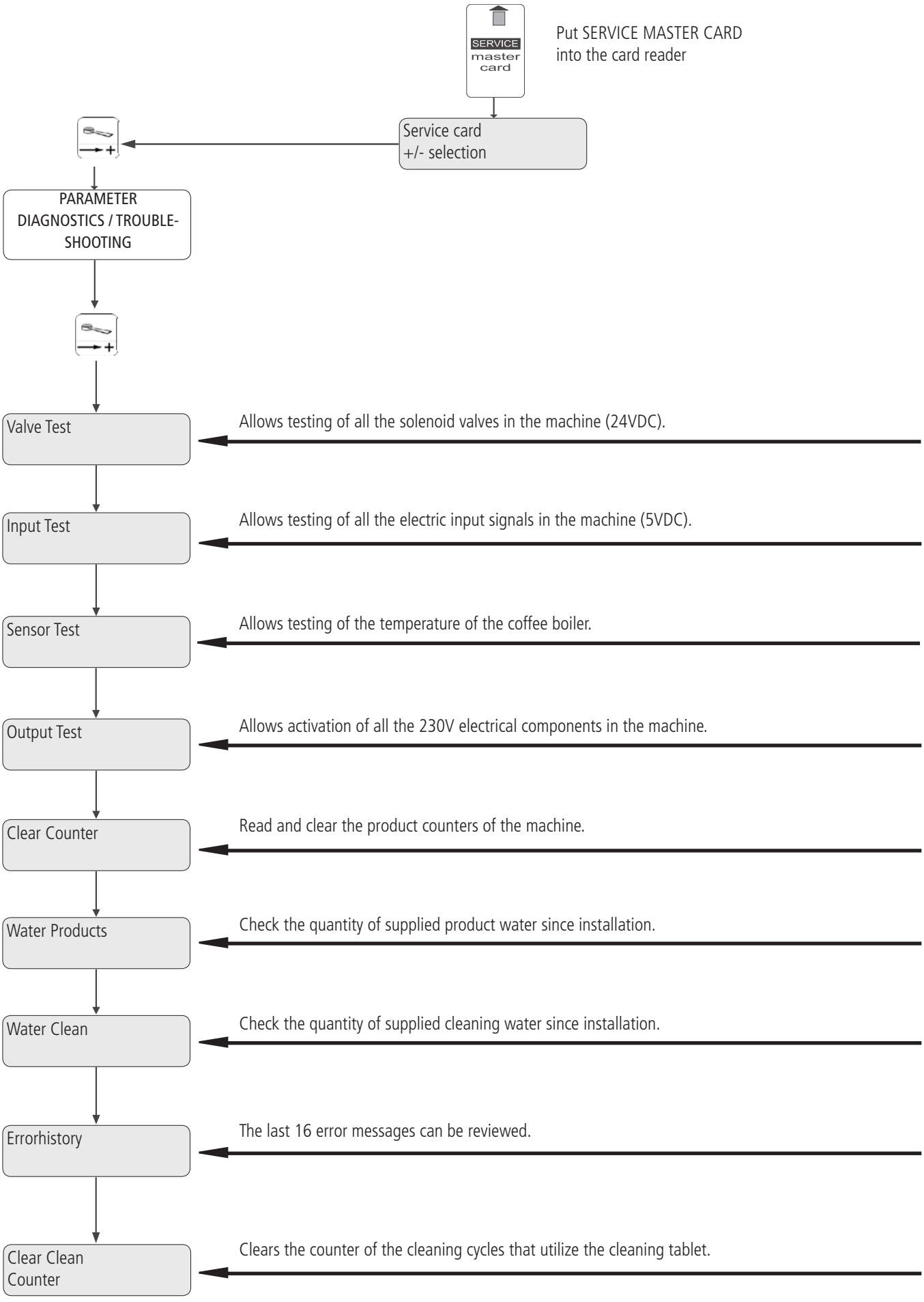
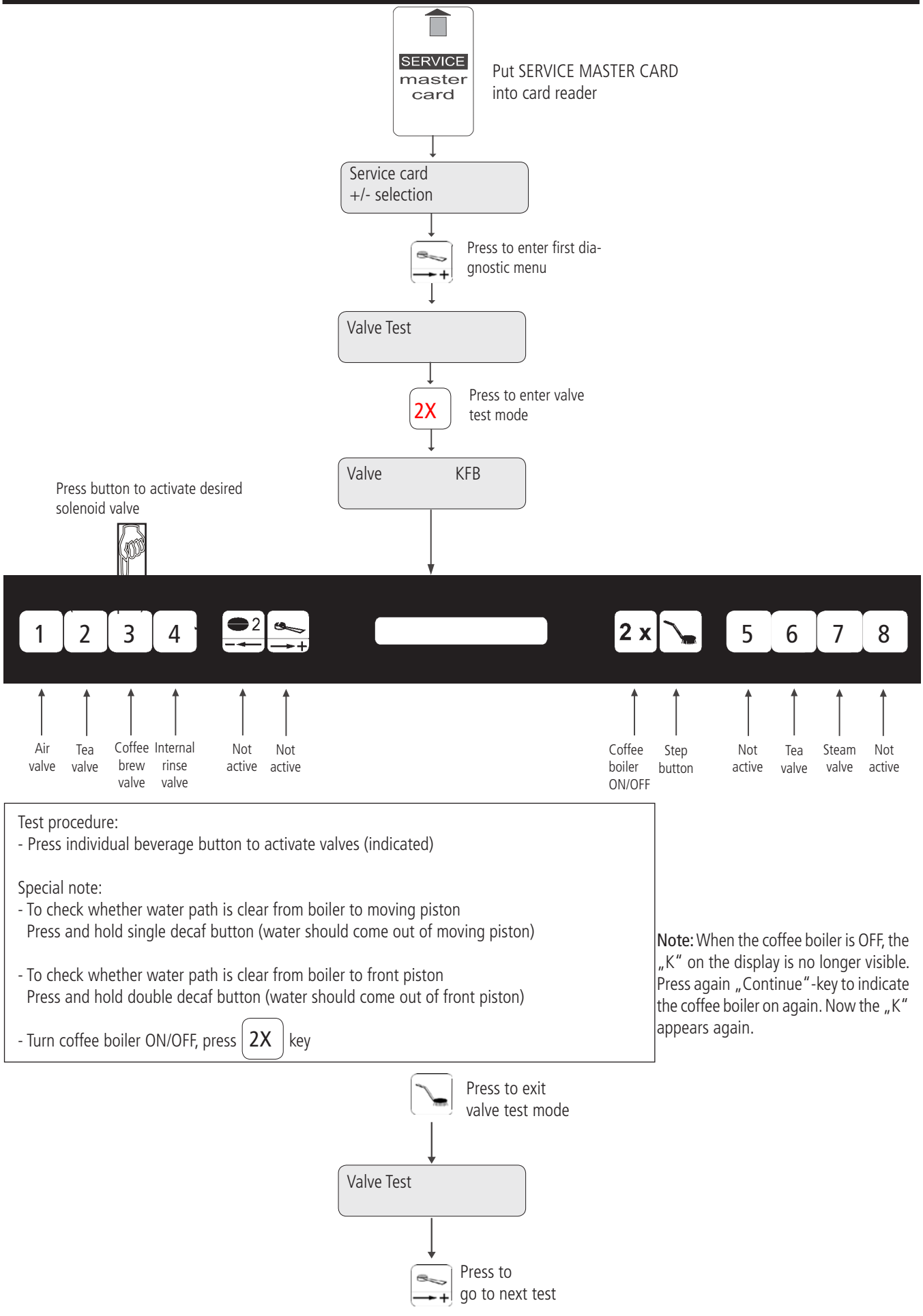
# Troubleshooting

INDEX

## SERVICE CARD DIAGNOSTICS / TROUBLESHOOTING OVERVIEW



## SERVICE CARD DIAGNOSTICS / TROUBLESHOOTING MENUS




Test procedure:
- Press individual beverage button to activate valves (indicated)

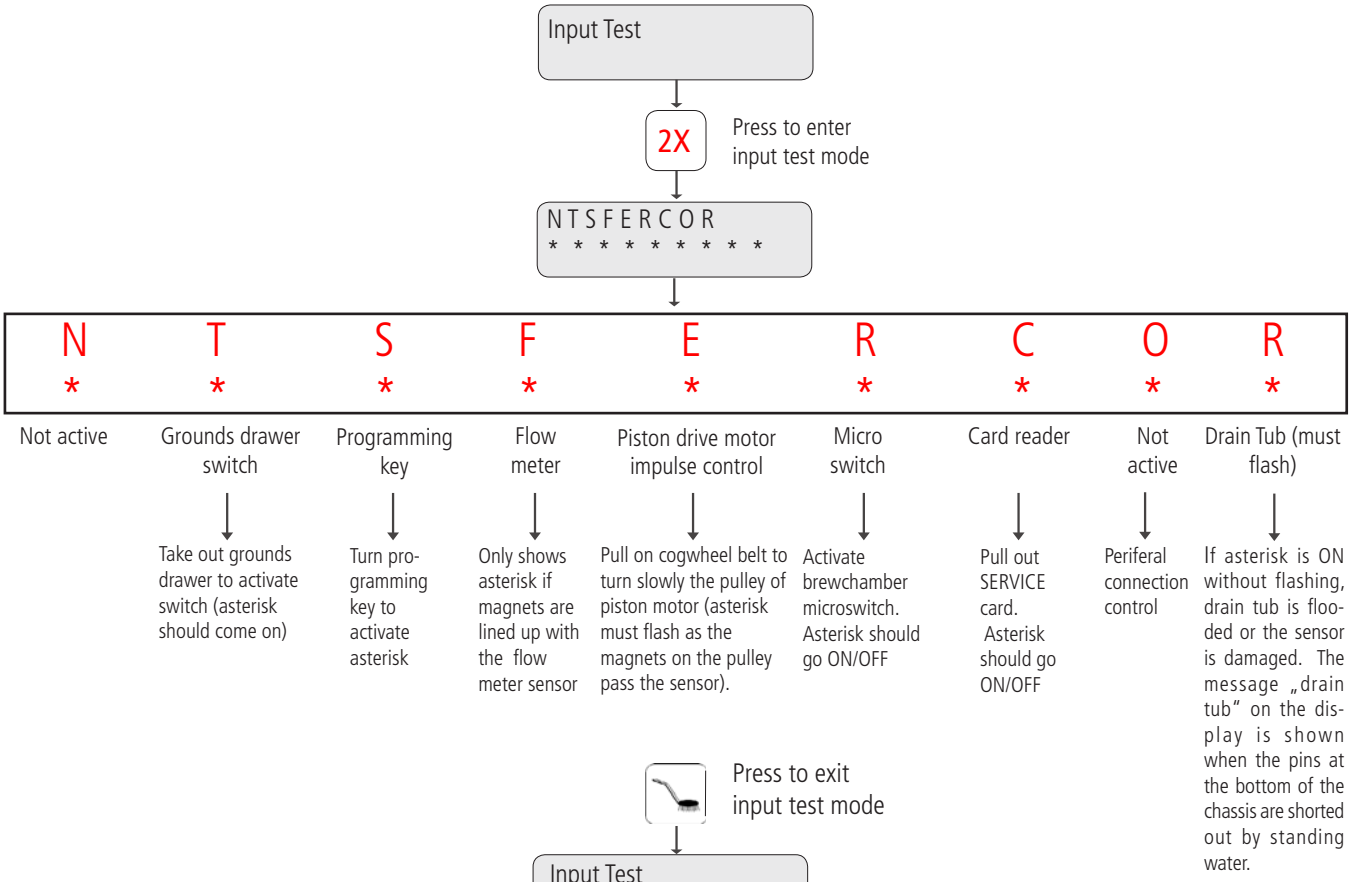
Special note:
- To check whether water path is clear from boiler to moving piston
  Press and hold single decaf button (water should come out of moving piston)

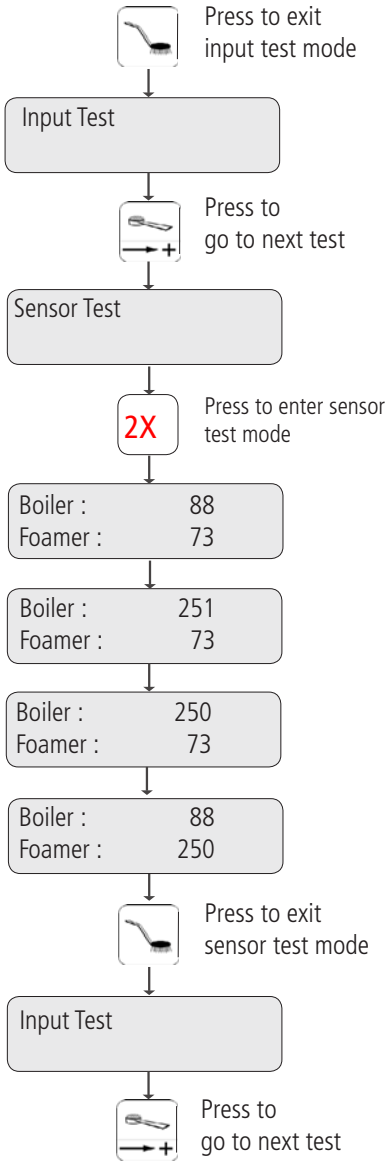
- To check whether water path is clear from boiler to front piston
  Press and hold double decaf button (water should come out of front piston)

- Turn coffee boiler ON/OFF, press 2X key

**Note:** When the coffee boiler is OFF, the „K" on the display is no longer visible. Press again „Continue"-key to indicate the coffee boiler on again. Now the „K" appears again.

