



F500 UNDERCOUNTER DISHWASHER/ GLASS DISHWASHER

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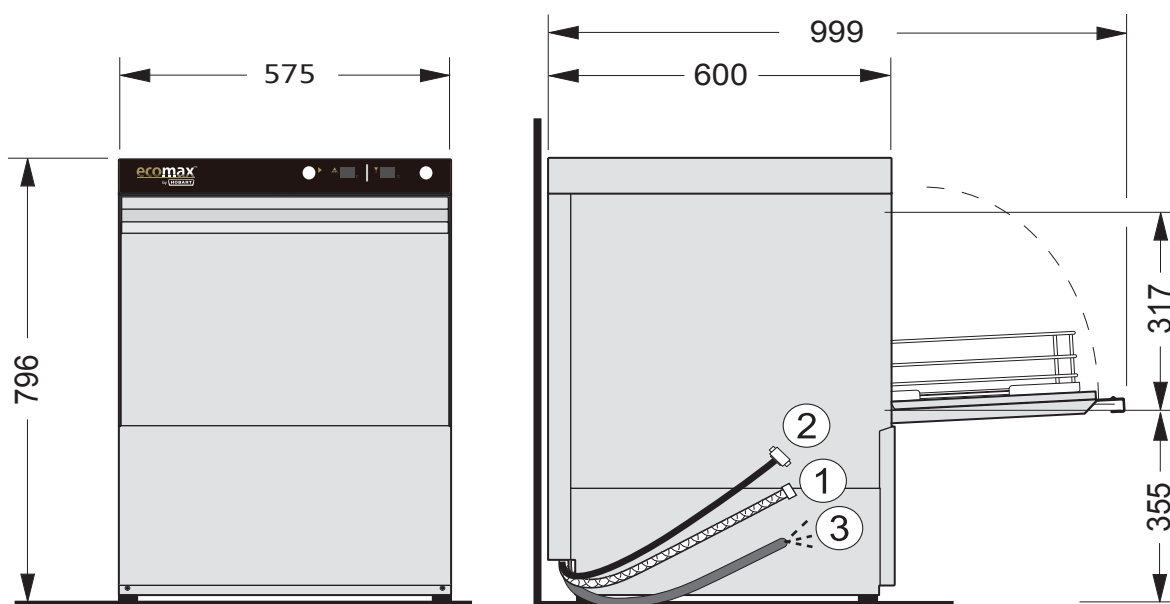


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1. Machine Dimensions

Dimensions (mm)	F500
Height	796
Depth	575
Width	600
Rack size	500x500



2. Installation

2.1 Electrical Connection



Must be carried out by an authorized technician according to the local and national codes. A cut-off device shall be provided to connect the supply cord (main switch). The leakage current action is not greater than 30 mA, Detailed see machine nameplate.

The electrical supply shall comply with the name-plate data.

Line fuses and cable cross section shall comply with the requirements

The supply cord must be connected via a cut-off device (isolating switch or accessible plug device).

According to EN 60 335 the appliance must be connected to an equipotential conductor.

The connecting screw (▽) is located beside the cable inlet.

2.2 Water Connection

The machines must be operated with potable water.

For water with an extremely high mineral content an external demineralization is strongly recommended.

Ideal conductivity value for washware made of stainless steel 80 $\mu\text{S}/\text{cm}$, for glasses 100 $\mu\text{S}/\text{cm}$ and for dishes 200 to 400 $\mu\text{S}/\text{cm}$.

The machine should be connected to soft and if possible warm water (up to 4 °dh = 0.5 mmol/l, max. 60°C).

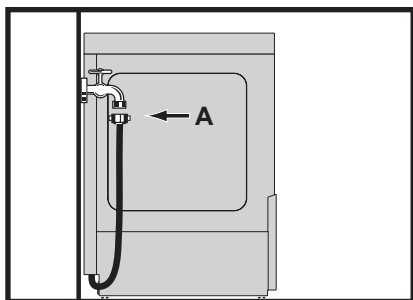
Line flow pressure:50-600KPa.

Important: The line flow pressure must not be less than 50KPa.

If the line flow pressure is **above 600KPa**, provide pressure reducer at source.

Connect the union nut "A" (3/4") of the water supply hose to the site shut off valve.

Do not kink or cut the supply hose. Eventually needed extension has to be provided with a suitable pressure hose.



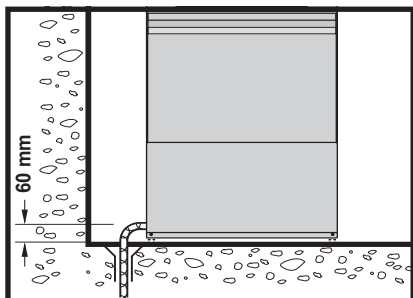
2.3 Drain Connection

Ensure gravity drain.

The height between floor and lower edge of the hose should be higher than 60 mm.

Otherwise it could be that water remains in tank and hose. Do not kink drain hose.

If a grease trap is required by code, it should have a minimum flow capacity of 95.5 liters per minute.



3. Technical parameter

Basic parameter

Voltage(V) Frenquency(Hz)/ Phase	Power (KW)	Current (A)	Inlet pressure(KPa)	Water temp (°C)	Flow rate(L/H)
380/50/3	8.1	14.5	50-600	10-60	120
380/60/3	8.1	14.5	50-600	10-60	120
220/50/1	3.1	14.5	50-600	10-60	120

Working cycle parameter

working cycle(S)	wash(S)	pause(S)	rinse(S)
90	77	4	9

4. Operation

4.1 Switch on and start the machine

Close the door, push power button, switch on the machine. It will scan the signal of door switch, tank water level and booster water level automatically.

4.2 Filling and heating

1.Booster and tank are empty

Switch on the machine, and the control system scan the signal of water level switch(1B3L/1B3H/1B4L/1B4H). When the water reaches the water level switch, it can be on.

1B3L=booster low water level

1B3H=booster high water level

1B4L=tank low water level

1B4H=tank high water level

It will filling to the booster.

