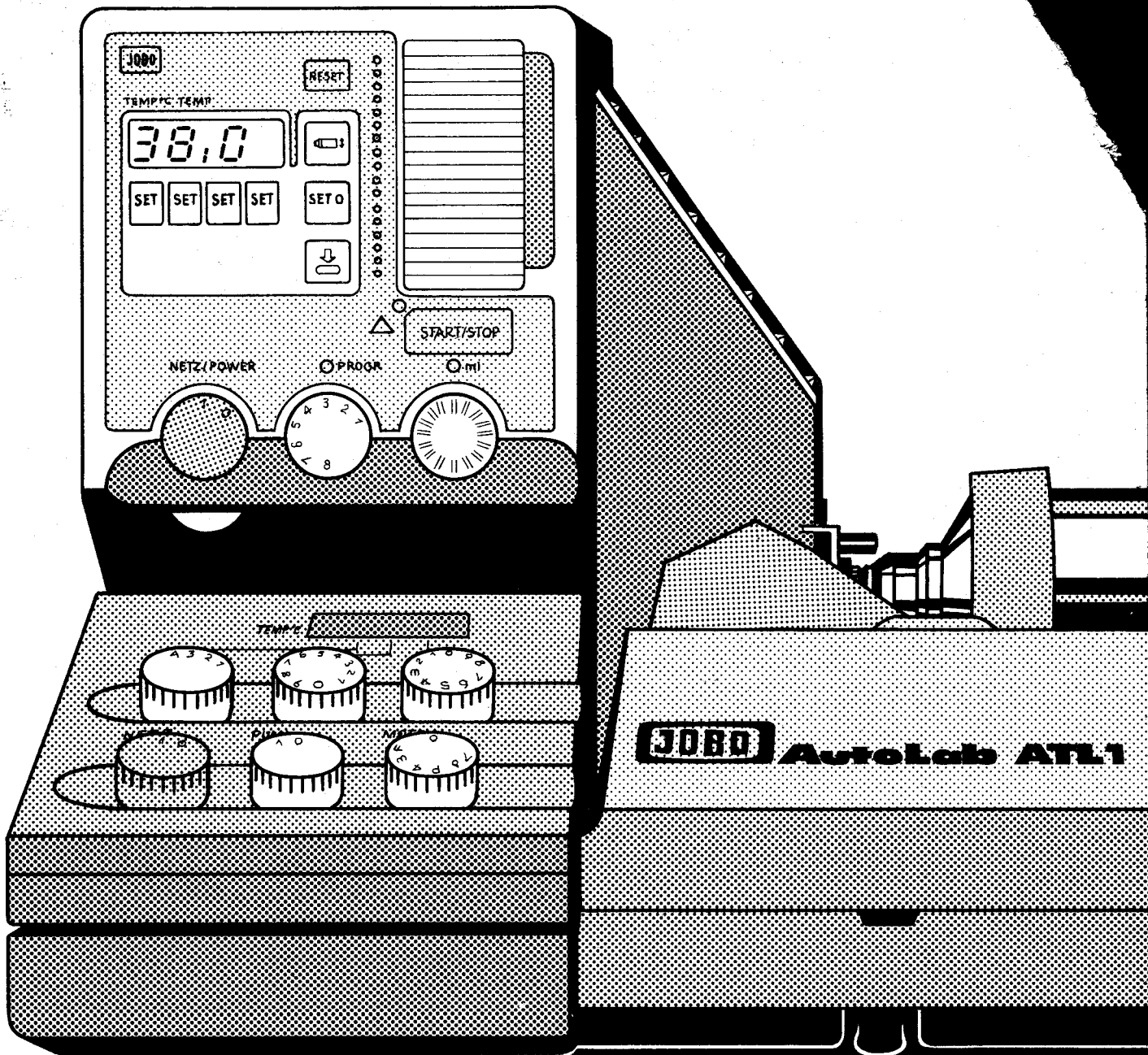
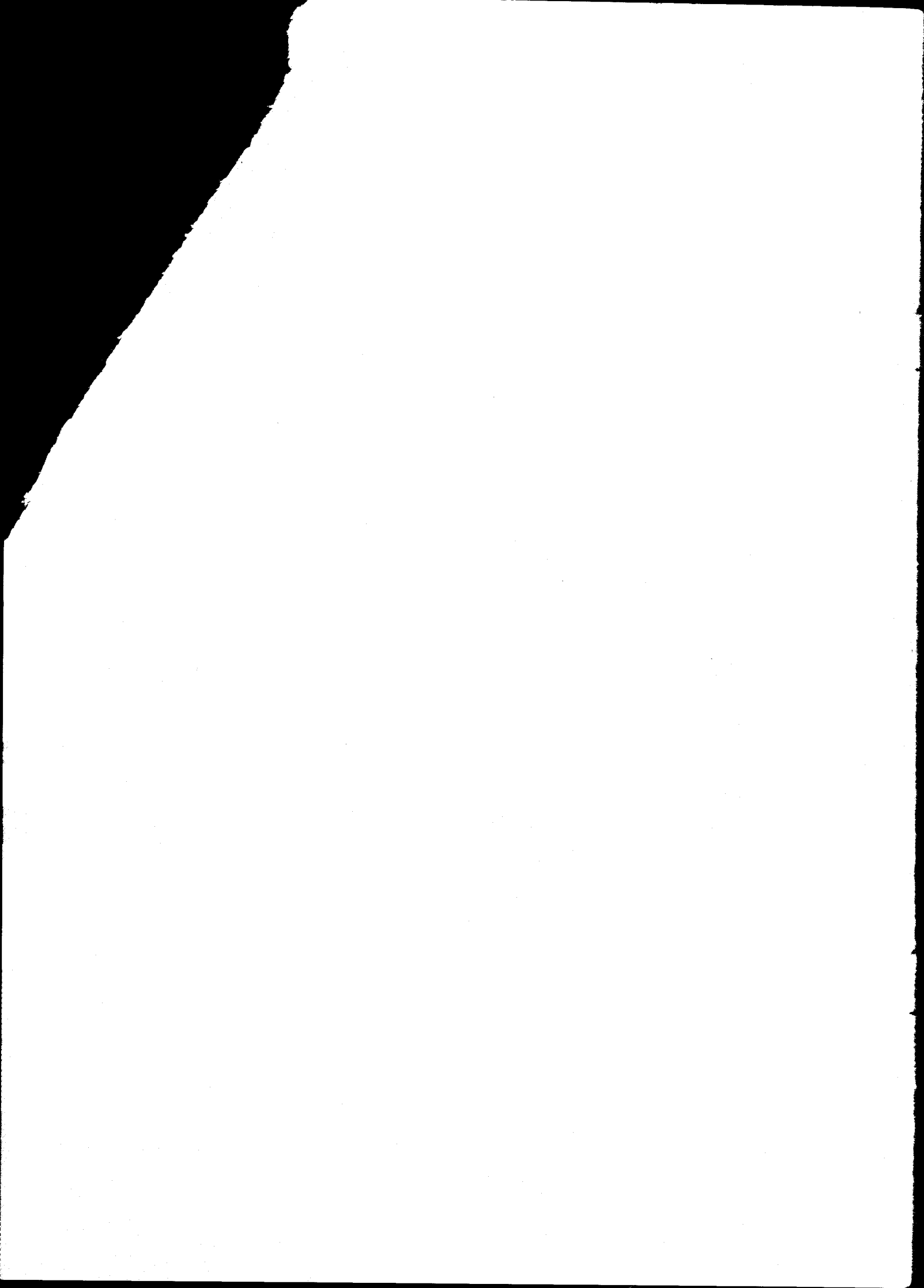




# AutoLab ATL1

## Operating instructions







# **AutoLab ATL1**

The fully automatic, professional processor for films and paper.

## **Four Outstanding Features:**

### **1. Quality of processing due to:**

- processing within manufacturers tolerances
- consistent results
- fully automatic processing including final rinse

### **2. Economy**

- only 1 Liter of stock solutions
- short warm-up time
- low power consumption
- maximum use of the chemicals with JOBBO tank and drum systems. Individual film processing as well as larger quantities
- automatic separate collection of used chemicals

### **3. Versatility, because it can handle**

- all common processes,
- all common materials,
- sizes up to 50 x 60 cm (20 x 24 inch) and disc films can be processed.

### **4. Experience**

For many years JOBBO has been successfully developing, designing and building darkroom equipment and processors. This experience stands behind the Autolab ATL-1.

A word from professional to professional:  
You can trust the AUTOLAB ATL-1.

# How the JOBOL Autolab ATL1 works!

The JOBOL AUTOLAB ATL-1 is a microprocessor-controlled, fully automatic processing unit.