## SERVICE CARD DIAGNOSTICS / TROUBLESHOOTING MENUS




Test procedure:
- Boiler: shows coffee boiler temperature
- Foamer: shows milk boiler temperature

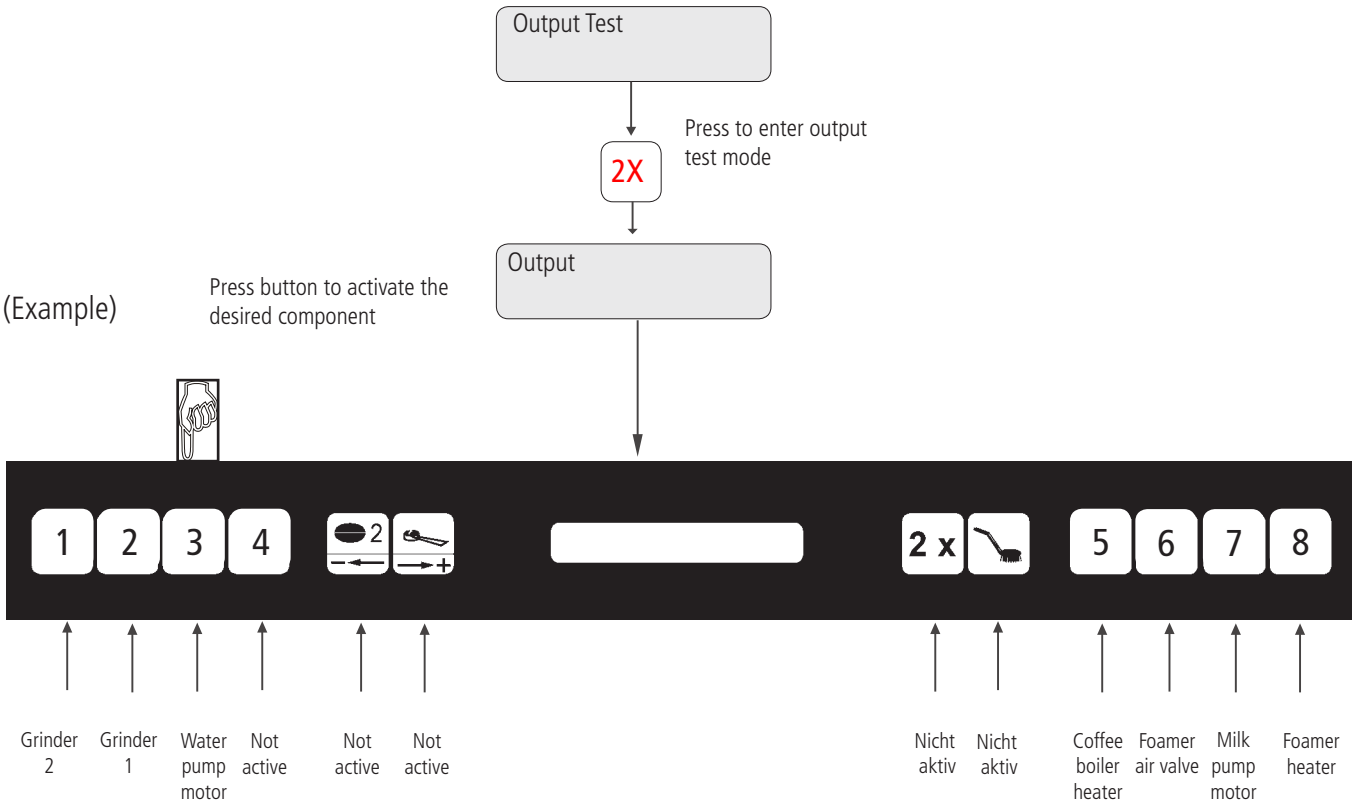
- Boiler: 251, means that the sensor is short circuited internally

- Boiler: 250, means that one of the connecting wires is broken

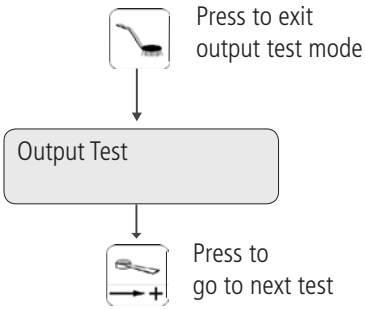
- Foamer: 250, means that one of the connecting wires is broken. This massage appears always by the combination CT with 2 MF5

- Foamer 251, means that the sensor is short circuited internally

SERVICE CARD DIAGNOSTICS / TROUBLESHOOTING MENUS

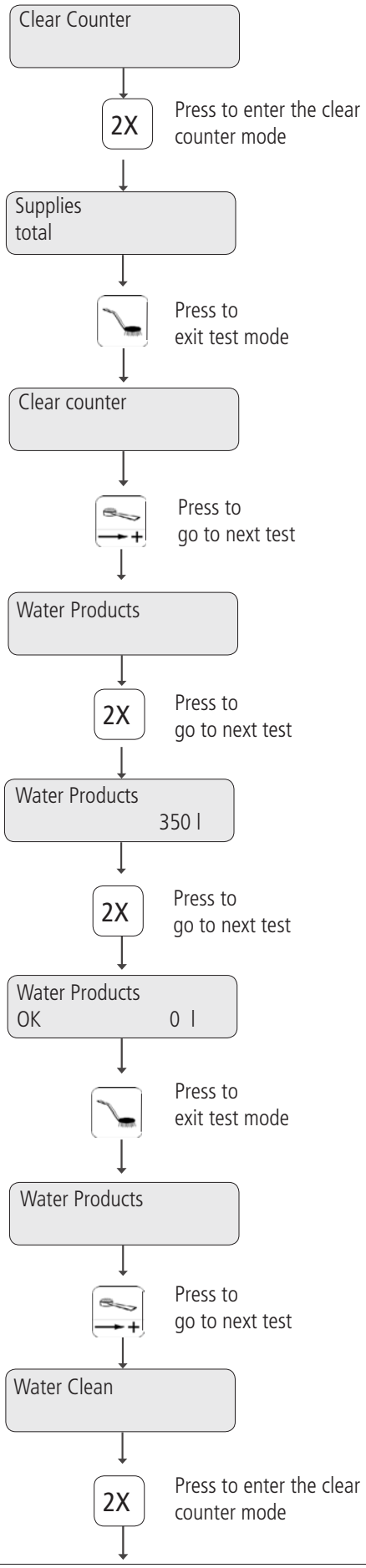



Test procedure:
- Press and hold key **1** to activate grinder 2 (right grinder)
- Press and hold key **2** to activate grinder 1 (left grinder)
- Press and hold key **3** to activate hydraulic module water pump motor
- Press and hold key **5** to activate coffee boiler heating
  (gauge pressure should rise. You can also see whether temperature is rising in sensor test)
- Press and hold key **6** to activate Foamer air valve
- Press and hold key **7** to activate Foamer Milk pump
- Press and hold key **8** to activate Foamer heater

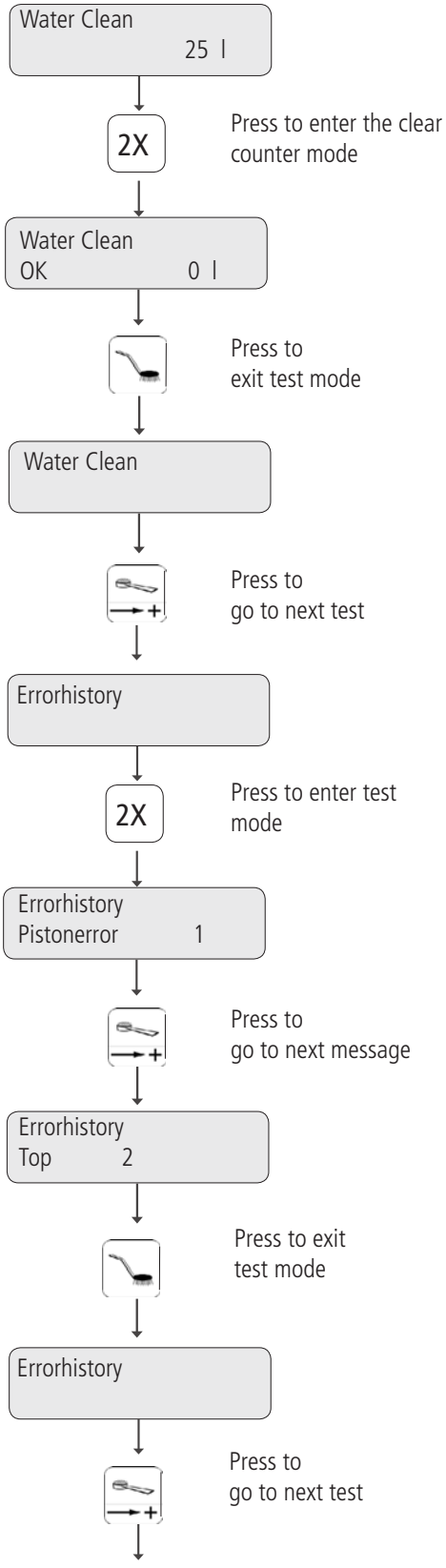


- This menu provides information on the number of products served. Press desired product selection key to display corresponding number of serving.
- Reset product total to zero. Press and hold **2 X - key.** Afterwards press the spezific product key and the counter will be set to 0

- This menu provides how meny liters of water were used for making all the coffee-, cappuccino- and tea-products.
- To clear the total of water-supplies, press **2 X - key** and maintain it. This will be confirmed by an appearing „OK" on the display.



- Press 2X key to delete the counter of the water consumption. If „OK" appears the counter is setted back to zero.

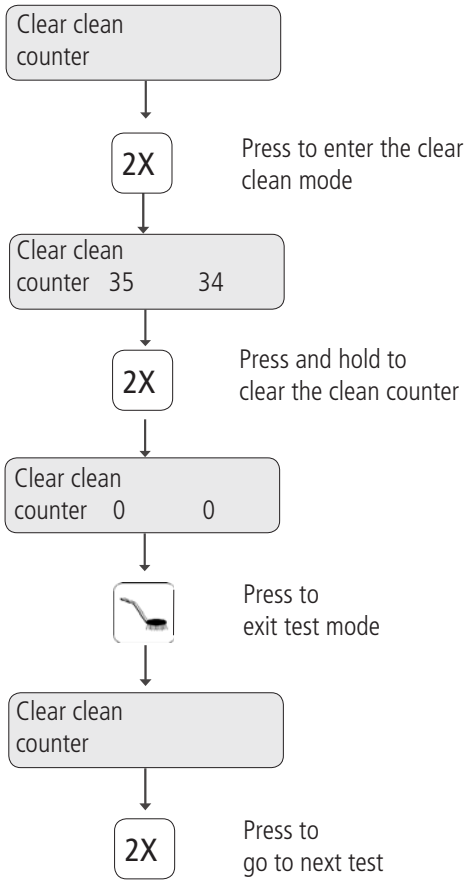



- The last 16 error messages can be tracked.

With + key you can scroll through the errors up or down, TOP means last error on list.

- Clear errorhistory:
Go to message „Top", press and hold 2x key until the display reads „OK"

- This counter is to check how many times the coffee machine has been cleaned.
- To clear counter press and hold the 2x - key until display shows OK.




Pull out SERVICE MASTER CARD to exit Parameter Diagnostics / Troubleshooting

## Quick Guide to remedy Error Messages

| Message on Display | Possible Cause | Solution |
|---|---|---|
| Heating | Coffee boiler has not reached set temperature | Allow machine to heat about three minutes. |
| | High limit switches have tripped | Reset the high limit switches by firmly pushing them in. **You must hear a click.** |
| | Moisture on button board / display assembly | Put your Service Master Card into card reader. If the message "Heating" remains, there is a moisture problem with the button board or display. Remove button board / display and look for moisture and corrosion build-up. Replace if necessary. |
| | Bad heating element | Check continuity on heating elements. Activate heating element in the „OUTPUT TEST" and press the „Half Decaf"-key (pressure on the gauge must increase). You can also check current temperature in the boiler in the diagnostic parameter „SENSOR TEST". |
| Ready | Coffee machine is ready for next serving. | |
| Ready<br>Foamer ON/OFF | If you use the model CTM or CT MF5 the message „Ready Foamer ON" or „Ready Foamer OFF" appears on Display instead of „Ready". | |
| Milk no ready | Milk or milk foam being heated. Temperature setting for milk or milk foam not yet reached. No milk serving possible. | Wait: Heating time for milk products approx. 12 minutes. |
| Empty Drawer | Grounds drawer has reached the programmed number of coffee pucks and needs to be emptied | Take out puck drawer and empty it. The machine will automatically reset counter to zero. **Note: Drawer must be removed by at least 5 seconds before counter is reset.** |
| | Moisture on button board / display assembly | Put your Service Master Card into card reader. If the message "Empty Drawer" remains, there is a moisture problem with the button board or display. Remove button board / display and look for moisture and corrosion build-up. Replace if necessary |
| Drain Tub | Excess water inside the chassis below the hydraulic unit has shorted out the two pins located at the back of the chassis | Check machine for leaks |

ERROR MESSAGE CODES

| Message on Display | Possible Cause | Solution |
|---|---|---|
| Drawer Missing | Drawer is not inserted | Insert drawer |
| | Drawer sensor defective or missing | Go to diagnostic parameter "Input test" and check letter "T".<br>Activate the sensor by taking the drawer out. An asterisk should appear under letter "T". |
| | Moisture on button board / display assembly. | Put your Service Master Card into card reader. If the message "Drawer missing" remains, there is a moisture problem with the button board or display. Remove button board / display and look for moisture and corrosion build-up. Replace if necessary |
| Fill hopper M1, (left side) | **Bean hopper M1 out of beans or hopper gate is closed.** | Fill left hopper<br>Open hopper gate |
| | Bean hopper or grinder outlet is obstructed | Remove Bean hopper and clear obstruction |
| | Defective 24 DC Volt piston motor, pulley loose on motor shaft | Replace 24 Volt DC piston motor |
| | Worn grinder belt | Replace belt |
| | Belt slips on pulley | Check belt tension |
| | Defective grinder motor capacitor | Replace capacitor |
| Fill hopper M2, (right side) | **Bean hopper M2 out of beans or hopper gate is closed.** | Fill left hopper<br>Open hopper gate |
| | Bean hopper or grinder outlet is obstructed | Remove Bean hopper and clear obstruction |
| | Defective 24 DC Volt piston motor, pulley loose on motor shaft | Replace 24 Volt DC piston motor |
| | Worn grinder belt | Replace belt |
| | Belt slips on pulley | Check belt tension |
| | Defective grinder motor capacitor | Replace capacitor |
| Milk low | Indicate that the container of milk is half empty. | Fill it if it's necessary |
| | Defective FT-Feeler F5 | Replace FT-Feeler F5 |
| Foamer off | Milk circuit out of service.<br>If the milk-product-keys are not programmed for products without milk, no serving with these keys are possible. | If desired, switch on Foamer.<br>Press and hold the „mill 2 „ key, then press and hold a milk-product key until on the display „Foamer ON" appears. |

ERROR MESSAGE CODES

| Message on Display | Possible Cause | Solution |
|---|---|---|
| Powder Error | Too much coffee is ground, exceeding the fill capacity in brew chamber | Push "Rinse" key to clear the error. Push the product key that prompted the error. If error reoccurs check the powder quantity and adjust the grinder finer. |
| Change filter | Water filter is saturated. This message is displayd until the filter is changed and the water counter is set to zero. All products can be served. | Call technical service. Change water filter and reprogram it in „Filter" menu (P213) on Programming leval 2. Press „Clear" key three times rapidly to reset counter to zero. This will be confirmd with „OK" on the display. |
| PM Required | Machine has reached a preprogrammed number of brew cycles, indicating preventive maintenance must be performed. All products can be served. | Perform PM as required. **To clear the error message, go to parameter "Service interval" and press the "Clear" key 3 times rapidly.** The display will confirm OK and the counter is set back to zero. |
| Clean Appliance | Machine has reached a pre-programmed number of brew cycles, indicating a cleaning cycle must be performed. All products can be served. | Perform a cleaning cycle to clear message on display. |
| Flow Error | Flow meter impeller is not rotating | Obstruction inside flow meter or water path, check with diagnostic parameter "Valve Test". |
| | Flow meter sensor does not read magnetic contacts on impeller | Pins on electrical plug are not connected or corroded, check for proper mounting of hydraulic module |
| | No water to machine | Verify gauge pressure on coffee boiler is above 2 bar. |
| | Obstruction of water flow through the Mechanical module and / or Hydraulic module | See "Defective brew valve" in Hydraulic module troubleshooting or „Defective air valve" in mechanical module |
| | Flow meter is defective | In "Valve test" push and hold the Nr.3 key (brew valve). Push and hold the Nr. 4 key (rinse valve). If water comes out of both valves the flow meter is defective, the connections are interrupted or corroded, or supply water pressure is too high. |
| Voltage high 109% | The option „voltage control" is working | The tension is to high. As soon as the adjusted value are reacht, all produkts can be served again. |
| Voltage low 109% | The option „voltage control" is working | The tension is to low. As soon as the adjusted value are reacht, all produkts can be served again. |

