

# **INSTRUCTION MANUAL**

## **NDT -FILMPROCESSOR**

### **FNDX 5 HS**



AT800 V2.8r09h



Produced by **Colenta**® exclusiv for Fujifilm

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# 1 INTRODUCTION

Congratulations upon your decision to buy a

## FNDX 5 HS NDT - FILMPROCESSOR

Your purchase has been designed to meet the highest technical standards.

Some outstanding design features include:

- \*) compact, space-saving design
- \*) full automatic processing cycle
- \*) smooth roller transport system
- \*) low tank volumes
- \*) electronically controlled temperature system
- \*) automatic replenishment
- \*) low energy consumption

This manual is a guide to installation and routine use of your

## FNDX 5 HS NDT - FILMPROCESSOR



**NOTE:**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are de-signed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

**1.1 Explanation of the warning signs used in this instruction manual**



**Danger:** Used to indicate a directly hazardous situation with instructions that must be obeyed to avoid risk of serious or fatal injury.

**Warning:** Used to indicate a potentially hazardous situation with instructions that must be obeyed to avoid risk of serious or fatal injury.

**Caution:** Used to indicate a potentially hazardous situation with instructions that must be obeyed to avoid risk of minor or moderate injury.



**Note:** Signal word that indicates a potentially harmful situation which, if not avoided, may result in damage to the device.

**Hazard symbols used in this manual:**



**Drawing in hazard:**

To warn against contact with moving parts that can entrap clothing and body parts causing serious injury.



**Crushing hazard:**

Possible contact with moving parts leading to crush injuries.



**Electrical hazard:**

Electrical hazard - possible contact with main voltage.



**Thermal hazard:**

Thermal hazard - possible contact with parts having high temperature.



**Fire hazard:**

Fire hazard - possibility of flammable material igniting.



**Chemical hazard:**

Chemical hazard - chance of chemical burns if chemicals are not handled correctly.

**Hazard sticker used on the processor:**



Isolate the electrical power-supply before opening.  
Used on covers where applicable.

**Symbols giving orders used in this manual:**



**Protective clothing:**

To always wear protective clothing when working with chemicals, moving parts or electricity.



**Working gloves:**

To always wear appropriate gloves when working with chemicals, moving parts or electricity.



**Safety goggles:**

Wear safety goggles when working with chemicals.



**Fire extinguisher:**

Where there is a potential fire hazard always make sure, that a fire extinguisher is readily available.

**Prohibitive signs used in this manual:**



**No necklaces:**

Wearing loose necklaces when working with moving parts can lead to entrapment.



**No ties:**

Wearing loose necklaces when working with moving parts can lead to trapping or drawing in.

**1.2 Qualified staff and system operation**

**CAUTION:**

**Only trained staff to be allowed to unpack or operate the device. Only trained service engineers are allowed to work on the equipment and electrical installation.**

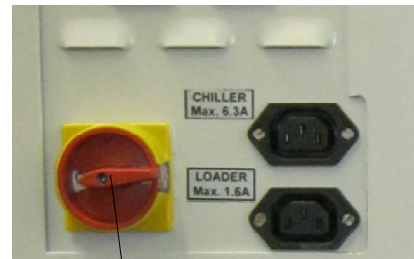


**CAUTION**

Staff in charge of maintaining the processor (see chapter 11 and 12) need to be thoroughly familiar and trained with the equipment. The equipment should not be operated without supervision.

Only the top cover of the film processor may be removed by the operator (see picture below)

**Top cover**



**Main switch of the film processor**

**CAUTION:**

**The installation, service, repair as well as the initial operation of the machine must be carried out by qualified and trained service personnel only !**



**CAUTION**

Carry out the following steps prior to removing the top cover:

- 1. Give instructions to the operators of the film processor.**
- 2. Switch off the main power switch („0“-position)**

The film processor is a complex machine with moving parts such as rotating gears and roller components. It uses photo processing chemicals which are irritating to eyes, lungs and skin. High voltage is used to power the film processor.

**DANGER:**

**Do not operate the film processor after consuming alcohol or taking strong medication.**



**DANGER**

## FNDX 5 HS

Room temperatures between 18-26 °C (65-80 °F) with a relative humidity between 35% and 75% are ideal for photographic processing and working.

**WARNING: Electrical and mechanical hazards**  
Observe all safety warnings to minimize the risk of electrical shock, burns or equipment damage.  
Photographic film processors are complex machines with many electrical and mechanical parts as well as with a considerable amount of chemicals.



### 1.3 Mechanical hazards

Observe all safety warnings to minimize the risks of mechanical hazards.

**WARNING:**  
Hands or fingers may be pinched or injured by moving parts or when handling heavy parts.



Make sure that clothing or other objects cannot get trapped in gear drives or the roller transport system within the film processor.

Do not wear jewellery or loose clothing when operating the processor.



**WARNING:**  
The roller transport system of the processor is a potential hazard - fingers, loose clothing or jewellery can get drawn into rollers or gearwheels.



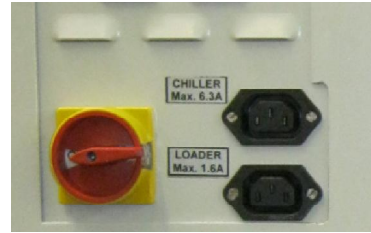
### 1.4 Electrical hazards

**DANGER:**  
During installation qualified service personnel must certify that the processor is permanently and reliably grounded according to the standards in the national electrical code.



The film processor must be separated from mains power prior to carrying out any maintenance. This is done by switching the mains power switch of the machine to the „0“ position.

Built-in safety devices must not be by-passed or made inoperative. Only use original COLENTA spare parts when replacing failed electrical components.



Main power switch

**DANGER:**  
Hazardous voltage can cause electrical shocks, burns or fatal injury !



1.5 Fire hazards

Fire Prevention

Beware that combustible materials ignite and cause fires.

**WARNING:**  
The area around 3 meters of the processor must be kept clean at all times. Keep dust, wood shavings, scrap paper or other inflammable materials out of the dryer compartment.



A functional 5kg ABC fire extinguisher must be available in the room where the processor is installed.



Burn hazard

**CAUTION:**  
Dryer compartment produces heat. Dryer parts and covers get hot, therefore do not touch dryer parts or covers when the processor is in operation.



Fire hazards

**WARNING:**  
Dryer compartment produces heat - Paper or other flammable material can ignite.





**1.6 Chemical hazards:****Corrosive liquids**

**WARNING:  
CHEMICALS MAY IRRITATE EYES, LUNGS, SKIN AND DIGESTIVE TRACT**

**WARNING**

Eyes, skin and lungs may be irritated by photo chemicals. Before using photo processing chemicals always read the Material Safety Data Sheets (**MSDSs**) for information about the hazards of the particular chemicals and how to use them safely contact the chemicals manufacturer or dealer.

Wear safety goggles, protective gloves and chemical aprons as indicated on Material Safety Data Sheets (**MSDSs**) when handling chemicals.



**CAUTION:  
To avoid hazardous situations, keep floors and floor coverings around the processor and associated drains clean and dry at all times. Any accumulation of fluids outside the film processor should be cleaned/removed immediately.  
Ensure proper ventilation in the area where chemicals are prepared, used or stored.**

**CAUTION**

Drain tanks carefully, avoid splashing. Always drain the system thoroughly before working on any of the external hose systems. Do not allow untrained personnel to handle photo processing chemicals or to operate the film processor.

**Chemical disposal**

Waste from photographic processing normally contains diluted chemicals. These chemicals should be collected and disposed in accordance with local environmental codes. Dumping chemicals into a drain system could lead to a pollution problem. Contact your local water treatment and sewer district authorities before disposing chemicals.

All plumbing must comply with local and national codes. The DRAIN must be made of chemical resistant and non-corroding material. Use PVC or equivalent.

**Exhaust, temperature and humidity**

It is necessary to ensure proper ventilation in order to receive good processing results. Make sure that the exhaust hose of the built-in exhaust fan is properly connected to the exhaust air socket (Picture 1).

The built-in exhaust fan exhausts the fumes from the film processor.

These chemical fumes are corrosive. The top cover and the feed cover lid of the film processor should be left slightly open over night (picture2).

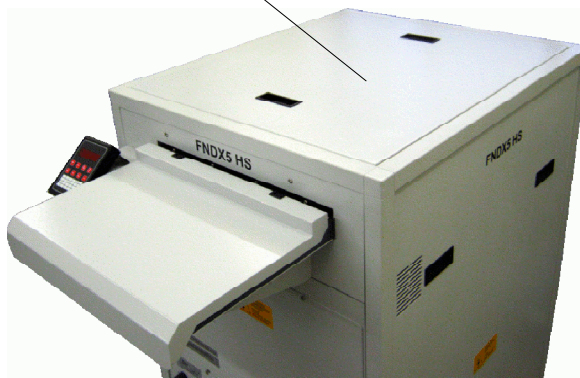
Picture 1

exhaust ventilation system



Picture 2

Top cover



**WARNING:**

Take care when draining the processor tanks for cleaning with running water. ALL racks must be removed from the processor for cleaning.



**CAUTION**

**Chemical handling and accident prevention**

Misuse of almost any chemical may create a hazard of some type. Generally photo chemicals are not any more dangerous than most of the regular cleaning agents. However, there is always a residual risk. When handling chemicals observe the procedures below.

- 1).Never smell into a container or open bottle to determine its contents. A cautious sniff of the cap or lid is safer.
- 2).Label storage containers properly. Avoid storing hazardous chemicals on high shelves or in unprotected glass containers. Keep chemicals away from children. Do not store chemicals in a refrigerator used for food because they may contaminate food or be mistaken for edibles.
- 3).Observe the manufacturer's recommendations for using and mixing chemicals.

**CAUTION:**

Overexposure to photographic chemicals may cause skin irritation to certain individuals.



**CAUTION**

**PHOTOGRAPHIC CHEMICAL EMERGENCIES AND FIRST AID PROCEDURES:**

- **SKIN** - Rinse thoroughly with water.
- **EYES** -Rinse thoroughly with water and consult a physician.
- **BY MOUTH** -Consult a physician immediately.



## 1.7 WEEE/RoHS Compliance Statement

### EU Directives WEEE and RoHS

To our valued customers:

We are committed to being a good corporate citizen. As part of that commitment, we strive to maintain environmentally conscious manufacturing operation.

The European Union (EU) has enacted two directives, the first on product recycling (**Waste Electrical and Electronic Equipment, WEEE**) and the second limit the use of certain substances (**Restriction on the use of Hazardous Substances, RoHS**). Over time, these directives will be implemented in the national laws of each EU member state.

Once the final national regulations have been put into place, recycling will be offered for our products which are within the scope of the WEEE Directive. Products falling under the scope of the WEEE Directive available for sale after August 13, 2005 will be identified with a “wheelie bin” symbol.

Two categories of products covered by the WEEE Directive are currently exempt from the RoHS Directive – category 8, medical devices (with the exception of implanted or infected products) and category 9, monitoring and control instruments. Most of our products fall into either category 8 or 9 and are currently exempt from the RoHS Directive. We will continue to monitor the application of the RoHS Directive to its products and will comply with any changes as soon as they apply.

Batteries incorporated into our products are exempted from the readily removed requirement of the directive for data integrity reasons, and are not marked with the separate collection and chemical symbols because end users are not expected to dispose of the battery separately from the product. Such batteries shall be separated from the product during the treatment phase of the product as required under the WEEE Directive. In particular, this exemption applies to the button or “coin” cell lithium batteries that are supplied embedded in some of our equipment.

**Battery:** CR2032  
**Weight Battery:** 2.8 Grams  
**Description:** Lithium Coin, 3V, 20mm  
**Quantity per Unit:** 1 Piece

In the European Union, this symbol indicates that when the last user wishes to discard this product, it must be sent to the appropriate facility for recovery and recycling.

Contact your local representative for additional information on the collection and recovery programs available for this product.



