

SERVICE MANUAL

NDT-FILMPROCESSOR

FNDX 9000



AT700 v2.8r14h and up



Produziert durch **COLENTA** Labortechnik GmbH & Co. KG, Austria.
Produced by **COLENTA** Labortechnik GmbH & Co. KG, Austria

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ATTENTION !!!

TAKE CARE TO FOLLOW THE SAFETY INSTRUCTIONS
IN CAPTURE 1 OF THE

INSTRUCTION MANUAL !

ACHTUNG !!!

BEFOLGEN SIE GENAU DIE SICHERHEITSHINWEISE
IN KAPITEL 1 VON DER

BEDIENUNGSANLEITUNG !

OBSERVANCE:

THIS SERVICE MANUAL CAN ONLY BE USED IN COMBINATION WITH THE
CORRESPONDING INSTRUCTION MANUAL !

**THE INDICES IN THIS SERVICE MANUAL ARE AN ADDITION OF THE CHAPTERS
IN THE INSTRUCTION MANUAL !**

ZUR BEACHTUNG:

DAS SERVICE MANUAL KANN NUR IN VERBINDUNG MIT DER
BEDIENUNGSANLEITUNG VERWENDET WERDEN!

**DIE INHALTE IN DIESEM SERVICE MANUAL SIND EINE ERWEITERUNG VON
DEN KAPITELN IN DER BEDIENUNGSANLEITUNG !**

*THIS SERVICE MANUAL IS ONLY INFORMATION FOR QUALIFIED TECHNICIANS!
EACH POINT MAY USE ONLY BY AN AUTHORIZED COLENTA TECHNICIAN!*

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***This Service Manual is only Information for qualified technicians!
Each point may use only by an authorized COLENTA technician!***

1. BEFORE INSTALLATION

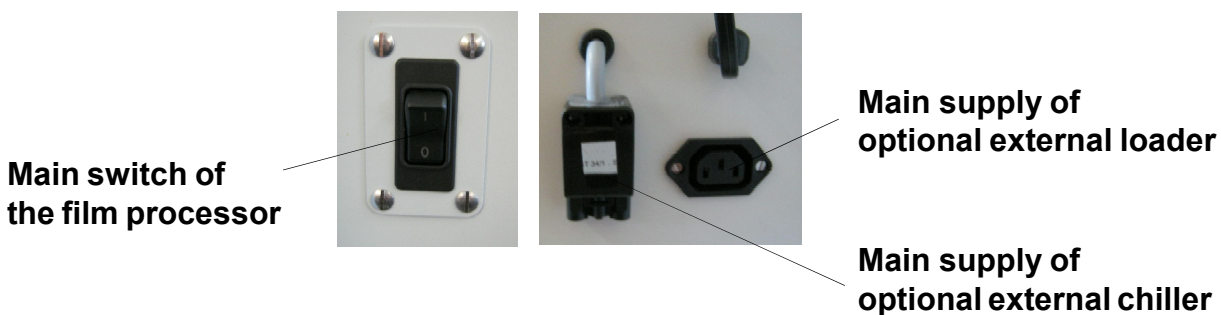
- *) Site preparation, e.g., water supply, drainage electrical supply must be completed prior installation.

1.1 LOCATION

- *) Processor can be installed "through-the-wall" or completely in the darkroom.
Required measurements can be taken from the processor specification sheet.
For "through-the-wall", a purpose built panel is required (optional accessory).

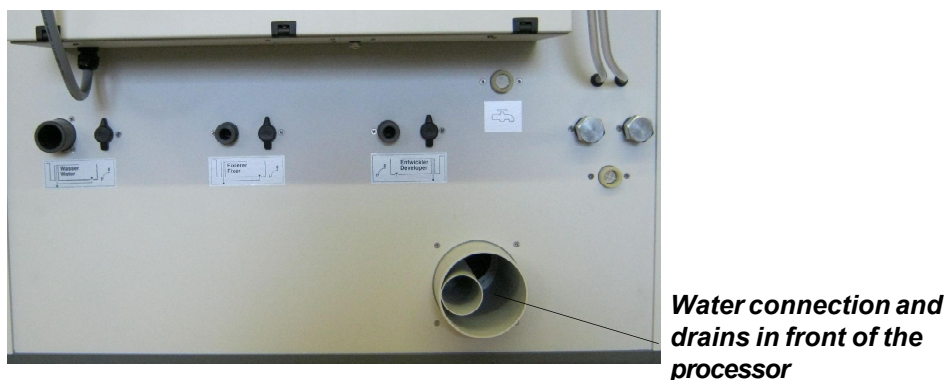
1.2 ELECTRICAL SUPPLY

- *) All electrical connections must meet national safety requirements. Correct fuses and electrical requirement can be taken from the processor specification sheet.

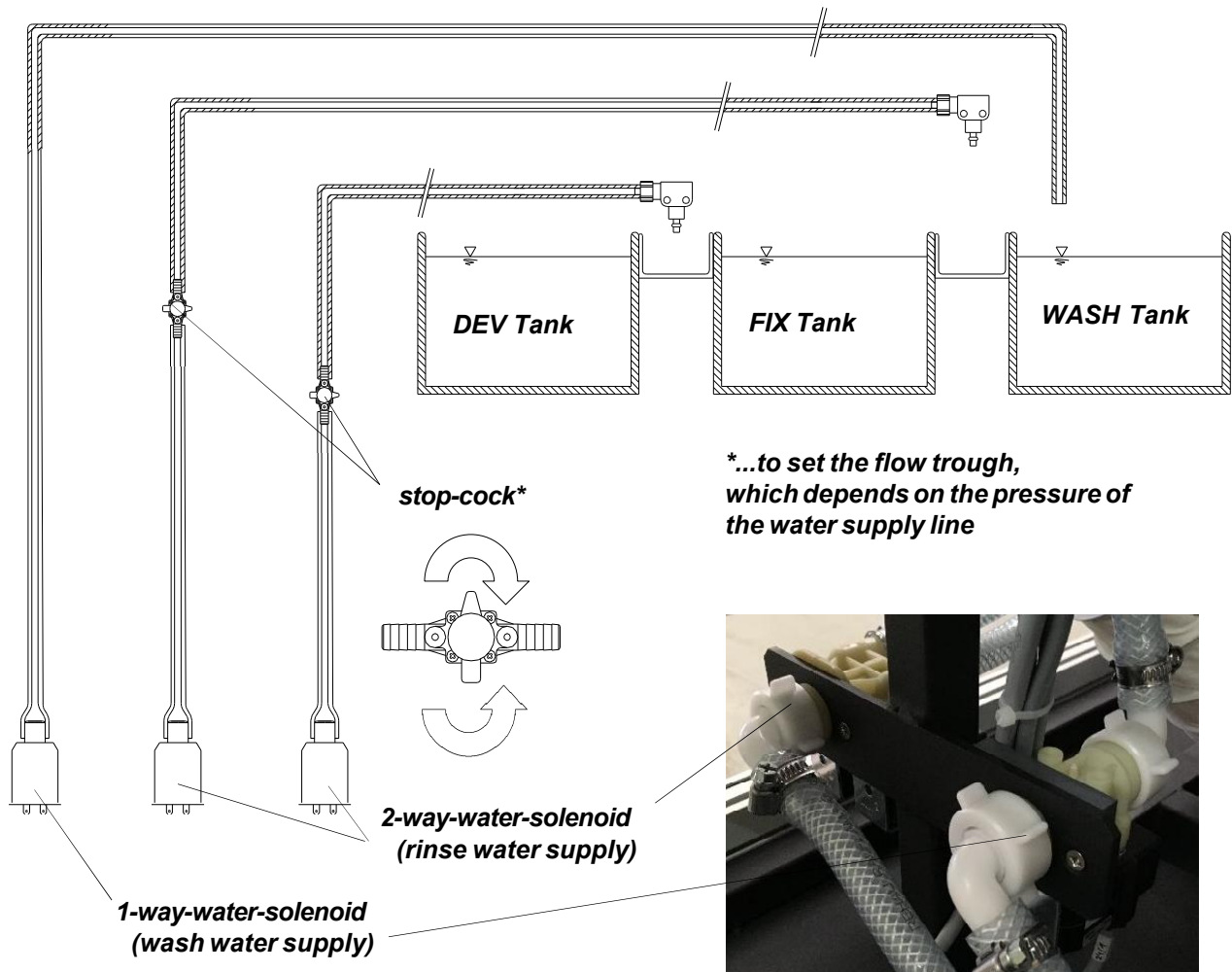


1.3 WATER SUPPLY

- *) The processor must be connected to the local water supply by using a DVGW-approved system separating device or pipe separating device.
- *) The cold water supply pipe must have a stopcock fitted connection to the processor and should be done by using the 3/4" hose connector, supplied. Easy access to the stopcock should be provided as it has to be opened and closed daily.
- *) A built in magnetic valve reduces water consumption to a maximum of 2.0 ltr./minute using pressure and quantity control.
- *) It is recommended to run a second cold water supply with 2.5 meters of hosing to facilitate easy cleaning of the racks and tanks (water supply kit - optional accessory).

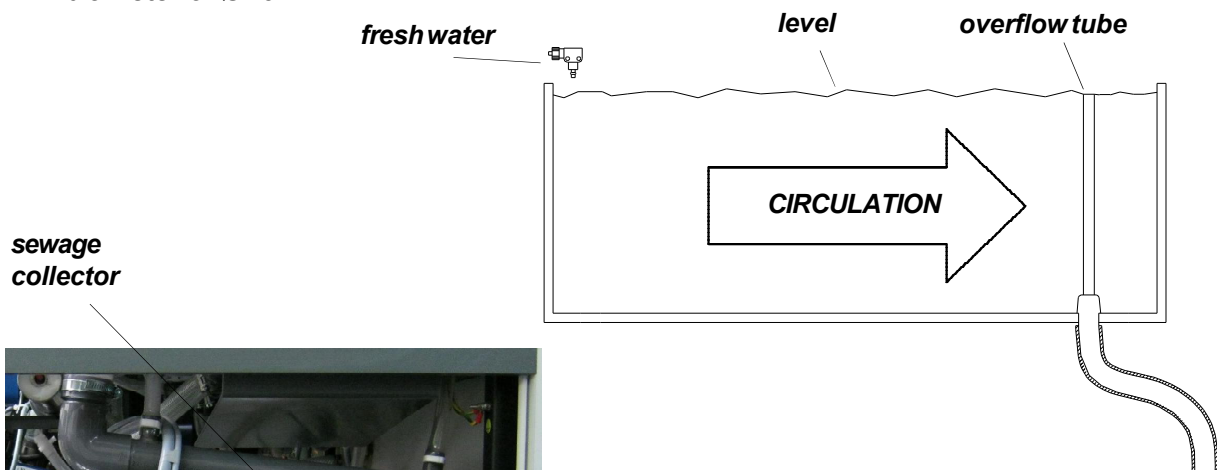


2. INTERNAL WATER CIRCUIT

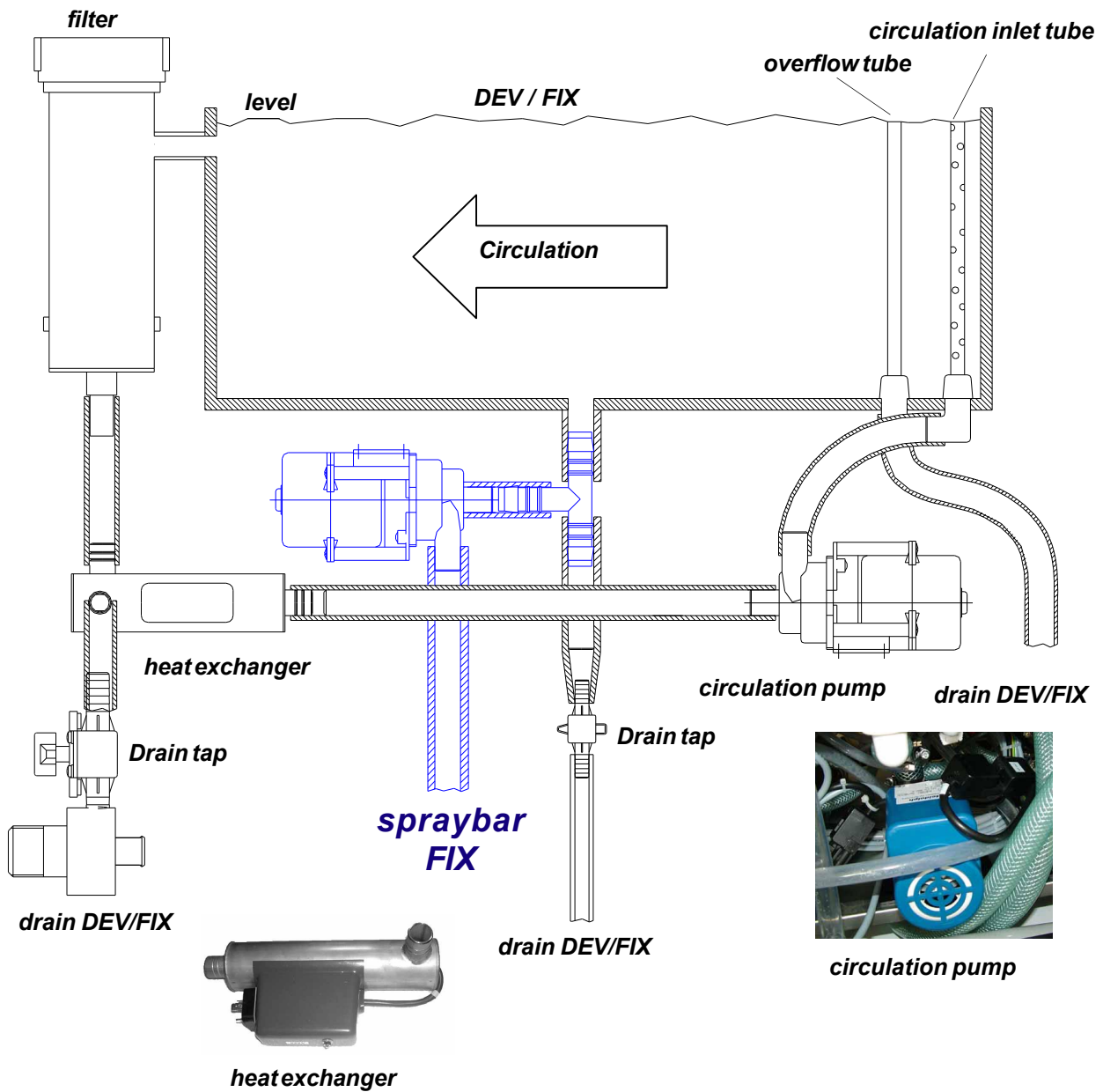


2.1 WATER DRAIN

- *) The wash water should be drained separately according to local environmental regulations. The processor comes with the suitable hose connections.
- *) The level of the water drain should be as low as possible with a minimum drain pipe diameter of Ø40 mm.



