
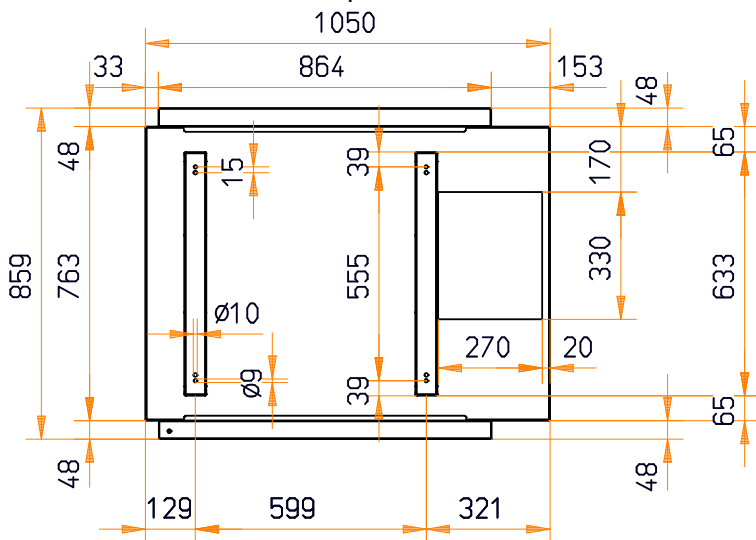


- A= Power connection
B= Water connection 3/4"
C= Grease drain
D= Waste water drain hose pillar 3/4"

TDR 7/8 AC ON COUNTER



Footprint dimensions, seen from above



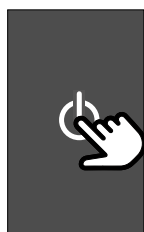
- A= Power connection
- B= Water connection 3/4"
- C= Grease drain
- D= Waste water drain hose pillar 3/4"

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)

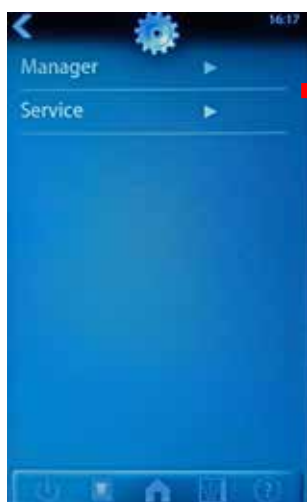
Log & maintenance menu

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



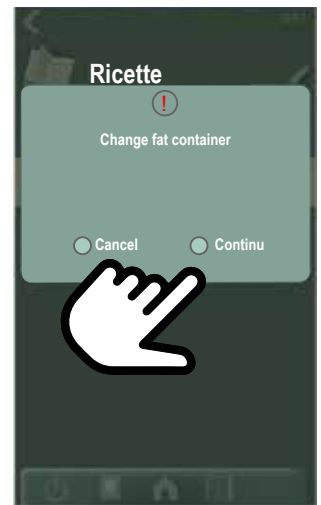
Choose program



Start program



Check fat container and push "continue"

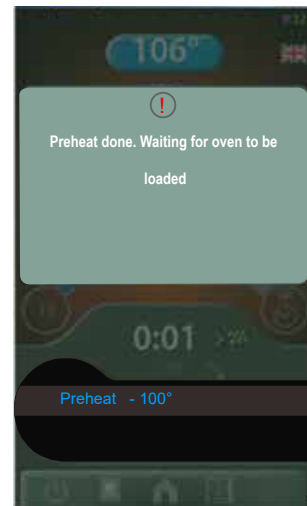


The below 4 steps are only applicable in case the cooking program has a pre-heat step.

Preheat starts.
Actual temperature shown.



Preheat done, open the door.



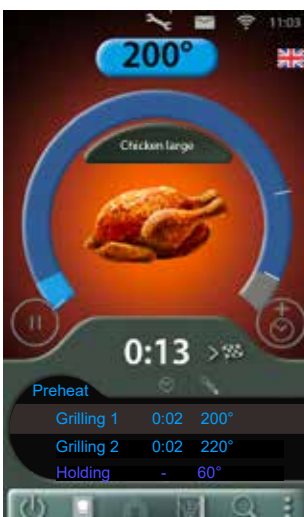
Load products and close the door.



Push 



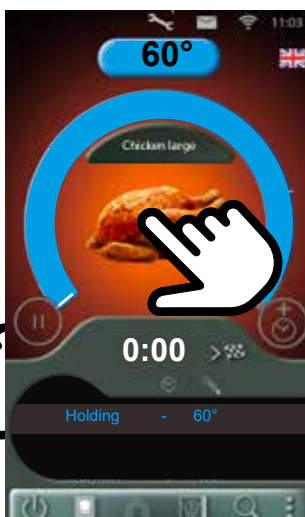
Program running.
Push to see actual temperature.
● = Pause button



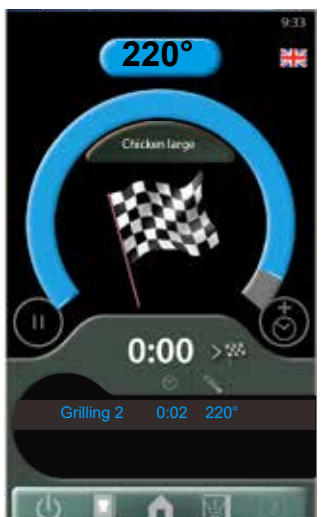
A short sound comes when going into the next step.
Push "boost" icon for extra time, if desired.



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



End of program when no holding is programmed.

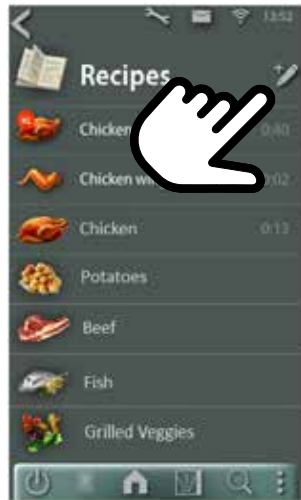


CREATING A COOKING PROGRAM

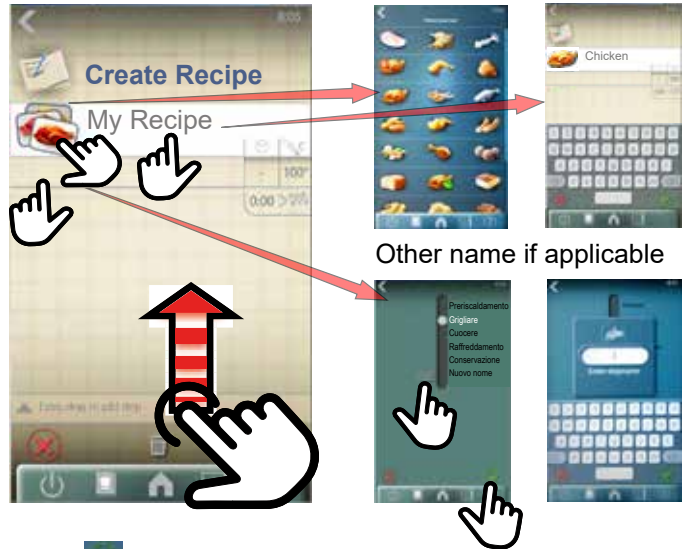
Push recipes icon



Push  icon

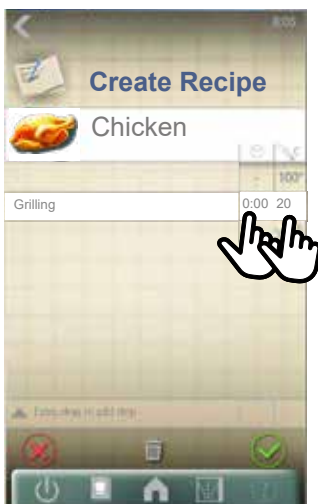


Chose product icon and fill in recipe name.
Chose or change step name if applicable.
Drag up for an extra cooking step.



Push time and temperature and adjust.

Push  when ready



EDITING A COOKING PROGRAM

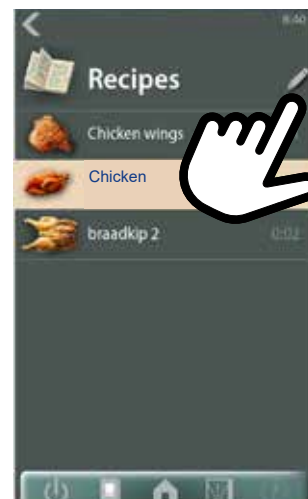
Push recipes icon



Choose program

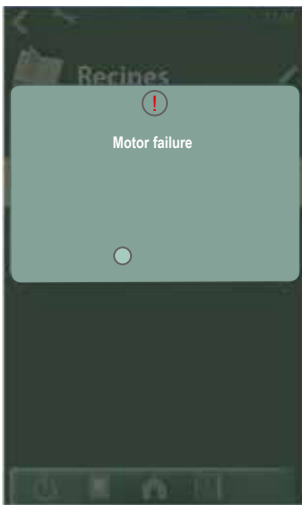


Push  icon to edit the highlighted recipe. Now follow the steps as described above.



EXAMPLE OF ERROR MESSAGE

Example motor failure during cooking.



In the "log" menu the error can be found



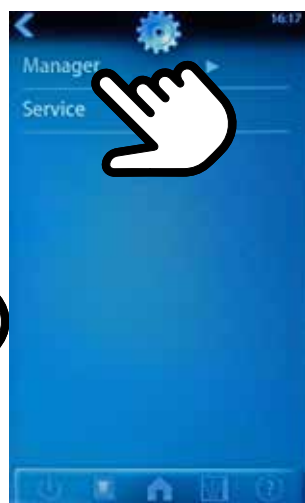
Select the error



Meta data is shown

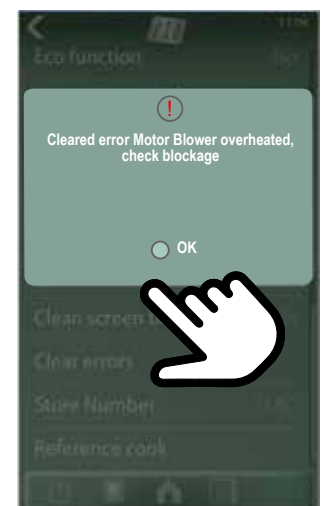
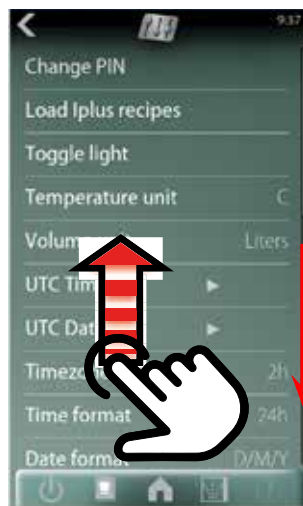


Go to the manager menu to clear the error.



In manager menu:

Scroll to "Clear errors" and push 



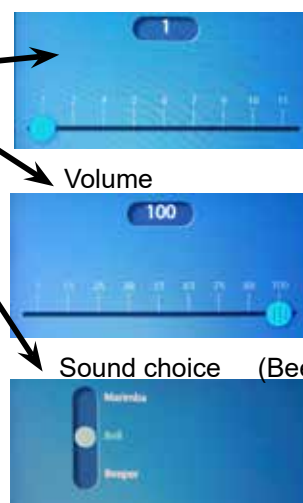
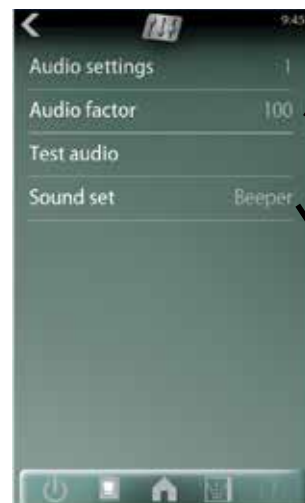
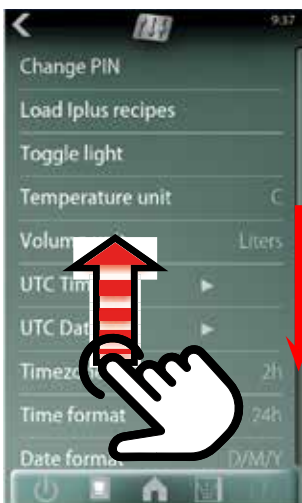
AUDIO VOLUME AND SOUND SETTING

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".

Volume

Sound choice (Beeper has highest volume)

THE CLEANING PROGRAM

Push cleaning icon



Choose program



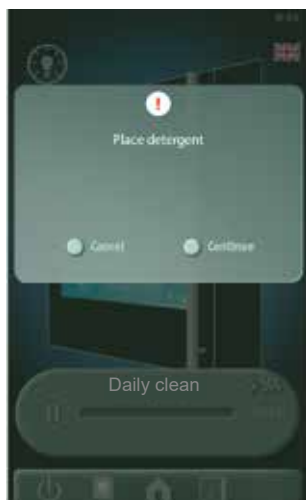
If unit is too hot, it will cool down first.



Now it is asked to place the detergent.

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

Place the detergent.



Push to pause, if applicable.



Push to continue



Cleaning program has finished.

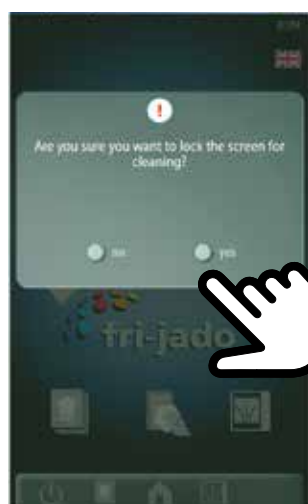


CLEANING THE TOUCH SCREEN (WHILE IN OPERATION)

Push icon



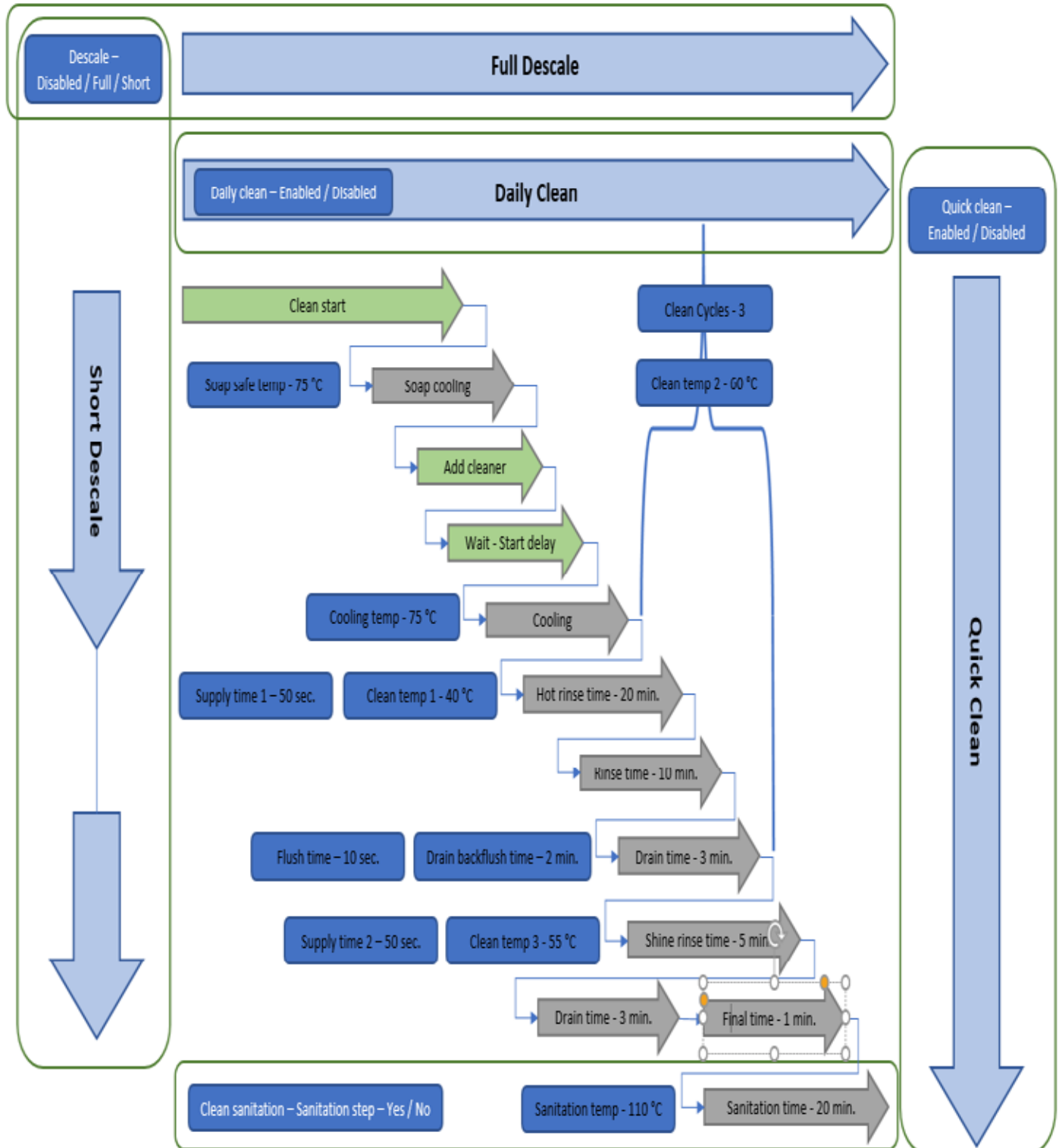
Push "yes"



The screen is now locked for 60 seconds and counting down



CLEANING PROCESS TDRAC (3 CYCLES)



Parameter setting

Operator action / delay

Proces stage

Proces cycle

PUMP AND VALVES IN ACTION DURING CLEANING

Valve position during cooking

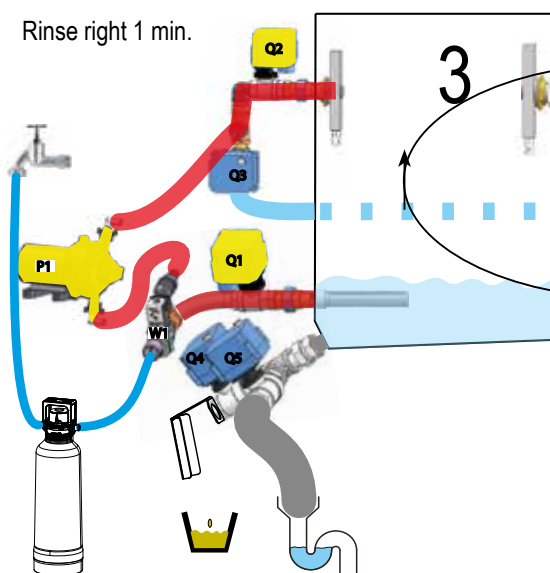
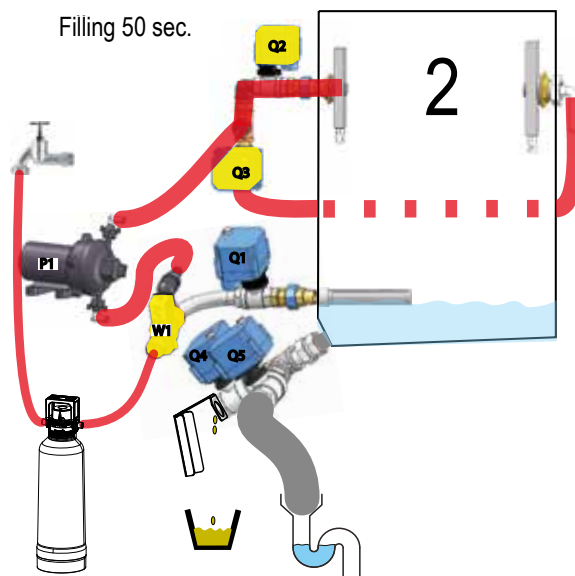
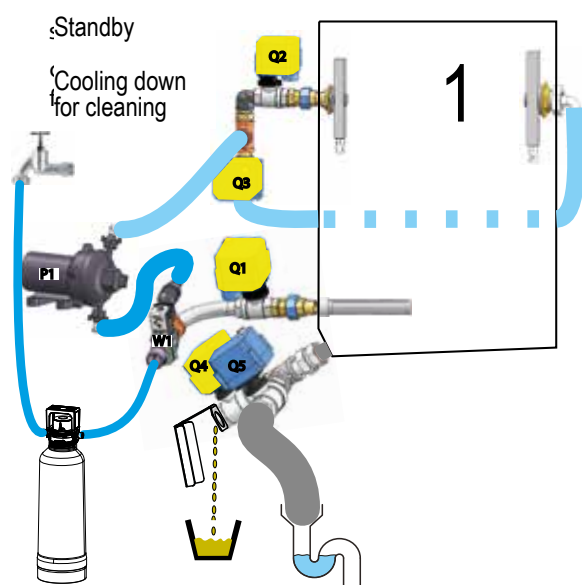
cooking

The pictures below show each stage in the cleaning program.

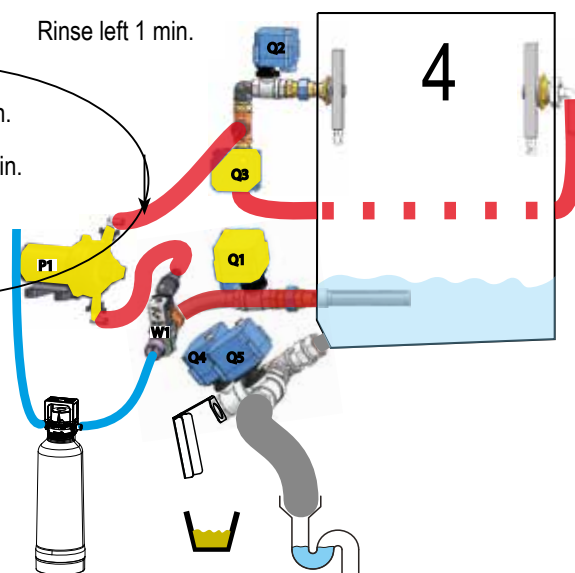
- Tubes in red, are flowing
- Pump or valves in yellow are active / open.
- Soap has to be added after stage 1

- 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.



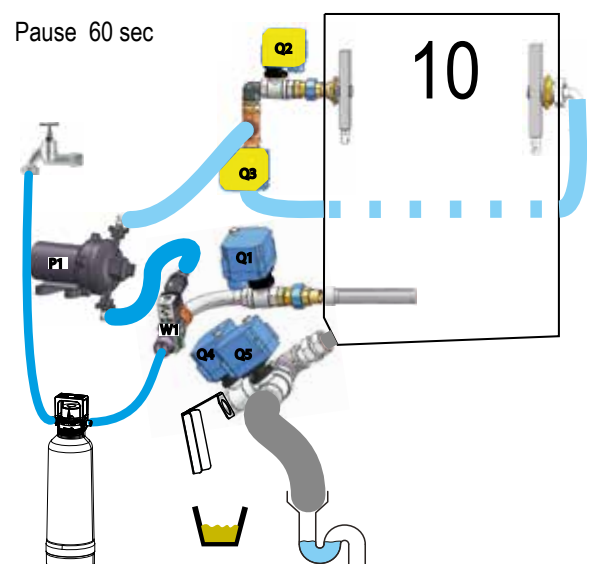
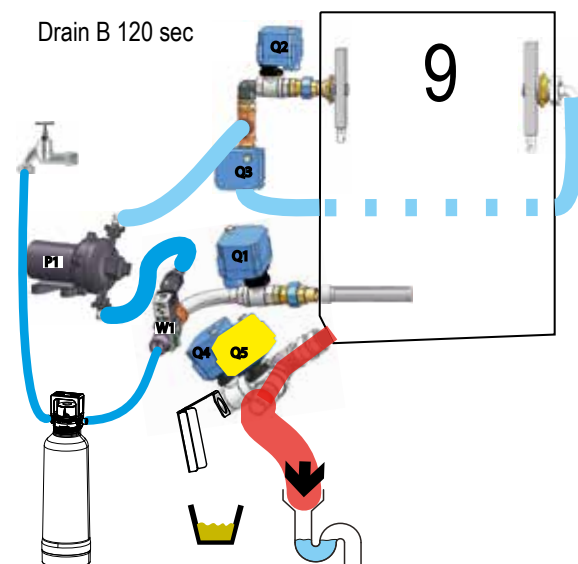
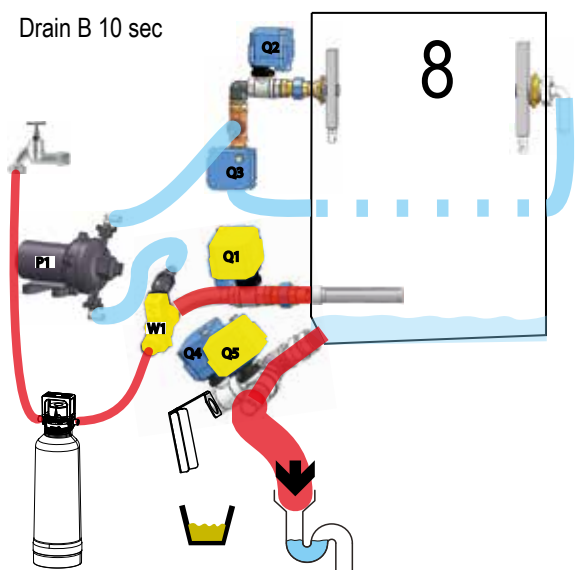
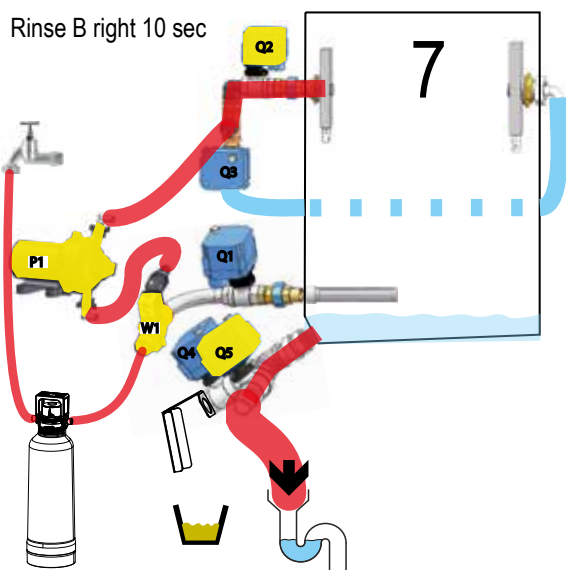
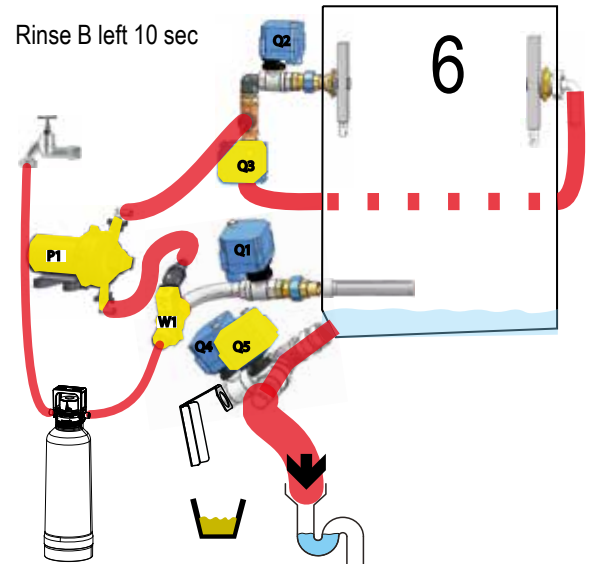
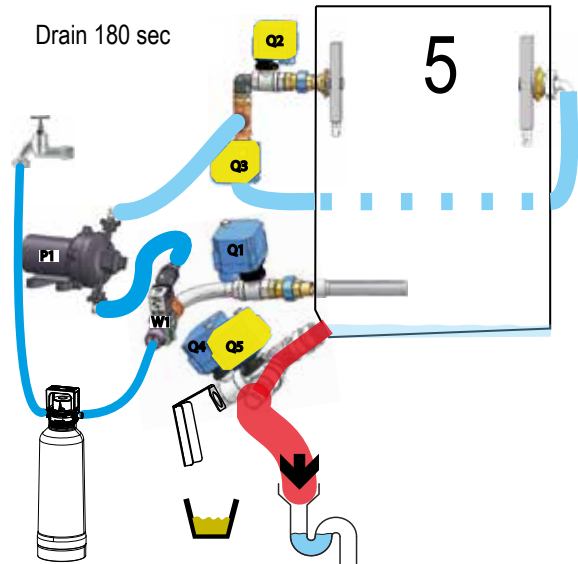
Hot 20 min.
Cold 10 min.



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.

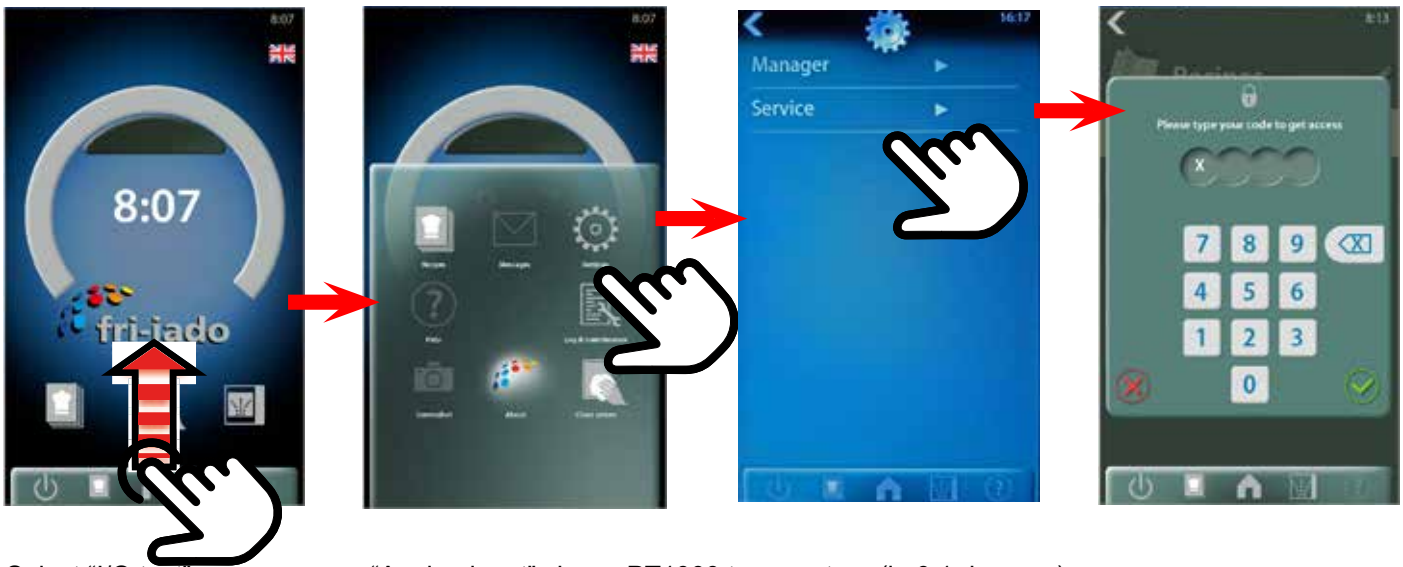
In case of a sanitation step, that will be like stage 10, but then only with the heating on.