ERROR MESSAGE CODES

| Message on Display | Possible Cause | Solution |
|---|---|---|
| Piston Error | Motor blocked | a) Press the clean key.<br>b) The 24 VDC is present. Check if the brew chamber is seized against the rear aluminium block. If it's seized, release the chamber by turning on the cogwheel and push another beverage button to reset. If the problem persists check the function of micro switch in diagnostic program „INPUT TEST".<br>c) The drive shaft is so much incrusted with an old hard coffee residue or chocolate that it's no more possible for the motor to move the brew chamber or the brew chamber is blocked on the front position. Clean it and apply new grease. |
| | No impulses | d) The impulses counter doesn't work. See detailed troubleshooting page 4.6. Check the counter in the diagnostic program „INPUT TEST". When you are in the menu „INPUT" turn the bigger pulley manually and slowly, observe that you see impulses on the display (asterisk, see card instructions. |
| | No 24VDC | e) Check the plug on motor, correct insertion.<br>f) Check fuse 6.3A on electrical drawer. |
| Overtime Error | Grind is set too fine. The coffee flow is to slow (more then 2 minutes). | Press the rinse key.<br>Check grind setting and weight according to parameters |
| | Water flow is clogged | Check the brew valve and the air valve |
| | Option:<br>Foam bush is clogged | Remove and clean Foam bush, replace if necessary |
| NTC Coffee Def. | CPU does not read NTC probe signal | Check for defective wiring on hydraulic module NTC probe<br>**Note: "NTC coffee def" message automatically appears on the display when the machine is on and the hydraulic module is removed.** |
| NTC Foamer Def. | CPU does not read NTC probe signal | Check for defective wiring on foamer module NTC probe<br>**Note: "NTC foamer def" message automatically appears on the display when the machine is on and the hydraulic module is removed.** |

GENERAL PROBLEMS

*The following problems are issues which can occur but may not coincide with an error message

| Problem | Possible Cause | Solution |
|---|---|---|
| Shortfilling of cups | Water quantity parameters have been altered | Verify that parameters for water quantity are correct. Recalibrate if necessary |
| | Leaking from worn gaskets on fixed or mobile pistons | See page 4.0 Mech. module troubleshooting |
| | Defective brew valve | See page 5.2 Hydr. module troubleshooting |
| | Defective expansion valve between flowmeter and coffee boiler | See page 5.3 Hydr. module troubleshooting |
| Grinder M1 or M2 runs continuously | Grinder triac 1 or 2 in short circuit | Change power print board in power management drawer. Refer to checkpoint troubleshooting. |
| No coffee is being dispensed | Defective air valve | See page 4.0 Mech. module troubleshooting |
| | Defective brew valve | See page 5.2 Hydr. module troubleshooting |
| | Inline water pressure is too high | If the inline water pressure is too high, the hydraulic module cannot be properly seated. As a result, the water check valve is not fully opened and there will be no electrical contact to the valves.<br><br>Note: a pressure reducing valve must be fitted if a pressure of 4 bars, approx. 60 PSI is exceeded. |
| | The pipe 71.21.08 is clogged | Clean the pipe on the mech. modul |
| | Grind is set too fine. The coffee flow is to slow | Press the rinse key.<br>Check grind setting and weight according to parameters |
| Cold shots | Coffee temperature parameter in programming has been altered | Verify that the parameter "Coffee temp" is set correctly |
| | Defective brew chamber heating element | See page 4.0 Mech. module troubleshooting |
| | Defective NTC switch | See page 5.0 Hydr. module troubleshooting |
| Low pressure on gauge while brewing (below 8 bar) | Defective brew valve | See page 5.2 Hydr. module troubleshooting |
| | Inline water pressure too low | Go to diagnostic parameter "Output test" and check water pump, remove and clean bypass valve (located at pump head).See on page 5.2. |
| | The motor works but the pump is blockt | Replace the EPROM with the version 4.03. |

GENERAL PROBLEMS (continued)

| Problem | Possible Cause | Solution |
|---|---|---|
| No milk is being dispensed | Switch the Foamer on.<br>Is the main switch on from MF5/MF10 | Press and hold the „mill 2"-key , then press and hold a milk-product key until on the display „Foamer ON" appears. |
| | Blockt intake line | See page 8.0 Foamer module troubleshooting |
| | Milk-backlog on the valve with spring | See page 8.0 Foamer module troubleshooting |
| | Defective FT-feeler | See page 8.3 Foamer module troubleshooting |
| | Obstruction of milk pump | See page 8.0 Foamer module troubleshooting |
| Cold milk products | Milk temperature parameter in programming has been altered | Verify that the parameter "Milk temp" is set correctly |
| | Defective foamer heating element | See page 8.2 Foamer module troubleshooting |
| | Defective NTC switch | See page 8.3 Foamer module troubleshooting |
| LCD is blank or fading | Defective 2 A fuse in power management drawer | See page 9.1 upper deck troubleshooting |
| | Loose cable connection between CPU and display | Check cable connection from CPU to display |
| | Moisture in the display / button board assembly | See page 9.3 upper deck troubleshooting |
| | Defective CPU mainboard | Replace CPU board |
| Display locked in "Heating" mode | Moisture in the display/ button board area | See page 9.3 upper deck troubleshooting |
| | Loose cable connection between CPU and display | Check cable connection from CPU to display |
| Machine queues and dis-penses drinks by itself / Machine steams by itself | Moisture on electronics | Allow upper deck components to dry. Replace permanently damaged electronics if necessary<br>**Note:** You must find the source of the leak before the problem can be fully resolved |
| Steam is rising from the drip tray | Pressure switch needs adjustment | If T/S boiler gauge reads above 1.9 bar, adjust the pressure switch until the gauge is correct (1.6 to 1.9 bar). |
| | Defective pressure switch | Test the pressure switch by using diagnostc program „INPUT". If pressure switch will not adjust pressure down (you must bleed off steam as you adjust) then replace the pressure switch. |

MECHANICAL MODULE

| Problem | Possible Cause | Solution |
|---|---|---|
| Grinder M1 or M2 runs continuously | Grinder triac 1 or 2 in short circuit | Inspect grinder triacs for damage. Change power print board in power management drawer if necessary |
| No coffee is being dispensed | Defective or clogged air valve | Use the diagnostic parameter "Valve test" to check the function of the air valve |
| | Defective brew valve | See page 5.2 Hydr. module troubleshooting |
| | Inline water pressure is too high | See page 5.0 Hydr. module troubleshooting |
| | Obstruction in brew water circuit | Clear obstruction, replace parts as necessary. Pay particular attention to the Teflon hose and fitting between the back of the brew chamber and hydraulic module inlet. |
| Shortfilling of cups | Leaking from worn gaskets on fixed or mobile pistons | Check for leaks coming off the front of the brew head during the brewing process |
| | Clogged brew valve | See page 5.2 Hydr. module troubleshooting |
| | Defective expansion valve between flowmeter and coffee boiler | See page 5.3 Hydr. module troubleshooting |
| Cold / poor quality shots | Coffee temperature parameter has been altered | Verify that the parameter "Coffee temp" is correct |
| | Defective brew chamber element | Touch the brew chamber. If it is cold, replace the heating cartridge. |
| | Defective NTC switch | See page 5.5 Hydr. module troubleshooting |
| | Worn grinder burrs | Change burrs |
| | Not enough tension on belt | Check belt tension. Use diagnostic program „OUTPUT". |
| | Incorrect powder quantity | Adjust powder quantity |
| | Incorrect grind setting | Adjust grinder |
| | Beans have expired and become stale | Fill new beans in hoppers |
| | Low pressure on gauge while brewing (below 8 bar) | See page 5.1 Hydr. module troubleshooting |
| Leaking from front of brew chamber | Damaged fixed piston O-ring | Replace fixed piston O-ring |
| Leaking from rear of brew chamber around piston shaft | Damaged O-ring on the moving piston shaft | Clean brewing chamber and change O-ring |

On the display of the coffee-machin appears the message:

| Fill hopper | M1 (M2) |
|---|---|

Problem source:

A) The pulley on the motor rotates on the arbor

B) 24VDC motor, the distance between sensor and rotor is not correct.

C) mobile piston blockt

D) Bean hopper / grinder

E) Belt slips on pulley

---

A) The pulley on the motor rotates on the arbor

24V DC Motor

The brewing chamber does not works correct.
Display message: „Fill hopper" or „Piston error"

In case of this error you have to pressing a security pin through the pulley and the shaft.

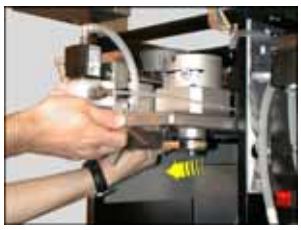
24V DC replace motor

1.) Switch off coffee machine. Use holes to lift up the keyboard.

2.) Raise the keyboard slightly, release the latches, and continue to rais the panel until it locks in the up position on both side.

3.) Dismount the frontpanel carefuly left and right.

5.) Unscrew knurled screws on both sides



6.) Pull out the plug connection

7.) Withdraw the toothed drive belt from Toothead pulley wheel.

8.) Unscrew the three tallow drop screw from 24V DC motor.

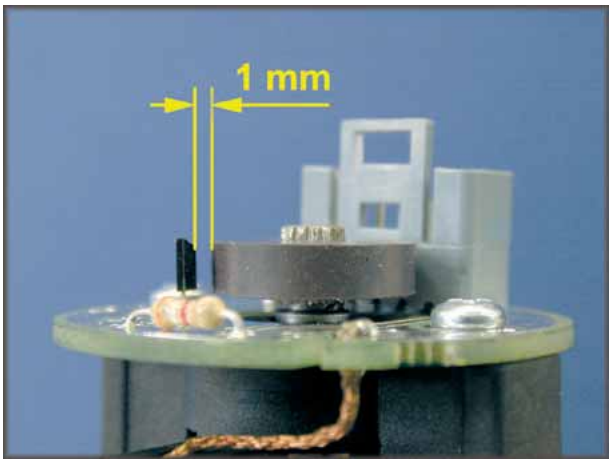
## 24VDC motor, the distance between sensor and rotor is not correct.

24V DC motor

The impulses counter doesn't work. Check the distance between sensor and rotor.

1.) Remove the protective cap from motor

2.) The distance between parallel lines sensor and rotor have to be 1mm.



C) Moving piston blockt

Moving piston

| | |
|---|---|
| The mobile piston is heavyli soild and blockt on the high of brew chamber window. During the grinding process all brew chamber window are tightli shot trow the moving piston and no powder can enter the brew chamber. | Remove the mobile piston and clean it thoroughly. |
| The scraper ring to the moving piston is deformd out of witch ar blochage of the piston resalts. | Remove the mobile piston and replace the scraper ring |
| One or both springs on the moving piston are broken. The moving piston being blockt trough the feather effect can not pull back ani more and blocks the brew chamber window. | Replace the spring(s) |

Remove the mobile piston

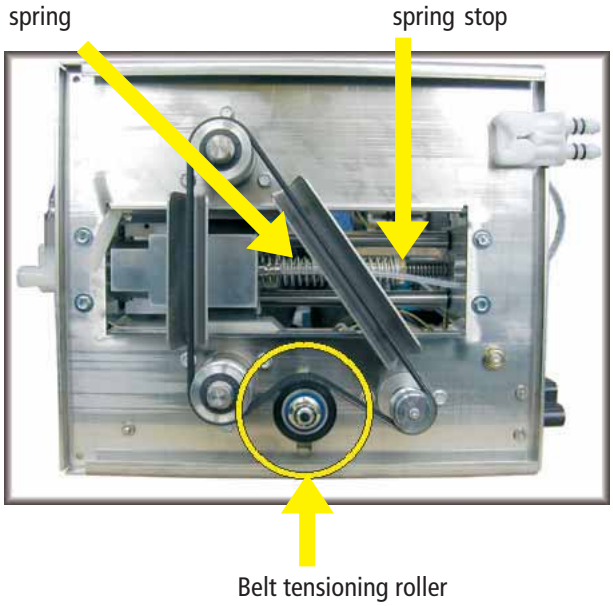
1.) To remove the mech. modul according to instruction on page 4.1

2.) Drive the brew chamber to the front block.

3.) Loosen the spring stop nut

4.) Remove the spring and the stop nut

5.) Drive the brew chamber back and remove the mobile piston.

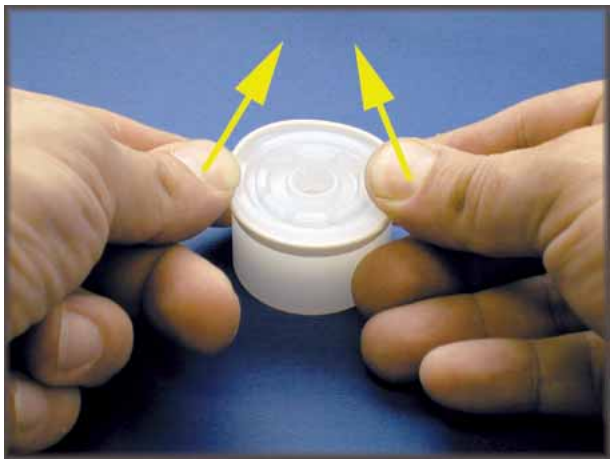


To replace scraper ring to mobile piston

1.) Clean mobile piston with lukewarm water

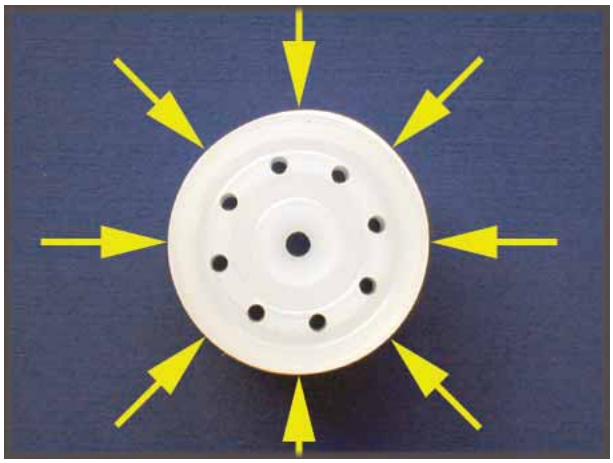
2.) New scraper ring in container preheat with hot water between 2-5 minute

3.) To start from one end the scraper ring carefully insert on to the mobile piston until scraper ring fits in to the slot from the piston.



4.) Press the scraper ring in to the slot of the piston and let it cool.

