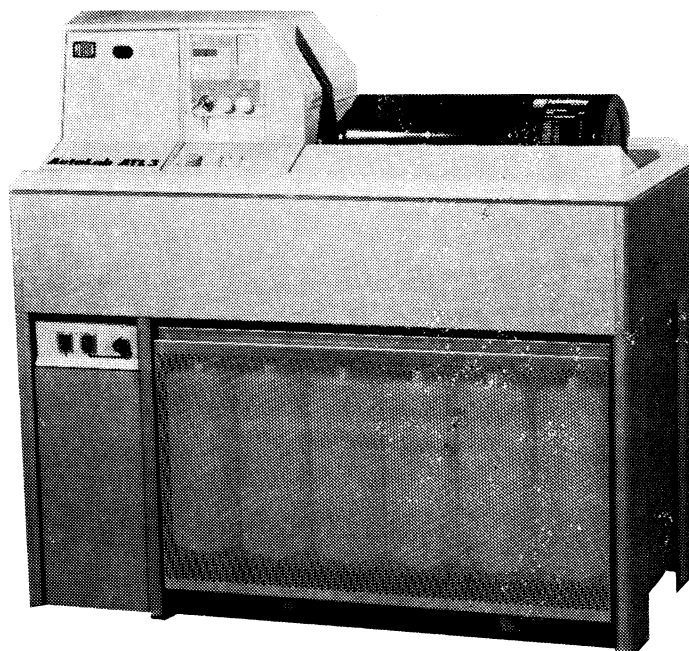


Introducing The ATL-3 Autolab



FEATURING:

QUALITY

- Fully automated via microprocessor control
- Consistent results batch to batch
- Each step of a process accurate to the second

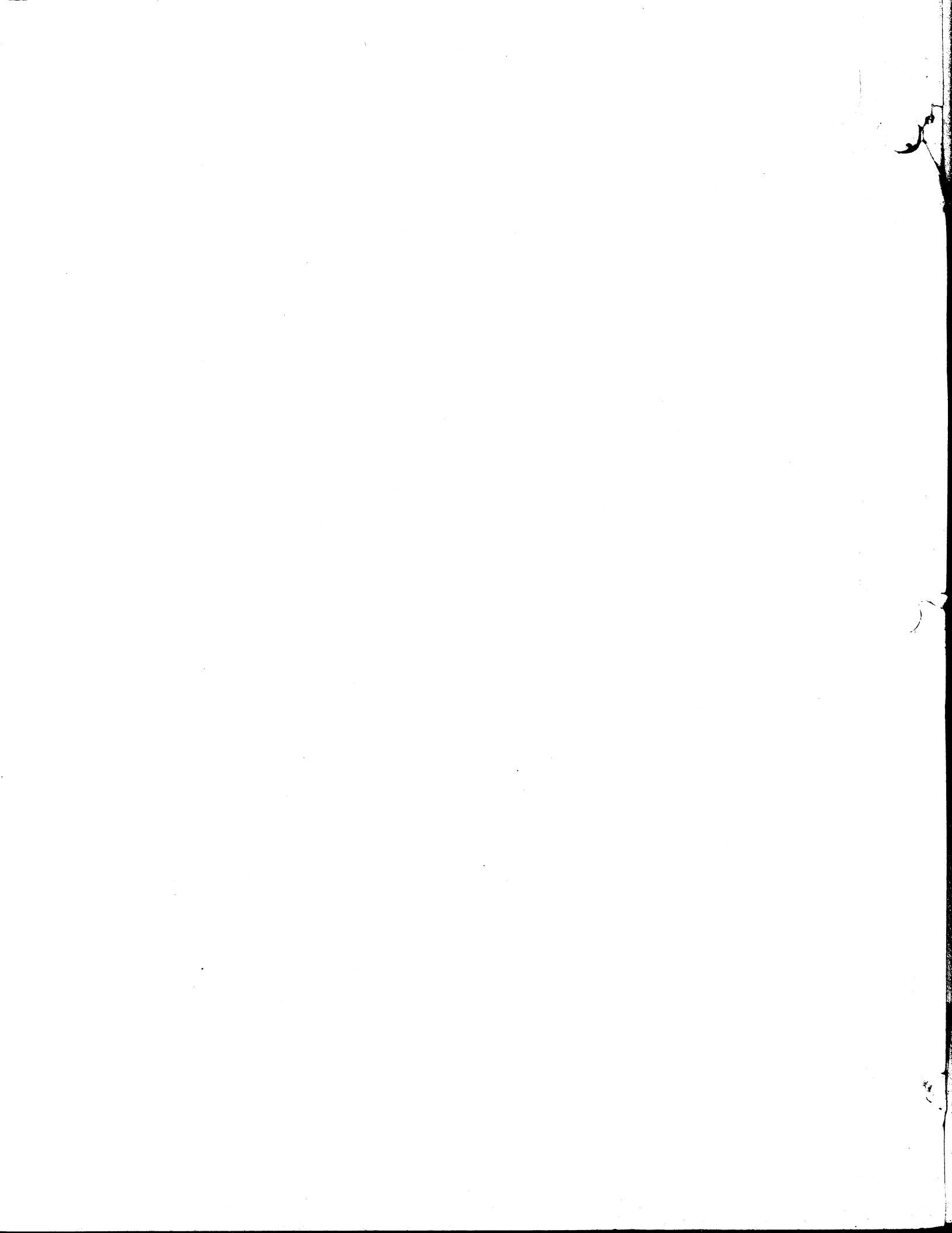
ECONOMY

- Maximum efficiency of chemistry
- Built-in tempering of complete system
- Built-in reclamation capabilities

VERSATILITY

- Immediate transition between different processes
- Every process: C-41, E-6, Ciba,™ B&W, EP-2, R-3, Litho. . .
- Every format: Roll film, sheet film, long film, disc film, sheet films from 4×5" - 16×20" and special sizes
- Paper from 3½×5" - 20×24", including 6-8×10" per run





Unpacking

1

Leave Chapters 1 & 2 with the New Owner before delivering the ATL

1.1 ATL-3 Complete Models #4170 and #4171

NOTE: Move the processor as close to the installation location as possible.

Units will arrive at your location as illustrated in figure 1.

The shipping weight of the unit is approximately 375 pounds (171 Kgs). Use a fork lift or pallet jack to move the unit while it is packaged and be sure to lift from the heavier side marked "Front". Lifting from the opposite side can be dangerous.

To remove the shipping carton, cut the banding material and remove the lid and outer casing as shown in Figure 2. Remove the box of accessories resting on top of the unit and set them aside.

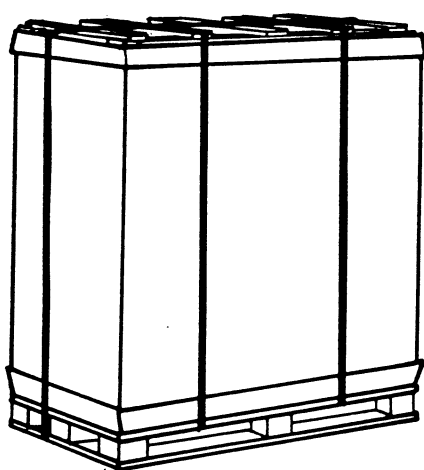


Figure 1

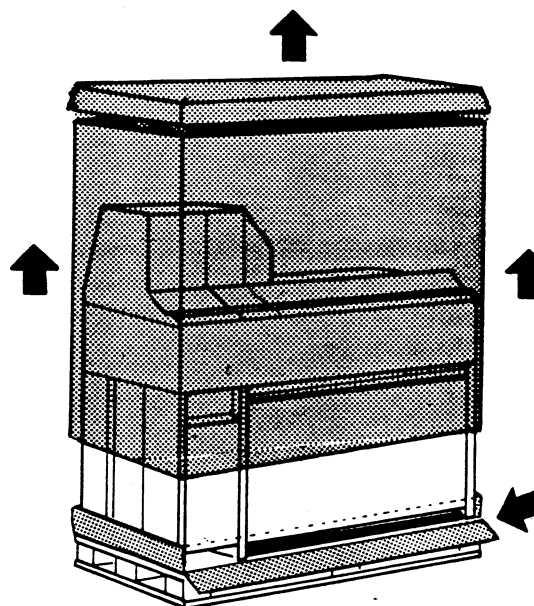


Figure 2

Cut the cardboard floor piece the ATL is resting on at the front corners, completely exposing the lower chemical cart. A 1" x 2" x 38" (2½ x 5 x 96½ cm) piece of wood has been attached at the front base of the unit to add support to the right panel wall during shipping. Lift the chemical cart over the wood support and pull the cart out.

You are now ready to lift the ATL off the pallet. Using the hand holds on the sides, lift the unit straight up, and set it down where it will be operated. Remove the piece of support wood using a Phillips screw driver.

Note: It takes two people to lift the ATL-3. Beware that the end with the controls is heavier.

1.2 ATL-3 Table Top (4172)

The ATL-3 Table Top will arrive at your location as shown in Figure 3.

The shipping weight of the unit is 170 lbs (77.1 Kgs). To remove the shipping carton, cut the banding material and remove the lid and outer casing as shown in Figure 4, completely exposing the unit.

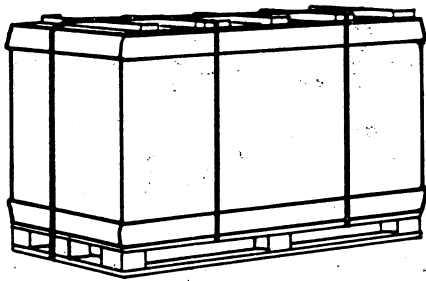


Figure 3

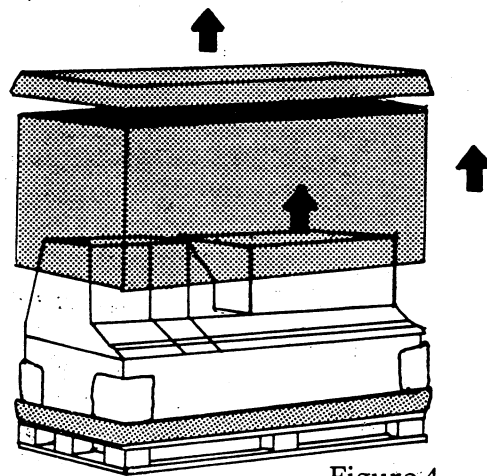


Figure 4

1.3 Final Assembly

The front (28) and back (26) bottle covers are packaged separately to protect them from getting damaged. The back bottle cover can be placed directly over the rear set of bottles. The front bottle cover requires two white plastic pins, from the accessory bag, to hold it in its proper place.

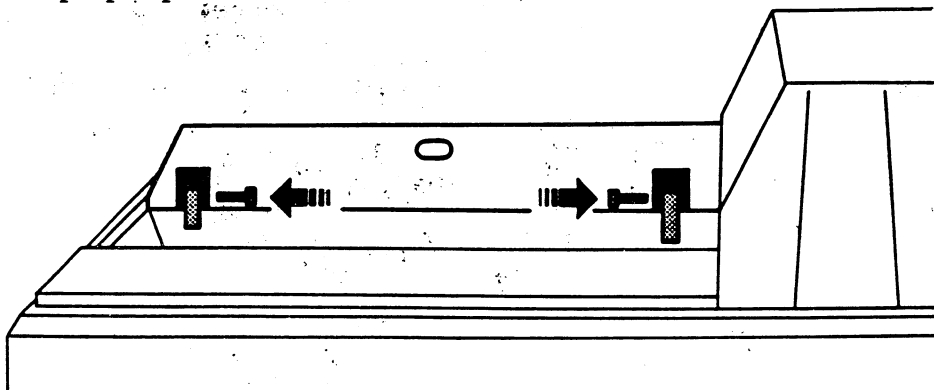


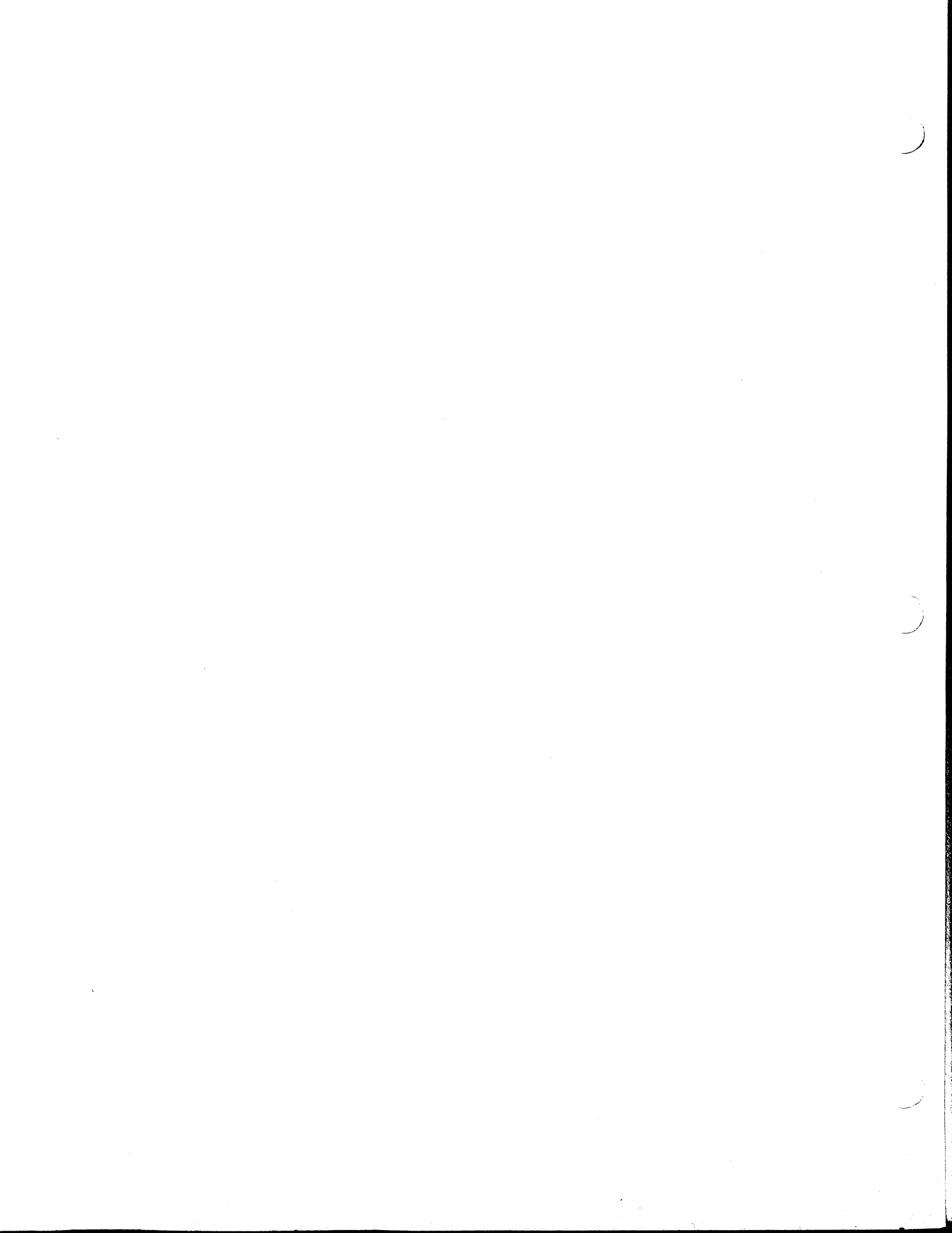
Figure 5

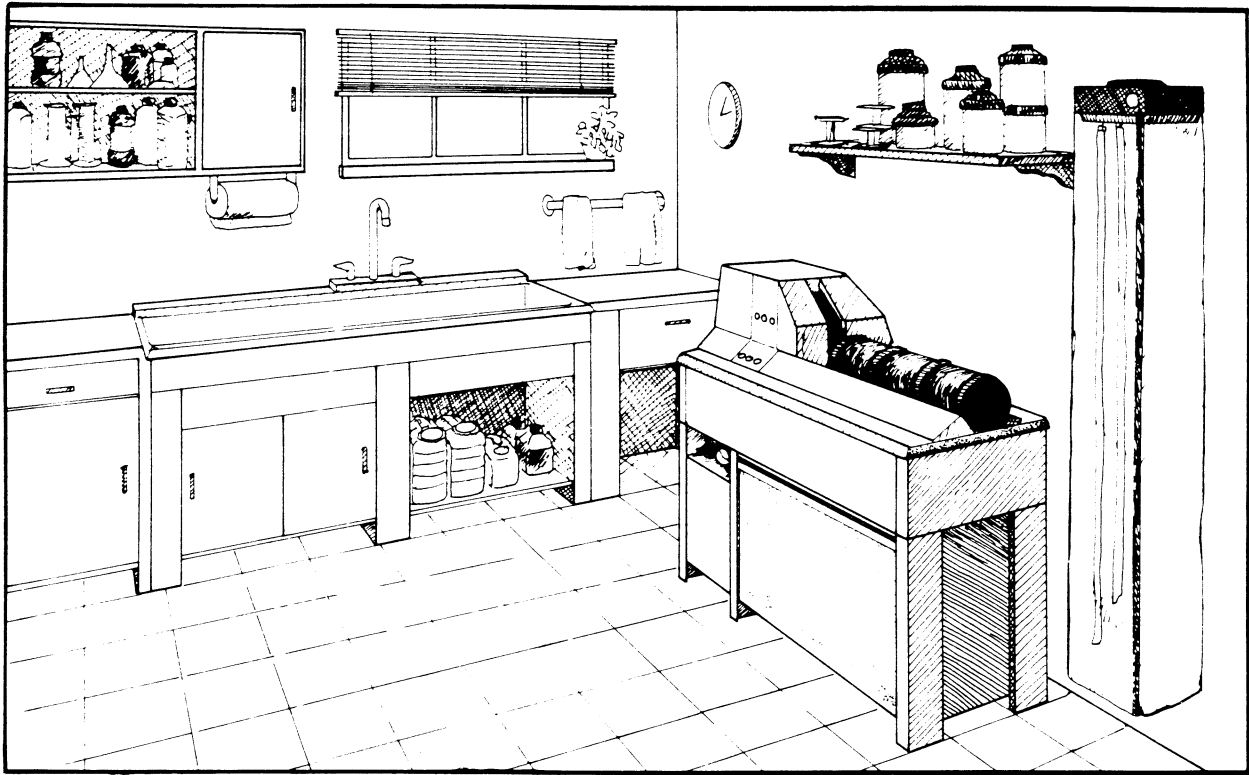
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Reference this manual for ATL-3's with a serial number of 11006 or greater.