It can be universally used for film and paper processing and for disc films, too. With its individual combinations of processing drums and chemicals the Autolab ATL-1 offers a flexibility unknown so far and the possibility to carry out different processes immediately one after the other. The automatic bath changes ensure an absolute constancy of time. At the same time the economy of the drum rotation method is fully maintained. All JOBOL System tanks and Jobodrums that have a cog lid can be used. Pump pressure is transmitted to the stock bottle through a separate pressure hose so that corrosive chemicals do not get into contact with pumps or valves. A collecting device for used solutions permits the utilization of multiple-process chemicals or regenerating preparations. The rinsing water is exactly tempered in a built-in heat exchanger. Apart from the pre-rinse, all rinses are carried out cyclically, about every 40 seconds the rinsing water is exchanged. In the case of sheet film development, an additional rocking movement guarantees maximum uniformity of results. The AUTOLAB ATL-1 is designed for 6 x 1000 ml stock solutions. Tempering is carried out with the proven water-jacket method. Thus stock solutions and tank/drum are kept at a constant temperature.

In order to avoid operating faults we recommend you familiarize yourself with the apparatus by means of the following operating instructions.

## Techn. data

**Height: 55 cm (22 inches)**

**Length: 122 cm (48 inches)**

**Width: 44 cm (17½ inches)**

**Weight empty: approx. 15 kg (35 lbs)**

**Voltage: 220 V/50 cycl., 240 V/50 cycl. or 115 V/60 cycl.**

**Connected load CPP 2: 880 W at 220 V, 1.050 W at 240 V or 440 W at 115 V**

**Connected load AT: 75 W**

**Heating-up time 20°C - 40°C: approx. 1 h**

## Outfit includes

- Autolab ATL-1 consisting of:
  - processor CPP 2, automatic unit AT 1
- collecting device consisting of: base, connecting column with threaded rod, collecting through and hood
- 1 power cable
- 4 wide neck bottles 1000 ml white with screw cap
- 2 wide neck bottles 1000 ml black with screw cap
- 6 collecting bottles 1000 ml
- 1 front cover
- 1 spirit level
- 1 set of magnetic process cards
- 2 nylon screws
- 1 set of spare fuses
- 3 spare tank gaskets for cog 1505

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# 1 Assembly of the ATL 1

The JOBO AUTOLAB ATL-1 consists of three main parts which are not screwed together until unpacking in order to ensure safe transportation.

## .1 Colorprocessor CPP 2

for rotation of the drums and tanks and tempering the water jacket.

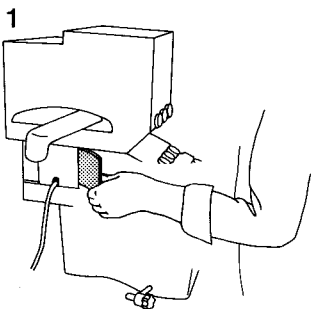
## .2 Automatic unit AT 1

is mounted on the CPP 2 and controls the process steps.

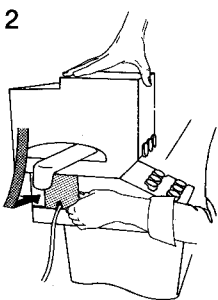
## .3 Collecting device

is mounted on the automatic unit and ensures separate collection of the used chemicals.

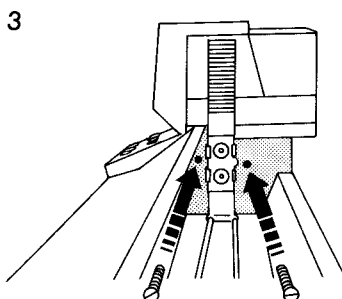
### Mounting



Before mounting, remove the cardboard strips (transport protection) on the side between CPP 2 and automatic unit.

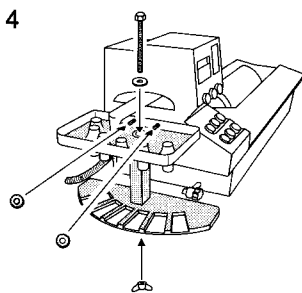


Place automatic unit on the motor head of the CPP 2, until the clamp (see arrow) catches.

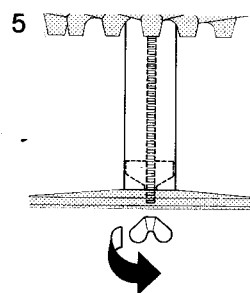


By screwing in the two screws (supplied) on the left and right of the cog wheel of the motor head both parts are connected to each other. (First press screw in to the stop, then tighten.) Please note that the sealing washers glued onto the screwing points must not be removed.

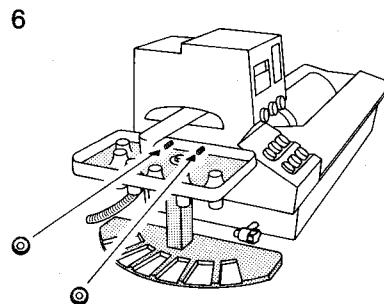
### Mounting the chemical reclamation device



The reclamation device consists of base, connecting column with threaded rod, reclamation trough and hood.



Base and reclamation trough are connected by means of the column by loosening the thumb screw, passing the threaded rod from the top through reclamation trough, column and base and fastening the thumb screw again under the base.



Before mounting the hood, which has numbers on it, the reclamation device is fastened to the head of the unit. For this the knurled nuts on the left of the head are screwed off, the collecting device put onto the trough and screwed tight again.

The solution distributing arm should now be exactly positioned between the third and fourth opening from the front.

# 2 Set up and installation of the unit

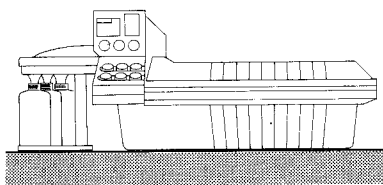
## .1 Set up

## .2 Electrical connection

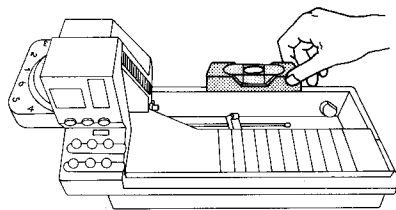
## .3 Water connection

## .4 Water outlet

### .1 Set up

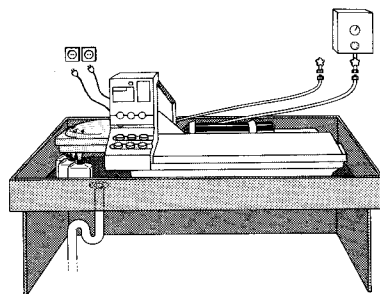


ATL-1 and reclamation device must stand on the same level because otherwise the solution distributing arm knocks against the collecting trough when it is swivelled.



Set up lab trough/lab table horizontally by means of the leveling wedges and the spirit level.

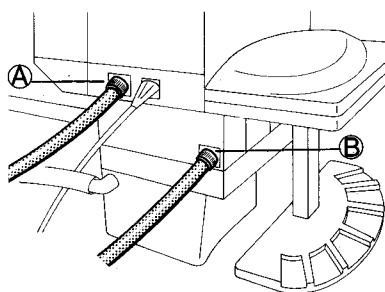
### .2 Electrical connection



Plug the mains (power) cable into the socket on the back of the AT-head. Plug both mains (power) cables into earthed safety (grounded) sockets to connect power.

### .3 Water connection

In order to make full use of the possibilities of the unit you need a tempered water supply and a cold water connection. The pressure of the warm water supply must not be lower than 1 bar. (15 p.s.i.)



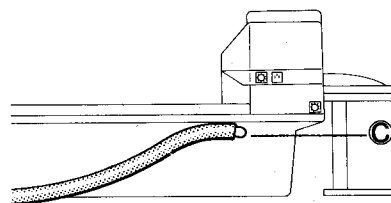
Note: Tempering units are available to match the ATL-1 requirements (Consult your dealer)

On the back of the ATL-1 two  $\frac{3}{4}$ " hose fittings can be found. The top one (A) should be connected to a warm water source. The bottom one (B) should be connected to a cold water source. Any pressure hose with a  $\frac{3}{4}$ " fitting, such as a "washing machine hose" is suitable. Rapid action couplings (e.g. Gardena Systems) have also proven useful.

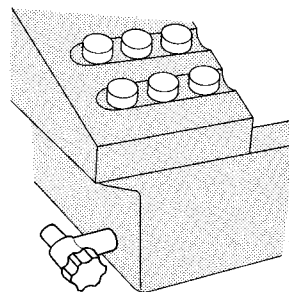
Please note for sandy or chalky water use of a water filter is required.

### .4 Water outlet

If the apparatus is not set up in the trough of a lab table with a drain, suitable measures must be taken to drain the used water. The rinsing water is led off through the flexible hose of the collecting device. It can therefore easily be led into an appropriate collecting container.



The overflow nozzle (C) of the water jacket is on the back of the appliance, somewhat below the motor head. To lead off the overflow water a PVC hose with an inner diameter of approx. 2.5 cm can be attached to the overflow nozzle and be fastened with a hose clamp.

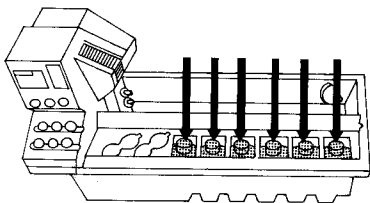


For draining the entire water jacket the drain cock is used, which you will find at the bottom on the left hand trough side. Please remember to close it again before filling the water jacket!