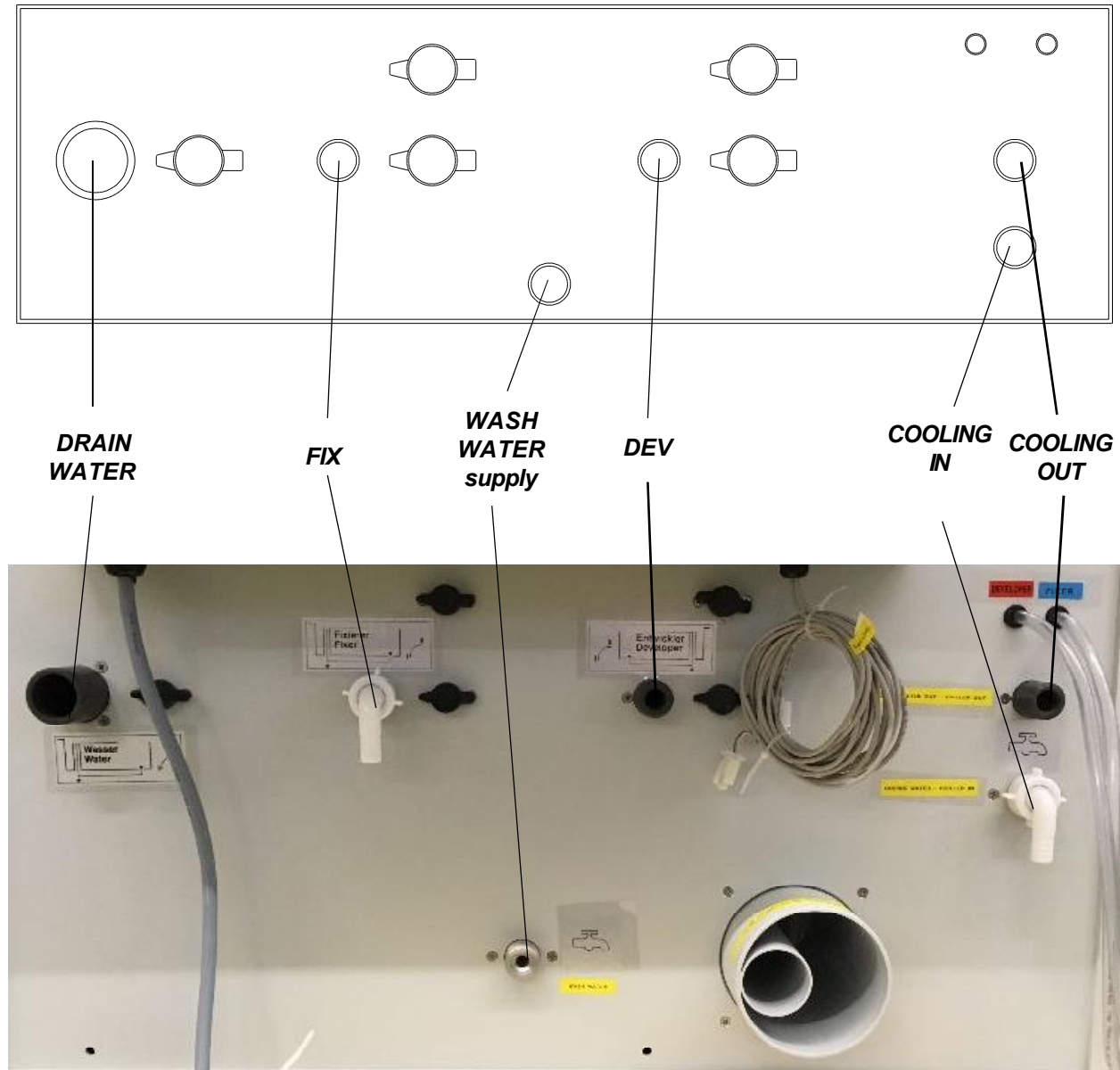
3. INTERNAL CHEMISTRY CIRCUIT



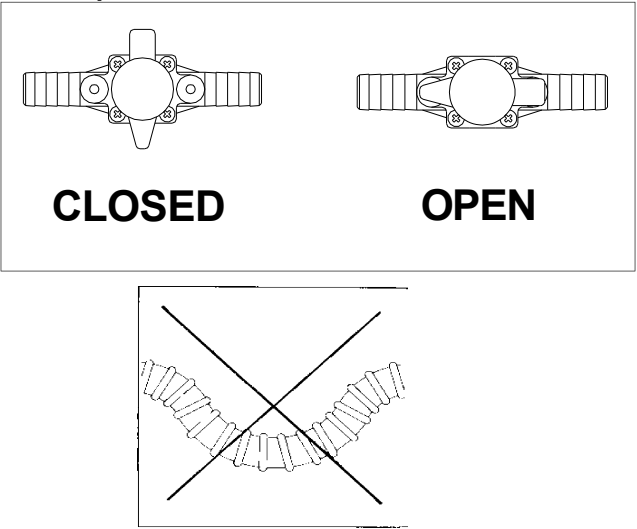
NOTE:
for the DEV there is additional a filter installed.
See more in chapter "Filter System for Developer"



3.1 CHEMISTRY DRAINS



Drain taps:



4. CHEMICAL REPLENISHMENT SYSTEM

4.1 REPLENISHMENT SYSTEM OVERVIEW

When operating a processor which uses chemicals for the continuous production of plate/film it is very important that the chemicals within the machine are kept in good working order so as to provide consistent processing quality.

To achieve this consistency we use replenishment solutions, which are formulated by the chemical manufacturer and injected into the processor precisely for the area of material being produced.

Replenishment of the chemical tanks is done automatically using infra red sensors located at the entrance to the processor. These sensors accurately monitor the width of material entering the processor, this information is then used by the microprocessor (CPU) control software to calculate the surface area for each film loaded into the processor.

Each sensor, when covered, will generate a pulse, which is then recorded on a decoder and counted – the more sensors that are covered then the faster the count. When the count reaches the programmed value of pulse counts it triggers the start of a replenishment cycle. During each replenishment cycle the replenishment pumps inject fresh solution from small storage bottles/tank and into the corresponding "working" tank solutions for a pre-set time.

WARNING:

Do not use brass or copper in the drainage system.

Chemistry disposal must be in accordance with local environmental regulations.

To avoid back pressure in the drain, the hoses should be free of bends and with a constant downward gradient.

**WARNING****WARNING:**

The replenishment rate has to be READJUSTED when the processor is used at 60 Hz!

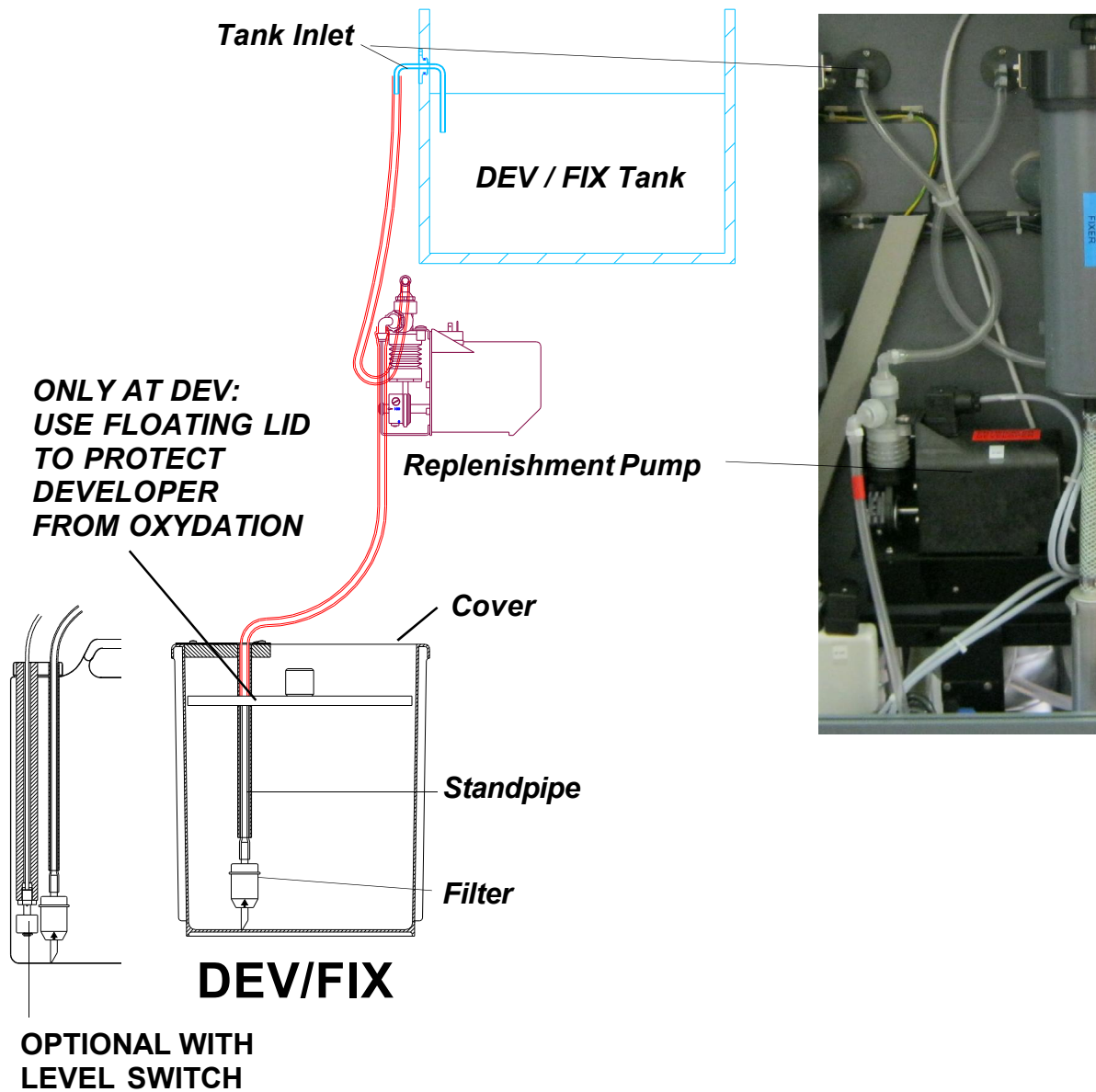
**WARNING****NOTE:**

A LEVEL CONTROL DEVICE FOR REPLENISHER TANK IS OPTIONAL AVAILABLE ON REQUEST.



4.2 THE HOSE SYSTEM

SYMBOLIC SCHEME

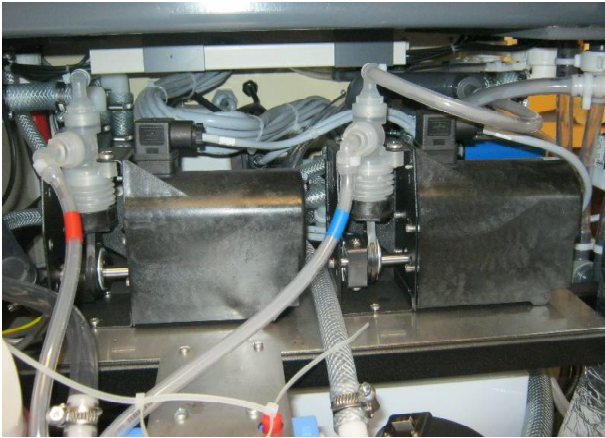


checking the hose system:

- 1) visible check of hoses that they are not bended
- 2) visible check of hoses that there is no blockade in the hoses
- 3) check if the connections (tank, pump, inlet) of the hoses are fixed

4.3 THE REPLENISHMENT PUMPS

cleaning the replenishment pumps:

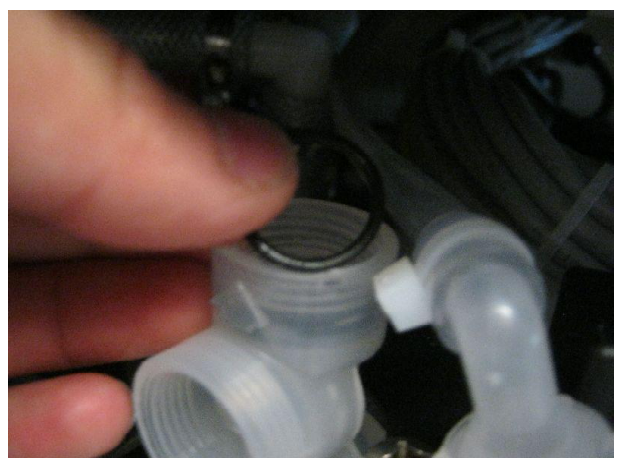


Drain the DEV/FIX tanks in correct procedure
before manipulating the pumps.



open the fasteners
remove the plastic parts (valves) and the gasket
rings and clean them with fresh water




AFTER CLEANING follow now the instruction to assemble again:





close the fasteners


4.5 MANUAL REPLENISHMENT

To check the functionality of the replenishment system you can use the software function of manual replenishment. You may need to run the replenishment manually, for instance during cleaning.