Revision #2.1189





Welcome to the JOBO System

JOBO has been a leader in darkroom and processing technology for over sixty years.

The AutoLab ATL-3 is the most advanced, microprocessor-controlled, fully automated processing unit in the JOBO line. With the large variety of tanks and drums available, the AutoLab is efficient for any size job. Since it's completely user programmable, you can enter processing times and temperatures for up to ten different processes into memory and be ready to process in minutes. Combined with the large number of solution bottles available, you can tailor the ATL for your specific needs.

All the necessary functions needed in photographic processing are fully automated with the ATL-3. The temperature is maintained to within ± 0.18 F. (± 0.1 °C) at all times using a recirculating water bath. The stock solution bottles as well as the drum in use are kept at the operating temperature with the water bath. Constant rotary agitation is maintained by the microprocessor-controlled motor. It has four bi-directional speeds and special settings for disc film and Cibachrome.™ Tempered chemistry is pumped from the stock bottles to the processing drum via an air pressure system. The on-board computer keeps track of how much chemistry is left in the stock bottles at all times. Consequently, your ATL-3 won't let you start a process if there is insufficient tempered chemistry. The microprocessor also controls the timing of each chemical and wash step, pumping in and dumping out at the appropriate times by following your programmed input to the second. Finally, the ATL-3 offers you the option of reclaiming each used solution in its own external container and has six built in programs to make cleaning of the solution bottles simple and automatic. Reclaiming and replenishing used chemicals makes processing with your ATL-3 even more economical.

Technical Information

	4170	4171	4172
	ATL-3 Complete w/ heater	ATL-3 Complete	ATL-3 Table Top
Height	48 in. (122 cm)	48 in. (122 cm)	27.5 in. (70 cm)
Height with largest drum in emptying position	69 in. (177 cm)	69 in. (177 cm)	48.5 in. (123 cm)
Length	52 in. (64 cm)	52 in. (64 cm)	52 in. (64 cm)
Width	25 in. (130 cm)	25 in. (130 cm)	25 in. (130 cm)
Weight (empty)	325 lbs. (148 Kg)	310 lbs. (140 Kg)	145 lbs. (66 Kg)
Voltage	220 V 50-60 Hz	110 V (220 V) 60 Hz (50-60 Hz)	110 V (220 V) 60 Hz (50-60 Hz)
Power Consumption — after initial warmup	3500 Watts 800 Watts	1500 Watts 500 Watts	1500 Watts 500 Watts
Amps	16	13 (7)	13 (7)

For all models

Temperature Range	64.4° to 123.8° F (18-51°C)
Tempering Water Jacket Capacity	9 gallons (34 L)

Installation Instructions

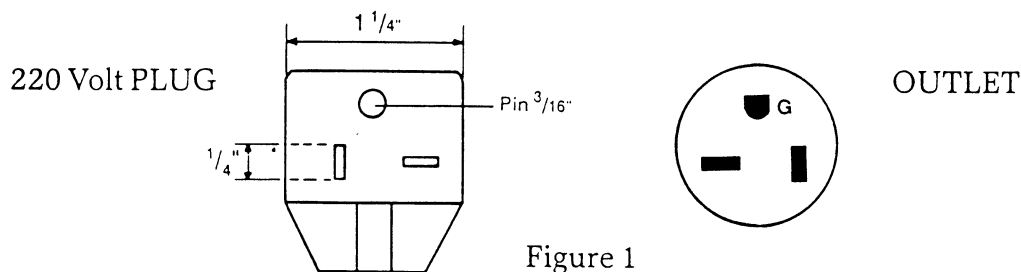
2

Pre-Installation Considerations

2.1 Electrical Service (U.S. Models only)

ATL-3 Complete w/ water heater, Model #4170

220 Volt 60 Hz single phase A.C. (see Figure 1); 20 amp fuse or comparable circuit breaker; Ground fault interrupter is recommended



ATL-3 Complete, Model #4171 or ATL-3 Table Top, Model #4172

110 Volt 60 Hz A.C. Any standard U.S. outlet; 20 amp fuse or comparable circuit breaker; Ground fault interrupter is recommended

The length of the power cord on all ATL-3s is 5 feet.

DO NOT operate processors on "drop cords" or overloaded circuits

2.2 Water Pressure

Water pressure of between 15 & 90 p.s.i. (1 & 6 bar) is required to correctly fill the processor to the proper levels. Pressures of less than 15 p.s.i. may cause an exceptionally long fill time for the tempering bath and/or inadequate rinsing. Water pressure greater than 90 p.s.i. can damage the processor. Use a pressure reducer if necessary, which is available from JOBO.

Water inlet hoses are provided with the processor. The ATL-3 complete with water heater (#4170) requires only one inlet hose. The ATL-3 complete (#4171) and ATL-3 Table Top (#4172) models require two inlet hoses. Standard 3/4" "high pressure" washing machine type hoses are in the accessory box.

To avoid the possibility of water damage, should a hose leak, always have faucets accessible and turn off faucets when the processor is not in use.

2.3 Water Temperature

ATL-3 Complete w/ water heater, Model #4170

Requires one cold water inlet.

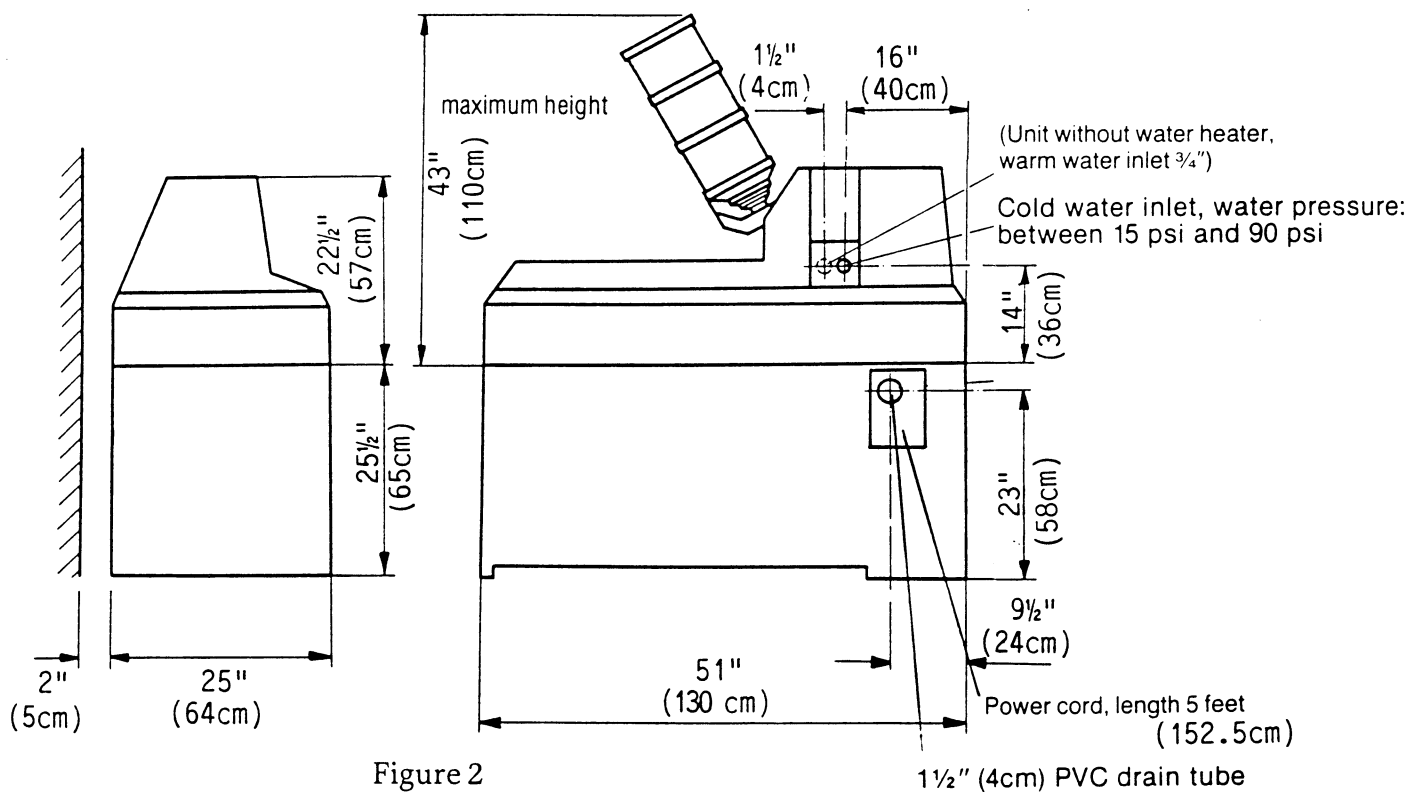
ATL-3 Complete, Model #4171 or ATL-3 Table Top, Model #4172

Requires one cold and one tempered water inlet. The tempered water source should be set to within $\pm 10^{\circ}\text{F}$ (6°C) of your processing temperature. A water mixing valve may be purchased from your local photographic supplies dealer or from JOBO.

2.4 Drain Facilities

ATL-3 Complete Models #4170 & #4171

As shown in Figure 2, the drain for these models is 23" (55 cm) from ground level and 9½" (23 cm) from the left side of the unit. The drain should be installed into a standpipe, which must be large enough to accept a 1½" outside diameter drain hose. See local building codes for further restrictions. NOTE: These processors are not designed to operate into a drain elevated more than 23" (55 cm) above the floor.



ATL-3 Table Top Model #4172

The drain for the table top model should be installed into a standpipe, which must be large enough to accept a 1½" outside diameter drain hose, or extended to a floor facility. See local building code for possible further restrictions.

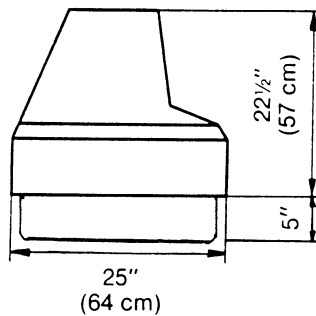
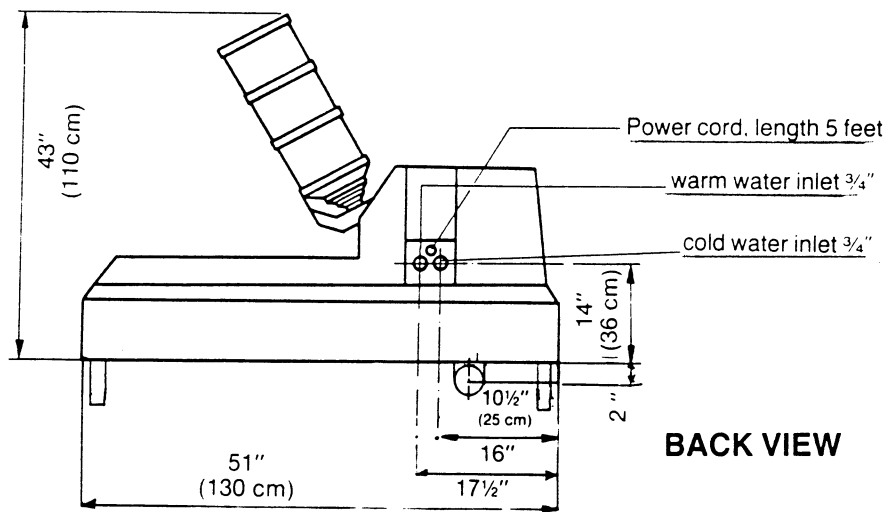
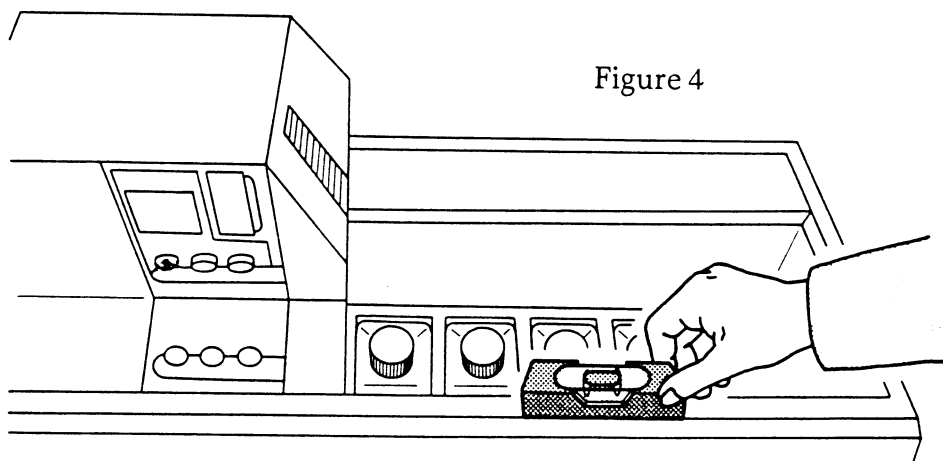


Figure 3

2.5 Flooring

For best performance the processor must be on a solid floor and level. Use the "Spirit Level", packed with the unit, on the front edge of the frame, as illustrated in Figure 4, for true levelling. Do not install the processor on a weak support structure or process with the unit improperly levelled.



2.6 Temperature Considerations

Since the processor always controls the chemistry and processing tank temperature to within .18°F (.1°C) by means of a recirculating water bath, normal variances in room temperature will not affect the processor's ability to temper accurately. We do not recommend operation in the direct path of air conditioning or heating ducts.

2.7 Cold Weather Storage

If the ATL-3 is to be stored where it would be subject to freezing the following precautions should be taken:

1. Turn off water supply, remove and drain inlet hose(s).
2. Drain the water bath, by depressing the drain key valve and empty the chemistry bottles.
3. Remove the drain hose.
4. Drain the water heater (see note below).

NOTE: If you are cold storing an ATL-3 Complete w/ water heater (#4170) the water heater must also be drained. Call JOBO @ 1-800-525-2821 and ask for the service department or contact your local servicing dealer before proceeding.

2.8 Things to Remember

Lubrication

No routine lubrication or adjustments are required to maintain this product. This does not mean the product will never need attention. In the event something does need attention please contact an authorized JOBO servicing dealer.

Finish

All cabinetry and external wood finishes are protected with vinyl to keep the product looking good for many years. As with any other piece of equipment, cleaning and applying a vinyl preservative maintains the beauty of these finishes.

Caution: *If spilled or used improperly, bleaches and other strong chemicals can permanently spot or stain finishes unless wiped off immediately.*

The top covers and water trough are made of ABS plastic. Since plastic is a synthetic material, it is very durable. However, care should be exercised to avoid damage by sharp blows from objects or tools used around and in the product. Plastic can be chipped.

NOTE: Do not add bleach or chlorine base chemicals to the recirculating water bath to prevent algae build-up. Chlorine will cause the recirculating pump to deteriorate and eventually fail. Refer to the instruction manual section on maintenance for procedures to prevent and/or remove algae.

Water Damage From Flooding

In the event the processor should be exposed to water from flooding, call your JOBO servicing dealer for proper maintenance before using. Always unplug product and have a qualified technician inspect the processor before any attempt is made to operate the unit.

Installation

2.9 Drain Connection

ATL-3 Complete Models #4170 & #4171

Install the drain for these models into a 1½" PVC drain. The ATL-3 is equipped with a 1½" PVC drain outlet. Connect the outlet to a PVC waste line which is not more than 22" (55.9 cm) above the floor.

ATL-3 Table Top Model #4172

Install the outlet for this model into a 1½" PVC drain. With the accessory support stand (#4173), connect the outlet to a PVC waste line which is not more than 22" (55.9 cm) above the floor.

Reminder: A trap should be built into your waste line since the ATL's do not have internal drain traps.

Note: Please consult a licensed plumber with questions and for additional local codes and stipulations concerning drain and water inlet connections.

2.10 Water Inlet Connections

ATL-3 Complete Model #4170

This model requires a single cold water supply line with a ¾" standard male fitting. The proper hose is provided for you in the accessory box.

ATL-3 Complete, Model #4171 or ATL-3 Table Top, Model #4172

These models require two water supply lines with ¾" standard male fittings which are provided for you in the accessory box. When facing the back of the unit the inlet on the left is for tempered water and the inlet on the right is for cold water. Set the tempered water supply to within +/- 10°F (6°C) of your processing temperature.

For all models:

When connecting inlet hoses to the water valves, be sure hose connectors are not cross threaded on the valves. Tighten the hoses securely by hand. Do not over-tighten as this can strip threads on the water valves.