I/O TEST

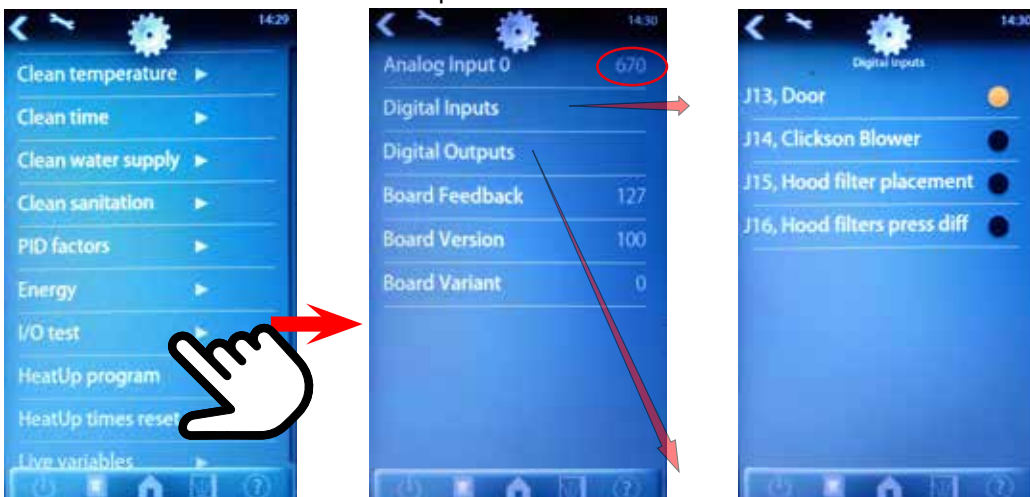
Gain access to the service menu

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.

J13 shows that the door is closed.

J14 shows an open thermostat in the blower, causing a blower error.

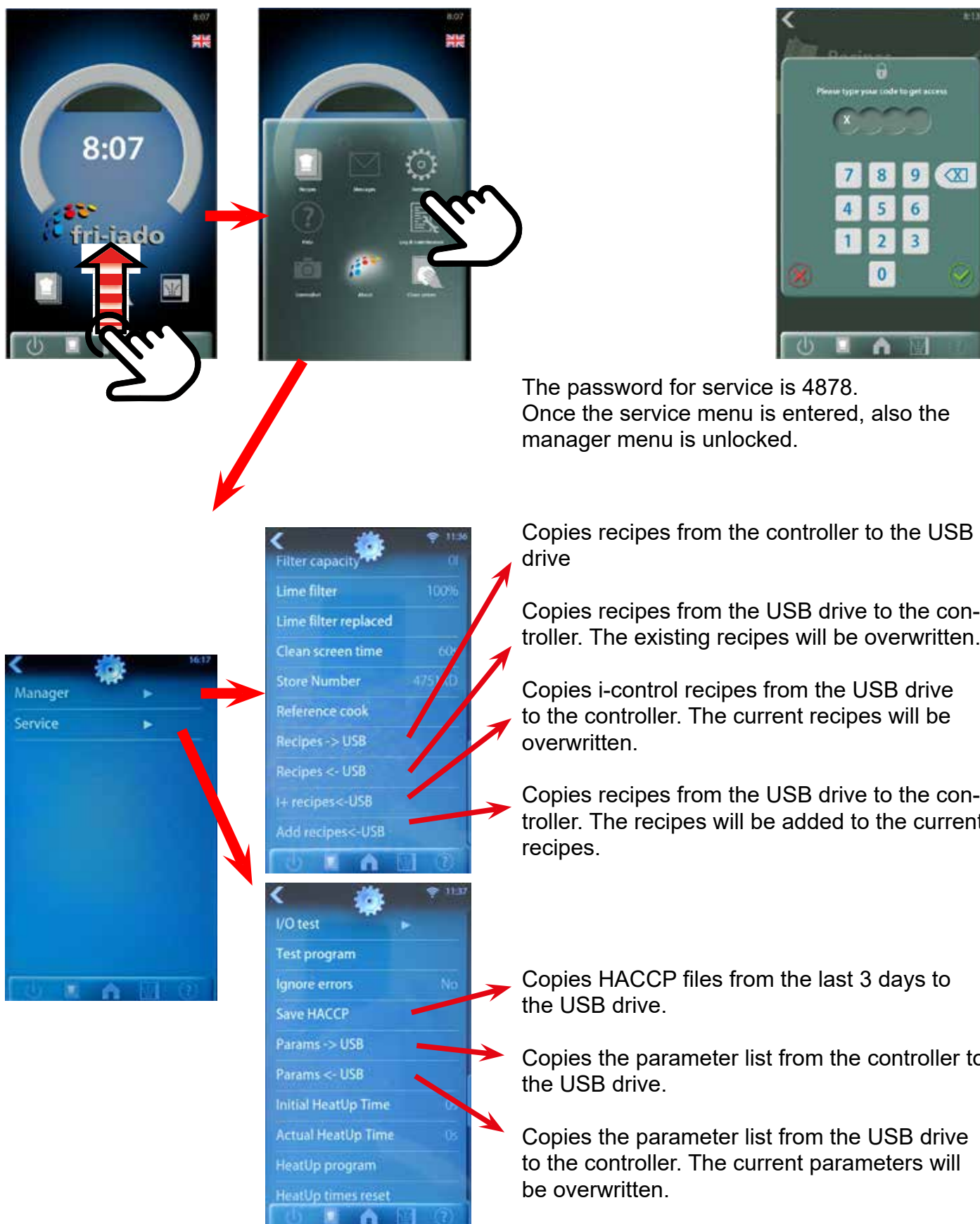


"Digital outputs" is showing the available outputs and also which are activated.

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

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

EXCHANGING DATA WITH THE USB DRIVE

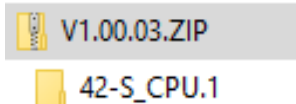


UPDATING SOFTWARE TDRAC (S-CONTROL)

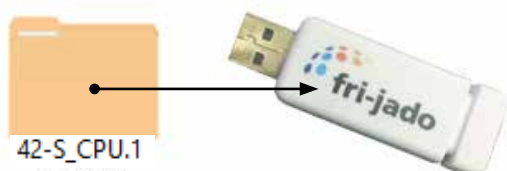
Preparing the software (firmware)

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

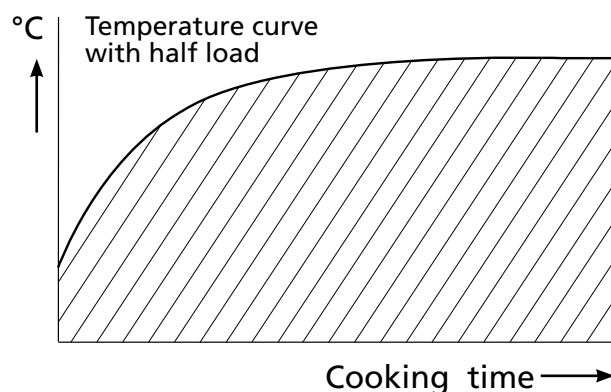
The automatic cook correction facility will automatically add or deduct time to the programmed cooking time in order to have constant cooking quality. To activate it, the parameter "auto correct" has to be put on "time".

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



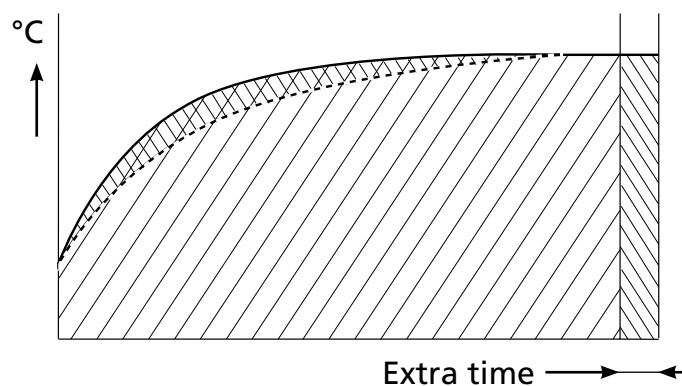
It is recommended to do that cook with a half to 3/4 load.

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.



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 TDRS-AC 230V EUR

About / software version			1.00.34	
Manager				
Change Pin code			0	0000 - 9999
Toggle Light			on	on - off
Temperature unit			°C	°C - °F
Volume unit filter			liters	liters-gallon
UTC time			Local time	
UTC date			Actual date	
Time zone offset			0h	-12 / 12
Time format			24 hr	24 hr - AM/PM
Date format			D/M/Y	D/M/Y - M/D/Y
Alarm			on	on - off
End-user recipe editing			no	no - yes
Ask weight			no	no - yes
Preheat mode			continue	no - 1x - continue
Preheat temp default			150	50-150 °C
Eco function			no	no - yes
Audio	Audio setting		1	1 -11
	Audio factor		100	1-100
	Test audio			
	Sound set		Marimba	Marimba-Bell-Beeper
key board beep			on	on - off
Filter capacity			-	50 - 30000 or "-" for infinite
Lime filter				Remaining capacity of lime filter
Lime filter replaced				no - yes
Clean screen time			60	10-60 sec
Store number				
Reference cook				
Recipes -> USB				
Recipes <- USB				
Add recipes <- USB				
Service			4878	
device type			TDR AC	TDR AC, TDR S
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		40 °C	25 - 60
		temp 2		60 °C	25 - 60
		temp 3		55 °C	10 - 70
		Soap safe temp		75 °C	25 - 100
		Cooling temp		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		10 sec	5 - 60
		Drain backflush time		2 min	1 - 15
		Final time		1 min	1 - 15 min
		Shine rinse time		10 min	1-30 min
	Clean water supply	supply time 1		50 sec	1 - 120
		supply time 2		50 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		110	25-125 °C
	Deep clean warning			0	0-30
	Daily clean warning			0	0-30
	Force cleaning			on	on - off
	Quick clean			enabled	enabled - disabled
	Daily clean			enabled	enabled - disabled
	Descale setting			Full	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
	Energy	Volts		230	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. 1x 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 energy 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 to 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 necessary (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 switch off the rotisserie automatically after the set time when not operated. When set to "no" the rotisserie will not be switched off automatically.
change pin		Option to change the manager pin code
Drain duration		Sets the open time for the drain valve and backflush valve
Fat drain		Option to controll the fat drain by the recipe or default open
Clean Cycles		Sets the number of repeated clean cycles during cleaning
Clean temperature	temp 1	Set clean temperature during cycle 1
	temp 2	Set clean temperature during cycle 2
	temp 3	Set clean temperature during cycle 3
	Soap safe temp	Sets the "safe" temperature to cool down to before soap can be added to the oven at the beginning of the cleaning cycle.
	Cooling temp	Set temperature to cool down to before the cleaning starts
Clean Times	Hot rinse time	Set time for hot rinse step in cleaning cycle
	Rinse time	Set time for rinse step in cleaning cycle
	Drain time	Set time for drain open step in cleaning cycle
	Flush time	Set time for flush step in cleaning cycle
	Drain backflush time	Set time for drain backflush step in cleaning cycle
	Final time	Set time for final step in cleaning cycle
	Shine rinse time	Set time for shine rinse step in cleaning cycle
Clean water supply	supply time 1	Set time 1 for filling the oven with clean water
	supply time 2	Set time 2 for filling the oven with clean water
	add water interv.	Interval time for adding water during cleaning
	add water time	set time for water adding during cleaning
Clean sanitation	sanitation step	Option to able or enable a sanitation step
	sanitation time	Set time for sanitation step in cleaning cycle
	sanitation temp	Set temperature during the sanitation step
Deep clean warning		Number of cook cycles after which you receive a deep clean warning
Daily clean warning		Number of cook cycles after which you receive a daily warning
Force cleaning		Option to enable a forced cleaning
Quick clean		Option to enable a Quick clean cycle
Daily clean		Option to enable a Daily clean cycle
Descale setting		Option to set the Descale cycle in a full / short cycle or to disable the descale cycle
Delete all programs		Option to delete all recipes from the controller

Level 1	Level 2	Level 3
Hood		Option to activate the optional hood
PID factors	P	Temperature regulation setting (P= proportional)
	I	Temperature regulation setting (I= Integrating)
	D	Temperature regulation setting (D= Differentiating)
	iMax	Temperature regulation setting
	Relay actions:	Controls the amount of relay switches in time
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 >= 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
Fact reset recipes		Reset to factory recipes
Fact reset data		Reset of factory data
Commission reset		Reset of set commission date
Commission apply		Option to apply the current date/time for commissioning

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

MENU SETTINGS TDRAC



Selection buttons

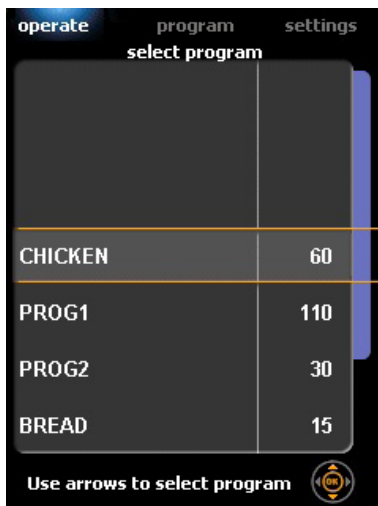
Display

Rotation pad
on/ off key

To enter the set up of the TDR AC press the on/off key for 3 seconds. The main screen will show 3 options:

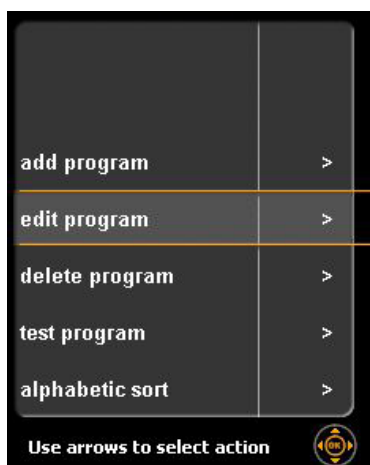
- operate
- program
- settings

Select the program by pushing the corresponding key.



Operate

The operator menu will allow the user to run cooking and cleaning programs

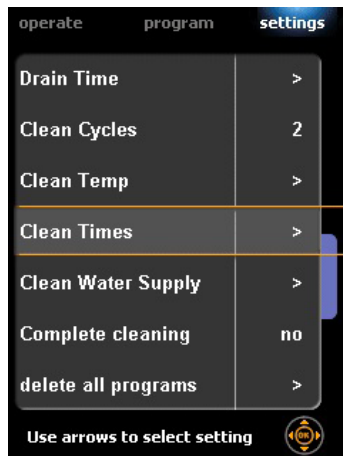


Program

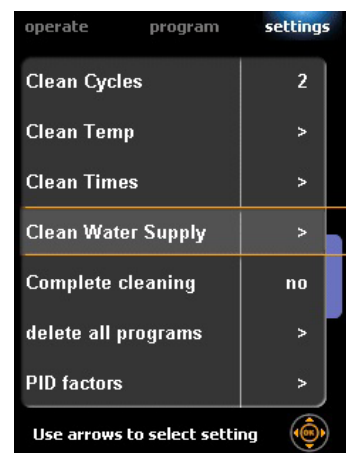
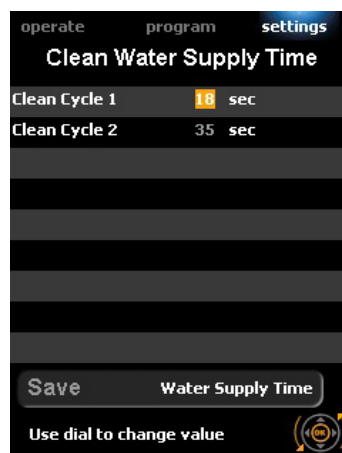
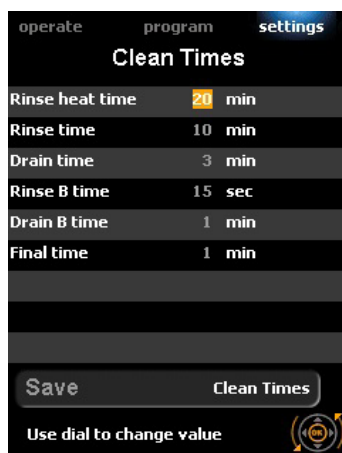
Within the program menu the user can edit or add additional cooking programs.

The cooking programs can be "pin code" protected.

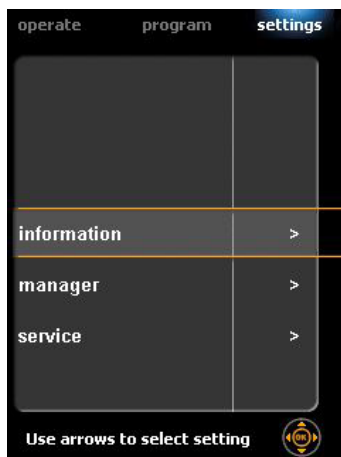
CLEANING PROGRAM TDRAC



An overview of the various steps of the cleaning program.
Go to: Settings->service. The amount of time of the various steps can be adjusted in minutes or seconds.



MENU SETTINGS TDRAC



Settings

Information

The Information screen will display the following information about the rotisserie:

- Device type (TDRi)
- Firmware version of the CPU board (version: 6.01.00)
- Last error
- Firmware version of the I/O board (MFMB:v1.00)

Manager

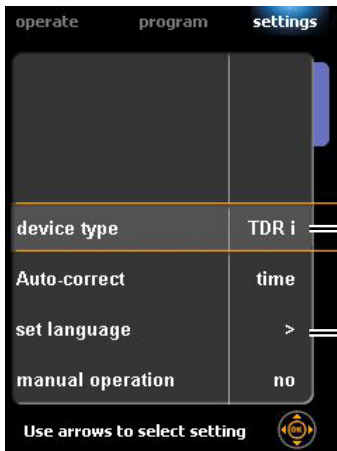
The manager settings are used to change local settings like temperature, date/time or to load recipes. A complete overview can be found in the TDR ac service manual.

No pin code is required if it is set to the default value "0000"

Service

A complete overview of service settings is available in the service manual of the TDR ac. Use pin code 4878 to enter the menu.

FIRST SETTINGS AND DIAGNOSTIC TOOLS TDR AC



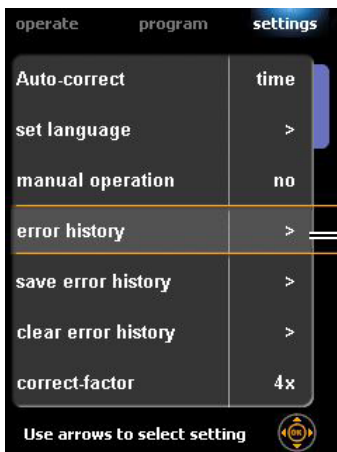
Miscellaneous service settings

device type

After replacing a cpu board the device type needs to be filled in.

set language

The next setting after replacing a board is to set language to local.

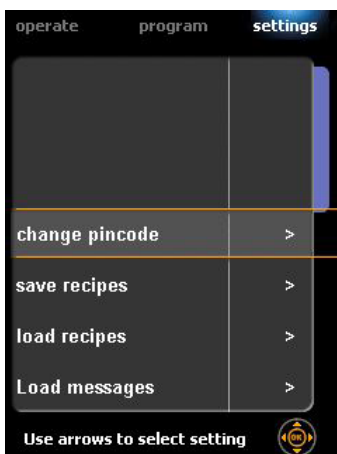


Error history

Read out

Save on USB stick

Clear errors



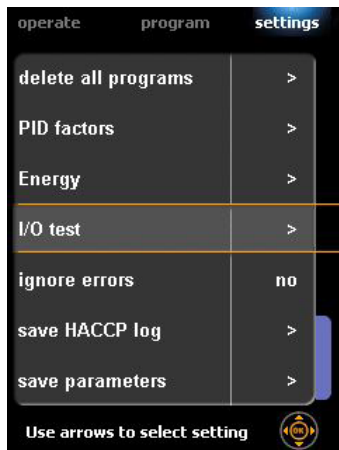
Pin code program menu

Go to: settings->manager->change pincode to protect the program and manager menu with a pin code.

The system will not ask for a pin code if the default 0000 value is being used.

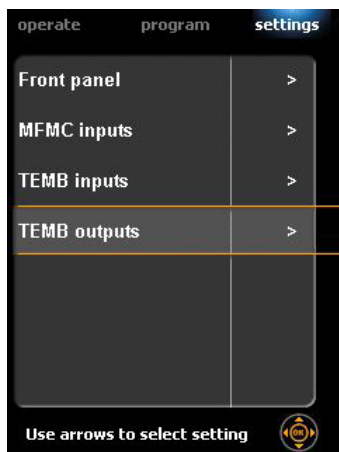
You can view the program pin code via: settings->service-> pin code

I/O TEST TDRAC (I-CONTROL)



Several I/O test can be executed:

Go to settings -> service -> I/O test.

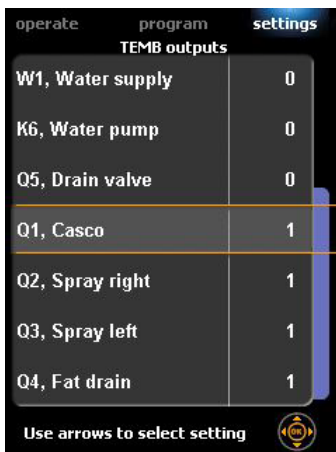
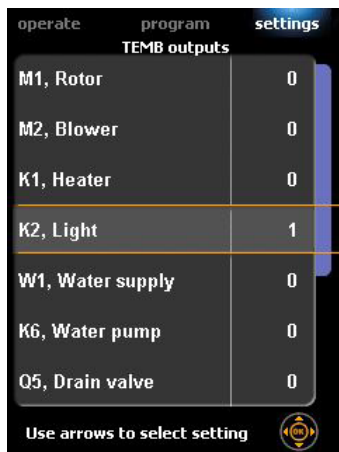


All switched electrical parts can be tested via TEMB outputs.

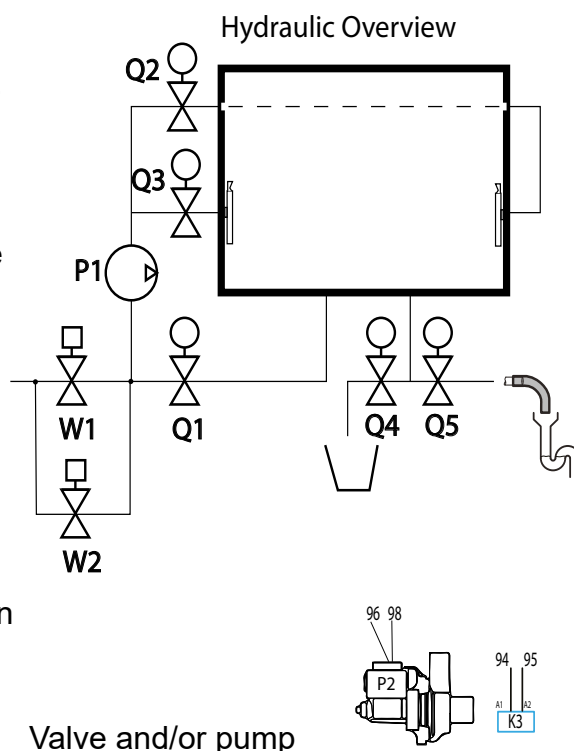
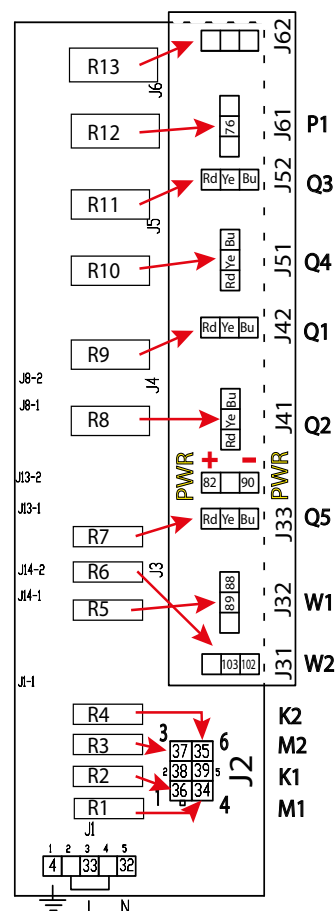
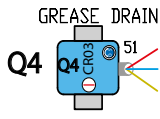
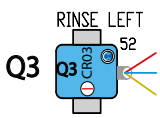
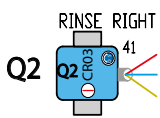
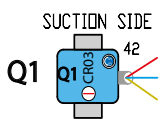
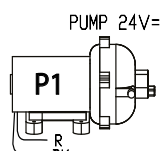
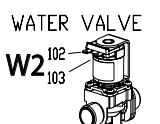
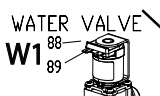
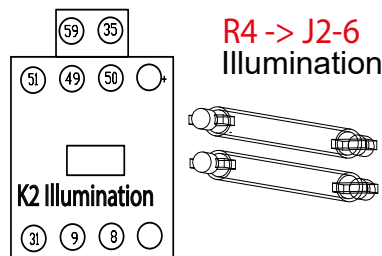
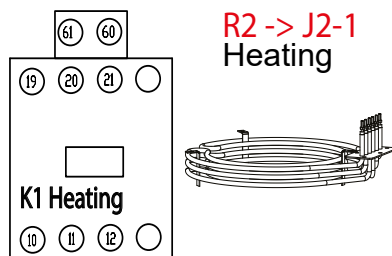
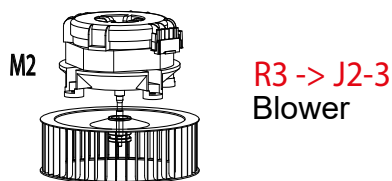
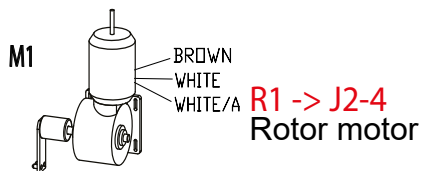
Go to: settings -> service -> I/O test -> TEMB outputs

See next page for an overview of connectors and relays. Note that a led will illuminate if a relay is switched on.

A corresponding electric diagram can be found on the next page.



Device	Relay	Connector
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

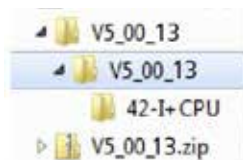


UPDATING SOFTWARE TDRAC (I-CONTROL)

Preparing the software (firmware)

The software comes in a .zip file. The name corresponds with the version of the software. For example: *V5_00_13.zip*.

After extracting



1. Extract the zip file



2. Copy or move the folder "42-I+CPU" to the USB drive.

Updating the software (firmware)

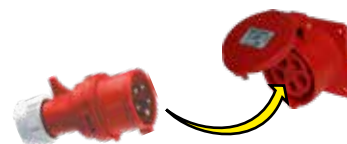
1. Disconnect the mains supply



2. Connect the USB drive.



3. Connect the mains supply



4. The following messages appear

Bootloader version V1.02.02

-USB stick found
starting upgrade

-Checking CRC

-Copying file
-Loading application

-Checking CRC

-Please remove USB stick
to start application

5. Disconnect the USB drive.



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

EMPTY PAGE

DEFAULT PARAMETERS VERSION 6.01.25 TDR8I-AC

Level 1	Level 2	Level 3		Default	Possibilities
Information				6.01.25	software version
Manager					
	Change Pin code			0000	0000 - 9999
	Save Recipes				save cookbook to USB
	Load Recipes				load cookbook from USB
	Load messages			on	on - off
	Light			on	on - off
	Temperature			°C	°C - °F
	Volume unit filter			lit	lit-gal
	Set time			Local time	
	Set date			Actual date	
	Time format			24 hr	24 hr - AM/PM
	Date format			DMY	DMY - MDY
	Alarm signal			yes	no - yes
	Preheat mode			yes	no - 1x - yes
	Preheat delta			0	-50°C to + 50°C or -90°F to +90°F
	Auto recipe start			yes	no - yes
	Buzzer set			0	0 - 4
	key beep			yes	no - yes
	water capacity filter			-	50 - 30000 or "-" for infinite
	Lime filter				Remaining capacity of lime filter
	Lime filter replaced			no	no - yes
	Clear error				no - yes
Service					
	device type			TDRac	STGi, Multi, BSi, STOi, TRC, ACR, TDRi, TDRac
	auto-correct			time	no - time
	set language			english	englisch - deutsch - francais - nederlands - espanol - japanese - danish - italiano - russian
	Manual Operation			no	no - yes
	error history				overview of last 200 errors
	save error history				save error history on usb
	clear error history				
	correct-factor			4x	1x - 10x
	debug rs232			no	no - yes
	demo mode			no	no - yes
	Demo parameters	Rinse time		5	2-40 min
		Drain time		5	2-40 min
		Supply time 1		40	1-120 sec

Level 1	Level 2	Level 3		Default	Possibilities
	auto off			60 min	no or 10 - 240
	pin code			****	read out of the manager pin code
	Sensor offset			0 °C	-5°C - 5°C
	Fat drain			open	open - programmed
	Drain time			40 sec.	10 - 40
	Clean Cycles			3	2 - 4
	Clean temp	Clean temp 1		40 °C	25-60 °C
		Clean temp 2		60 °C	25-60 °C
		Clean temp 3		55 °C	10-70 °C
		Cool tempera- ture		75° C	25 - 100 °C
	Clean Times	Rinse heat time		20 min	5 - 40
		Rinse time		10 min.	5 - 40
		Drain time		3 min	2 - 10
		Rinse B time		10 sec	5 - 60
		Drain B time		2 min	1 - 5
		Final time		1 min	1 - 15
		Clean rinse time		10 min	
	Clean water supply	supply time 1		50 sec	1 - 120
		supply time 2		50 sec	1 - 120
		add water interv.		20 min	1-60
		add water time		7 sec	1-30
	Clean sanitation	sanitation step		no	
		sanitation time		20	0-30 min
		sanitation temp		110	25-125 °C
	Complete cleaning	-		yes	no - yes
	Daily clean warning			0	0-30
	Delete all programs				no - yes
	Hood			no	no-yes
	PID factors	P		100	0 - 100
		I		5	0 - 100
		D		100	0 - 500
		iMax		100	10 - 300
		Relay actions:		80	16 - 160
	Energy	Volts		230	1 - 260
		Model		TDR	TDR
	I/O test				read the inputs and set the outputs
	Test program				
	Ignore errors			no	no - yes
	save HACCP log				save haccp log on usb
	save parameters				save parameters on usb
	load parameters				load parameters from usb

CLEANING PROCESS TDRAC (3 STEPS) (PARAMETER "CLEANING CYCLES")

Cycle 1

Cooling
 •Cool down <75°C
 [Clean temp 25-60°C]

Rinsing
 •Water supply time 50 sec.
 [Clean Cycle 1 1-120 sec.]
 •Rinse heat 20 min
 [Rinse heat time 5-40 min.]
 •Temperature 55°C
 [Clean temp 1, 10-70°.]
 •Rinse cold 10 min.
 [Rinse time 5-40 min.]