- Do not dispose product with municipal waste
- Special collection/disposal required



#### Reference:

Original text of the amended EU Battery Directive:

[http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/l\\_266/l\\_26620060926en00010014.pdf](http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/l_266/l_26620060926en00010014.pdf)

EPBA web site:

<http://www.epbaeurope.net>

## 2 TECHNICAL SPECIFICATIONS

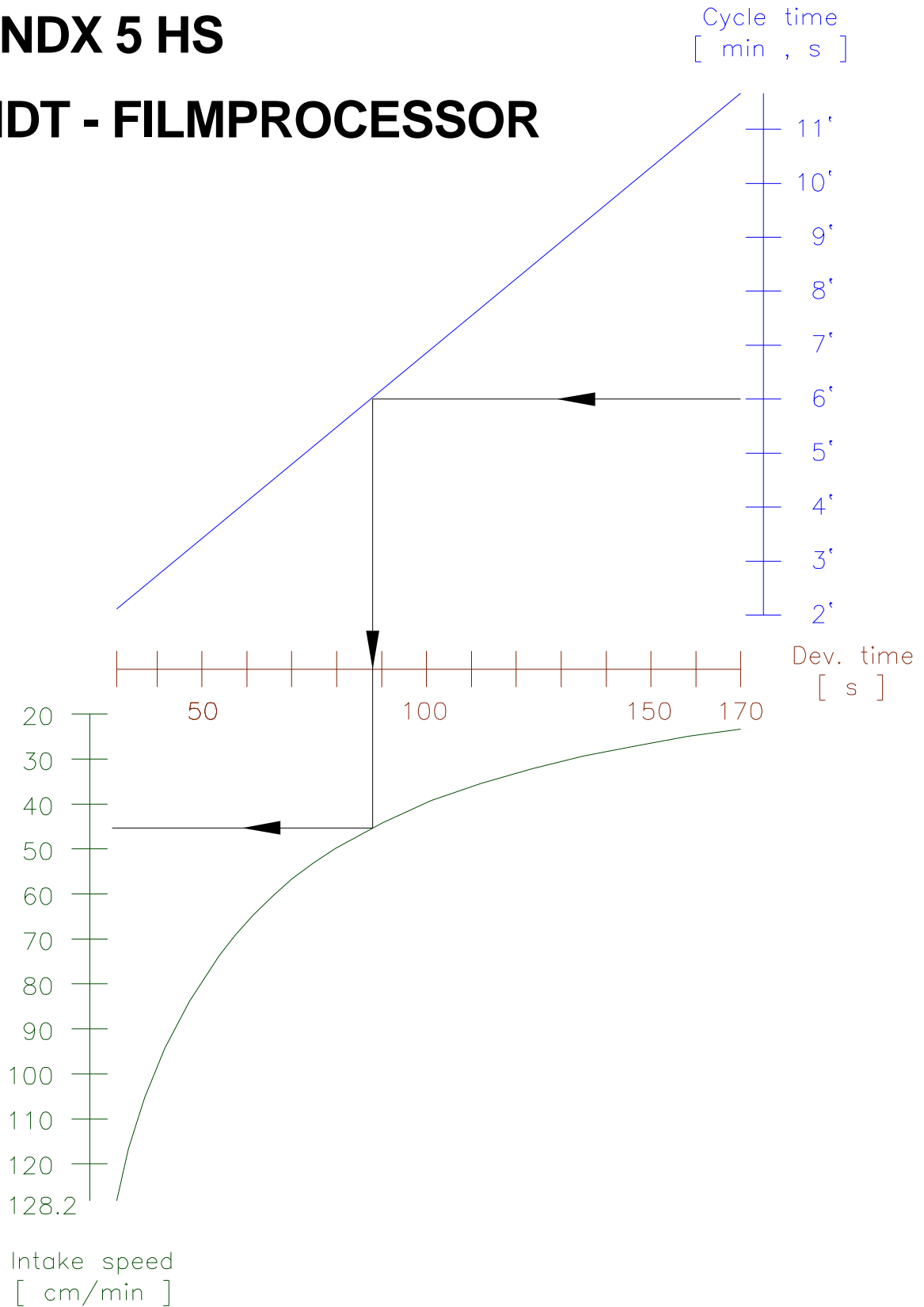
<b>Processing applications:</b>	Rolls/Cut sheets of all commonly used ind.-x-ray films	
<b>Film thickness:</b>	min. 0.10 mm	
<b>Material width:</b>	min. 7.5 cm max. 43 cm	
<b>Material length:</b>	min. 10 cm	
<b>Time in Developer:</b>	min. 30 sec - max. 178sec (see the table in chapter 2.1)	
<b>Tank capacity:</b>		
Developer (incl. Filter):	12,7 l	
Fixer:	13,2 l	
Wash Water:	12,7 l	
Cooling Liquid:	2,5 l	
<b>Solution heating (DEV and FIX):</b>	variable in a range of 18.0 °C - 43.0 °C (separate inline 350 W heaters)	
<b>Dryer:</b>	warm air variable in a range of 18 °C - 60 °C	
<b>Replenishment:</b>	fully automatic replenishment is microprocessor controlled and calculated from information received from sensors measuring the width and length of material entering the processor. Replenishment cycles are variable.	
<b>Water Supply:</b>	2-way magnetic valve, with 3/4" hose connection by using a DVGW-approved system-separating device or pipe-separating device.	
<b>Cooling:</b>	Filter System with Chiller Assy and Cooling Pump	
<b>Wash Water Flow Rate:</b>	2.0 ltr/min when film is in process	
<b>Wash Water Supply Pressure:</b>	3 - 10 bar	
<b>Wash Water Supply:</b>	filtered at a temperature of 10 °C - 15 °C	
<b>Weight:</b>	Empty	177 kg
	With solution	215 kg
<b>Power Supply:</b>	<b>Single Phase</b>	<b>1 / N / PE</b>
	<b>230 V ~ (+6% / -10%)</b>	<b>50/60 Hz</b>
	<b>20 A</b>	<b>4.5 kW</b>

*Technical specification subject to change without notice.*

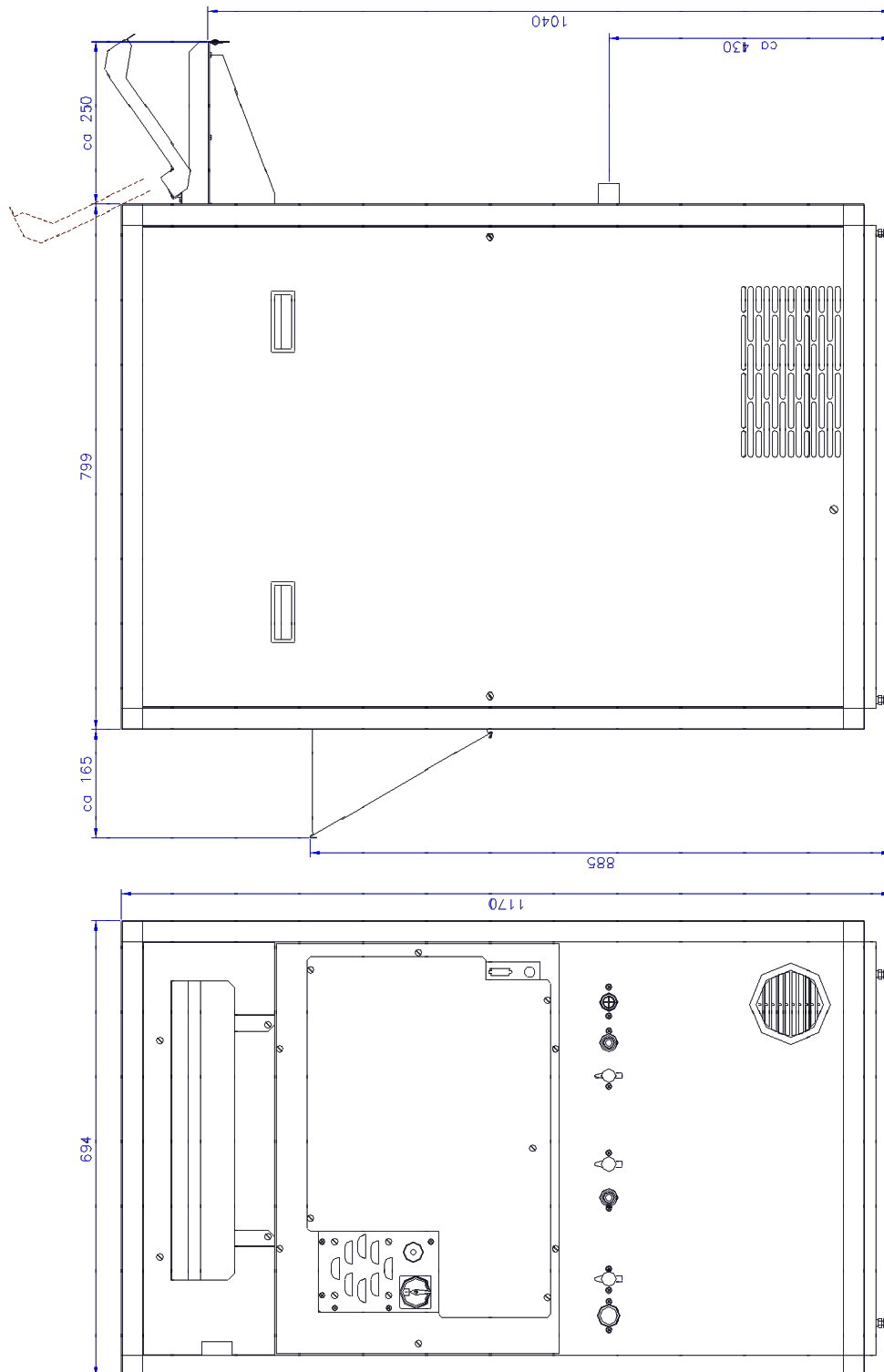
2.1 INPUT SPEED / DEV-TIME / CYCLE-TIME

FNDX 5 HS

NDT - FILMPROCESSOR



## 2.2 DIMENSIONS



We recommend a minimum walking space of 50 cm around the processor.  
**Technical specification subject to change without notice.**