# 3 Preparations for operation

- .1 Putting in the solution bottles
- .2 Connecting the bottles
- .3 Putting in the collecting bottles
- .4 Filling the water jacket
- .5 Adjusting for tempered rinsing water

## .1 Putting in the bottles



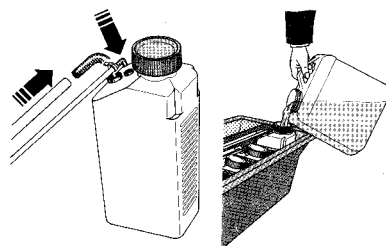
Remove bottle cover(32). Put in filled JOBO scale bottles from left to right in process order. For instance 6 x 1 l for E-6.

It is recommended to always fill solutions of the same kind into the same bottles, for instance b/w developer 1st bottle, colour developer 3rd bottle, fixing bath 6th bottle.

By doing this, the risk of contamination in different processes can be avoided. For handling the chemicals please observe the instructions of the manufacturers.

To protect your skin from contamination we recommend JOBO laboratory gloves. (Art. No. 3344/45)

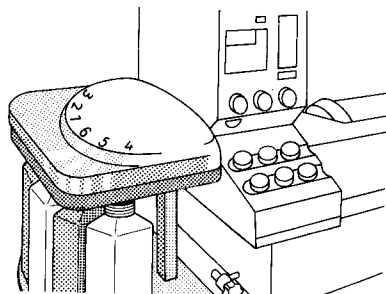
## .2 Connecting the bottles



Firmly screw on bottle lid, press air hose and elbow and push solution feed hose onto rising pipe(37).

**Attention:** Leaks in the compressed air system lead to reduced filling quantities.

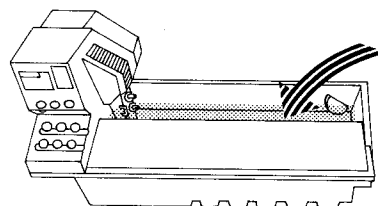
## .3 Putting in the collecting bottles



Put collecting bottles into the collecting device according to process order.

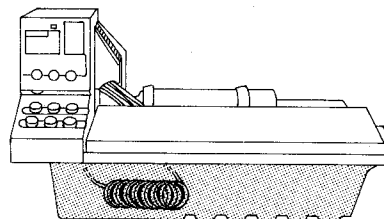
**Attention!** Observe numbering on the collecting device, 1st bottle under pos. 1 etc.

## .4 Filling the water jacket (close drain cock first!)



Manually fill the water jacket until the shoulders of the scale bottles are covered, switch on the mains (power) switches(4) and(30) as well as the pump switch(29). To avoid the condensation of humidity in the ATL-head always switch on/off the control head (switch 4 ) and the processors (switch 30 ) together.

## .5 Adjusting for tempered rinsing water



Set your warm water apparatus approx to the desired rinsing temperature.

Through the heat exchanger of the ATL-1 the rinsing water is brought to the exact process temperature. Before beginning to work, i.e. before coupling on the tank/drum, simultaneously press the buttons 5 + 6 in order to let the cold water out of the head.



# 4 Adjustments for operation

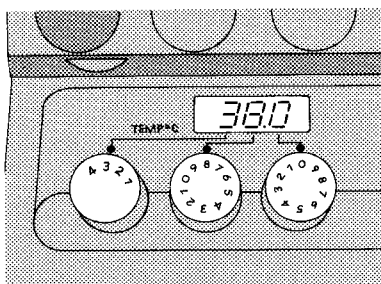
- .1 Switching on the unit (CPP-2 and AT-1 head)
- .2 Adjusting the temperature in the water jacket
- .3 Adjusting the water level in the rotation trough
- .4 Adjusting for drum/tank system
- .5 Adjusting the bearing block
- .6 Adjusting the rotation speed

## .1 Switching on the unit

Switch on mains (power) switch(30) and pump switch(29) for heater/pump on the processor, and mains (power) switch(4) on the control head.

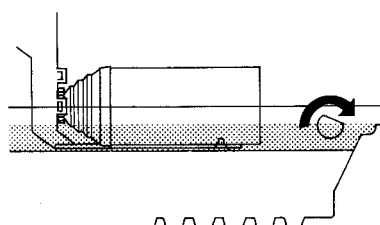
Press Reset button(14). (Flashing warning triangle(28) goes out).

## .2 Adjusting the desired process temperature



The temperature control consists of 3 knobs(27) as a functional unit in connection with the digital display(26). It is turned on/off by the pump switch(29). This three-digit display indicates the exact temperature of the water jacket which flows around solution bottles and tank/drum. The first knob is for adjusting the decades 10, 20, 30 and 40°C. With the second knob the figures from 0-9°C are selected. The third knob is for the tenths of degrees. Due to the high accuracy of the electronic measuring and the quick reaction of the thermostat, the digital display may sometimes indicate temperature variations up to 0.2 of a degree. However, these variations will in no way affect the accuracy of the water jacket.

## .3 Adjusting the level of the water jacket



On the right hand side of the rotation trough there is a water level regulator(34), with which the water level in the rotation trough is adjusted.

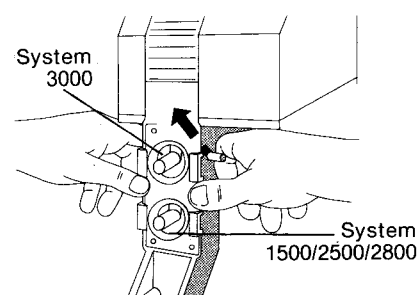
Adjust the level so that the tank/drum is as deep as possible in the water jacket, without floating.

## Cooling

If the surrounding temperature is higher than the set process temperature or if a quick change to a low-temperature process is required, an automatic cooling process starts. Upon starting of the cooling program, a thermostatically controlled solenoid valve opens and releases cold water. (Connection see page 6,2.3). Cooling starts approx. 30 secs after the set temperature is exceeded.

**Attention:** Because of the natural temperature gradient the temperature in the water jacket may be slightly above that in the bottles. This difference is already accounted for in the thermostatic control so that the temperature displayed digitally corresponds with that in the solution bottles.

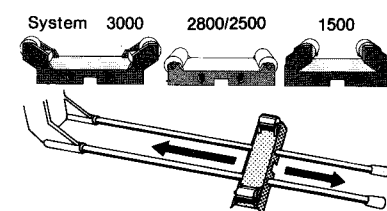
## .4 Adjustment for tank/drum system



Firmly press down the selector levers(33), located right and left of the coupling flanges, if you use the systems 1500, 2500, 2800. When using the system 3000, pull them upward. Make sure that they are firmly engaged.

**Attention!** When using system 3000, the bottle cover(32) to protect the chemicals hoses must be in place.

## .5 Adjusting the bearing block



Adjust the bearing block for the tank/drum being used and position it on the lifting arm tubes of the Autolab depending on the tank length.

## .6 Adjusting the rotation speed

With the motor switch(35), rotation speeds from approx. 20 rpm up to approx. 90 rpm can be adjusted. The position marked P is the rotation speed recommended by JOBO.

# 5 Programming

- .1 Preparations for programming
- .2 Programming in general
- .3 Entering the solution bottle amount
- .4 Entering the process temperature
- .5 Entering the individual process times

## .1 Preparation for programming

Eight magnetic process cards are enclosed with the unit. These cards are numbered at the top from 1 - 8. That means that for each of the eight possible, different programs you have a separate card at your disposal.

Write onto these cards the data for the process, for instance, temperature and the times of the individual process steps.

It is important to observe the correct order, since the process will later run down in the same order.

Process: E-6 <b>2</b>		Process: C-41 <b>3</b>	
Temp.	38.2	Temp.	38.2
Pre-heat	5:00	Pre-heat	3:30
Pre-rinse	---	Pre-rinse	---
Solution 1	6:30	Solution 1	---
Rinse	2:30	Rinse	---
Solution 2	2:00	Solution 2	---
Rinse	---	Rinse	---
Interm. exp.	---	Interm. exp.	---
Solution 3	6:00	Solution 3	3:15
Rinse	---	Rinse	---
Solution 4	2:00	Solution 4	---
Rinse	---	Rinse	---
Solution 5	6:00	Solution 5	6:00
Rinse	---	Rinse	3:15
Solution 6	4:00	Solution 6	6:00
Rinse	6:00	Rinse	3:00
End		End	

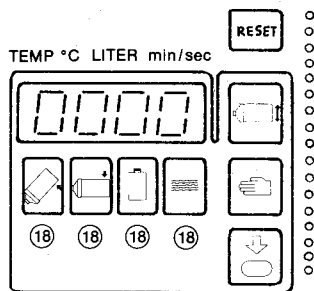
First select the correct process number. Then write the intended process temperature in the line »Temp«. This is followed by the times for the individual baths and rinses. All given steps that you don't require should be marked with a dash! Examples for the marking of the magnetic cards can be found in the illustrations above.