Draining
 • Drain time 3 min.
 [Drain time 2-10 min.]

Rinsing
 •Rinse + drain 10 sec.
 [Rinse B time 5-60 sec.]
 •Drain 2 min. [1-5 min.]
 •Backflush water

Pause
 •60 sec

Cycle 2

Rinsing
 •Water supply time 50 sec.
 [Clean cycle2 1-120 sec.]
 •Rinse heat 20 min.
 [Rinse heat time 5-40 min.]
 •Temperature 55°C
 [Clean temp 2, 10-70°.]
 •Rinse cold 10 min.
 [Rinse time 5-40 min.]

Draining
 • Drain time 3 min.
 [Drain time 2-10 min.]

Rinsing
 •Rinse cold + drain 10 sec.
 [Rinse B 5-60 sec.]
 •Drain water 2 min.
 [Drain B time 1-5 min.]
 •Backflush

Pause
 •Drain 60 sec.

Cycle 3 (shine)

Rinsing
 •Water supply time 50 sec.
 [Clean Cycle 1 1-120 sec.]
 •Rinse shine 10 min
 [Rinse heat time 5-40 min.]
 •Temperature 55°C
 [Clean temp 3, 10-70°.]

Draining
 • Drain time 3 min.
 [Drain time 2-10 min.]

Rinsing
 •Rinse + drain 10 sec.
 [Rinse B time 5-60 sec.]
 •Drain 2 min. [1-5 min.]
 •Backflush water

Finish
 •Drain 60 sec.

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.

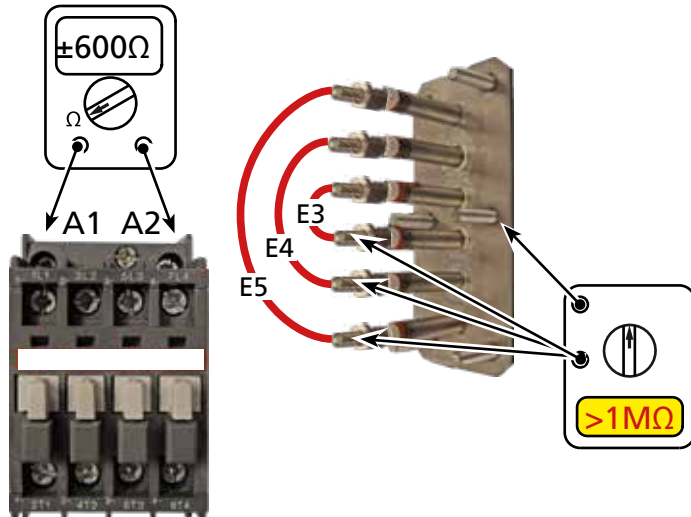
MEASURING THE HEATING ELEMENTS

230V Heating element TDR 5

E3	1800W	29 Ω	7,8A
E4	1800W	29 Ω	7,8A
E5	1800W	29 Ω	7,8A

230V Heating element TDR 8

	In 20A / 13,6kW or stacked 40A / 27,2kW units	
E3	4000W	13,1 Ω
E4	4000W	13,1 Ω
E5	4400W	12 Ω
	In 16A / 10,5kW or stacked 31A / 10,5 kW units	
E3	3000W	17,5 Ω
E4	3000W	17,5 Ω
E5	3300W	16 Ω

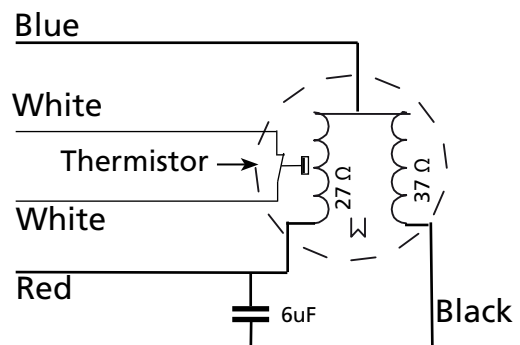
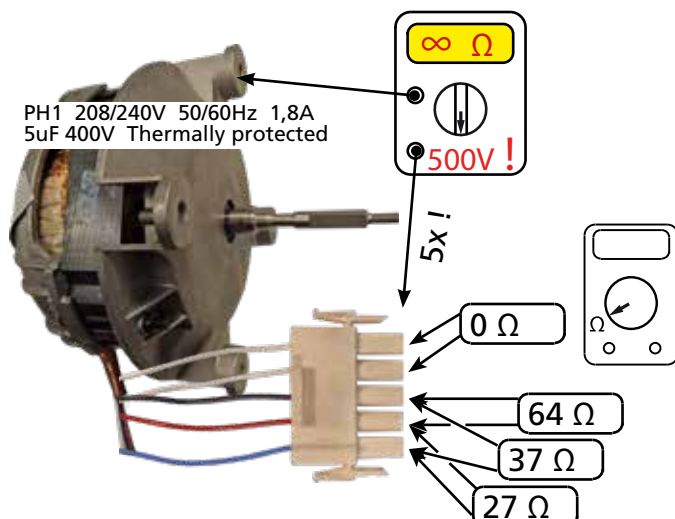


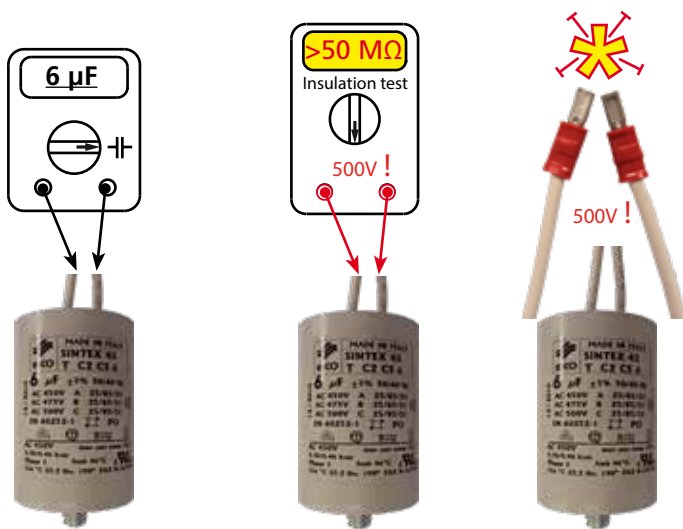
If heaters have been stored for a longer period, Moist can go in and the insulation resistance can go down. Therefore it is good to measure this insulation resistance before mounting it.
In case this Insulation resistance is too low, it could be considered to dry the heater in an oven for 24 hours on 130°C (266°F). The longer the better.

Advise:

- Keep stock limited.
- Store in conditioned space (for example in a box with silica gel)

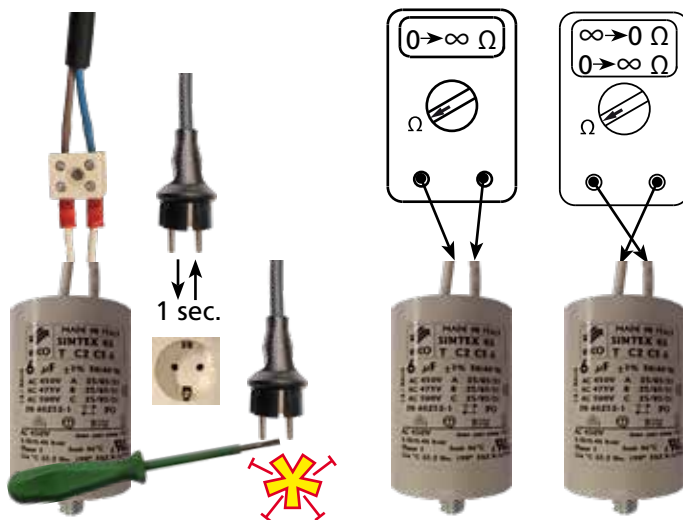
Blower of rotisserie





Charging with a test cable

Checking with Ω meter



The 6 μ 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 Ω 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 (loosing 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 Ω meter.

Be sure that the capacitor is empty!

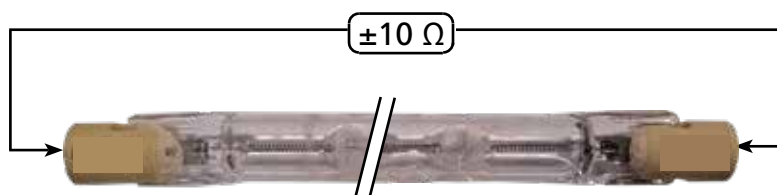
The value will go up until $\infty \Omega$ is reached.

Exchange the test leads. The value will go down, through "0" and up again.

If not, the capacitor is broken.

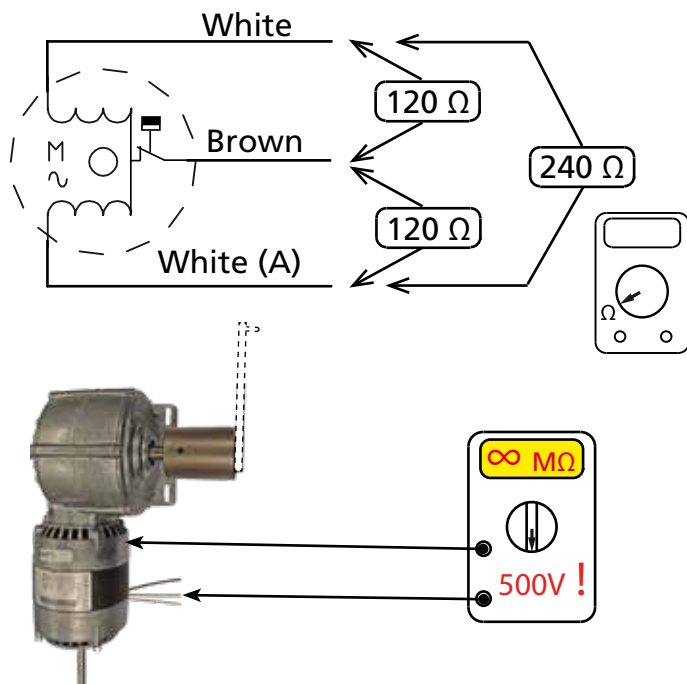
If ok, it is still not sure if the capacitor is ok. It might leak when it is connected to the mains power!

MEASURING THE 500W LAMP



230V 500Watt

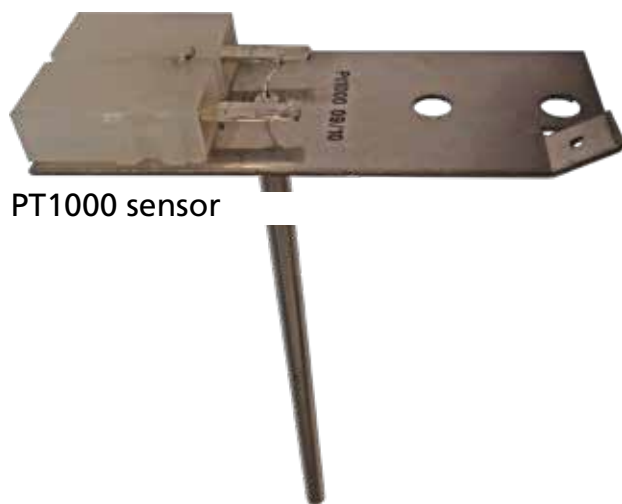
MEASURING THE ROTOR (DRIVE) MOTOR



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.



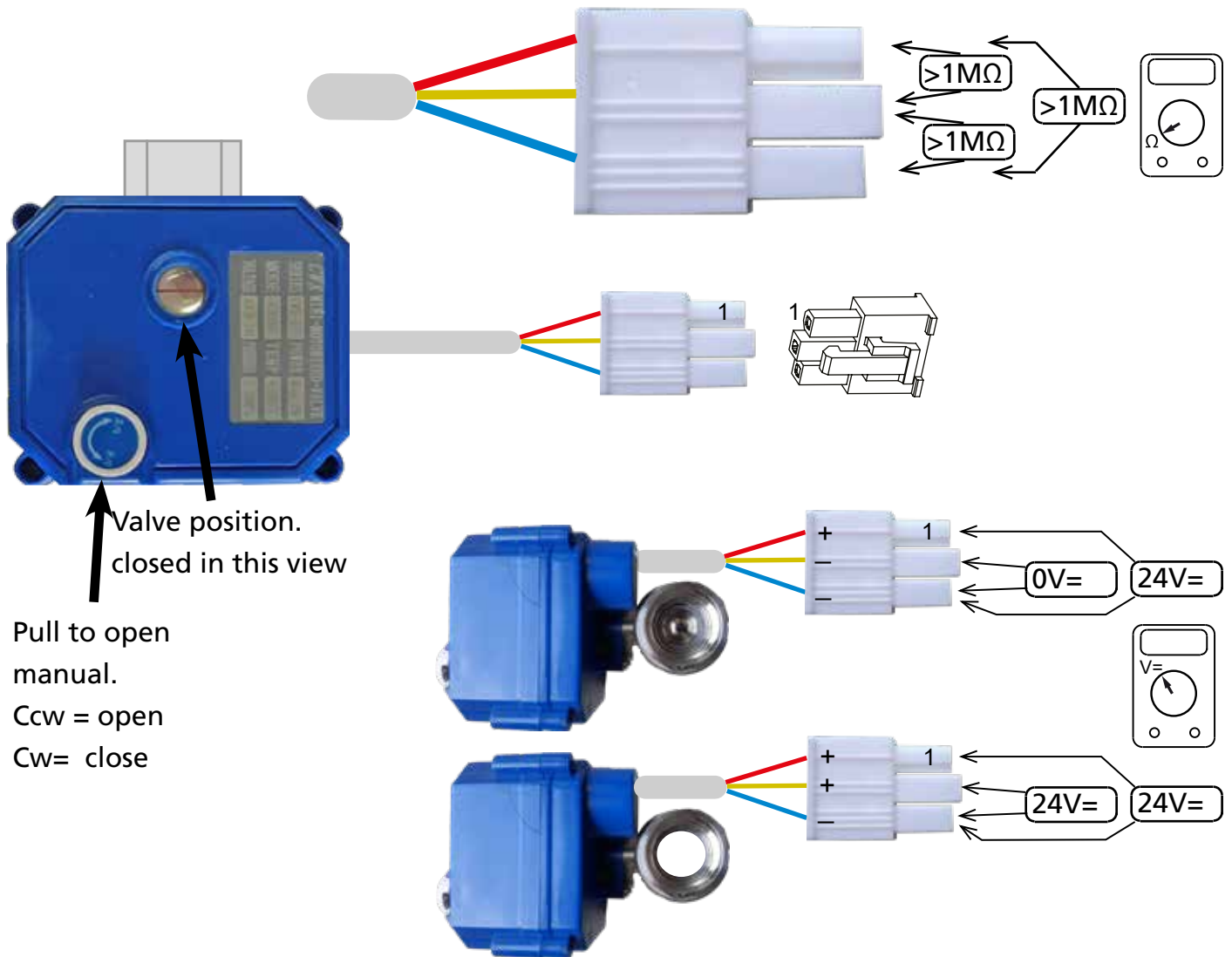
PT1000 sensor

°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

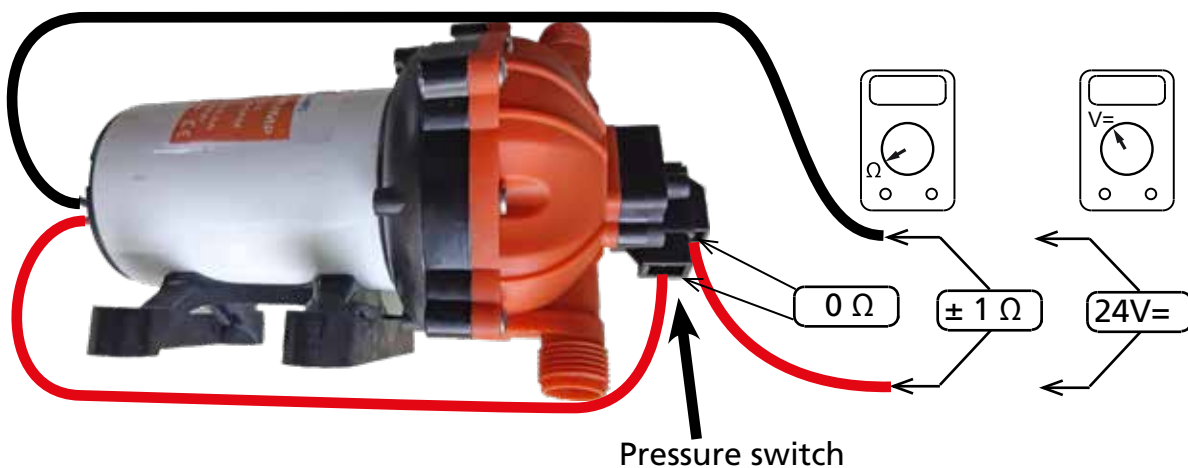
°C	PT1000
120	1460,60
130	1498,20
140	1535,80
150	1573,10
200	1758,43
250	1940,81
300	2120,30

MEASURING THE MOTOR VALVE



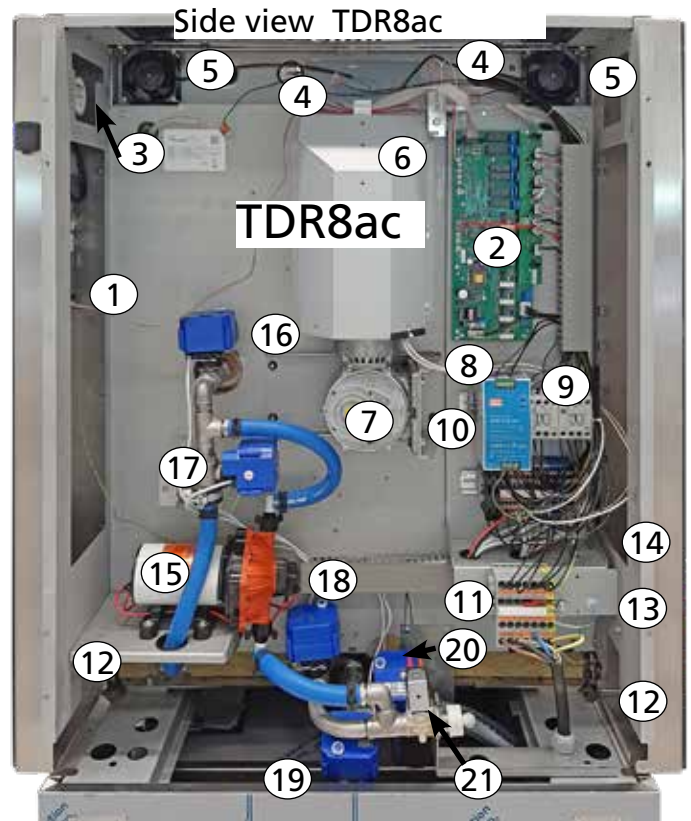
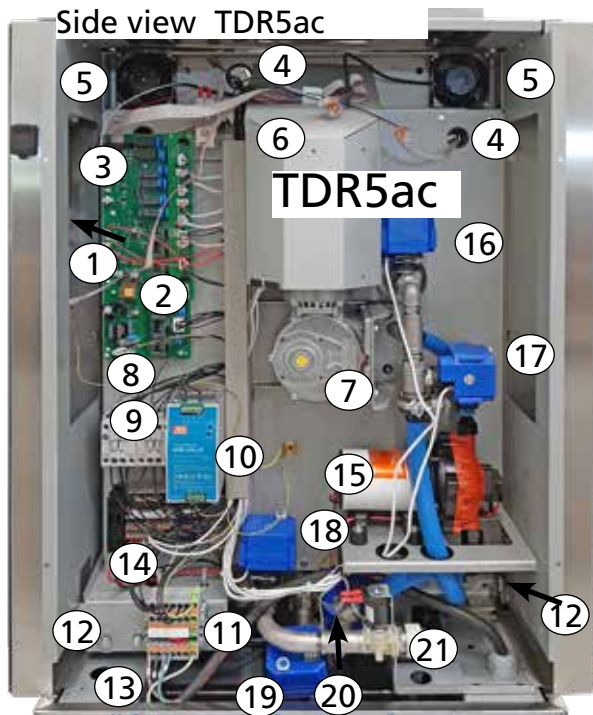
MEASURING THE PUMP

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 TDR-AC

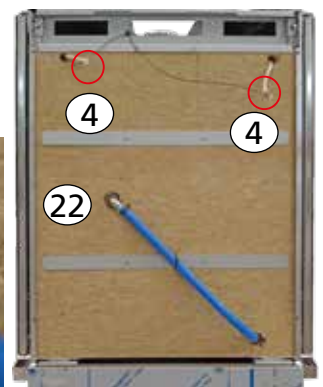
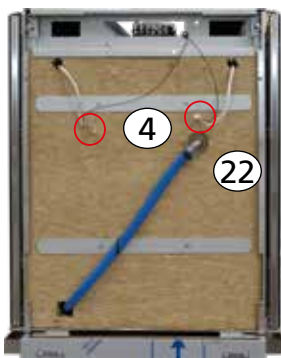


Unscrew 4 screws and open the panel from the electric compartment .
The same for the panel on the oposite side to reach the wiring from the light and also to "unlock" the top panel.
Remove the top panel and the blower panel on the inside, to reach the blower motor and the heating element.

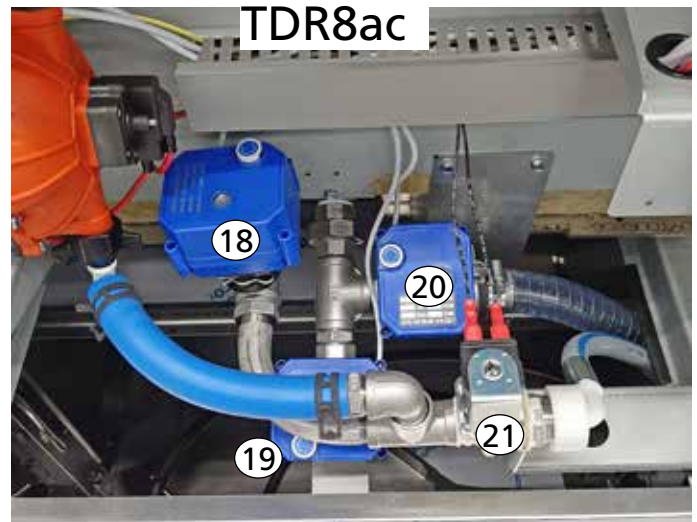
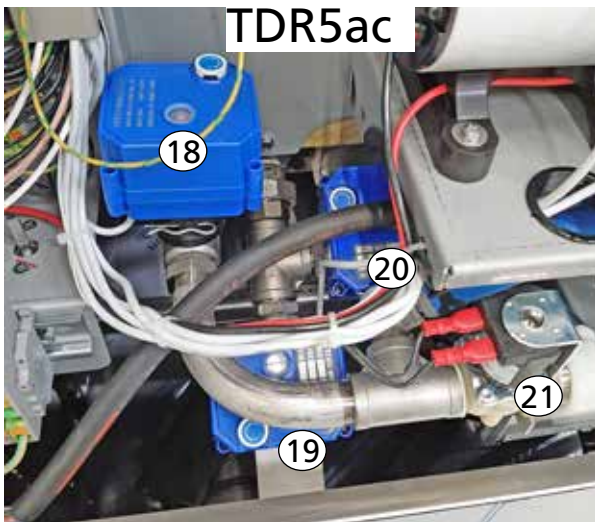
1. CPU & LCD board and key board
2. Power & I/O board.
3. Speaker
4. Lamp connection
5. Cooling fans
6. PT 1000 temperature sensor.
7. Rotor drive motor
8. Fuse on board (1A 5x20 slow acting).
9. Contactors (left = heating, right = light)
10. Power supply 24V 10A (short circuit pro-

- tected)
11. Mains connection block
12. Door switch
13. Capacitors
14. Hi Limit thermostat
15. Rinse pump
16. Motor valve, rinse right
17. Motor valve, rinse left
18. Motor valve, suction side
19. Motor valve, grease drain
20. Motor valve, waste water (sewer) drain
21. Solenoid valve, water inlet (10 ltr/min)
22. Elbow connection left rinse arm

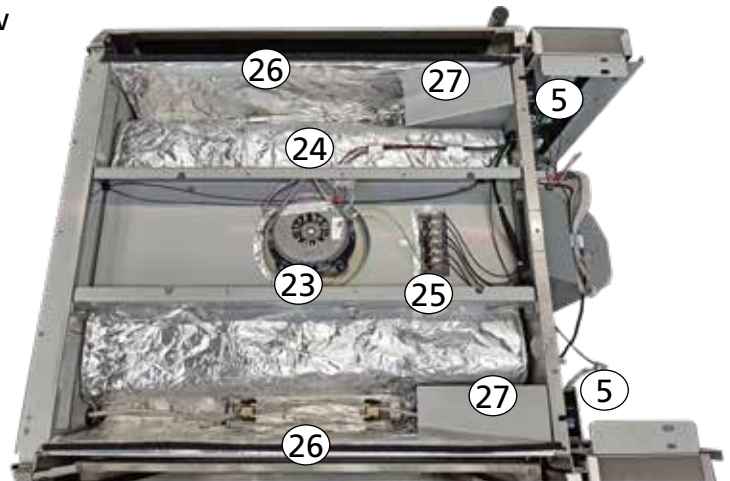
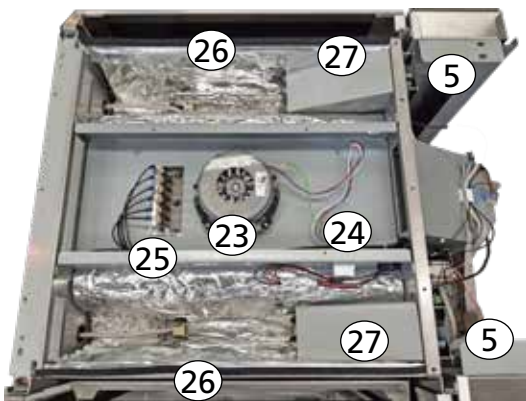
view opposite side



Close up view of water inlet valves and drain valves



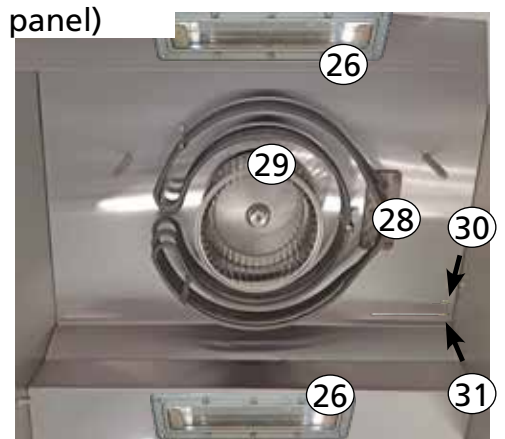
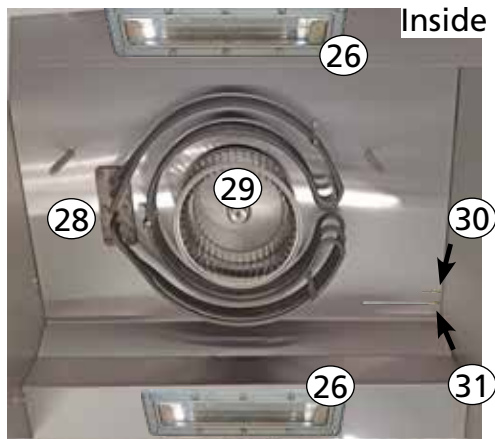
Top view



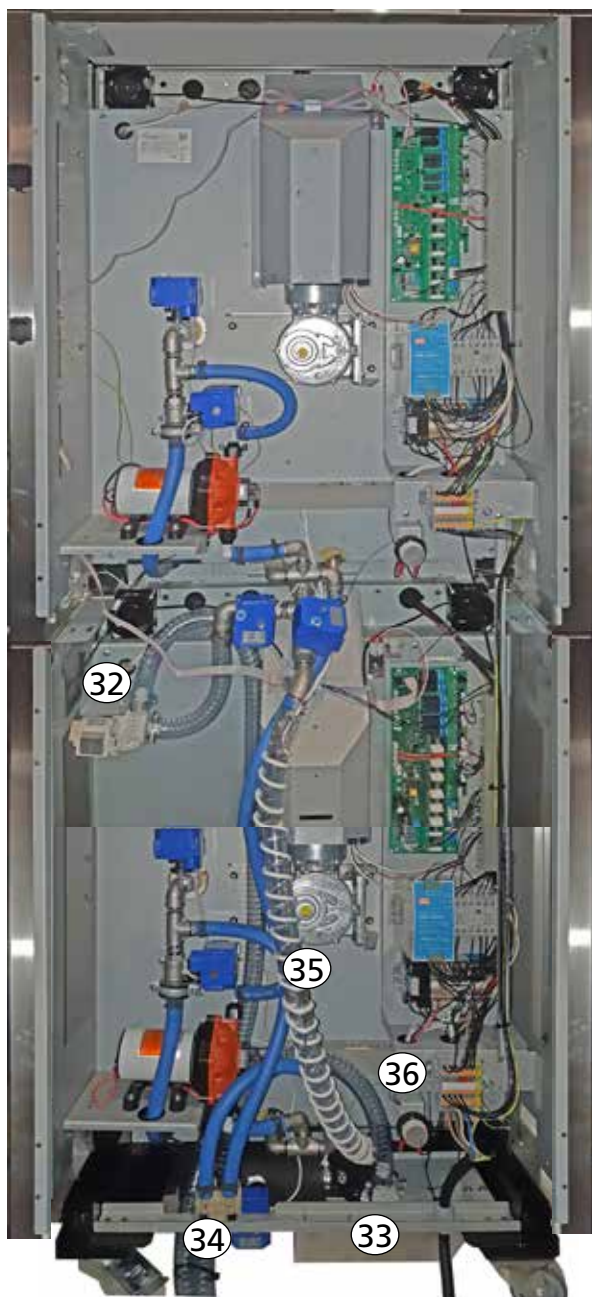
- 23. Blower motor
- 24. 5 pole socket / plug connection of blower
- 25. Connections of heating element.
- 26. Illumination
- 27. Air funnel lamp cooling
- 28. Heating element
- 29. Turbine

- 30. PT1000 sensor
- 31. Sensor, hi limit thermostat.