To do this press . With , move the cursor under "Rep" and select it with .

To replenish tank 1:

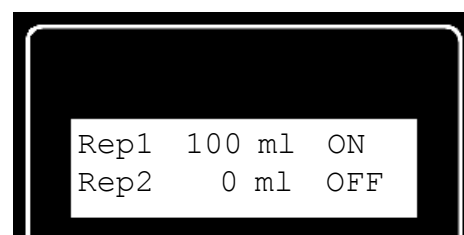
With , move the cursor under "Rep1" and press .

This will add 100ml. The OFF indication will change to ON, meaning that the replenishment pump is working. If you need more replenishment, press  again to add more replenishment in steps of 100ml.

There is no need to wait for the replenishment pump to finish.

For tank 2, move the cursor under Rep2 and repeat the procedure.

Press  to jump back to the main page.



NOTE:

Up to 2000 ml of manual replenishment or a maximum of 25min pump working time is allowed (what ever is greater).



checking the replenishment:

make the whole procedure for each replenishment system (DEV / FIX) separately.

- 1) take the hose out of the DEV/FIX chemistry tank
- 2) activate manual replenishment of about 200ml
- 3) if the replenishment is working well some air bubbles have to appear in the activated Tank inlet.
- 4) put the hose back into the DEV/FIX chemistry tank.
- 5) activate manual replenishment of about 200ml
- 6) visible check during the pump is working, if the pump is sucking well the chemistry out of the chemistry tank.
- 7) take a graduated cylinder (max. 500ml) and fill in 500ml of chemistry.
- 8) activate manual replenishment of 400ml
- 9) check on graduated cylinder the sucked amount of chemistry (tolerance of +/- 20ml)
- 10) adjust the replenishment pumps according the chapter **"adjusting the replenishment rate"**



4.6 AUTOMATIC REPLENISHMENT

The processor is equipped with a film area measuring system. Infrared sensors in the sensorbar scan the incoming plate area and when the programmed amount of film per replenishment cycle (area) enters the processor, a replenishment cycle will be activated. How much chemistry will be replenished can be set in the program point R1/R2.

The replenishment is always done for all chemistries at one time.

checking the automatic replenishment:

make the whole procedure for each replenishment system (DEV / FIX) separately.

- 1) take a graduated cylinder (max. 500ml) and fill in 500ml of chemistry.
- 2) feed in as much film area as needed to replenish as much as possible but less than 500ml. This has to be done in respect of minimum replenishment rate set in the SETUP. (replenish after each 0.125 / 0.250 / 0.500 / 1 litres).

For example: R1 = 700 ml / m² and Replenish after each 0.125 litres
 => Feed in about 0.375 m² - 0.45 m² of film.
 so 3 replenishment cycles will be done
 from the graduated cylinder should have been
 sucked about 0.375 litres of chemistry

- 3) visible check during the pump is working, if the pump is sucking well the chemistry out of the chemistry tank.
- 4) check on graduated cylinder the sucked amount of chemistry (tolerance of +/- 20ml)
- 5) adjust the replenishment pumps according the chapter
"adjusting the replenishment rate"

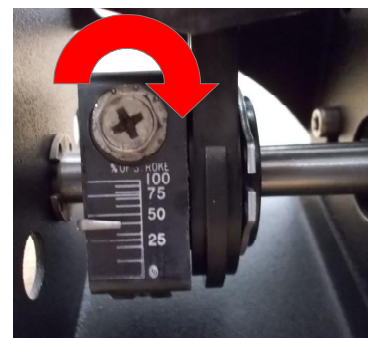


4.7 ADJUSTING THE REPLENISHMENT RATE

The flow rate of the replenishment pumps can be adjusted from 0 - 100%.

After checking the replenishment rate according the chapters **"manual replenishment"** and/or **"automatic replenishment"** it is possible to adjust the replenishment rate with a screw driver for recessed-head screws.

To increase the replenishment rate turn the screw driver clockwise like shown in the picture.
 To decrease the replenishment rate turn the screw driver counter clockwise.



After adjusting the replenishment rate it is recommended to measure some automatic and some manual replenishment cycles to check the adjustments.

WARNING:

The replenishment rate has to be READJUSTED when the processor is used at 60 Hz!

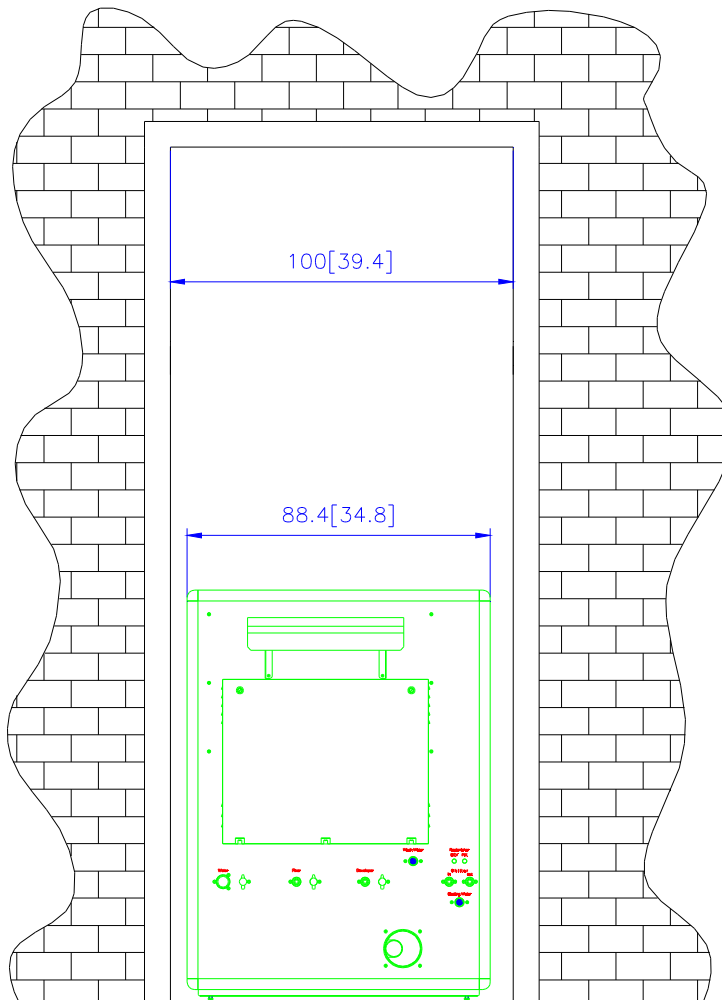


WARNING

5. TRANSPORTATION ON SITE AND ASSEMBLING

The transport to the installation area can be done easily by two men.

WARNING:
DURING TRANSPORT ALL RACKS AND DRYER MUST BE
TAKEN OUT OF PROCESSOR !!



NOTE:
The Processor must be installed leveled for optimum
performance.



5.1 ADDITIONAL TO INSTALLATION OF THE RACKS

- *) The processor is delivered complete assembled, except the transport racks, dryer and film catch tray.
- *) Transport fixings must be removed before use.
- *) Insert each rack at the location indicated by reference number or label.
- *) Rinse the tanks with water and then fill it to the red marker on the tank wall.
- *) Insert the racks according the reference number or label
- *) Turn on the transport motor and check rotation
- *) Insert racks carefully and slowly, avoiding chemistry splashes.

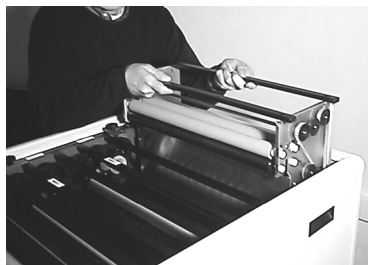
RACK 1 in the developer tank
RACK 2 in the fixer tank
RACK 3 in the water tank



5.2 ADDITIONAL TO INSTALLATION OF THE DRYER-RACK

Dryer Rack in the dryer

Sample photos



6. THE FIRST STEPS

WARNING:

Separate the Film Processor from mains. To do so, switch the main power switch of the Filmprocessor to „0“ position. Wear safety goggles, protection gloves and clothing.



6.1 ADDITIONAL TO THE FIRST STEPS

We recommend that the machine is fully water tested on installation before filling with chemistry – this is just a safety procedure in case of transport damage.

- *) Thoroughly clean processor ensuring no packing materials restricts the free running of the processor. Pay special attention to the racks and inside of the tanks.
- *) Close the drain taps for the developer, fixer and wash.
- *) Fill the tanks (Dev, Fix and Wash) with water to the markers on the tank wall.
- *) Switch on the processor
- *) Check for signs of leakage.

6.2 USING THE CHEMISTRIES

- *) Only use chemistry suitable for roller transport systems.
- *) Follow instructions of chemistry manufacturers.

6.2.1 FIXER BATH

- *) Empty fixer tank by opening the fix drain tap.
- *) Remove the Fixer-rack.
- *) Check fixer tank is free of alien material.
- *) Close fix drain tap.
- *) Fill fixer tank with ready-to-use-fixer solution to the red marker on the tank wall. Insert the Fixer-rack very carefully and slowly, add hardener solution if advised by the chemistry manufacturer.

6.2.2 DEVELOPER BATH

- *) Empty developer tank by opening dev drain tap.
- *) Remove the Developer-rack.
- *) Check developer tank is free of alien material.
- *) Close dev drain tap.
- *) Fill developer tank with ready-to-use-developer solution to the red marker on the tank wall. Insert the developer-rack very carefully and slowly. Replenishment tanks may be used to mix the chemistry. Any remaining can be used for replenishment. **CAUTION:**

Even the smallest quantity of fixer could contaminate the developer solution. Therefore, always fill with fixer first.

When removing the fixer rack, always cover the developer tank.

For removing the fixer rack use rack carrier tray (optional accessory).

CAUTION:

Even the smallest quantity of fixer could contaminate the developer solution. Therefore, always fill with fixer first. When removing the fixer rack, always cover the developer tank. For removing the fixer rack use rack carrier tray (optional accessory).



7. PROCESSOR FUNCTIONS

Programming:

Automatic processing parameters, e.g., temperature, speed and replenishment rates, can be stored in 9 different programmes.

Warm-Up Time:

Once programmed, temperature settings are accurately controlled. Constant solution temperatures are maintained in the processing tanks. Temperatures tolerances ± 0.2 °C are achieved by the microprocessor control unit while the solutions are circulated by circulation pumps.

When temperature has reached PRE-SET levels, the processor enters STANDBY mode and is ready for use.

Standby:

In case no film is in process - after a fixed period of time and when, after the last plate leaves the dryer, the processor transport, dryer and water supply is switched off automatically. The processor goes to standby mode. During standby, the processor activates two important features: ANTI-OXIDATION and ANTI-CRYSTALIZATION programmes.

Anti-Oxidation:

During STANDBY mode - and in long periods of no production, a preprogrammable ANTI-OXIDATION cycle (replenishment cycle) is initiated. The additional replenishment compensates the impact of air oxidation of the chemistry during standby mode and maintain chemistry levels in the tanks, in order to compensate evaporation of the water in the solutions.

Anti-Crystalization:

During STANDBY mode - within a programmable cycle period - the transport rollers and the gum pump are activated - this helps to prevent crystalization build-up on the rollers.

Automatic Replenishment:

The processor is equipped with a film area measuring system. Infrared sensors scan the incoming plate area and when the preprogrammed amount of plate (area) enters the processor, a replenishment cycle will be activated.

Automatic (Start-Stop):

Infrared sensors also automatically control the start cycle of the film processor. The film processor changes from STANDBY to RUN once a film has interrupted the light barrier. As the rollers turn, water is supplied to the wash tank and to the intermediate rinse bath system. Once the last film has passed through, the film processor reverts to STANDBY. The film can be taken out of the receiving basket or top cover lid.

8. ADDITIONAL SAFETY DEVICES

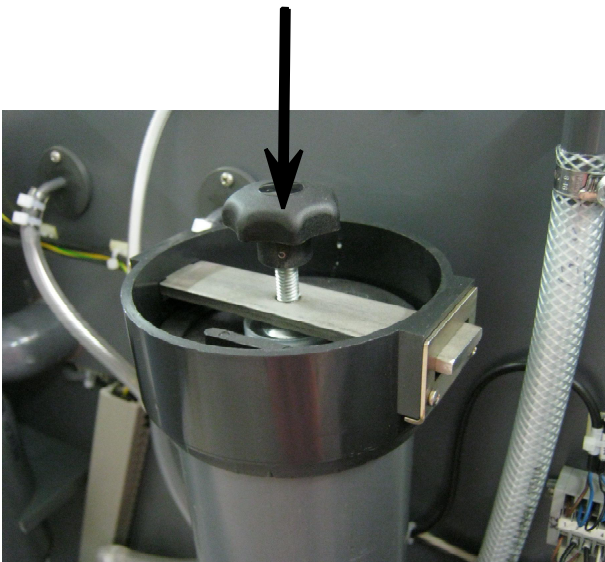
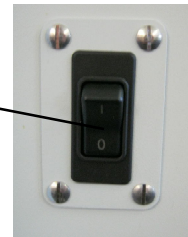
- *) Thermostatically controlled solution heater with overheating CUT-OUT and AUTO-RESET.
- *) Thermostatically controlled dryer heater with overheating CUT-OUT and MANUAL-RESET.
- *) All electric motors are equipped with thermal CUT-OUT and AUTO-RESET.
- *) Each electrical component is protected by a fuse on the power distribution board (PDB).