The pressure of the water supply line must be between 15 and 90 psi (1 to 6 Bar). Pressures lower than 15 psi will cause insufficient rinsing and pressures higher than 90 psi could cause damage. Use a pressure reducer if necessary which is available from JOBO.

Note: Depending on the condition of tap water in your area, you may consider installing a water filtration device. Particles in the rinse water can damage your film.

2.11 Electrical Connection (U.S. Models only)

Observe ALL National Electrical Codes and Local Codes & Ordinances

ATL-3 Complete model #4170

A 220 volt, 60 Hz, 20 ampere fused electrical supply is required. Do not use an extension



cord unless it meets all requirements as outlined for grounding, polarizing (3-wire) and capacity. See Figure 1 for plug and outlet configurations.

ATL-3 Complete, Model #4171 or ATL-3 Table Top, Model #4172

A 110 volt, 60 Hz, 20 ampere, fused electrical supply is required. Do not use an extension cord unless it meets all requirements as outlined for grounding, polarizing (3-wire) and capacity.

Grounding

Important Safety Precautions

Warning — To prevent unnecessary risk of fire, electrical shock or personal injury, all wiring and grounding must be done in accordance with the National Electrical Code ANSI/NFPA and local codes and ordinances. It is the personal responsibility and obligation of the processor owner to provide adequate electrical service for this processor.

Electrical Ground is Required

Your processor must be grounded. In the event of malfunction or breakdown, grounding will reduce the risk of electric shock by providing a path of least resistance for electric current.

The processor is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

Do not, under any circumstances, modify the plug provided with the processor. If it will not fit the outlet, have a proper outlet installed by a qualified electrician.

Do not plug in, operate, or test the processor until proper power and ground connections have been made. Consult local utility or an authorized JOBO servicing dealer with any other questions.

Battery Back-Up Power Supply

An accessory Battery Back-Up Power Supply is available. Contact JOBO or your authorized servicing dealer for details.

2.12 Installation Check List

- Processor is properly grounded and plugged into a correctly polarized electrical outlet or a separate or adequate capacity circuit.
- Water is turned on and checked for leaks at faucet and water valve.
- Drain is properly located into a drain facility.
- Processor has been leveled with all legs firmly on the floor.
- Processor operates properly.
- Water inlet temperatures are correct.
- Spray wand dispenses water properly (while power is still off).

Preparing for Operation

3

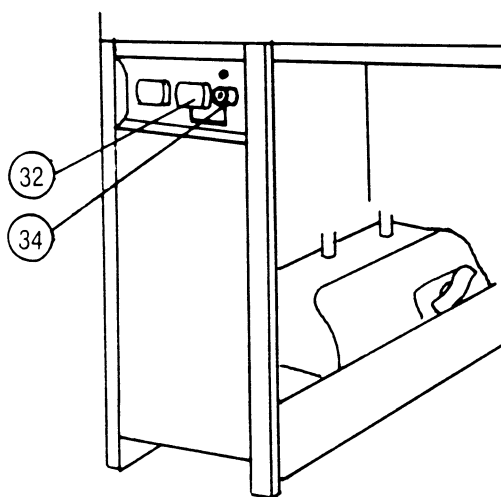
3.1 Getting Started

ATL-3 Complete with rinse water heater, model #4170

- Turn on the cold water supply
- Turn the mixing valve (34) to the position marked "4".
- Hold the spray wand (41) open until water flows freely.
- Turn on the rinse water heater switch (32).

Remove the piece of tape that is on the rinse water heater dial, set the dial to the position marked "e" and replace the tape back over the dial to prevent the dial from turning accidentally.

Figure 3a



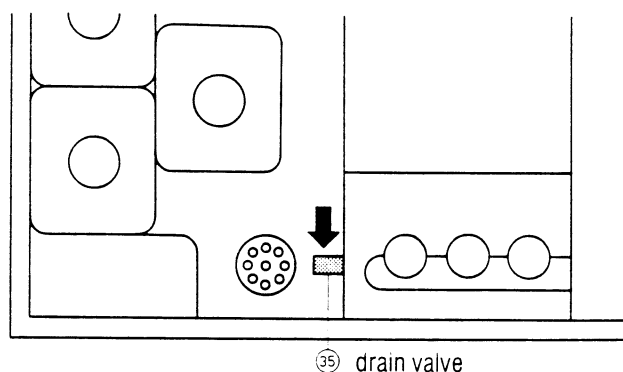
ATL-3 Complete without rinse water heater and Table Top, models #4171 & #4172

- Turn on the cold water supply.
- Turn on the tempered rinse water supply.
- Hold the spray wand open, rinse water will flow freely.

3.2 Filling the water bath

- Make sure the drain valve (35) is closed (pull up).
- Turn on the power switch (23).
- Turn the Set/Run switch (20) to the "Run" position.
- Press the Reset Key (13).

The unit will start to fill automatically within two minutes and maintain the proper water level.

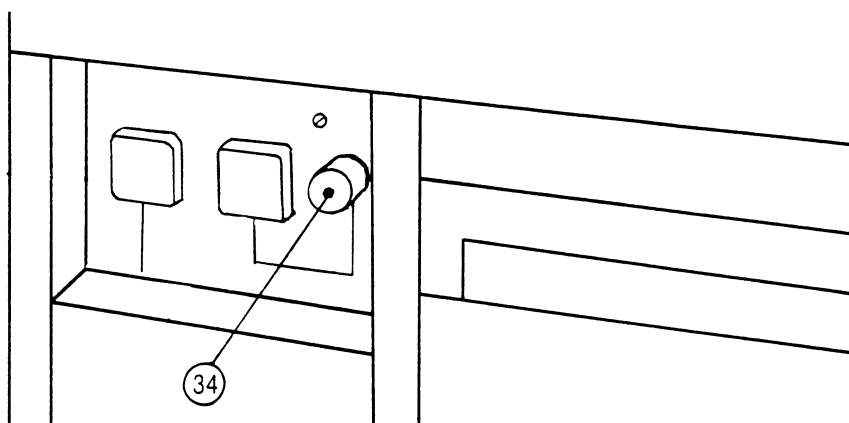


Note: If you are filling the water bath for the first time, let the bath fill about half way and then drain it completely by depressing the drain valve (35). This initial draining of water will ensure a secure sealing of the water bath drain. After releasing the drain valve, the ATL will resume filling itself to the proper level.

3.3 Adjusting rinse water temperature

ATL-3 Complete with rinse water heater, model #4170

Hold the spray wand open and adjust the mixing valve (34) to the desired temperature while water is flowing.



ATL-3 Complete without rinse water heater and Table Top, models #4171 & #4172

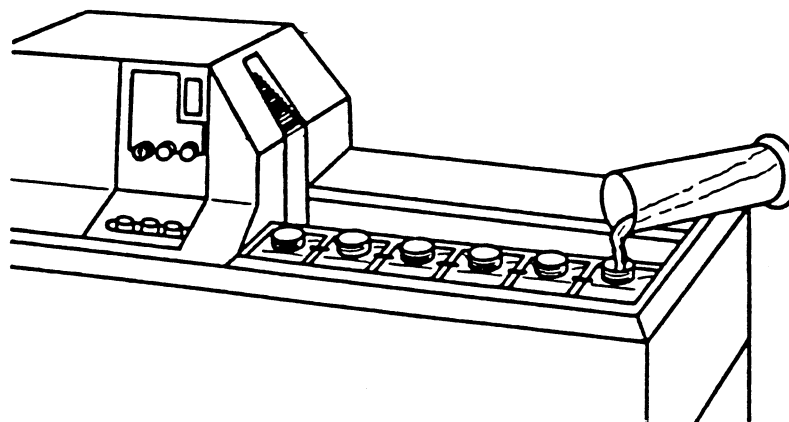
On these models the temperature must be adjusted with an external mixing valve and thermometer. The AutoLabs have a coil submerged in the water bath which acts as a heat exchanger. All incoming rinse water passes through the coil so that your rinse water only has to be within $\pm 10^{\circ}\text{F}$ (6°C) of the processing temperature. Adjust the rinse water accordingly for each process run.

3.4 Filling the chemical bottles

ATL-3 Complete models (#4170 & #4171)

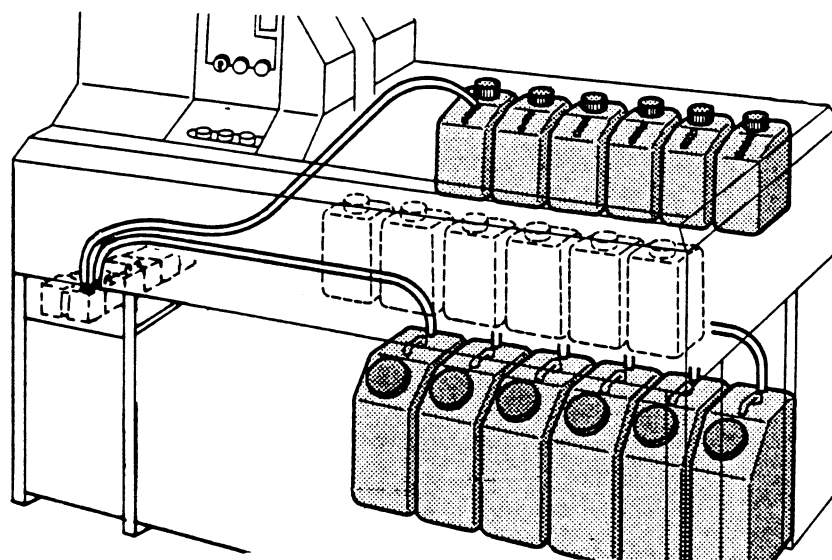
Front bottles

Lift the front bottle cover (28), unscrew bottle lids, and fill bottles with the desired amount of chemistry. The maximum fill quantity is 1.8 liters. The amount should be programmed into the microprocessor in accordance with section 4.4.



Back bottles and 15 liter containers

The back set of tempering bottles can be refilled manually or automatically via the 15 liter containers on the lower chemistry cart. If manual refilling is desired, fill the bottles in the same manner as the front bottles described above. Otherwise, if you wish to use the automatic refill feature, the cart (29) must be pulled out from under the ATL, and the numbered chemical hoses inserted into the rear set of 15 liter containers. To access the chemical hoses, pull the cart out completely. The grey hoses are on a hanger mounted to the inside back panel. Unscrew the lids and fill the back set of containers with the desired amount of chemicals.



Note: Unused 15 liter containers should be filled with approximately 5 liters of water so that the tempering bottles will be filled with water and the fault alarms will not be activated.

Note: The most convenient way to mix the chemicals for the 15 liter containers is to mix right in the containers. JOBO has a very handy accessory which allows you to do this quickly and without causing oxidation. The **Chemix** (#4185) is available through your authorized JOBO servicing dealer.

To protect stored chemicals against oxidation, the 15 liter containers have floating lids which automatically position themselves as the container is filled. Loosely screw the lids on the 15 liter containers when the automatic refill feature is to be used in order to avoid causing a vacuum. Return the cart to its proper position under the ATL.

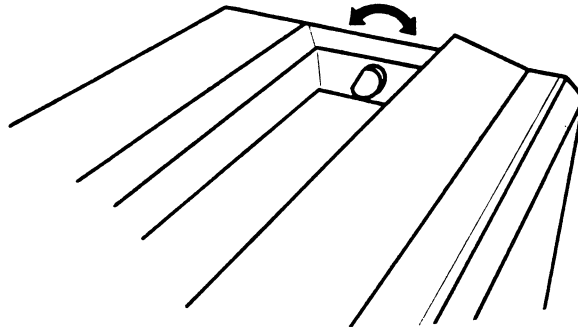
Turn the refill pump power switch (31) on.

ATL-3 Table Top, model 4172

Since the Table Top model is not equipped with automated refill capabilities, the front and back set of chemical bottles are filled in the same manner. Lift the front (28) and back (26) bottle covers, remove bottle lids and fill each bottle with up to 1.8 liters of solution according to your processing needs.

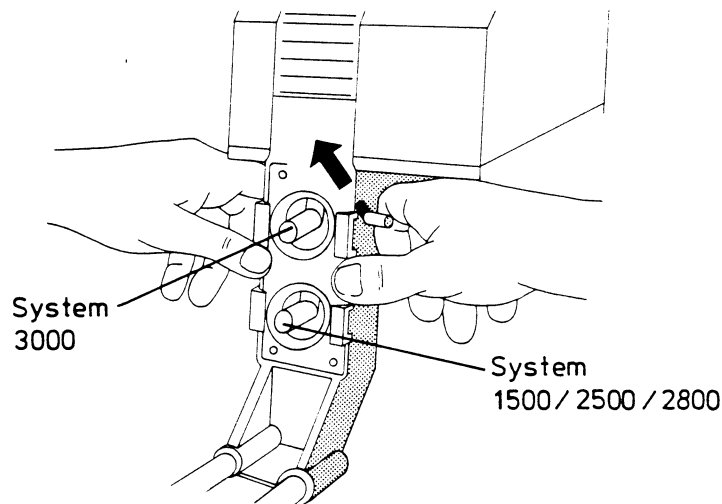
3.5 Adjusting water level

On the right hand side of the water trough is a black flow dial (27) for adjusting the water level. Turn this dial to obtain the highest level of water in the trough without causing the processing tank to float. Floating the tank will cause the chemistry to puddle at one end and may result in uneven development. Be sure the tank is resting flat on the roller blocks.



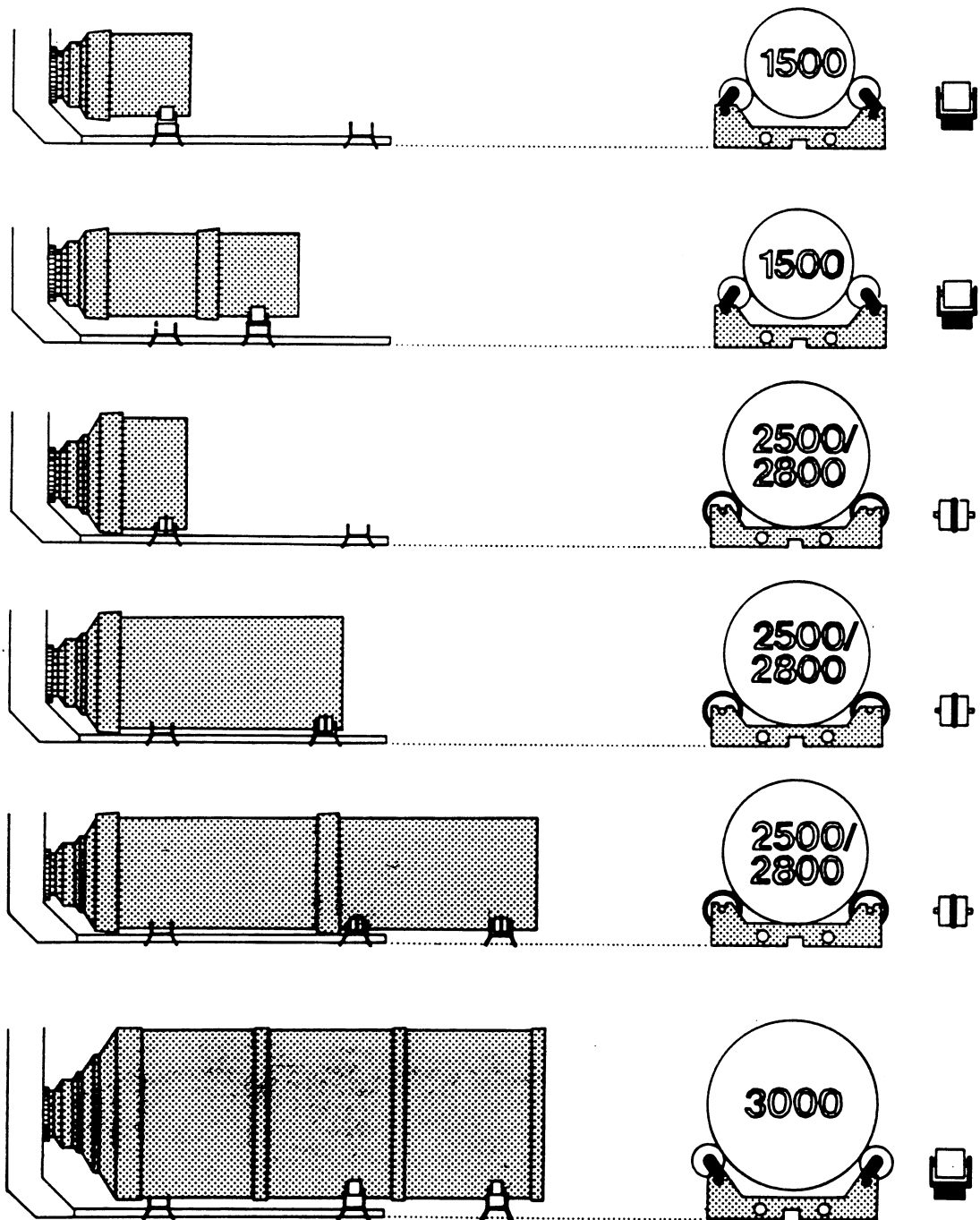
3.6 Tank system adjustments

Notice that there are two spigots on the lift arm. Because JOBO manufactures an assortment of tank systems to meet a wide variety of processing needs, you will need to make an adjustment to the lift arm according to the system being used. When using the 1500, 2500 & 2800 systems, press down the levers (45), which are on both sides of the arm. When using the 3000 system pull the levers upward. The levers must be fully engaged in order to operate the ATL properly.