Inside view (with removed blower panel)



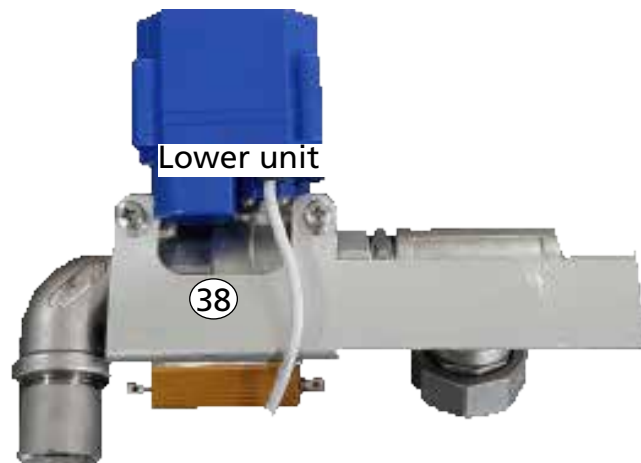
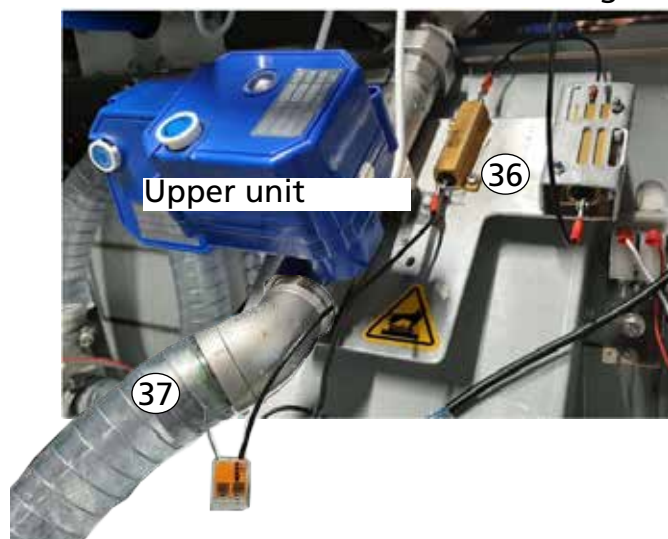
ACCESS TO SERVICE PARTS STACKED UNITS



- 32. Waste water pump upper unit
- 33. Waste water pump lower unit
- 34. Double solenoid valve, water inlet.
- 35. Heated grease drain hose.
- 36. Thermostat for heated drain hose
- 36. Drain heating upper unit
- 37. Heated hose
- 38. Drain heating lower unit



Drain heating from serial nr. 100104167



EMPTY PAGE

BLOWER MOTOR

Dismounting the blower assembly in the TDR5ac, TDR8ac and top unit of the TDR8+8ac

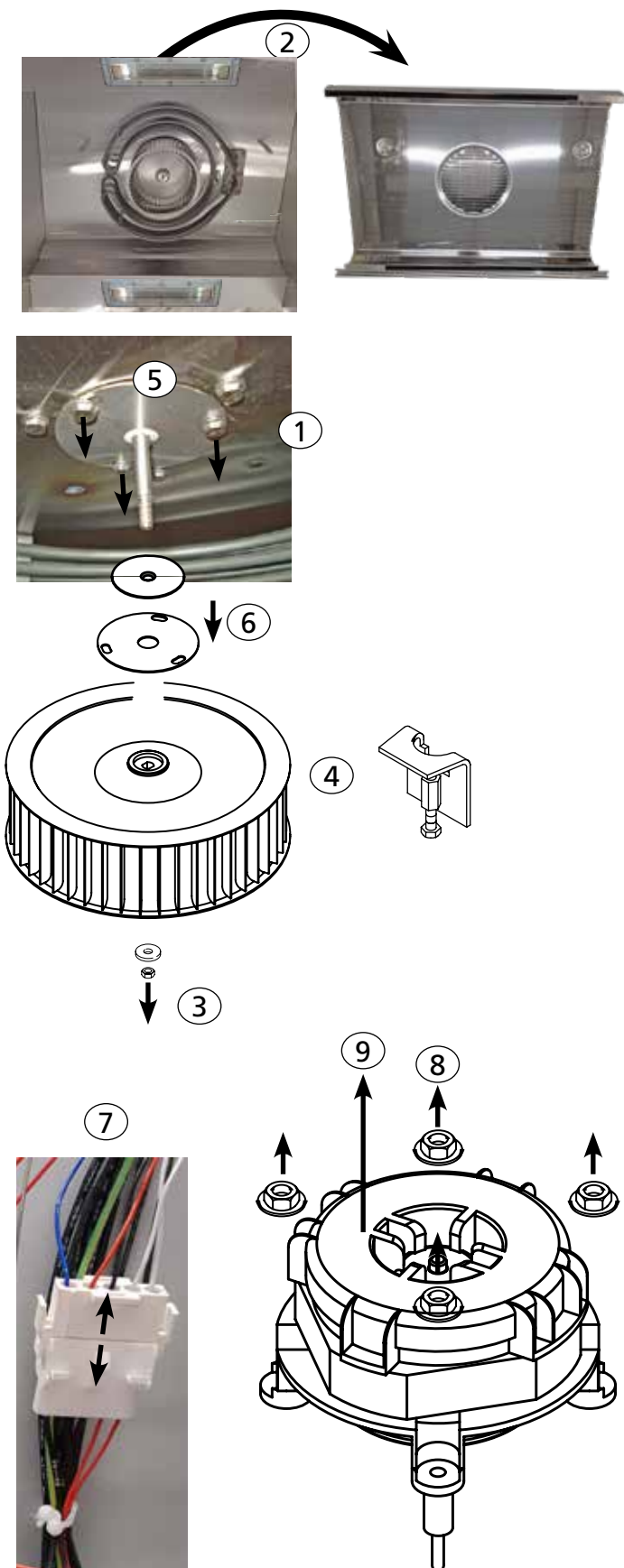
1. Remove both side panels and the top panel
2. Remove the blower panel
3. Remove the M5 nut and washer from the motor shaft
4. Pull the turbine from the shaft. A puller is delivered with the new blower kit.
5. Unscrew 3 screws.
6. Pull off the shaft seal with pressure plate.
7. Disconnect the blower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

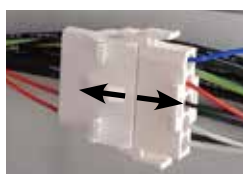


BLOWER MOTOR IN LOWER UNIT OF TDR8+8AC



Dismounting the blower assembly in the lower unit of the TDR8+8ac

1. Remove the blower panel.
2. Unscrew 10 screws around the turbine. The assembly will come down a little. If not, the seal is sticking. Loosen the mounting disc from the ceiling.
3. Turn the assembly a little to the right, hold it steady and let it come down.
4. Disconnect the 5 pole plug.

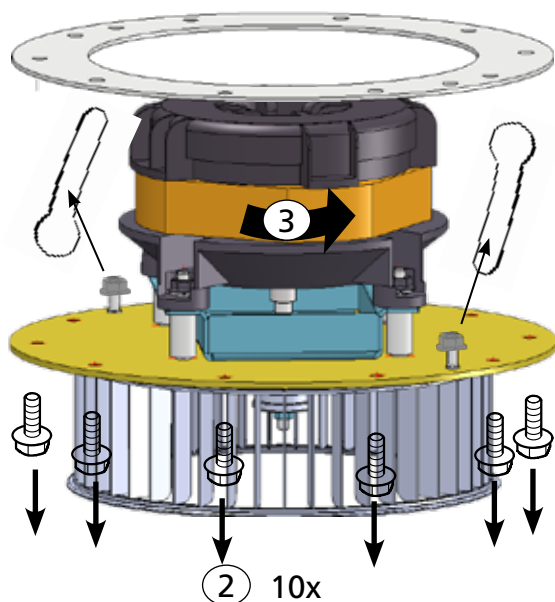


Mounting the blower assembly.

This has to be done in reversed order from disassembling.

Very important!

- Clean the remainigs of the gasket.
- Apply the new delivered gasket.



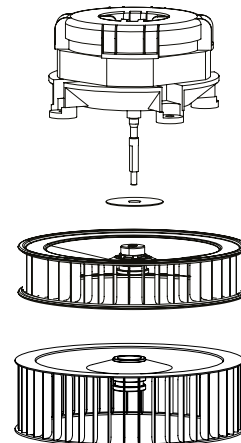
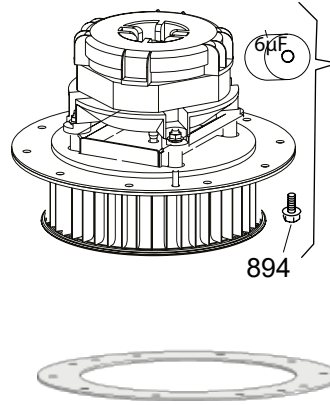
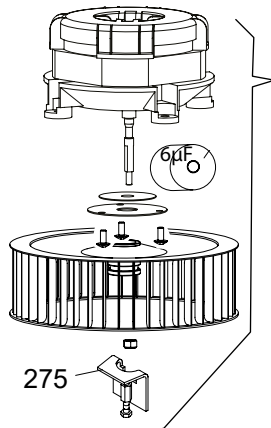
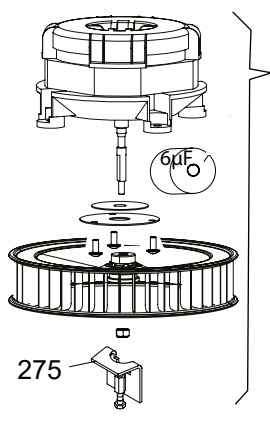
The below parts are available for service (drawings from exploded views)

TDR5ac

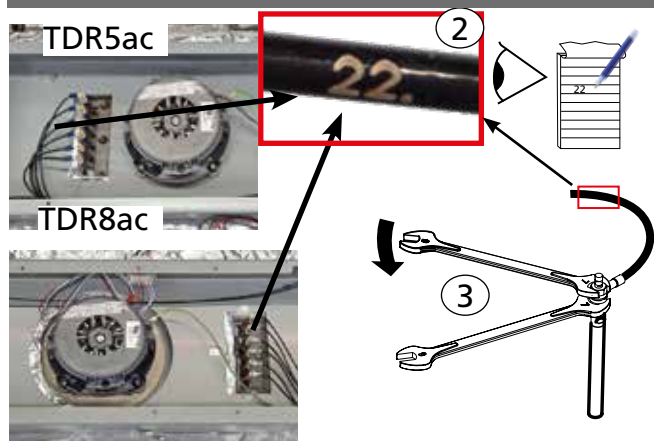
TDR8ac
TDR8+8 top unit

TDR8+8
lower unit
seal

Loose motor
Turbines

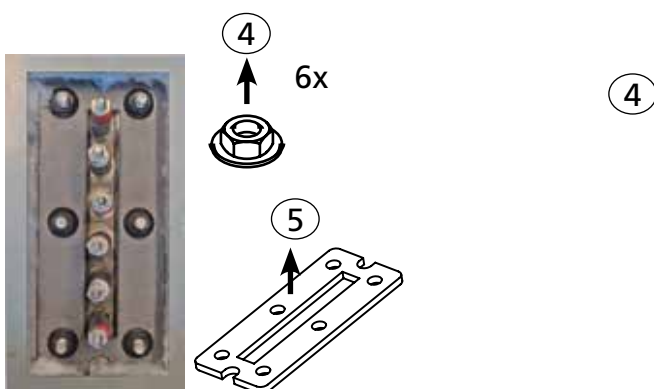


HEATING ELEMENT TDR5AC AND (TDR8AC UNTILL SERIAL NR. 100099039)



Dismounting the heating element.

1. Remove both side panels and the top panel.
2. Note the wiring number and write down if necessary.
3. Disconnect the wiring. Note! Hold the rear nut with an open end spanner!
4. Unscrew 6 nuts M6.
5. Take out the pressure plate.
6. Remove the blower panel.
7. Unscrew the M4 nuts that secure the heating element to the ceiling. This is one in a TDR5 and 3 in a TDR7/8.
8. Remove the graphite gasket from heating element. Also clean the ceiling from residues.

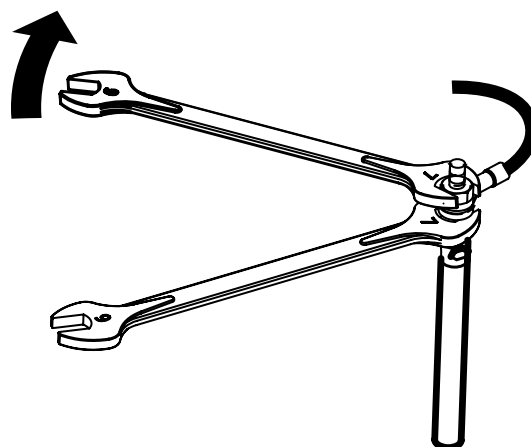
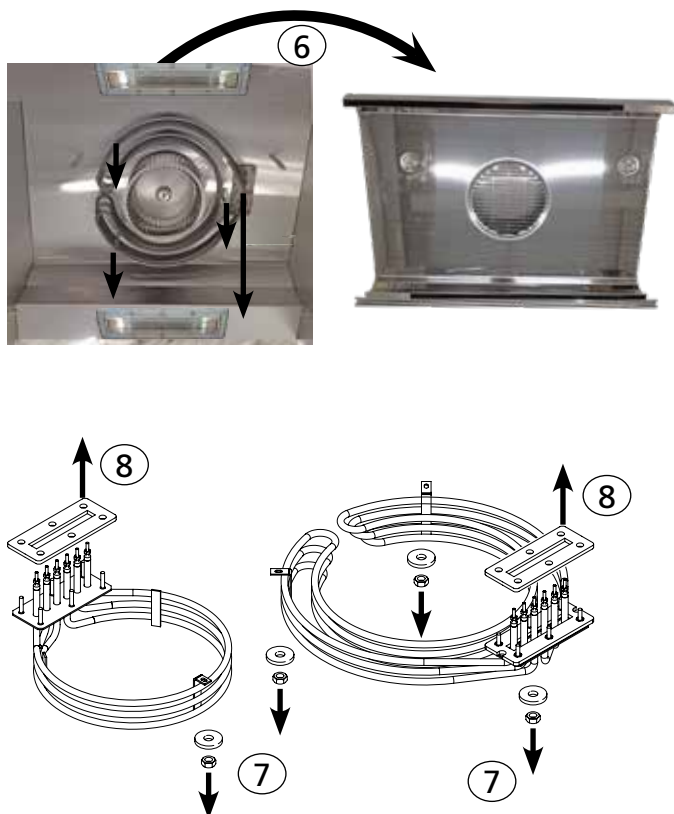


Mounting the heating element.

This has to be done in reversed order from disassembling.

Very important!

- Take a new gasket.
- Do not forget to hold the rear nut with an open end spanner when connecting the wiring and tightening the nuts.



HEATING ELEMENT TDR8AC (FROM SERIAL NR. 100099040) AND 8+8AC

Dismounting the heating element.

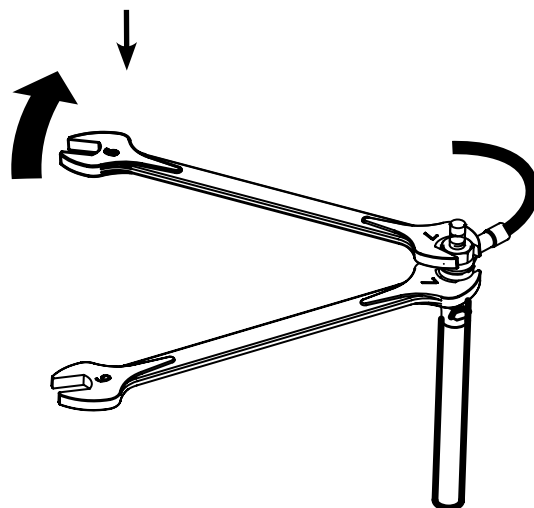
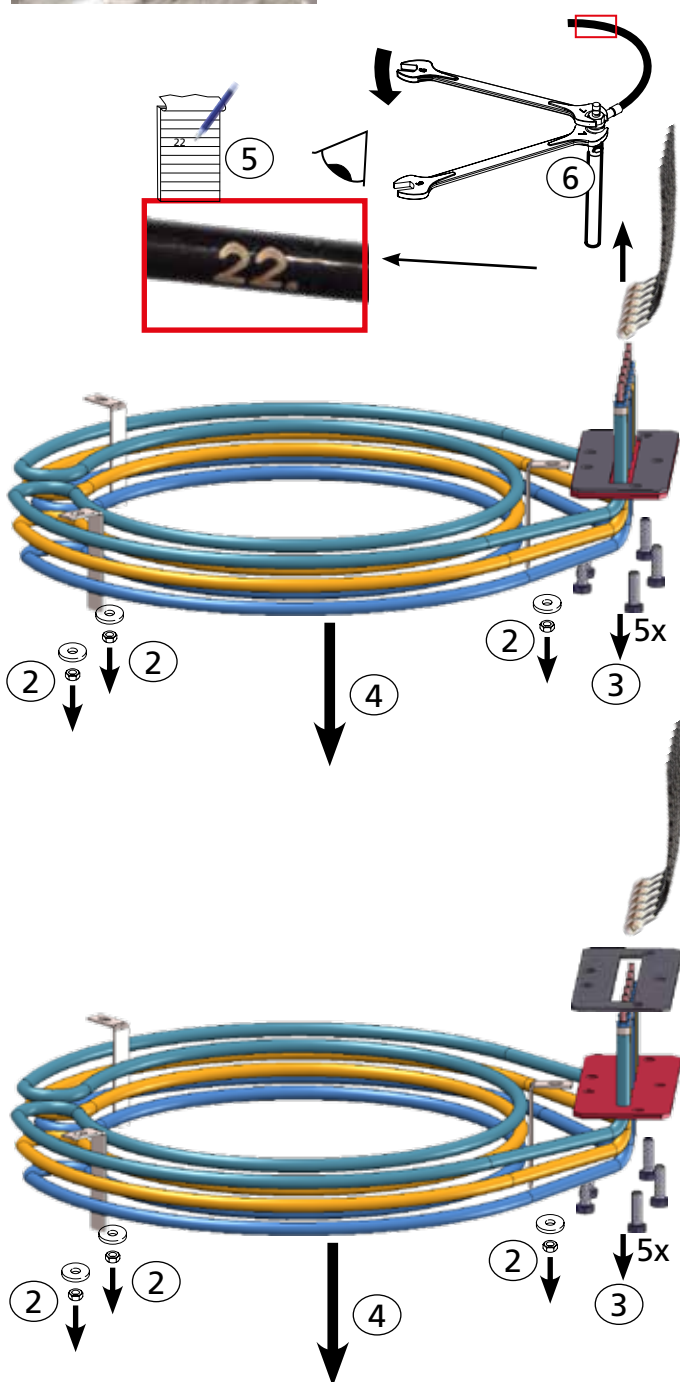
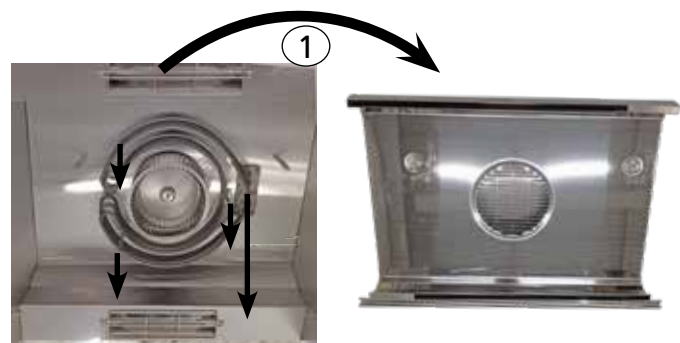
1. Remove the blower panel.
2. Unscrew the three M4 nuts that secure the heating element to the ceiling.
3. Unscrew the 5 screws from the mounting plate.
4. Hold the heating element or pull it down when the gasket sticks.
5. Note the wiring number and write down if necessary.
6. Disconnect the wiring. Note! Hold the rear nut with an open end spanner!
7. Clean the ceiling from residu's.

Mounting the heating element.

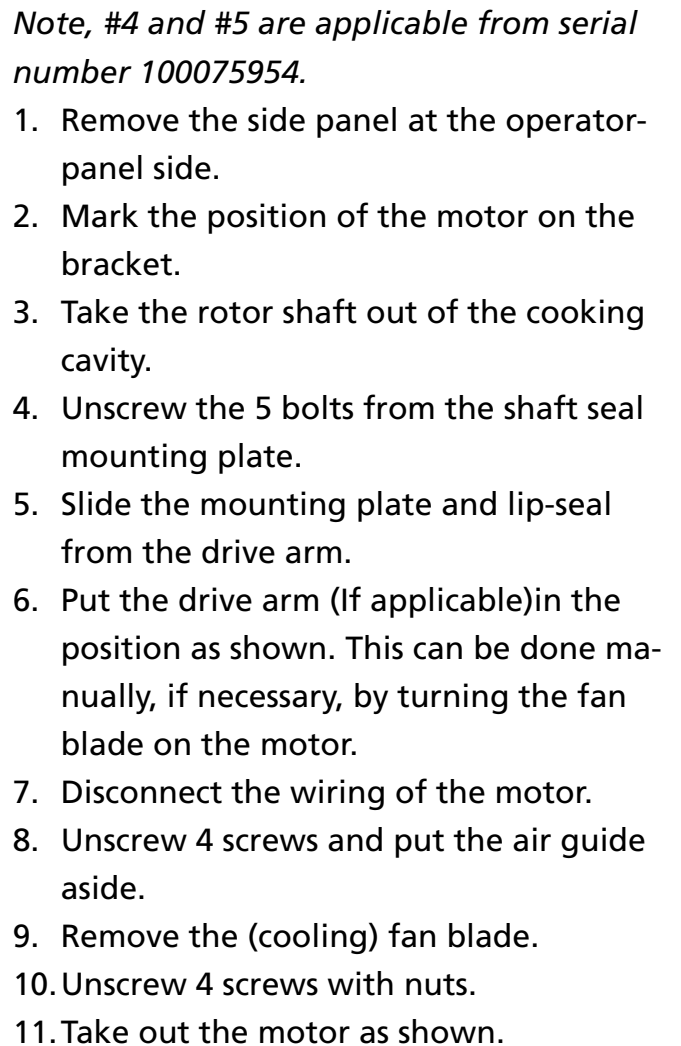
This has to be done in reversed order from disassembling.

Very important!

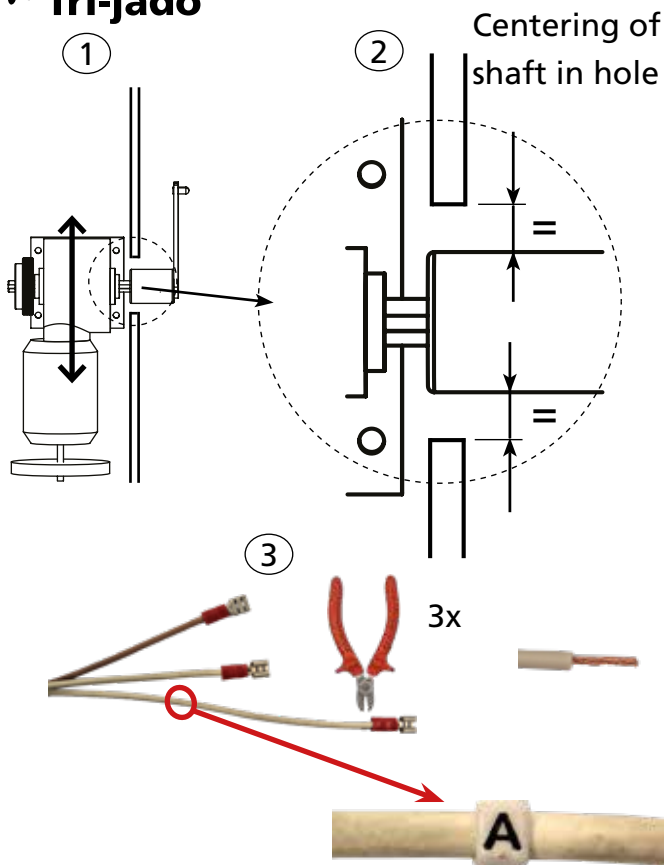
- Take a new gasket.
- Firts place the gasket, then connect the wiring
- Do not forget to hold the rear nut with an open end spanner when connecting the wiring and tightening the nuts.



Dismounting the rotor motor:

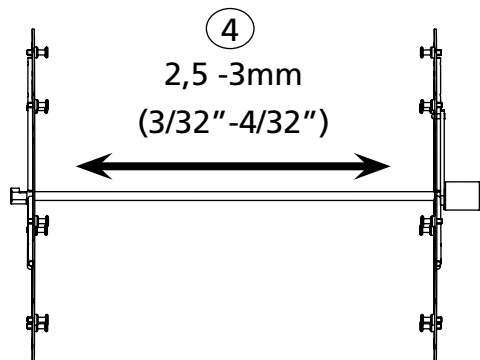
[illegible]

TB 2

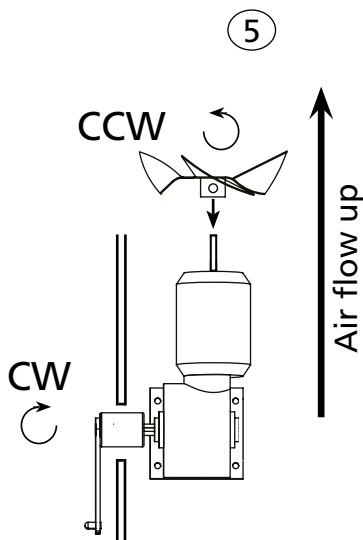


Mounting the rotor motor

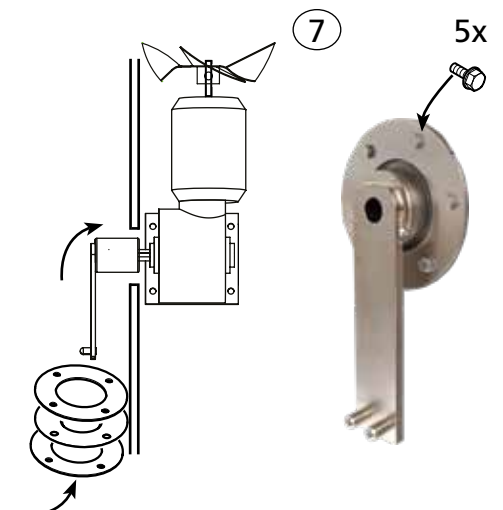
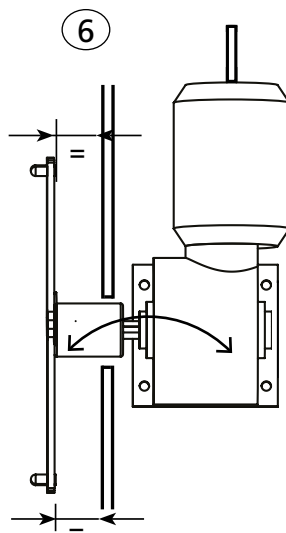
1. Mount the motor on the bracket using the previous made mark (see #2 from disassembling).
2. The motor shaft should come through the center of the hole!!
3. Connect the wiring of the (new) motor.
See previous page for position of wires.
In case the wires have receptacles mounted, then these have to 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)	
Bad cooking results, uneven cooking		Air circulation problem	Fanblade loose Blower defect (coil or bearing) or thermistor open (140°C) Capacitor of blower defect Suction grid of ventilator plate blocked
		Too much heat	Contactor hangs PT1000 sensor malfunction , value too low PT1000 Sensor too far out of cooking chamber
	Rotor motor stops	Cooling air flow blocked Wrong rotation direction	
		Product not cooked, cooking takes more time	Short of heat
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.