When 1B3L is on, the booster heater begin to work(if the water temp does not get the setting valve.), it will stop filling to the booster till 1B3H is on. At this monment, the rinse pump begin to work and fill to the tank.

2.Tank filling

When 1B4L is on, the tank heater begin to work(if the water temp does not get the setting valve.), it will stop filling to the tank till 1B4H is on. If 1B3L is off during this process, the water will fill the booster. The operation indicator is on when the filling procedure is over.

4.3 Tank filling

When the machine enter rinse cycle or filling because of tank lack of water,rinse pump run, and high water pressure switch 1B3H of booster disconnect, inlet valve open for filling booster.

Switch 1B3I disconnect when booster level at low level, heater and rinse pump will stop, untill booster level at high level, switch 1B3H closed contact 21 and 24, heater and rinse pump will continue to work, until the spray cycle or tank filling water.

4.4 Temp control and thermostop

When the temprature reaches setting value, the heater stops heating.

NOTE: Thermostop can be selected in site S2=1 ON; S2=0 OFF.

4.5 Stand by

When the temprature reaches setting value, the machine is stand by. If 1B4L is off, the tank heater will stop heating; if the door is close, it will filling to the tank.

4.6 Washing cycle

Open the door, put the rack(with dishes) in the machine. Close the door. The wash cycle starts.The indicator will flash(frenquency:1S).

When the wash cycle is over, the indicator is permanent. Open the door, take off the rack.

If the rinse temp does not get the setting value, the wash time will be longer untill rinse temp is ok.

NOTE: The wash pump and rinse pump can stop working when the door is open. Re-close the door, it will start a new washing cycle.

4.7 Switch off and drain

Push the power switch to "0", and the machine is power off. Open the door, pull off the drain pipe and drain the machine, then clean the machine according to operation instruction.

5. Removal and replacement of parts

WARNING: This machine may have more than one source of power. disconnect all power sources. place a tag on the circuit box(es) indicating the circuit is being serviced.

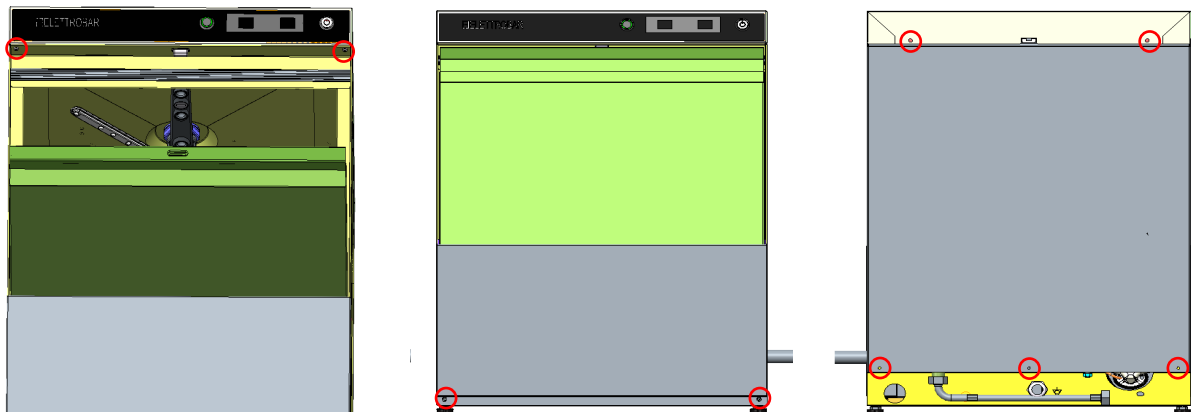
5.1 Top cover and protect cover

1. Disassembly of top cover protect cover
 - The machine includes 1 top cover, 1 front cover, 1 backside cover.
 - Disassemble screw of all protect cover.
 - Disassemble top cover, front cover, backside cover.

NOTE: Take care in front panel removing, there are wires connect with electrical box.

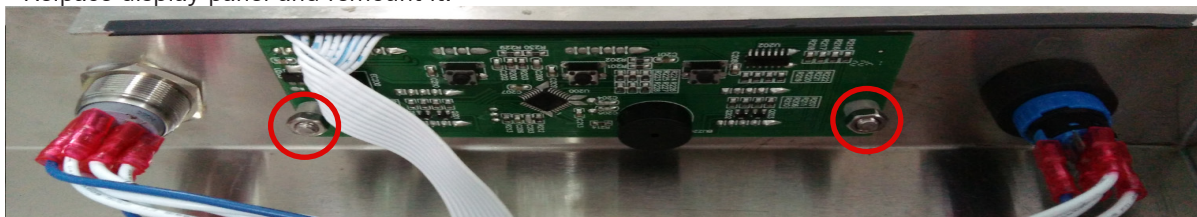
2. Assembly of top cover and protect cover
 - Put the top cover on the top of the machine.
 - Put the backside cover into the top cover.
 - Align mounting holes and screw on nuts by hand.
 - Hang the front cover on the front of machine bottom.
 - Align front panel mounting holes, screw on nuts and tighten by tools.

NOTE: Tidy up wires before installing front panel, make sure no any wires are pressed.

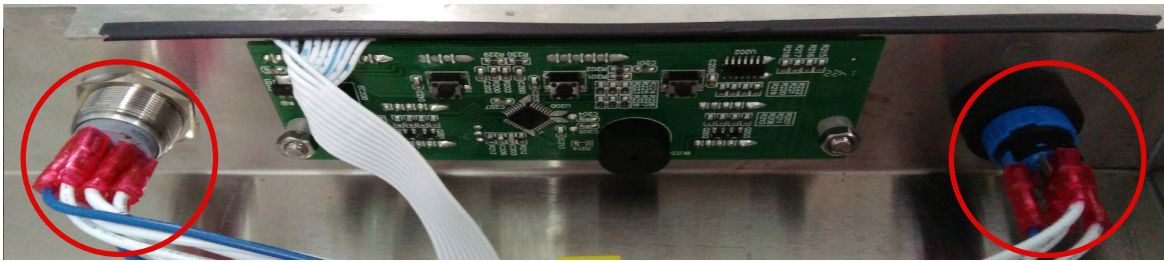


5.2 Display/control model

1. Replacement of display panel
 - Disassemble the top cover.
 - Pull data cable that connected to the display panel out of the top control box.
 - Disassemble mounted screw of display panel and remove display panel.
 - Replace display panel and remount it.