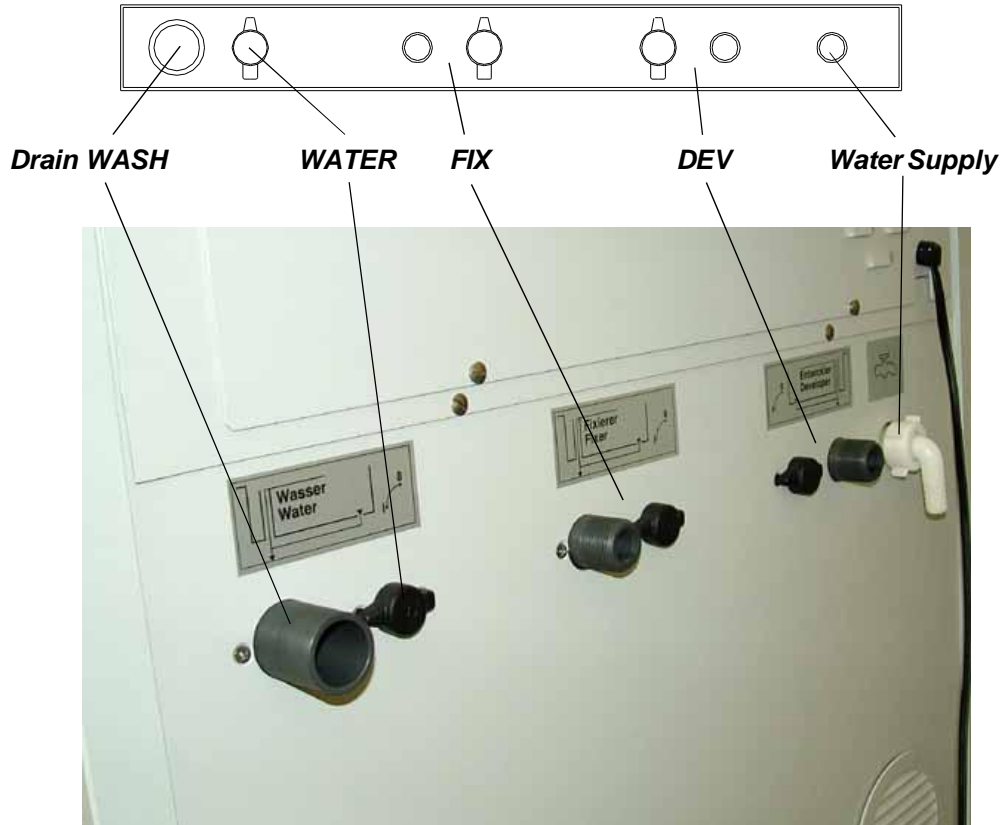
## FNDX 5 HS NDT - FILMPROCESSOR

### 3 CHEMISTRY DRAINS AND WATER DRAINS

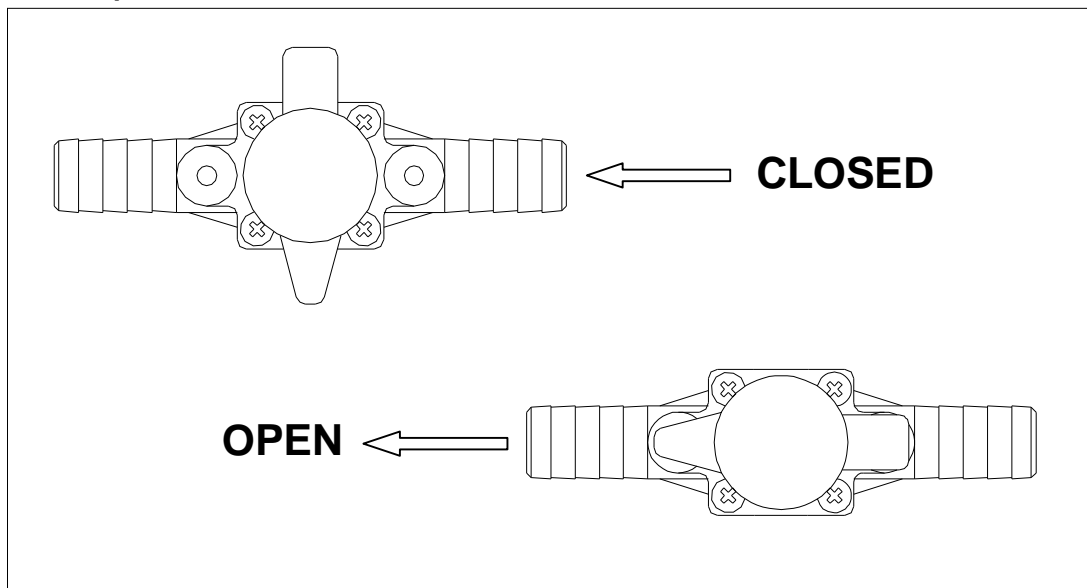
To drain the filmprocessor (Developer, Fixer and the Wash) just open the drain taps according the illustrations below.

**Take care that all the mentioned drain taps are close during Refill up.**

**CAUTION:**  
Used Developer and used Fixer has to be collected in suitable containers seperately.



**Drain taps:**



## 4 INSTALLATION OF THE TRANSPORT ROLLERS

**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.

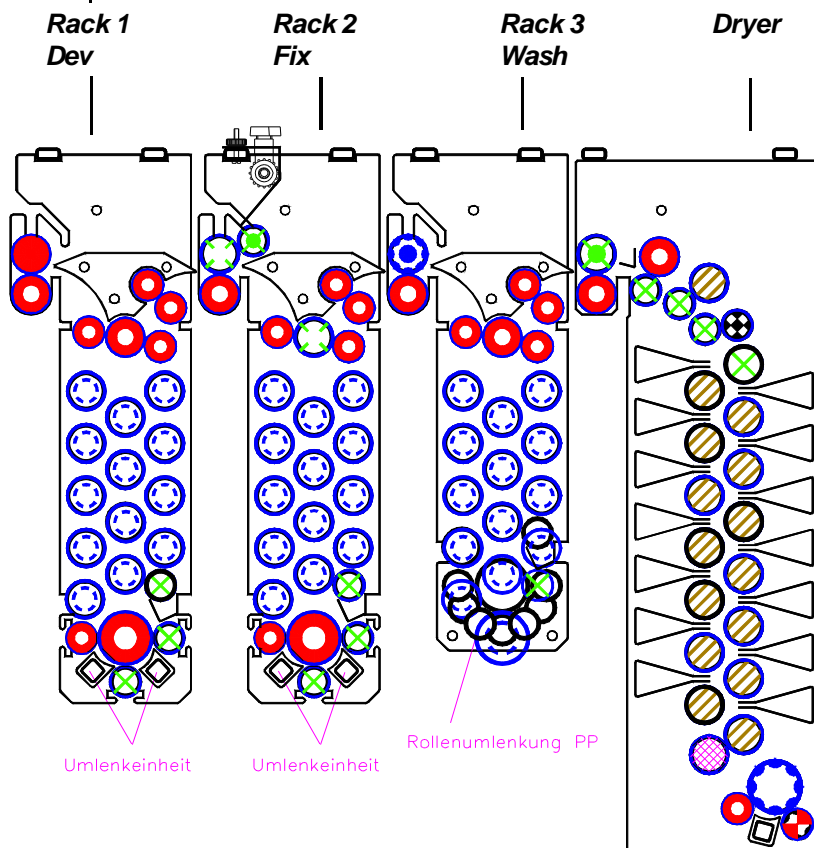
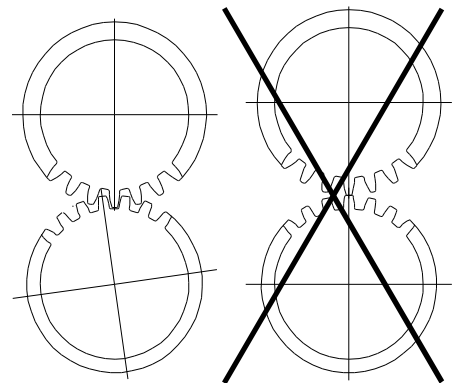
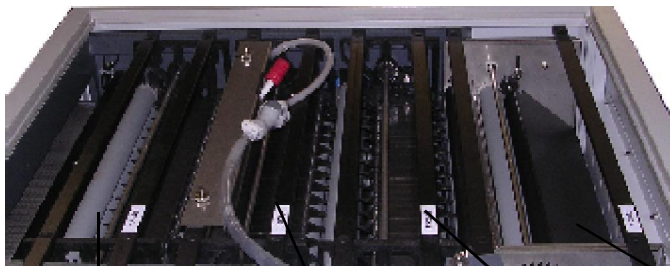
- \*) *Rinse the tanks with water and then fill it to the red marker on the tank wall.*
- \*) *Remove all packing materials*
- \*) *Rinse the tanks with water and then fill it to the red marker on the tank wall.*

**RACK 1** in the developer tank  
**RACK 2** in the fixer tank  
**RACK 3** in the water tank  
**Dryer** in the dryer

**CAUTION:**

Take care that all gears are installed as shown.

The supporter of the racks have to be completely set into the grooves of the tank.

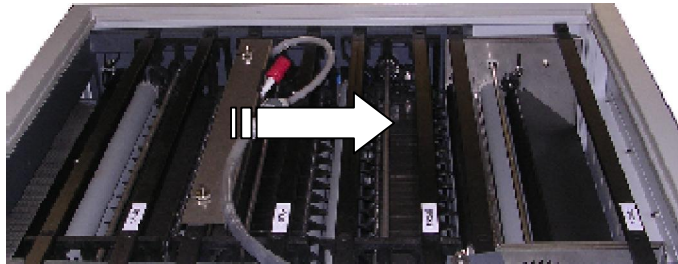
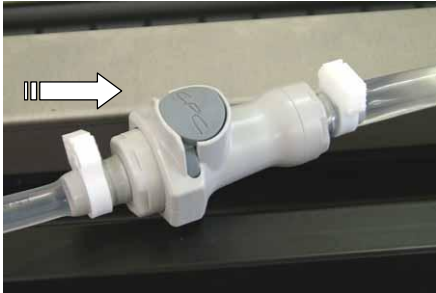


- PVC poliert
- PVC poliert schwer
- PVC geschliffen
- PE poliert
- PE poliert schwer
- PE spezial
- Gummi schwer
- Gummi leicht
- Gummi segmentiert
- Schaumstoff
- Phenol
- Stahl



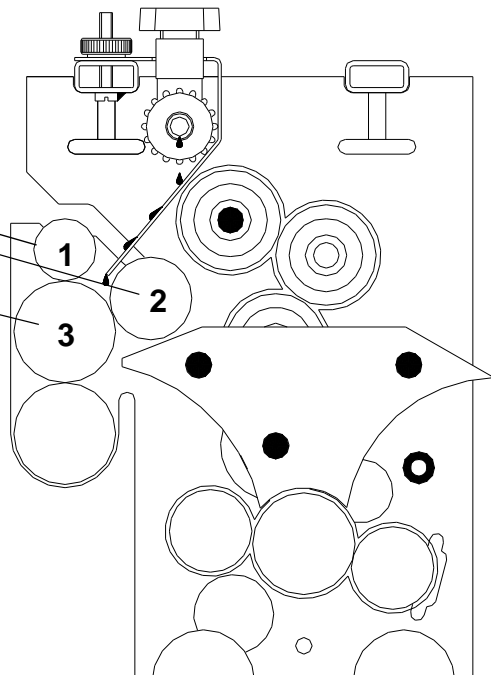
## 4.1 ADDITIONAL CONNECTION FOR THE FIX RACK

Following up the page before, open/close the hose connector by pressing the marked button:



### FIX RACK

**CAUTION:**  
Pay attention to the Roller configuration  
about the FIX Rack!



*Separate package for rollers*



## 5 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!

### 5.1 USING THE CHEMISTRIES

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

**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.

**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).

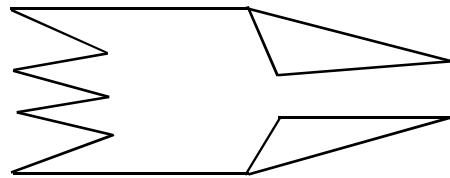
## 6 WORKING WITH THE PROCESSOR

### IN THE MORNING:

- Turn on water supply
- Check replenishment tank levels
- Check whether that the water drain tap is closed
- Switch on the Filmprocessor with the Filmprocessor main switch (position "1")
- Wait for the "READY" of the processor

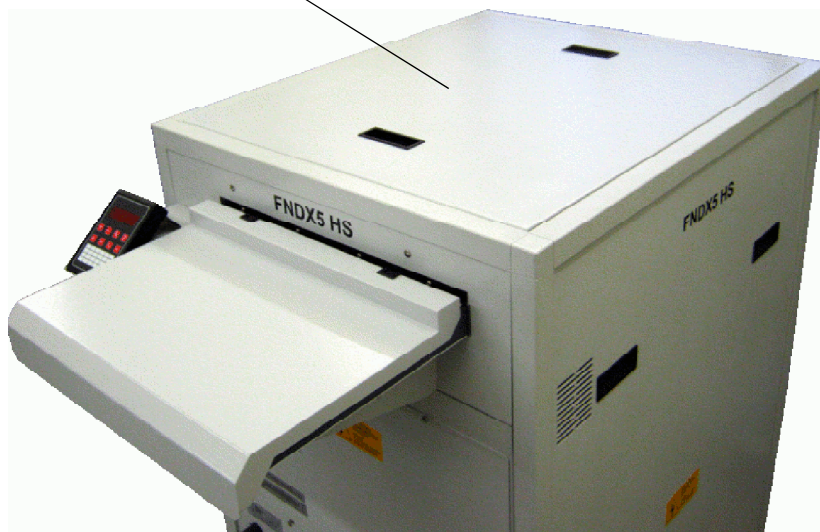
### NORMAL WORKING:

- Check level of the replenishment containers (DEV&FIX)
- Check level of the waste containers (DEV&FIX)
- Select programme
- Feed through one or two of cleaning films (optional item)
- During feeding films, always check the free-signal, given form the display
- Ensure first rollers pull material
- Feed large format films in straigh
- Put a leader on roll films
- Fold the leading edge on roll paper