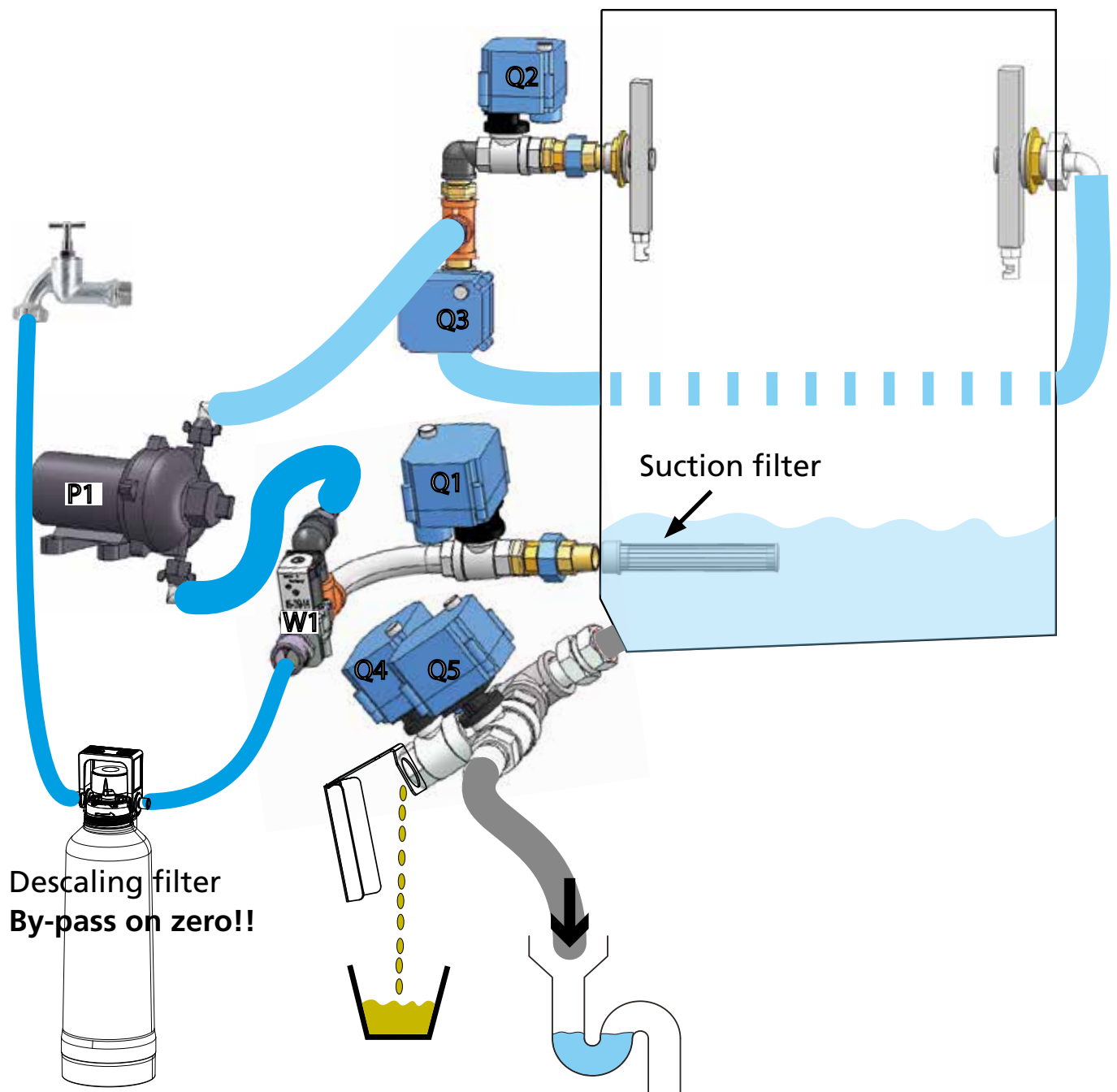
TROUBLE SHOOTING BY PART / FUNCTION.

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.
		Contact 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	Contact does not switch on after starting of program	Wiring. Thermostat malfunction.	Check the wiring. Check if the thermostat is making contact.
	Contact switches off before reaching the adjusted temperature in program	Thermostat malfunction.	Check if the thermostat is turned fully clockwise (contact closed).
		Thermostat probe not in right position.	Check the position of the thermostat probe.
Contactor	Contactor doesn't switch on	Wiring. Coil malfunction.	Check the wiring. Check resistance of the coil. This should be $\pm 600\Omega$.
	Contactor 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 contactor.
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>

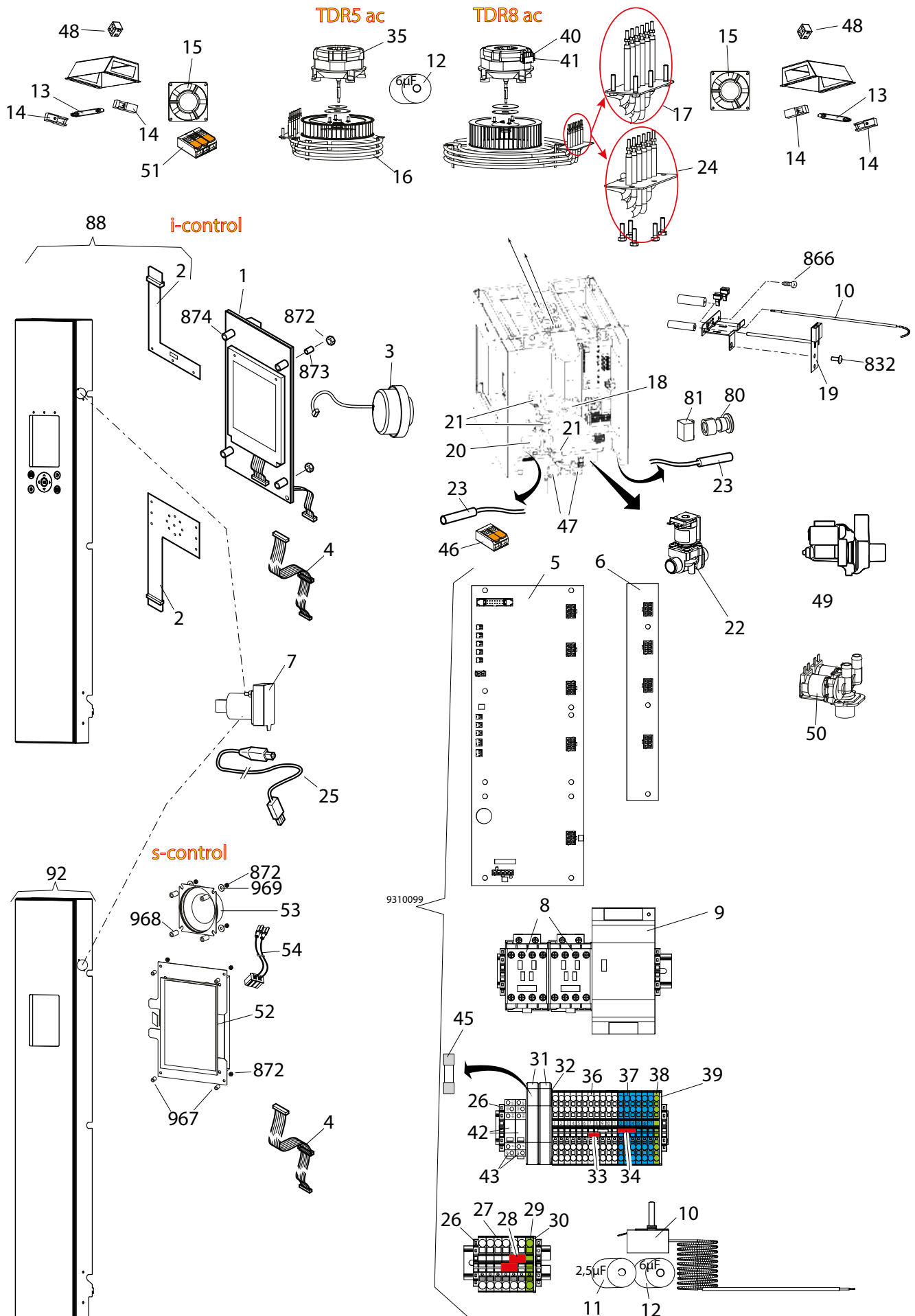
Description of part / function	Symptoms	Possible cause	Action
Drive motor	Motor doesn't run and / or main fuse burned Motor runs after starting it up by hand Motor stops during process and comes in again after a period of time	Wiring. Coil malfunction. Gearbox. Capacitor malfunction. Coil overheated,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

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

Description of part / function	Symptoms	Possible cause	Action
Pump See below over-view P1	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 W1	Too much water in unit	Valve polluted by dirty water	Clean valve
		Broken valve	Replace valve
		Missing reducer (10 ltr/min)	Replace valve by the right one
	No Water	Wiring loose	Check wiring
		Broken valve	Replace wiring
Motor valve suction side Q1	Not rinsing during cleaning	Valve does not close during filling of water	Check function of valve in I/O test Check wiring and plugs / sockets on the I/O board
		Valve does not open during rinsing	
Motor valves left and right rinse See below over-view Q2 / Q3	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 Q4	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 Q5	Water comes in the grease container (bucket) and probably on the floor	Valve does not open	Check function of valve in I/O test 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

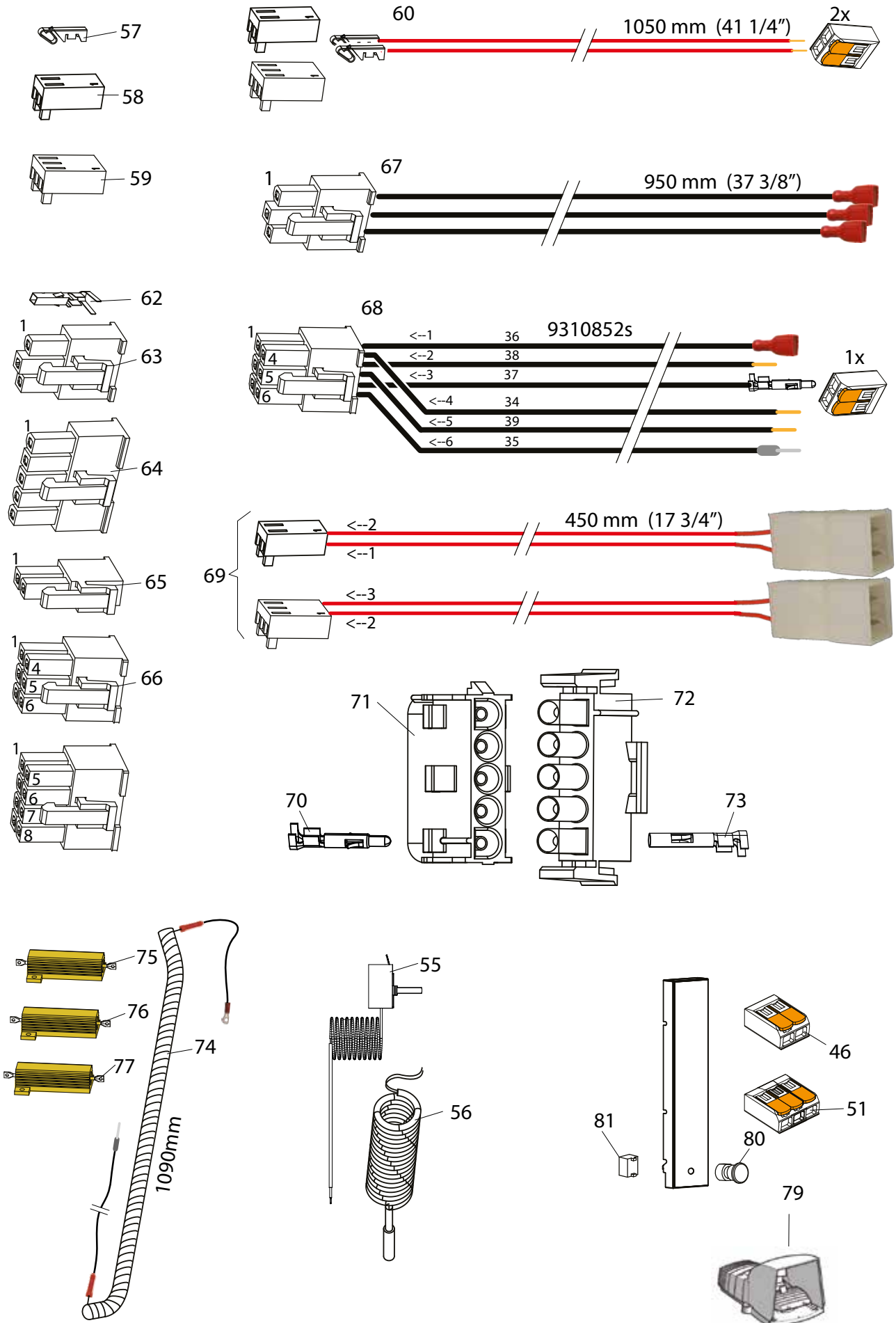
TDRAC, ELECTRICAL PARTS



TDRAC, PARTSLIST ELECTRICAL PARTS

Pos	Part nr.	Description	Qty	Pri	Comment
1	9172552s	CPU + LCD board i-control	1	1	Until the end of 2019
2	9172329	Keypad, set of 2	1	2	
3	9172362	Buzzer 12V	1	2	
4	9172314	Ribbon cable 14p	1	2	
5	9192400s	Power & I/O board	1	1	from ser nr 10008518
6	9192401s	Interface board	1	1	from ser nr 10008518
7	9310161	USB socket, ass.			
8	3500069	Contacto	2	2	
9	9311016	Power Supply 24V 10A	1	1	
10	9040970	Thermostat 50-320°	1	2	
11	9077101	Capacitor 2,5µF	1	2	for rotor motor
12	9192034	Capacitor 6µF	1	2	for blower
13	9291001s	Lamp 500W	2	1	see 9312055s, lamp replacement kit
14	9311015	Lamp holder R7s ceramic	4	2	
15	8091005	Fan	2	1	
16	9292019s	Heating element 230 V, 5.4 kW			
17	9312058s	Heating element 12,4kW 230V	1	2	For 20A / 13,6kW or stacked 40A / 27,2kW units
17,1	9292018s	Heating element 9300 W 230V		2	For 16A / 10,5kW or stacked 31A / 10,5 kW units
18	9310070s	Gearmotor, complete with drive head	1	1	
19	9172310s	Temperature sensor PT 1000	1	1	
20	9311006s	Pump	1	1	
21	9311008s	Motor valve -2/2 1/2" CR03		1	from ser nr 100085818
22	9311007s	Solenoid valve E 2/2 - 1/2" (reduced 9 ltr/min)	1	1	
23	3500020	Reed switch	2	2	
24	9312059s	Heating element 12,4kW 230V			For 20A / 13,6kW or 40A / 27,2kW units
24,1	9312080s	Heating element 9,3kW 230V			For 16A / 10,5kW or stacked 31A / 10,5 kW units
25	9291012	USB cable			
26	9191222	End Clamp Clipfix 35-5 PHX	1		
27	9191352	Terminal PT 6 (GY) 6 qmm PHX	6		
28	9191355	Plug-in bridge FBS 2-8 PHX	2		
29	9191353	Terminal PT 6 PE (GN/YE) 6 qmm PHX	1		
30	9191354	End Cover D-PT 6 PHX	1		
31	9191218	Fuse holder Euro ABB	2		
32	9191250	Cap end, for fuse holder	1		
33	9191238	Plug-in bridge FBS 2-6 PHX	3		
34	9191237	Plug-in bridge FBS 3-6 PHX	1		
35	9298550s	Blower, ass. TDR5	1	2	
36	9191240	Terminal PT 4 (GY) 4 qmm PHX	13		
37	9191241	Terminal PT 4 (BU) 4 qmm PHX	7		
38	9191239	Terminal PT 4 PE (GN/YE) 4 qmm PHX	1		
39	9191223	End Cover D-PT 4 PHX	1		
40	9298551s	Blower, ass. TDR8ac	1	2	
41	9310154s	Blower, ass. TDR8ac (lower stacked unit)	1	2	Until ser. nr. 100092266, the service kit 9311054s is necessary to mount this assembly.
42	9311044	Relay, 24V Allen Bradley (blue)			
43	9291141	Socket, relay Allen Bradley	3		
44	9291140	Relay, 230V Allen Bradley (yellow)	3		until ser nr 100085817
45	9191197	Fuse 10A, ceramic 32x6,3	2	1	
46	9291122	Connector, 2 pole			
47	9311013s	Motor valve -2/2 3/4" CR03	2	1	
48	9171110	Connector, 2 pole ceramic			
49	9312083s	Drain pump	1	1	
50	9312085	Solenoid double valve 1/2" (reduced 9 ltr/min)			
51	9291123	Connector, 3 pole			
52	9292280s	CPU + LCD board s-control			From May 2019
53	9311046s	Speaker			
54	9311047	Cable, speaker s-control			

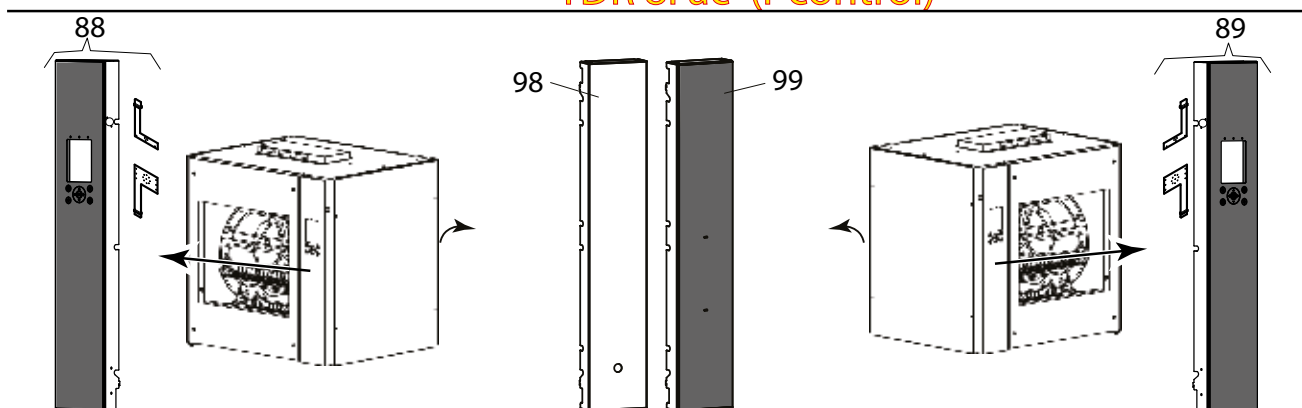
TDRAC, ELECTRICAL PARTS



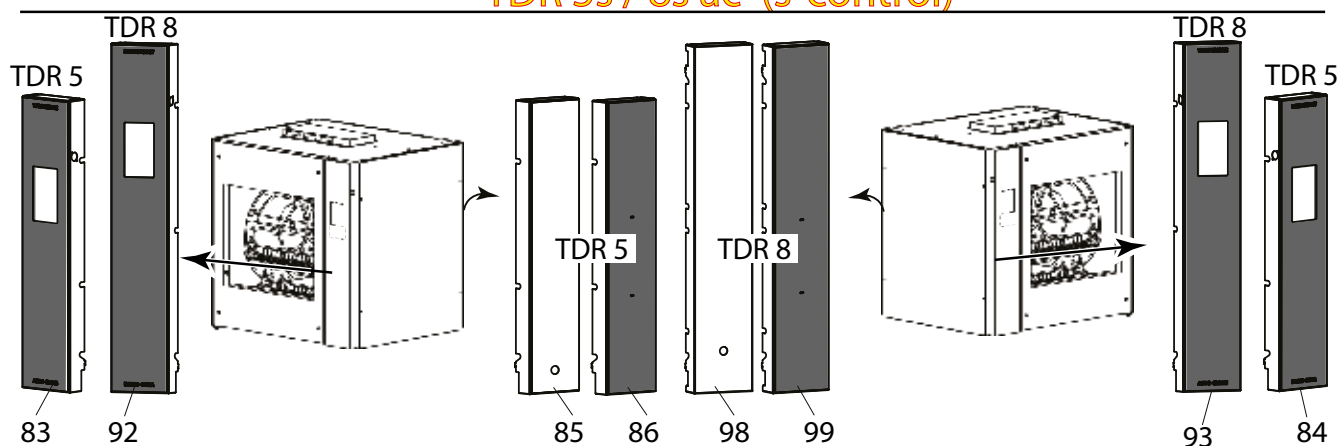
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TDRAC, CONTROL PANELS

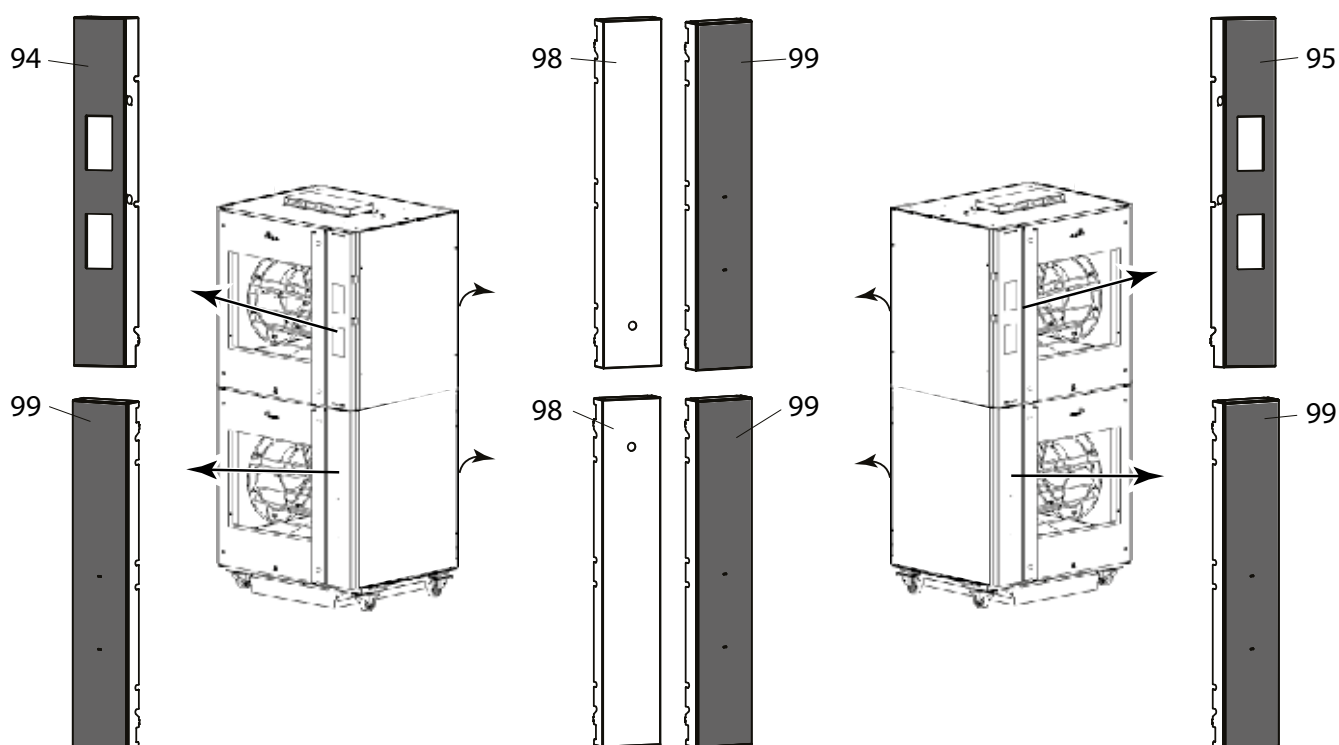
TDR 8i ac (i-control)



TDR 5s / 8s ac (s-control)



TDR 8+8s ac (s-control)



TDR5S AC, PARTSLIST CONTROL PANELS

Pos	Part nr.	Description	Qty	Priority	Comment
83	9318523s	Operator panel, ass.TDR5-s, Right-contr.	1	2	
84	9318524s	Operator panel, ass.TDR5-s, Left -contr.	1	2	
85	9314727s	Panel, customer side L+R, ass. TDR5, for rotor button	1		
85,1	9310302s	Conversion kit Pass through (5), incl door handle			
86	9318525s	Panel, customer side L+R, ass. TDR5	1	2	

TDR8I AC, PARTSLIST CONTROL PANELS

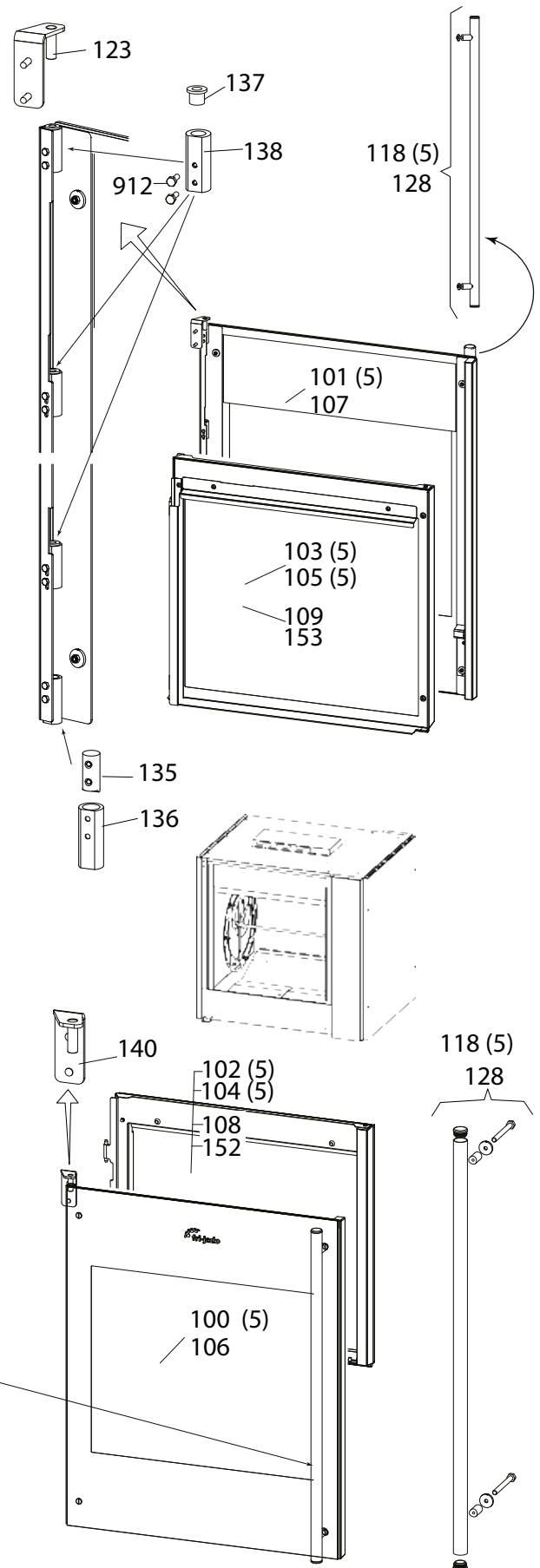
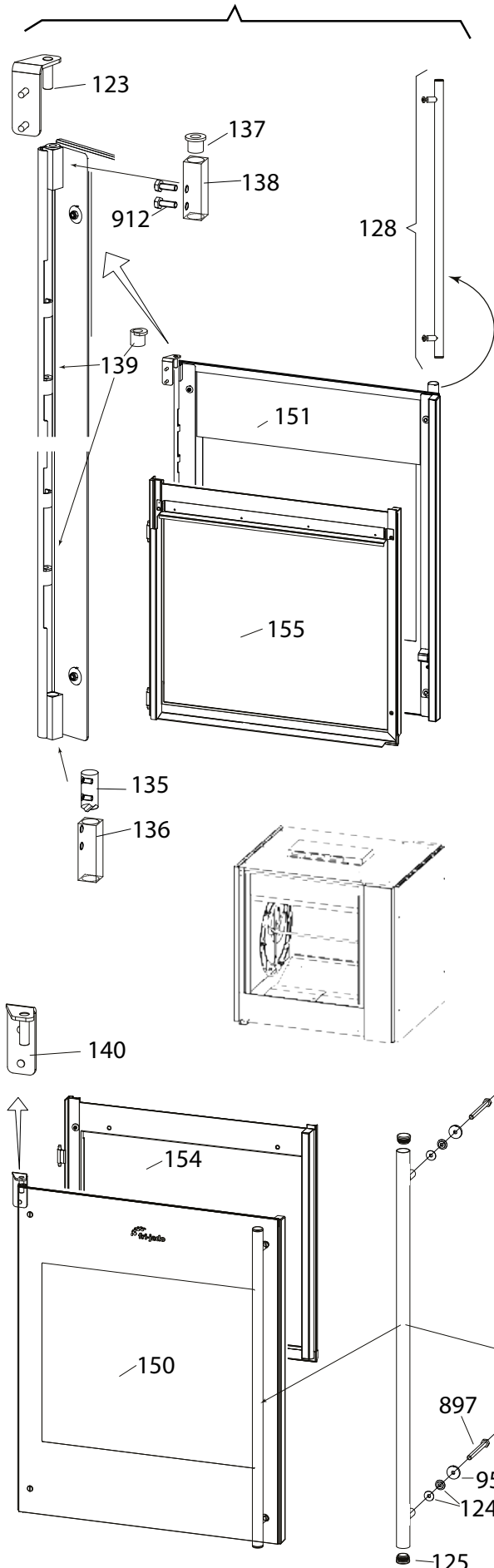
88	9318520s	Operator panel, ass.TDR8-i Right-contr	1	2	
89	9318521s	Operator panel, ass.TDR8-i, Left-contr	1	2	
98	9314170s	Panel, customer side L+R, ass. TDR8, for rotor button	1		
98,1	9310150s	Conversion kit Pass through (8), incl door handle			
99	9318522s	Panel, customer side L+R, ass. TDR8	1	2	

TDR8S AC, PARTSLIST CONTROL PANELS

92	9318534s	Operator panel, ass.TDR8-s Right-contr	1	2	
93	9318535s	Operator panel, ass.TDR8-s, Left-contr	1	2	
94	9318536s	Operator panel, ass. 8+8-s, Right-contr	1	2	
95	9318533s	Operator panel, ass. 8+8 -s, Left-contr	1	2	
98	9314170s	Panel, customer side L+R, ass. TDR8, for rotor button	1		
98,1	9310150s	Conversion kit Pass through (8), incl door handle			
99	9318522s	Panel, customer side L+R, ass. TDR8	1	2	

TDRAC, DOORS

TDR8 ac untill serial number 100095331



TDR5 AC, DOORS

Pos	Part number	Description	Qty	Priority	Comment
		Outer doors TDR5 ac			
100	9318550s	Ass. Outer door Left turning TDR5ac from 100094859	1	2	
101	9318551s	Ass. Outer door Right turning TDR5ac from 100094859	1	2	
		Inner doors TDR5 ac from 100103281			
102	9318555s	Ass. Inner door Left turning TDR5ac from 100103281	1	2	
103	9318556s	Ass. Inner door Right turning TDR5ac from 100103281	1	2	
		Inner doors TDR5 ac untill 100103280			
104	9318552s	Ass. Inner door Left turning TDR5ac untill 100103280	1	2	
105	9318554s	Ass. Inner door Right turning TDR5ac untill 100103280	1	2	