Indication: To warrantedly thet the scraper ring those not protrude

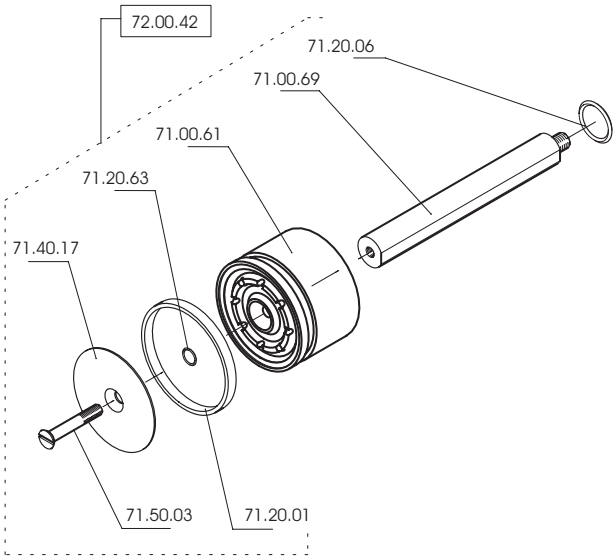


Assemble the mobile piston and install

1.) During the reassembling prosses to clean micro filter and fasten again with Loctite.

2.) In case one or both springs are brocken these have to be replacet now.

To reassembling mobile piston in to the brew chambre make sure, that during this process scraper ring is not damage.



D) Bean hopper is closed / Grinder blockt

| Problem source | Solution |
|---|---|
| **Bean hopper / Grinder** | |
| Bean hopper gates is closed | Open hopper gate |
| Bean hopper out of beans | Fill hopper |
| Bean hopper or grinder outlet is obstructed | Remove bean hopper ans clean obstruction |
| Wrong grinder adjustment. No space between the mill wheel. | Grinder have to be settet |

**Grinder setting**

1.) To remove the mech. modul according to instruction on page 4.1

2.) Thoroughly clean exterior of grinder and vacuum out remaining beans from grinder.

3.) Remove the adjustment pin

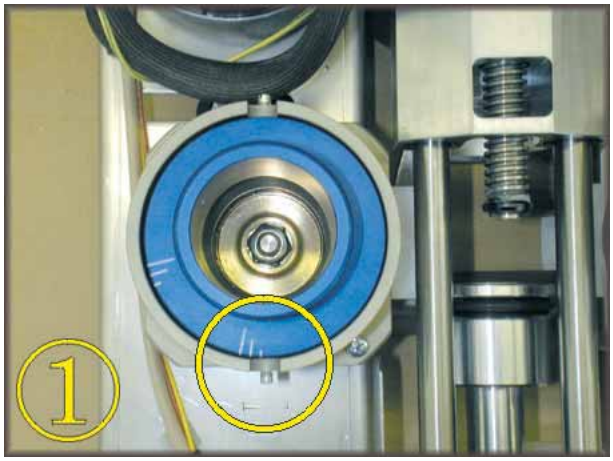
4.) Remove the grinder burr with the special tool part nr. 71.40.20

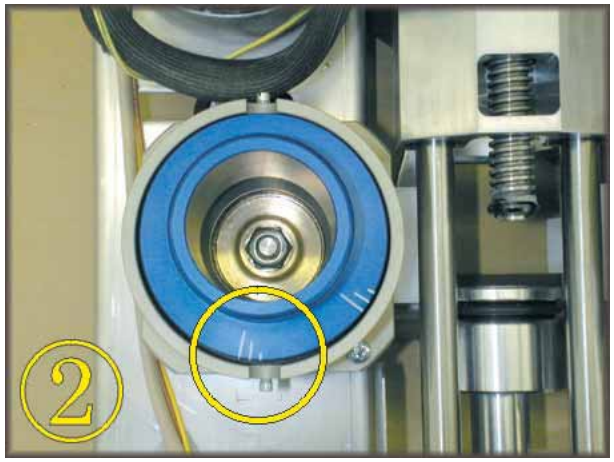
5.) Clean the mill wheel.

6.) Insert the grinder body into block andthread all way until the two bulls touch.

7.) Back off top burr by the distance between the two marks on the special tool.

8.) Remount adjustment pin on the very left of the slotted grinder head lining up 2 holes to mount the bracket, this will be the finest position.



## MECHANIK MODUL

| Problem Source | Solution |
|---|---|
| The belt turns irregularly / or defekt | Stretch the belt or replace |
| Grinder motor is rotating incorrectly | Check the programming and the connection |

Mill change

**Stretch the belt or replace**

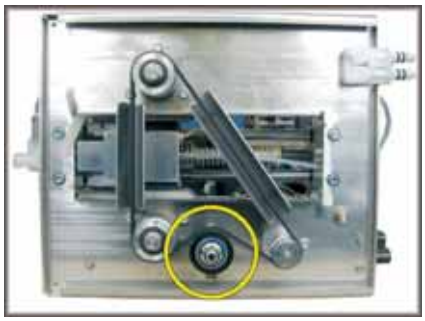
1.) To remove the mech. modul according to instruction on page 4.1

2.) Stop nut with a fork wranch unloosen untill the belt can be removed

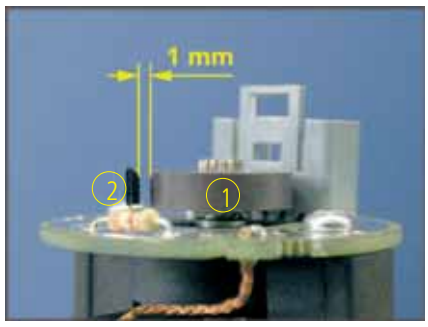
3.) Belt to be replaced if necessary

4.) Belt to be insert in all pulley and strech untill tight fixed, (rotation control max 90°)

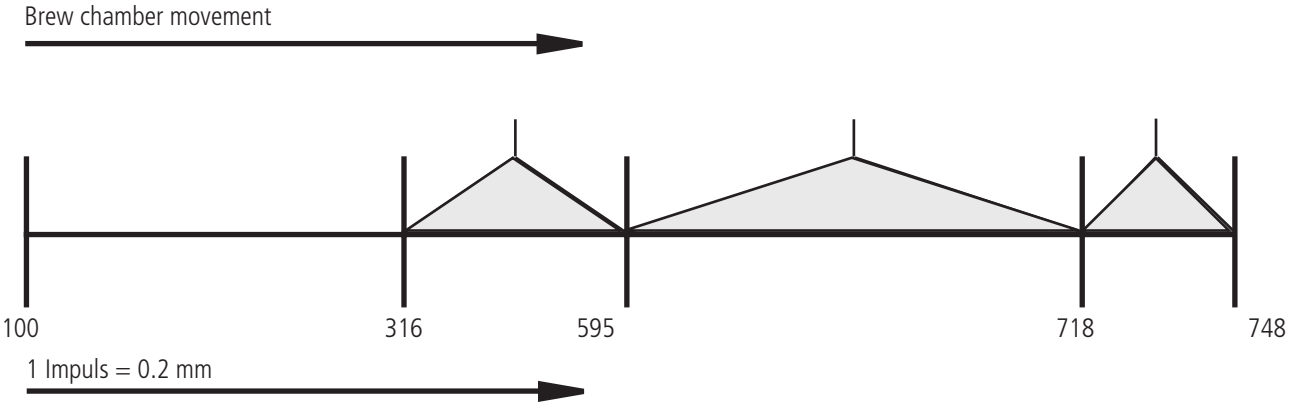
5.) To screw nut again tighhtly



**Brew chamber movement**



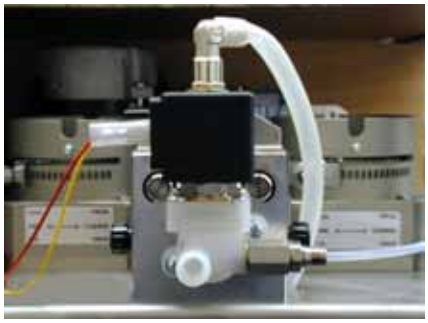

On the drive motor there is a hall sensor (2), which detects five impuls per revolution, given through the magnetic wheel (1) located on motor shaft




**Air valve providet**

Flow error

Coffee powder is retain in air valve the plunger can not be moved anymore.
Open the air valve and clean the plunger



## HYDRAULIC MODULE

| Problem | Possible Cause | Solution |
|---|---|---|
| Low pressure on gauge during brew cycle (below 8 bar) | Pump head may seized | Press a beverage button and check pressure on gauge. Pressure must be between 8 - 9 bar during a brew cycle. |
| | The motor works but the pump is blockt | Replace the EPROM with the version 4.03. This version open the brew valve 0.2 sec. befor the pump starts. In some cases the backup pressure caused a blocking of the water pump. |
| | Clogged bypass valve inside pump head | Go to diagnostic parameter "Output test" and check water pump, open bypass valve located on pump head and clean it |
| No coffee is being dispensed | Defective brew valve | Use the "Valve test" parameter to check the function of the brew valve. When the Nr.3 key is pressed, water should pour from the back of the brew chamber. When the Nr.4 key is pressed, water should pour from the fixed piston. |
| | Inline water pressure is too high | If the inline water pressure is too high, the hydraulic module cannot be properly seated. As a result, the water check valve is not fully opened and there will be no electrical contact to the valves.<br><br>Note: a pressure reducing valve must be fitted if a pressure of 4 bars, approx. 60 PSI is exceeded |
| Shortfilling of cups<br><br>*Also see Mechanical module for additional troubleshooting of this problem | Clogged brew valve | Check drain line from brew valve. There must be no water coming off the coffee brew valve to the drain during the brew cycle |
| | Defective expansion valve between flowmeter and coffee boiler | Check for leak. There must be no water coming off the the expansion valve to the drain during the brew cycle |
| Cold / poor quality shots | Coffee temperature parameter has been altered | Verify that the parameter "Coffee temp" is set correctly |
| | Defective NTC switch | Check current temperature in the diagnostic parameter "Sensor test" compare temperature inside boiler by removing the NTC switch |
| | Defective brew chamber element | See page 4.0 Mech. module troubleshooting |
| | Incorrect water pressure | Check the gauge on the Hydraulic module - when the machine is at rest the gauge should be between 3 -5 bar, however, it should read between 8 - 9 bar during a brew cycle. |

Cold / poor quality shots, can be a result of rhe following causes:

A) Water pump
B) Brew valve
C) Pressure control valve
D) Temperature sensor NTC
E) Safty device for boiler

| Problem Source | Solution |
|---|---|
| **A) Water pump** | |
| Low pressure on gauge during brew cycle (below 8 bar) | The motor works but the pump is blockt. Replace the EPROM with the version 4.03. This version open the brew valve 0.2 sec. befor the pump starts. In some cases the backup pressure caused a blocking of the water pump. |
| The magnet on the motor rotates on the arbor. | Fix the countersunk screw on the arbor |

**Release the obstruction in the pump**

1.) Open the circlip with a circlip pliers.

2.) Turn magnet to unlock the blocked pump and clean it under fluently water.

| Problem Source | Solution |
|---|---|

The water pressure during the brew cycle is lesser then 8 bar. Set the water pressure with the adjustment screw.

| | | |
|---|---|---|
| Turn | clockwise | more pressure |
| Turn | counterclockwise | less pressure |

### Cleaning from bypass

1.) Open with a fork wrench the bypass bolted connection.

2.) Clean this parts and reassemble the bypass.

---

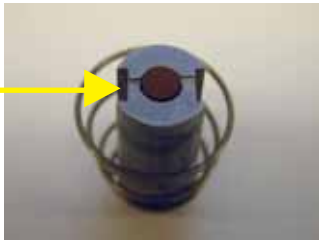
### B) Brew valve

Flow Error

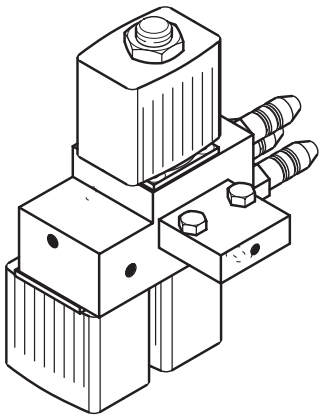
Check the plunger from brew valve.

Example:

It happend, that in some machines the plunger in the brew valve blocked in case of coffee backlogs.



### Open from brew valve



1.) Remove the solenoid

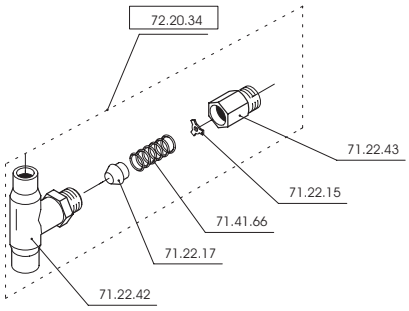
2.) Unscrew the four Torx-screw

3.) Check the plunger 72.20.39 clean or replace if necessary.

| Ursache | Massnahmen |
|---|---|

C) Surpression valve

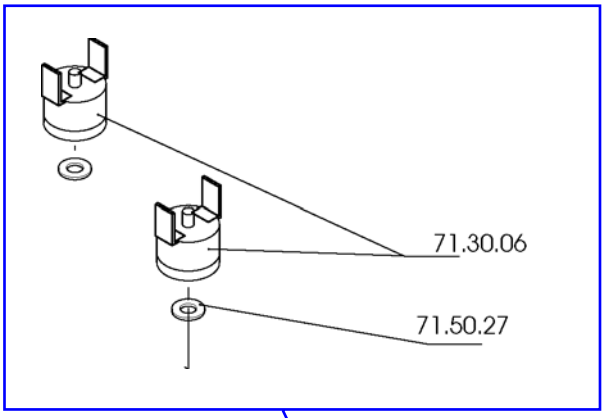
The correntlly pressure release valve sometimes breaks down.




This valve has to be checked during the preventive maintenance with opening it to do a visual control df the assembly: rubber cone - casing fitting. As you can see in the picture below, the casing fitting has a mechanical demage. This damage can be due to the water wear or to the corrosion because of the water quality too soft (water hardness close to zerow).

1.) Open with a fork wrench the surpression valve.

2.) Check the rubber cone clean or replace if necessary.




D) Temperature sensor NTC

Check for scale on the NTC Temperature sensor Sonde.

Check current temperature in the diagnostic parameter "Sensor test" compare temperature inside boiler by removing the NTC switch

Check the resistant with a multi meter ( by ambient temperature approx. 100k Ohm).