### IN THE EVENING:

- Turn off water supply
- Switch off the main power switch of the Filmprocessor (Main switch in position "0")
- Open water drain tap to prevent algae growths in water tank
- ***Lift the top cover to prevent condensation!***



## 6.1 PROCESSOR FUNCTIONS

# FNDX 5 HS NDT - FILMPROCESSOR

### **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. Temperature tolerances  $\pm 0.2$  °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):**

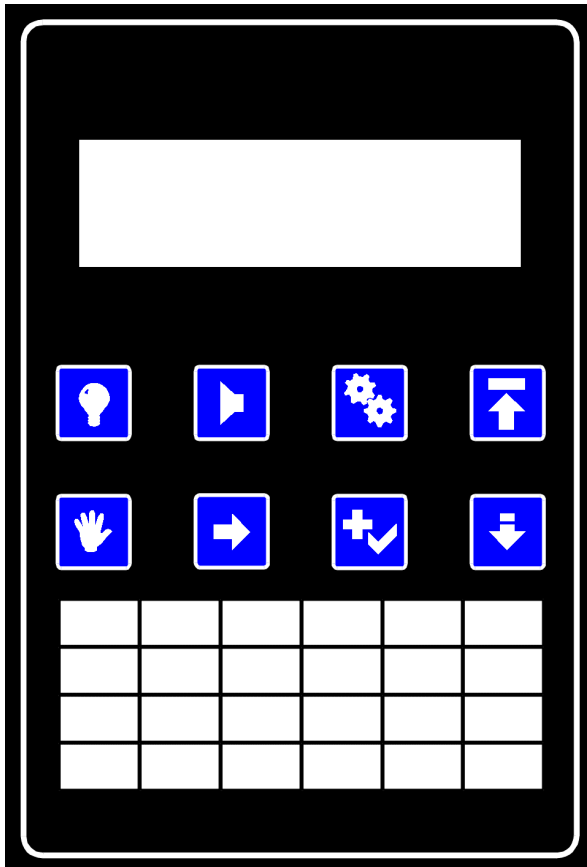
Infrared sensors also automatically control the startcycle of the filmprocessor. The filmprocessor changes from STANDBY to RUN once a film has interrupted the light barrier. As the rollers turn, water is supplied to the wash tank and to the intermediate rinse bath system. Once the last film has passed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

## 2.2 THE DISPLAY

SOFTWARE: AT\_800 V2.8r09h

Number of programs	9
Temperature range, developer and fixer	18,0 ÷ 43,0°C
Temperature range, dryer	18 ÷ 60°C
Temperature control tolerances	±0.2°C
Temperature measurement resolution	0.03°C
Developing time tolerances at max. speed	±2%
Motor speed is quartz-stabilized and controlled by a separate microprocessor	


### The display

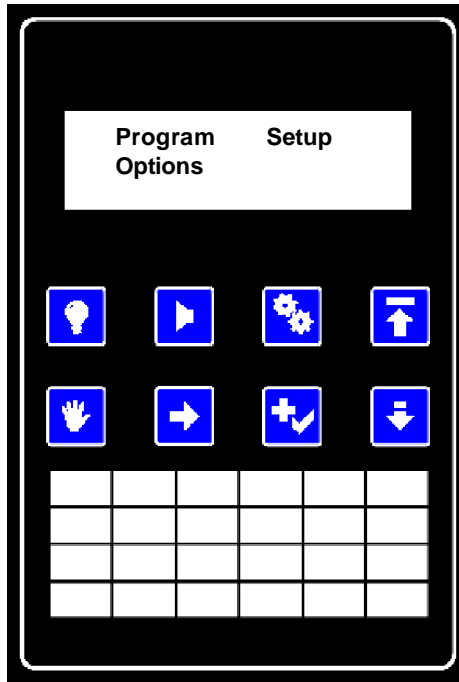




- 💡 back light ON/OFF
- ▶ check errors /alarm shutdown
- ⚙️ setup mode
- ⏪ back to top menu
- 👉 manual operation
- ➡ move cursor
- ⬆️ select menu item/change value
- ⬇️ scroll page down

### 2.2.1 Programming procedures

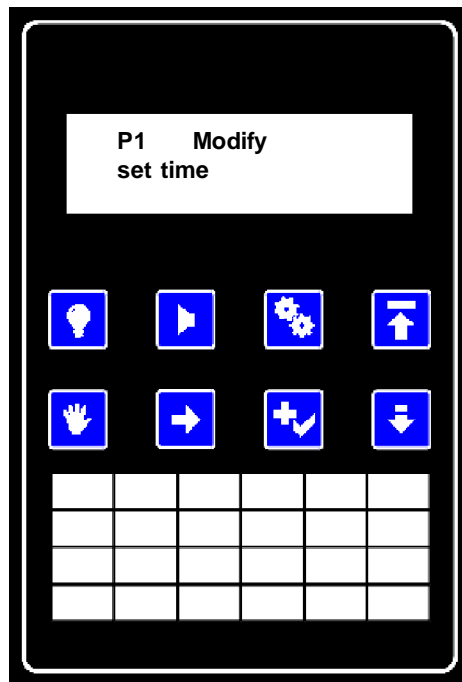
Switch on the film processor at the main switch (position „1“).  
 By default the processor starts in working mode. Make sure that no media is being processed, since re-programming is enabled during standby only.

Press . The programming menu will appear:



With , move the cursor under "Program" and select it with .

You will get:



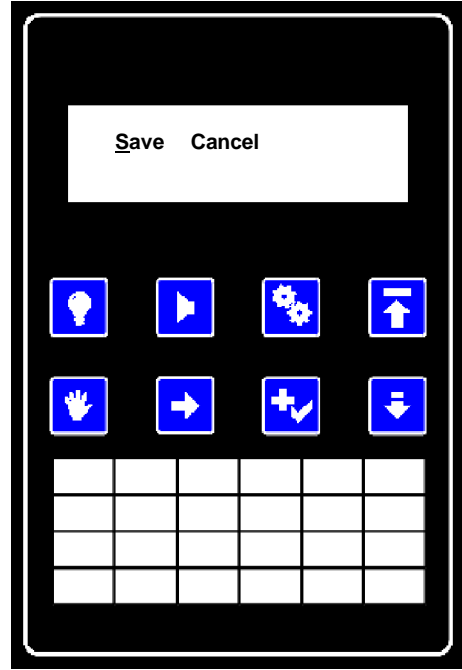
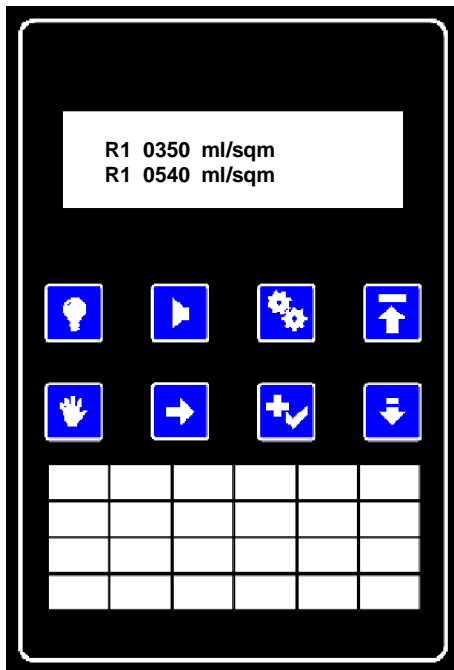
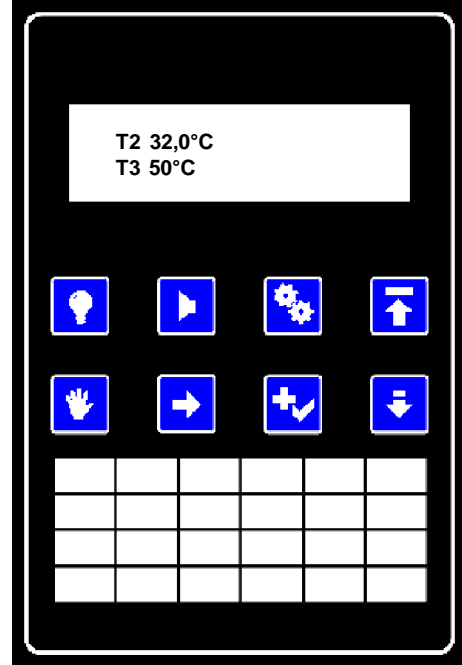
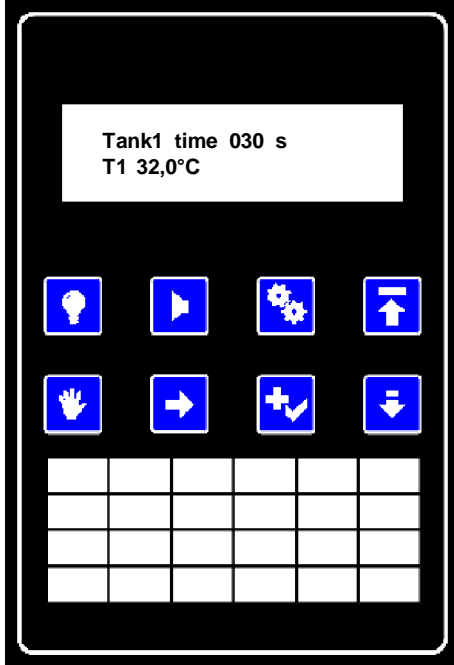
"set time" .... see page 19

Press **+✓** to change the number of the program you wish to modify.

With **→**, move the cursor under "Modify" and select it with **+✓**.

T1 Developer  
T2 Fixer  
T3 Dryer

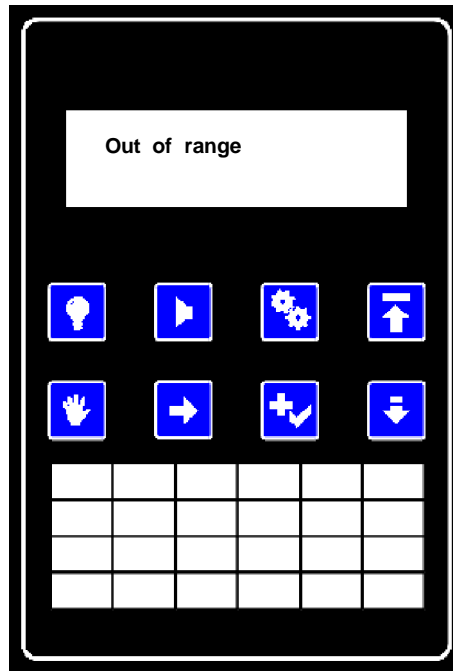
The program consists of four pages:



Use **↓** to scroll through the pages.

To set the parameters, move the cursor with  $\leftarrow$ , then change the value with  $\pm$ . Once all digits have been set to the desired value, position the cursor under "Save" and press  $\pm$  to store the values, or select "Cancel" to discard the changes.

If any of the values are set too high or too low, when trying to save the program you will get.



After 2 seconds the message will disappear and you will be taken back to re-program the values. A parameter that was too high will be automatically reset to the maximum possible value. A parameter that was too low will be reset to the minimum possible value.

This can be used if you want to program extreme values - for instance you want to use the shortest developing time possible, but you don't remember the value. In this case just program the "Tank1 time" to 000. After the "Out of range" message, the developing time will be reset to the minimum. Just select "Save" once again.

To go back to work mode, press  $\bar{\Delta}$ .

**Note:**


The "Setup" menu is for service and factory setup purposes only. The "Setup" menu sets film processor specific values. This values should not be changed by the costumer. Although you can select these menus, scroll through the data and even change it, saving the changed data is disabled. Only authorized service technicians are allowed to set these values.



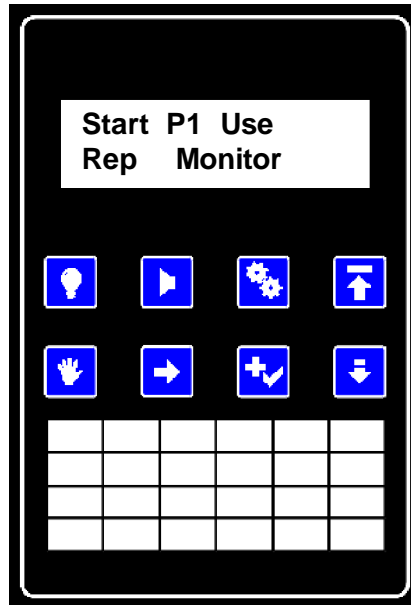


### 2.2.2 Changing the program

To use another program:




Press .