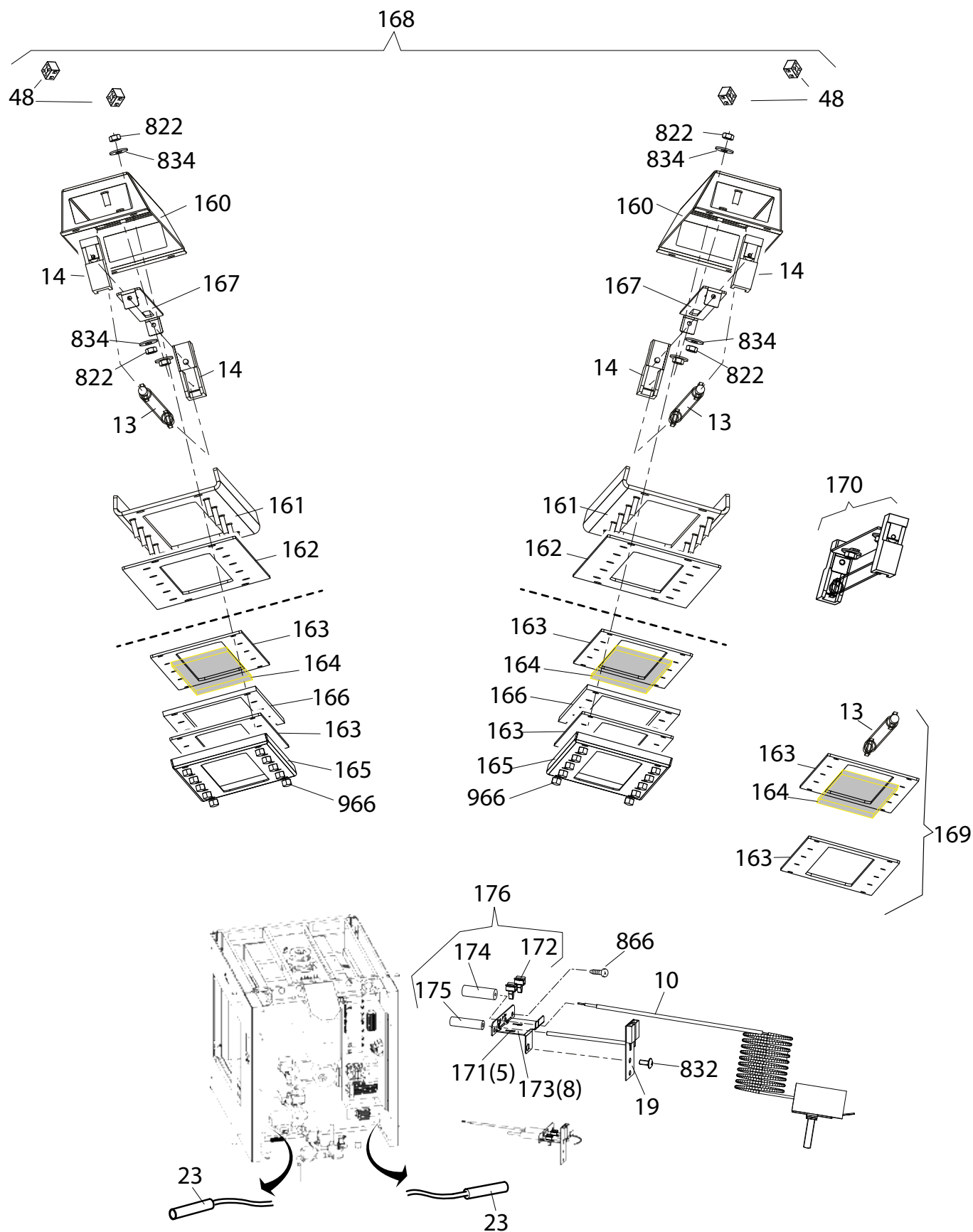
TDR8(+8)AC, OUTER DOORS

		Outer doors TDR8(+8) ac from serial number 100095332			
106	9318515s	Ass. Outer door Left turning TDR8ac from 100095332	1	2	
107	9318516s	Ass. Outer door Right turning TDR8ac from 100095332	1	2	
		Outer doors TDR8(+8) ac untill serial number 100095331			
150	9318510s	Ass. Outer door Left turning TDR8ac untill 100095331	1	2	
151	9318513s	Ass. Outer door Right turning TDR8ac untill 100095331	1	2	

TDR8(+8)AC, INNER DOORS

		Inner doors TDR8(+8) ac from 100104167			
108	9318547s	Ass. Inner door Left turning TDR8ac from 100104167	1	2	
109	9318549s	Ass. Inner door Right turning TDR8ac from 100104167	1	2	
		Inner doors TDR8(+8) ac from 100095332 untill 100104166			
152	9318517s	Ass. Inner door Left turning TDR8ac from 100095332 untill 100104166	1	2	
153	9318519s	Ass. Inner door Right turning TDR8ac from 100095332 untill 100104166	1	2	
		Inner doors TDR8(+8) ac untill 100095331			
154	9318527s	Ass. Inner door Left turning TDR8ac untill 100095331	1	2	
155	9318529s	Ass. Inner door Right turning TDR8ac untill 100095331	1	2	
		associated door parts			
118	9298100s	Doorhandle set TDR5			
123	9310411	Hinge, top right	1		
124	3702342	Collar bush 10x5x3,5	16		
125	2103209	Plug Ø 30mm	4		
128	9298101s	Doorhandle set TDR8			
135	9312014	Positioning pin, door hinge	2		
136	9312112	Bearing bush, lower hinge	2		
137	9172054	Collar bearing, bronze	2		
138	9312111	Bearing block, upper hinge	2		
139	9172122	Collar bearing, modified, bronze			
140	9310410	Hinge, top left	1		

TDRAC, LIGHTING AND SENSORS

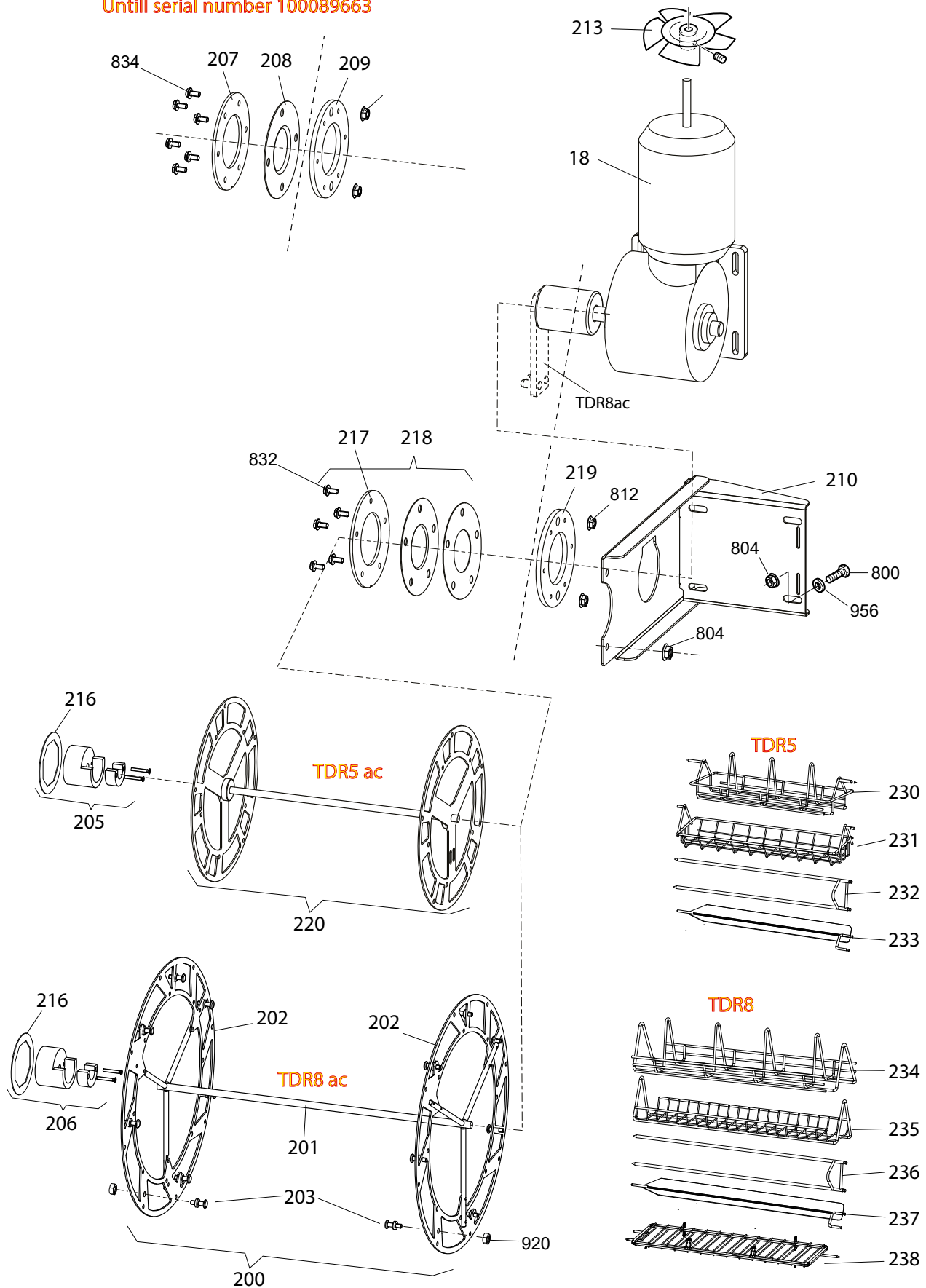


TDRAC, LIGHTING AND SENSORS

Pos	Part nr.	Description	Qty	Priority	Comment
10	9040970	Thermostat 50-320°	1	2	
13	9291001s	Lamp 500W	2	1	see 9312055s, lamp replacement kit
14	9311015	Lamp holder R7s ceramic	4	2	
19	9172310s	Temperature sensor PT 1000	1	1	
23	3500020	Reed switch	2	2	
48	9171110	Connector, 2 pole ceramic			
0					
160	9314113	Cover, lamp	2		
161	9314114	Mounting bracket, lamp fixture.	2		
162	9312054	Seal, top	2		
163	9312055	Seal, light (for lamp 500W)	2	1	
164	9312020	Glass, oven illumination	2	1	
165	9314330	Cover profile, oven illumination	2		
166	9314331	Spacer plate	2		
167	9314334	Bracket, lamp holder.	2		
168	9310071s	Service kit, 2 lamp fixtures			
169	9312055s	Lamp replacement kit			
170	9311029s	Lamp holder kit			
171	9314785s	Bracket, sensors TDR5ac	1		
172	9110072	Clamp	2		
173	9294069s	Bracket, sensors TDR8ac	1		
174	9313022	Silicon hose Ø12xØ3, L=43	1		
175	9313023	Silicon hose Ø10xØ4, L=43	1		

TDRAC, ROTOR

Untill serial number 100089663

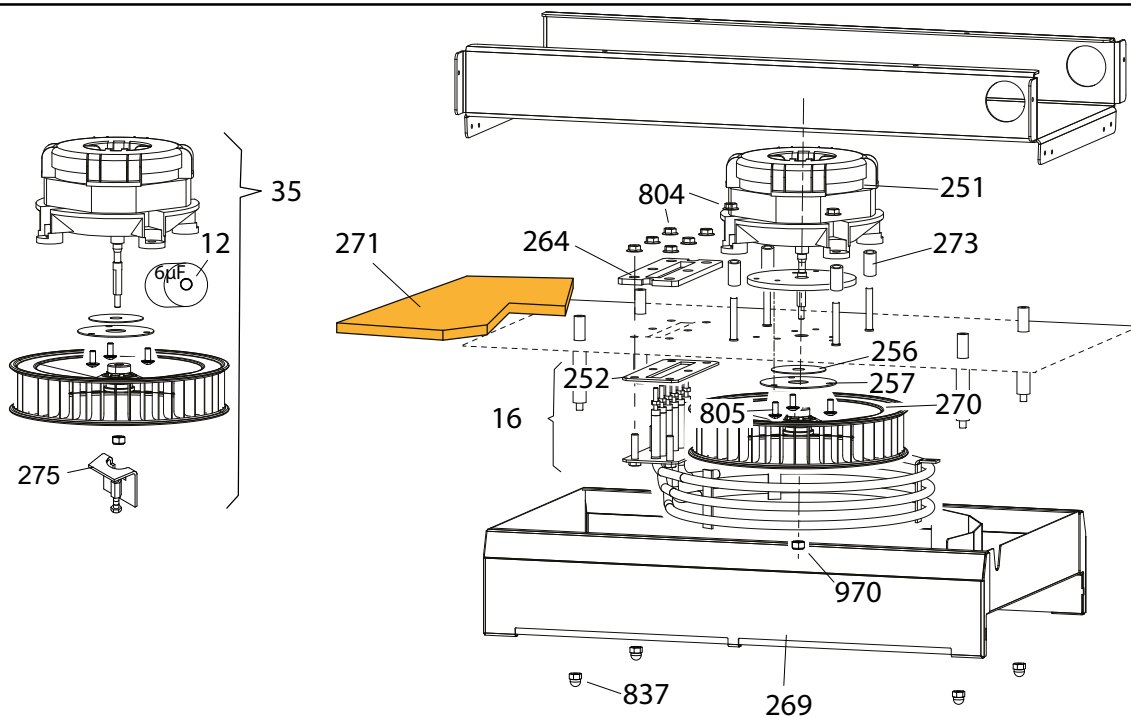


TDRAC, PARTSLIST ROTOR

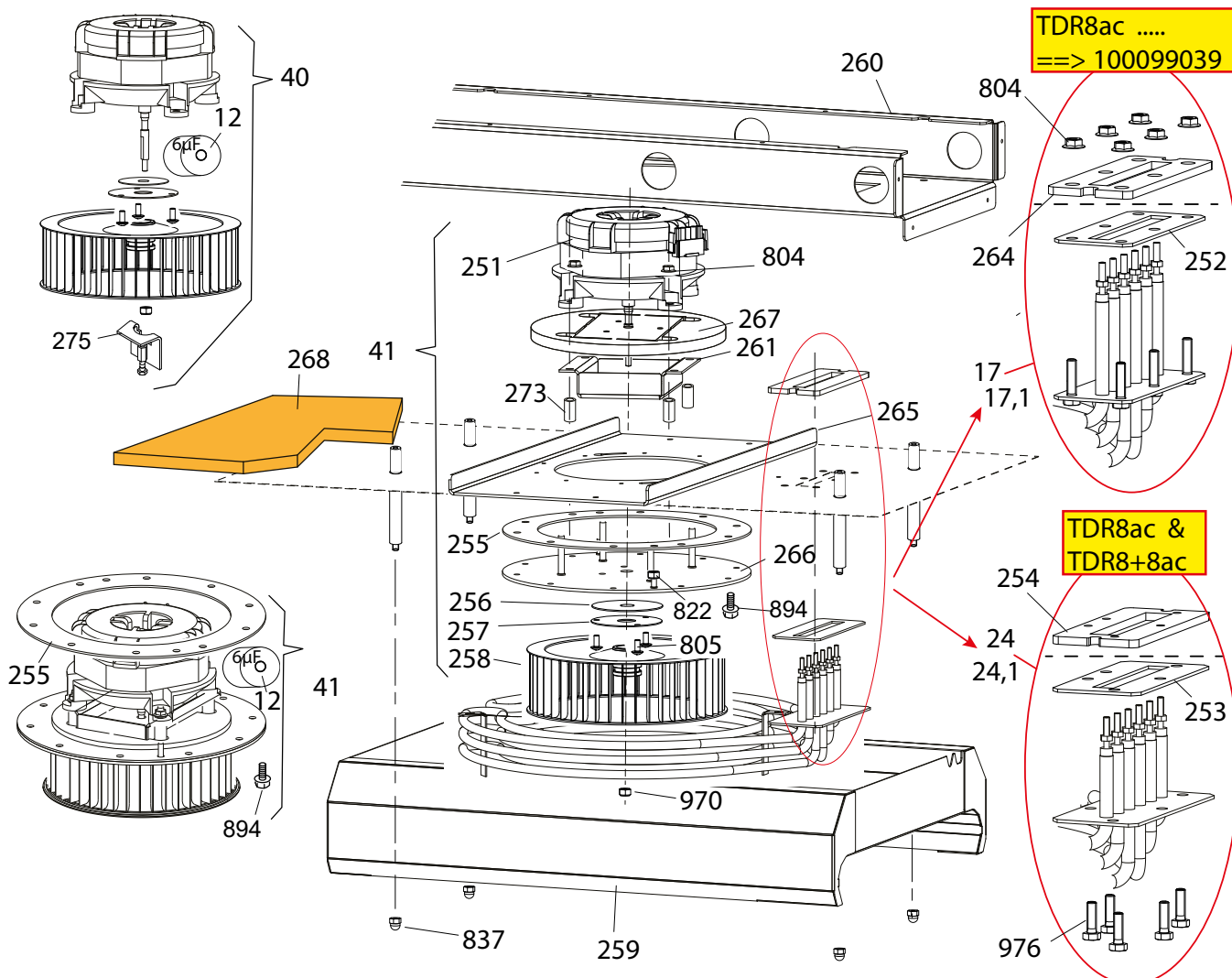
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TDRAC, BLOWER & HEATING

TDR 5ac



TDR 8 ac / TDR 8+8 ac



TDR5AC, PARTSLIST BLOWER & HEATING

Pos	Part nr.	Description	Qty	Priority	Comment
16	9292019s	Heating element 230 V, 5.4 KW		1	
35	9298550s	Blower, ass. TDR5	1	2	
251	9293020s	Blower motor, with conversion cable			

TDR8AC, PARTSLIST BLOWER & HEATING UNTILL SERIAL NR. 100099039

17	9312058s	Heating element 12,4kW 230V	1	2	For 20A / 13,6kW or stacked 40A / 27,2kW units
17,1	9292018s	Heating element 9300 W 230V		2	For 16A / 10,5kW or stacked 31A / 10,5 kW units
40	9298551s	Blower, ass. TDR8ac	1	2	
251	9293020s	Blower motor, with conversion cable			

TDR8AC FROM 100099040 AND TDR8+8AC, BLOWER & HEATING

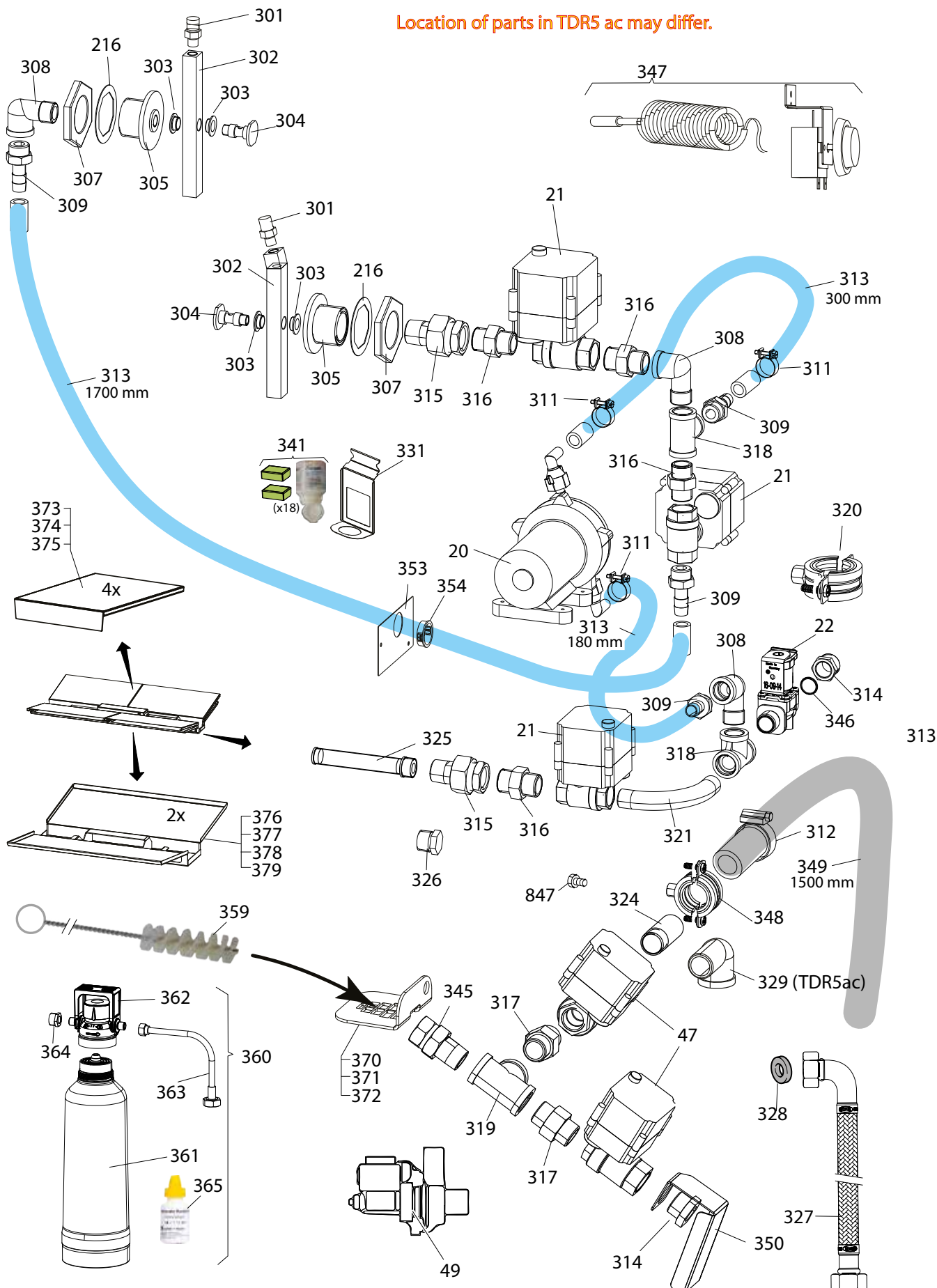
24	9312059s	Heating element 12,4kW 230V	2	2	For 20A / 13,6kW or 40A / 27,2kW units
24,1	9312080s	Heating element 9,3kW 230V	1	2	For 16A / 10,5kW or stacked 31A / 10,5 kW units
40	9298551s	Blower, ass. TDR8ac	1	2	
41	9310154s	Blower, ass. TDR8ac (lower stacked unit)	1	2	
251	9293020s	Blower motor, with conversion cable			

TDRAC, ASSOCIATED PARTS BLOWER & HEATING

252	9194489	Gasket heating element	1	2	
255	9312018	Seal, Fan suspension	1	1	
256	3702325	Shaft seal	1	1	
257	9294007	Pressure ring	1		
258	3701273	Turbine, Ø200x61	1		
259	9310419	Blower panel TDR8ac	1		
260	9314139	Reinforcement plate, blower panel	1		
261	9314137	Mounting bracket, blower motor	1		
262	9294083	Spacer ring	8		
263	9293004	Spacer. 12 mm	9		
264	9294168	Pressure plate, heating element	1		
265	9314138	Suspension plate, blower motor	1		
266	9314136	Mounting plate, blower motor	1		
267	9313018	Insulation, blower motor			
268	9313011	Insulation top TDR8ac			
269	9310257	Blower panel TDR5ac	1		
270	3701218	Turbine, Ø200x43	1		
271	931pk02	Insulation top TDR5ac			
273	9312075	Spacer 20,5 mm	4		

TDRAC, CLEANING SYSTEM

Location of parts in TDR5 ac may differ.

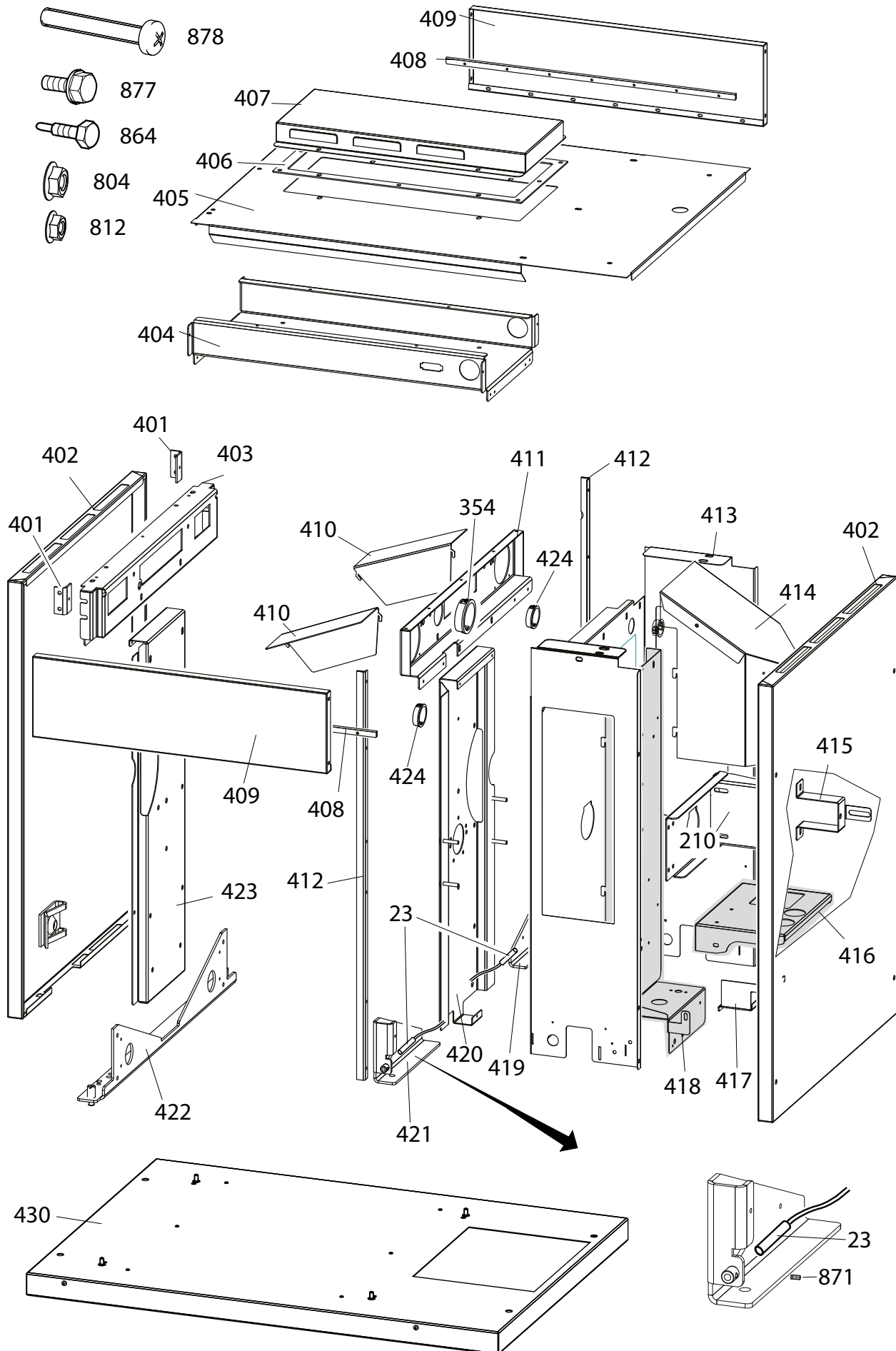


TDRAC, PARTSLIST CLEANING SYSTEM

Pos	Part nr.	Description	Qty	Pri- ority
20	9311006s	Pump	1	1
21	9311008s	Motor valve -2/2 1/2" CR03		1
22	9311007s	Solenoid valve E 2/2 - 1/2" (reduced 9 ltr/min)	1	1
47	9311013s	Motor valve -2/2 3/4" CR03	2	1
49	9312083s	Drain pump	1	1
50	9312085	Solenoid double valve 1/2" (reduced 9 ltr/min)	1	1
216	9312019	Seal	3	2
301	9301007	Nozzle, spoon shape	2	
302	9312117	Spray arm TDR5ac and 8ac	2	
303	9311014	Collar bearing, Ø12xØ10	4	1
304	9312012	Shaft , spray arm	2	2
305	9312011	Adapter, spray arm	2	
307	9311021	Nut, 3/4"	2	
308	3721050	Elbow threaded 1/2" (F-M) BSP	4	
309	9311011	Hose Pillar 1/2" (M) SS	4	
311	9311018	Hose clamp, 19-21 mm	6	
312	6000032	Hose clamp, 26-38 mm	2	
313	9301108	Hose 13x23	2,2 m	
314	9311028	Reducing bushing 3/4"x1/2", SS		
315	9311009	Union conicle 1/2" (M-F) SS	3	
316	3721047	Hexagon nipple threaded 1/2" (M-M) BSP	7	
317	3721029	Hexagon nipple threaded 3/4" (M-M) BSP	2	
318	3721046	Tee threaded 1/2" (F-F-F) BSP	3	
319	9301028	Tee threaded 3/4" (F-F-F) BSP	1	
320	2650194	Clamp, suspension, 26-30	1	
321	9311010	Bend 90° threaded 1/2" (M-M) SS	1	
324	9301006	Welding nipple, 3/4"	1	
325	9310401	Suction filter	1	2
326	9313026	Plug 1/2"		
327	9191203	Water supply hose	1	
328	9191227	Gasket Ø24xØ16x2	1	1
329	9301031	Elbow threaded 3/4" (F-M) BSP	1	
331	9314435	Deep-clean cartridge holder	1	1
341	9312078	Cleaning Tabs, box 36 Pcs + 18 DC Cartridge		
342	9312077	Deep-clean cartridge 200gram		