3.7 Roller block adjustments

Due to the assortment of tank systems available, the roller blocks in the rotation trough also require adjustment. Slide the two black roller bearing blocks to the correct position and adapt the rollers and extensions to the correct position. Use the table below as a guide. All of the roller blocks and black roller bearing blocks are in the accessory bag.



3.8 Automated cooling

Cooling of the tempering bath is automatic. When required, the ATL-3 automatically allows cold water to enter the unit, via your cold water tap, until the desired temperature is reached. If the water bath temperature is higher than the programmed process temperature, the automatic cooling system is activated. The cold water solenoid valve opens automatically and the cold water flows in. The solenoid is designed to open approximately 30 seconds after the water bath temperature rises higher than the temperature you have programmed.

Note: The actual temperature of the water bath is slightly warmer than the temperature in the chemistry bottles simply because of the physics of heating. The temperature probe in the chemistry bottle displays the actual temperature.

Note: If your cold water tap is not cold enough to cool the processor to the temperatures required for the processes you are doing, you may need to purchase a chiller unit. Contact your JOBO servicing dealer for further information.

Helpful hint

If you want to change from a high temperature, such as 38° C, to a low temperature, such as 20° C, it is fastest to use the following procedure:

- Turn the power (23) off.
- Press the drain valve (35) to drain the water bath.
- Select the new program with the lower temperature.
- Turn the unit back on.

Within two minutes the water bath will begin refilling with water from your cold water supply. This procedure saves a considerable amount of time.

3.9 Chemical Reclaiming Options

With the ATL-3 complete units (4170 & 4171) you have two options for chemical reclamation. Used chemicals can be reclaimed in the front set of six 15 liter storage containers on the lower chemistry cart or in two liter containers in the top reclamation trough (see Figure 6).

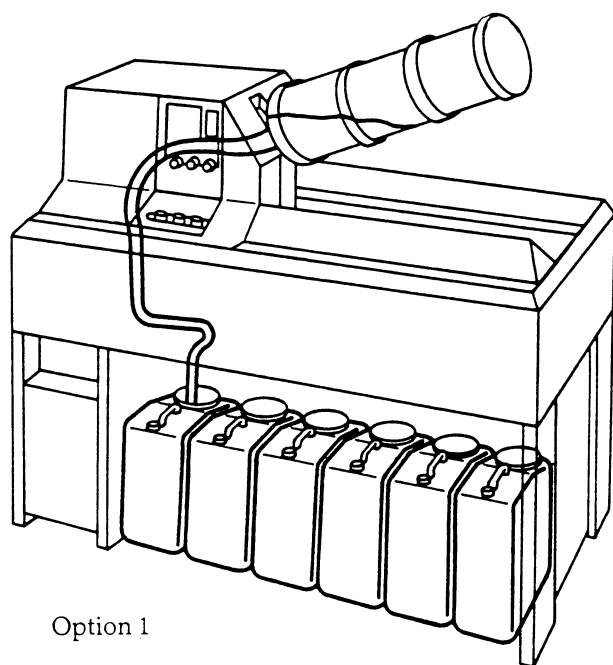
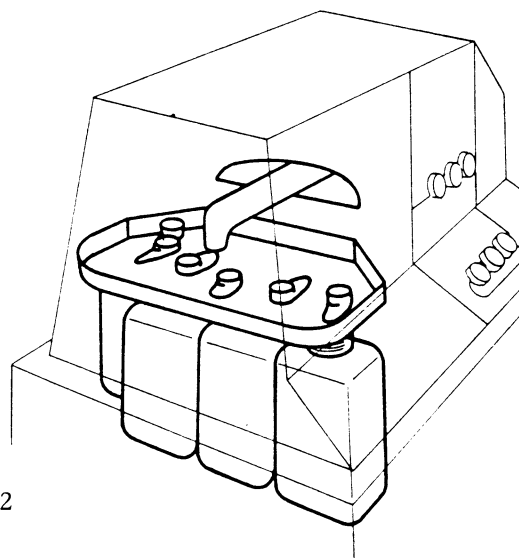


Figure 6



To use the 15 liter containers (option 1), set the plastic hose positioning plate and the 6 black spiral delivery hoses in place as shown in Figure 7.

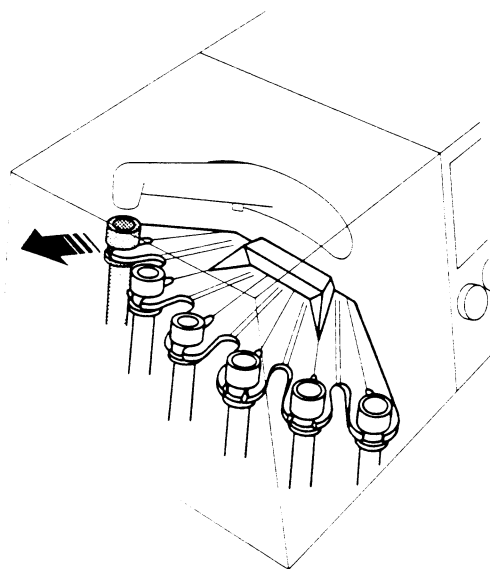


Figure 7

Be sure the front set of 15 liter containers are in the cart with the lids off and the mouths are toward the back as shown in Figure 6, Option 1. The lower cart must be pushed all the way in and not moved while a process is running. Incorrect positioning of the 15 liter bottles will cause the dumped chemistry to miss the mouth of the bottle.

To use the 2 liter containers for reclaiming chemistry (Option 2) remove the six black spiral delivery hoses and the plastic hose positioning plate from the unit and set them aside. Put the six empty 2 liter bottles into the six recesses of the molded bottom to the reclamation trough. Push the drain arm back and out of the way when lowering the hinged plate. Lay the hinged reclamation plate down on top of the bottles so that a funnel enters each of the bottles. The reclamation arm should return back over bottle one when you release it.

A third option is to remove all of the reclaiming apparatus from the trough so that the used chemistry pours down the drain. Use the plugs, provided in the small bag of accessories, to cork the holes which lead to the 15 liter reclaiming bottles. The plugs will prevent dumped chemistry and rinse water from accidentally spilling into the holes and possibly contaminating the reclaimed chemistry stored below.

With the ATL-3 Table Top unit (4172) only reclaiming Options 2 and 3 are possible.



Programming

4

4.1 Pre-programming Preparations

Enclosed with the ATL are five double-sided magnetic programming data cards which have been provided for use as references. The cards do not program the processor, they are for user reference only. Using the cards will help to verify that the program in memory is set correctly. We have pre-programmed each channel for you with our recommended processing times for six popular processes. The temperatures and channels we have entered are listed below. Obviously, since the AutoLab is user programmable, the programs can be altered at any time. Read sections 4.2 through 4.6 if you would like to alter a program.

Note: To avoid confusion, decide now which process chemicals will go in which bottles and be sure that the program card number corresponds accordingly (i.e. don't write your E-6 data on card #1 if you are planning on using the back set of bottles for holding the E-6 chemistry).

Program 1	
Process Kodak E-6	
Temp	38.0 °
Prewarm	5:00
Prerinse	—
Chem. 1	6:30
Rinse	2:30
Chem. 2	2:00
Rinse	—
Re-Expose	—
Chem. 3	4:00
Rinse	—
Chem. 4	2:00
Rinse	—
Chem. 5	6:00
Rinse	—
Chem. 6	3:00
Rinse	5:00

Program 3 & 8	
Process C-41 (Photocolor II)	
Temp	38.0 °
Prewarm	5:00
Prerinse	—
Chem. 1	—
Rinse	—
Chem. 2	—
Rinse	—
Re-Expose	—
Chem. 3	—
Rinse	—
Chem. 4	3:15
Rinse	—
Chem. 5	1:00
Rinse	—
Chem. 6	8:00
Rinse	5:00

Program 5	
Process P-30 Ciba	
Temp	24.0 °
Prewarm	—
Prerinse	1:00
Chem. 1	—
Rinse	—
Chem. 2	—
Rinse	—
Re-Expose	—
Chem. 3	—
Rinse	—
Chem. 4	3:00
Rinse	0:30
Chem. 5	3:00
Rinse	—
Chem. 6	3:00
Rinse	3:00

4.2 Programming in General

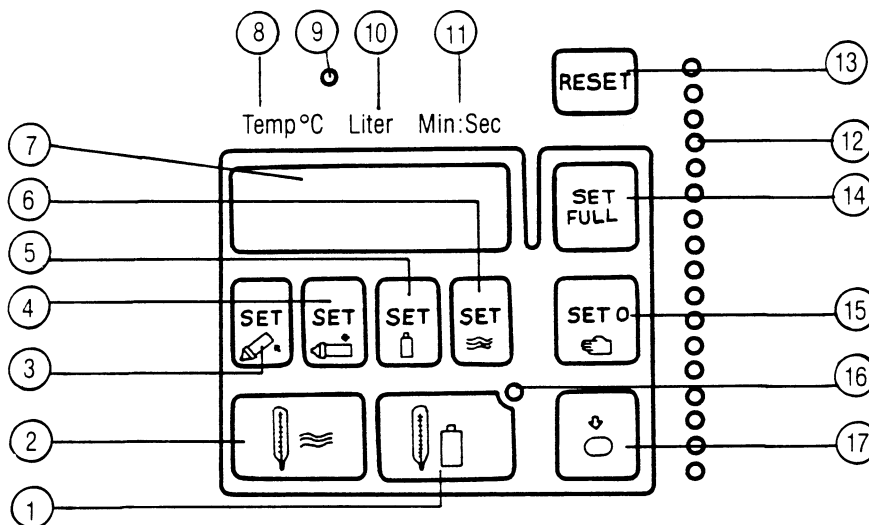
There is a column of LED's to the left of the programming data cards. As you step through the program an LED will light up next to the step that is currently being displayed on the digital readout. Enter the appropriate data for that step and move down to the next (specific details for each step are given in sections 4.3 through 4.6).

Pressing the "Reset" button (13) while programming returns you to the first step of the program. If you identify a mistake in a previous step, you have to press "Reset" and step down to it, in order to make the correction.

The program is entered in the following order: chemistry quantity; temperature; pre-warm and pre-rinse times; six chemical steps with following rinse times. More information is given on the programming of each step in the following sections.

For clarity we have used three colors for the LED's indicating process steps.

- Red** - Temperature, pre-heat, re-exposure, end
- Green** - Rinse steps
- Orange** - Chemistry steps



4.3 Begin Programming

- Turn the power switch (23) on and place a prepared process card in the white area of the control head.
- Turn the program selector dial (21) to the channel which corresponds to the number on the program card and press the "Reset" button (13).
- Turn the "Set/Run" selector switch (20) to "Set".

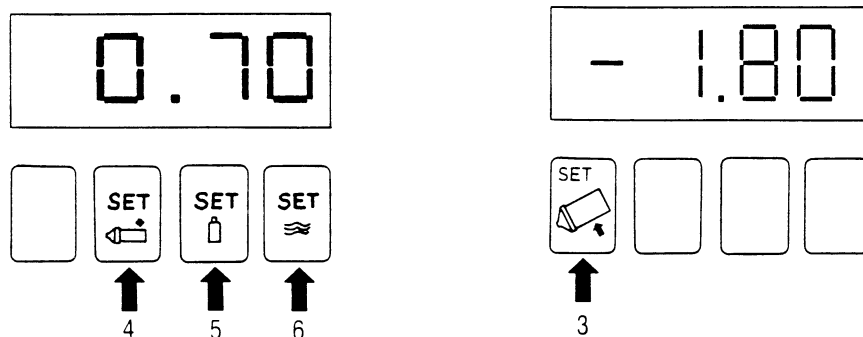
Number values are entered for each input by pressing the entry buttons (3, 4, 5 & 6). Press a button to increment the digit displayed in the window above it by one. If a lower number is desired, continue pressing the button and after reaching the highest number it returns to zero. Press the "Set 0" button (15) to set all the digits to zero.

4.4 Entering the Tempered Chemistry Amount

The first programming step is to enter the quantity of chemistry which you have filled into the tempering bottles. If you have followed the instructions in section 4.3, three digits will appear in the display with a decimal point between the first and second digit. The number indicates the volume of chemistry in liters. If you have filled the bottles to be used for this particular program with 1.8 liters, press the "Set Full" key (14) and hold it for two seconds. The LED display will change to "1.80" indicating the amount of chemical in liters, and an audible signal is given to acknowledge the entry has been made. If you have filled the bottles with a volume of chemistry less than 1.8 liters, use the entry buttons (4, 5 & 6) to enter the amount of chemistry you have filled. When a process is run, the amount of chemistry used is automatically deducted from the total (see variations on this feature below and in section 6.8).

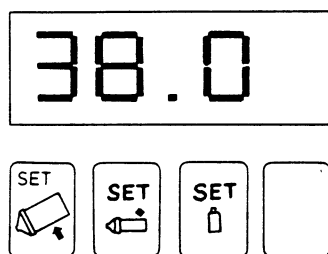
Note: To convert the chemistry amount to milliliters (ml), drop the decimal point and add a zero to the right of the number. Thus, a display of 0.07 is 70 ml, 0.15 is 150ml, 1.00 is 1000 ml (or 1 liter), and 1.80 is 1800 ml (when the bottles are full).

Since the back set of bottles on ATL-3 complete models (4170 & 4171) are automatically refilled, entering the tempered bottle amounts for those bottles is not necessary (it automatically resets the program to "1.80"). However, if you want the back bottles to run until empty, turn the automatic refill switch (31) off and enter a minus (-) sign in the left most display by pressing the button (3). Now the back set of bottles will operate in the same manner as the front, for this particular program.



4.5 Entering the Process Temperature

The second step in programming the ATL-3 is to enter the temperature at which the process will be run. If the chemistry amount is being displayed, press the step button (17) once to access the temperature setting step. The top red LED (12) will light up. Notice that it corresponds with the word "temp" on the program card. The temperature is displayed as three digits with a decimal point between the second and third digit. The display reads in Celsius. The highest temperature that can be entered is 121.8°F (49.9°C) and the lowest is 64.4°F (18.0°C). Within this range, the process temperature will be maintained to within $\pm 0.18^\circ\text{F}$ (0.1°C). Using the entry buttons (3, 4 & 5) enter the temperature you want for the process written on the card.



Note: Temperatures lower than 18.0 can be entered into a program but, when the "Set/Run" switch is moved to "Run", lower entries are changed to 18.0.

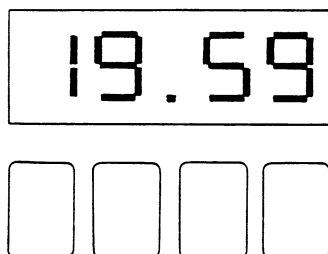
Note: A quick tempering function can also be programmed in at this time. Quick tempering decreases the length of time necessary to bring cool chemistry up to operating temperature. To engage this option, press the right most entry button (6) so that a "U" appears in the display above it. To cancel quick tempering press the button again and the "U" will extinguish.

When the overheat feature is on, the "Temp C" LED (8) flashes (if the "Set/Run" switch is on "Run") to remind you that the feature is engaged.

It is recommended that the temperature overheat feature only be used for the initial start-up of the processor and not be left on all the time.

4.6 Entering the Individual Process Times

All of the remaining steps to be programmed are timed, meaning that you enter times for each step. Four digits appear with a colon in the middle. The length of time you want for each step will be entered in minutes and seconds. For example, two minutes and thirty seconds is displayed as "02:30", forty seconds is displayed as "00:40", and nineteen minutes and fifty-nine seconds is displayed as "19:59".



The first timed step is the "pre-warm" (red LED). It is a dry incubation period before any fluid enters the tank. The pre-warm allows the tank and its contents to stabilize at the processing temperature.

The second timed step is the "Pre-rinse" (green LED). A pre-rinse also allows the tank and its contents to stabilize at the processing temperature by allowing tempered water to flow in.

Enter the times for each of the incubation steps using the entry keys (3, 4, 5 & 6). Using the "pre" steps depends on the requirements of the particular process (see chapter 8 for specific process recommendations on all the common processes). If you wish to skip a particular step, press "Set 0" and it will be bypassed when the program is run.

The chemical step times are programmed in the same manner. Use the step key (17) to move through the program and enter the desired times for each step. The ATL takes into account the length of time it takes to drain the used chemistry. The lift arm will raise the tank to drain the used chemistry before the total time has expired. The microprocessor knows how long it takes to completely empty and lower the tank back down so that it's ready for the next step the moment the time elapses.

When running a rinse step, the water is exchanged every thirty or forty seconds so that the film or paper is thoroughly cleaned.

Note: There is a step after chemistry #2 called "Re-exposure". For virtually all contemporary processes the step is bypassed (enter "00:00"). See section 6.2 for further explanation.

After entering all the values you can go back, check the program and change it if necessary. Press "Reset" (13) and then the step button (17) consecutively, checking each step with the data written on the magnetic card. Then press "Reset" again to return to the top. If all the entered values are correct, turn the "Set/Run" switch (20) back to "Run". Entries cannot be changed unless you are in "Set" mode. The battery back-up will maintain your programs even if the machine is left unplugged for several months.

Note: The "Set/Run" switch must be in the "Run" position for the processor to adjust the waterbath to the programmed temperature.

Running a Process

5

- Turn the power (20) on.
- Turn the "Set/Run" switch to "Run".