2. Replacement of power button and start button
 - Disassemble the top cover.
 - Put out all the terminal of button
 - Disassemble nut of button.
 - Replace button and remount it. (note the wiring number)



5.3 Wash arm and rinse arm

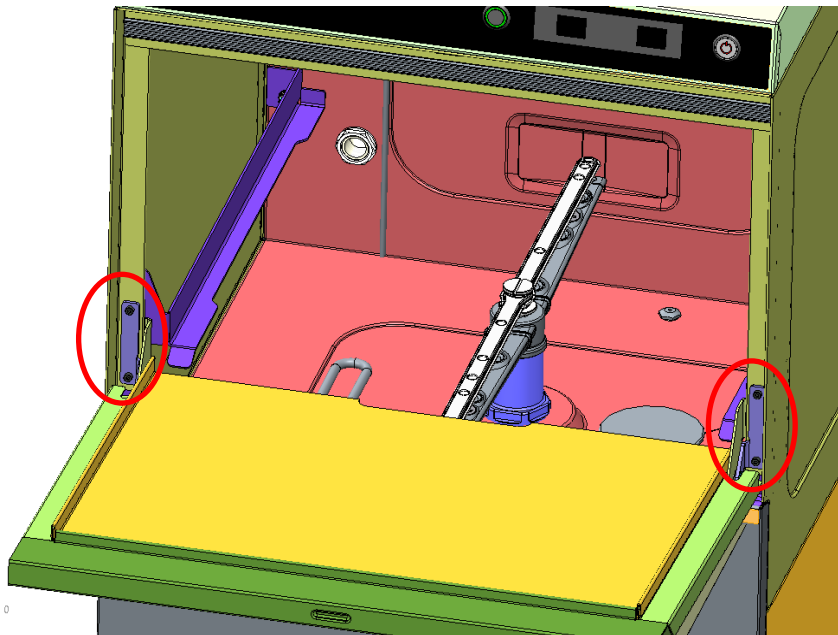
- Open the machine door before disassemble wash arm/rinse arm.
- Unscrew wash arm/rinse arm nut.
- Pull wash arm out of tee joint.
- Take out wash arm and rinse arm.
- Reverse process to assemble wash arm and rinse arm.



5.4 Machine door

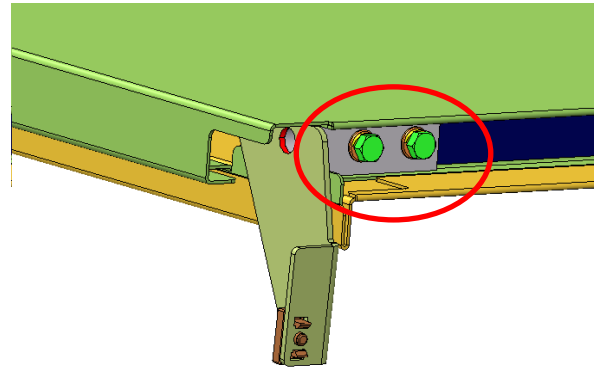
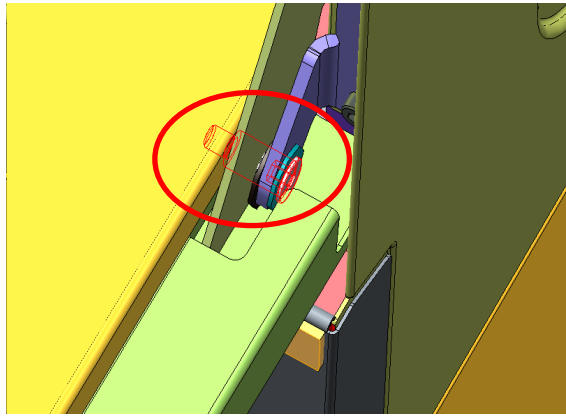
1. Disassembly

- Disassemble M4-20 hexagon socket head bolt 4 pcs.
- Tilt the machine door left or right and take out it.



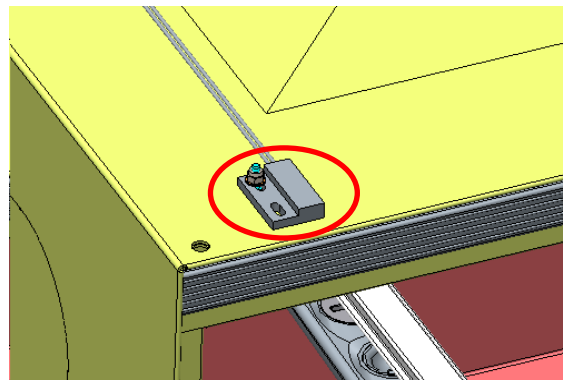
2. Hinge shaft bracket

- Disassemble machine door.
- Disassemble hinge shaft bracket 2 pcs.
- Disassemble M5-20 bolt 4 pcs.
- Replace hinge shaft bracket, remount it.



5.5 Magnet switch

- The magnet is at top left corner of door.
- The magnet switch is at the top left of the chamber wash.
- Adjust and replace magnet switch after remove the top cover.