9. FILTER SYSTEM FOR DEVELOPER



9.1 HOW TO REPLACE THE FILTER INSERT

1. Switch off the processor using the **Main power switch**



2. Open and remove the closing sheet



3. Remove the Filter Cover



4. Take out the used filter cartridge



5. Check position of the O-ring inside the filter housing

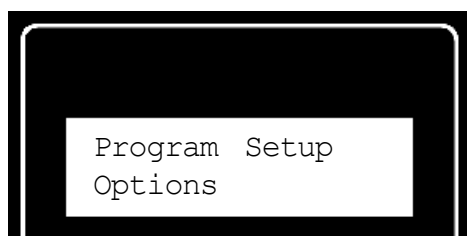





6. Put in the new filter cartridge slowly and carefully







7. Close the filter system in the reversed sequence as described before (step 2)

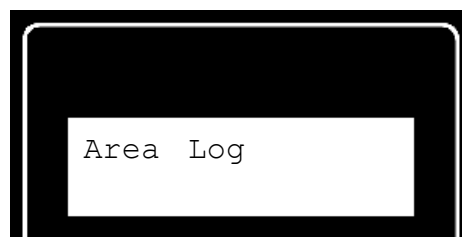
8. Reset the Filter Log (clear the processed area to 0000).



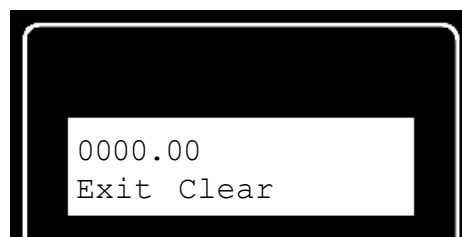
Press the button , use  to move the cursor under "Options", press , you will see "Standby Refill Filter Service".

Use  again to move the cursor to "Filter" and press .

Use  to move the cursor to "Log" and then press .



To reset the filter log, use  to move the cursor to "Clear" and then press .



CAUTION:

After the insert has been replaced, place the filter inside the processor again.



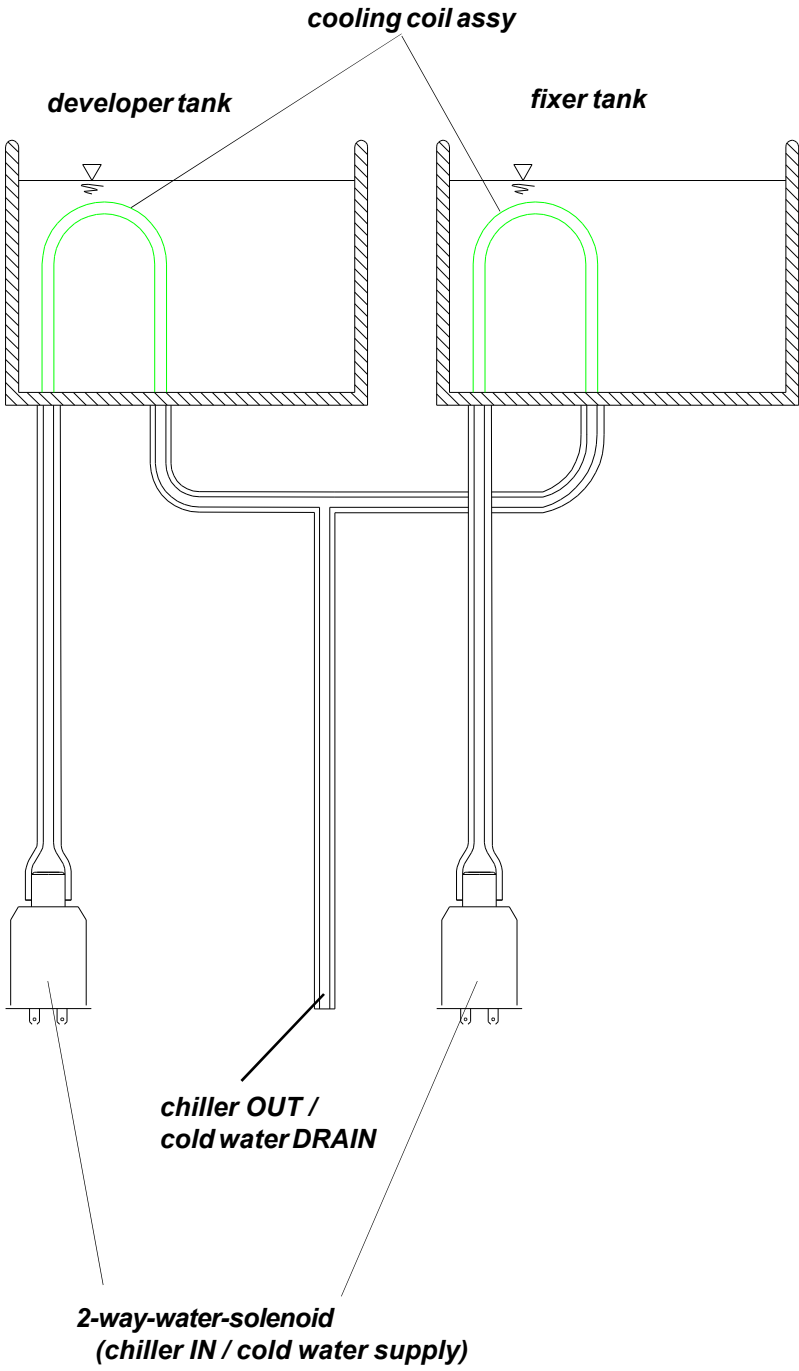
CAUTION

NOTE:

After the filter has been replaced, reset the filter log. Go to *programming* mode menu *Options/Filter/Log* and *clear* the processed area to 0000.



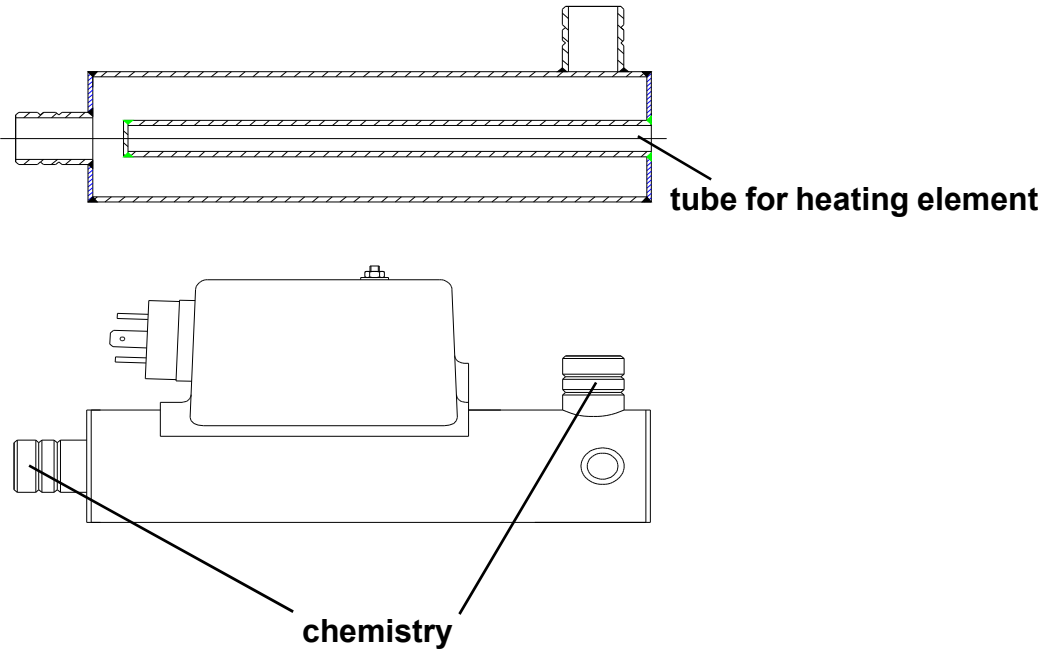
10. INTERNAL COOLING CIRCUIT



cooling coil assy



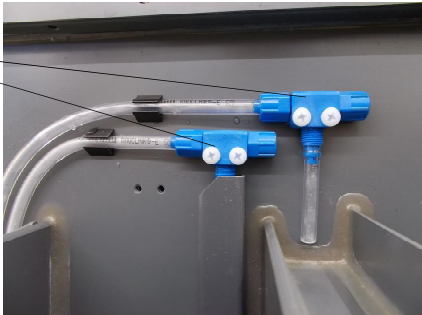
Heat exchanger assy



heating element



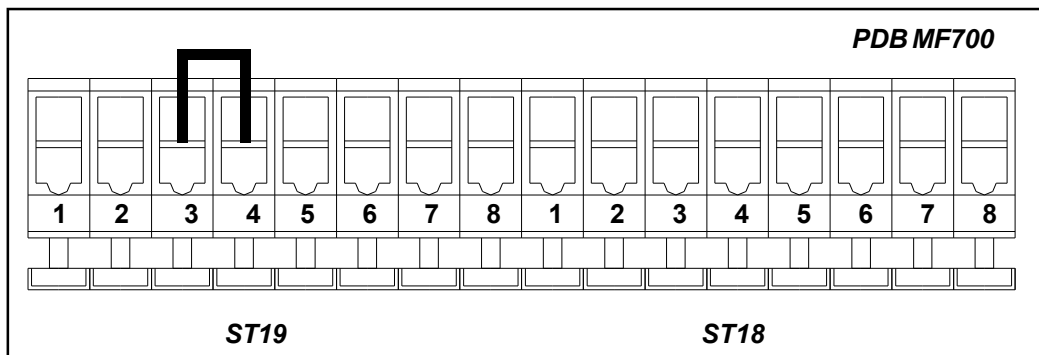
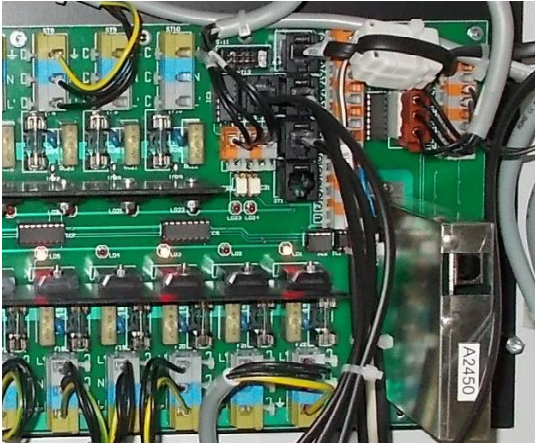
water inlet L-fitting



11. ADDITION FOR AUTHORIZED TECHNICANS

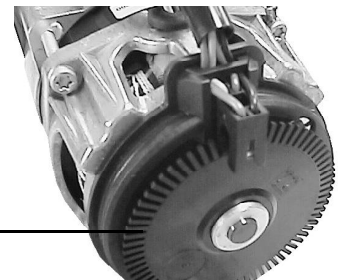
11.1 SETUP JUMPER

It is possible to see data and to change working data in the **SETUP** menu but to save any new data entered into the **SETUP** menu then it will be necessary to insert a jumper on the main board of the processor:



When selecting **Save** in the setup menu, the program will refuse to save the data unless this wire jumper is present.

Main drive motor
with tachometer



NOTE:

DO NOT forget to remove the Jumper after service!
Otherwise the cooling is switched continuously!




NOTE:

The shaft of the main drive motor has a tachometer installed. When the drive motor starts the tacho will rotate to generate a speed counter which sends pulses to the Processor CPU. By using these pulses the CPU is able to accurately control the transport speed/timing sequences after entering the Setup-Menu.



11.2 SETUP OF THE PROCESSOR


Values see: Testwerte_xx.pdf

Switch on the processor, use  1-time and you will see:



Use  to move to **Setup** and confirm with .


There are several pages, which depend on the mechanical construction and must be entered during the factory setup.

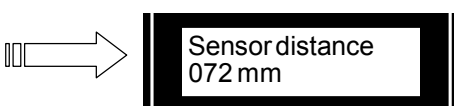
next page
with 




Gear is the number of motor pulses corresponding to 1m advance of the material. It is needed to calculate the processed film area (for the replenishment) and the processing speed in cm/min.

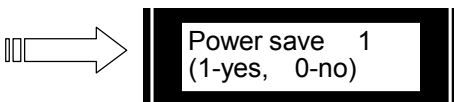
Pump is the number of milliliters per second of the replenishment pump.

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with 




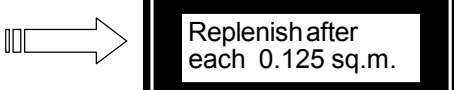
Sensor distance is the distance between two sensors of the sensorbar. It is needed for the film area calculation.

next page
with 




Power save. If set to 1 (yes) the tank2 heater will be switched off whenever the tank1 and the dryer heaters are both on, regardless of the tank2 temperature. This to keep the total power consumption in legal limits.

next page
with 




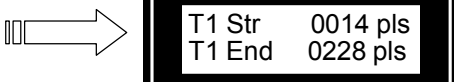
Replenish after. This is that area, after one replenishment cycle has to be activated.

next page
with 




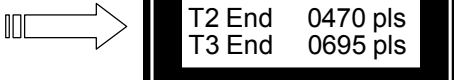
Pause between sw heaters. Is used to prevent any possible disturbances back to the power line / power supply (Dryer heater power is splitted / switched time-delayed)

next page
with 




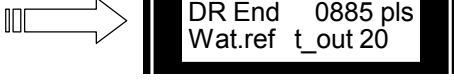
T1 Str - startpoint of the DEV-rack
T1 End - endpoint of the DEV-rack

next page
with 




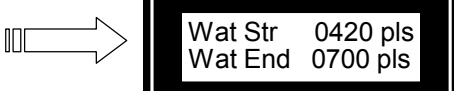
T2 End - startpoint of the Fix-rack
T3 End - endpoint of the WASH-rack

next page
with 




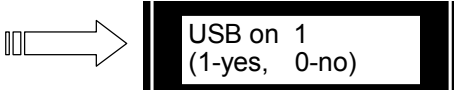
DR End- endpoint after the dryer
Wat.ref t_out - Timeout from automatic Water refill (If water level sensor is not reached in this time - Error message: Can't fill water)

next page
with 




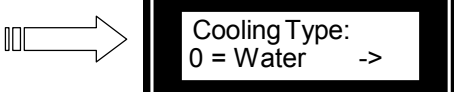
Wat Str - startpoint when the wash valve is on
Wat End - endpoint when the wash valve is off

next page
with 




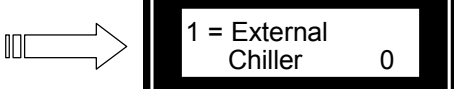
0 = USB connection off
1 = USB connection on, for future use.