## Programming in general

Press Reset button(14), turn selector switch Set/Run(1) to position »SET« (program).

Switch (power) on the unit with the mains switch(4), place the prepared magnetic card in the process card area, set the program number on the program selector switch(2).

Always use the number of the inserted process card. For programming the first process, the data of which you have noted on the adhesive card with the number 1, set the program selector switch(2) to position 1. When entering further programs always set the number of the prepared adhesive card on the program selector switch(2). This is important to ensure that later, during the actual process run, the inserted magnetic card is always accompanied by the corresponding program (and no other).



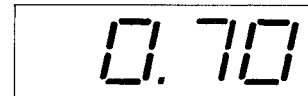
Values for each process item are entered by pressing the entry keys (18) below the digital display (10). One key is located beneath each digit of the display and is used to enter values for that digit. Values are entered by repeatedly pressing a particular key until the desired value is displayed in the corresponding digit. For now ignore the additional symbols on the keys, these additional functions (currently disabled in the "set" mode) will be explained later.

Now the following are entered consecutively:

- quantity in the solution stock bottles
- process temperature
- the times of the individual process steps

## .3 Entering the quantity which is in the stock bottles:

For this first press the RESET key 14. Now no light must be showing in the row of control lamps(15) left of the magnet card. If necessary press the RESET key(14) once more. Now 3 digits are showing in the digital display 10.



The value for the solution quantity in the stock bottles is always indicated or entered in litres, with two decimals behind the comma.

Examples:

- Stock solutions 700 ml - display 0.70
- Stock solutions 1000 ml - display 1.00
- Stock solutions 150 ml - display 0.15

By pressing the entry key(18) the desired value is transmitted to the display.

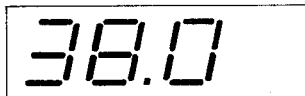
Afterwards the ATL-1 always deducts the used quantities from this figure. Then if the stock volume is less than the selected quantity, the programme will not commence and the warning light and buzzer are activated.

# Programming 5

## .4 Entering the process temperature

Press step key(20) once.

After that the top red control lamp(15) lights up next to the line in which you have noted the desired process temperature »Temp«. At the same time the word »Temp °C.«(11) lights up above the digital display. In the digital display(10) 3 digits are displayed again.



The process temperature is always indicated or entered in degrees centigrade with one decimal after the comma.

Example: 38°C - display 38.0

Now transmit the required temperature value to the display again by means of the entry keys (18).

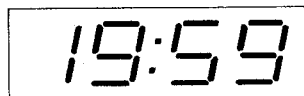
Remark: If the additional rocking movement is to be entered (only for sheet film processing in the tank system 3000), this is done at this point by pressing the key(17). The warning triangle(23) lights up. By repeated pressing of the key(17) the rocking movement is cancelled. For further information see Chapter 8 »Special functions« under the point »Key for additional rocking movement«.

## .5 Entering the individual process times

By pressing the step key(20) once the next step mentioned on the magnetic card is carried out. Now the control lamp(15) next to the line »Pre-heat« lights up. That means that you can now enter the time for pre-heating the tank/drum.

In the digital display(10) 4 digits are indicated now, two of which are set off by a colon. The illumination of the words »min/sec« (13)

above the digital display(10) indicates that the time values are indicated in the display.



The time values are always indicated or entered in minutes and seconds. The digits before the colon indicate minutes, those after the colon seconds.

Example:

2 minutes, 30 seconds - display 02:30  
40 seconds - display 00:40  
19 minutes, 59 seconds - display 19:59

Now enter the desired time required for pre-heating by means of the entry keys (18).

Important:

If there is one or more of the given process steps which you do not want to use (marked with a dash on the magnetic card), you must enter the value 00:00 with key(19) when programming the respective step. These steps are simply skipped during the process run.

By once more pressing the step key(20) the next process step can be programmed, which is indicated by the next control lamp(15).

In this way, one by one the times are now entered for each step mentioned on the magnetic card.

For a better understanding, the control lamps(15) differ in colour for the individual steps:

- red lamps for temperature, pre-heating, intermediate exposure and end,
- green lamps for rinses and
- yellow lamps for solutions

After having entered all values, you can once more check all programmed values.

To do this first press the RESET key(14). Now the quantity of the stock solutions is indicated which you have programmed first. With each pressure on the step key(20), the value you entered for the next step is indicated.

Once more compare all stored data with the prepared magnetic card for the process. If you notice a mistake you can immediately correct the wrong figure by means of the entry key(18).

If all entered values are correct, turn the function selector switch Set/Run 1 to position »RUN«. With this, programming is switched off, so that entered values can not be changed.

Note:

All entered values are stored in an battery-backed-up RAM. In normal service the battery is always charged so that stored values will be maintained up to 3 months after switching off the mains (power).

# 6 Starting the process

## .1 Setting the filling quantity

## .2 Selecting the program

## .3 Starting the process

- Switch on mains (power) switch 4
- Selector switch(1) in position »Run«, press Reset key(14)

As a protection against erroneous actuation of the key area now only 3 functions are left to be operated:

### .1 Setting the filling quantity

- Set the desired filling quantity with the filling quantity switch(25).

If the stepped values of the ATL-1 do not correspond with the required quantities of the tank/drum, the next higher value should be set. If the volume of chemistry remaining in the bottles which is shown in the digital display is lower than the filling quantity set with the filling quantity switch(25), the process cannot be started: Refill the bottles, enter new chemistry amount and switch(1) to »Run«.

### .2 Selecting the program

- With the program selector switch(2) the process stored under the corresponding number is called up. It is recommended to insert the matching process card(16).

Check:

- Right program selected?
- Filling quantity set?
- Solution quantity sufficient?
- Actual quantity in bottles programmed into the display?
- Rinsing water supply opened?

Couple on tank/drum

Select rotation speed with motor switch(28) (approx. values under »Processing instructions«)  
Now the ATL-1 is ready to start.

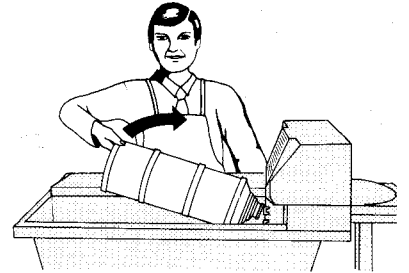
### .3 Starting the process

- Press Start key(22). "set temperature" appears on the display.
- If the set temperature is the same as the indicated actual temperature on the CPP 2 display(20), once more press the Start key(22).

All processes without intermediate exposure run automatically until the »End« signal sounds.

Upon actuation of the Start/Stop key(22) the selector switches for program(2) and filling quantity (25) are ignored so that no more changes are possible.

Exact monitoring of the process run is possible by means of the LED row(15) next to the program cards. The running processing time can be watched on digital display.



- Upon process end, press Reset key(14) and lift off tank/drum obliquely upwards.
- Take out processed material.

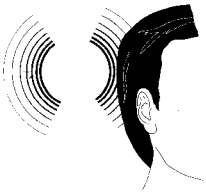
Take films out of tank and reels and pull through the final bath 2 to 3 times. (Tank and reels must not contact the wetting agent bath.) The ATL-1 is now ready to start the next process. The remaining stock solution is calculated and indicated in the display.  
If you do not continue working, the two water faucets must be closed to keep the connecting hoses pressureless.

- Changes during the program run see chapter 8.5, page 14.

# 7 Faults

Troubles are indicated with an acoustic signal and the LEDs.

## .1 Indication



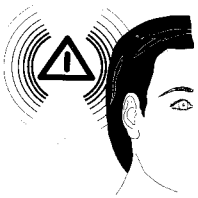
After the start of the process the buzzer sounds in the process step Temperature. Upon repeated pressing of the Start/Stop key the program returns to the initial waiting position and the display shows 0.00.

## .2 Causes

The set filling quantity on the switch(25) is greater than the displayed filling quantity in the stock bottles.

## .3 Remedies

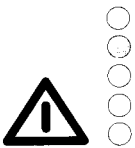
Put in new solutions; program the new solution quantity. Start process anew.



During a process, a process step does not run, warning lamp(23) lights up, buzzer sounds.

No solution in the stock container of the indicated process step.

Put in new solution. Continue the process by pressing the Start key(22).



In spite of proper process run the warning lamp(23) lights up and additionally, one (or several) yellow process step control lamps light up.

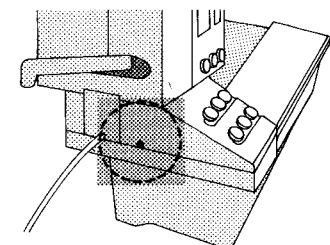
Too little solution was fed in the process step where the LED flashes.

Refill solutions before starting the process anew.



Warning lamp(23) flashes.

Mains (power) failure during the process run. (If it is a failure of only a few seconds, this does not have any consequence.)