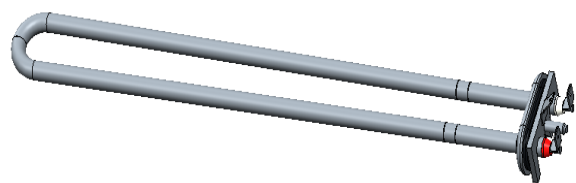
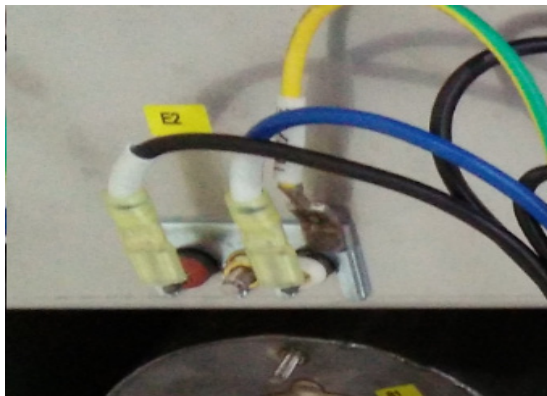


5.6 Tank heater

- Switch off the power and turn off the tap, drain the tank.
- Remove the front cover.
- Note the wiring location when remove the wiring harness.
- Remove nuts from the heater flange
- Pull heater out of tank.

NOTE: Replace the seal gasket when replace the tank heater.

- Remount process is reverses.
- Filling tank check for leaks.



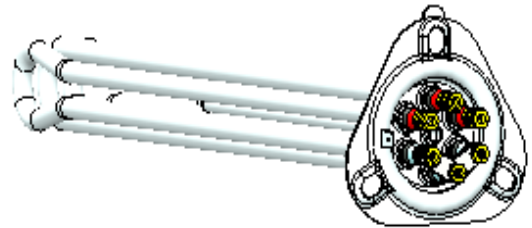
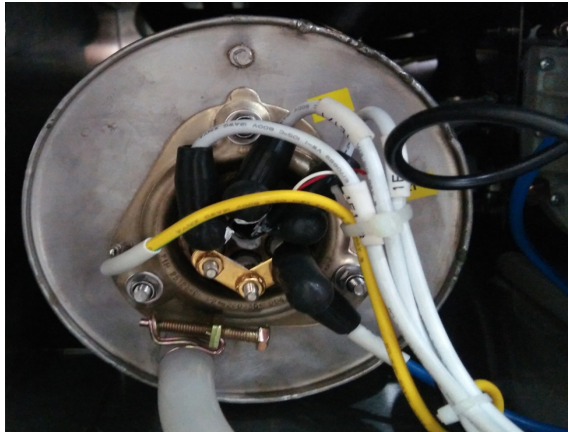
5.7 Booster heater

1. Disassembly
 - Shut off the water and the power.
 - Remove front cover.
 - Remove drain nut on the bottom of tank, drain booster.
 - Note the wiring location when remove the wiring harness.

- Disassemble heater fixed screws.
- Pull heater out of booster.

2.Assembly

- Install the gasket between heater flange and booster.
- Put the heater into booster, ensure that high transfer capability side on top.
- Assemble flat washers, spring washers and nuts
- Assemble drain stoper of booster.
- Connect wires of booster.
- Switch on the power and turn on the tap, check for leaks of heater all around.
- Run machine and check wroking status.
- Assemble front cover.



Heater parameters

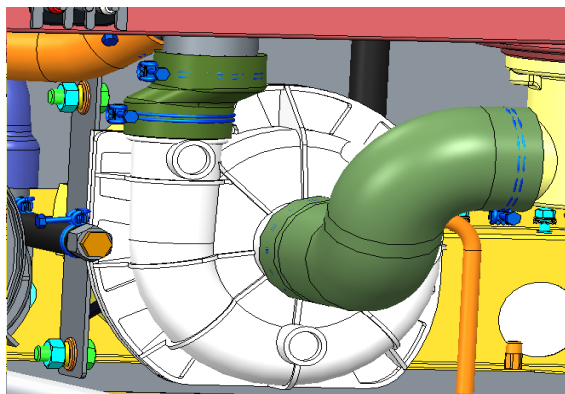
	Power(kw)	current(A)
Tank heater	2	9.1(3853/3863)
Booster heater	7.5	11.4(3853/3863) 11.4(2251)

5.8 Wash pump by HOBART

1. Disassembly and assembly

- Drain the tank.
- Switch off the power and turn off the tap.
- Remove front cover and lower control box.
- Disassemble motor wire from right side (note wiring location).
- Disassemble bolts from wash pump bracket.
- Unscrew hose clamp on wash pump outlet hose.
- Unscrew hose clamp on wash pump inlet hose.
- Reverse process to assemble them.

NOTE: After reinstall the wash pump, note wiring connection point. The pump could be damaged if wrong wiring connection.



2. Wash pump/motor adjustment

- Remove front cover
- Switch on the power and measure the input voltage, and check it according to the voltage named on machine data plate.
- Push the power button and measure current of the wash pump/motor.

NOTE: The pump power is 0.38kw, current is 2.5A. In normal operation, the value is lower than rated.

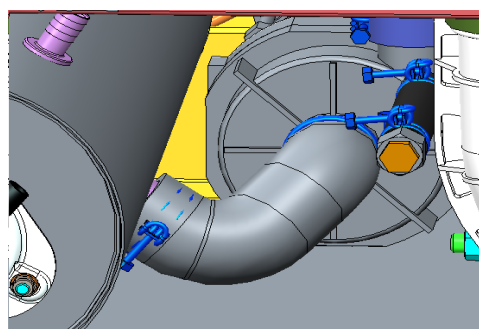
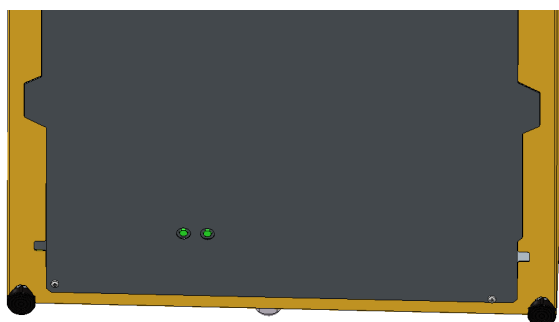
- If motor current exceeds the value, inspect pump for blockage causing a locked-rotor condition. If blockage is not present, replace motor.