next page
with 



0 = internal cold water cooling
1 = external chiller cooling

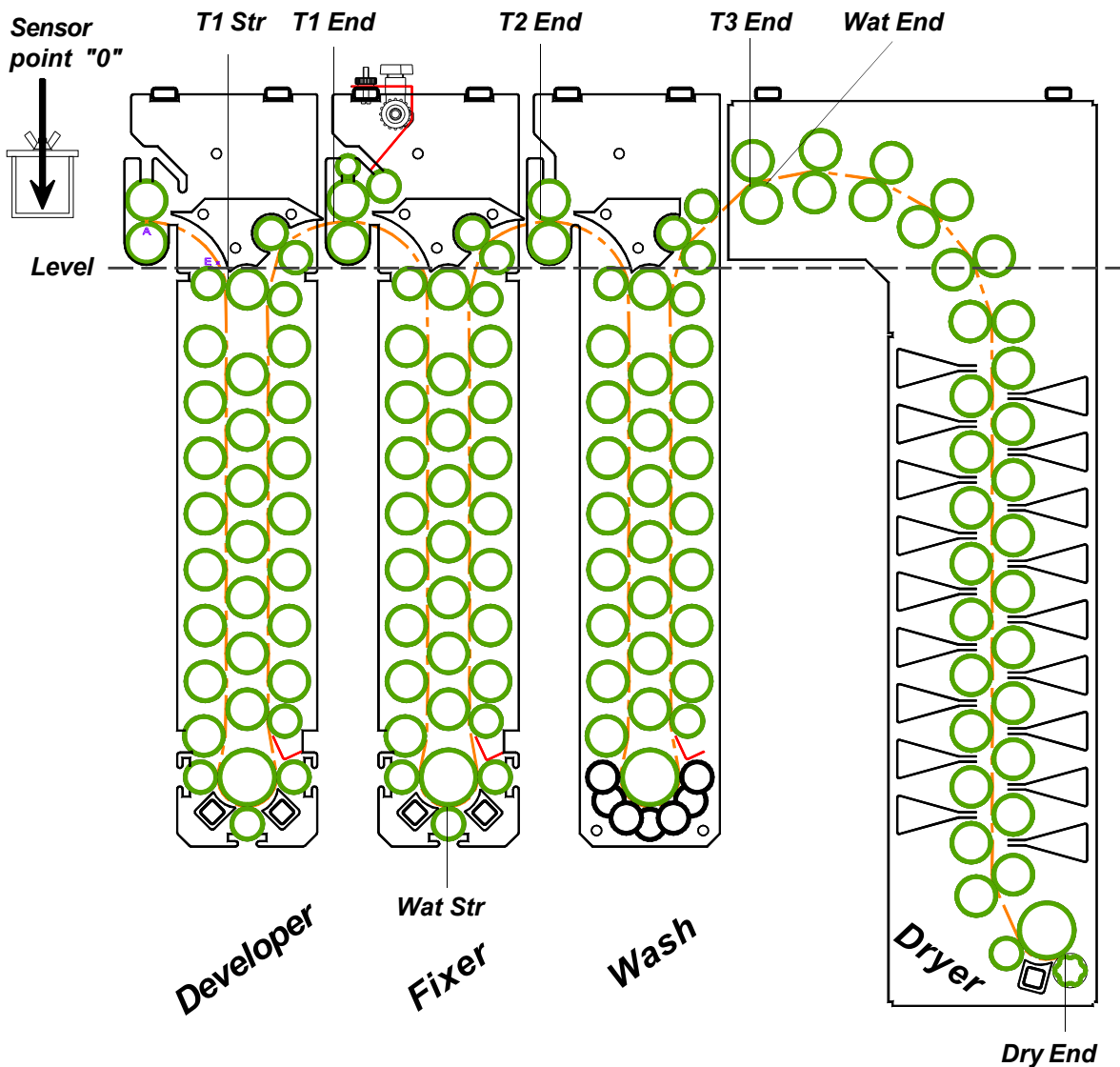
next page
with 



next page with ↓	→	Feed distance 07 cm	Feed distance: additional amount of pulses for delaying feed film in signal, for more distance between films.
next page with ↓	→	Wash T-probe 0 (1=yes 0=no)	0= No Temperature Probe for Wash Tank is present 1=Temperature Probe for Wash Tank is present
next page with ↓	→	Temperature unit 0-°C, 1-°Fahr. 0	0 = Temperature is shown in Degree Celsius 1 = Temperature is shwon in Degree Fahrenheit
next page with ↓	→	Save Cancel	Use Save to store your adjustments (The setup jumper desribed before has to be installed and on PDB LD9 is on) or use Cancel to leave.

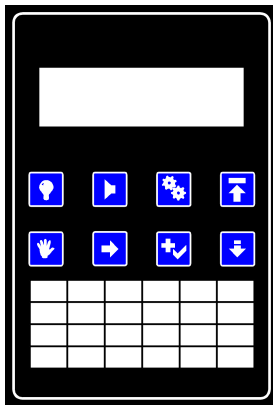
DO NOT forget to remove the setup jumper ! Otherwise the cooling is switched continously!!!

11.3 DESCRIPTION OF SETUP VALUES

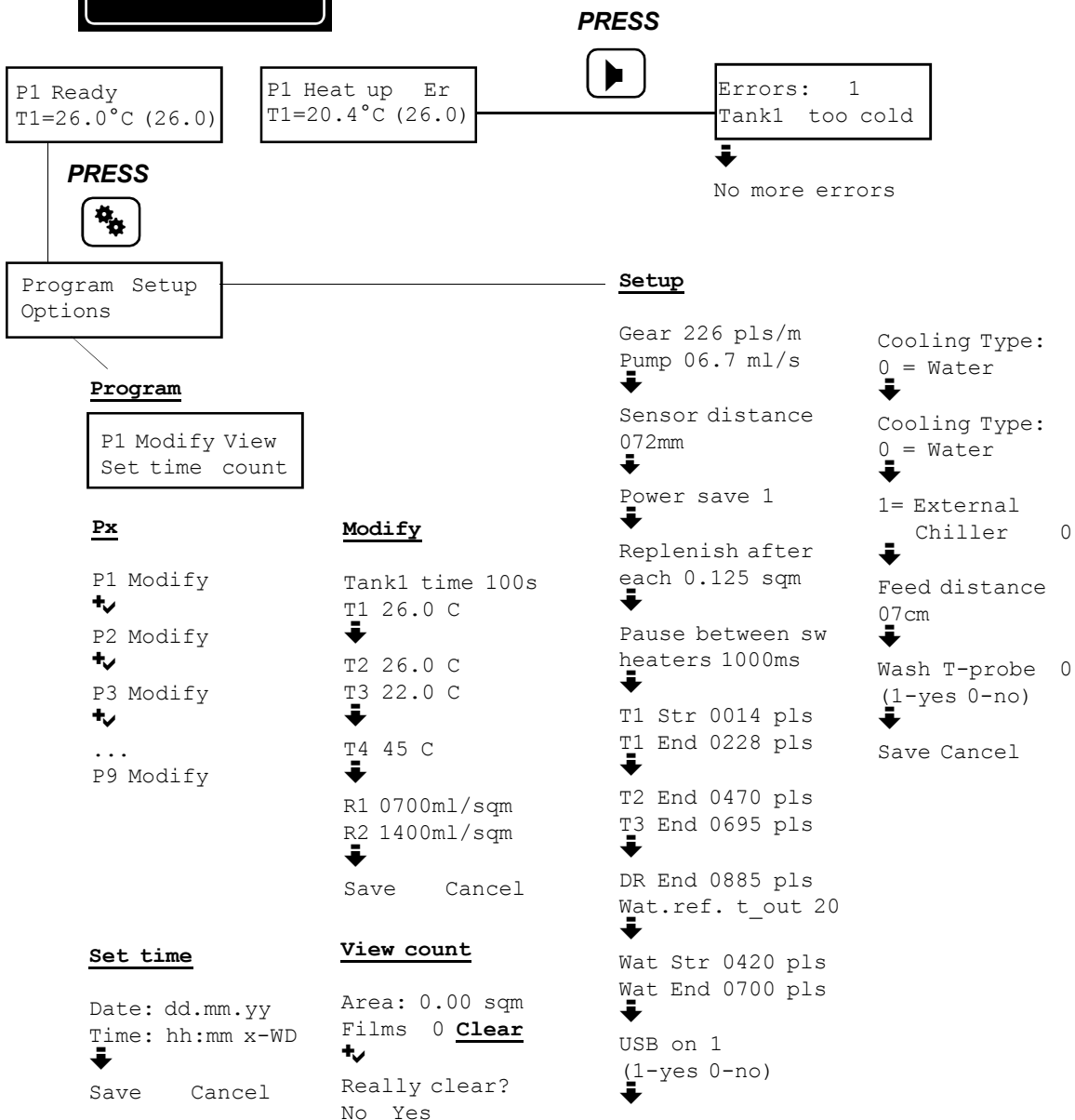


11.5 FLOWCHART OF PROGRAM

Program version: AT_700v2.8r14c

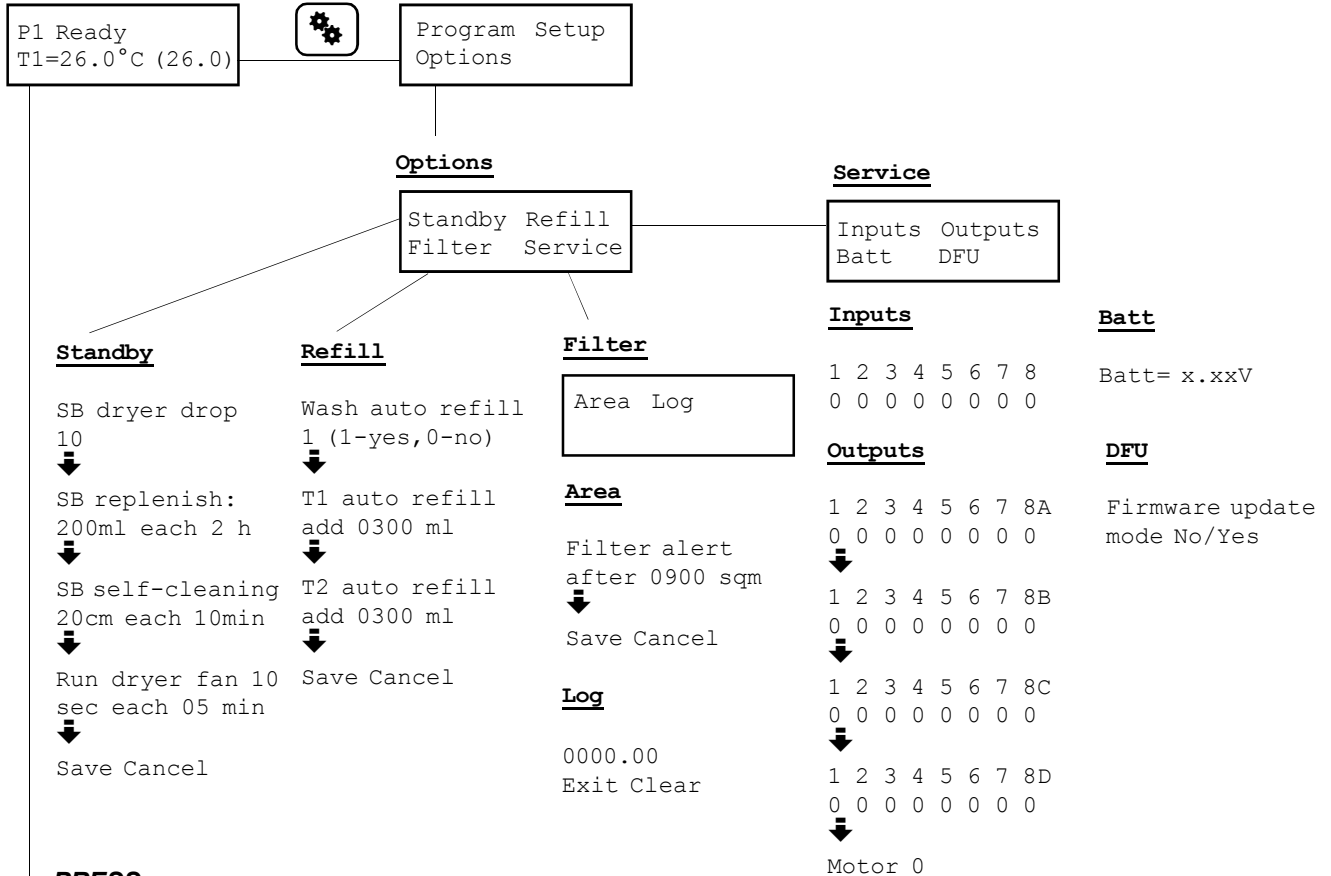


- 💡 back light ON/OFF
- ▶ check errors /alarm shutdown
- ⚙️ setup mode
- ⬆️ back to top menu
- 👉 manual operation
- ➡️ move cursor
- +✓ select menu item/change value
- ⬇️ scroll page down