You will see:



If media is being processed, only the "Rep" and "Monitor" items are selectable. Therefore you must wait until the processor is empty to switch to another program.

With , move the cursor under P1. Press  to change the program number.

With , move the cursor to "Use" and select it with . Press  to jump back to main page.

**Note:**

A cyclic redundancy check is used to verify the data being read from the non-volatile memory. If some damage occurred to the program data, or the program was never set up properly, you will get the error message "Program invalid". The solution is to enter programming mode and re-program the data. This error will occur if the EEPROM chip has been replaced as well, in which case it contains random data.




#### 2.2.2.1 Date & Time

The processor allows to set the actual date and time:

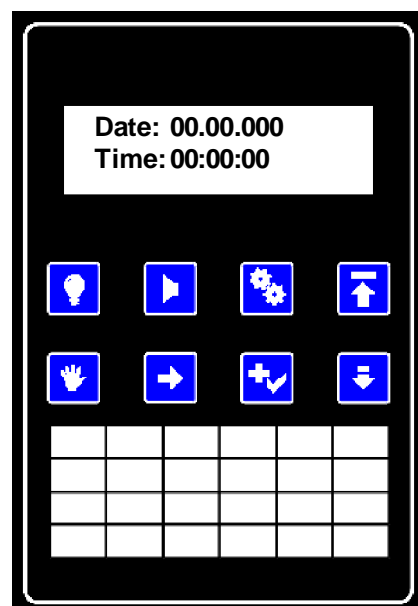
Use , Program Setup Options select "Program"

and you will get P1 Modify set time go to "set time"

and confirm this with  you will get:


You are now able to program the date and time, this has no impact on the processor function.


Use save or cancel after doing so.

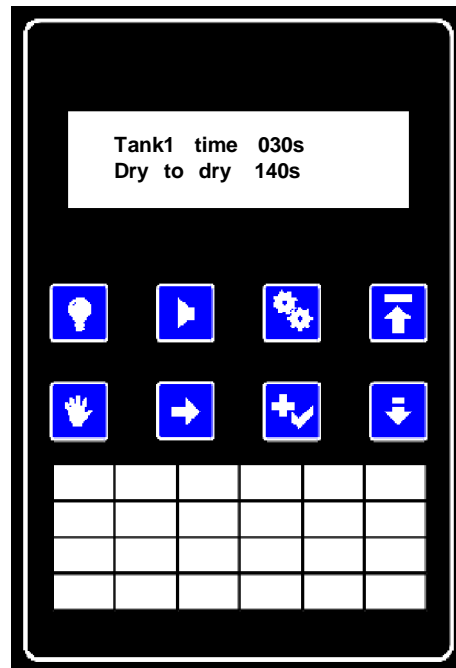
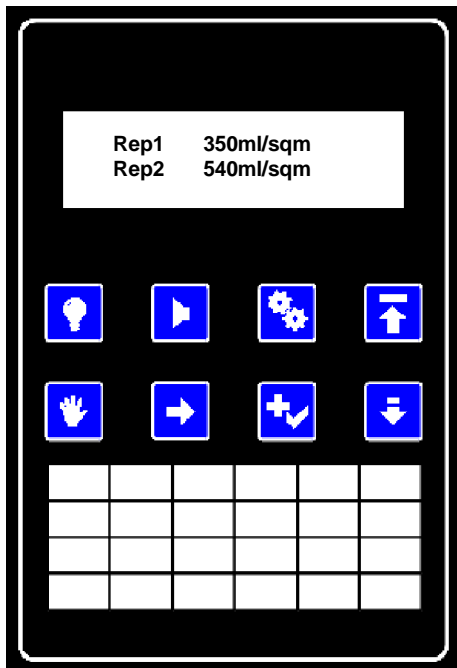
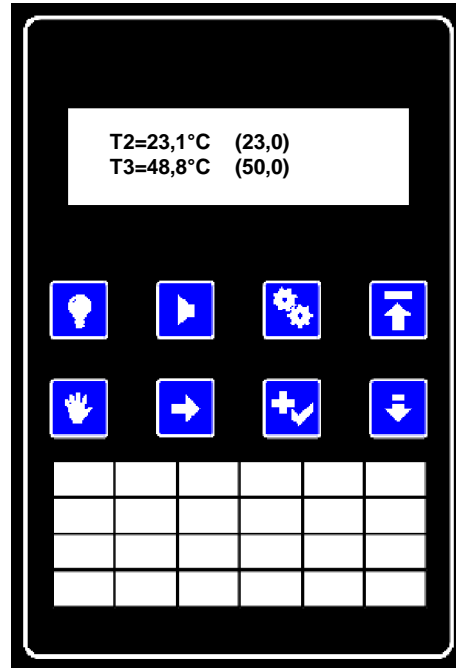
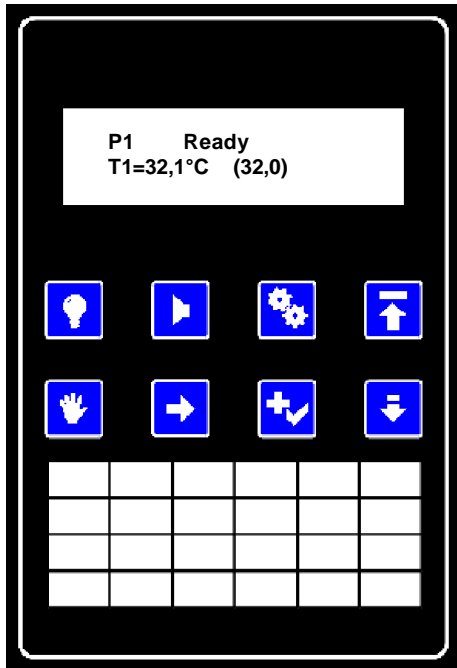


2.2.3 Automatic mode

The film processor is designed to work without operator assistance. Under normal circumstances the operator will use the front panel only to check the process parameters and progress.

To scroll through the pages, press .

Press  to jump back to main page.



P1 tells you that you are using program 1. If the film processor was started manually, the indication will be M1.

"55% Done" is the progress indicator. It means 55% of the developing process is complete. After it reaches 100%, appears **Additional run** and then the machine will switch to standby.

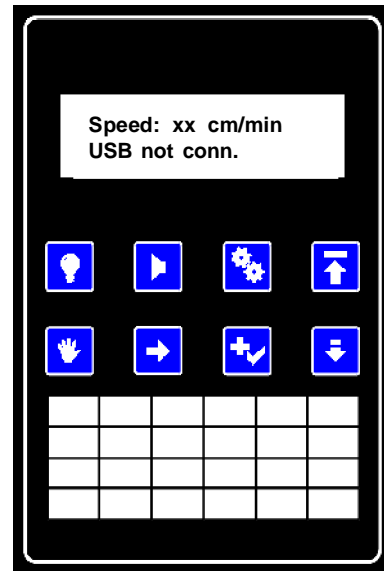
"T1=32,1°C" tells you the actually measured temperature in the tank. The value in the brackets is the programmed temperature. The same indication is available for tank 2 (T2) and for the dryer (T3).

"Rep1" and "Rep2" are the replenishment rates for the actual program.

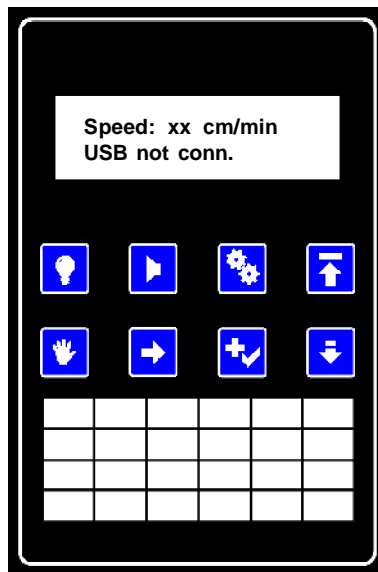
"Tank1 time" is the time the media stays in tank 1.

"Dry to dry" is the length of the complete processing cycle (leading edge to rearmost edge).

"Film Speed" indicates the linear speed of the media inside the film processor.



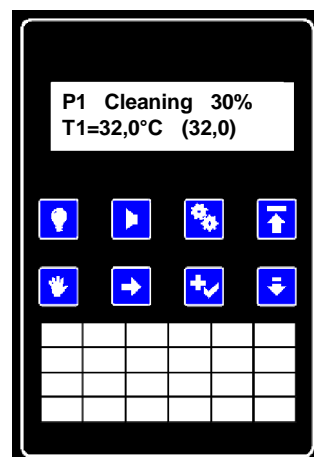
"USB not conn." ....for service personnel only








### 2.2.4 Standby Options

The film processor is equipped with an anti-oxidation and a anti-crystallization cycle. That means, when in standby, the processor will start the transport of the rollers and the wash on regular intervals in order to prevent crystallization on the rollers (Anti-crystallization). The anti-oxidation cycle activates, in free programmable time intervals, replenishment cycles. This will prevent oxidation of the the chemicals.

During such a cleaning cycle, the display will look like this.






During such a cycle the film processor will accept media. It's not necessary to wait to the end of the cycle.

Press , use  to move the cursor to "**Options**" and press , use  again to confirm "**Standby**". By using  you can scroll through the pages:

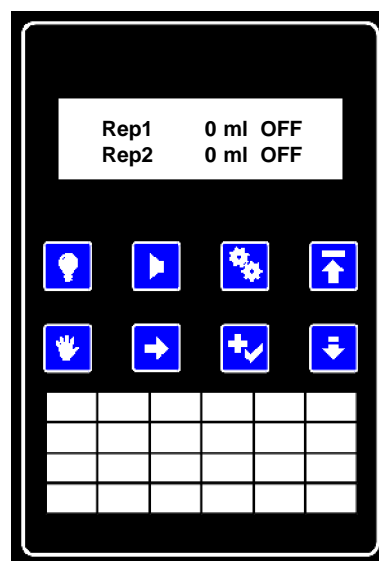
<b>SB dryer drop 10</b>	The dryer temp. is 10°C lower than the programmed value.
<b>SB replenishment 100 ml each 3 h</b>	The film processor will activate a 100ml replenishment cycle each 3 hours.(Anti-oxidation-cycle)
<b>SB self-cleaning 20cm each 10min</b>	The film processor will activate 2 roller turns (1 roller turn @ 10 cm) each 10 min.(Anti-crystallization-cycle)
<b>Save Cancel</b>	

### 2.2.5 Manual replenishment cycle



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 .


You will see:



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.

*Note: Up to 2000ml of manual replenishment or a maximum of 25min pump working time is allowed (whichever is greater).*

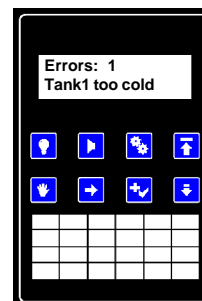
Press  to jump back to the main page.

2.2.6 Error codes

If an error occurs, the indication "P1" (or M1) will alternate with "Er". If this happens Press the **▶** button. This will stop the beeper and take you to the error menu, so you can check what kind of error is indicated. If more than one error occurred, press **↓** to view the rest of them.

Press **↵** to jump back to the main page.

When the film processor switched on at the beginning of the working hours ,it is expected to have low temperatures in the tanks. For this reason, the "Er" indication will be shown without alarm. If, however, the temperature drops during normal work, the alarm will be activated.