5.9 Rinse pump

1. Disassembly and assembly

NOTE: The rinse pump should be removed from the machine as an assembly even if only servicing the pump motor.

- Switch off the power, turn off the tap.
- Remove front cover.
- Drain the booster.
- Disassemble motor wire and capacitor.
- Unscrew inlet hose and outlet hose clamp.
- Unscrew screw on the bottom cover, disassemble rinse pump.
- Reassemble in reverse process.
- Check for leaks, ensure the machine work properly.



2. Rinse pump/ motor adjustment

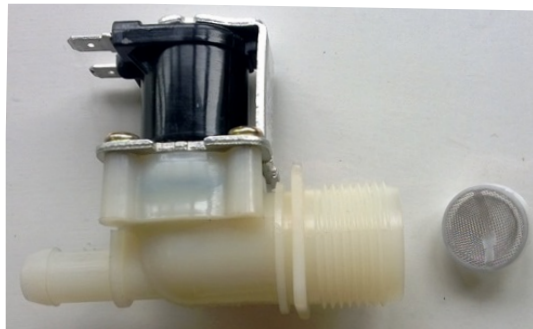
- Remove front cover.
- Remove lower control box.
- Switch on the power and measure the input voltage, and check it accord to the voltage named on machine date plate.
- Push the power button and measure current of the rinse pump/motor.

NOTE: The pump power is 0.14kw, current is 0.6A. In normal operation, the value is lower than rated.

- If motor current exceeds the value, inspect pump for blockage causing a locked-rotor condition. If blockage is not present, replace motor.

5.10 Replacement of inlet valve

- Switch off the power and turn off the tap, remove backside cover.
- Disassemble control wire on the valve.
- Remove inlet hose that connect with valve.
- Remove inlet hose that connect with booster.
- Remove valve from bracket.
- Unplug the strainer from valve if need clean it (use nipper pliers)
- Reassemble in reverse process.
- Switch on the power and turn on the tap, check the valve working status.



5.11 Temperature probe

- There are two temperature probes in the machine: tank temp probe and booster temp probe
- They are installed in the front side of tank and booster
- Disconnect the control wiring of probe
- Remove the probe
- **NOTE: When install the booster temp probe to the booster, re-paint heat conducting glue.**

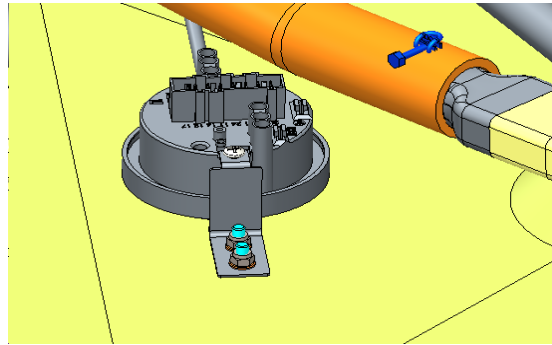


5.12 Pressure switch

1. Replacement of booster pressure switch

- Switch off the power and turn off the tap, remove the front cover.
- Drain the booster.
- Remove the top cover.
- Unplug pressure switch control wires, notes connector wires position.
- Remove hose clamp on the pressure hose, unplug pressure hose.
- Remove screw, remove bracket and pressure switch.
- Reassemble in reverse process.

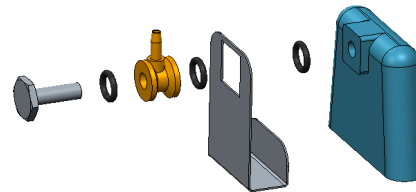
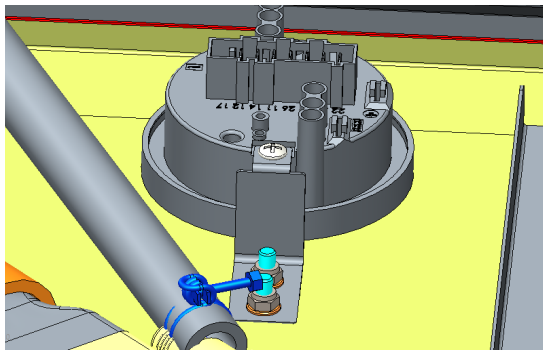
NOTE: Make sure the booster is empty when install the pressure hose. And change a new clamp of pressure hose.



2. Replacement of tank pressure switch

- Switch off the power and turn off the tap, remove the top cover.
- Remove the backside cover.
- Drain the tank.
- Unplug pressure switch control wires, note connector wires position.
- Remove hose clamp on the pressure hose, unplug pressure hose.
- Remove screw, remove bracket and pressure switch.
- Don't rotate air chamber when remove bolt, and then take it out.
- Reassemble in reverse process.
- Check the machine ensure it work properly.

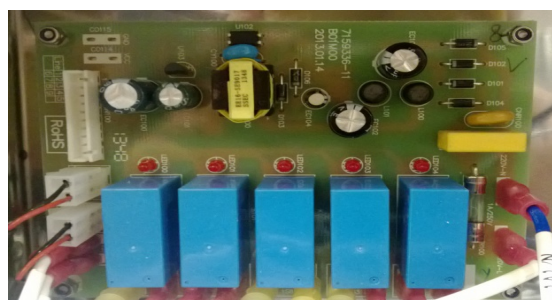
NOTE: Keep the air chamber vertical when install it, and make sure it's opening downward.



5.13 Control board

NOTE: The control board is subject to damage by electrostatic discharge during field repairs. A field service grounding kit is available to prevent damage. The field service grounding kit must be used anytime the control board is handled.

- Switch off the power and turn off the tap, remove the top cover.
- Pull control wire out of PCB, note connector wires position.
- Unscrew PCB fixed nuts.
- Remove PCB.
- Reassemble in reverse process.
- Check the machine ensure it work properly.
- Reassemble the top cover.