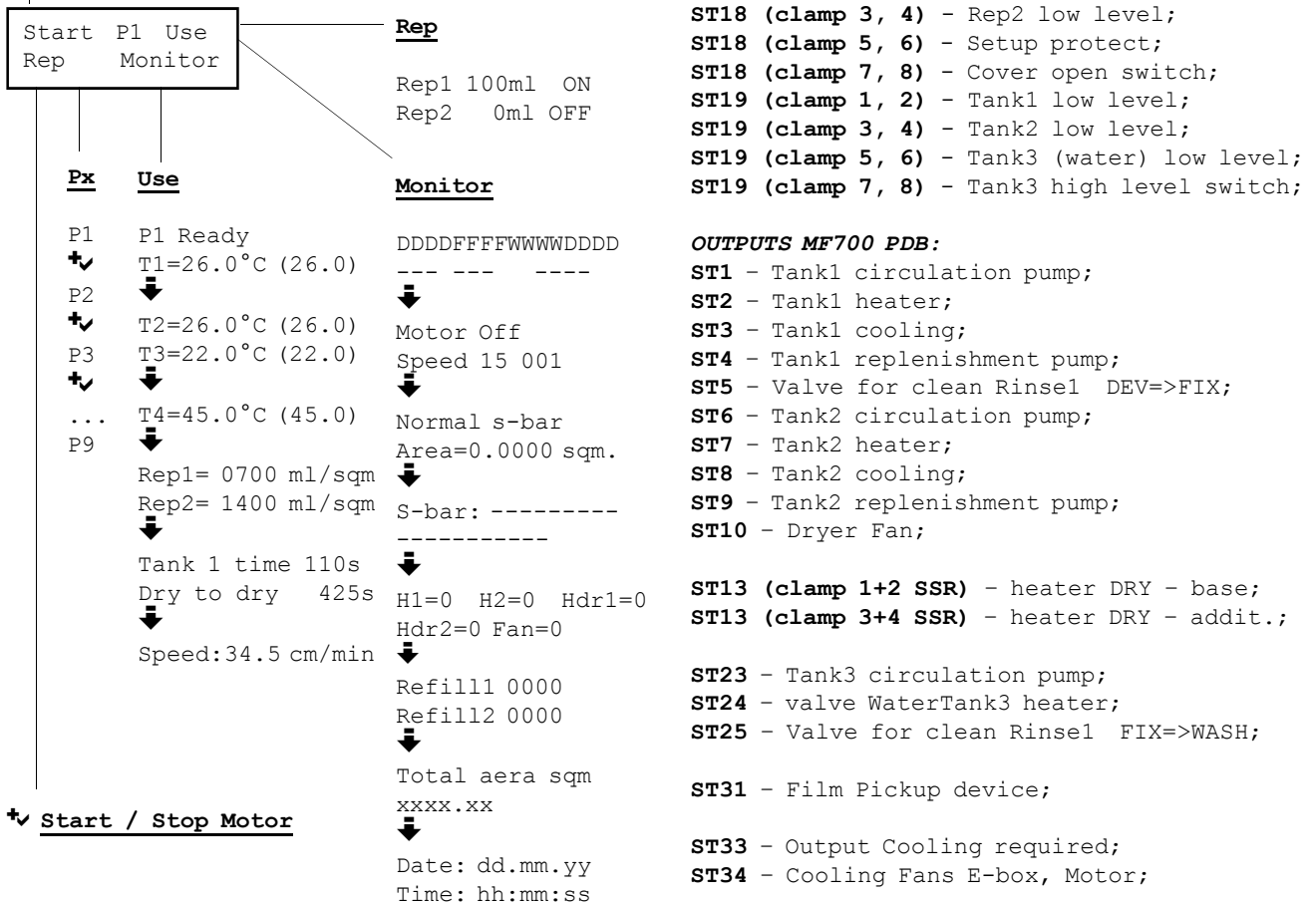


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PRESS



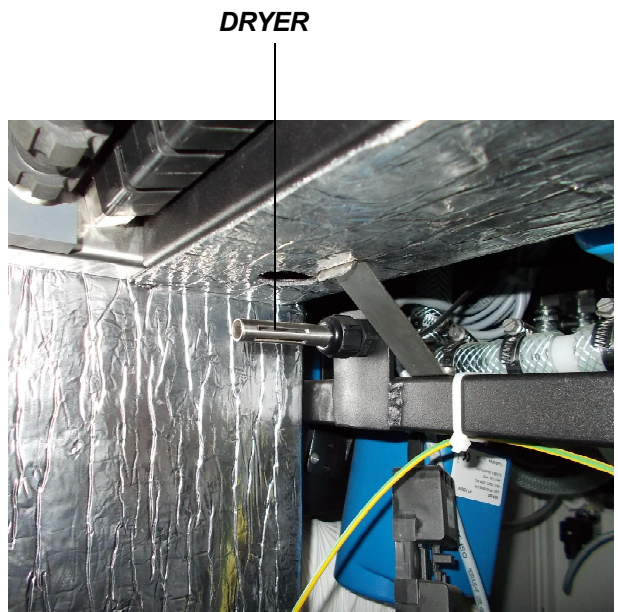
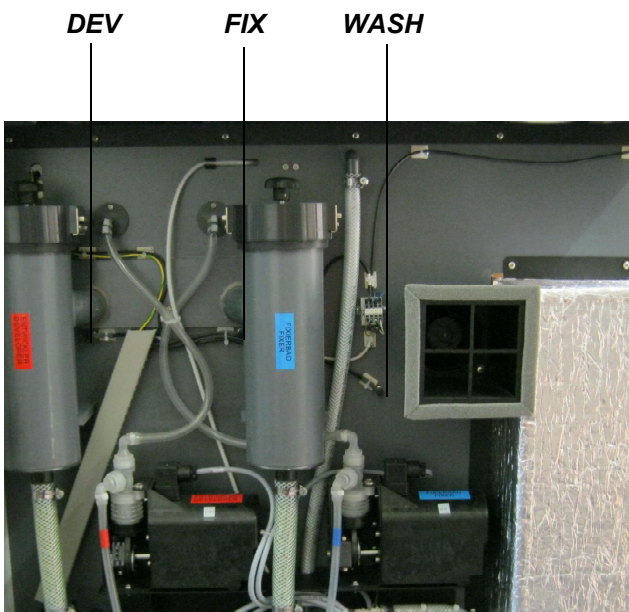
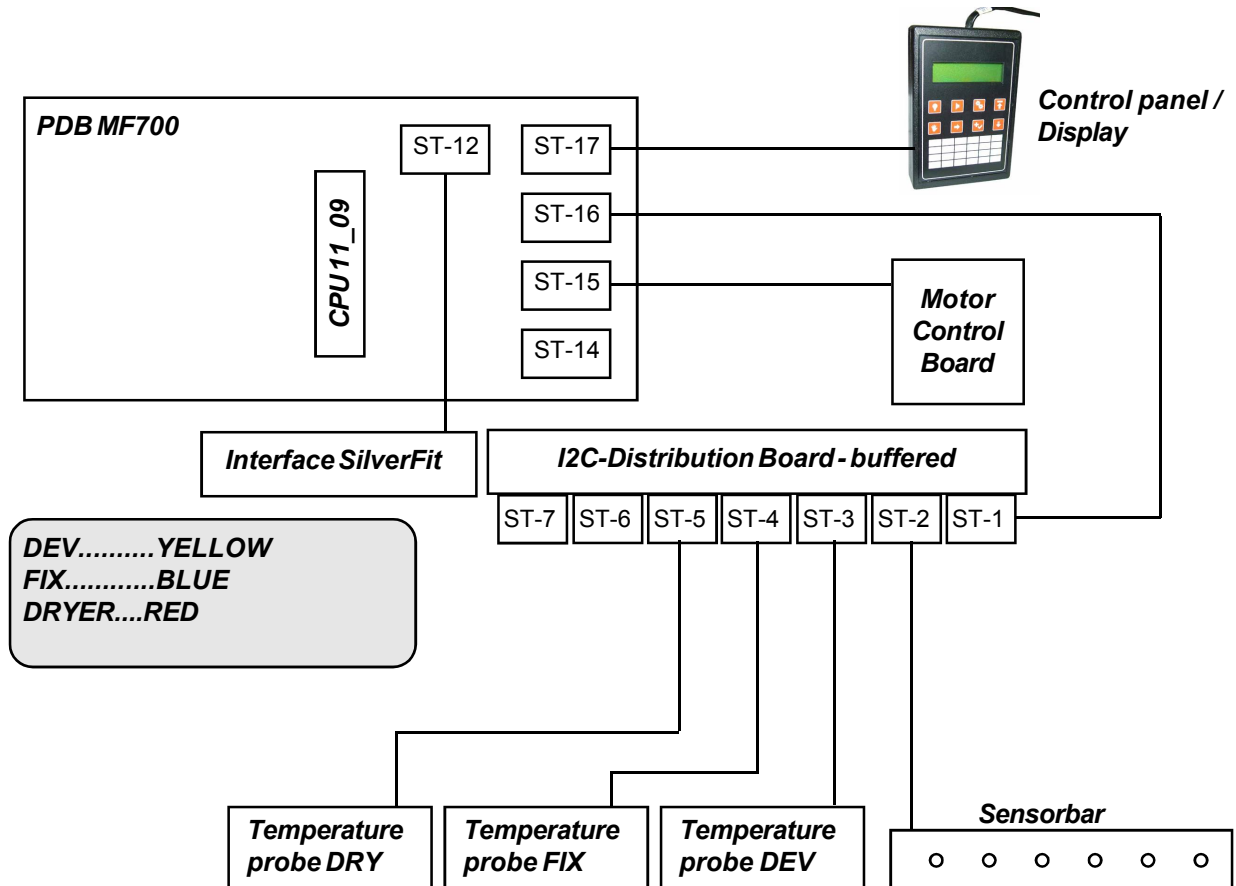
PRESS



11.6 I2C-BUS - OVERVIEW

Probes positioned under solution levels precisely monitor all solution tank temperatures. These temperature probes are continuously supplying information to the microprocessor on actual solution temperatures within the tanks. The microprocessor then compares these actual temperatures to the required programmed "set" temperatures and controls the relevant heaters/cooling systems accordingly.

To transfer this information, a I2C-Bus System is installed.



11.7 TEST INSTRUCTIONS FOR THE I2C-BUS SYSTEM

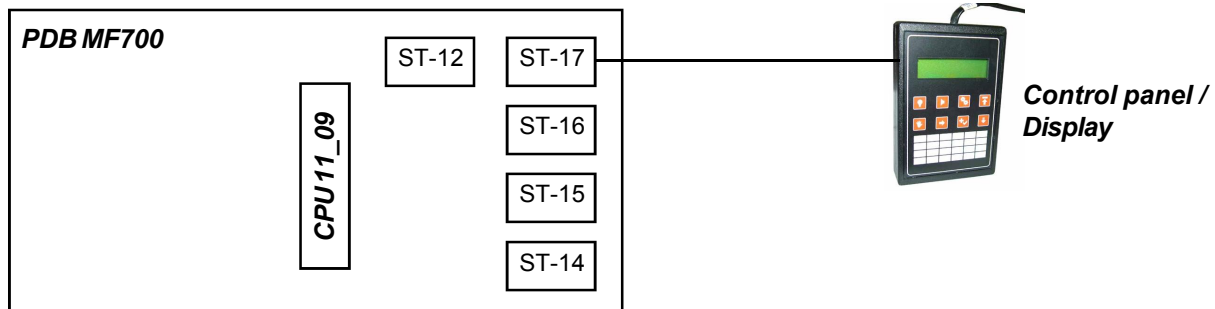
Testing of the I2C-Bus is easy!

Prior to the test disconnect all elements of the I2C-Bus System and follow the necessary working steps:

1. Connect the Display to the Main Board PDB (ST-17)
2. Install the Cable between Main Board PDB (ST-16) and the Distribution Board (ST-6)
3. Connect the Temperature sensor DRYER to the Distribution Board (ST-5)
4. Connect the Temperature sensor FIX to the Distribution Board (ST-4)
5. Connect the Temperature sensor DEV to the Distribution Board (ST-3)
6. Connect the Sensorbar to the Distribution Board (ST-2)
7. Connect the Motor Control Board to the Main Board PDB (ST-15)
8. OPTIONAL: Install the SilverFit Interface to the Main Board PDB (ST-12)

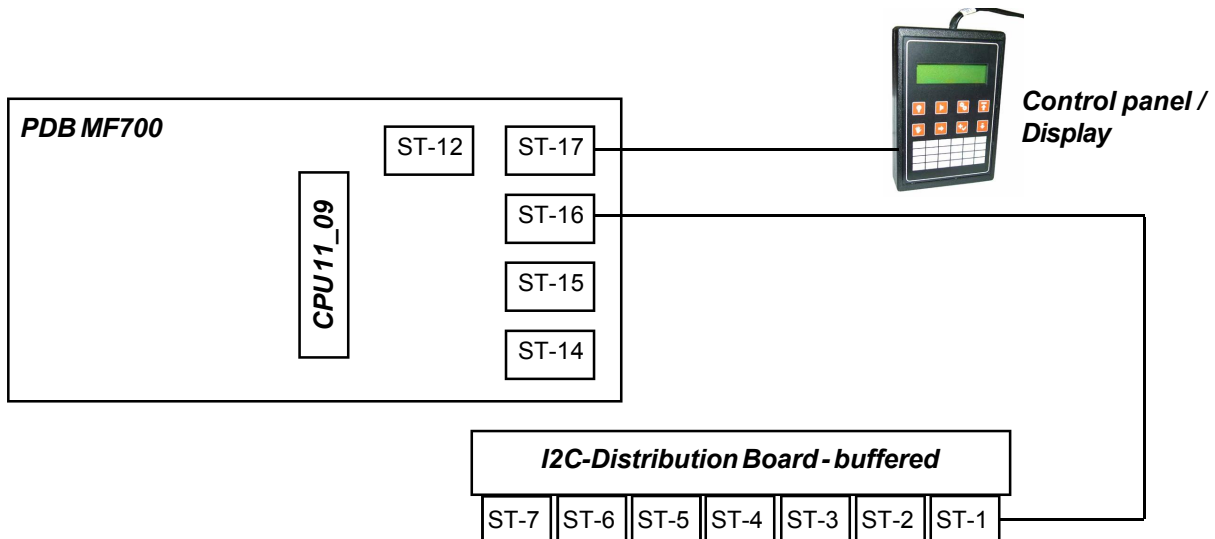
11.7.1 CONNECT THE DISPLAY TO THE PDB (ST-17)

If it's O.K. it will show the Software identification and the electronic will go in operation mode.