Pos	Part nr.	Description	Qty	Pri- ority
345	9301027	Union, conicle 3/4" (M-F) SS	1	
346	9311033	O-ring	1	
347	9310157s	Heat tracing kit		
348	2650217	Clamp, suspension, 32-38	1	
349	9301059	Hose, Ø25xØ33	1,5m	
350	9314070	Splash guard	1	
352	9314131	Bracket, valve	1	
353	9314130	Suspension, Hose	1	
354	9171015	Grommet Ø 33 mm	3	
359	9191136	Pipe brush	1	
360	9308010	Water filtration system		
361	9301073	Replacement filter cartridge		
362	9301070	Filter head		
363	9301071	Hose 3/8"x 3/4" x 1,5 Mtr		
364	9301061	Reducing ring 3/4" x 3/8"		
365	9301074	Carbonate hardness test kit		
370	9314764	Grid, drain TDR5	1	
371	9314542	Grid, drain TDR8+8 and TDR8ac from 100104167	1	
372	9314195	Grid, drain TDR8	1	
373	9314765	Grease cover TDR5ac	4	
374	9314529	Grease cover TDR8+8ac and TD-R8ac from 100104167	4	
375	9314184	Grease cover TDR8ac	4	
376	9310328s	Filter screen TD-R5ac from serial nr 100103281	2	
377	9310272s	Filter screen TDR5ac	2	
378	9310208s	Filter screen TDR8+8ac and TD-R8ac from 100104167	2	
379	9310405s	Filter screen TDR8ac untill 100104166	2	

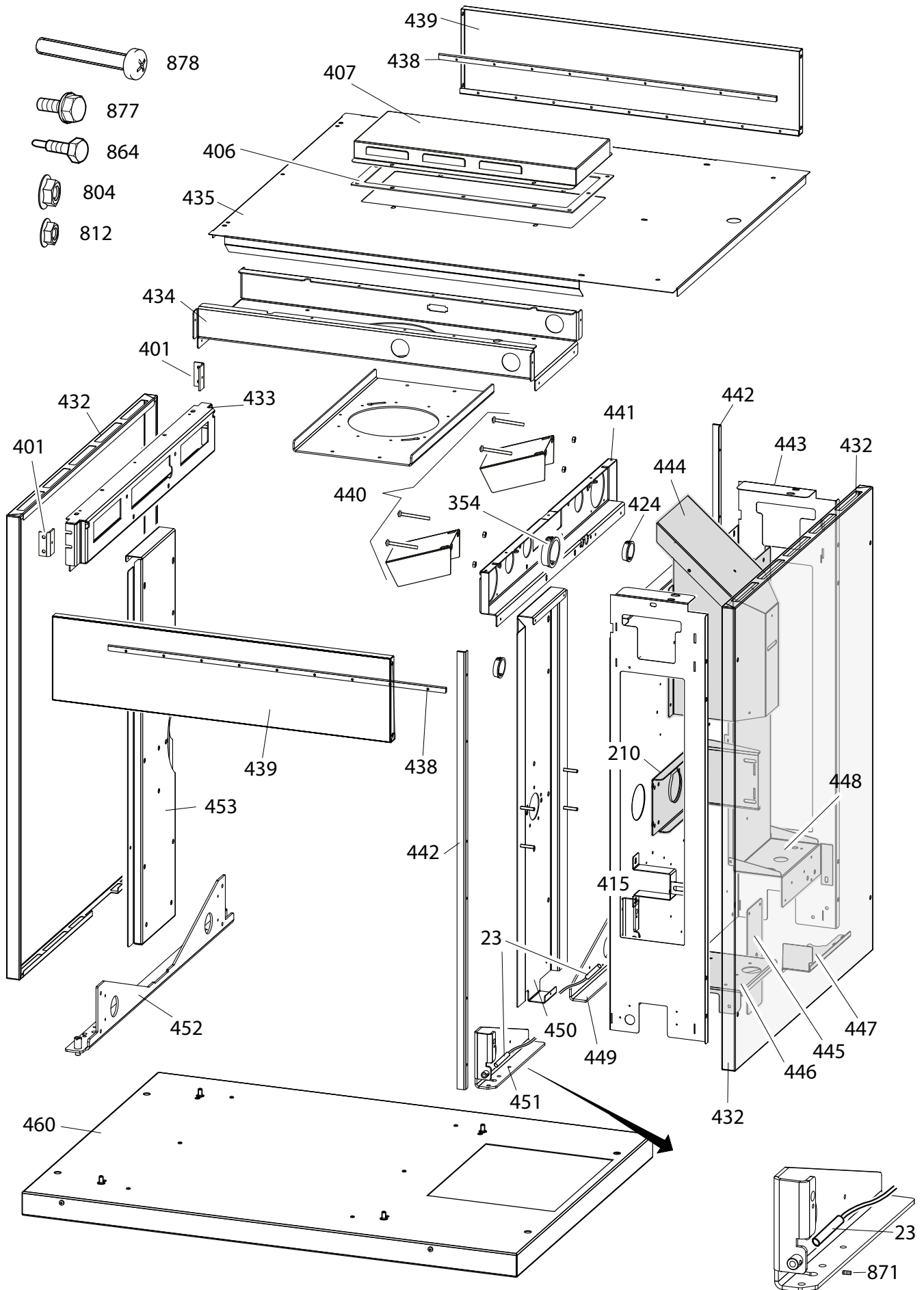
TDR5AC, SHEET METAL



TDR5AC, PARTSLIST SHEET METAL

[illegible]

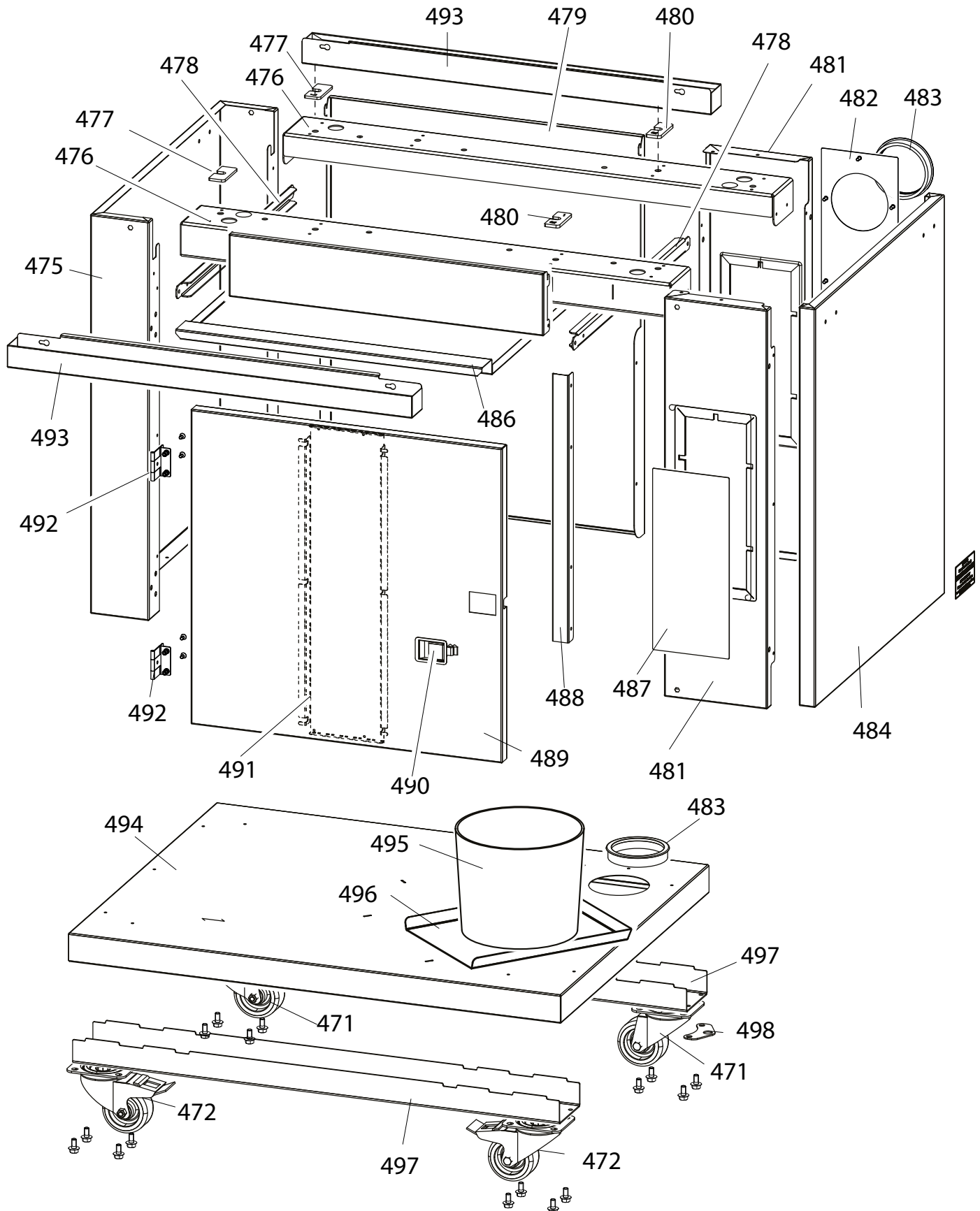
TDR8AC, SHEET METAL



TDR8 AC, PARTSLIST SHEET METAL

[illegible]

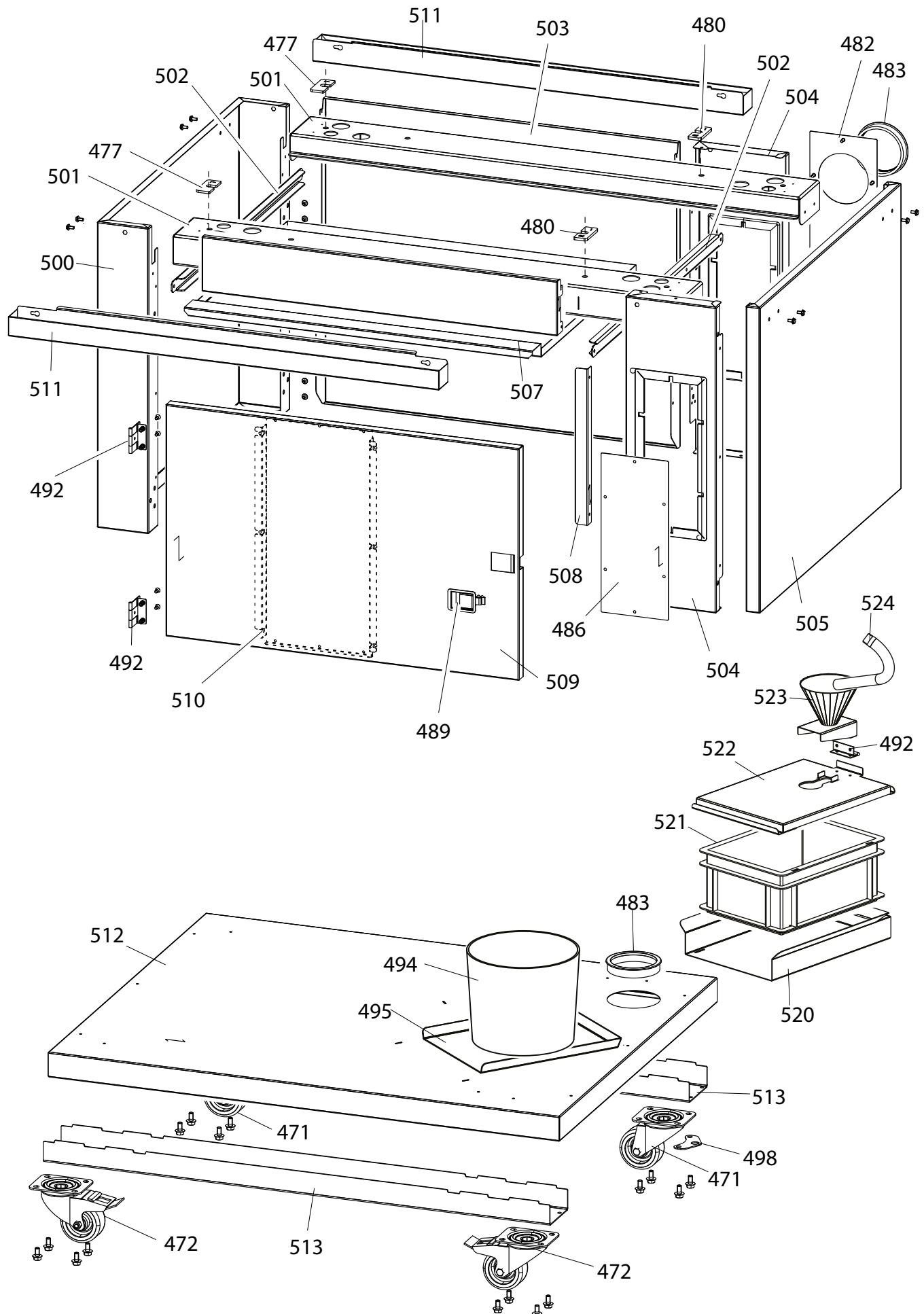
TDR5 AC, UNDERFRAME



TDR5 AC, PARTSLIST UNDERFRAME

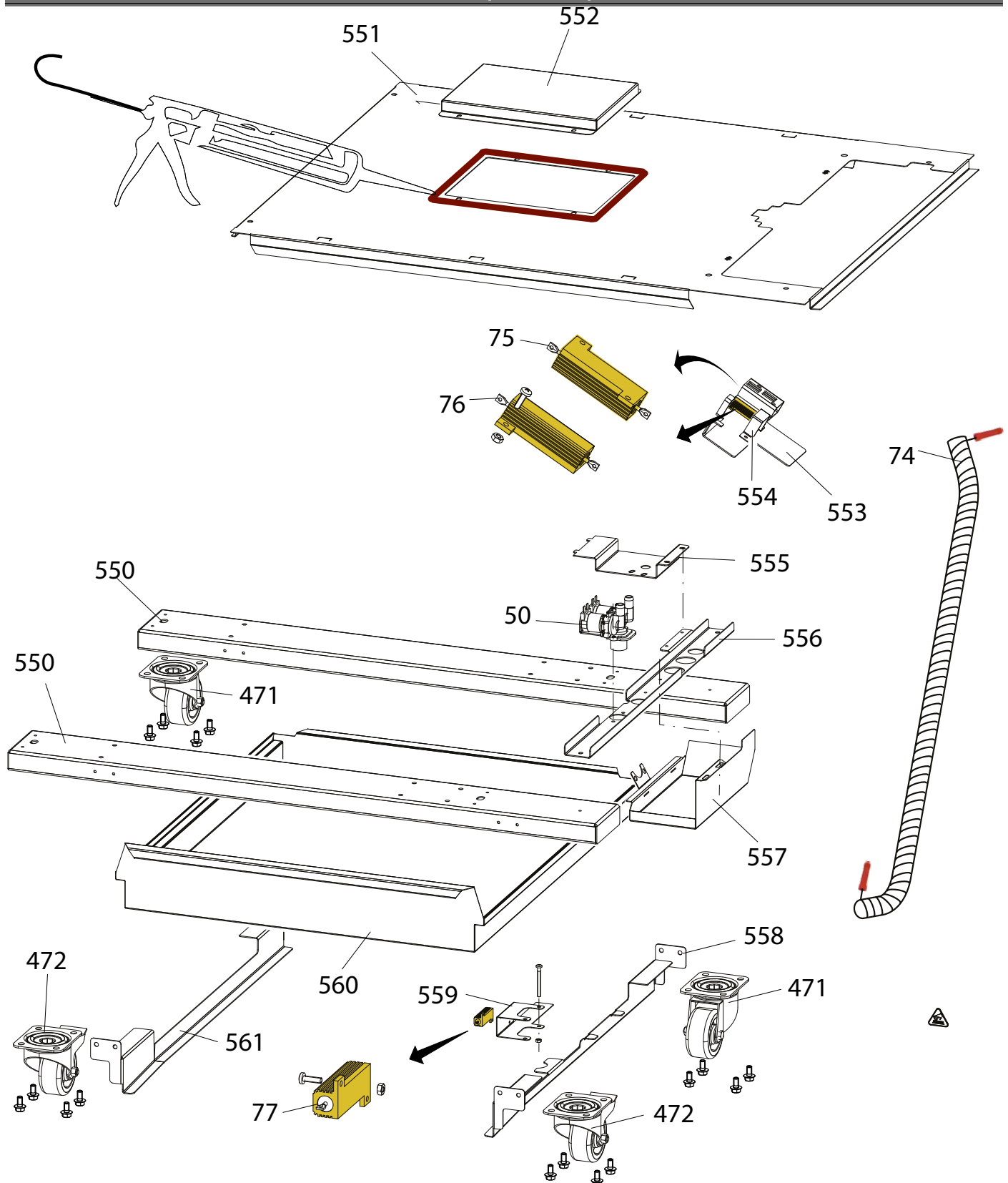
[illegible]

TDR8 AC, UNDERFRAME



[illegible]

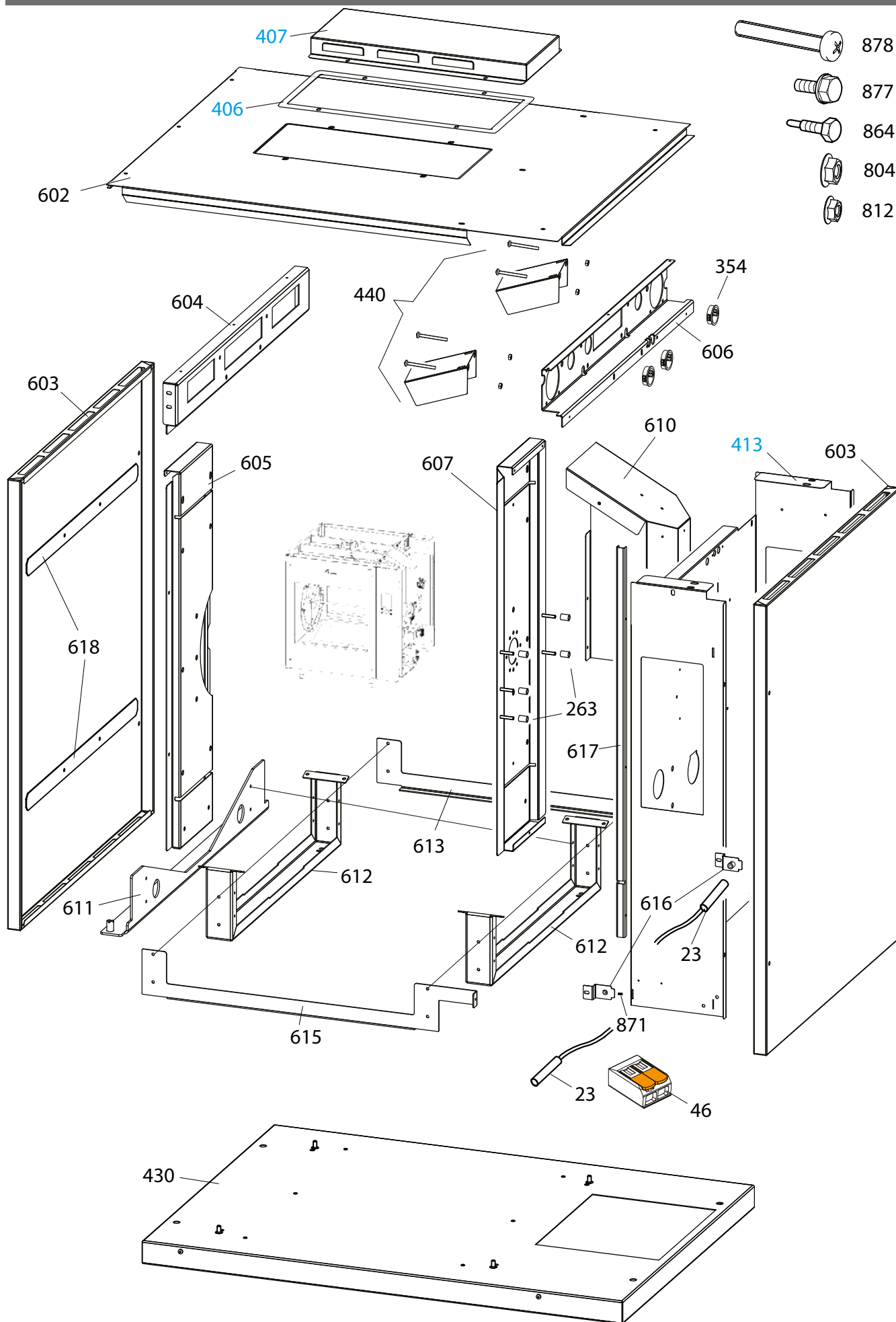
TDR8+8 AC, (EXTRA) PARTS



TDR8+8 AC, PARTSLIST (EXTRA) PARTS

[illegible]

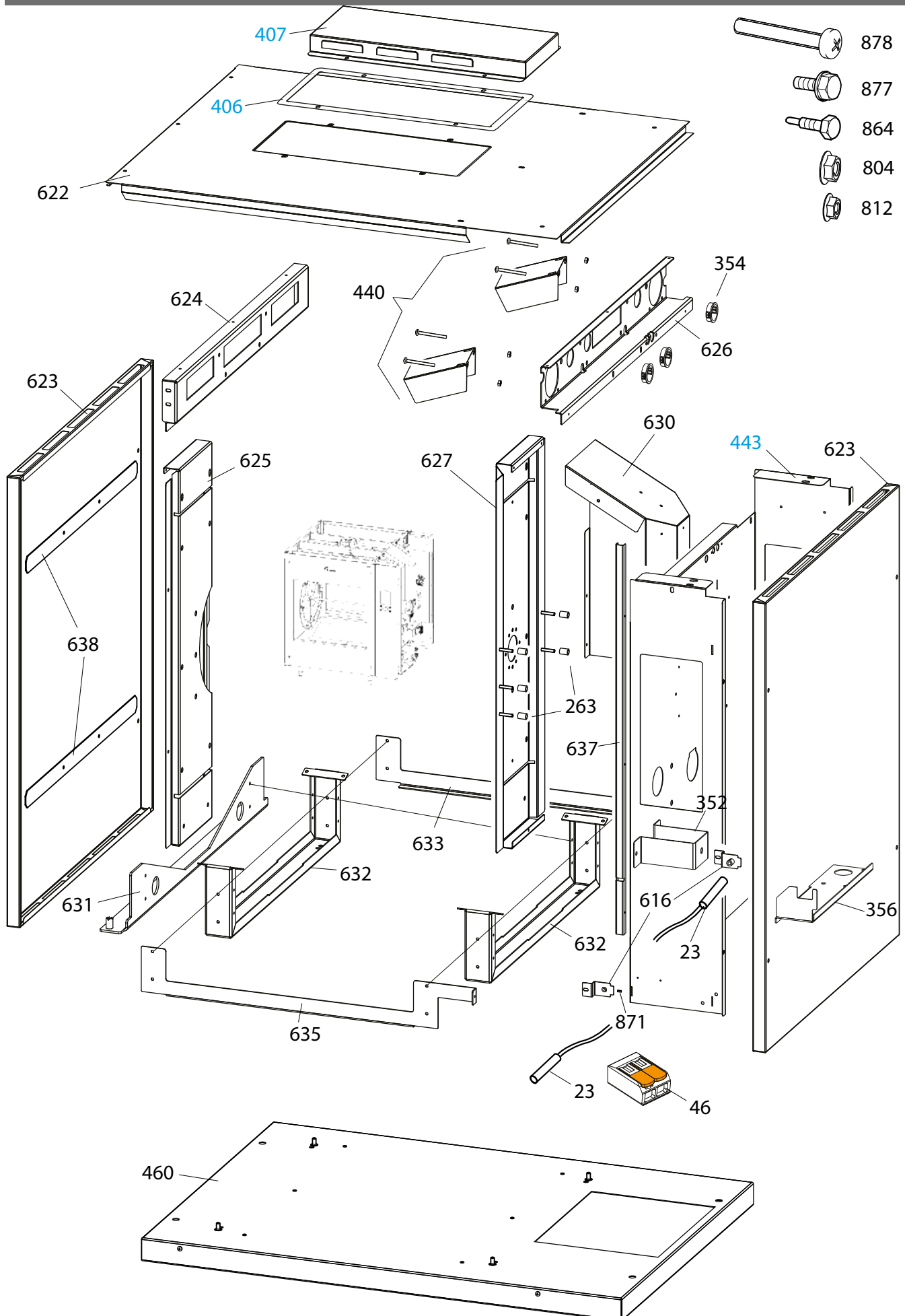
TDR 5 AC SHEET METAL UNTILL 100103281



TDR 5 AC PARTS LIST SHEET METAL UNTILL 100103281

[illegible]

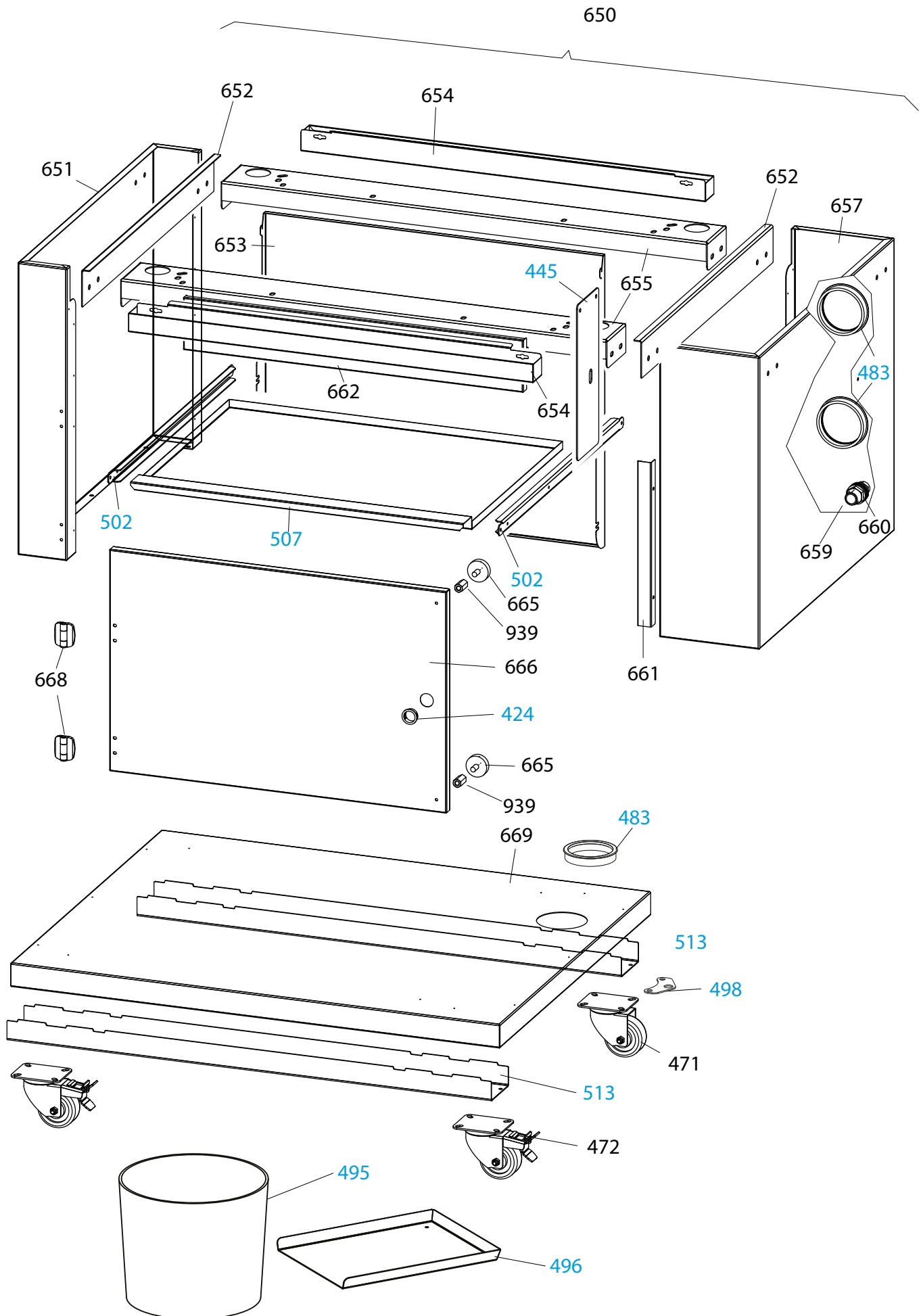
TDR8 AC SHEET METAL UNTILL 100104166



TDR8 AC PARTS LIST SHEET METAL UNTILL 100104166

[illegible]

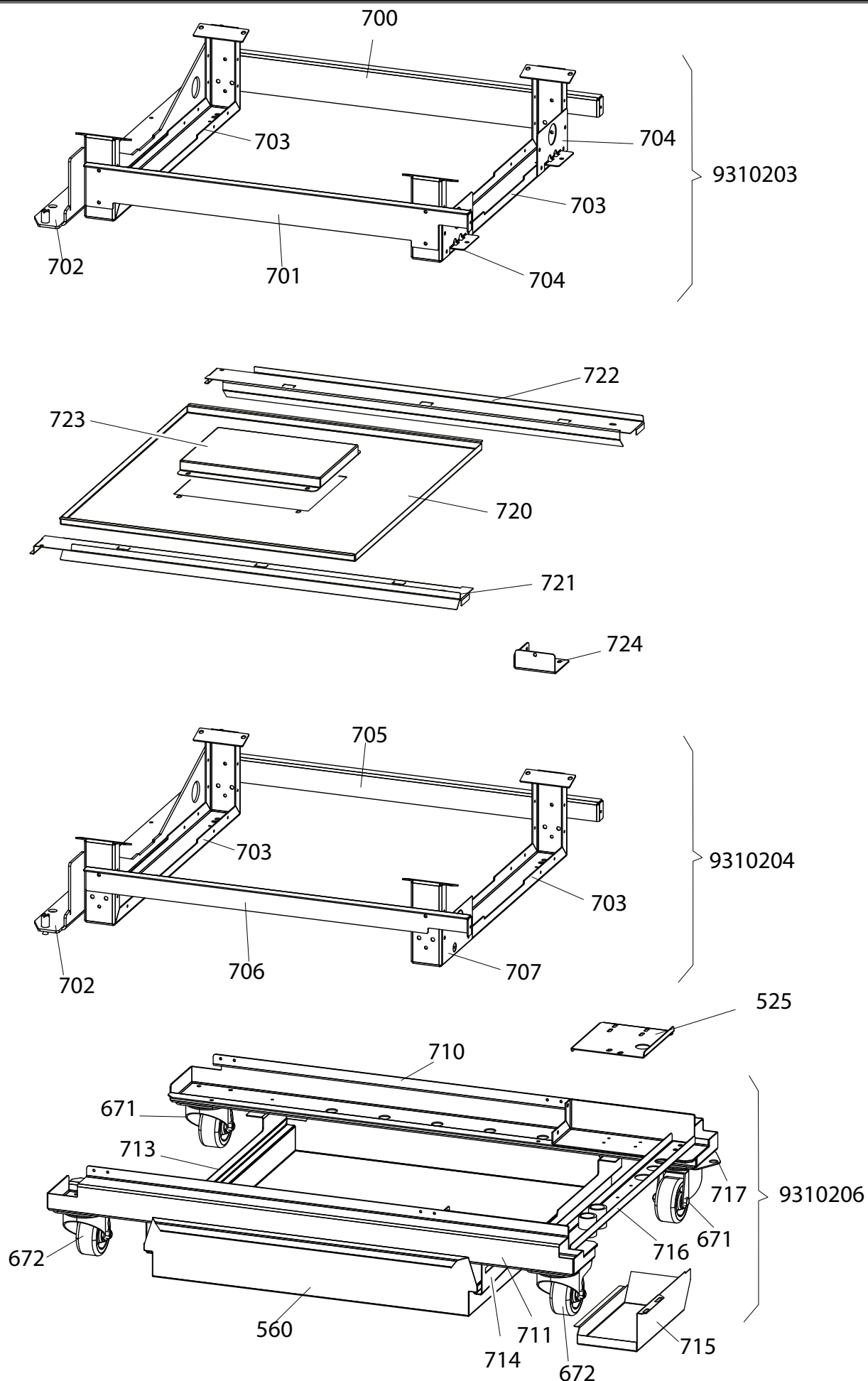
TDR8 AC UNDERFRAME UNTILL 100104166



TDR8 AC PARTS LIST UNDERFRAME UNTILL 100104166

[illegible]