By pressing in the pin on the overheating safety switch the processor can be put into operation again after it has cooled down.

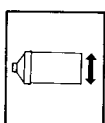
Processor does not heat up.

Overheating, e.g. operation of the heating without water jacket.

# 8 Special functions

- .1 Additional rocking movement
- .2 Intermediate exposure
- .3 Manual operation
- .4 Changes during the process run
- .5 Pre-rinse
- .6 Intermediate/final rinse

## .1 Key for additional rocking movement



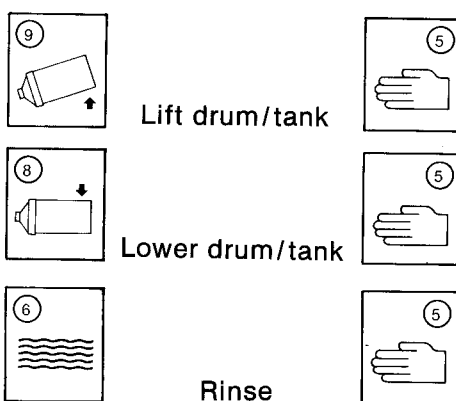
To increase uniformity during sheet film processing from 13 x 18 cm upwards (important for smooth backgrounds etc.) an additional rocking movement can be programmed with the rotation. When programming (see process entry) additionally key(17) is pressed in the process step »Temperature« (first red control lamp(15) lights up), the warning lamp(23) lights up. By repeated pressing of key(17) the storage can be cancelled.

## .2 Intermediate exposure

If an intermediate exposure is to be made, this is first entered together with the program (see Chapter \*5.5). During the process run a buzzer sounds when this process step is reached. Now press the Start/Stop key: The set time for intermediate exposure runs in the digital display.

Uncouple drum/tank and carry out intermediate exposure manually. After the set period of time, the buzzer sounds again. Recouple tank/drum, press Start key(22) — processing is continued.

## .3 Manual operation



By *simultaneous* pressing of the double function key(5) and one of the keys 6, 8, 9, the individual process steps can be carried out manually.

## .4 Changes during the process run

After the start of a process and unless the solenoid valve/filling pump is in operation or the lifting arm for emptying is lifted, the following changes can be made during or after a process step:

### .4.1 Entering/Cancelling of the rocking movement

Set selector switch Set/Run(1) to SET. By pressing the key(17), enter or cancel the rocking movement. When the rocking movement is programmed, the warning triangle(23) lights up. Afterwards set selector switch Set/Run(1) to RUN again.

### .4.2 Changing the filling quantity

First set filling quantity switch(25) to the desired filling quantity, set Set/Run switch(1) to Set and then again to Run. If the newly set filling quantity is greater than the quantity set originally, the difference between the old and the newly entered filling quantity is fed into the tank. If the newly set filling quantity is smaller than the quantity set originally, the smaller quantity is fed into the tank in the next process step.

### .4.3 Correction of process step time already running

Press Start/Stop key(22), so that the green control lamp(21) lights up. Set Selector switch Set/Run (1) to SET. In the digital display(10) now the previously programmed process step time appears. (Internally, the interrupted time continues running as long as the selector switch Set/Run remains on SET.) Now the process step time can be changed with the keys(18) or set to 00:00 with key(19). After changing the selector switch Set/Run (1) to RUN, the difference between newly programmed time and the time already run down is calculated and displayed and the process step is continued with the changed time. Finally press Start/Stop key(22) so that the green control lamp(21) goes out.

# Special functions 8

## .4.4 Entering/Cancelling of individual process steps

Press Start/Stop key(22) so that the green control lamp(21) lights up. Allow the current process step to run down (possibly reduce process step time as described under 3) and set selector switch(1) to Set after the tank/drum is emptied. Select the process step to be changed with the step key(20) and carry out the program alteration with the entry keys(18) or Set 0 key(19).

All process steps up to the last rinse can be changed in this way. If in the last rinsing process step the step key is pressed again, there is a leap back to the process in which there was an interruption. (Not after »End«). Also, if somewhere in a later process step the switch is set from SET to RUN, there is an automatic leap back into the process step where the interruption was. It is not possible to leap back into process steps already run down.

After changing from SET to RUN and actuating the Start/Stop key (green control lamp 21 out again) the process is continued with the altered times.

The changes mentioned under Points 3 + 4 can also be carried out when the program goes to »Trouble« in a process step (warning triangle(23), buzzer, green control lamp 21 on).

After the process is finished in which changes were made, as described in Points 1-4 above, it is recommended to check the program memory for its contents before starting the process anew (see Point Program entry).

The process can be stopped by pressing the Start/Stop key (green LED next to the Start/Stop key lights up). In this case the process ends after finishing the current process step. To continue, press the Start key again, after which the process continues according to the program (green LED next to the Start/Stop key goes out).

## Breaking off the process

With the Reset key the process run is immediately interrupted, the step motor goes to its Zero position, the program returns to the initial waiting position and a continuation of the process at the point of interruption is impossible. Therefore the Reset key should only be pressed during a process run in case of emergency.

## .5 Pre-rinse

The pre-rinsing quantity flows into the drum and remains there until the time set for this step is over. (The water quantity is always above the quantity set with the filling quantity switch(25).)

## .6 Intermediate/final rinse

These rinses are carried out cyclically, i.e. after the water was filled into the drum, it remains there for 15 secs. After this the drum is emptied and fresh water flows into the drum. One cycle (= fill in water, move the water, empty out the water) takes approx. 33 to 46 seconds, depending on the filling quantity. The cycle is repeated until the rinsing time is over. The rinsing quantities are always higher than the quantities selected with the filling quantity switch(25).

# 9 The JOBO tank/drum system

On the JOBO ATL-1, tanks/drums with cog lid are used.

## Tank system 1500

The System 1500 can be used for all types of film processing. Because of its modular construction the tank grows with the film quantity. That means maximum use of the chemicals.

Maximum capacities:

Size	Quantity	Reels	Solution Qty.	Tank No.
110	32	16	1000 ml	Tank 1520 + 2x Module 1530 + cog 1505
135	8	8	1000 ml	
120	8	5	1000 ml	
220	4	5	1000 ml	

Attention: In 1 Liter E-6 solution a maximum of 8 135 films can be processed.  
Please observe the instructions of the chemicals manufacturers!

## Disc tank system

In the Disc tank system your disc films are processed according to manufacturer's specifications. Two tanks are available.

Disc films	Solution qty.	Tank No.
17	400 ml	1517
44	870 ml	1544

## Professional tank system 2500

This tank system was especially designed for rotary processing. Two reel types are available. Window reel 2502 and RoSet 2501. In the rotation reel RoSet 2501 the films only rest on a few points.

For loading the rotation reel 2501, the film loader 2505 is required.

Maximum capacities

Size	Qty.	Reels	Solution qty.	Tank No.
135	8	8	1000 ml	2523 + Module 2560
120	5	5	1000 ml	
220	4	4	1000 ml	
120	8	4	1000 ml	2563

(based on 1 ltr. E-6 solution)



## For sheet film processing with tank system 2500

up to size 4 x 5", the sheet film reel No. 2509 with loader No. 2508 is available

Size	Qty.	Reels	Solution qty.	Tank No.
6 x 9 cm	20	5	1000 ml	2523 + Module 2560
9 x 12 cm	16	4	1000 ml	
4 x 5"	12	3	1000 ml	

## Sheet film drum system 3000

Special film drums for uniform developments to the edges.

Size	Qty.	Solution qty.	Drum No.
6 x 9 cm	12	330 ml	3009
9 x 12 cm	8	330 ml	3012
4 x 5"	5	330 ml	3013
13 x 18 cm	4	330 ml	3018
18 x 24 cm	2	330 ml	3024
8 x 10 "	2	330 ml	3025

## Drum system 2800

The drum system ensures perfect processing of photographic papers with the lowest possible chemical use because of its modular construction.

### Capacity for the largest drum

Size	Qty.	Solution qty.	Drum No.
7 x 10* cm	8	340 ml	2850 with cog 1505
WPC*	8	340 ml	
13 x 18 cm 5 x 7"	8	200 ml	
18 x 24 cm	4	200 ml	
20 x 25 cm 8 x 10"	4	200 ml	
11 x 14"	1	200 ml	
30 x 40 cm 12 x 16"	1	200 ml	
40 x 50 cm 16 x 20"	1	200 ml	

\* with format holder 4206

## Jobodrum 3063

This drum is suited for enlargements up to 50 x 60 cm (20 x 24 inch) or for processing of smaller sizes (e.g. 6 pcs. 20 x 25 cm 8 x 10", 2 pcs. 28 x 35 cm · 11 x 14", 2 pcs. 30 x 40 cm · 12 x 16", 1 pc. 40 x 50 cm · 16 x 20"). Required solution quantity: 300 ml

# 10 Special processing instructions

*Generally, developing times below 5:00 min. are not recommended for film processing*

- .1 Process control with control strips**
- .2 Reversal process E-6, UK 6**
- .3 Negative process C-41**
- .4 Disc process C-41 A**
- .5 Black-and-white film processing**
- .6 Paper processing EP 2, Agfa P, Tetenal PK**
- .7 Paper reversal processing Kodak 14 RC/R 3, Agfa Cu, Tetenal UK 3**
- .8 Ciba-P 30**

## **.1 Process control with control strips**

Exposed control strips are offered by the film manufacturers for process control. Each package is accompanied by a reference strip developed by the manufacturer (comparison strip).