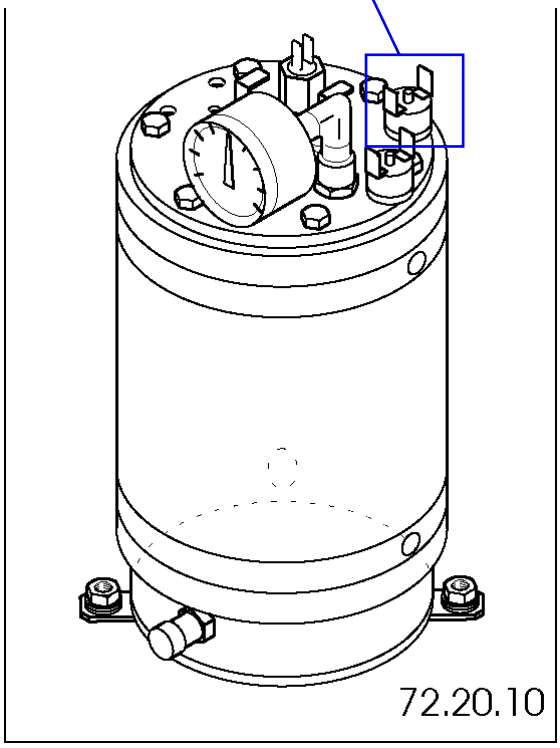
---

E) Safty device for boiler

Check both safty device (71.30.06) on top from the coffee boiler.

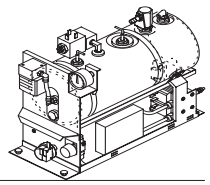
1.) The safty device are release by over heating themperature from 125°C.

2.) Press the red button to reset the device.



## TEA / STEAM MODULE

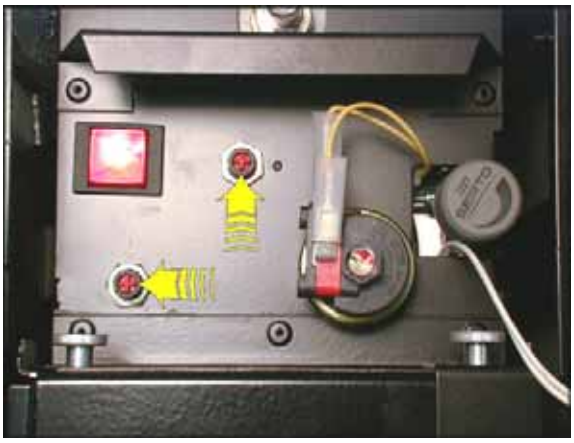
| Problem | Possible Cause | Solution |
|---|---|---|
| No steam / no pressure | Main boiler switch is turned off | Turn power to module "ON" |
| | Both limit switches have tripped | See detailed troubleshooting of the TS module |
| | Defective pressure switch | |
| | Triacs or heating elements are defective | |
| | Defective power relay | |
| | Defective boiler main switch | |
| | No power from main power plug | |
| | No power supply from the terminal block | |
| | Water level is to low | |
| Low steam power / slow recovery | Clogged steam nozzle | Remove steam nozzle tip and clear blockage. |
| | High limit switch is tripped | See detailed troubleshooting of the TS module |
| | Defective triacs and/or heating elements | |
| | Boiler has overfilled | |
| Boiler is overheating | Defective pressure switch | See detailed troubleshooting of the TS module |
| | Defective triac(s) | |
| Low water level in steam boiler error | Defective TS water pump | See detailed troubleshooting of the TS module |
| | Fouled fill level probe | |
| | No water supply to TS boiler | |
| | No water supply to pump | |
| | No water supply to the quick-disconnect | |
| | Clogged water inlet screen | |
| No power to Tea / Steam module | Defective 6.3 amp fuse in power management drawer | See detailed troubleshooting of the TS module |
| | Defective 7 amp block fuse on liquid level control board (in TS module) | |
| | Defective CPU mainboard | |
| | | Replace CPU |

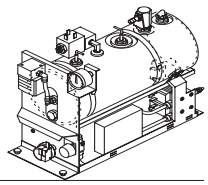


## TEA/STEAM MODULE: NO STEAM, NO PRESSURE

NO STEAM, NO PRESSURE IN THE BOILER, (GAUGE READS 0 BAR), CAN BE A RESULT OF THE FOLLOWING CAUSES IN ORDER OF PROBABILITY:

A) MAIN POWER SWITCH IS "OFF"
B) BOTH HIGH LIMIT SWITCHES ARE TRIPPED
C) DEFECTIVE PRESSURE SWITCH
D) HEATING ELEMENTS Q/R AND S/T ARE BAD
E) DEFECTIVE POWER RELAY
F) DEFECTIVE MAIN POWER SWITCH

| Problem Source | Solution |
|---|---|
| a) MAIN POWER SWITCH IS "OFF" | |
|  | Turn main TS module power switch to the "ON" position. (Button must be illuminated) |
| b) LIMIT SWITCHES ARE TRIPPED | |
|  | Reset the limit switches by pressing the red knobs until a "click" is heard.<br><br>**Note:** This problem indicates a larger malfunction and further examination of the machine is required. |



## TEA/STEAM MODULE: NO STEAM, NO PRESSURE (continued)

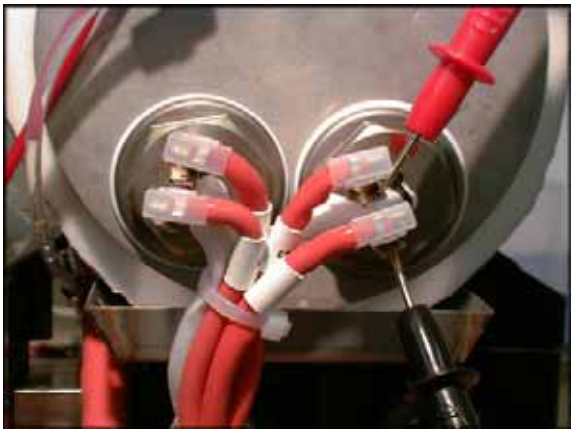
| Problem Source | Solution |
|---|---|

c) DEFECTIVE PRESSURE SWITCH


Check Continuity between Pressure switch wires.

Jump the two yellow wires to start the heating process. If the heating process starts and pressure on the gauge begins to rise, the pressure switch is defective and will need to be replaced.

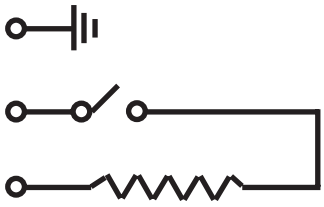
d) HEATING ELEMENTS Q/R AND S/T ARE BAD



Check continuity on each heating elements:

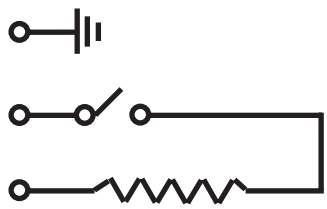
1) With the module installed and back panel removed check the voltage on heating elements. This shoud read appr. 230 Volt AC across the legs (Q/R & S/T) of each element during the heating process.

Single phase current:




| | | |
|---|---|---|
| U = | 230V | N - Ph |
| U = | 0V | N - G |
| U = | 230V | Ph - G |

Cumulative multistage system:




| | | |
|---|---|---|
| U = | 210V | L1 - L2 |
| U = | 105V | L1 - E |
| U = | 105V | L2 - E |

## TEA/STEAM MODULE: NO STEAM, NO PRESSURE (continued)

| Problem Source | Solution |
|---|---|

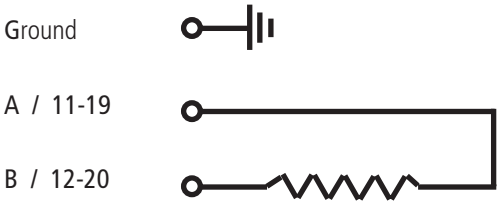
e) DEFECTIVE POWER RELAY


Check the voltage from the main power switch to the power relay.

You must meter approx. 230v AC between
points A & B.

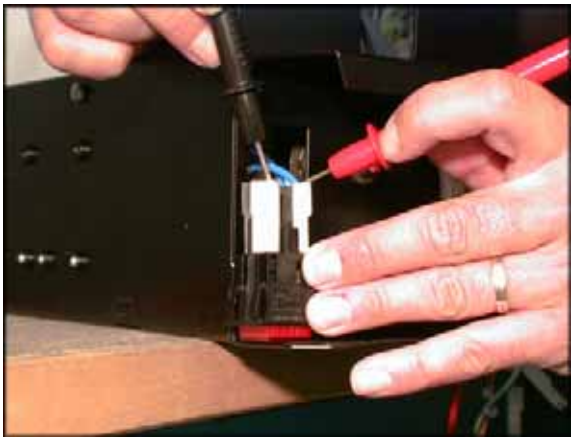
You should meter approx. 230v AC to ground between contacts 11-19 (the upper terminals) and 12-20 (the lower terminals).

Single phase current:




U = 230V A - B
U = 230V 11-19 / 12-20

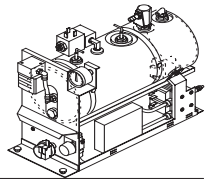
f) DEFECTIVE BOILER MAIN SWITCH



Check voltage from the main terminal to the main power switch.

Voltage reading between the
two contacts, (white plugs), should be approx. 230v AC.

When the power button is pressed, you should hear the relay audibly activate.



## TEA/STEAM MODULE: LOW STEAM POWER, SLOW RECOVERY TIME

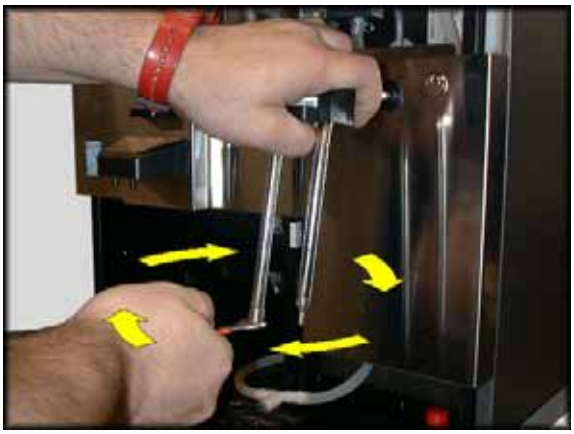
LOW STEAM POWER, SLOW RECOVERY CAN BE A RESULT OF THE FOLLOWING CAUSES IN ORDER OF PROBABILITY:

Caution!!
Be sure to depressurize the TS boiler before you open !!!

A) CLOGGED STEAM NOZZLE
B) HIGH LIMIT SWITCH IS TRIPPED
C) BOILER HAS OVERFILLED

| Problem Source | Solution |
|---|---|

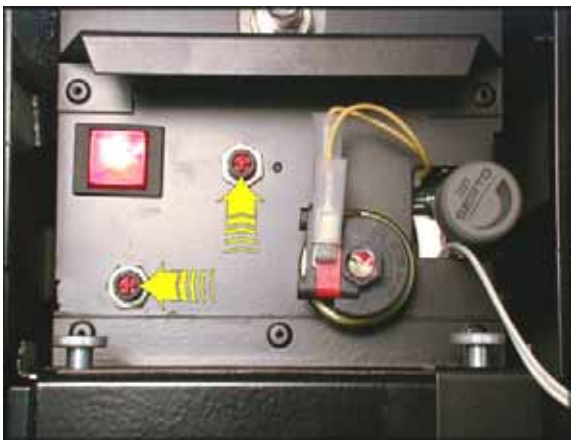
a) CLOGGED STEAM NOZZLE



Check boiler pressure on the gauge.
If boiler pressure is correct but there is hardly any steam pressure coming out of the steam wand, it is very likely that the tip of the steam wand may be clogged.

Remove steam tip and clean orifice with a wire brush or similar instrument

b) HIGH LIMIT SWITCH IS TRIPPED



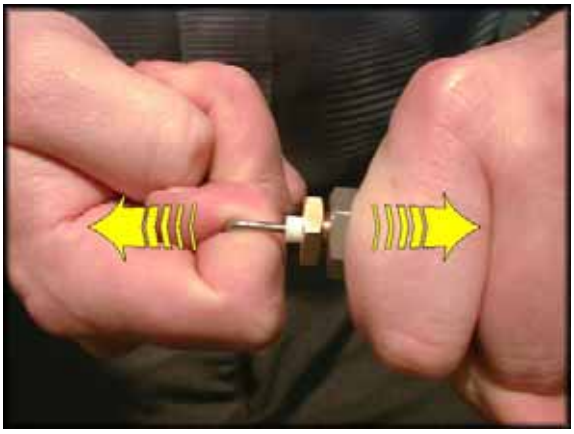
Reset the limit switches by pressing the red knobs until a "click" is heard.

NOTE: This problem indicates a larger malfunction and further examination of the machine is needed

## TEA/STEAM MODULE: LOW STEAM POWER, SLOW RECOVERY TIME

| Problem Source | Problem Source |
|---|---|

c) OVERFILLED BOILER



Caution!!
Be sure to depressurize the TS boiler before removing probes !!!

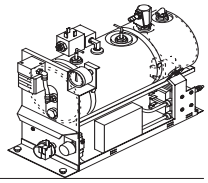
Remove the entire fitting together with the fill level probe and check for scale build-up.

If probe is coated with scale, clean entire probe and replace the teflon pipe for probe 71.22.64.

Overheating in the Tea/Steam boiler

Quick pressure switch chick:

If adjusting the pressure switch has not decreased the pressure, pull off one of the pressure switch wires after the pressure reaches 1.6 to 1.9 bar. If this stops the heating process either the pressure switch is defective, or the pressure switch supply is clogged, the pressure switch can not recieve a pressure reading from the boiler and will need to be replaced.



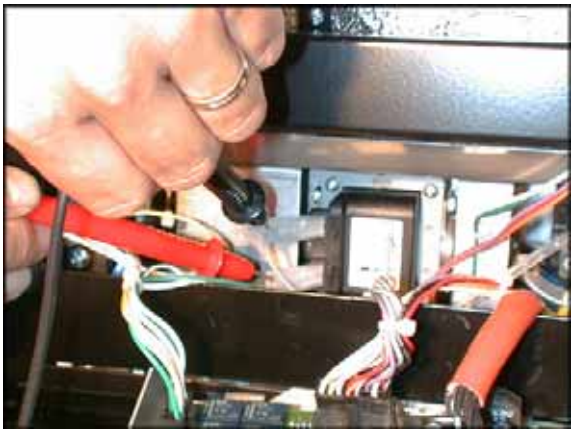
## TEA/STEAM MODULE: LOW WATER LEVEL IN STEAM BOILER

LOW WATER LEVEL IN STEAM BOILER CAN BE A RESULT OF THE FOLLOWING CAUSES IN ORDER OF PROBABILITY

A) DEFECTIVE WATER PUMP (OPTION)
B) FOULED FILL LEVEL PROBE
C) NO WATER SUPPLY TO TS BOILER
D) NO WATER SUPPLY TO PUMP
E) CLOGGED WATER INLET SCREEN
F) DEFECTIVE INLET VALVE PLUNGER

| Problem Source | Solution |
|---|---|

### a) DEFECTIVE WATER PUMP

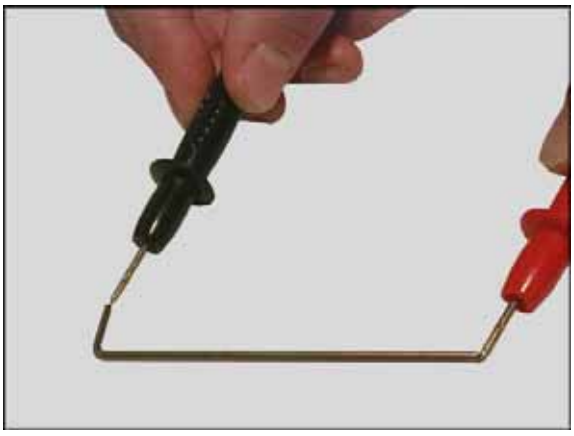


Remove one wire from pump and check pump coil for continuity.