Error Messages:

Display	Reason
<b>Tank1 too cold</b>	A:Normal condition during heat-up period. The developer is heated until the set temperature is reached.
<b>Tank1 too warm</b>	B:If an error message is displayed: Call for qualified service personnel. Developer temperature has gone up more than 1°C above SET-temperature.Call for qualified service personnel.
<b>Tank2 too cold</b>	A:Normal condition during heat-up period. The fixer is heated until the set temperature is reached.
<b>Tank2 too warm</b>	B:If an error message is displayed: Call for qualified service personnel. Fixer temperature has gone up more than 5°C above the set temperature. Call for qualified service personnel.
<b>Dryer too warm</b>	Actual temperature in the dryer is more than 5°C above the set temperature. Call for qualified service personnel.
<b>Motor overload</b>	Sluggishly running drive/transportssystem. The drive motor does not reach it´s SET-speed. Call for qualified service personnel.
<b>Emergency stop</b>	A: Top cover of the film processor is open. Close cover. B: Emergency stop is active. Deactivate Emergency stop.
<b>T1: no probe</b>	Temperature probe in tank1 is defect or missing. Call for qualified service personnel.
<b>T2: no probe</b>	Temperature probe in tank2 is defect or missing. Call for qualified service personnel.
<b>T3: no probe</b>	Temperature probe in the dryer is defect or missing. Call for qualified service personnel.
<b>Change filter</b>	The filter medium has to be replaced. Call for qualified service personnel.
<b>Can't fill water</b>	After 20 (25) minutes, the watertank should be filled up with water, if the sensor is not reached during this time, the meassage appears. Call for qualified Service personnel.
<b>Tank1 low level</b>	The chemical level in tank1 is too low. Call for qualified Service personnel
<b>Tank2 low level</b>	The chemical level in tank2 is too low. Call for qualified Service personnel.
<b>Water low level</b>	Level of the water tank is too low. Call for qualified Service personnel.
<b>Water overflow</b>	Drain of watertank is blocked. Call for qualified service personnel.
<b>Rep. T1 low level</b>	The replenishment tank for tank 1 is empty. Refill tank.
<b>Rep. T2 low level</b>	The replenishment tank for tank 2 is empty. Refill tank.

### 2.2.7 Manual start/stop

The manual start/stop is possible only when no media is being processed. During processing the corresponding menu items are not selectable - you can't move the cursor there.

To run the motor manually:

Press  $\blacktriangledown$  use  $\blacktriangleright$  to move the cursor under "**Start**" and select it with  $\blacktriangledown$ .

This will run the motor. The menu item "**Start**" changes to "**Stop**".

You can stop the motor by selecting "**Stop**".

When you start the motor manually, this will be indicated on the main page as **M1 instead of P1**.

### 2.2.8 Display illumination ON/OFF

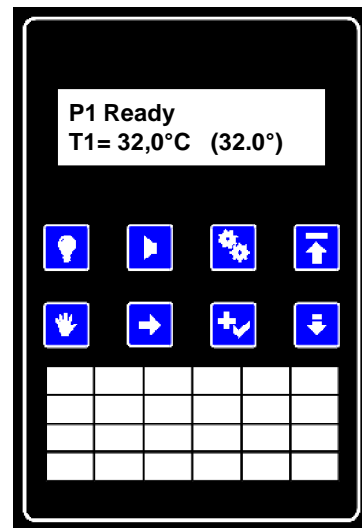
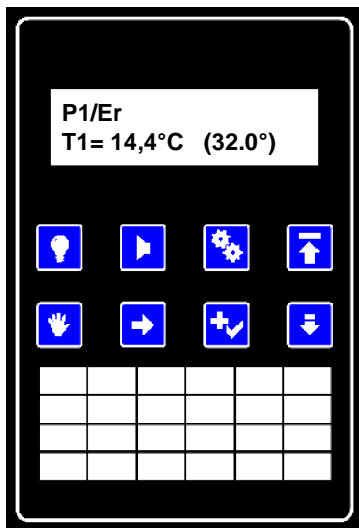
In a dark room, it might be necessary to switch off the display backlight to prevent exposure. The  $\text{lightbulb}$  button toggles the backlight on/off.

When the backlight is off, all the buttons except  $\text{lightbulb}$  are disabled.

This is done to prevent pressing buttons by accident in a dark room. Switching the display off is a good idea if the film processor is left unattended. This will reduce the chances for unauthorized people to operate the film processor.

### 2.2.9 Automatic start

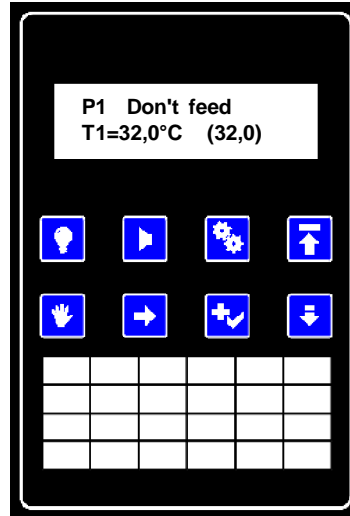
After switching on, the processor will check all processing parameters (especially the temperatures) and will start to heat up - during this period, (crossover run & heating up) no film can be processed....once the "**Ready**" message is displayed, film can be loaded.



The heat up time, very much depends on the ambient temperature.

**2.2.10 Distance between the films**

To prevent film jams, some minimum distance between the films is needed. After the end of the film, the display will show:



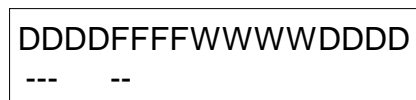
As long as "Don't feed" is present, it's not allowed to feed films. After a while "Don't feed" will disappear and a beep will indicate that the input is free again.

**2.2.11 Monitor Mode:**

The "Monitor Program" is used to check some different parameters of the film processor.

Press the button , you will see: **Start P1 Use Rep Monitor** move the cursor by using  under **Monitor** and confirm with 

The first page looks like this:



This represents the film processor: The first four DDDD are the developer tank, FFFF - fixer tank, WWWW - water and the last DDDD is the dryer.

The dashes on the second row indicate where there are pieces of material in the film processor.

The water is turned on only if there is a film in the specified portion of the film processor, that saves water and protects the environment.

Each film is tracked inside the machine. The software can track up to 70 films. Note that two films running in parallel are considered as one. For the film processor, different films are pieces of material detected by a completely free sensorbar.

**Motor Off / On  
Speed 31 001**

Motor is **On** or **Off**  
**31** speed  
**001** re-impulses from the motor

**Normal s-bar  
Area=0.0000 sqm.**

A normal 6-sensor sensorbar is recognized  
Value of the given film area until to the next replenishment cycle.

**S-bar: -----  
-----**

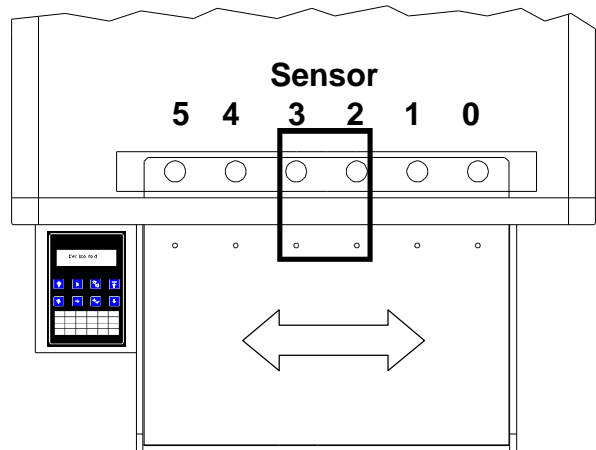
This feature is used to check each sensor of the sensor-bar. In Your COLENTA processor there are 6 sensors integrated. To check the sensors, follow the instructions underneath:  
-put a small film under the sensorbar (don't feed into the film processor).  
-move the film as shown underneath.  
-at the same time take a look at the display.

**S-bar: -----  
-----10**

That means sensor 1 and 0 are occupied

**S-bar: -----  
-----32--**

That means sensor 3 and 2 are occupied



**H1=0 H2=0 H3=1  
Fan=1 Wash=1**

H1=1 or 0	heater tank1	<b>On</b> or <b>OFF</b>
H2=1 or 0	heater tank2	<b>On</b> or <b>OFF</b>
H3=1 or 0	heater dryer	<b>On</b> or <b>OFF</b>
Fan=1 or 0	dryer fan	<b>On</b> or <b>OFF</b>
Wash=1 or 0	wash valve	<b>On</b> or <b>OFF</b>

**Refill1 0000  
Refill2 0000**

see chapter "Automatic developer and fixer tank fill" on page 28.

**Total area sqm  
0000.00**

Displays the total amount of film that was loaded into the processor.

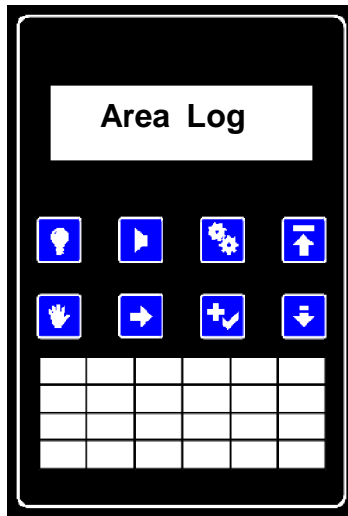
**Date: dd.mm.yy  
Time: hh:mm:ss**

Displays the date and time.

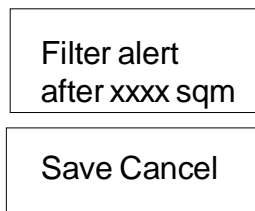


**2.2.12 Filter control:**

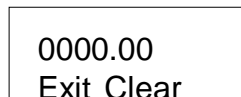
The software is equipped with a sub-program to control the filter unit of the developer:  
 Press the button  $\leftarrow$ , use  $\rightarrow$  to move the cursor under "Options", press  $\leftarrow$ , you will see  
 "Standby Refill Filter" use  $\rightarrow$  again to move the cursor to "Filter", press  $\leftarrow$ , you will see:



The "Area" menu sets the amount of square meters before the filter alert.  
 The value is 0000-9999 . A value of 0000 turns off the filter alert.



The "Log" menu shows the total area processed so far. This value is stored in the RAM.  
 The value is updated each time a replenishment is initiated. It depends on the „Replenish after“ variable from the setup.



For example if "Replenish after = 0.250sqm" , the total processed area is increased by 0.250 sq.m. at each replenishment.

At each replenishment the total processed area is checked for exceeding the alert value. When the value has been exceeded, an error message appears „Change filter“.

**WARNING:**  
 Call for qualified service personnel. The filter may be replaced by qualified service personnel only.



After changing the filter, the user must enter the programming mode menu Options/Filter/Log and clear the processed area, so that the counter restarts from 0 for the new filter.








**2.2.13 Additional features - auto fill water / auto fill chemicals (dev & fix)**

- 1 - Automatic wash tank fill / automatic wash tank draining
- 2 - Automatic developer and fixer tank fill (see next page)



**1 - Automatic wash tank filling**

This feature ensures that the water level in the wash tank is at the normal level on „start-up“ and then to drain automatically on shut down. This is done by the use of an additional level sensor in the wash tank to inform the film processor controller about the level of water in the tank and the use of an electrically controlled drain valve that will remain „closed“ when the film processor is in use and „open“ when the film processor is shut down. On morning „start-up“ the drain valve is closed and the water „fill“ solenoid is opened to allow water to pass into the wash tank until reaching the normal operation level. If the wash tank does not reach normal level within *20 minutes* (level switch not activated) the electronics will assume that there is a water supply problem and the error message "can't fill water" is displayed.


The following instructions will activate or deactivate this feature:

Press the button , use  to move the cursor under "Options", press , you will see "Standby Refill" use  again to move the cursor under "Refill", press  you will see:

Wash auto refill  
1 (1=yes,0=no)

Use  to set 1 or 0. After that procedure, use (3x)  to leave the menu, the controller will ask you : 

Save Cancel

 choose "Save" by using .

**2) Automatic developer and fixer tank fill.**





This feature automatically corrects low level conditions in the developer and fixer chemical tanks with the use of additional level switch monitoring circuits.

If any tank „low level“ sensor is activated a replenishment cycle will inject solution (\*\*XXml\*\*) into the chemical tanks until the correct tank level is reached.