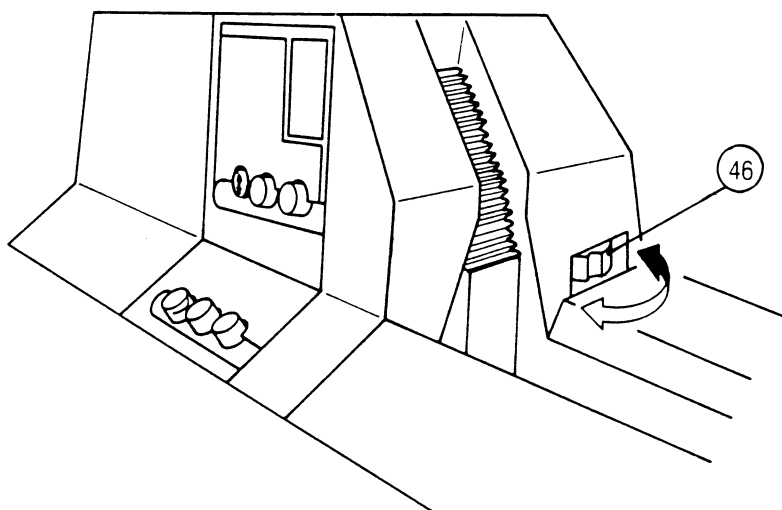
5.1 Filling Quantity Selection

Read the label on the tank you will be using for the process and determine the amount of chemistry needed for processing. If you're using a tank with a module connected to it, be sure to add the amounts on both labels. Set the "Filling Quantity" dial (22) to the appropriate position. If the quantity required is not listed on the dial, use the next higher amount.

Note: If you are using the 2500 system of tanks with the 2502 Duo-Set reels, use the "Automatic Filling Quantity Selector" dial (25). Read section 6.7 for details.

5.2 Chemistry Bottle Selection

Determine which set of bottles you will use for the process and adjust the "Front/Back Selector" (46) switch to the correct position. In the forward position the front set of bottles will be used, and in the rear position, the back set of bottles.



Reminder: Programs 1 through 5 are for the front bottles and programs 6 through 10 are for the back bottles. If you try to run programs 1 through 5 with the switch set to the rear position (or vice versa), an alarm will sound and a "1" will flash in the left most display window. The alarm will continue until the switch is set to the correct position.

5.3 Rotation Speed Selection

The "Rotation Speed" dial (24) can be adjusted to six different settings. Four of them, 25, 50, 75 and 100, are standard bi-directional speeds corresponding to the number of revolutions per minute. The other two, "Quick start" and "Disc", are for special processes. Find the particular process you're doing in chapter 8 to determine which speed you should use.

All the speeds are held constant electronically, regardless of the weight of the load.

5.4 Final Check List

Couple the tank to the processor and review the following list to verify that you are ready to process:

1. Has the right program been selected?
2. Has the correct filling amount been set?
3. Has the proper rotation speed been set?
4. Is there a sufficient quantity of solution in the stock bottles?
5. Is the chemistry amount indicated on the display the same as the amount in the bottles to be used?
6. Are the tempering bottles lids sealed properly and tightly?
7. Have the rollers been set properly for the tank series to be used?
8. Is the water bath level high enough to temper the tank, yet not cause it to float?
9. Has the cold water supply been turned on?

For ATL-3 Complete without rinse water heater and Table Top models (4171 & 4172)

10. Has the rinse water supply been turned on?
11. Is the rinse water at the right temperature (within $\pm 10^{\circ}\text{F}$ [6°C] of the processing temperature)?

5.5 Starting the Process

The display should be showing the amount of chemistry in the tempering bottles.

- **Press the "Start" button once.**

The display will indicate the fill quantity you have selected.

- **Press the "Start" button again.**

If the fill quantity (25) you have selected is greater than the chemical quantity entered in the program, then the insufficient quantity entered in the program will display, and the ATL will not allow you to proceed. Press "Reset", refill the tempering bottles if necessary, and reprogram.

Note: When using the automatic fill quantity dial (25) an "A" will appear in the left most display along with the amount of chemistry to be pumped.

If the chemical quantity entered in the program is enough to meet the amount specified on the fill quantity dial, the program channel selected will display.

- **Press the "Start" button a third time.**

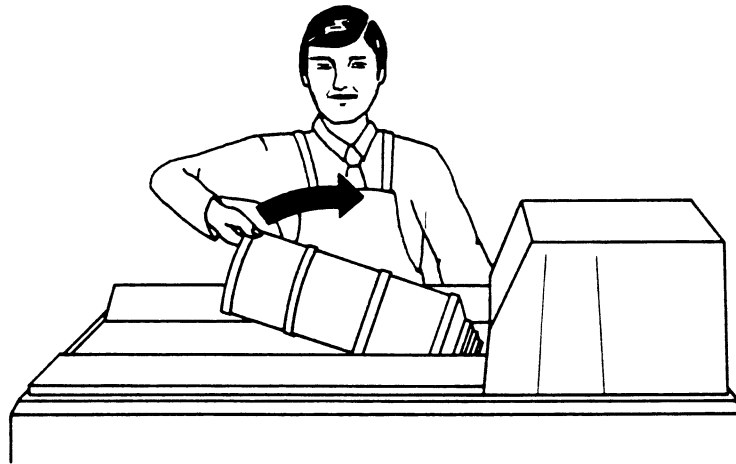
The programmed temperature at which you want the process to run will display, and the tank will begin rotating slowly. If the water bath and chemistry are at the programmed temperature, the processor will beep, and start the process. Otherwise, if the processor has not reached the correct temperature yet, the red temperature LED (16) will illuminate, and the tank will continue to

rotate slowly. When the programmed temperature is reached in both the chemistry bottle and the water bath, the temperature LED is extinguished and the process starts. Read section 6.5 for instructions on how to override the temperature delay.

Note: Once a process has started, turning the program dial will not change the program. To see how changes can be made to a program in process, read section 6.4.

The column of LED's (12) that are to the left of the programming data cards light up in sequence to indicate the step in progress. The display acts as a timer, counting down the time for each step. At the end of the process, a beeper sounds until the "Reset" button is pressed. The display will show the amount of chemistry remaining in the tempering bottles.

Remove the tank from the processor by grasping it at the bottom and pulling up. The tank will make a snapping sound when it disengages from the lift.



Note: It is recommended that stabilizers or wetting agents not be used in the processor. Both chemicals rinse off the tanks and reels with difficulty and create a foam if agitated. When a wetting agent or stabilizer is used at the end of a process, remove the film/prints from the tank and reels before placing them in the agent. If you do use them in the processor, be sure to clean all the apparatus thoroughly before the next run. Even a small buildup will hinder the loading of film reels and can "carry over" and contaminate future processes.



Special Functions

6

6.1 Filling the Tempering Bottles

In order to update the tempered solution level for a program more conveniently, JOBO has included a key for resetting the available tempered solution amount to the full 1.8 liters. After completely filling the tempering bottles for a particular program, press the "Set Full" key (14) and hold it for two seconds. When the audible signal ceases, the tempered chemistry amount for that program has been set to "1.80". The new full setting will only affect the program for which the program selector dial (21) is set.

The "Set Full" key can be executed while the ATL is in either "Set" or "Run" mode. Pressing the "Set Full" key while the processor is in "Set" mode will change the setting to the maximum amount immediately. If the processor is in "Run" mode, the "Set Full" key is only operable if a process is not running (i.e. either before pressing the "Start" key or after pressing "Reset"). The "Set Full" key must be held for at least two seconds if the processor is in "Run" mode. At first, "1.80" will flash in the display, then a beep will sound to indicate that the new amount has been entered. If the key is released before the two seconds has elapsed, the chemical quantity will remain unchanged.

6.2 Intermediate Exposure (Re-exposure)

Light reversal, as opposed to chemical reversal, can be used when processing E-6 compatible slide film on an ATL. If an intermediate exposure is to be made, enter the exposure time into the program (see section 4.6). During the process run a buzzer sounds when the re-exposure step is reached. Detach the tank and expose the film manually. Press the "Start" button (19) and the set time for the exposure runs in the digital display. After the time elapses, the beeper will sound again. Re-couple the tank, press "Start" button and the process will continue.

6.3 Manual Operation

In addition to being program entry keys, buttons 3, 4, 5, 6 & 15 may also be used to do some manual operations. To perform the additional functions the "Set/Run" selector switch (20) must be in the "Run" position (recall that in the "Set" position the buttons are used to program the times, temperatures and chemistry amounts). Then, by simultaneously pressing the "Set 0" button (15) and one of the other entry buttons, individual process steps can be carried out manually. The manual functions are as follows:

- Press buttons (15) & (3) together to raise the lift arm.
- Press buttons (15) & (4) together to lower the lift arm.
- Press buttons (15) & (5) together to pump chemistry from the tempering bottle to the tank. The ATL assumes that the last bottle from which chemistry was pumped is the one you want. Approximately 100 ml of chemistry is pumped per second.
- Press buttons (15) & (6) together to allow tempered rinse water to flow into the tank.

6.4 Program changes while a process is running

Once a process is running, there are several changes that can be made.

A. Changing the Filling Quantity

Set the "Fill Quantity" dial (22) to the new filling amount and then turn the "Set/Run" selector switch (20) to "Set" and back to "Run". If the new filling quantity is greater than the original amount, the difference is pumped into the tank immediately and all subsequent steps will receive the new amount. Otherwise, the new filling quantity is smaller than the original amount and the smaller quantity is fed into all the subsequent process steps.

Be sure to check the tempering bottles at the end of the process to see if they all have equal volumes of chemistry.

B. Correcting a process step that is in progress

- Press the "Stop" button (19). The green LED (19a) will light up.
- Turn the "Set/Run" selector switch (20) to "Set". The digital display (7) shows the originally programmed time.
Note: Internally, the interrupted time continues running as long as the selector switch is in "Set" mode.
- Use the entry buttons (3, 4, 5 & 6) to modify the time.
- Return the selector switch back to "Run" mode. The difference between newly programmed time and the time already elapsed is displayed and continues counting down.
- Press the "Start" button (19). The green LED will extinguish.

C. Entering/Cancelling program steps

- Press the "Stop" button (19). The green LED (19a) will light up. Wait for the current process step to run down to "00:00". The arm will lift to empty the tank and lower itself.
- Turn the "Set/Run" selector switch (20) to "Set".
- Use the "Step" button (17) and select the step you want to alter.
- Use the entry buttons (3, 4, 5 & 6) to modify the times. All remaining process steps can be changed.
- Return the selector switch back to "Run" mode.
- Press the "Start" button (19). The green LED will extinguish and the process will move on to the next step.

Note: Pressing the "Stop" button (19) at any time during a process run causes the process to pause when it reaches the end of the step it's in. If the button is pressed again the program will continue. The green LED (19a) will always light up when the program is paused.

Note: The program cannot be changed while in a "pre" step.

Reminder: Pressing the "Reset" button (13) interrupts the program immediately, returns the drain arm to its home position and the program returns to the beginning. Continuing a process from the point of interruption is not possible. Therefore the reset button should only be pressed during a process run if you want to terminate the process.

6.5 Overriding the Temperature Check

As stated in section 5.5, once you have pressed the "Start" button three times, the temperature at which you want to start the process will display and the tank will begin rotating. If the temperature of the water bath and chemistry match the programmed temperature, the process starts. Otherwise, the ATL waits until the temperatures do match and then starts.

If you want to override the pause, do the following:

- Press the bottle temperature button (1) and the "Start" button (19) simultaneously, and hold them

for one second. The process will start, and the temperature holding LED (16) will flash throughout the process run.

6.6 Quick Tempering Feature

Read the second note from section 4.5

6.7 Automated Fill Quantity Feature

As stated in section 5.1, the amount of chemistry required for a particular run is chosen with the "Filling Quantity" dial (22). Another method should be used to choose the filling quantity if you're using the 2500 tank series with 2502 Duo-set reels. All you need to do is set the "Automated Filling" dial (25) to the tank or tank combination in use and the ATL pumps the correct amount of chemistry required.

To activate this feature, turn the "Filling Quantity" dial (22) to "A" (for automatic). Notice that on one side of the "Auto Fill" dial is the listing of the tanks with a picture of a half filled tank and on the other half the tank is completely full. The full tank picture is for a double loaded 120, single loaded 220 or 35mm film, and a half full tank picture is for single loaded 120 films which are only loaded on the outside of the reel. Set the "Automated Filling" dial to the appropriate position and the chemistry and rinse volumes are then automatically calculated. When the start button is pressed for the first time in starting a process, an "A" will appear in the left most display next to the readout for the amount of chemistry to be pumped.

Using the "Automated Filling" dial not only makes running a process easier, but it also assures thorough rinsing by filling the tank completely with water even though only minimal chemistry amounts are needed.

6.8 Calculation of the Chemistry Quantity Remaining

The ATL-3 keeps track of the amount of chemistry in each of the tempering bottles. For example: If you put C-41 chemistry in bottles 1-2-3, you would enter the solution quantity into the C-41 program channel. Let's assume it's program #4. Similarly, if you put black and white chemistry in bottles 4-5-6, you would enter that amount in the program number chosen to operate the black and white process, say program #5. When a C-41 run is made with program #4, the unit will deduct the quantity of solution used for the run from the original quantity entered. So if the bottles were full, the display should read "1.80", and after you run a process which required 270ml of chemistry the display would read "1.53". Hence, anytime the program selector is turned to channel 4 the display will indicate "1.53", the solution remaining in bottles 1-2-3. Likewise, if you turn the program selector to channel 5 the display will show the amount of solution in bottles 4-5-6, which was not affected by the C-41 run.

The ATL-3 Table Top model (4172) will operate as outlined above for both the front and rear set of six 1.8 liter bottles.

The ATL-3 Complete models (4170 & 4171) automatically refill the back set of tempering bottles from the 15 liter containers on the lower cart. As soon as a quantity of solution is pumped from a bottle in the rear six bottle set, the automatic refill sensor signals the pump to refill the upper 1.8 liter bottle to capacity. Therefore, programs 6-10 always display "1.80" as the amount of solution available for the next run.

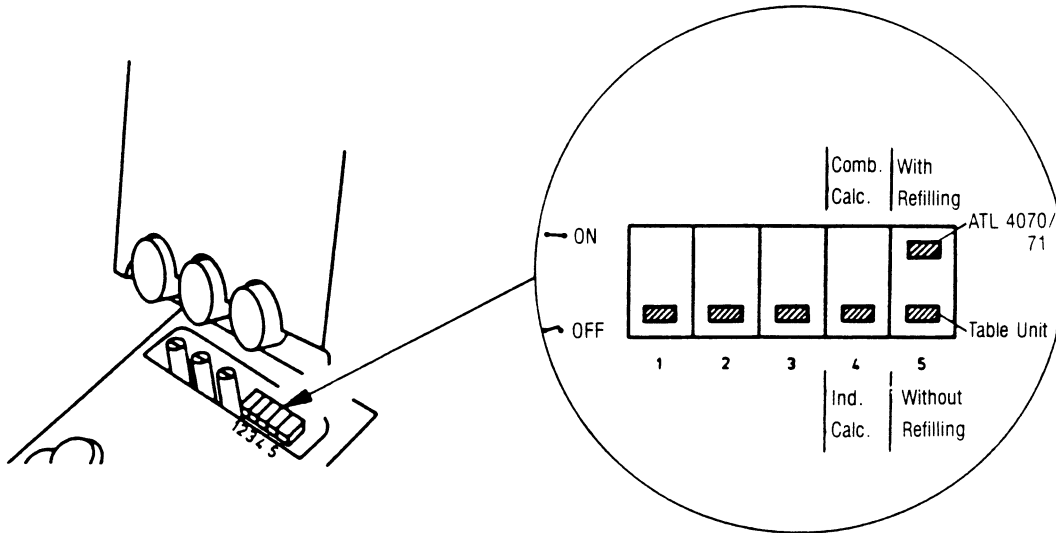
When desired, the repositioning of a dip switch under the panel (38) will allow the machine to track solution quantities by the bottle set, either front or rear, so that in the above described scenario, pumping chemistry for one program will equally change the amounts for programs set intended for the same set of bottles. (The change makes it possible to run altered versions of a process requiring the same chemicals, and you don't have to calculate and reprogram the developing time for each run.) The alternative would be having several programs for the same set of bottles and remembering how much chemistry is left in the bottle set so that you could enter the correct amount each time you switch programs. This is especially likely with a process such as E-6.

The ATL resolves the problem in the following manner. Assume that you are running the Kodak™ E-6 process, which requires six bottles plus a stabilizer. You could use the same chemistry for five different programs: 1) Standard E-6, 2) Pull 1 stop, 3) Push 1 stop, 4) Pull 2 stops, 5) Push 2 stops. Enter each process in its entirety into its own program channel 1-5 respectively, and follow the directions below for keeping one running total for each set of six bottles.

It is also possible to run the back set of tempering bottles empty on ATL-3 Complete (i.e. use the back set in the same manner as the front set of bottles). Refer to section 4.4 to engage that option.

The front and back bottles on the ATL-3 Table Top model (#4172) will operate exactly the same way since it is not equipped with refill bottles.

To reconfigure the ATL for one running total per bottle set, turn the power switch (23) to the off position and unplug the power cord. Remove the access panel (38) using a Phillips screwdriver. Three fuse sockets and a set of dip switches will now be exposed and readily accessible. The #4 switch is set to the off position at the factory. In the "OFF" position the chemistry quantities are calculated by each program independently, while in the "ON" position the one running total is kept for each of the six 1.8 liter bottles. Set the switch to the desired position.