The pre-exposed control strips are stored at -18°C and taken out shortly before the test development. For a comparative measurement a densitometer is required.

For measuring, the filters red/green and blue are placed in the densitometer one after the other and the low density (LD), the high density (HB) and the density maximum (Dmax) are measured. The values thus obtained are compared with the density values of the reference strips, the deviations noted, and the correction values supplied are adjusted.

If the deviations are within the tolerances determined by the film manufacturers, one can speak of a development "in control."

## **.2 Reversal process E-6, AP-44, UK 6**

Process run:

### **First developer (FD)**

In the first developer the exposed silver halides of the film coating are reduced to metallic silver. The black-and white first developer represents the critical phase of the process. Time, temperature, agitation and dilution as well as the storage of the solution must be exactly controlled and observed. Deviations from the instructions of the chemicals manufacturers can affect the factors density, contrast, maximum density and veil.

### **Rinsing**

The first rinse serves to quickly interrupt the chemical reactions and to avoid a spreading of the first developer into the reversal bath. Insufficient or too long rinsing can cause changes in density as well as colour shiftings.

### **Reversal bath (Rev)**

The reversal bath contains a chemical reversing substance which has the same purpose as an intermediate exposure. Faults in this process step can lead to an incomplete reversal and thus cause a general loss of density.

## **Colour developer (CD)**

In this process step the remaining silver salts are reduced to metallic silver. At the same time the oxidized colour developing substances react with the embedded colour coupling agents and form the colours.

Deviations from the processing instructions can affect colour balance, contrast, maximum density, fogging and the evenness of the developers.

## **Conditioner bath (intermediate bath)(Con)**

In the conditioner bath the metallic silver is prepared for the subsequent bleaching step. At the same time this bath has the purpose of maintaining the PH value of the bleaching solution by preventing a spreading of colour developer into the bleach bath. Processing other than recommended by the chemicals manufacturers can lead to silver residues and thus to the formation of fog.

There must be no rinsing between conditioner bath and bleach bath, since the remaining conditioner bath is a necessary part of the bleach bath.

## **Bleach bath (BL)**

Here the metallic silver is transformed to silver halide so that it can later be dissolved by the fixing bath. Deviations from the processing instructions lead to the following faults: silver residues, low maximum densities in the red, yellow fog resp. high maximum densities in the blue. After processing the bleach bath can be regenerated and used again.

# 10.2 E-6, AP 44, UK 6

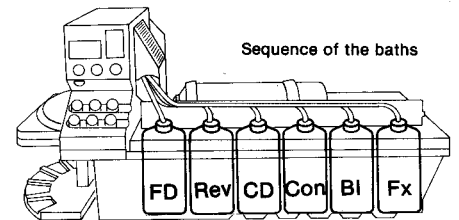
**Recommended setting** for Process E-6:

**Rotation speed:** 3-P

**Rocking movement:** Only for sheet films in System 3000

Process: E-6	<b>2</b>	AP 44, UK 6
Temp.	38.2	
Pre-heat	5:00	
Pre-rinse	—	
Solution 1	6:30	First developer*
Rinse	2:30	
Solution 2	2:00	Reversal bath
Rinse	—	
Intern. exp.	—	
Solution 3	6:00	Colour developer
Rinse	—	
Solution 4	2:00	Conditioner
Rinse	—	
Solution 5	6:00	Bleach bath
Rinse	—	
Solution 6	4:00	Fixing bath
Rinse	6:00	
End		

The times may vary depending on the chemicals manufacturers.



## Fixing bath (FX)

In the fixing bath the silver halides contained in the film emulsion are washed out. Much of them remains in the fixing bath and can be recovered. Insufficient fixing bath times or incorrect dilution can lead to the following faults: excessive blue density in the density minimum (yellow veil) and spots because of silver halide residues which become visible in areas with a low density.

## Final rinse

It ensures the removal of the remaining chemicals and should be made for at least 6 minutes.

## Stabilizer bath

This improves the durability of the colours and contains a wetting agent. To avoid drying spots or damage to the film surface the stabilizer bath should be renewed in regular intervals.

*(Put the film into the stabilizer bath in a separate container, outside of processor, tank + reel, to avoid contamination.)*

## Process control

Each colour reversal film possesses a certain colour tendency. Moreover the colour characteristics of the films differ from emulsion to emulsion number. With test exposure and developing the emulsion number is determined which under constant shooting conditions yields the most neutral results in the colour solution used. It is advisable to keep a large stock of film with the same emulsion number. This way repeatability of colour matching is achieved with ease. Additionally, the colour can be adapted during shooting by means of correction filters.

## Control of film speed sensitivity

By altering the first developing time a change of the sensitivity can be obtained. By extending the time by 30%, the sensitivity is increased by 3 DIN = 1 aperture. Overexposures of 1 aperture can be compensated by reducing the first developing time by 30%. Since colour shifts occur with different sensitivity ratings, we recommend to determine these by a test development.

## Particularities:

### Slide positive too dark

Underdevelopment in the first developer: Processing time too short or temperature too low.

### Slide positive too light

Overdevelopment in the first developer: Processing time too long or temperature too high.

### Slide positive too light and blue

First developer contaminated with fixing bath (FX)

### Slide positive with heavy discolouring towards blue

Dilute reversal bath or short rinse after reversal bath and/or addition of starter solution to colour developer. For processing Kodak-Ektachrome, the reversal bath can be diluted up to 60%. For Agfachrome R 100 S and Fujichrome the dilution of the reversal bath and/or a short rinse after the reversal bath must not be made.

An addition of starter solution to the colour developer changes the colour: With Kodak material from blue to yellow, with Agfachrome R 100 S and Fujichrome from yellow to blue.

## Slide positive with heavy discolouring towards green and insufficient maximum blacks

Use fresh reversal bath (this solution only keeps for a very short time) and/or increase concentration for Agfachrome R 100 S/Fujichrome

## Slide positive with magenta veil in the lights

Increase concentration of colour developer by 10%.

## Slide positive with heavy discolouring towards yellow

When processing Kodak Ektachrome: Add H<sub>2</sub>SO<sub>4</sub> to the colour developer. When processing Agfachrome R 100 S add starter NaOH.

## Slide positive with yellow spots/high minimum density

Contamination with stabilizer bath. Strictly take care that the stabilizer bath is always used outside of tank and reel. Or residual silver: Processing time in the bleach bath or fixing bath too short.

\* (exact adaptation by means of control strips to step

ND = sensitivity exploitation)

## 10.3 C-41, AP 70, NK 2

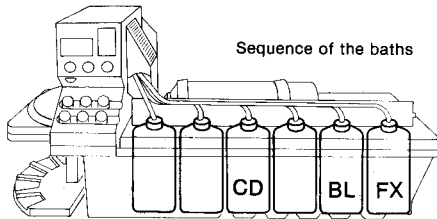
**Recommended setting** for process C-41, AP 70, NK 2

**Rotation speed:** 3-P

**Rocking movement:** Only for sheet films in system 3000

Process: C-41 3		AP 70, NK 2
Temp.	38.2	
Pre-heat	3:30	
Pre-rinse	—	
Solution 1	—	
Rinse	—	
Solution 2	—	
Rinse	—	
Interm. exp.	—	
Solution 3	3:15	Colour developer
Rinse	—	
Solution 4	—	
Rinse	—	
Solution 5	6:00	Bleach bath
Rinse	3:15	
Solution 6	6:00	Fixing bath
Rinse	3:00	
End		

The times may vary depending on the chemicals manufacturers.



### .3 Negative process C-41

#### Colour development (CD)

Contrast, colour and density are determined by the colour development.

#### Bleach bath (BL)

In the bleach bath the photo silver is made dissolvable for the fixing bath. Due to a faulty bleach bath, silver residues may remain in the film and cyan colour can be transformed to colourless leuco-cyan colour. This causes a reddish discolouration of the negative. The positives show red shadows and cyan-coloured cold lights.

#### Intermediate rinse

#### Fixing bath (FX)

In the fixing bath the photo silver is washed out. The result is a clean colour photo. Faults in this bath lead to silver residues.

#### Final rinse

It ensures the removal out of the remaining chemicals and should be done for at least 5 minutes.

#### Stabilizer bath

It acts as a wetting agent against bacteria damage, hardens the film and may only be used outside of processor, tank and reel.