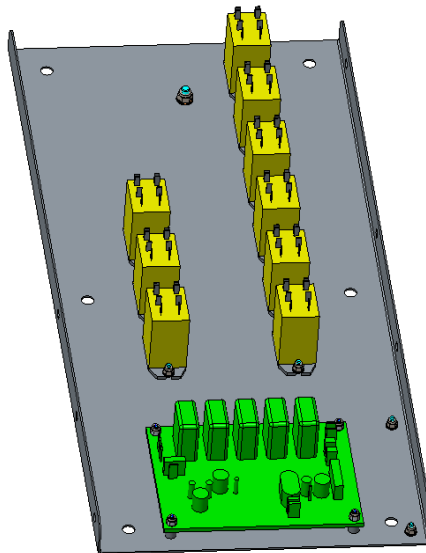
5.14 Contactor

- Switch off the power.
- Remove the front cover.
- Disassemble wires connect with contactor, note connector wires position.
- Take contactor out of lower control box.
- Reassemble in reverse process.tighten the screw of terminal.(refer to the diagram if necessary)
- Check the machine ensure it work properly.

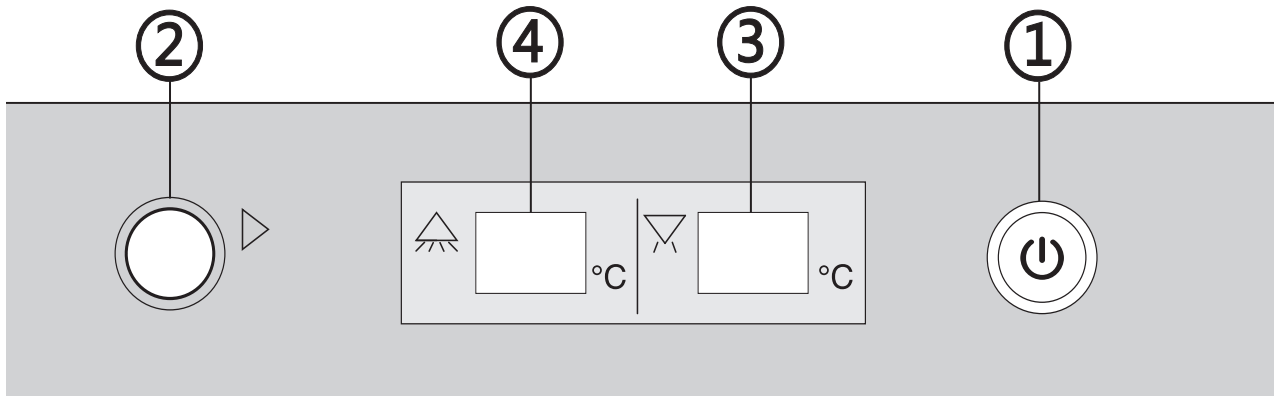


5.15 Relay

- Switch off the power.
- Remove the top cover.
- Disassemble wires connect with relay, note connector wires position.
- Disassemble M3 fixed nuts.
- Take the relay out of the top control box.(refer to the diagram if necessary)
- Reassemble in reverse process.
- Check the machine ensure it work properly.



6. Controls



① Machine ON/STOP button	Pushing this button switches the machine on. The red LED ① lights up – Lights up = Machine is filling and heating. In case of operating error or faults, it is possible to switch-off the machine immediately without the drain cycle, by pushing this button. After switch off, the machine is not voltage free!
② Washing button	Pushing this button machine washing, green LED ② flashing. – Lights up = Machine stand by, it can start washing. – Flashing = Machine washing/rinsing.
③ Rinse temperature display	Rinse temperature display.
④ Wash temperature display	Wash temperature display.

7. Schematic diagram

7.1 F500 parts

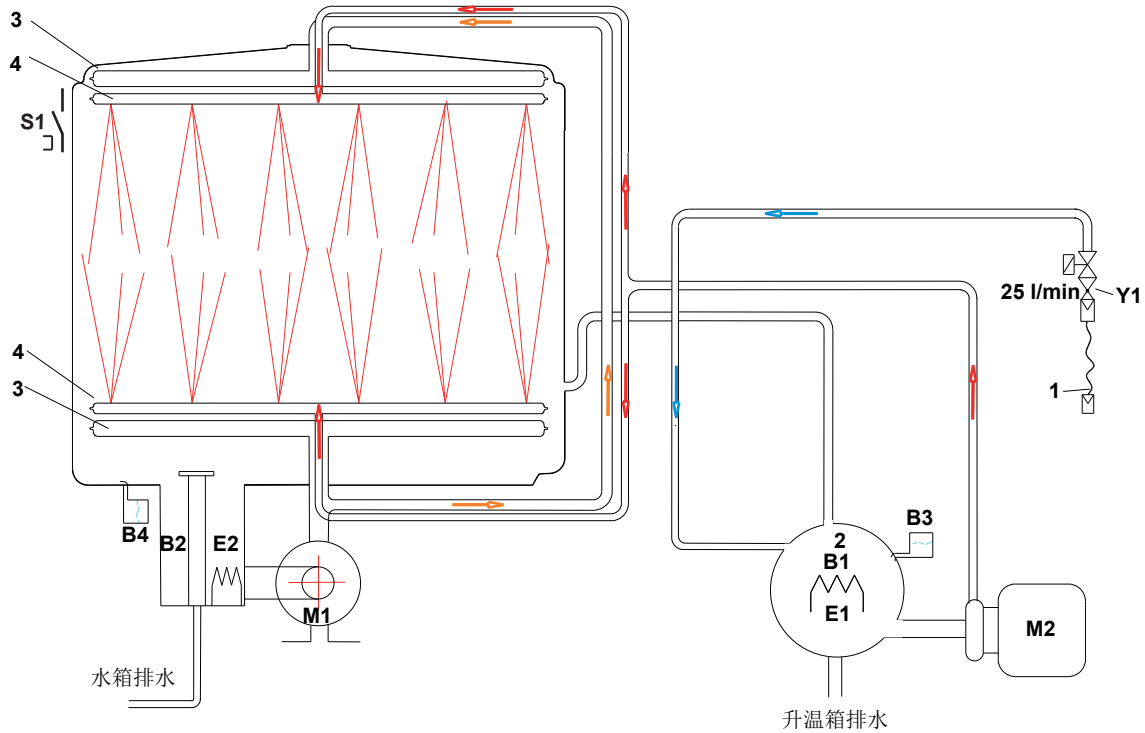
B1	Temperature sensor-booster	A
B2	Temperature sensor-tank	A
B3	Pressure switch-booster	A
B4	Pressure switch-tank	A
1E1	Booster heater 380V/7.5 kW or 220V/2.5kW	A
1E2	Tank heater 220V/2.0kW	A
M1	Wash pump 230V/50Hz 380 kW 2.5A	
C1	10μF	A
M2	Rinse pump 220-240V/50Hz 140 kW	
C2	0.6A 4.0 μF	A
1S2	Magnet switch	A
Y1	Solenoid valve – flow 20 l/min.	A
1	Water supply hose	A
2	Pressure-less booster	A
3	Wash arm	A
4	Rinse arm	A