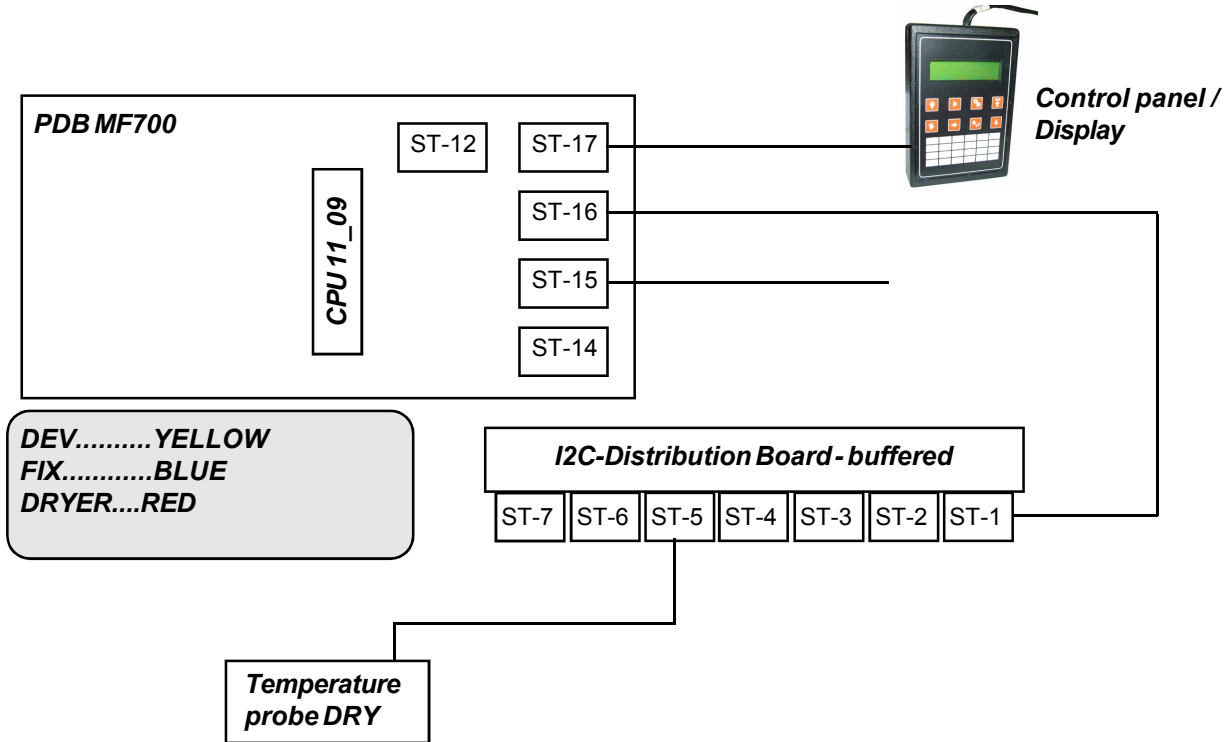
11.7.2 INSTALL A CABLE BETWEEN PDB (ST-16) AND THE I2C-BOARD (ST-6)

If no trouble is shown, the connection Cable + the Distribution Board will be O.K.




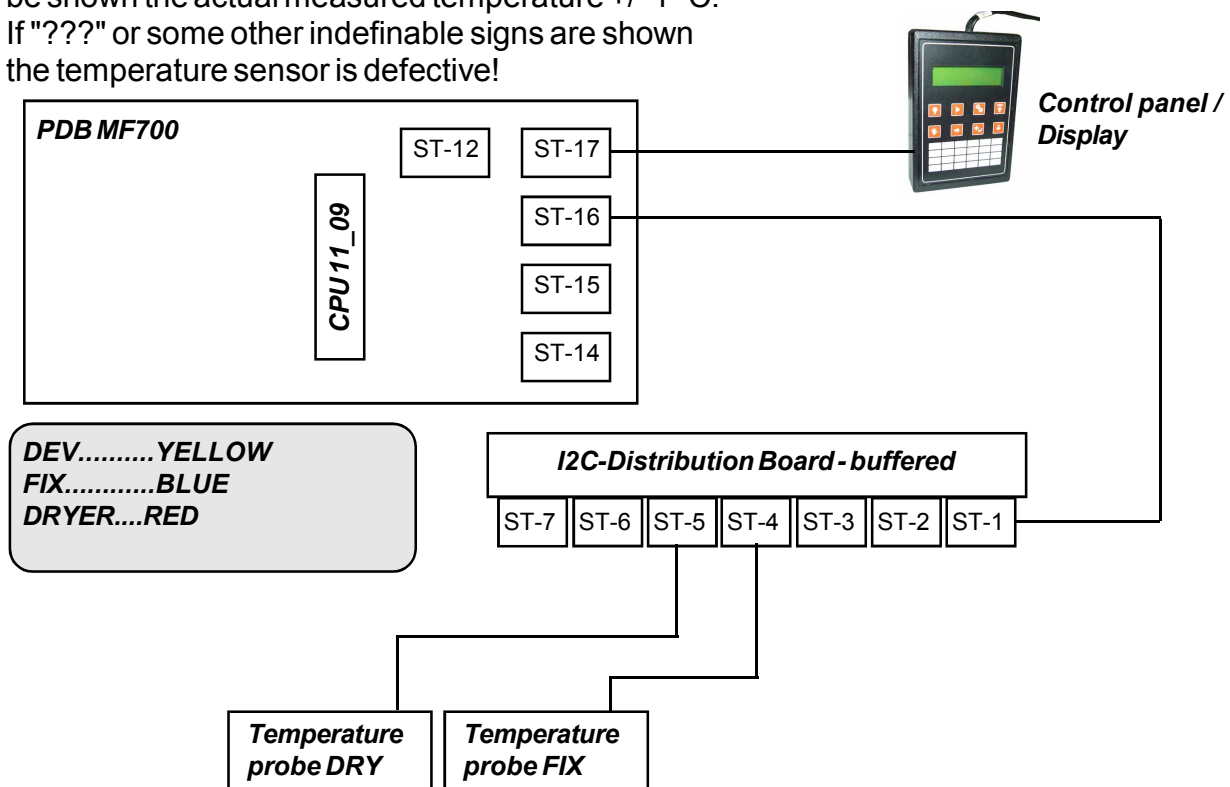
11.7.3 CONNECT THE SENSOR DRYER TO THE I2C-BOARD (ST-5)

Press 2 times  to see T4 (DRYER). If no trouble is shown, then the sensor will be O.K. On the Display will be shown the actual measured temperature +/- 1 °C.
If "???" or some other indefinable signs are shown the temperature sensor is defective!



11.7.4 CONNECT THE SENSOR FIX TO THE I2C-BOARD (ST-4)

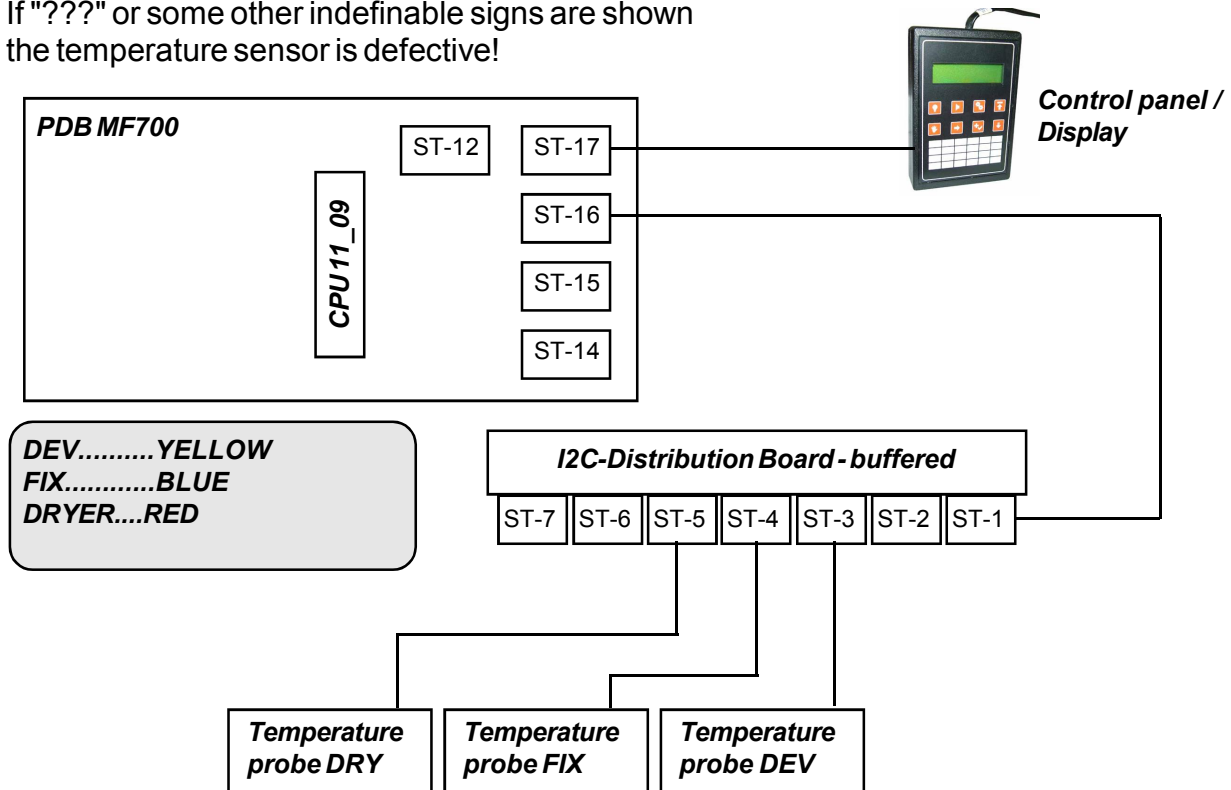
Press  to see T2 (FIX). If no trouble is shown, then the sensor will be O.K. On the Display will be shown the actual measured temperature +/- 1 °C.
If "???" or some other indefinable signs are shown the temperature sensor is defective!



11.7.5 CONNECT THE SENSOR DEV TO THE I2C-BOARD (ST-3)

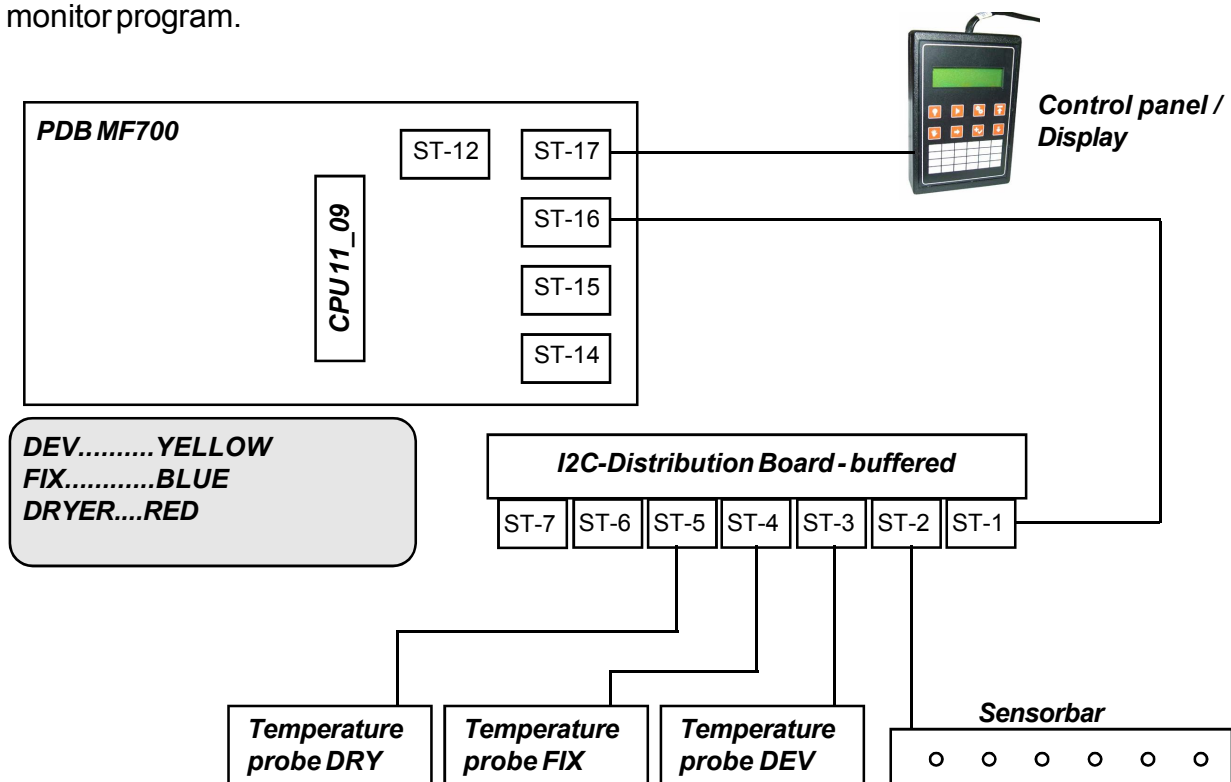
If no trouble is shown, then the sensor T1 (DEV) will be O.K. On the Display will be shown the actual measured temperature $\pm 1^\circ\text{C}$.

If "???" or some other indefinable signs are shown the temperature sensor is defective!