Trouble-Shooting

7

Fault Indicators

Indication	Cause	Remedy
1. Water bath does not heat up	"Reset" was not pushed after programming	Push "Reset" (13)
2. Water bath does not heat up	"Set/Run" in position "SET"	Turn switch (20) to "RUN" Push "Reset" (13)
3. Unit does not respond when pressing start button	Chemical amounts in bottles not sufficient	Refill bottles, enter new volume in display
4. Beep & red triangle LED	Rinse water off Bottles empty Bottle caps are not tight	Turn it on Refill bottles Tighten the caps
5. Triangle lit & flashing step button	There was insufficient solution in the bottle specified	Fill the bottle before starting the next process
6. Flashing red triangle	There was a momentary loss of power to the unit during operation	Ignore it, the process will not be affected if it was only for a few seconds. The triangle will turn itself off at the start of the next process. Note: The ATL-3 always flashes the triangle when the processor is first turned on.
7. Yellow LED	Unit has an internal problem with the microprocessor	Corrects itself automatically
8. A "1" in the display & beeping	The front/back switch (46) is in the wrong position	Switch it to the correct position
9. A "2" in the display & beeping	Drum motor stopped	The motor should automatically reverse in less than 5 seconds. If it doesn't free up, call for service.
10. Motor turns at 50 rpm's w/out reversing & does not respond to speed changes	Motor is overburdened	It should work normally after if cools for a while. If problem occurs often call service.
11. A "3" in the display & beeping	Air distributor control problem	Call service.

12. A "4" in display & beeping	ATL cannot raise the lift arm	Empty the drum manually, re-attach it to the processor and press the start button. Finish the run and call for service.
13. A "5" in the display & beeping	Defective water temperature sensor	Press bath temp. display button (2). If the display is >2.3 or <49.9 call for service.
14. A "6" in display and beeping. See note 3 below.	Pumped solution quantity was not sufficient	Depress keys (15) & (5) together to pump more chemistry. 1 sec = 100 ml
15. A "7" in display & beeping	Chemical sensor defective	Disengage the quick-tempering feature (see second note in sec. 4.5) and call for service. The unit can be used with the temp. override (see section 6.5).
16. Continuous long beep	Filters plugged on automatic refill, or 15L containers empty	Change filters or refill 15L containers. Turn the refill switch (31) off & then on again.
17. Continuous long beep	Pump defect	Call service

Notes on filling

Note 1: If the volume set on the "Fill Quantity" switch (22) is greater than the amount in the display, the program will not start.

Remedy: Refill the bottles and reprogram the ATL with the new chemical amount.

Note 2: If the ATL gets less than 15% of the fill quantity instructed, a continuous beeping alarm will sound, the yellow triangle (18) will illuminate and the program will pause.

Remedy: Check to see if there is chemistry in that particular bottle, or if the hoses for that bottle are kinked, or if the cap to the bottle is not fit properly. Once the problem is located and resolved, press the start button and the unit will attempt to pump the chemistry again.

Note 3: If the ATL gets more than 15% but still substantially less than the fill quantity instructed, the alarm will sound, the yellow triangle (18) will illuminate and a "6" will flash in the left most display window. The program will continue running.

Remedy: Follow the remedy stated for note #2. If you don't hear the alarm and the program reaches the end of that step, the flashing "6" and beeping stop. The LED for that step will continue blinking to inform you of the problem it had.

Specific Processing Instructions

8

8.1 Introduction to Processing

This section details the steps involved in running specific processes. JOBO has made every reasonable effort to be sure that this information is accurate, however the various manufacturers can, and do change their specifications for these processes. You should always confirm the processing procedure (and mixing instructions) by referencing the instructions packaged with the chemistry. Check for rotary-specific instructions.

Before processing valuable photo materials we strongly suggest that you become familiar, and are satisfied with the quality of any process used!

The developer times listed are suggested starting points for proper processing. Due to a great many variables involved in any photo process, these times should only be considered approximately correct. For best results, and personal preference, the development times may need to be adjusted. Refer to the section on process control strips (8.2) for further information on adjustments for optimal processing.

Included with the information on the processes to follow are bottle location numbers (from left to right). The order of the chemical steps must be maintained, but the specific bottle locations are only recommendations. These recommendations are helpful when several different processes are run on the machine. They minimize the possibility of cross-contamination and expedite the change of chemistry containers for different processes.

The list of processes covered in this section is not meant to be a complete list. Virtually any photo process may be run on your JOBO processor. This section covers the instructions for Kodak™ Photocolor™ and Ilford™ (Cibachrome) chemistry. The list is not meant to be exclusive. Agfa™ Unicolor™ Hunt™ RT™ and others make chemistry that will work excellently on your JOBO processor. If the chemistry you wish to use is a not listed in this section, and rotary instructions are not supplied, contact the manufacturer for rotary specific instructions.

If you are unable to obtain instructions, or are experiencing problems, write or call JOBO for assistance.

8.2 Processing Process Control Strips

The use of the process control strips is not strictly necessary, however, their use is the best assurance of correct processing, and is strongly suggested for critical commercial work.

Pre-exposed process control strips are available from Kodak and other manufacturers. They can be purchased through photographic supply dealers. Control strips can be processed in the Autolab and compared against a strip pre-processed by the manufacturer. Variations between a control strip processed on the Autolab, and the manufacturer's pre-processed strip will determine what adjustments (if any) need to be made to the process times or chemistry. Control strips should be stored in a freezer and thawed thoroughly before processing.

Use a densitometer to make accurate evaluations of control strips. Read the density steps of each processed control strip. Log the results and compare them to charts provided by the control strips' manufacturer.

If the readings obtained do not vary from the chemistry manufacturer's tolerance specifications, then the process is "in control" and your film will be processed correctly. If readings are out of the chemistry manufacturer's specified range, refer to the chemistry manufacturer's process manual for corrective action(s). After adjustments are made, process another control strip. A control strip should be run periodically to verify an "in-control" process. A control strip should be run when new chemistry is mixed, or any change is made in the process.

Note: If you are unfamiliar with the use of a densitometer, see your local industrial photographic dealer.

Note: Process control strips are the most accurate system for assuring that all the parts of the process are working to produce the expected final product. Judgment must be used, however, to insure that the end result is acceptable to the end-user. If you are processing for yourself, then you are the "judge and jury" of what is acceptable. When processing for others, having a process that is documented as standard or "in control" will alleviate potential problems with your customer and will help to determine what may have caused undesirable results in the customer's film. When the process is in control, other non-processing related areas should be examined for possible cause.

8.3 Color slide film process: Kodak E-6

The Kodak E-6 process is used to develop E-6 Ektachrome™ (and compatible) films (processing with Bessler E-6 chemistry will also work with the same recommendations). The following is a brief description of each processing step.

- Use speed 75 with 1500 or 2500 series tanks.
- Use speed 50 with 1500 and 3000 series tanks.
- Set temperature to 38.0°C.

Program 1		
Process Kodak E-6		
Temp	38.0 °	
Prewarm	5:00	
Prerinse	—	
Chem. 1	6:30	1st Dev.
Rinse	2:30	
Chem. 2	2:00	Reversal
Rinse	—	
Re-Expose	—	
Chem. 3	4:00	Color Dev.
Rinse	—	
Chem. 4	2:00	Cond. Bath
Rinse	—	
Chem. 5	6:00	Bleach
Rinse	—	
Chem. 6	3:00	Fixer
Rinse	5:00	

Pre-warm, 5:00 minutes

First developer, bottle position 1, 6:30 minutes

The exposed silver salts are converted to metallic silver. This is the most critical step in the process. Errors in time, temperature, agitation, and dilution will adversely affect density, contrast, maximum density, and fog level.

Rinse, 2:30 minutes

The first rinse stops the developing action of the first developer. It also prevents carryover of developer into the reversal bath. Too long or too short a rinse can cause the density and color balance to change.

Reversal Bath, bottle position 2, 2:00 minutes

Reversal Bath contains a fogging agent so that re-exposure to light is not required. Improper reversal bath use will produce partial reversal of the image, and result in loss of density. See Note 1 below.

Color Developer, bottle position 3, 4:00 minutes

The remaining silver salts are converted to metallic silver and the color couplers in the film are converted into the image. Improper color development will adversely affect the color balance, contrast, maximum density, fog level, and evenness of development. See Note 2 below.

Conditioner Bath, bottle position 4, 2:00 minutes

The metallic silver is prepared for bleaching and the pH of the film is adjusted in preparation for the bleach. Color developer is prevented from contaminating the bleach. Improper conditioning produces silver retention and fog. See Note 3 below.

Bleach Bath, bottle position 5, 6:00 minutes

Metallic silver is converted to silver halide so the fixer can remove it. Improper bleaching produces silver residue, low maximum density in red, yellow fog, and/or high maximum density for blue. See Note 4.

Fixing Bath, bottle position 6, 4:00 minutes

The fixer removes silver halides from the emulsion leaving just the color dyes. Ineffective fixing leaves silver in the film, causing excessive blue density in the highlights, yellow veiling, and spots.

Final Rinse, 6:00 minutes

This rinse removes all remaining chemicals in the film. To be effective it needs to be at least six minutes long.

Stabilizer Bath, (time not critical) 1:00 minute

Stabilizer helps to preserve the color dyes from fungus or mold, and contains a wetting agent to promote spot free drying. This bath should be replaced periodically to prevent scum from forming. See note 5.

Note 1: Kodak recommends diluting their E-6 reversal bath to 60% of the working strength solution (i.e. 1.6 gal. for use from 1 gal. of normal working strength chemistry), when using a rotary processor. This increase is not beneficial when using non-Kodak films in Kodak E-6 process.

Note 2: Kodak recommends decreasing their E-6 color developer time from 6:00 minutes to 4:00 minutes when using rotary processing. Use 6:00 minutes only when push processing.

Note 3: Do not use a rinse between the conditioner and the bleach. Carryover is required for proper processing results.

Note 4: The bleach needs to be aerated to work effectively. Unlike developers which are degraded by too much oxygen, the bleach needs to be fully oxygenated. This is accomplished by making sure that air is introduced while mixing the bleach. This can be accomplished several ways, for example, mixing in a larger container than the volume of bleach and stirring or shaking (while capped) vigorously. On a large scale, air can be bubbled through the bleach with a pump.

Note 5: Stabilizer should be always be used outside of the processor to avoid contaminating tanks and reels. Use a separate container for stabilizing film and remove the film from the reel before stabilizing. Stabilizer is very difficult to remove entirely from reels and tanks. If it is carried over into the next process, the developer will be ruined.

8.4 Color slide film process: Photocolor Chrome-Six 3 Bath

The Photocolor Chrome-Six 3 Bath process is used to develop Kodak E-6 Ektachrome (and compatible) films. The following is a brief description of each processing step.

- Use speed 75 with 1500 or 2500 series tanks.
- Use speed 50 with 1500 and 3000 series tanks.
- Set temperature to 38.0°C.

Pre-warm, 5:00 minutes

Program 2 & 7		
Process Crome-Six		
Temp	38.0 °	C
Prewarm	5:00	
Prerinse	—	
Chem. 1	6:30	1st Dev.
Rinse	4:00	
Chem. 2	4:00	Color Dev.
Rinse	1:00	
Re-Expose	—	
Chem. 3	10:00	Bleach-Fix
Rinse	5:00	
Chem. 4	—	
Rinse	—	
Chem. 5	—	
Rinse	—	
Chem. 6	—	
Rinse	—	

First Developer, bottle position 1, 6:30 minutes

The exposed silver salts are converted to metallic silver. This is the most critical step in the process. Errors in time, temperature, agitation, and dilution will adversely affect density, contrast, maximum density, and fog level.

Rinse, 4:00 minutes

The first rinse stops the developing action of the first developer. It also prevents carryover of developer into the color developer. Too short a rinse can cause the density and color balance to change (usually a green shift and low maximum density).

Color Developer, bottle position 2, 4:00 minutes

The color developer contains a fogging agent that chemically "Re-exposes" the film so that no additional chemical step or light re-exposure is necessary. The remaining silver salts are converted to metallic silver. At the same time the color couplers in the film are converted into the image. Improper color development will adversely affect the color balance, contrast, maximum density, fog level, and evenness of development. See Note 1 below.

Rinse, 1:00 minute

Bleach/Fix bath, bottle position 6, 10:00 minutes

Metallic silver is converted to silver halide by the bleach/fix and removed from the film. This leaves only the color dyes. Improper bleach fixing leaves silver residue, producing low maximum density in red, yellow fog, and high maximum density for blue. Silver left in the film causes excessive blue density in the highlights, yellow veiling, and spots. See Note 2 below.

Final Rinse, 4:00 minutes

This rinse removes all remaining chemicals in the film. To be effective it needs to be at least four minutes long.

Stabilizer Bath or Wetting Agent (this is an optional step and the time is not critical) 1:00 minute

Stabilizer helps to preserve the color dyes from fungus and mold, and contains a wetting agent to promote spot free drying. This bath should be replaced periodically to prevent scum from forming. See Note 3 below.

Note 1: Photocolor recommends decreasing their color developer time from 6:00 minutes to 4:00 minutes, when using rotary processing. Use 6:00 minutes only when push processing.

Note 2: The bleach/fix needs to be aerated to work effectively. Unlike developers which are degraded by too much oxygen, the bleach needs to be fully oxygenated. This is accomplished by introducing air while mixing the bleach. This can be done several ways, for example, mixing in a larger container than the volume of bleach and stirring or shaking (while capped) vigorously. On a large scale, air can be bubbled through the bleach with a pump.

Note 3: Stabilizer (or wetting agent) should always be used outside of the processor to avoid contaminating tanks and reels. Use a separate container for stabilizing film. Remove the film from the reel before stabilizing. Stabilizer is very difficult to remove entirely from reels and tanks. If it is carried over into the next process, the developer will be ruined.

E-6 Process Control

Color characteristics and contrast vary from one brand of film to another. There are even slight differences between emulsion batches of the same film. If possible, test each batch of film to determine how the film reacts with the processing chemistry. Use of filters on the camera may be required for critical color balancing.

Control of film speed sensitivity

Alter the first developer time to change the effective "speed" or "sensitivity" of a film (EI, ASA, DIN, ISO). A 30% change in the time will produce a one stop adjustment. Add 30% to increase the speed (double the ASA or add 3 to DIN). This is known as "push processing". To decrease the speed of the film, subtract 30% from the first developer time. This will divide the ASA by 2, or subtract 3 from the DIN. Lowering the sensitivity of the film is known as "pull processing."

Greater changes in the first development time will produce larger adjustments to the speed of the film. The precise amount of time change required to produce a specific speed change depends on the particular film and chemistry combination.

Note: Tests should be done for any change in the first developer time. The results obtained will show some loss of quality in the image produced. These results may not be acceptable for critical work.

Processing Faults

Transparency too dark

Underdevelopment in the first developer. The developer time is too short, or the temperature is too low, or the developer is too old.

Transparency too light

Overdevelopment in the first developer. The developer time is too long, or the temperature is too high.

Transparency is too light and blue

First developer is contaminated with fixing bath.

Transparency with yellow spots and/or high minimum density

Contamination of chemicals with stabilizer or silver retention. Clean all equipment. Extend bleach and fixer times (approximately 25% to 50%).

8.5 Color Negative Film Process: Kodak C-41

The C-41 process is used to develop Kodacolor™, Vericolor™ and C-41 compatible films (Unicolor K-2 chemistry will also work with the same recommendations). The following is a brief description of each processing step.

- Use speed 75 with 1500 or 2500 series tanks.
- Use speed 50 with 1500 and 3000 series tanks.
- Set temperature to 38.0°C.

Pre-warm, 5:00 minutes

Color Developer, bottle position 3, 3:15 minutes

Contrast, color and density are determined by the color developer.

Stop Bath, bottle position 4, 1:00 minute

Recommended, optional step to minimize the possibility of density shifts and staining. See note below.

Bleach Bath, bottle position 5, 6:30 minutes

Program 3 & 8	
Process C-41 (Photocolor II)	
Temp	38.0°
Prewarm	5:00
Prerinse	—
Chem. 1	—
Rinse	—
Chem. 2	—
Rinse	—
Re-Expose	—
Chem. 3	—
Rinse	—
Chem. 4	3:15
Rinse	—
Chem. 5	1:00
Rinse	—
Chem. 6	8:00
Rinse	5:00

Developer

Stop Bath

Bleach-Fix

The bleach bath converts metallic silver to silver halides which can be removed by the fixer. If the bleach is not properly aerated some silver may remain in the film and the cyan layer dyes will not properly couple. (This is called "leuko-cyan failure"). If this happens, the negatives will appear excessively red and prints made from them will have red shadows and cyan colored highlights. Film with the leuko-cyan problem may be corrected by re-bleaching in a good bleach bath.

Intermediate Rinse, 3:15 minutes

Fixing Bath, bottle position 6, 6:30 minutes

Silver halides are removed by the fixer, leaving only dyes in the emulsion. Insufficient fixing will leave silver in the emulsion, increasing the density and decreasing the color saturation and storage life of the film.

Final Rinse, 3:15 minutes

All remaining chemicals are removed in the final rinse. Use at least the recommended time for this step.

Stabilizer Bath, (time not critical) 1:30 minute

Stabilizer incorporates a wetting agent and dye preservatives with hardening properties. Always use stabilizer outside of the processor. Avoid contact with tank or reels.

Note: Use a black and white stop bath, such as Kodak Indicator Stop Bath, Photocolor Indicol, or mix from acetic acid to make a 2% solution.

Disc film process C-41 A

Normal C-41 processing steps and times are unchanged for disc film development. Always use the "DISC" setting for speed on the processor. JOBO makes special tanks for disc film (1517 for up to 17 discs, and 1544 for up to 44 discs).