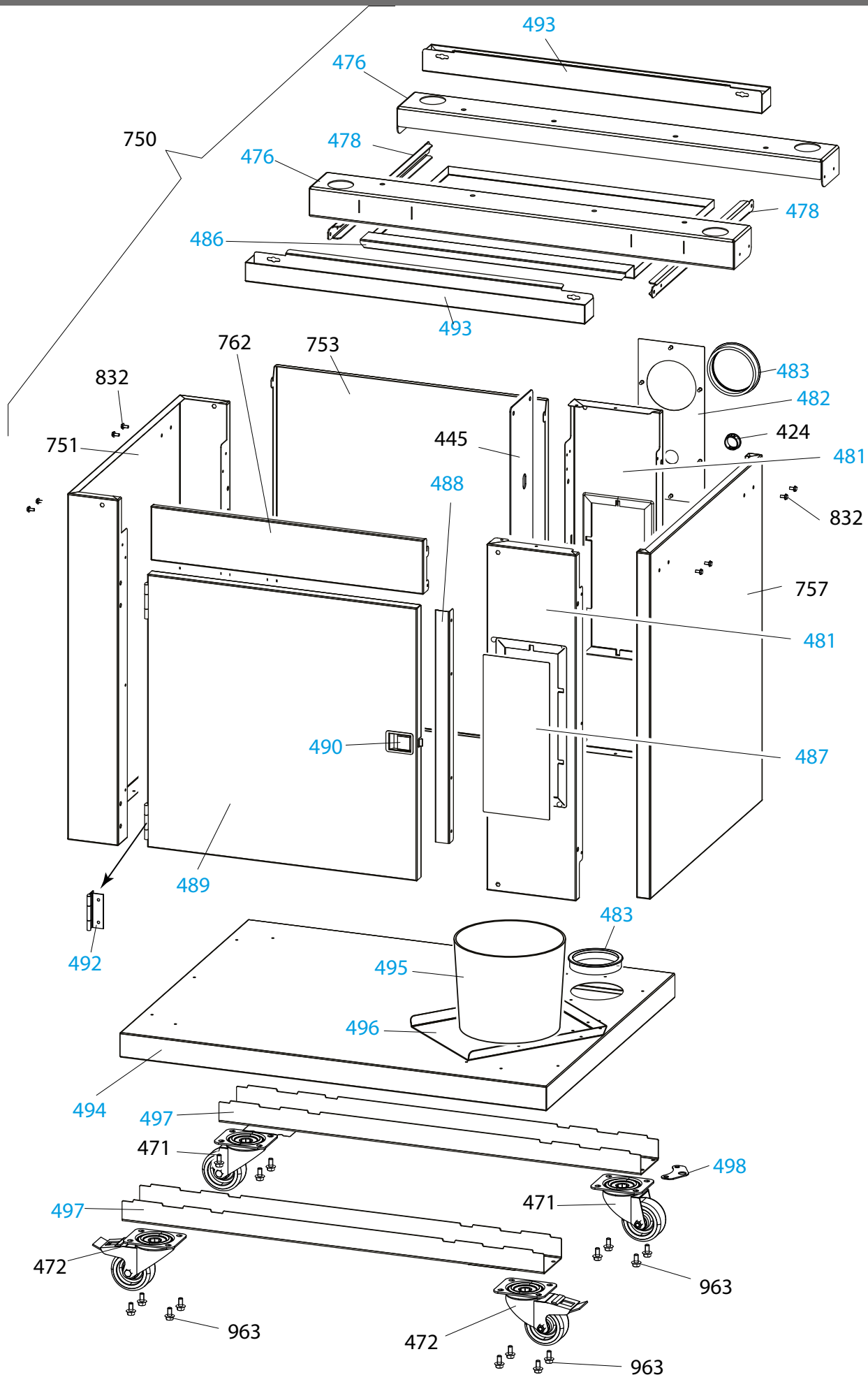
TDR8+8 AC, (EXTRA) PARTS UNTILL 100104166



TDR8+8 AC, PARTSLIST (EXTRA) PARTS UNTILL 100104166

[illegible]

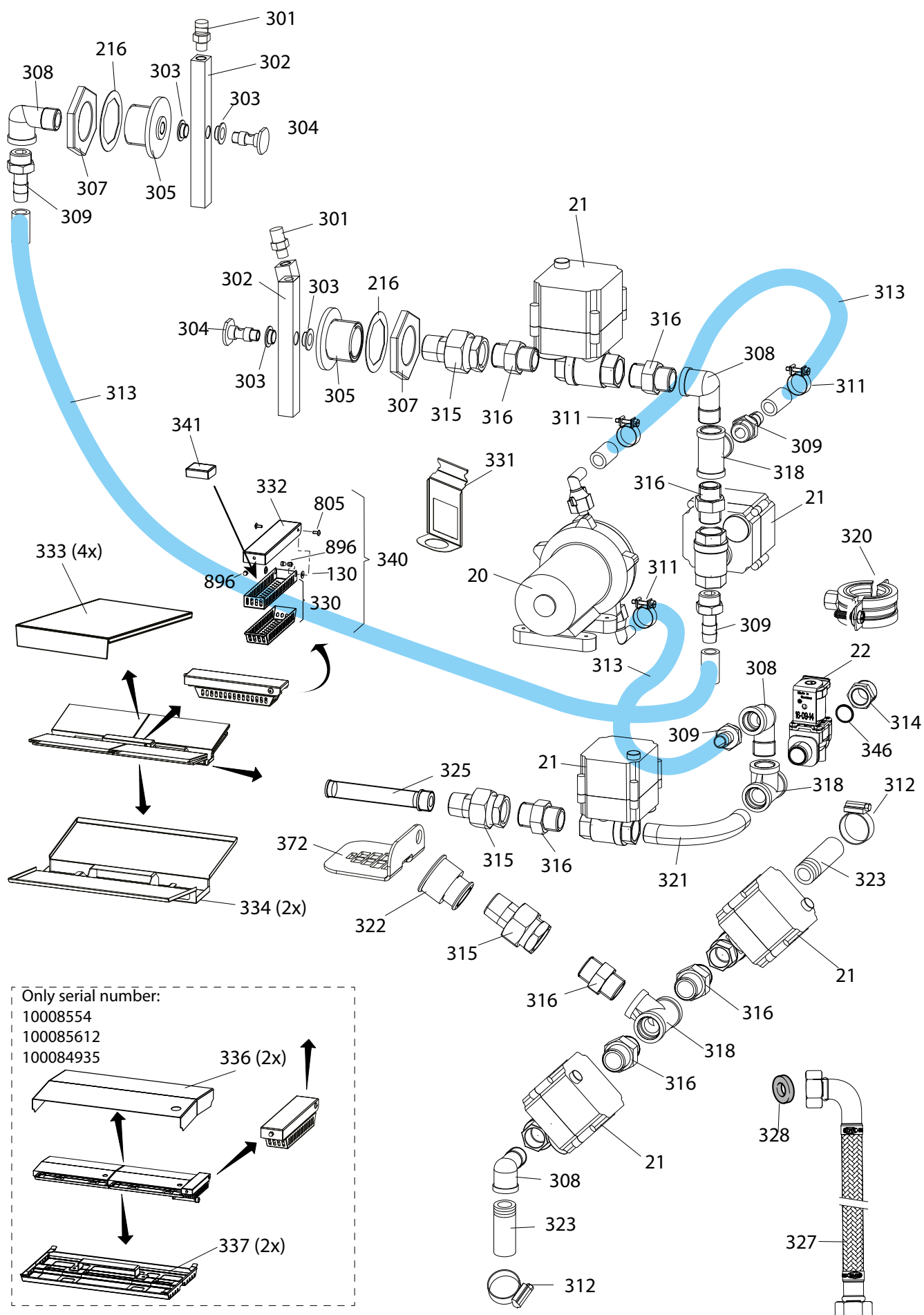
TDR5 AC UNDERFRAME UNTILL 100103281



TDR5 AC PARTS LIST UNDERFRAME UNTILL 100103281

[illegible]

TDRAC, CLEANING SYSTEM, UNTILL SER NR 100087797



TDRAC, PARTSLIST CLEANING SYSTEM, UNTILL SER NR 100087797

Pos	Part number	Description	Qty	Priority	Comment
20	9311006s	Pump	1	1	
21	9311008s	Motor valve -2/2 1/2" CR03		1	from ser nr 100085818
22	9311007s	Solenoid valve E 2/2 - 1/2" (reduced 9 ltr/min)	1	1	
216	9312019	Seal	3	2	
301	9301007	Nozzle, spoon shape	2		
302	9312117	Spray arm TDR5ac and 8ac	2		
303	9311014	Collar bearing, Ø12xØ10	4	1	
304	9312012	Shaft , spray arm	2	2	
305	9312011	Adapter, spray arm	2		
307	9311021	Nut, 3/4"	2		
308	3721050	Elbow threaded 1/2" (F-M) BSP	4		
309	9311011	Hose Pillar 1/2" (M) SS	4		
311	9311018	Hose clamp, 19-21 mm	6		
312	6000032	Hose clamp, 26-38 mm	2		
313	9301108	Hose 13x23	2,2 m		
314	9311028	Reducing bushing 3/4"x1/2", SS			
315	9311009	Union conicle 1/2" (M-F) SS	3		
316	3721047	Hexagon nipple threaded 1/2" (M-M) BSP	7		
318	3721046	Tee threaded 1/2" (F-F-F) BSP	3		
320	2650194	Clamp, suspension, 26-30	1		
321	9311010	Bend 90° threaded 1/2" (M-M) SS	1		
322	9191228	Socket adapter, 3/4"x 1/2"	1		
323	9311019	Welding nipple, 1/2"	2		
325	9310401	Suction filter	1	2	
327	9191203	Water supply hose	1		
328	9191227	Gasket Ø24xØ16x2	1	1	
330	9310426	Tablet tray	1		
332	9314187	Cover, tray	1		
340	9310152	Ass. soap dispenser			
341	9312078	Cleaning Tabs, box 36 Pcs + 18 DC Cartridge			
346	9311033	O-ring	1		
372	9314195	Grid, drain TDR8	1		
375	9314184	Grease cover TDR8ac	4		
379	9310405s	Filter screen TDR8ac untill 100104166	2		

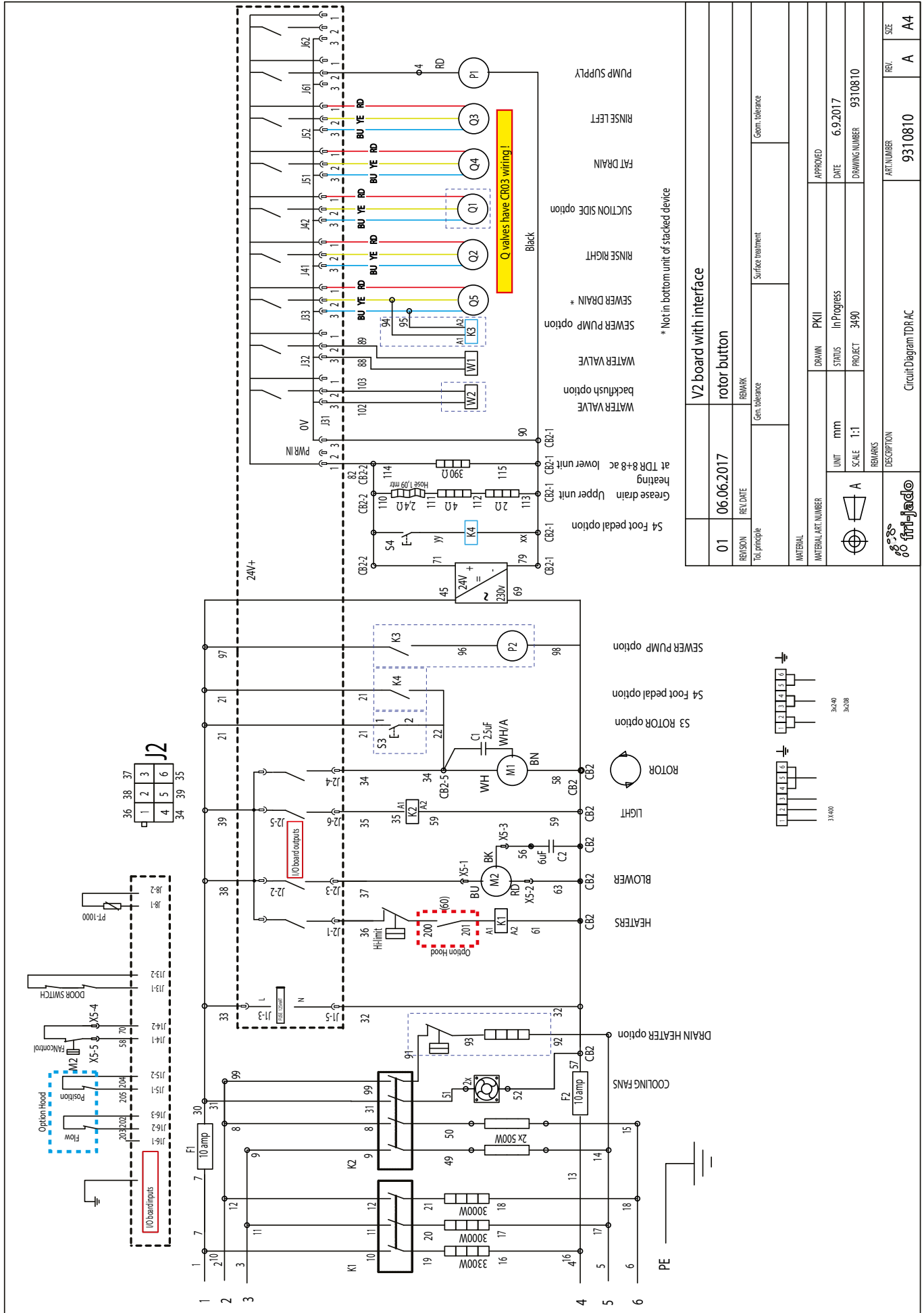
FASTENERS

Pos	Part nr	Description
800	4280107	Bolt M6x20 ZP
801	4289559	Lockwasher M6, serrated ZP
802	4288321	Screw M5x16, SS socket button head.
804	4285092	Nut M6, black serrated
805	4288232	Screw M5x12, SS cross recess, wide button head
806	4286713	Bolt M6x16, ZP threadforming
810	4288325	Screw M5x12, SS socket, wide button head
812	9087570	Nut M5, black serrated
814	4289787	Bolt M6x30 ZP
817	4287549	Washer M8, ZP
819	0196673	Bolt M8x25, ZP
820	0141149	Screw M5x16, SS Cross recess pan head
822	0142315	Nut M5, SS hexagonal
824	9191050	Bolt, SS M5x18
825	0142103	Washer M5, SS
826	4280218	Screw M5x45, SS Cross recess pan head
827	4280208	Screw M4x8, SS Cross recess pan head
828	4280215	Screw M5x8, SS Cross recess pan head
829	4280558	Screw M5x16, SS Slotted wide head
830	9192065	Capnut M4, ZP
831	0142129	Washer M4, SS
832	4288231	Bolt M5x10, SS serrated
833	0142307	Nut M4, SS
834	4311110	Washer M5, SS ø5xØ15
835	0142111	Washer M6, SS
836	4285035	Nut M6, Brass
837	0195910	Capnut M6, BNP
838	4285076	Bolt M8x16, SS
841	0147017	Screw M2,5x16, SS Slotted pan head
842	0142293	Nut M2,5, SS hexagonal
843	9191130	starlock washer, 3mm black
845	0141081	0
847	9070688	Bolt M8x12, SS
848	9008518	Lockwasher, M8 SS serrated
849	0142292	Nut M3
853	0141050	Screw M3x10, SS Cross recess pan head
854	0141076	Screw M3x20, SS Cross recess pan head
855	0141078	Screw M3x30, SS Cross recess pan head
856	0141035	Screw M3x5, SS Cross recess pan head
858	0141075	Screw M3x16, SS Cross recess pan head
859	4312810	Socket set screw M3x6, SS
861	4285151	starlock washer, 6mm
862	9191041	Circlips, E type for 6mm shaft
863	4287540	Screw M4x10, BNP
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

Pos	Part nr	Description
873	3701248	Spacer 7mm, Ø3,2x6 NP
874	0149296	Spacer 10mm, Ø4,2x8 Nylon
875	9057347	Spacer 10mm, Ø5,2x10 Nylon
876	0141165	Screw M5x25, SS Cross recess pan head
877	4285135	Bolt M5x10, ZP thread forming
878	0137344	Screw M5x30, SS Cross recess pan head
879	4287610	Screw, ZP selftapping 3,5x13
880	9008178	Bolt M5x8, SS
881	0141246	Bolt M6x12, SS
882	0141117	Screw M4x45, SS Cross recess pan head
883	0142365	Locknut M6, ZP
885	4288324	Screw M4x8, SS Cross recess pan head
888	6962153	Washer M6, ZP ø6xØ25
889	6802013	Rivet nut, M5, ZP
890	9172053	Nut M5, for sheet metal
891	4288058	Bolt M5x20, ZP
892	0141521	Nut M6, SS
893	0146987	Washer M8, SS
894	0211520	Bolt M5x12, SS
895	0144359	Locknut M5, SS
896	4285408	Capnut M5, BNP
897	4288320	Screw M5x50, SS hexagonal
898	9073987	Washer M8, SS ø8xØ25
900	9008869	Bolt M8x50, ZP
902	4288319	Screw 6x20, ZP CR threadforming
903	4289402	Lockwasher M8, ZP
904	3701280	Lockwasher, starlock for 10mm shaft
905	0141393	Screw M4x10, SS countersunk
906	0141084	Screw M4x10, SS Cross recess pan head
907	4288327	Screw M5x25, SS Socket pan head
908	9006930	Lockwasher M4, countersunk SS serrated
909	0141092	Screw M4x12, SS Cross recess pan head
910	4287520	Washer M4, Brass
911	4285020	Nut M4, Brass
912	4280128	Bolt M4x12, SS
914	0144347	Locknut M4, ZP
915	8047381	Washer M6, SS ø6xØ25
920	0141547	Nut M8, SS
922	2800066	Connection nut M8x24, ZP
923	4285051	Connection nut M10x30, ZP
925	0195596	Bolt M8x10, ZP Socket head
926	9070793	Connection nut M6x18, ZP
929	0197378	Washer M12, Zp
930	9008056	Nut M12, ZP
931	0142056	Lockwasher M8, SS
933	9077004	Socket set screw M4x6, SS
934	9301049	Circlips external ø25
935	4287557	Washer M10

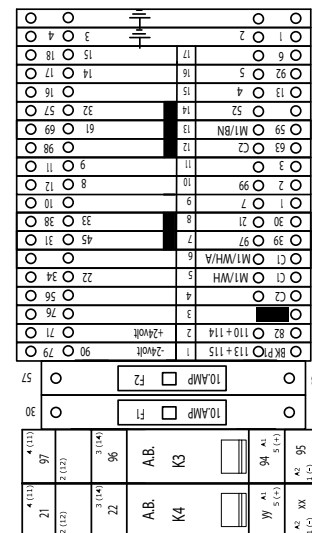
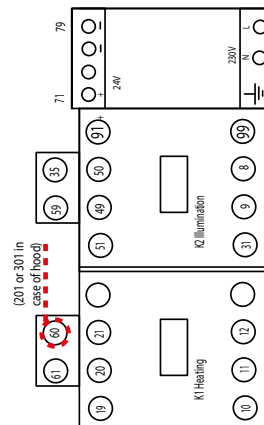
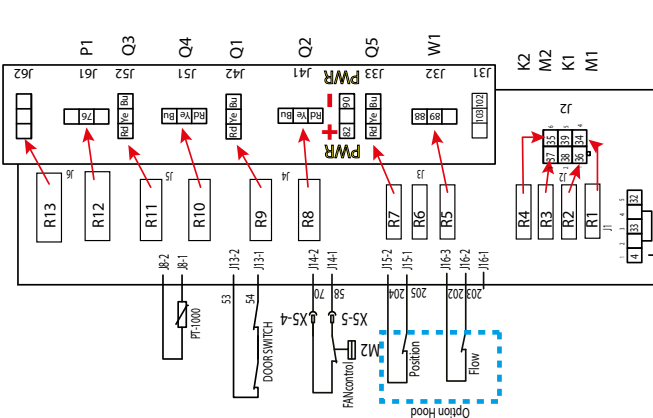
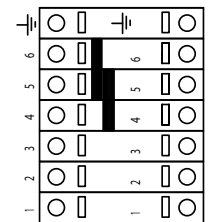
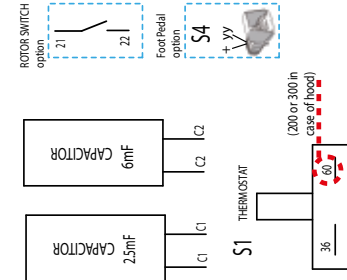
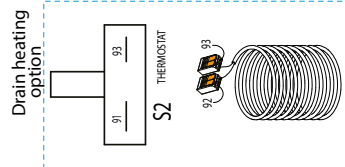
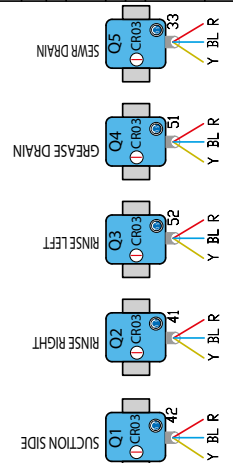
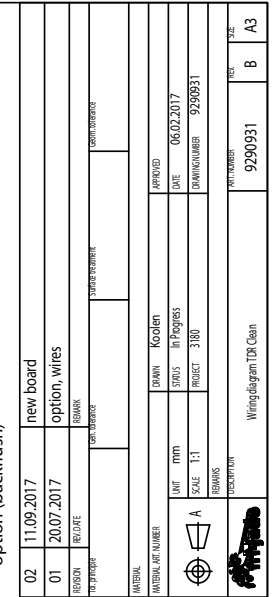
Pos	Part nr	Description
936	9073149	Wingnut M6, SS
937	2800082	Wingnut M6, Brass Nickle plated
939	4312027	Connection nut M5x15, ZP
940	4280540	Screw M5x6, SS countersunk
941	4311215	Screw , socket head M6 x 30
942	0141123	Screw pan head, Philips M5x10, SS
943	149299	Spacer, Ø8xØ4,2, H15, black
944	0139142	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	0
950	4285120	Screw M4x20, thread rolling
951	8071043	Nut M4, serrated ZP
952	6962187	0
953	0197807	Screw M4x30, slotted ZP
954	4285084	Screw 4,8x19, ZP Self drilling and tapping.
955	9008217	Blind rivet 4x8,6
956	9174680	Washer ø5,2xØ20x2mm
957	4285047	nut M8 hexagon, thin DIN 439B
958	0195783	Screw M10x30 sock button head
959	9191108	Wing nut 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
964	0	Screw M3x20, SS countersunk
965	4288330	Screw M8x12, SS button head, wide flange
966	4285414	Capnut, M4 ss
967	0149298	Spacer 10mm, Ø3,4x6 Nylon
968	0149299	Spacer 15mm, Ø4,2x8 Nylon
969	0251473	Washer M4, ZP ø4xØ16
970	9087575	Nut M5 hexagon, tensilock A4
971	4280555	Screw M6x16, Brass nickel plated
972	6390168	Rivet nut, M6 ss
973	9261029	Wing screw M5x10 SS
974	0141131	M5x12 kruiskop
975	9008543	Nut M12, SS
976	4280110	Bolt M6x20, SS hexagon head
977	4286723	Hex. screw M8x20 flange thread forming

CIRCUIT DIAGRAM TDRAC

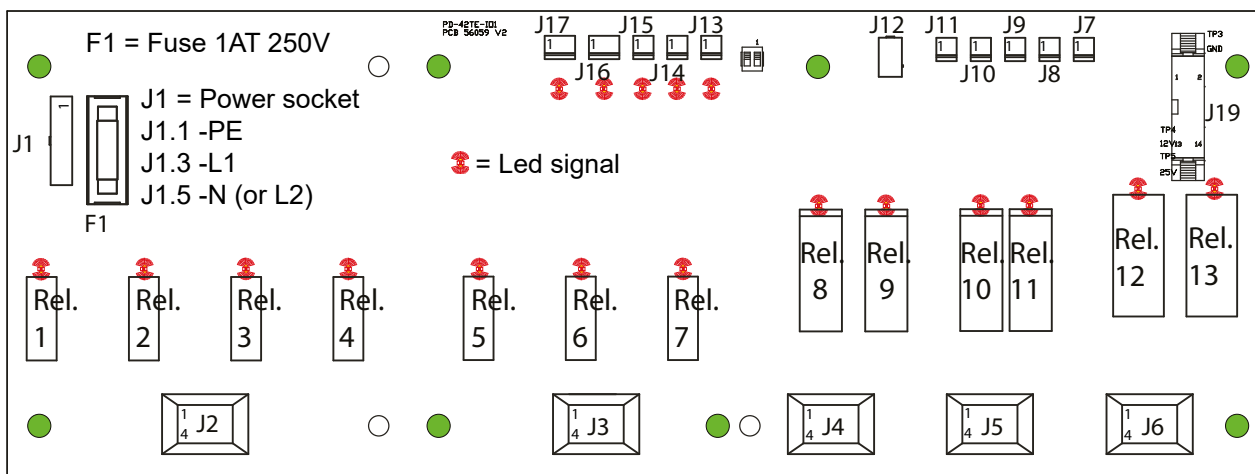
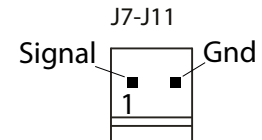
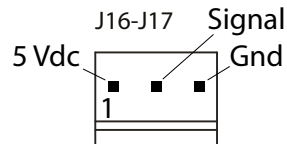
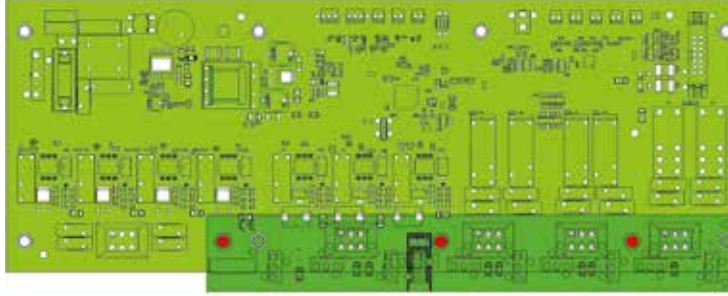


V2 board with interface	
01	06.06.2017
REASON	Tol. principle
REQ. DATE	
REMARK	Gen. tolerance
Surface treatment	Geom. tolerance
MATERIAL	
MATERIAL ART. NUMBER	PKII
DRAWN	PKII
STATUS	In Progress
DATE	6.9.2017
PROJECT	3490
DRAWING NUMBER	9310810
REMARKS	
DESCRIPTION	Circuit Diagram TDR AC
ART. NUMBER	9310810
REV.	A
SIZE	A4

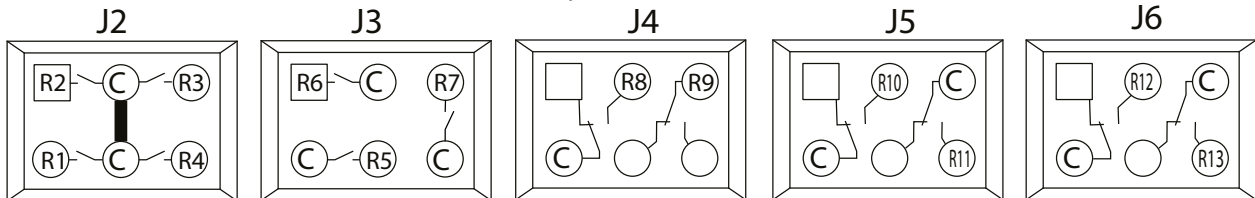
Hydraulic Overview



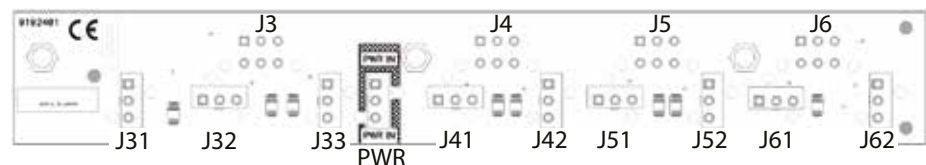
OVERVIEW OF I/O BOARD WITH INTERFACE BOARD



Output connectors



Overview of interface board (Jx to Jxx sockets)



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