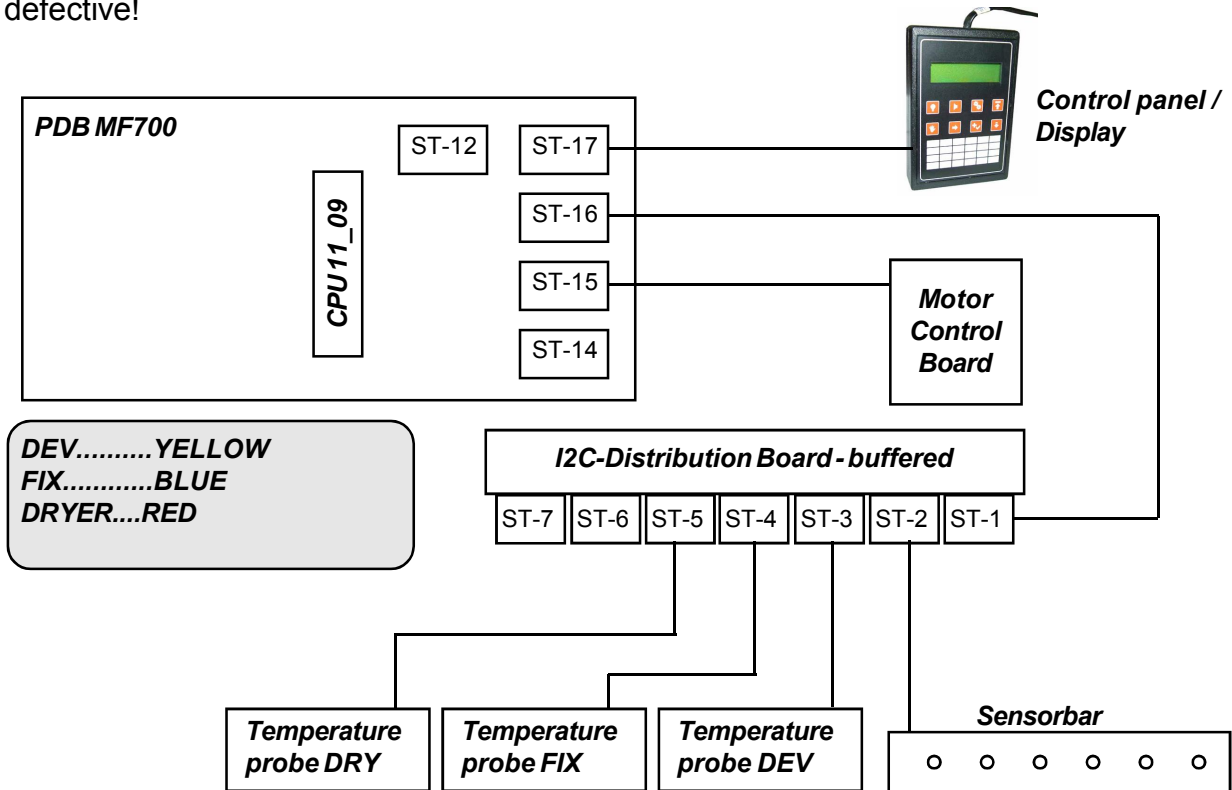
11.7.6 CONNECT THE SENSORBAR TO THE I2C-BOARD (ST-2)

If no trouble is shown, then the sensor will be O.K. If all sensors are O.K. you can see in the monitor program.



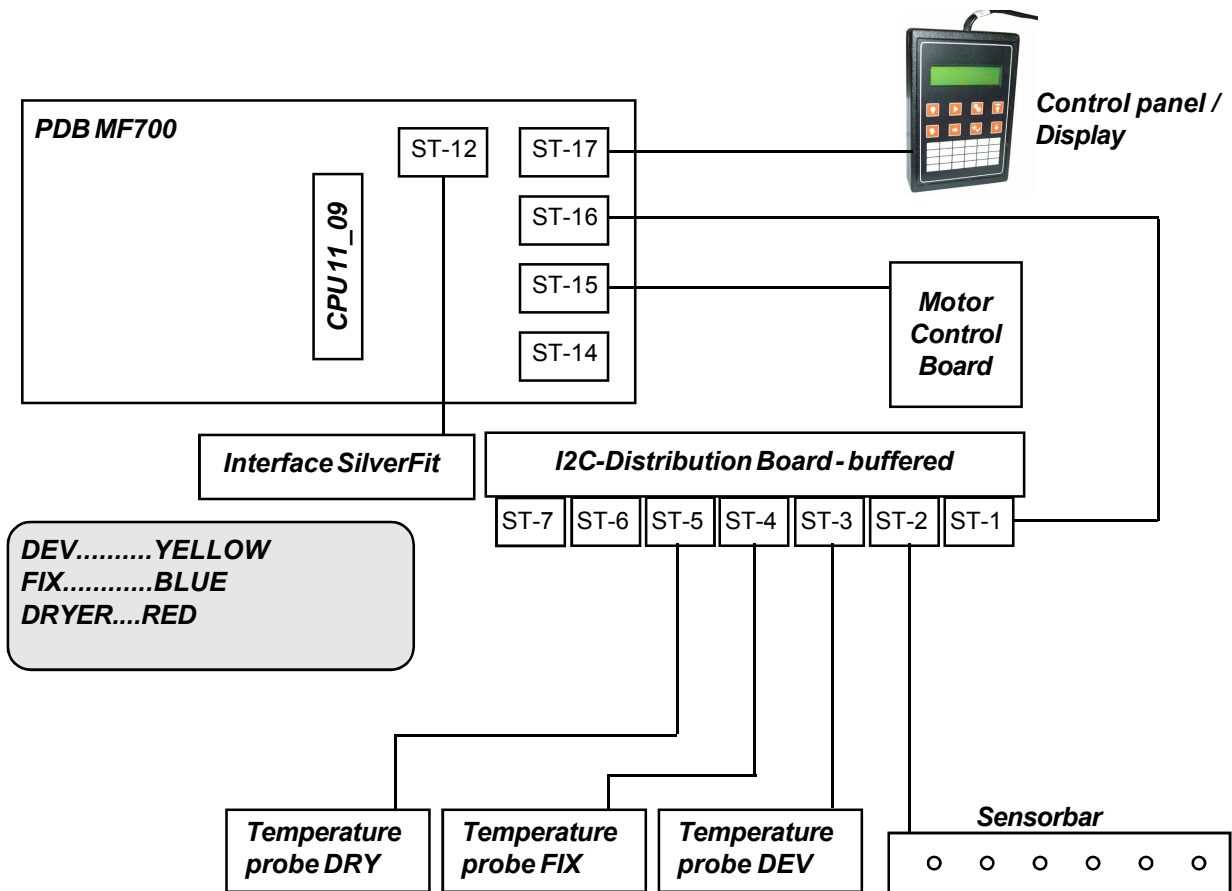
11.7.7 CONNECT THE MOTOR CONTROL BOARD TO THE MAIN BOARD PDB (ST-15)

When using Manual Mode and switch to START, so the motor has to be activated. Otherwise an error "Motor overload" or similar errors occur and so the board or the motor is defective!



11.7.9 CONNECT THE SILVERFIT INTERFACE TO THE MAIN BOARD PDB (ST-12)

When using a SilverFit device and this device has a critical error then a warning has to be shown on the processor display.



12. TROUBLE SHOOTING

Problem	Possible Cause	Correction
1. Tank1 too cold The Developer temperature is more than 1 °C below the programmed value	a) Developer bath temperature is too low b) Heater problem c) No circulation in the bath	a) Check the Heat up time, check Developer temperature in 2-3 minutes, 1°C temperature increase b) Check in the Monitor mode H1, check the LD3 on main board and check the Fuse F3 c) Check the Circulation pump, check the LD7 on Main board and check the Fuse F7
2. Tank1 too warm The Developer temperature is more than 1 °C above the programmed value	a) Chiller doesn't work b) Cooling Pump c) too less Cooling Fluid	a) Check the Cooling assembly, check the LD9 on Main board and check the Fuse F9 b) Check the Cooling Circulation Pump c) Check the fill level of the Cooling Fluid using the inspection glass
3. Tank2 too cold The Fixer temperature is more than 1 °C below the programmed value	see point 1	see point 1, check the Fuse F4 / LD4 check the Fuse F7 / LD7
4. Tank2 too warm The Fixer temperature is more than 1 °C above the programmed value	see point 2	see point 2, check the Fuse F9 / LD9
5. Dryer too warm The Dryer temperature is more than 5 °C above the programmed value	a) Set temperature is too low (lower than room temperature) b) main board defective c) Solid State	a) Change the Set temperature b) Change main board c) Solid State Relais defective
6. Motor overload The Drive motor did not reach, it's Set-speed	a) Main Drive assembly blocked b) Main drive chain too much tension c) Film jam in the racks	a) Check the main drive for easy running b) Check the chain c) Check the racks
7. Cover opened The cover of the machine is not closed	a) The cover of the machine is not closed correctly b) the cover switch is damaged	a) Check the machine cover b) Check function of the cover switch

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Problem	Possible Cause	Correction						
8. Main Drive and Dryer run continuously	<p>a) Main Drive was started in "manual mode"</p> <p>b) Material always under the sensorbar. Material not transported/pulled into the processor</p> <p>c) Sensor/s at the sensorbar is/are wet or dirty</p> <p>d) Main board defectiv</p>	<p>a) Check in the manual programm if "STOP" is shown; stop the transport with the button.</p> <p>CAUTION: If also an automatic cycle is started by the sensor bar this cycle will end first.</p> <p>b) Check the Input rubber roller, check if a film is on the film table under the sensorbar.</p> <p>c) Clean the sensor/s</p> <p>d) Change the Main board</p>						
9. Material wet when exiting processor	<p>a) Dryer temperature is too low</p> <p>b) Transport speed to high</p> <p>c) Unusable or wrong Developer or Fixer</p> <p>d) Dryer blows only cold air</p>	<p>a) Increase the Dryer temperature (max. 60 °C)</p> <p>b) Lower the Transport speed</p> <p>c) Increase the Replenishment rate or change the chemicals</p> <p>d) Fuse F4 of the Heater Dry defective or solid state relais defective, or dryer heating elements defective, or thermoswich from heating element is open</p>						
10. Temperature problems Temperature is shown incorrect.	The Temperature probes has to be positioned according their code.	<p>a) The Temperature probes are colour coded</p> <table><tr><td>Developer</td><td>... Yellow</td></tr><tr><td>Fixer</td><td>... Blue</td></tr><tr><td>Dryer</td><td>... Red</td></tr></table>	Developer	... Yellow	Fixer	... Blue	Dryer	... Red
Developer	... Yellow							
Fixer	... Blue							
Dryer	... Red							
11. No fresh water supply	<p>a) Water tap is closed</p> <p>b) Water valve is blocked or faulty</p> <p>c) Main board defective</p>	<p>a) Open the Water tap</p> <p>b) Clean the small Filter in the valve, or exchange it</p> <p>c) Check the Fuse F8 / LD8</p>						
12. Circulation pump don't work	<p>a) Pump wheel is blocked by dirt</p> <p>b) no electrical power</p>	<p>a) Clean the Pump wheel and make shure easy running</p> <p>b) Check the Fuse F7 / LD7</p>						
13. Level in water tank to high, Water tank Overflows	<p>a) Water drain/overflow blocked</p> <p>b) Worse water drain installation</p>	<p>a) Clean the Water tank and clean the Overflow and the Water drain</p> <p>b) Modify the Water drain installation</p>						

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Problem	Possible Cause	Correction
14. Level in Developer- or Fixertank to low.	a) Tank leaks b) Too low Replenishment rate or too long Anti-Oxid.cycle c) Replenishment container empty d) no electrical power on the Replenishment pumps	a) Seal the Tank leak b) Increase the Replenishment rate or decrease the Anti-Oxid.cycle time c) Fill up the Replenishment containers d) Check the Fuse F5 / F6, check the Fuse LD5 / LD6 and clean the Replenishment pump or exchange it
15. Chemical temperature can't be reached	a) Incorrect temperature b) Temperature sensor is faulty c) The processor was started without liquid in tanks. The safety fuses at the heating element have interrupted the current supply	a) Program the temperature correctly b) Replace the temperature sensor c) Reset the safety Fuse.
16. Scratches or pressure marks	d) PDB is faulty a) Unsuitable handling of the processing materials b) Cross over rollers are dirty. c) Bent guide bars	d) Replace PDB a) Handle material carefully b) Clean all rollers above the fluid level c) Clean and check guide bars. If necessary, replace it
17. Material remains in the Processor	a) Material fed incorrectly b) Material has excessive curl c) Material is too thin d) Rollers are not rotating	a) The material must be fed in straight b) Fold leading edges and feed in the processor c) Use a leader to process d) Check gears and the position of the loose rollers
18. Processor could not be switched on	a) Main cable isn't plugged b) Main Fuse is faulty	a) Plug in main cable correctly b) Check the Main Fuse F1
19. Paper or Film too dark	a) Developer temperature is too high b) Processing time is too slow. c) Exposure time is too long d) After new chemistry: starter is missing	a) Decrease developer temperature b) Increase processing time c) Reduce exposure time d) Add starter according to instructions

Problem	Possible Cause	Correction
20. Paper or Film too light	<ul style="list-style-type: none"> a) Bath temp is too low b) Transport speed is too high c) Exposure time is too short d) Bath level is too deep (no heating and circulation) e) Developer exhausted f) Fixer getting into developer (Dev becomes cloudy) g) Exposure settings are incorrect or machine is faulty 	<ul style="list-style-type: none"> a) Adapt the bath temperature to the recommended process or change chemistry b) Decrease transport speed c) Increase exposure time d) Fill bath to the right level and check Replenish-tanks e) Replenish or change chemistry f) Carefully clean the tank and replace chemistry g) Adjust setting or repair faults
21. Paper or Film is fogged	<ul style="list-style-type: none"> a) Light leak in darkroom or cassette b) Incorrect darkroom light c) Material is outdated 	<ul style="list-style-type: none"> a) Seal off light leak b) Check the Filter, wattage and distance from the dark room lamp to the processor c) Check the date of maturity
22. Paper or Film has yellow-green surface	<ul style="list-style-type: none"> a) Unsuitable hand processing material is used b) Fixer is exhausted c) Level of fixer bath has dropped (Temperature safety fuse has been activated) d) Circulation pumps have failed 	<ul style="list-style-type: none"> a) Only use material suitable for roller processing b) Replenish or change chemistry c) Check level of the Replenishment containers and fill up the bath to the required level d) Check the pump motor and eventually replace it

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