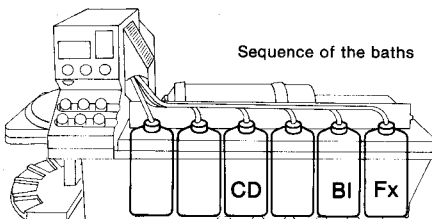
## 10.4 C-41 A

**Recommended settings** Disc film development C 41 A

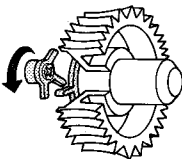
Swivel out shifting star for rotation reversal (next to the cog lid).

**Rotation speed:** maximum, without rotation reversal

Process: C41 A 4		
Temp.	38.2	
Pre-heat	3:30	
Pre-rinse	—	
Solution 1	—	
Rinse	—	
Solution 2	—	
Rinse	—	
Interm. exp.	—	
Solution 3	3:25	Colour developer
Rinse	—	
Solution 4	—	
Rinse	—	
Solution 5	6:30	Bleach bath
Rinse	3:15	
Solution 6	6:30	Fixing bath
Rinse	3:15	
End		



### .4 Disc film development C-41 A



Swing out nylon reversing sprocket for reversal rotation (beside cog).

Disc film processing differs from the preceding development (C-41) by processing without rotation reversal at maximum speed. The stabilizer bath contains an additive with an antistatic effect. (Stabilizer bath outside of processor, tank and reel). Process control is made with Kodak control discs.

#### — General Information

JOBO disc tanks are available for 17 or 44 discs. The outfit includes a disc insert which ensures optimum movement. To avoid drying spots, drying should be done immediately after stabilizing.

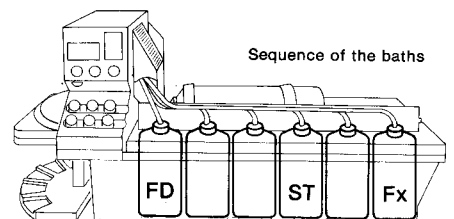
## 10.5 black and white

**Recommended settings** for black-and-white negative process

**Rotation speed:** P

**Rocking movement:** Only for sheet films without reels

Process: b/w 5 5		
Temp.	20.0	
Pre-heat	—	
Pre-rinse	5:00	
Solution 1	←	Developer, according to the instructions of the chemical producers + 20%
Rinse	—	
Solution 2	—	
Rinse	—	
Interm. exp.	—	
Solution 3	—	
Rinse	—	
Solution 4	0:30	Stop bath
Rinse	—	
Solution 5	—	
Rinse	—	
Solution 6	←	Depending on the film and fixing bath
Rinse	12:00	
End		



### .5 Black and white

#### Film developing

Black-and-white film development is critical regarding uniformity. Additionally and depending on the motive, bromine flows may occur which appear as bromine smears.

To eliminate these problems, we have designed the ATL-1 with a rocking movement for sheet film processing. With this, a good flow distribution of the solution over the entire film is obtained. This rocking movement should only be used in connection with the drums 3012-3025.

Developing times below 5 minutes should be avoided, if possible.

For films with low sensitivities, a pre-rinse of up to 5 min. is recommended. Depending on the film/developer combination, developing time must be extended. (Test required)

**FD = black and white/developer**  
**ST = stop bath**  
**FX = fixing bath**

## 10.6 EP-2, AP, PK

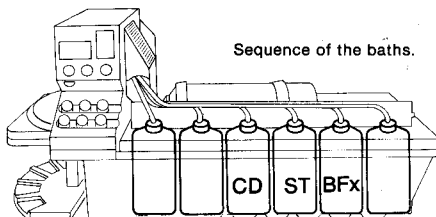
Recommended settings for process EP-2, Agfa P, Tetenal PK:

Rotation speed: P

Rocking movement: —

Process: EP 2		Agfa P, PK
Temp.	38.2	
Pre-heat	2:00	
Pre-rinse	—	
Solution 1	—	
Rinse	—	
Solution 2	—	
Rinse	—	
Interm. exp.	—	
Solution 3	2:00	Colour developer
Rinse	—	
Solution 4	0:30	Stop bath
Rinse	—	
Solution 5	2:30	Bleach/fixing bath
Rinse	—	
Solution 6	—	
Rinse	2:30	
End		

The times may vary depending on the chemicals manufacturers.



### Positive process Kodak EP 2, Agfa P, Tetenal PK

Process run:

- Colour developer (CD)
- Stop bath (ST)
- Bleach/fixing bath (BFX)
- Rinse

Sources of faults

- Old or insufficient time, too low a temperature, old or exhausted developer makes shadows become blue.
- Contamination with bleach/fixing bath flattens contrast and leads to colour shifting.
- Residual silver remaining in the coating causes muddy yellow areas.

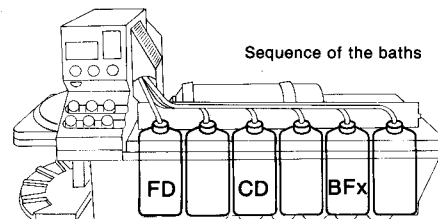
Attention: The colour character of an enlargement can only be judged after drying.

## 10.7 R-14/R-3, CU, UK 3

Recommended settings for process Kodak R-14/R-3, Agfa CU, Tetenal UK 3:  
Rotation speed: P  
Rocking movement: —

Process: R 14		CU, UK 3
Temp.	38.2	
Pre-heat	2:00	
Pre-rinse	—	
Solution 1	1:15	b/w developer
Rinse	2:30	
Solution 2	—	
Rinse	—	
Interm. exp.	—	
Solution 3	2:30	Colour developer
Rinse	0:30	
Solution 4	—	
Rinse	—	
Solution 5	2:00	Bleach/fixing bath
Rinse	—	
Solution 6	—	
Rinse	3:00	
End		

Times may vary depending on the manufacturer.



### Reversal process Kodak R-14/R-3 Agfa CU, Tetenal UK 3

Process run

- First developer (FD)
- Thorough rinsing
- Colour development (CD)
- Bleach/fixing bath (BFX)
- Rinsing

Sources of faults

- If the maximum blacks are blue after drying, colour development was insufficient. Time and temperature must be increased accordingly.
- If the maximum blacks tend towards blue and the colours have a grey shade, this indicates contamination of the colour developer with first developer. (Possibly insufficient rinsing between first and colour developer. Increase rinsing time.)
- If the photo is too blue, without contrast and too dark, first developing was too short or the intermediate rinse after the first developing insufficient.

Attention: The Tetenal UK 2 process works like UK 3, but requires an intermediate exposure after the first developer.

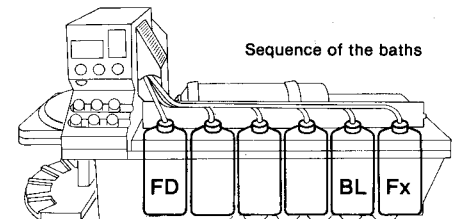
## 10.8 Ciba P 30

Recommended settings for process Ciba P 30:

Rotation speed: P

Rocking movement: —

Process: P 30		
Temp.	29.0	
Pre-heat	1:00	
Pre-rinse	—	
Solution 1	2:00	b/w developer
Rinse	0:30	
Solution 2	—	
Rinse	—	
Interm. exp.	—	
Solution 3	—	
Rinse	—	
Solution 4	—	
Rinse	—	
Solution 5	2:00	Bleach bath
Rinse	0:30	
Solution 6	2:00	Fixing bath
Rinse	2:00	
End		



### Cibachrome IIA process

This process works according to the silver colour bleaching principle.

With this enlargements get

- excellent colour separation and true to nature colour reproduction due to the automatic masking system
- brilliant, unblackened colours due to the use of azure colours
- very sharp definition and high resolution
- very good light-fastness

Process run

- First developer (FD)  
The first developer is a black-and-white developer containing special additives which permit the formation of a positive silver mask.
- Intermediate rinse  
It interrupts development and prevents undiluted developer from getting into the bleach bath and causing undesired reactions.
- Bleach bath (BL)  
In this bath the colour bleaching and the silver bleaching are carried out. The bleach bath is a strongly acid solution. Handling must be done with care.
- Intermediate rinse  
Here, the residues of the bleach bath are washed out.
- Fixing bath (FX)
- Final rinse

Sources of faults(Cibachrome II A)

- too small filling quantities lead to streaks. Please observe the solution quantity prescribed by the chemicals manufacturer of 75 ml per sheet 20 x 25 cm (8 x 10").
- If the intermediate rinse after the first developer exceeds 30 secs, brown spots may occur on the back coating and the picture side.
- Too small bleaching quantity or time lead to dark stripes.