Notes:

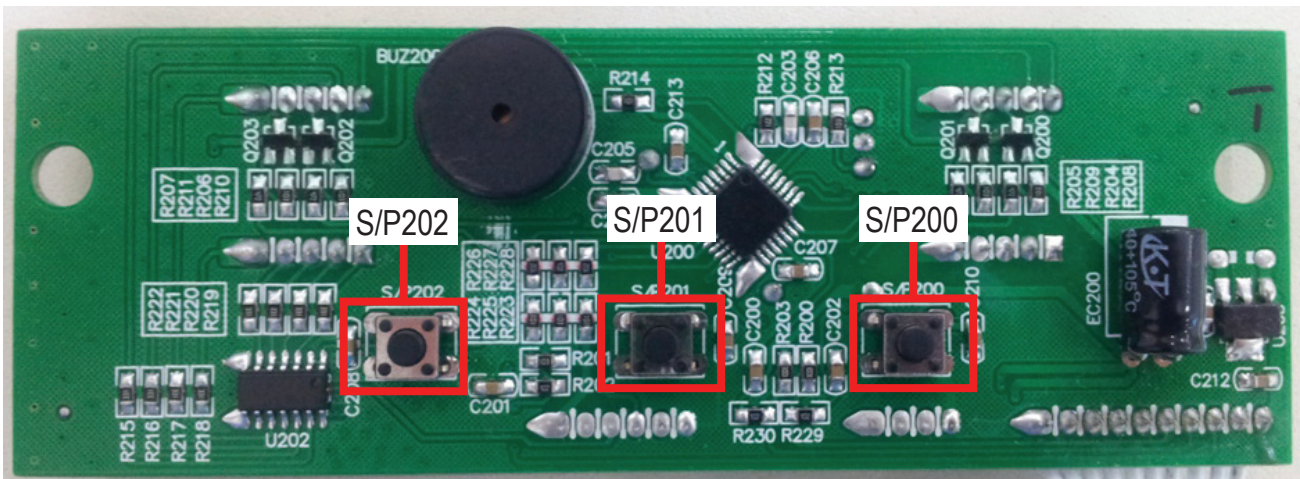
A = Delivery status connected load (according to wiring diagram)

O = Optional part

7.2 Schematic for F500 (with pressure-less booster)



8. Electronic Control



Requirements: Machine OFF and door open.

8.1 Parameter setting

- In normal condition, press“ENTRY(S/P202)” will indicator the program version. And press “UP(S/P201)” will change to other parameters as below:
 Tank upper temp limit(H1),Tank lower temp limit(L1);
 Tank temp offset(SP1);
 Booster upper temp limit(H2), Booster lower temp limit(L2);
 Boosterter standby temp reduction(F2);
 Thermostop set point(tH);
 Booster temp offset(SP2);
 Wash time(T1);
 Dripping time(T2);

Rinse time(T3);

Auto wash(S1);

Booster thermostop(S2);

Booster and tank heating interlocking setting (S3) ;

Buzzer on / off (S4) ;

program number setting (U1) : U1=3 is F500 program number;

C2+C1(total number of wash cycle 000+0000),for example:C2(101)+C1(8000),the total number of wash cycle is 1018000 times.

C4+C3(tatal time of power on 000+0000), for example:C4(188)+C3(6000), the total time of power on is 1886000 minutes.

Program version(E5 00), the machine model is "F500", program version is "00".

Press“DOWN(S/P200)” will decrease the value and press “UP(S/P201)” increase the value.The indicator will display the setting item and the others display with "-"

2. When select the item, press "ENTER(S/P202)" to set its value. In setting state, the left indicator displays the original value and the right indicator display the setting one(except T1,T2,T3). Press "UP(S/P201)" or "DOWN(S/P202)" can change the setting values.