8.6 Color Negative Film Process: Photocolor II

The Photocolor II process is used to develop Kodacolor, or Vericolor, and C-41 compatible films. The following is a brief description of each processing step.

- Use speed 75 with 1500 or 2500 series tanks.
- Use speed 50 with 1500 and 3000 series tanks.
- Set temperature to 38.0°C.

Pre-warm, 5:00 minutes

Color Developer, bottle position 3, 3:15 minutes

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

Stop Bath, bottle position 4, 1:00 minute

Recommended, optional step to minimize the possibility of density shifts and staining.

Bleach/Fix Bath, bottle position 5, 6:00 minutes

The bleach converts metallic silver to silver halides which are removed by the fixer, leaving only dyes in the emulsion. Insufficient fixing will leave silver in the emulsion, increasing the density and decreasing the color saturation and life of the film. If the bleach/fix is not properly aerated, some silver may remain in the film and the cyan layer dyes will not properly couple (this is called "leuko-cyan failure"). If this happens the negatives will appear excessively red. Prints made from them will have red shadows and cyan colored highlights. Film with the leuko-cyan problem may be corrected by re-bleach/fixing in a good bleach/fix bath, and completing the remaining process steps again.

Final Rinse, 5:00 minutes

All remaining chemicals are removed in the final rinse. Maintain at least a five minute time for this step.

Stabilizer Bath or Wetting Agent (this is an optional step and the time is not critical) 1:00 minute

Stabilizer helps to preserve the color dyes from fungus or mold, and contains a wetting agent to promote spot-free drying. This bath should be replaced periodically to prevent scum from forming. Always use stabilizer outside of the processor and avoid contact with tank or reels.

8.7 Black and White Film Process: Kodak or Monocolor™

Black and white film development. Developer times shorter than five minutes should be avoided to maintain uniformity. A five minute pre-rinse is recommended. Test the chosen developer/film combination to find the correct developer time. As a general guide for determining the correct developer time, use the manufacturers' recommended intermittent agitation time to start your tests. The following is a brief description of each processing step.

- Use speed 75 with 1500 or 2500 series tanks.
- Use speed 50 with 1500 and 3000 series tanks.
- Set temperature to 20.0C (or recommended temperature).

Program 4		
Process B/W Film		
Temp	20.0 °	C
Prewarm	—	
Prerinse	5:00	
Chem. 1		Developer
Rinse	—	
Chem. 2	1:00	Stop Bath
Rinse	—	
Re-Expose	—	
Chem. 3		Fixer
Rinse	5:00	
Chem. 4	—	
Rinse	—	
Chem. 5	—	
Rinse	—	
Chem. 6	—	
Rinse	—	

Pre-rinse, 5:00 minutes

Lack of a sufficient pre-rinse will cause excessive contrast and possible unevenness of development.

Black and White Developer, bottle 4, time depends on developer and film (if using a diluted developer i.e., D-76 1:1, be sure to have additional chemistry selected).

Stop Bath, bottle 5, 1:00 minute

The use of stop bath promotes consistent overall and batch-to-batch density.

Fixer, bottle 6, time depends on fixer and film (use the manufacturers' recommended time)

Excessive fixing will bleach the metallic silver on the film, producing lower density and contrast. Insufficient fixing will allow retention of silver salts resulting in milkiness in the non-image areas and a shortened storage life of the film.

Final Rinse, 5:00 minutes

Insufficient rinsing will not remove all of the fixer. This will eventually cause image staining or fading.

Wetting Agent, 1:00 minute (optional, outside of tank, not on reels)

Use a wetting agent such as Kodak's Photoflo or Photo Technology's Monocolor Wetting Agent 326 to avoid water spots while drying.

Note: Wetting agent should always be used outside of the processor to avoid contaminating tanks and reels. Use a separate container for the wetting agent. Remove the film from the reel before immersing. Wetting agent is very difficult to remove entirely from reels and tanks. If it is carried over into the next process, the development will be affected.

8.8 Color Print from Slide Process: Kodak R-3000

Kodak R-3000 is used to process prints on Ektachrome™ 22 paper (or equivalent) from color slides. The following is a brief description of each processing step.

- Use speed 75 with 2800 series drums.
- Use speed 50 with 1500 and 3000 series drums.
- Set temperature to 38.0°C.

Program 6		
Process Chrome-R (R-3000)		
Temp	38.0 °	C
Prewarm	—	
Prerinse	1:00	
Chem. 1	—	
Rinse	—	
Chem. 2	—	
Rinse	—	
Re-Expose	—	
Chem. 3	—	
Rinse	—	
Chem. 4	1:10	First Dev.
Rinse	2:00	
Chem. 5	2:15	Color Dev.
Rinse	1:00	
Chem. 6	2:00	Bleach-Fix
Rinse	2:00	

Pre-rinse, 3:00 minute

First Developer, bottle position 1, 1:30 minutes

The exposed silver salts are converted to metallic silver. Errors in time, temperature, and dilution will adversely affect density, contrast, and fog level.

Rinse, 2:00 minute

The first rinse stops the developing action of the first developer. It also prevents carryover of developer into the color developer. Too short a rinse can cause the density and color balance to change (usually a green shift and low maximum density).

Color Developer, bottle position 2, 2:15 minutes

The color developer contains a fogging agent that chemically "exposes" the paper so that no additional chemical step or light re-exposure is necessary. The remaining silver salts are converted to metallic silver. At the same time the color couplers in the paper are converted into the image. Improper color development will adversely affect the color balance, contrast, maximum density, fog level, and evenness of development.

Rinse, 1:00 minute

Too short a rinse will weaken the bleach/fix.

Bleach/Fix Bath, bottle position 6, 2:30 minutes

Metallic silver is converted to silver halide by the bleach/fix and removed from the print. This leaves only the color dyes. Improper bleach/fixing leaves silver residue, yielding low maximum density in red, yellow fog, and high maximum density for blue. Silver left in the print can cause excessive blue density in the highlights, yellow veiling, and spots.

Final Rinse, 2:30 minutes

This rinse removes all remaining chemicals from the print. To be effective it needs to be at least two minutes long.

8.9 Color Print from Slide Process: Photocolor Chrome R

Photocolor Chrome R is used to process prints on Ektachrome 22 paper (or equivalent) from color slides. The following is a brief description of each processing step.

- Use speed 75 with 2800 series drums.
- Use speed 50 with 1500 and 3000 series drums.
- Set temperature to 38.0°C.

Pre-rinse, 1:00 minute

First Developer, bottle position 1, 1:10 minutes

The exposed silver salts are converted to metallic silver. Errors in time, temperature, and dilution will adversely affect density, contrast, and fog level.

Rinse, 2:00 minutes

The first rinse stops the developing action of the first developer. It also prevents carryover of developer into the color developer. Too short a rinse can cause the density and color balance to change (usually a green shift and low maximum density).

Color Developer, bottle position 2, 2:15 minutes

The color developer contains a fogging agent that chemically "Re-exposes" the paper so that no additional chemical step or light re-exposure is necessary. The remaining silver salts are converted to metallic silver. At the same time the color couplers in the paper are converted into the image. Improper color development will adversely affect the color balance, contrast, maximum density, fog level, and evenness of development.

Rinse, 1:00 minute

Too short a rinse will weaken the bleach/fix.

Bleach/Fix Bath, bottle position 6, 2:00 minutes

Metallic silver is converted to silver halide by the bleach/fix and removed from the print. This leaves only the color dyes. Improper bleach/fixing leaves silver residue, producing low maximum density in red, yellow fog, and high maximum density for blue. Silver left in the print can cause excessive blue density in the highlights, yellow veiling, and spots.

Final Rinse, 2:00 minutes

This rinse removes all remaining chemicals in the print. To be effective it needs to be at least two minutes long.

R-3000, Chrome R Processing Problems

If maximum density blacks are blue, the first developer was either used for too short a time, was too cold, or exhausted.

If maximum density blacks are blue and colors look gray, then the color developer was contaminated with the first developer. Increase the rinse time between developers.

If the print is too blue and too dark, with low contrast, then the first developer time was too short, or the rinse between developers was too short.

8.10 Color Print from Slide Process: Ilford Cibachrome P-30

Cibachrome Process P-30 uses an azo dye-destructive process to produce prints from color transparencies, on Cibachrome A II paper.

- Use speed "Quick Start" for all drums (see note 1 below).
- Set temperature to 30.0°C.

Note: Cibachrome P-3 Process may also be used. All times and temperatures and rotation speeds are the same for both processes. When using P-3, extend the final rinse step to 4:30.

Program 5		
Process P-30 Ciba		
Temp	24.0°	
Prewarm	—	C
Prerinse	1:00	
Chem. 1	—	
Rinse	—	
Chem. 2	—	
Rinse	—	
Re-Expose	—	
Chem. 3	—	
Rinse	—	
Chem. 4	3:00	Developer
Rinse	0:30	
Chem. 5	3:00	Bleach
Rinse	—	
Chem. 6	3:00	Fixer
Rinse	3:00	

Pre-rinse, 1:00 minute

Uneven development may result if pre-warm is substituted.

First Developer, bottle 4, 3:00 minutes

The first developer is a black and white developer which contains special additives that permit the formation of a positive silver mask.

Intermediate Rinse, 0:30 minute

Ceases development and prevents developer carryover into the bleach. See note 2 below.

Bleach Bath, bottle 5, 3:00 minutes

In the bleach bath the unwanted color dyes are removed and the silver is bleached.

Intermediate Rinse, 0:30 minute

Residual bleach is removed.

Fixing Bath, bottle 6, 3:00 minutes

The fixer removes the silver from the print.

Final Rinse, 3:00 minutes

Removes all remaining chemicals from the print.

WARNING! The bleach is a strong acid, handle it carefully!

WARNING! This process can release noxious fumes and should only be done in a well-ventilated area!

Note 1: Insufficient amounts of chemistry will produce streaks. Use at least the manufacturer's recommended quantity of chemistry (75ml per 8 × 10 print). This quantity will probably be larger than the minimum amount required to fill the drum.

Note 2: Extending the time of the rinse between developer and the bleach steps beyond 30 seconds can cause brown spots on the front and back of the print. Too small a quantity or a short bleach time will produce dark stripes.

8.11 Color Print from Negative Process: Kodak EP-2

EP-2 processes Ektacolor Professional™ and Ektacolor Plus™ papers and their equivalent, for prints made from color negatives. The following is a brief description of each processing step. Times for the steps, or temperatures may be different from those of other chemical manufacturers.

- Use speed 75 with 2800 series drums.
- Use speed 50 with 1500 and 3000 series drums.
- Set temperature to 38.0°C.

Program 10		
Process Printmaster (EP-2)		
Temp	38.0 °	C
Prewarm	—	
Prerinse	0:30	
Chem. 1	1:00	Developer
Rinse	—	
Chem. 2	0:30	Stop Bath
Rinse	—	
Chem. 3	1:30	Bleach-Fix
Rinse	2:00	
Chem. 4	—	
Rinse	—	
Chem. 5	—	
Rinse	—	
Chem. 6	—	
Rinse	—	

Pre-rinse, 1:00 minute

This rinse tempers the paper, removes masking dye layers, and promotes even development.

Color Developer, bottle 1, 2:00 minutes

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

Stop Bath, bottle 2, 0:30 minute

Recommended optional step to minimize the possibility of density shifts and staining.

Bleach/Fix Bath, bottle 3, 2:30 minutes

The bleach portion converts metallic silver to silver halides which are removed by the fixer portion, leaving only dyes in the emulsion. Insufficient bleach/fixing will leave silver in the emulsion, increasing the density, causing yellow highlight stains, and shortening the life of the print. If the bleach/fix is not properly aerated (this may be done while mixing), some silver may remain in the print and the cyan layer dyes do not properly couple ("leuko-cyan dye failure"). If this happens, the prints made will have red shadows and cyan colored highlights.

Rinse, 2:30 minutes

All remaining chemicals are removed in the final rinse.

8.12 Color Print from Negative Process: Photocolor II

Photocolor II (when mixed with the print additive) processes Ektacolor Professional and Ektacolor Plus papers and their equivalent, for prints made from color negatives. The following is a brief description of each processing step. Times for the steps, or temperatures may be different from other chemical manufacturers.

- Use speed 75 with 2800 series drums.
- Use speed 50 with 1500 and 3000 series drums.
- Set temperature to 38.0°C.

Pre-rinse, 1:00 minute

This rinse tempers the paper, removes masking dye layers, and promotes even development.



Color Developer, bottle 1, 2:00 minutes

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

Stop Bath, bottle 2, 0:30 minute

Recommended optional step to minimize the possibility of density shifts and staining.

Bleach/Fix Bath, bottle 3, 1:00 minute

The bleach portion converts metallic silver to silver halides which are removed by the fixer portion, leaving only dyes in the emulsion. Insufficient bleach/fixing will leave silver in the emulsion, increasing the density, causing yellow highlight stains, and shortening the life of the print. If the bleach/fix is not properly aerated (this may be done while mixing), some silver may remain in the print and the cyan layer dyes do not properly couple ("leuko-cyan dye failure"). If this happens, the prints made will have red shadows and cyan colored highlights.

Rinse, 2:00 minutes

All remaining chemicals are removed in the final rinse.

8.13 Color Print from Negative Process: Photocolor Printmaster

Photocolor Printmaster rapidly processes Ektacolor Professional and Ektacolor Plus papers and their equivalent, for prints made from color negatives. The following is a brief description of each processing step. Times for the steps, or temperatures may be different from those of other chemical manufacturers.

- Use speed 75 with 2800 series drums.
- Use speed 50 with 1500 and 3000 series drums.
- Set temperature to 38.0°C.

Pre-rinse, 0:30 minute

This rinse tempers the paper, removes masking dye layers, and promotes even development.

Color Developer, bottle 1, 1:00 minute

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

Stop Bath, bottle 2, 0:30 minute

Recommended optional step to minimize the possibility of density shifts and staining.

Bleach/Fix Bath, bottle 3, 1:00 minute

The bleach portion converts metallic silver to silver halides which are removed by the fixer portion, leaving only dyes in the emulsion. Insufficient bleach/fixing will leave silver in the emulsion, increasing the density, causing yellow highlight stains, and shortening the life of the print. If the bleach/fix is not properly aerated (this may be done while mixing), some silver may remain in the print and the cyan layer dyes do not properly couple ("leuko-cyan dye failure"). If this happens, the prints made will have red shadows and cyan colored highlights.

Rinse, 2:00 minutes

All remaining chemicals are removed in the final rinse.

EP-2, Photocolor II and Printmaster process problems

The possible causes for blue shadows are: The developer is old, the development time is too short, the process temperature is too low, or the developer is exhausted.

If the prints show low contrast or color shifts (usually cyan), the developer is contaminated by bleach/fix.

If there are muddy yellow areas in the print, silver is being retained in the print.

Note: The color balance of a print should be evaluated only after the print is dry. The colors will change while wet and during drying.

WARNING: For Kodak EP-2 and other manufacturer's compatible products, be very careful to thoroughly mix part A of the developer in the water. Part A contains benzyl alcohol and is very difficult to dissolve. Unless the alcohol is totally dissolved, the developer will precipitate a tar-like substance. This tar will stick to containers and drums. It is difficult to notice and to remove. Spots and streaks on the prints may result. Contamination of the other chemicals is likely.

8.14 Black and White Print Process: Kodak or Monocolor

Black and white (resin, or polyethelene coated) print development. The following is a brief description of each processing step. Use the chemical manufacturer's recommended temperature and times for each step. For fiber based prints see notes below.

- Use speed 75 with 2800 series drums.
- Use speed 50 with 1500 and 3000 series drums.
- Set temperature to 20°C or recommended temperature.

Program 9		
Process B/W Print		
Temp	20.0°	C
Prewarm	—	
Prerinse	1:00	
Chem. 1	—	
Rinse	—	
Chem. 2	—	
Rinse	—	
Chem. 3	—	
Rinse	—	
Chem. 4	—	Developer
Rinse	—	
Chem. 5	0:30	Stop Bath
Rinse	—	
Chem. 6	—	Fixer
Rinse	—	Final Wash

Pre-rinse, 1:00 minute

Insufficient pre-rinse may cause unevenness of development.

Black and White Developer, bottle 4, time depends on developer and paper.

The developer changes the exposed silver salts to metallic silver.

Stop Bath, bottle 5, 1:00 minute

The use of stop bath promotes consistent overall and batch-to-batch density.

Fixer, bottle 6, time depends on fixer and paper (use the manufacturer's recommended time)

Excessive fixing will bleach the metallic silver on the paper, producing lower density and contrast. Insufficient fixing will allow retention of silver salts eventually resulting in staining and a shortened storage life.

Final Rinse, 2:00 minutes

Insufficient rinsing will not remove all of the fixer. This will eventually cause image staining or fading.

Note: The final wash time will be significantly longer for fiber-based prints. Use the manufacturer's recommended time. You may use a two minute rinse, and then remove the paper from the drum to continue the wash and/or other optional post-fixer steps (toning, hypo-clearing, print-flattening, or glazing aids) elsewhere.

Note: Toning of both fiber based or resin coated papers may be done in the Autolab. Just add the steps and times to the program. If the last step done on the processor is not a rinse, use a "purge" program to rinse the system before another run.

8.15 Phototechnology Chemistry

Process Times to use for Pre-Programmed ATL'S

The following processing steps are already installed which you can certainly modify to meet your individual requirements. (see programming instructions chapter 4).