Reattach wire then remove water from the TS boiler (using the hot water button) and check for about 18VAC voltage to the pump when the pump on the boiler should activate.

Note: Remove the white wire of level probe to activate the pump and the fill valve. If pump does not activate, proceed to the following steps.

### b) FOULED FILL LEVEL PROBE



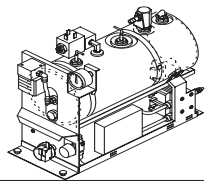
Caution!!
Be sure to depressurize the TS boiler before removing probes!!!

Take off complete probe fitting
and pull out fill and safety probes.

Check for scale build-up on the TS boiler fill and safety probes.

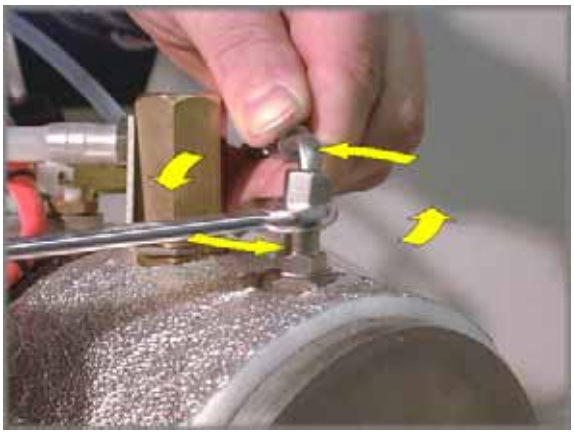
Check continuity of probes, clean or replace if necessary.

Note: When replacing either probe, be sure to replace both the probe and teflon assembly. Fouled probes may indicate a larger problem and further inspection of the supply water quality is needed.



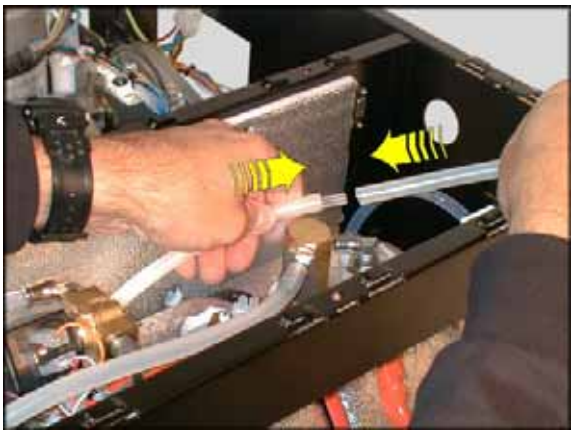
## TEA/STEAM MODULE: LOW WATER LEVEL IN STEAM BOILER

| Problem Source | Solution |
|---|---|
| c) NO WATER SUPPLY TO TS BOILER | |

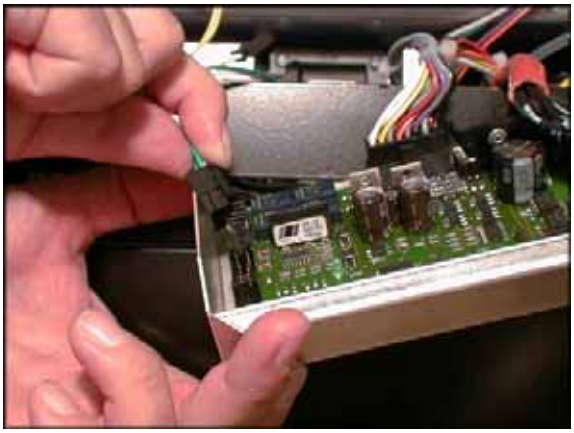


Caution!!
Be sure to depressurize the TS boiler before removing fill tube!!!

Remove the boiler fill tube at the back of the TS boiler.
Check for scale build-up on the TS boiler water inlet fitting.

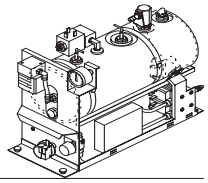


Connect a hose to extend the water line outside the machine.

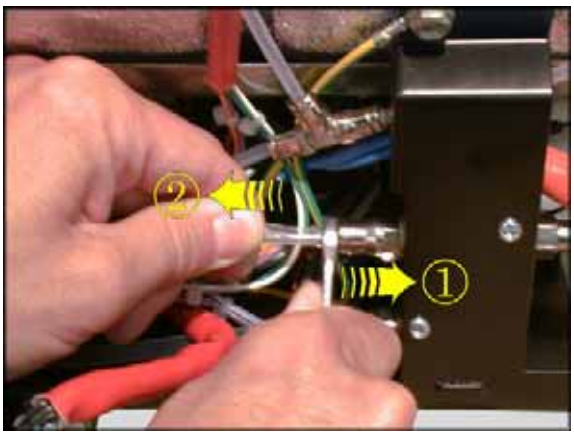
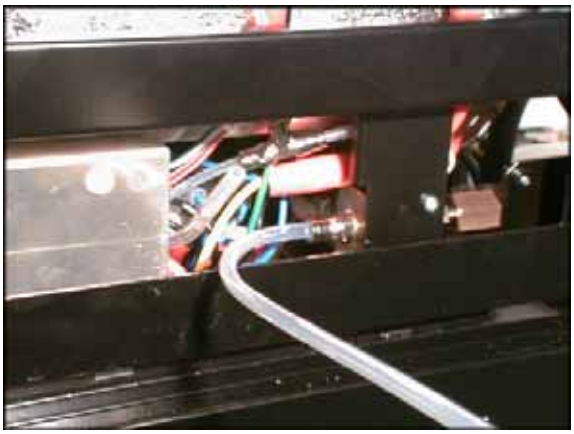


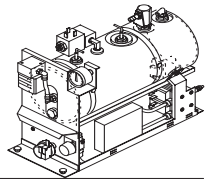
Pull off fill probe connection plug on the LLCB to initiate the TS pump. Water should pour from the hose. If the water pours check the water inlet fitting (scale).

Reverse the above process to reassemble.

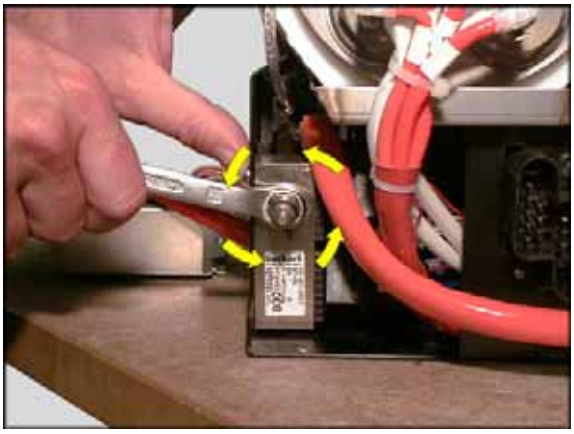
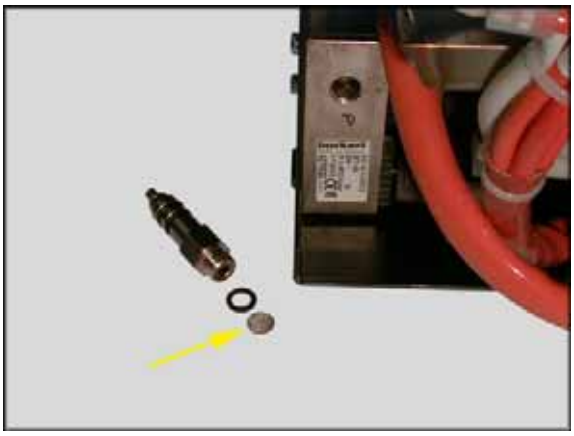
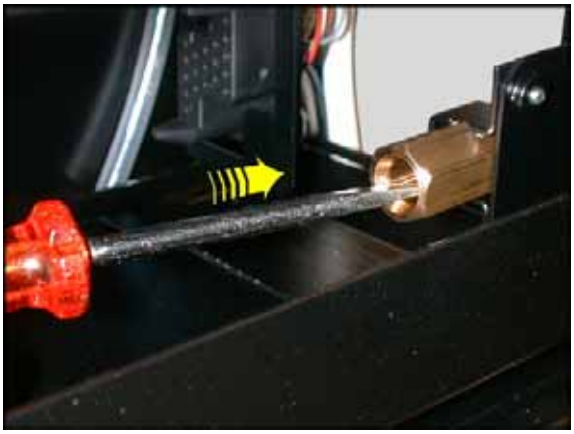


## TEA/STEAM MODULE: LOW WATER LEVEL IN STEAM BOILER

| Problem Source | Solution |
|---|---|
| d) NO WATER SUPPLY TO PUMP | |
|  | Take off the inlet water hose to pump. |
|  | Attach an extension hose to the inlet valve. |
| | Remove the fill probe connection plug on the LLCB to verify the water supply to the pump.<br><br>Reverse the above process to reassemble. |



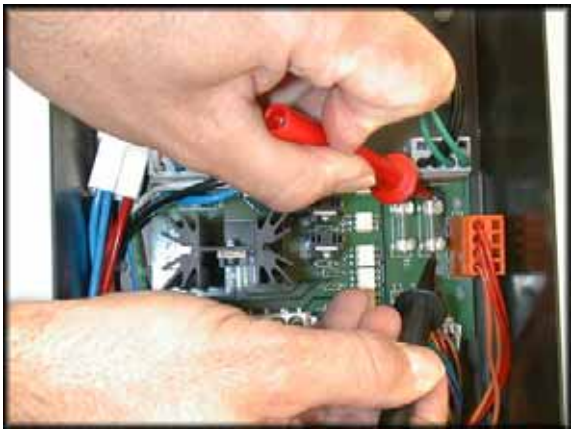
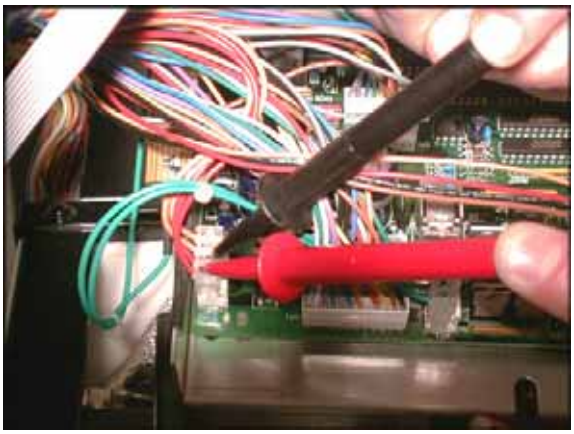
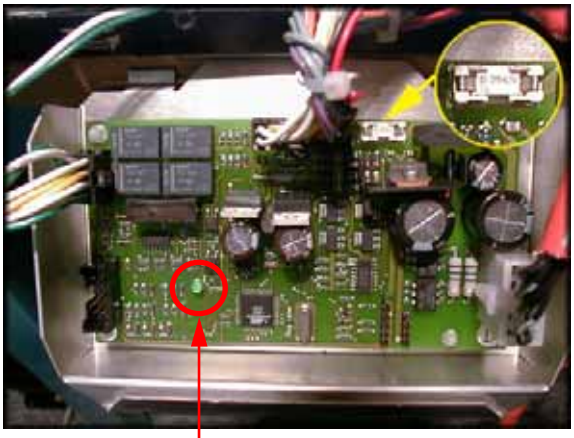
## TEA/STEAM MODULE: LOW WATER LEVEL IN STEAM BOILER

| Problem Source | Solution |
|---|---|
| e) CLOGGED WATER INLET SCREEN | |
|  | Remove the entire TS module from the chassis. |
|  | Remove the water inlet nozzle and check the inlet screen for debris.<br><br>Remove the water inlet valve and check the plugger. |
| f) NO WATER SUPPLY TO THE QUICK-DISCONNECT | |
|  | Gently insert a philips-head screwdriver into the quick-disconnect on the machines' chassis. Slightly push against the check valve to verify water supply to TS boiler module.<br><br>**Note:** Make sure you have a towel handy, as water will be dispensed from the valve. |

## TEA/STEAM MODULE: NO POWER TO TEA/STEAM BOILER MODULE

NO POWER TO TEA/STEAM BOILER MODULE CAN BE A RESULT OF THE FOLLOWING CAUSES IN ORDER OF PROBABILITY

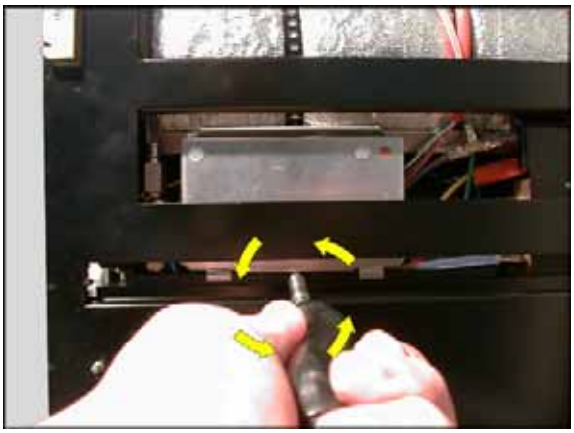
A) DEFECTIVE 6.3 A FUSE IN POWER MANAGEMENT DRAWER
B) DEFECTIVE 7 A BLOCK FUSE ON LIQUID LEVEL BOARD OF TS BOILER MODULE
C) DEFECTIVE CPU MAINBOARD

| Problem Source | Solution |
|---|---|
| a) 6.3 AMP FUSE IS DEFECTIVE | |
|  | Check continuity of 6.3 Amp fuse in power management drawer |
|  | Check voltage from power management drawer to CPU.<br>You must read approx. 20v AC across the two red wires on top of the plug on the bottom left side |
| b) 7 AMP BLOCK FUSE IS DEFECTIVE | |
|  | Check continuity of 7 Amp block fuse on liquid level board<br><br>If the green LED on the LLCB is not lit, there is no power supplying the LLCB. |

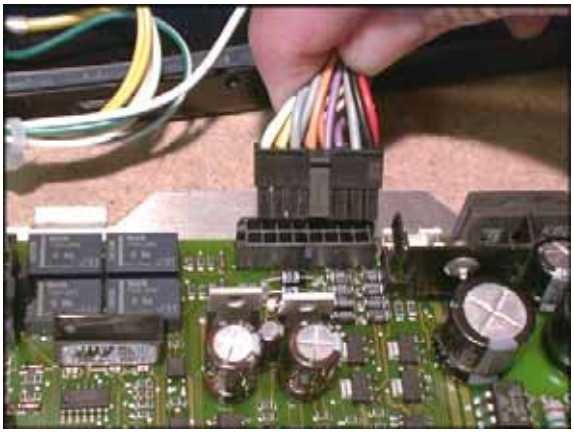
## TEA/STEAM MODULE: NO POWER TO TEA/STEAM BOILER MODULE

| Problem Source | Solution |
|---|---|

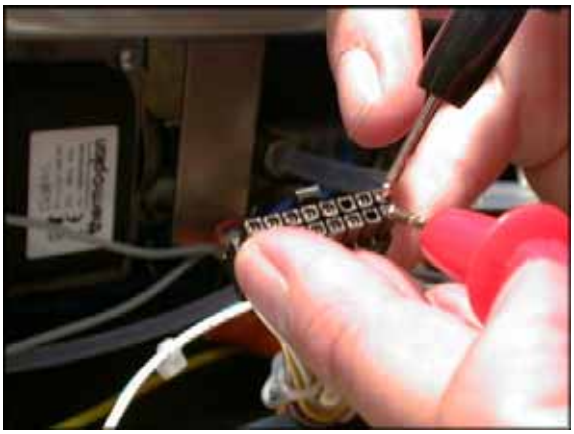
c) DEFECTIVE CPU MAINBOARD



Remove right side body panel to expose TS module. Remove LLCB protector plate screw and remove LLCB from the chassis of the machine.