\*\* XXml\*\* this amount is programmable and relates to the size of the film processor. (see the table : factory settings)


In the case of a leak in the tank or the associated circulation system and to avoid the replenishment pumps operating continuously and thereby draining and wasting replenishment chemicals there is a built in fail safe system that will disable the replenishment pumps if the level in the tank can not be reached after 2000ml of replenishment. The pump stops and the message „ Tank - Low Level“ is displayed.

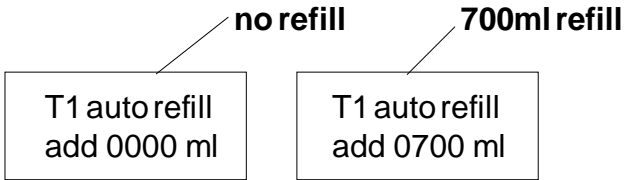
Use the following procedure to activate or deactivate the feature:

Press the button , use  to move the cursor under "Options", press , you will see "Standby Refill" use again  to move the cursor under "Refill" you will see:



Wash auto refill  
1 (1=yes,0-no)


**(page before)**

Use  (1x) you will see:



In this case, the automatic chemical tank fill function is deactivated, to activate it, you have to set a value in milliliters. To do so, use the following procedure:


Move the cursor under the "zeros" by using . To set a value, use .

To leave, use  (1x) you will see:

T2 auto refill  
add 0000 ml

Use the same procedure for tank2 as described for tank1 before.

After you set all that, use  (1x) to leave the menu, the

controller will ask you : Save Cancel choose "Save" by using .

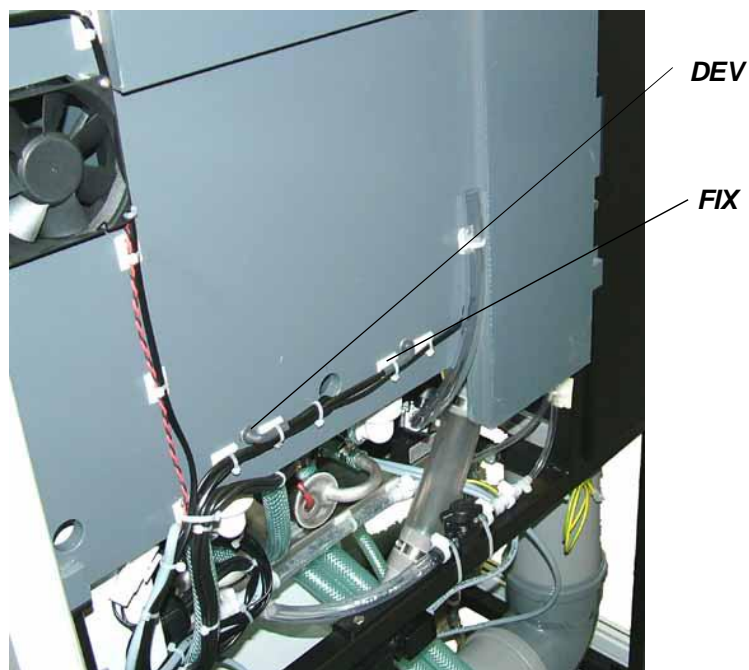
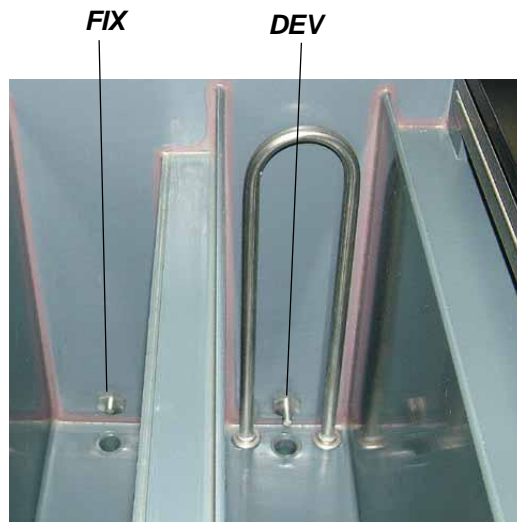
### 3 TEMPERING SYSTEM

The filmprocessor employs a indirect tempering system to maintain processing solution temperatures accurately and efficiently. This tempering system is integrated into the recirculation. This system offers more efficiency and energy-saving.

The control panel in turn activates the circulation pumps and the tempering unit. The circulation pumps mix the chemistry to ensure even temperature throughout the entire tank. The drive motor also comes on during this period, to prevent build-up of chemical by-products on the processing rack parts during period of low usage. As protection against overheating most of the filmprocessors are equipped with a „cold water“ cooling system.

#### 3.1 TEMPERATURE SENSING

The temperature probe in the tank senses the temperature change and activates the relevant heater control circuits within the main processor control system so as to maintain accurate solution temperatures.



## 4 I<sup>2</sup>C - BUS SYSTEM

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.

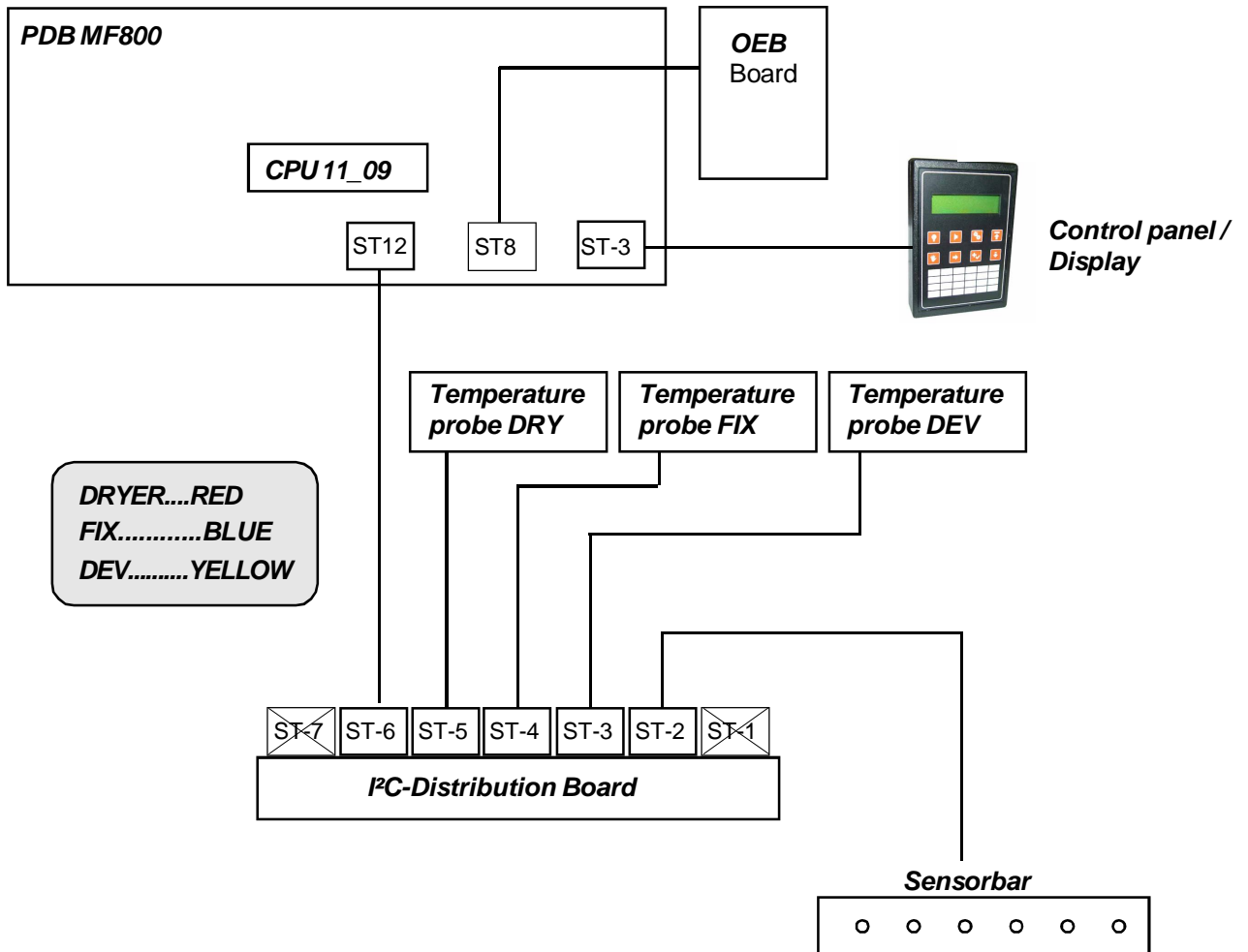
The microprocessor then compares these actual temperatures to the required programmed "set" temperatures and controls the relevant heaters/cooling systems accordingly.

<i>Bus-System</i>	<i>Measurement</i>	<i>Action</i>
Temperature probe	Developer Temp. Fix Temp. Dry Temp.	Heating/Cooling Heating/Cooling Heating
Sensorbar	Incomming film-area	Start/Replenishment/Stop

**NOTE:**

To transfer this information, a I<sup>2</sup>C - Bus System is installed.

### 4.1 OVERVIEW: I<sup>2</sup>C-DISTRIBUTION BOARD



## 5 VENTILATION

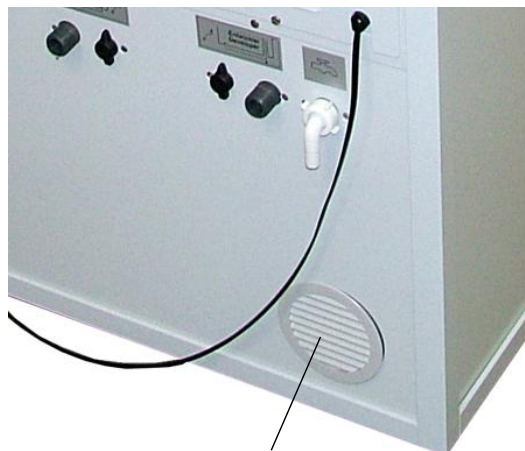
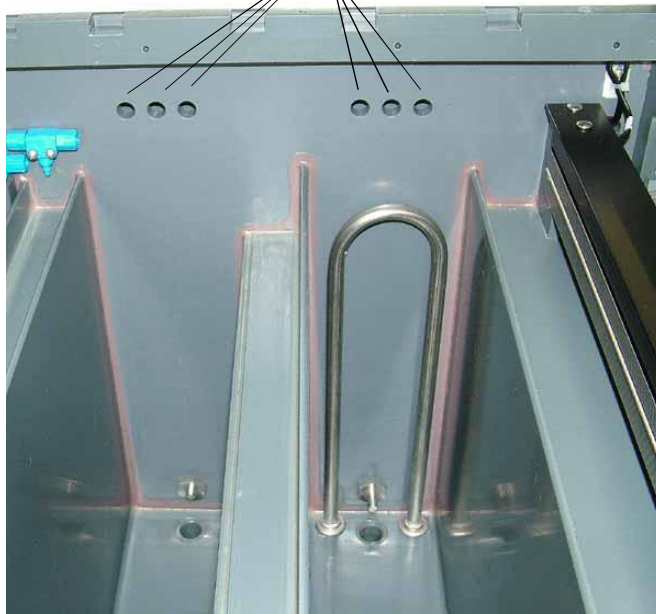
To prevent cristalization and humidity inside the filmprocessor a ventilation divice is fitted to processor.

It is recommended to connect the below mentioned tube to an external exhaust device to prevent any possible problems.

**WARNING:**

To install such a external exhaust device, is allowed for qualified Service personnel only.