Requirements: H1>L1, H2>L2

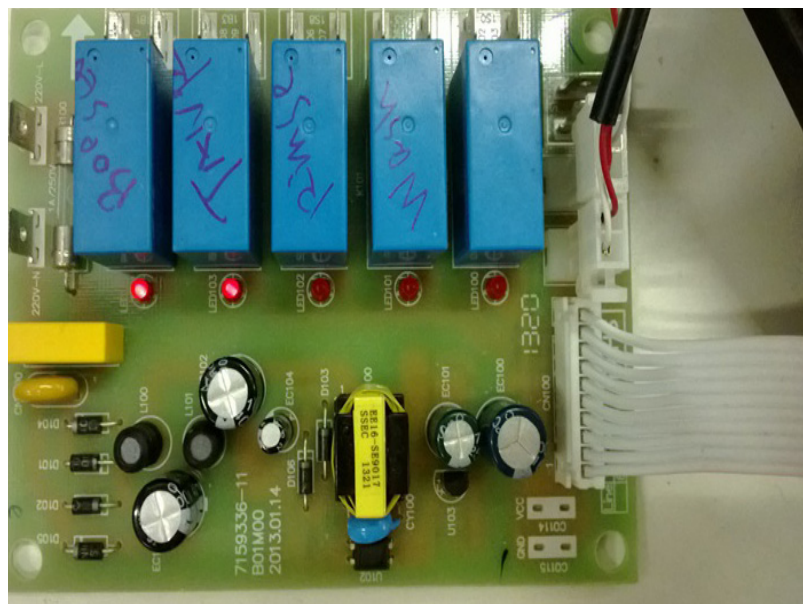
Parameter list

Item	H1	L1	SP1	H2	L2	F2	tH	SP2	T1	T2	T3	S1	S2	S3	S4	U1
Scope	0~99	0~99	-9~+9	0~99	0~99	0~19	0~99	-9~+9	1~999	1~999	1~999	0~1	0~1	0~1	0~1	0~3
F500 set point	68	66	2	87	86	12	82	0	77	4	9	0	1	1	0	3

3.Press“ENTER(S/P202)” return to item selecting state, the adjusted value will be saved in the EEPROM.

4. None press for 10S will quit the setting state and save the latest values.

8.2 Control board state



Lamp	Function	Filling	Washing	Dripping	Rinsing	Stand by
LED100	Power	OFF	Flanshing	Flashing	Flashing	OFF
LED101	Wash	OFF	ON	OFF	OFF	OFF
LED102	Rinse	OFF	OFF	OFF	ON	OFF
LED103	Tank Heating	OFF or ON	OFF or ON	OFF or ON	OFF or ON	OFF or ON
LED104	Booster Heating	ON	OFF or ON	OFF or ON	OFF or ON	OFF or ON

NOTE: LED103 and LED104 can be controled by the tank and booster temprature. When the red dot in temp indicator is on, the temperature is lower than setting value, and the corresponding lamp is on. If not, the lamp is off .

9 Troubleshooting

WARNING:Some process need circuit testing, be carefull when power is on. If it is difficult to test, cut off all of the power; when the preparatory work is over, switch on the machine and begin to test.

NOTE:Some parts are subject to damage by electrostatic discharge during field repairs. A field service grounding kit is available to prevent damage. The field service grounding kit must be used anytime the electric parts are handled.

Faliure description	Possible cause	Measures
Units no filling	No press of ON/OFF button	Press down the ON/OFF button
	Door is open	Close the door
	No water supply	Trun on the water valve
	Relay(1K9) inoperation	Check the relay, change a new one if necessary.
	Relay(1K7) inoperation	Check the relay, change a new one if necessary.
	Filling solenoid valve inoperation	If the valve is stuck with foreign part, clear it; if the valve could not close, change a new one.
Long time filling	Inlet hose is block-up	Check the strainer of inlet hose
	Filling solenoid valve inoperation	Check the solenoid valve.
	Pressure transmitter inoperation	Check the pressure transmitter of tank and booster.
	The machine not levels	Adjust the machine levels by leveling instrument.
Tank water level reach the low float switch, the power lamp is not on	Power supply incorrect	Check the voltage of powr
	Relay(1K9) inoperation	Check the relay, change a new one if necessary.
	Power lamp damaged	Change the power lamp
No booster heat	Booster water level reaches the heating level and LED104 is on, the heater inoperation	Check the heater, change a new one if necessary
	The relay(1K13) inoperation	Check the relay, change a new one if necessary.
	The relay(1K1) inoperation	Check the relay, change a new one if necessary.
	Booster temp sensor inoperation, indicate Er ③	Check the sensor, change a new one if necessary.
	Control board damaged	Change the control board.

Booster temperature lower than setting value	Booster heater inoperation	Check the heater, change a new one if necessary
	Too low inlet water temperature($\geq 10^{\circ}\text{C}$)	Adjust the inlet water temperature
	The voltage of booster heater incorrect	Adjust the voltage
	Incrustation on the heater	Eliminate incrustation
	Location of temp sensor incorrect	Adjust the location of sensor on the end of heater
No tank heat	Tank pressure switch inoperation	Check the pressure switch, change a new one if necessary.
	Tank water level reaches the heating level and LED103 is on, the heater is inoperation.	Check the heater, change a new one if necessary.
	Tank temp sensor inoperation, indicate Er ④	Check the pressure switch, change a new one if necessary.
	Control board damaged	Change the control board
Tank water temperature lower than setting value	Tank heater inoperation	Check the heater, change a new one if necessary.
	The voltage of tank heater incorrect	Adjust the voltage
	Incrustation on the heater	Eliminate incrustation
No rinse	Booster pressure transmitter(1B3) inoperation	Check the transmitter, change a new one if necessary
	The relay(1K6) inoperation	Check the relay, change a new one if necessary
	The relay(1K7) inoperation	Check the relay, change a new one if necessary
	The relay(1K10) inoperation	Check the relay, change a new one if necessary
	If the lamp LED103 is not on, the control board damaged.	Change a new control board
	Tank pressure transmitter 1B3H inoperation	Check the transmitter, change a new one if necessary
	The door reed switch inoperation	Check the reed switch, change a new one if necessary.
	The booster temperature does not reach the setting value	Check its related items
	Risne pump inoperation	Check the pump for excess temperature; remove he motor and measure its resistance value.
	The rinse hose struck	Check the hose and nozzles.
No wash	Door reed switch inoperation	Check the reed switch, change a new one if necessary.
	Tank pressure transmitter inoperaton	Check the transmitter, change a new one if necessary
	Control board damaged	Change a new control board
	The relay(1K3/1K5) inoperation	Check the relay
	Wash pump inoperation	Check the pump for excess temperature; remove he motor and measure its resistance value; check the wash hose.
	The wash hose struck	Check the wash hose.

NOTES

A large grid of graph paper for taking notes, consisting of 20 columns and 40 rows of small squares. The grid is centered on the page and occupies most of the lower half of the document.