Remove connector located at the middle top of the LLCB. This connector can be removed and metered while the machine is on.



Check supply from CPU to the LLCB by metering the power across the red and black pins on the plug. You should read approx. **30 Volt DC.**
If not, change the CPU.

## FOAMER MODUL

NO MILK IS BEING DISPENSING, MAY BE A RESULT OF THE FOLLOWING CAUSES IN ORDER OF PROBABILITY:

A) Constipation in the intake line
B) Milk backlog by the valve with spring
C) Milk pump blocked

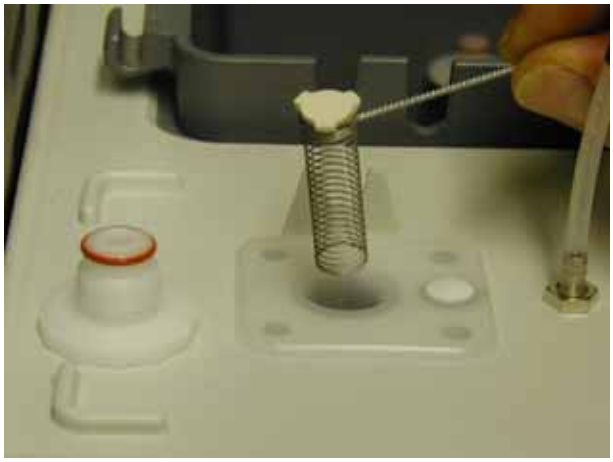
| Problem Source | Solution |
|---|---|

A) Constipation in the intake line

Disassemble all the parts as per diagram right side and clean them with lukewarm water. Use the brush to clean all the holes and tubes.

B) Milk backlog by the valve with spring

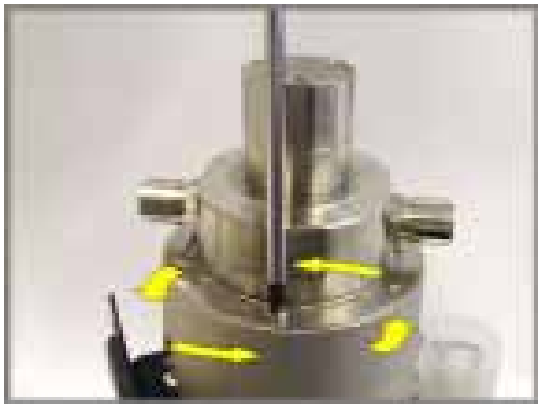
Remove valve screw. Remove spring with plate and clean it carefully. Reassemble the milk foam tube. Ensure that the plate of the spring with plate is on the top.



# FOAMER MODUL MILK PUMP CLEANING

## Variant 1 (suggested)

1. Unscrew the three screws as shown to dismount pump head from motor housing



2. Put pump head into a bath of influence (Thermoclean Special Cleaner, mix 1:20) for about one hour.

3. Dry pump with air pressure (in direction of arrow)

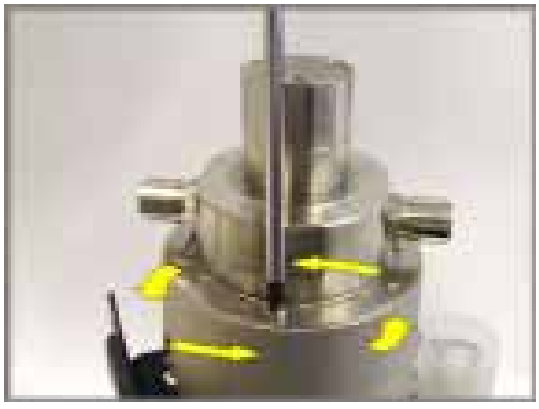
4. Remount pump head on motor housing

5. After remount start the cleaning process with cleaning detergent

## Variant 2

In case of obstruction of the milk pump caused by old milk we give two variants to clean the pump:

1. Unscrew the three screws as shown to dismount pump head from motor housing



2. Unscrew the six screws to dismount the mounting ring and the pump cover. Clean both parts under flowing water.

3. Turn magnet to unlock the blocked pump and clean it under fluently water.

**Note:** Take care of the o-ring

4. Reassamble pump head and mount it on motor housing

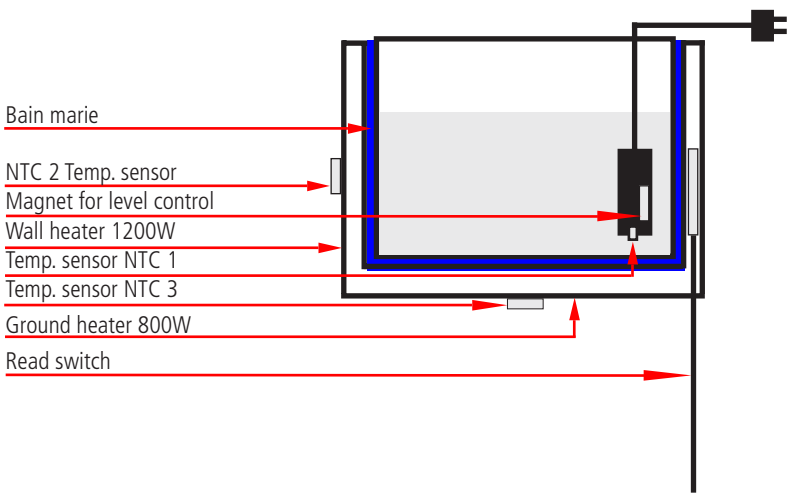
5. After remount start the cleaning process with cleaning detergent

## FOAMER MODUL

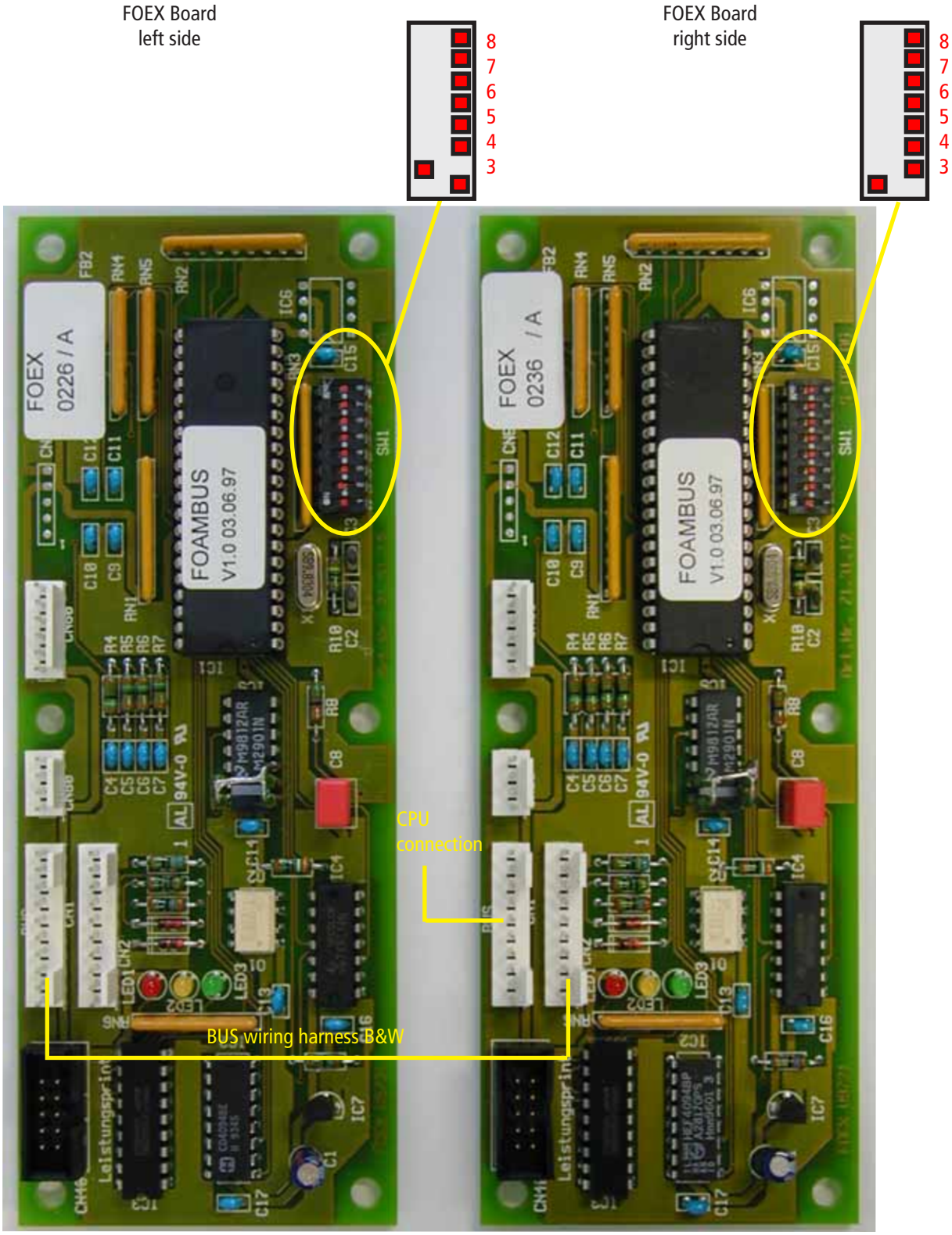
| FOAMER | HEATING MANAGEMENT |
|---|---|
| MF5 / CT / MF5  | CT /MF5  |
| You must have water (50ml) for „bain marie" | You must have water (50ml) for „bain marie" |
| Extension menue must be on „B&W bus" position | Extension menue must be on „Foamer extern" position |
| When you set the milk temperature on the CPU to 73°C, this setting is a reference for both FOEX board. Then the FOEX board will control the temperature on each NTC. | When you set the milk temperature on the CPU to 73°C, the CPU control the temperature through the NTC 3 of gound heating. The BCF5 board control independently the heating on side (NTC 2) . You can adjust the temperature through the potenziometer on board. See picture page 8.6. |
| The temperature sensor NTC1 must be connected and floated in the milk. | The temperature sensor NTC1 must be connected and floated in the milk. |
| Switch both MF5 in „ON position" with main switch under the Foamer. | Switch the MF5 in „ON position" with main switch under the Foamer. |
| You can dispense a milk only when the temperature has reached 73°C, then, as long as the Foamer works, it dispensing milk, as far as the temperature doesn't fall below 65°C | You can dispense a milk only when the temperature has reached 73°C, then, as long as the Foamer works, it dispensing milk, as far as the temperature doesn't fall below 65°C |
| All heating elements heat even if the milk level only is half or fourth capacity. | All heating elements heat even if the milk level only is half or fourth capacity. |
| In th configuration with FOEX board, if you have to change the milk temperature it's necessary after every change to switch the coffee machine OFF and ON to make the new setting effective. | |
| With FOEX board (MF5 / CT / MF5) configuration,if the FT-Feeler detects the positon milk low, we hear nothin, but appears on the display the message „Milk low".<br>Tow functions: -Levelcontrol<br>-Temperatecontrol | With BCF5 board (CT / MF5) configuration,if the FT-Feeler detects the positon milk low, we hear an alarm (buzzer), and the message „Milk low" appears on the display.<br>Tow functions: -Levelcontrol<br>-Temperatecontrol |
| | If we need an external signal for alarm message (ex. self service), only with the BCF5 board it's possible. (Relay with electrical potential free on the board) Rating's contact max. 4Amp./250V. |

## NTC ORGANISATION

| | MF5 / CT / MF5 | CT / MF5 |
|---|---|---|
| Menu an coffee machine<br>Programming level 3 |  |  |
| Milk temperatur<br>73°C | Set NTC 2 and NTC 3 to 73°C. | Only the NTC 3 is fixed to 73°C. NTC 2 is controled through the potenziometer on board. NTC 1 is desactivated. |
| Milchstarttemp.<br>high<br><br>With NTC1 (FT-Feeler) | NTC 1 frees Foamer | NTC 1 is deactivated.<br>NTC 3 frees Foamer as soon as the temperature will be 60-65°C. |
| Milchstarttemp.<br>high<br><br>Without NTC1 (FT-Feeler) | NTC 1 is desctiveted.<br>NTC 3 frees Foamer as soon as the temperature will be 73°C. | NTC 1 is desctiveted.<br>NTC 3 frees Foamer as soon as the temperature will be 73°C. |
| Milchstarttemp.<br>low<br><br>With NTC1 (FT-Feeler) | NTC 1 frees Foamer as soon the temperature will be 55-60°C. | NTC 1 has no effect.<br>NTC 3 frees Foamer as soon the temperature will be 55-60°C. |
| Milchstarttemp.<br>low<br><br>Without NTC1 (FT-Feeler) | NTC 1 has no effect.<br>NTC 3 frees Foamer as soon the temperature will be 55-60°C. | NTC 1 has no effect.<br>NTC 3 frees Foamer as soon the temperature will be 55-60°C. |



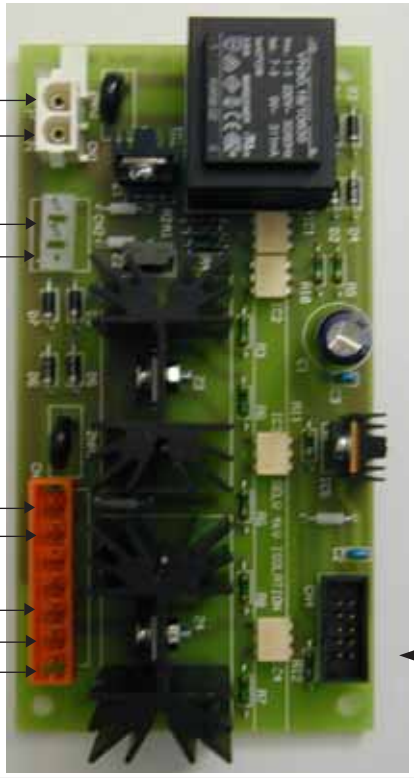
If you have MF5/CT/MF5 in basic configuration or you are migrate from CT/MF5 to MF5/CT/MF5, you allways must have the DIP switch setting as described below.