*Ventilations holes*



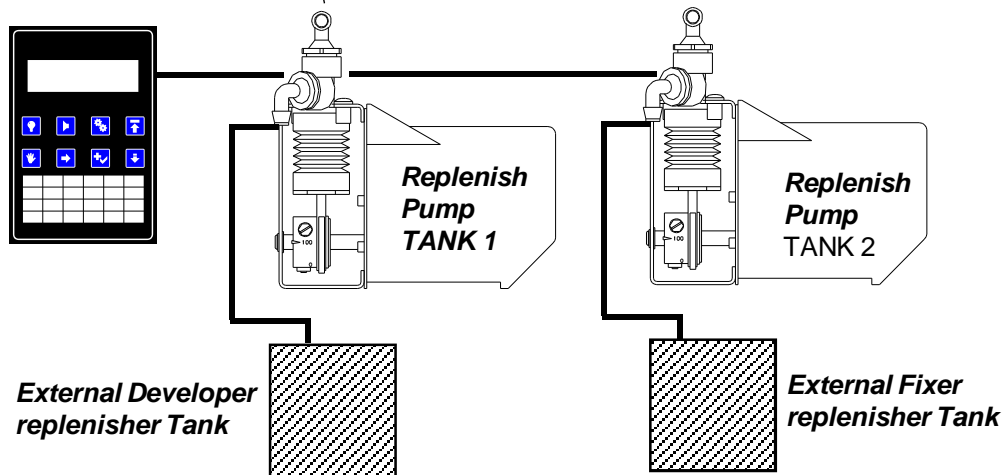
*Tube with Air Grille*

## 6 CHEMICAL REPLENISHMENT SYSTEM

Whenever photographic material is processed, chemical components of the processing solutions are used and by-products are left behind in the processing solutions.

Replenisher solutions are formulated to restore the chemistry to its original activity and to dilute the by-products to a correct level. It is therefore necessary to add the proper amount of replenisher for the amount of material that has been processed.

Performed automatically by the film processor by way of infrared sensors installed across the complete feed width of the film processor.



These sensors emit pulses of infrared light which has no effect on photographic emulsions. When media is beneath the sensorbar, the pulses are reflected and detected by the sensor. The pulses are transmitted to the control panel where they are "counted" by the microprocessor. When the number of pulses reaches the amount that has been programmed on the microprocessor, the replenishment timer function starts.

The replenishment timer runs the replenishment pump(s) for the number of seconds that have been set on the microprocessor. When the replenishment pumps are activated, the replenisher solutions are pumped through filters located at the bottom of the external replenisher tanks to the chemistry tank. The replenisher tanks are outside of the film processor.

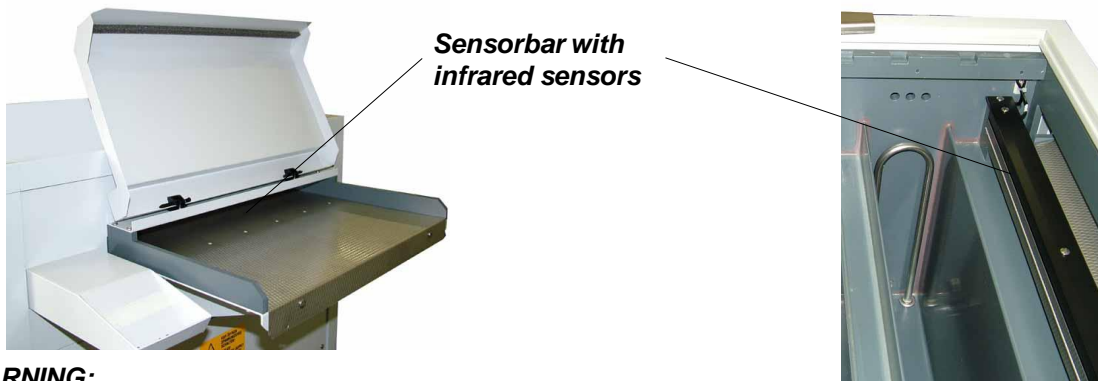
The filters should be checked monthly and be cleaned or replaced if necessary.

**WARNING:**

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

## 6.1 INFRARED REPLENISHMENT SENSORBAR

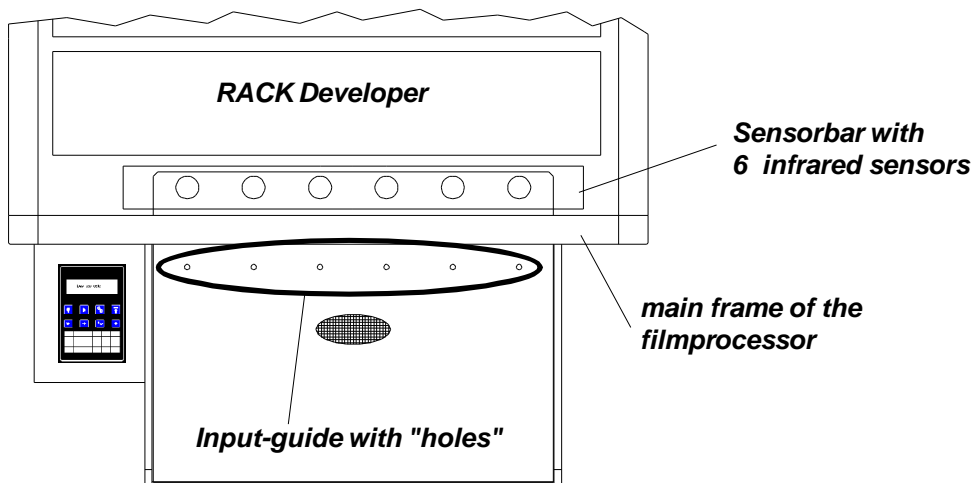
The automatic replenishment system is using an infrared-sensor-bar to detect the incoming film area. With that information the CPU of the filmprocessor will calculate the replenishment rate which will be need.



**WARNING:**

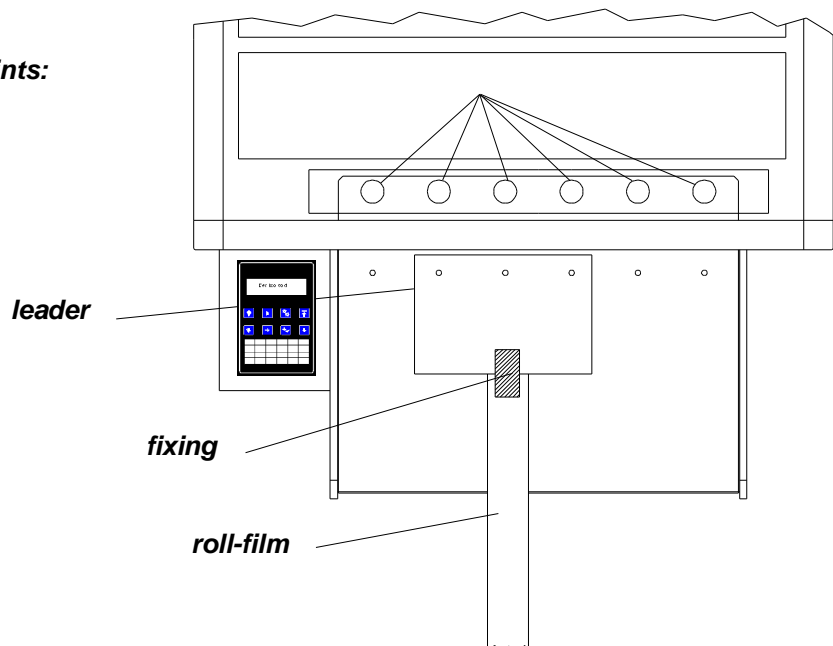
Special care must be taken to ensure that the processor entrance rollers are always clean and dry – any spillage of chemical or water onto the feed tray / feed rollers or sensor bar must be avoided. Any spillage must be cleaned immediately.

The "holes" in the film input guide show you the position of the sensors.



**To process rollfilms, take care to the following points:**

- use a leader
- take care that the film will be detect by minimum 1 sensor





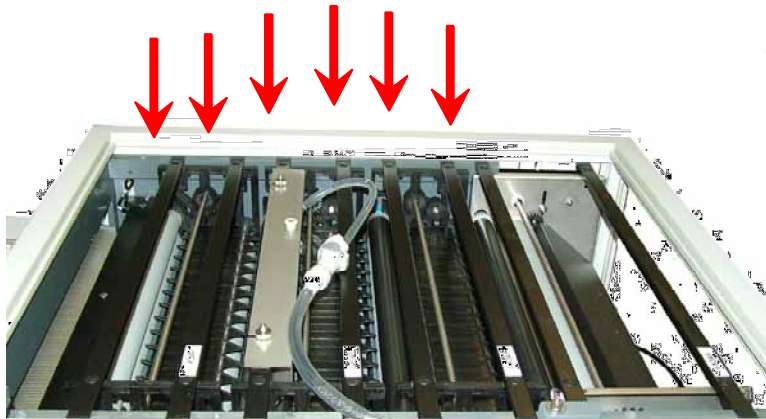
## 7 MAINTENANCE

The filmprocessor is designed to produce consistent high quality production with the minimum of maintenance. Regular maintenance minimizes the chances for equipment failure and loss of processing quality.

A well trained person has to be responsible for performing the maintenance of the filmprocessor and must be familiar with the operation and function of the processor as well.

### 7.1 DAILY MAINTENANCE

- \*) Check levels of the external replenishment tanks - If necessary mix fresh solution.
- \*) Cleaning feed tray.
- \*) Cleaning spray-bar-guide for the fixer
- \*) Before starting production we advise to feed some cleaning films to remove any overnight residue.
- \*) Use the supplied "spray-bottle" to remove any deposits from the drive gears:



Spray-bottle

### 7.2 WEEKLY MAINTENANCE

- \*) Wipe external surfaces of film processor / enclosures / panels with a wet cloth to remove any chemical / dirt deposits.
- \*) Inspect and clean the wash tank and intermediate water rins drains. If algae present then they should be removed, in such a case we suggest to use a proven algae control system
- \*) Check the shown drain pipes and overflow tubes - remove any deposits to prevent blocked of the drain.



## 7.3 RECOMMENDED MAINTENANCE EVERY 3-6 MONTHS

*(Period is subject to filmprocessor useage.)*

Good processing quality and the reliable operation of a filmprocessor is dependent upon regular and careful cleaning. Every 3-6 months, the chemicals in the tanks should be drained.

A chemical cleaning of the processing tanks and wash tank is recommended. Always follow safety warnings as described in section 1 when cleaning the filmprocessor.

***Prior to carrying out any maintenance, switch off the power at the main power switch (position "0") ensuring it cannot be accidentally switched back on.***

- \* ) Switch off the main power switch of the film processor first (position "0").
- \* ) Remove the top cover of the filmprocessor.
- \* ) Drain individual tanks by open the draitaps in front of the filmprocessor.
- \* ) Remove rack assemblies (water / DEV / FIX, see chapter 5) and put them aside.
- \* ) Close taps and fill all tanks with water or better with suitable cleaning solution until the red mark inside the tanks are reached.
- \* ) Put the racks back into the tanks of the filmprocessor and close the top cover.
- \* ) Switch on the filmprocessor and start some replenishment cycles. The hoses will be cleaned with water as well. Also start the transport of the filmprocessor, the racks has to be in. Let the filmprocessor run for 10 to 15 minutes.
- \* ) Switch off ("0" position) the main power switch of the filmprocessor and drain the filmprocessor tanks again.
- \* ) NOTE: Use cleaning solution according to the manufacturer´s instructions.
- \* ) After tank cleaning, the developer- and wash-tank should be filled twice with fresh water (eventually use neutralizer recommended by manufacturer). Let the filmprocessor run for approximately 10 minutes again. Check all external (outside of the filmprocessor) hose connectors (outside of filmprocessor) and fittings for leaks.
- \* ) Drain all tanks.
- \* ) Remove the water / DEV / FIX Racks and check for:
  - worn gears
  - damaged or worn bearings
  - loose screws
  - scratched or bent film guides
  - plastic flat springs in developer bottom underturn.
- \* ) All repairs must be carried out by qualified service personnel.
- \* ) Check the inside of the tank for contamination and alien substances.
- \* ) Clean the rollers well.
- \* ) Close the drain taps of all 3 tanks.
- \* ) Fill developer and fixer tanks with fresh chemicals to the required level (1st fixer, 2nd developer)
- \* ) Fill wash tank.
- \* ) Re-install the racks carefully. Take care of correct sequence of the racks is followed and make sure the gears are in the right position. Secure the racks.
- \* ) Insert the respective suction pipe to the correct external replenisher tank. Re-install the top cover and switch on the filmprocessor.
- \* ) Process test films.

## NOTES

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