# 11 Capacity ATL 1

## Film processing - all values referred to 1 ltr. E-6

Size	Quantity	Solution	Reels	Tank
Disc	44	1000 ml	—	1544
110	32	1000 ml	16 · No. 1502	1520
126	16	1000 ml	8 · No. 1501	+ 2 × Module 1530
135	8	1000 ml	8 · No. 1501	
120	8	1000 ml	5 · No. 1501	+ cog 1505
220	4	1000 ml	5 · No. 1501	
135 (72)	2	560 ml	2 · No. 2501	2523
135 (36)	8	1000 ml	8 · No. 2501/02	2523
120	5	1000 ml	5 · No. 2501	+ Module 2560
120	8	1000 ml	4 · No. 2502	2563
220	4	1000 ml	4 · No. 2501/02	2523
6 × 9 cm	20	1000 ml	5 · No. 2509	+ Module 2560
9 × 12 cm	16	1000 ml	4 · No. 2509	
4 × 5"	12	1000 ml	3 · No. 2509	
6 × 9 cm	12*	330 ml	—	3009
9 × 12 cm	8*	330 ml	—	3012
4 × 5"	5*	330 ml	—	3013
13 × 18 cm	4*	330 ml	—	3018
18 × 24 cm	2*	330 ml	—	3024
8 × 10"	2*	330 ml	—	3025

\* Special designs, for double to triple capacity, as well as special sizes on request.

## Paper processing

Size	Quantity	Solution	Format holder	Drum
9 × 13 cm · 4 × 5"	8	340 ml	8 · No. 4206	2850 with cog 1505
WPC · —	8	340 ml	8 · No. 4206	
13 × 18 cm · 5 × 7"	8	200 ml	—	
18 × 24 cm · —	4	200 ml	—	
20 × 25 cm · 8 × 10"	4	200 ml	—	
24 × 30 cm · 9½ × 12"	2	200 ml	—	
28 × 35 cm · 11 × 14"	1	200 ml	—	
30 × 40 cm · 12 × 16"	1	200 ml	—	
40 × 50 cm · 16 × 20"	1	200 ml	—	
30 × 40 cm · 12 × 16"	2	300 ml	—	
50 × 60 cm · 20 × 24"	1	300 ml	—	3063

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# 12

- .1 Cleaning
- .2 Maintenance
- .3 Replacing fuses

## 12.1 Cleaning

At the end of a process, cleaning is carried out automatically by means of the final rinse. If desired, it can be extended or repeated respectively. Like this a thorough cleaning of the short common solution paths is guaranteed.

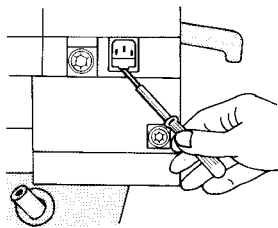
### Automatic cleaning programm

If a break of a few days of process is expected with the ATL-1 a cleaning programm can be run on program 1. For this all solution bottles are filled with hot water (max. 40 to 50°C) and the quantity to be fed in is set to 1000 ml. All solution steps are programmed to 40 secs. and a tank/drum with a suitable volume is coupled.

## 12.2 Maintenance

- The motors of the ATL-1 are self-lubricating.
- The Autolab ATL-1 does not require any special maintenance. It should value be cleaned from time to time. After approx. 100 service hours it is recommended to grease the rollers of the bearing block with vaseline. To prevent the formation of algae during longer operation with the same water jacket, we recommend to change the water at least once a week. If the unit is not going to be used for a long period, empty out completely. This can easily be done by means of the drain cock.

## 12.3. Replacing fuses



After pulling out the mains (power) cable open fuse holder on the back of Autolab with a screw driver or the like and replace fuse 0,8 A. In the interior of the appliance there are another 5 fuses:

CPP 2 - bottom part

1 x F 6.3 A apparatus fuse 1 x T 1.25 A  
and 1 x T 0.8 A for motor and temperature control

AT-1 top part

1 x T 1.0 A for 5 V microprocessor control  
and 1 x T 1.6 A for 24 V units

# 13

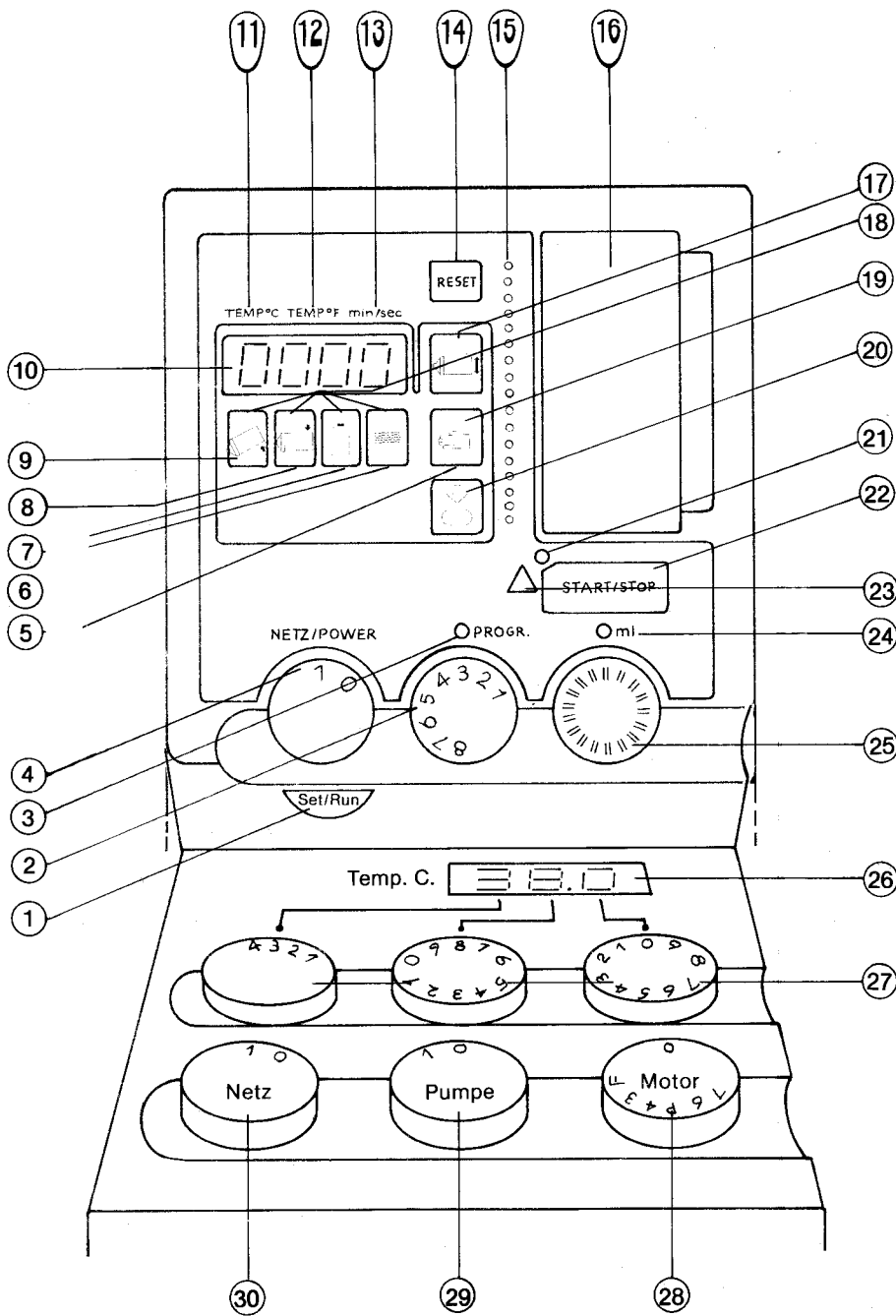
- .1 Guarantee
- .2 Service

## 13.1 Guarantee

We give a guarantee of 12 months on the apparatus, with the date of the purchase voucher being considered as the beginning of the guarantee. Damages caused by improper handling are not included in the guarantee.

## 13.2 Service

If your ATL-1 needs servicing please contact your dealer from where you purchased your unit.



- ① Selector switch process entry/run (SET/RUN)
- ② Process program selector switch
- ③ Control lamp process selection
- ④ Mains plug for automatic part AT-1
- ⑤ Double function key manual/Set 0
- ⑥ Double function key for manual rinsing
- ⑦ Double function key for manual filling
- ⑧ Double function key for manual lowering
- ⑨ Double function key for manual lifting
- ⑩ Digital display
- ⑪ Control lamp temperature °C
- ⑫ Control lamp temperature
- ⑬ Control lamp time min./sec.
- ⑭ Reset key
- ⑮ Control lamps process monitoring
- ⑯ Process card area
- ⑰ Key for additional rocking movement
- ⑱ Entry key for digital display
- ⑲ Set - 0 key
- ⑳ Programming step key
- ㉑ Control lamp Start/Stop
- ㉒ Start/Stop key
- ㉓ Control lamp trouble
- ㉔ Control lamp filling quantity
- ㉕ Filling quantity switch
- ㉖ Digital display temperature Colorprocessor
- ㉗ Knobs temperature
- ㉘ Motor switch
- ㉙ Switch heating/pump
- ㉚ Mains switch for Colorprocessor
- ㉛ Collecting device
- ㉜ Bottle cover
- ㉝ Selector lever tank/drum system
- ㉞ Overflow slide
- ㉟ Bearing block (for syst. 1500, 2500, 2800, 3000)
- ㊱ Fixing screws automatic part
- ㊲ Bottle connection
- ㊳ Heat exchanger (for rinsing water)