| | |
|---|---|
| The red LED flash | One of the NTC sensor is defectiv or communication is bad. |
| The yellow LED flash | Heating elements are under electric tension If the milk container stay cold even after some minutes, the heating elements certainly are default. |
| The green LED light | The FOEX board is powered up. |

## Board BCF5 for CT / MF5 configuration


## Powerboard MF5



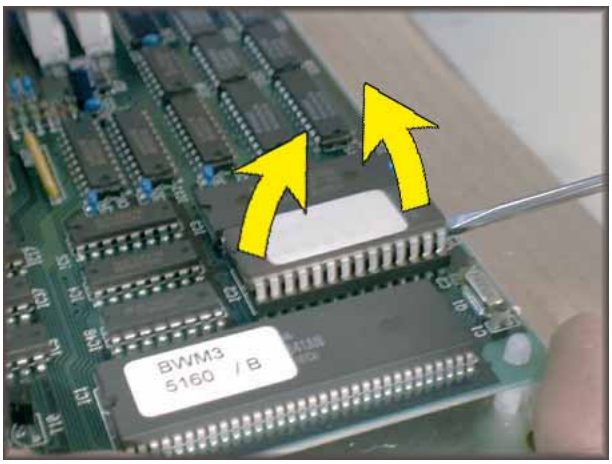
## COMMAND UNIT CPU REPLACE

### CPU replace

**Bevor you replace the CPU, save the product data with the data card**

1.) Switch OFF the machine. Rais the control panel slightly until it locks in the up position.
2.) Open the three knurlet nut to remove the CPU- support plate.
3.) Remove all wirings from CPU board (be careful)
4.) Press the support piece(71.30.36) witha pliers together and pull out the CPU board
5.) Latch the new CPU on, replace the support pieces if necessary

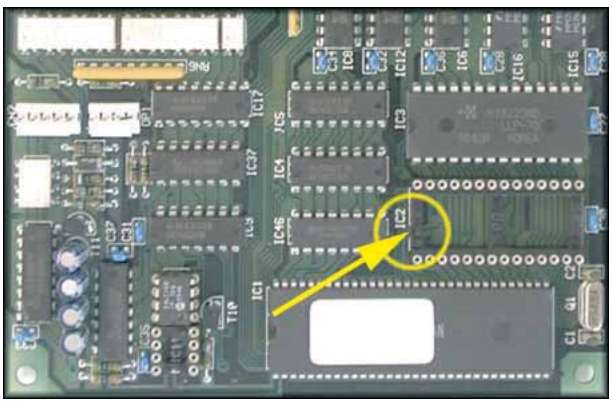
---




### EPROM replace

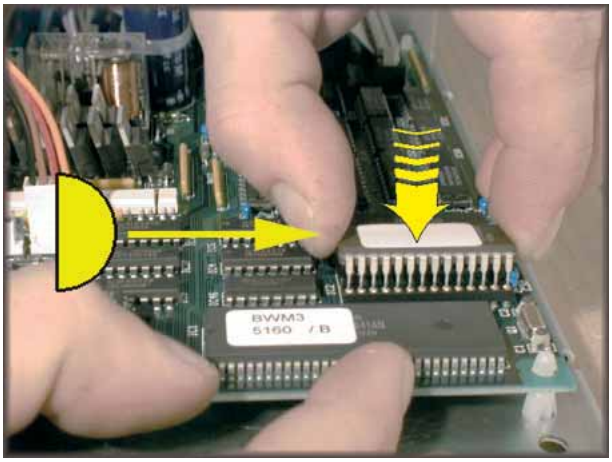
1.) Repeat point 1.) and point 2.) from „CPU replace"

2.) Remove the EPROM with a screwdriver



3.) Introduce the new EPROM, look at the notch

**Attencion:** Be very carefully with the foot from the EPROM

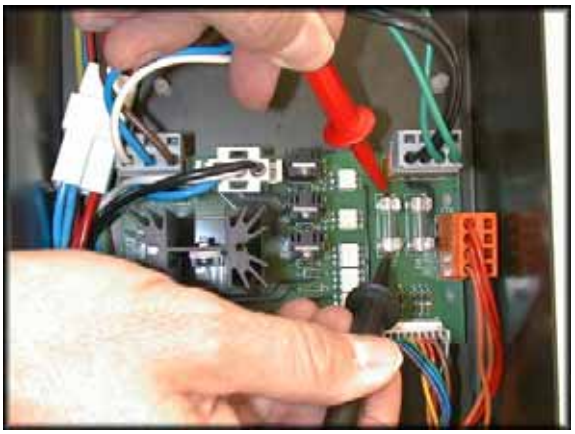
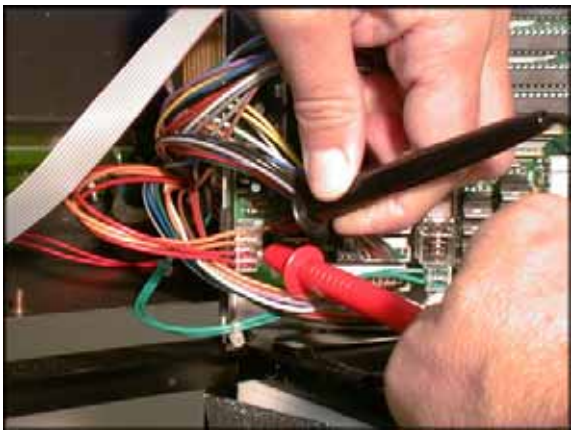



4.) Assembly the CPU and close the control plate

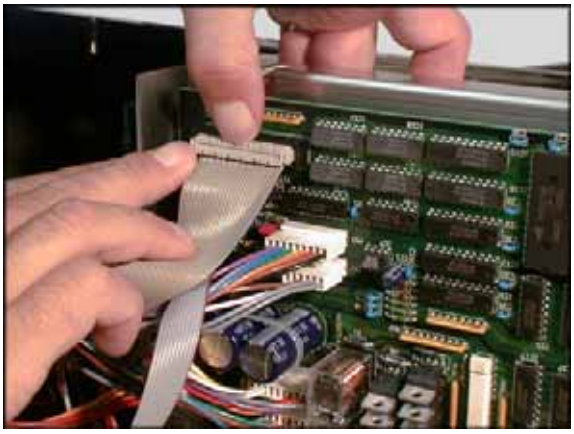
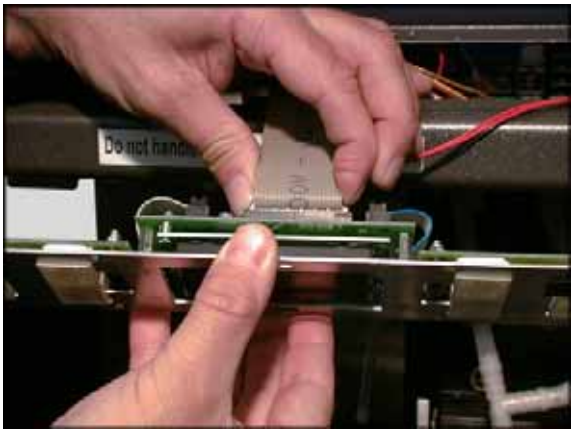
## UPPER DECK: LCD IS BLACK OR FADING

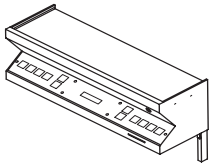
LCD display blank, feding display may be a result of the following causes in order of probability:

A) Defective 2 Amp fusw in power management drawer
B) Loose cable connection between CPU and display
C) Moisture build-up in the display / button board area
D) Defective CPU mainboard

| Problem Source | Solution |
|---|---|
| a) Defective 2 Amp fuse in power management drawer | |
|  | Check continuity of 2 Amp fuse in power management drawer. |
|  | Check voltage from the power management drawer to the CPU. You must read approx. 8-10 vAC across the two orange wires on top of the plug on the bottom left side. |

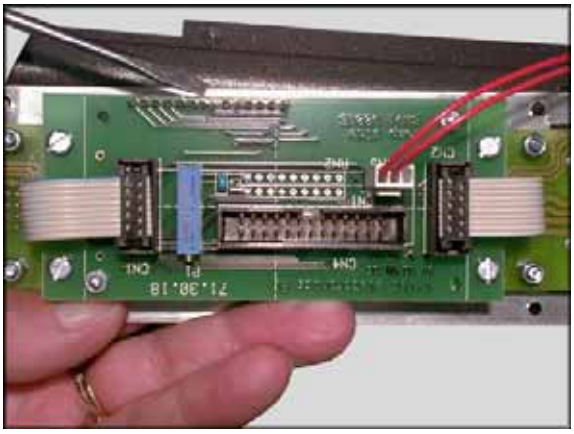
## UPPER DECK: LCD IS BLANK OR FADING (continued)

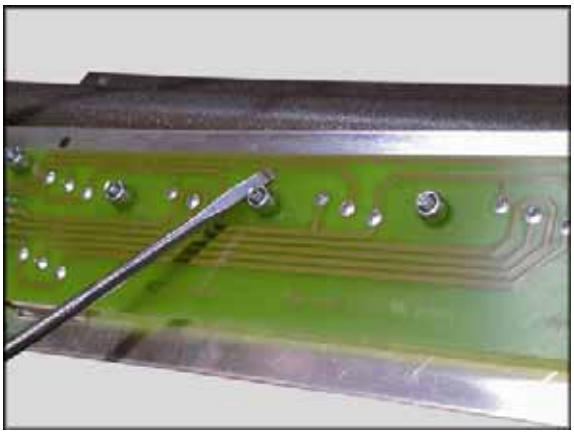
| Problem Source | Solution |
|---|---|
| b) Loose cable connection between CPU and display | |
|  | Check for loose cable connection between CPU and display print |
|  | |



## UPPER DECK: LCD IS BLANK OR FADING (continued)

| Problem Source | Solution |
|---|---|
| c) Moisture in the display / button board area | Check for moisture and/or corrosion on display and button prints. If corrosion is found, replace component. If this does not resolve the failure, more see next step. |
| d) Defective CPU mainboard | Replace the CPU mainboard |





Use this function only, if you have no other solution.

1.) Put SERVICE MASTER CARD into the card reader or turn programming key clockwise to access the menü „Supplies total".

2.) Press and hold „minus" key. RESET is displayed in the upper line .In the lower line al machine type in order „CT,CTM,CTS,CTF,CTB" appear. As soon as your machine type is displayed, press simultaneously the „Plus" and „2x" key and releasthe „Minus" key.

3.) „Maschine Reset" „Please wait" appears when step 2 is succsessfully implemented.

4.) Pull out SERVICE MASTER CARD or turn programming key counterclockwise.

5.) After a few seconds „Ready" massage appears on display. Turn off the machine.Turn machine on again after approx. 10 seconds.

The EPROM is now resetted on factory defaults. You have to reprogram all product data.

1.Press and hold


2. As soon as your machine type appears, press simultaneously the „Plus" and „2x" key and release the „Minus" key.

| | | |
|---|---|---|
| Machine types: | CT | Coffee and Tea |
| | CTM | Coffee, Tea and Milk |
| | CTS | Coffee, Tea and Steam |
| | CTF | Coffee, Tea and Milkfoamer5 |
| | CTB | Coffee, Tea and Bussystem |

Use this function only, if you have no other solution.

1.) Turn programming key clockwise to access the menü „Statistic".

2.) Turn off the machine press and hold „Stop/Reset" key.Turn machine on again.

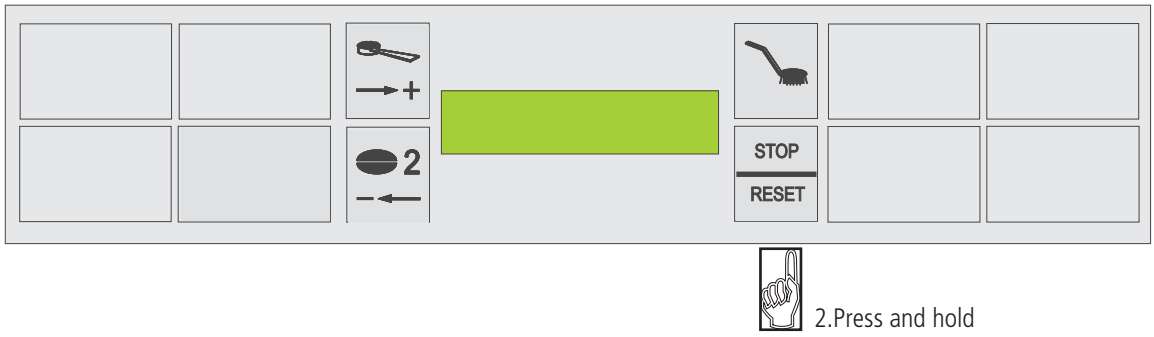
3.) After approx. 10 seconds appears „Factory defaults" appears when step 2 is succsessfully implemented.

4.) Turn programming key counterclockwise.

5.) Press the „Rinse" key.

6.) After a few seconds „Ready" massage appears on display.

The software is now resetted on factory defaults. You have to reprogram all product data.



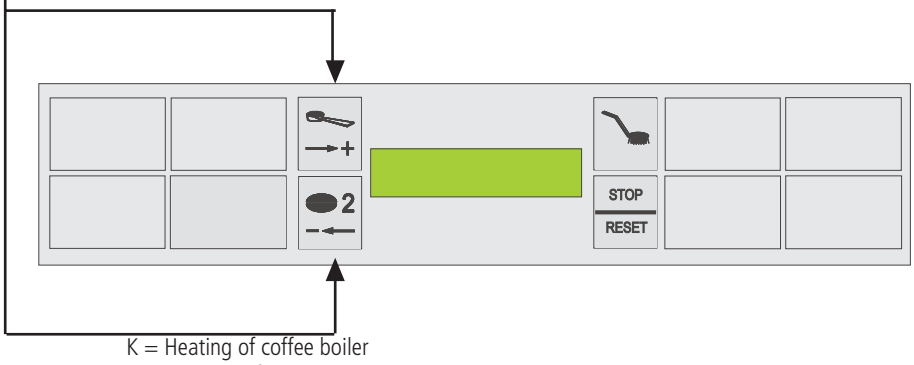

2.Press and hold

To check the function of the several heating sequences, you can enter a key combination to show the different heating temperatures:

Press simultanously the Minus- and Plus-key for approx. 2 seconds during the working mode, until the software-version appears on display, for example: „V1.50-R02"
After another 3 seconds the display shows: „k= 88 m=73 t=110".

23.01.02 14.15 M1
k= 88 m=73 t=110

If the letter appears small „k", the heater is not active.
If the letter appears large „K", the heater is active.




K = Heating of coffee boiler
M = Heating of Foamer
T = Heating of Tea-Steam boiler

---

Possible display-messages:

Coffee boiler is heating, Foamer and Tea-Steam boiler are already on highest heating power

23.01.02 14.15 M1
K= 80 m=73 t=110

Coffee boiler is on highest heating power, Foamer is available, but not turned on, Tea-Steam unit is not available

23.01.02 14.15 M1
k= 90 m=00 t= --

Heating priorities:
1. Coffee
2. Steam
3. Milk

To return to the normal display, press Minus- and Plus-key simultanously (approx. 5 sec), until the display shows „Ready".

Ready 14.30