Program 1	
Process Kodak E-6	
Temp	38.0°
Prewarm	5:00
Prerinse	—
Chem. 1	6:30
Rinse	2:30
Chem. 2	2:00
Rinse	—
Re-Expose	—
Chem. 3	4:00
Rinse	—
Chem. 4	2:00
Rinse	—
Chem. 5	6:00
Rinse	—
Chem. 6	3:00
Rinse	5:00

Program 2 & 7	
Process Crome-Six	
Temp	38.0°
Prewarm	5:00
Prerinse	—
Chem. 1	6:30
Rinse	4:00
Chem. 2	4:00
Rinse	1:00
Re-Expose	—
Chem. 3	10:00
Rinse	5:00
Chem. 4	—
Rinse	—
Chem. 5	—
Rinse	—
Chem. 6	—
Rinse	—

Program 3 & 8	
Process C-41 (Photocolor II)	
Temp	38.0°
Prewarm	5:00
Prerinse	—
Chem. 1	—
Rinse	—
Chem. 2	—
Rinse	—
Re-Expose	—
Chem. 3	—
Rinse	—
Chem. 4	3:15
Rinse	—
Chem. 5	1:00
Rinse	—
Chem. 6	8:00
Rinse	5:00

Program 4	
Process B/W Film	
Temp	20.0°
Prewarm	—
Prerinse	5:00
Chem. 1	—
Rinse	—
Chem. 2	1:00
Rinse	—
Re-Expose	—
Chem. 3	—
Rinse	5:00
Chem. 4	—
Rinse	—
Chem. 5	—
Rinse	—
Chem. 6	—
Rinse	—

Program 5	
Process P-30 Ciba	
Temp	24.0°
Prewarm	—
Prerinse	1:00
Chem. 1	—
Rinse	—
Chem. 2	—
Rinse	—
Re-Expose	—
Chem. 3	—
Rinse	—
Chem. 4	3:00
Rinse	0:30
Chem. 5	3:00
Rinse	—
Chem. 6	3:00
Rinse	3:00

Program 6	
Process Chrome-R (R-3000)	
Temp	38.0°
Prewarm	—
Prerinse	1:00
Chem. 1	—
Rinse	—
Chem. 2	—
Rinse	—
Re-Expose	—
Chem. 3	—
Rinse	—
Chem. 4	1:10
Rinse	2:00
Chem. 5	2:15
Rinse	1:00
Chem. 6	2:00
Rinse	2:00

Program 9	
Process B/W Print	
Temp	20.0°
Prewarm	—
Prerinse	1:00
Chem. 1	—
Rinse	—
Chem. 2	—
Rinse	—
Chem. 3	—
Rinse	—
Chem. 4	—
Rinse	—
Chem. 5	0:30
Rinse	—
Chem. 6	—
Rinse	—

Program 10	
Process Printmaster (EP-2)	
Temp	38.0°
Prewarm	—
Prerinse	0:30
Chem. 1	1:00
Rinse	—
Chem. 2	0:30
Rinse	—
Chem. 3	1:30
Rinse	2:00
Chem. 4	—
Rinse	—
Chem. 5	—
Rinse	—
Chem. 6	—
Rinse	—

Rotational Speeds

System	1500	50 rpm
System	2500/2800	75 rpm
System	3000	50 rpm

Cleaning & Maintenance

9

9.1 Cleaning

The ATL automatically does a thorough rinse of the internal chemical delivery system at the end of every process. Cleaning of the chemical delivery hoses is only necessary if you intend to use different chemicals in the same bottles. In that case, empty the bottle(s) desired, fill them with tap water and run a rinse program that will pump only the bottles/hoses that require cleaning. Set the "Fill Quantity" dial to 1500 ml and run the process. Do a thorough cleaning of all the bottles and delivery hoses when the processor will not be used for a long period of time.

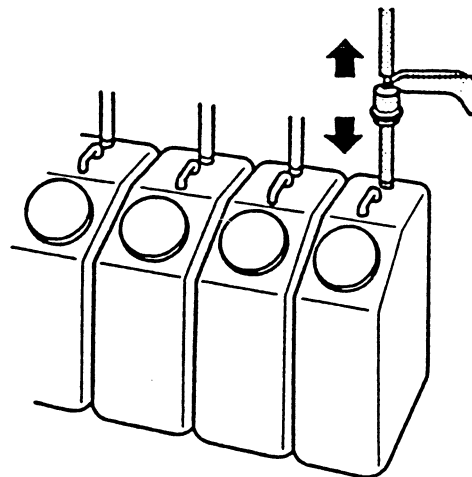
The motors used on the ATL-3 are all self-lubricating. No periodic maintenance is needed for the ATL-3. If you don't plan to use it for over a month, drain the trough completely.

ATL-3 Complete models #4170 & #4171

If the automatic filling feature is not going to be used for two months or more fill the back six 15 liter containers with water and allow them to fill the top six 1.8 liter bottles once in order to rinse all chemistry from the feed lines and pumps.

These models are also equipped with chemical filters to prevent debris from entering the tempering bottles. The filters are located on the intake lines which connect to the 15 liter bottles (see illustration). If these filters become clogged a continuous "beep" will sound and a "6" will flash in the left most display. To replace the filters, turn off the power and replace the filters to all 6 lines.

Note: Filters are bottle specific and should be installed as indicated on the filter.



Check the 15 liter refill bottle chemical filters regularly and replace them when necessary. Use the hose removal tool (47) to disconnect the filters (#16134).

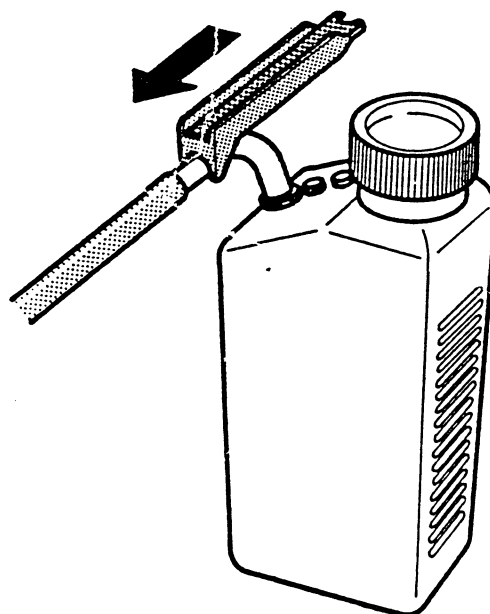
WARNING: The electronics head is not completely sealed, therefore be careful when using the spray nozzle and do not spray the front electronics unit.

Periodically drain the complete water jacket, to prevent algae build-up, by pressing the drain valve (35). The water bath will refill itself automatically, when the process is ON and in "Run" mode.

Changing from one chemical process to another (i.e. E-6 to C-41) is not recommended with the 15 liter refill containers. If such a change is necessary, contact your authorized JOBO servicing dealer for information on how to make the transition.

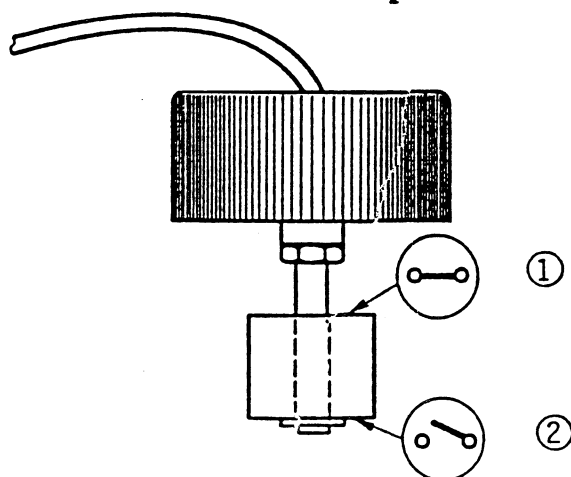
9.2 Removal of Hoses

It sometimes becomes necessary to remove the tempering bottles from the water bath for cleaning. To make detaching the hoses from the bottles simpler, use the tool provided in the accessories bag. Push the delivery hose from the grey rise tube as shown in the illustration.



9.3 Float Switch Setting

The back set of 1.8 liter chemical tempering bottles are equipped with float switches which signal the microprocessor when the tempering bottles need to be refilled. In the event the float is inadvertently removed when cleaning, see the illustration for replacing the switch to its correct position (i.e. side 1 must always be on top).



9.4 Comments on Filling Quantities

The ATL-3 is designed to operate correctly even though filling quantities can vary from 5 to 10%. There is no need to be concerned, this factor has been taken into consideration and your developing will not be adversely affected. Therefore, when using the 15 liter refill containers, it is not unusual for the containers to empty at slightly different rates.

9.5 Dip Switch Adjustment

All AutoLab processors come with the dip switches set to the sequence necessary for normal operation. However, three changes may be made, via the dip switches, to alter its operation:

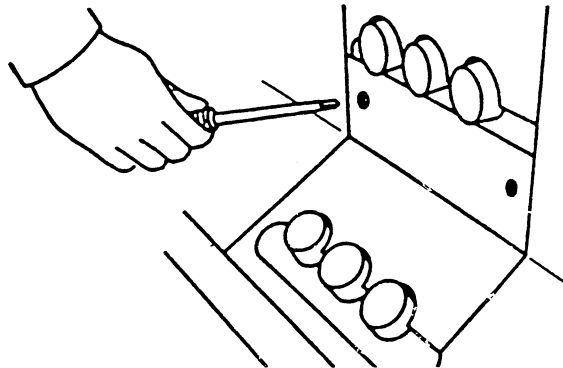
1. The method of calculating the quantity of chemistry available can be changed so that each set of six 1.8 liter bottles have one running total. Making this alteration is explained in section 6.8.
2. The chemical/water sensing feature can be disengaged.
3. On ATL-3 Complete units (#4170 & #4171) the automatic refill from the 15 liter containers can be disengaged.

The following two sections will cover the application and use of adjustments 2 and 3.

9.6 Disengaging the Chemical/Water Sensing Feature

The AutoLab is equipped with a liquid sensing system which monitors whether or not the desired water or chemical amount you have requested is actually going into the processing tank. With dip switch #3 the activation of the function can be controlled.

To disengage the chemical/water sensor, remove the two Phillips screws and access the dip switches behind the panel. Pushing switch #3 up will turn the sensors off. A diagram of the dip switches appear in section 6.8.



9.7 Disengaging the Automatic Refill Feature

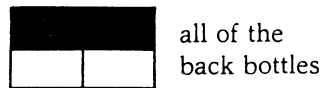
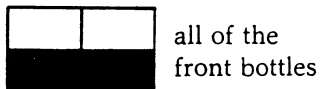
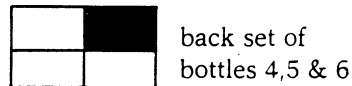
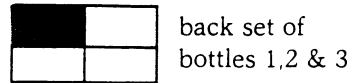
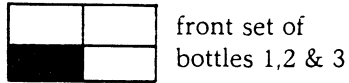
The ATL-3 Complete models (#4170 & #4171) are equipped with an automatic refill feature (see section 6.7). The AutoLab will automatically keep the back set of 1.8 liter tempering bottles full and reset programs 6 through 10 to "1.80" at the end of each run to accommodate the next run.

To turn the feature off, remove the panel to access the dip switches and pull switch #5 down. The refill pumps are now deactivated and the available chemistry amount will decrease as it is used. The diminishing amount will be calculated in programs 6 through 10 just as it does for programs 1 through 5.

The only difference between changing the dip switch and turning the refill pump switch (31) off is that by using the dip switch you do not have to enter a "-" minus sign in the left most display to have the program calculate the diminishing tempered chemical quantities (see section 4.4). A diagram of the dip switches appear in section 6.8.

9.8 Cleaning Programs

Cleaning the tempering bottles and chemical delivery hoses is only necessary if you intend to use a set of chemicals in bottles which previously had a different set of chemicals. In order to simplify this task, six programs are available for cleaning the tempering bottles and chemical delivery lines. An illustration of each setting and the bottles it empties appears below.



To use a cleaning program, attach a 2553, 2563, 2830, or 2840 tank to the processor, then turn the program selector dial (21) to the cleaning program you wish to run. The program is designed to pump for twenty seconds from each designated bottle. It is not necessary to set the fill quantity amount. Be sure the "Set/Run" selector switch (21) is set on the "Run" position and start the program. We recommend that you run the program twice, once to purge the remaining chemicals from the bottles, then a second time after refilling the bottles with water. The bottles can be conveniently filled with water from the spray wand (41).

Service

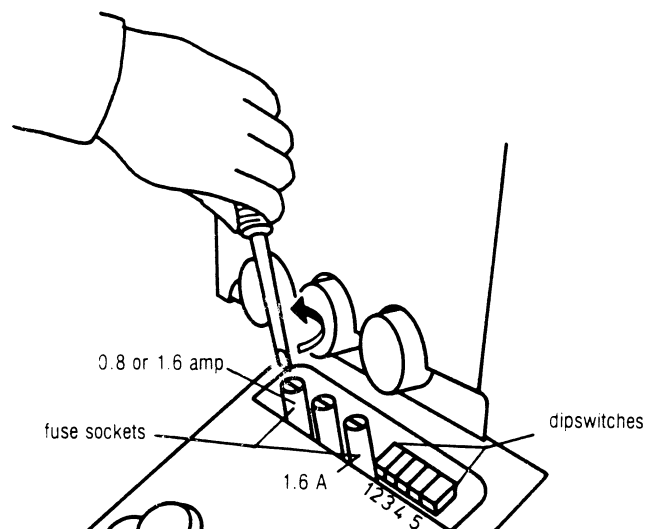
10

10.1 Fuse Replacement

The AutoLab ATL-3 has two fuses, one fuse protects the primary heating function and the other protects all the other functions. The ATL-3 Complete with rinse water heater (#4170) has a built in overload switch which protects the boiler from overheating.

To replace either fuse, first remove the two Phillips screws securing the panel. You can now access the fuse sockets. Fuse #1 is .8 amp for 220 volt units (#4170) and 1.6 amp for 110 volt units (#4171 & #4172). Fuse #2 is not used and fuse #3 is 1.6 amps in all units. Fuse #1 protects the entire unit while Fuse #3 is a sub-protection for the 5 volt supply (microprocessor and display).

Warning: Always unplug the unit before replacing fuses.



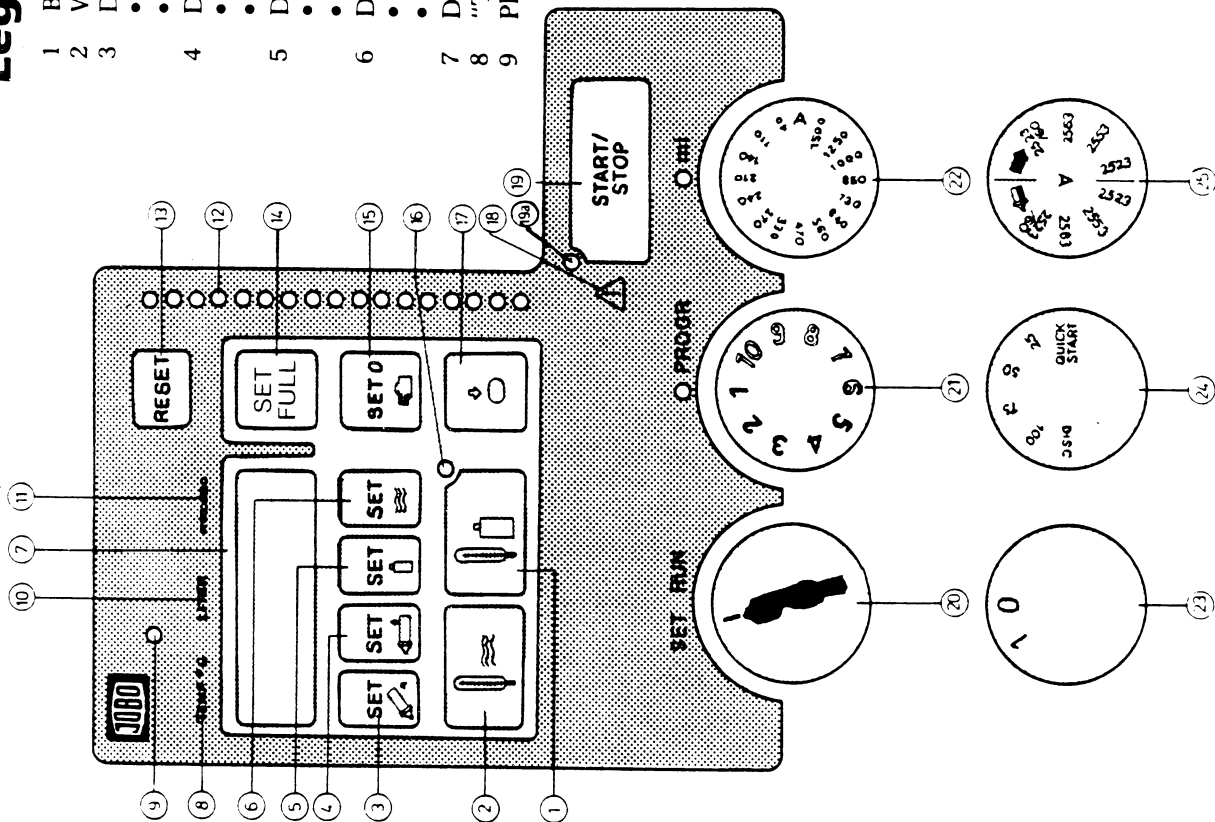
10.2 JOBO Hot Line

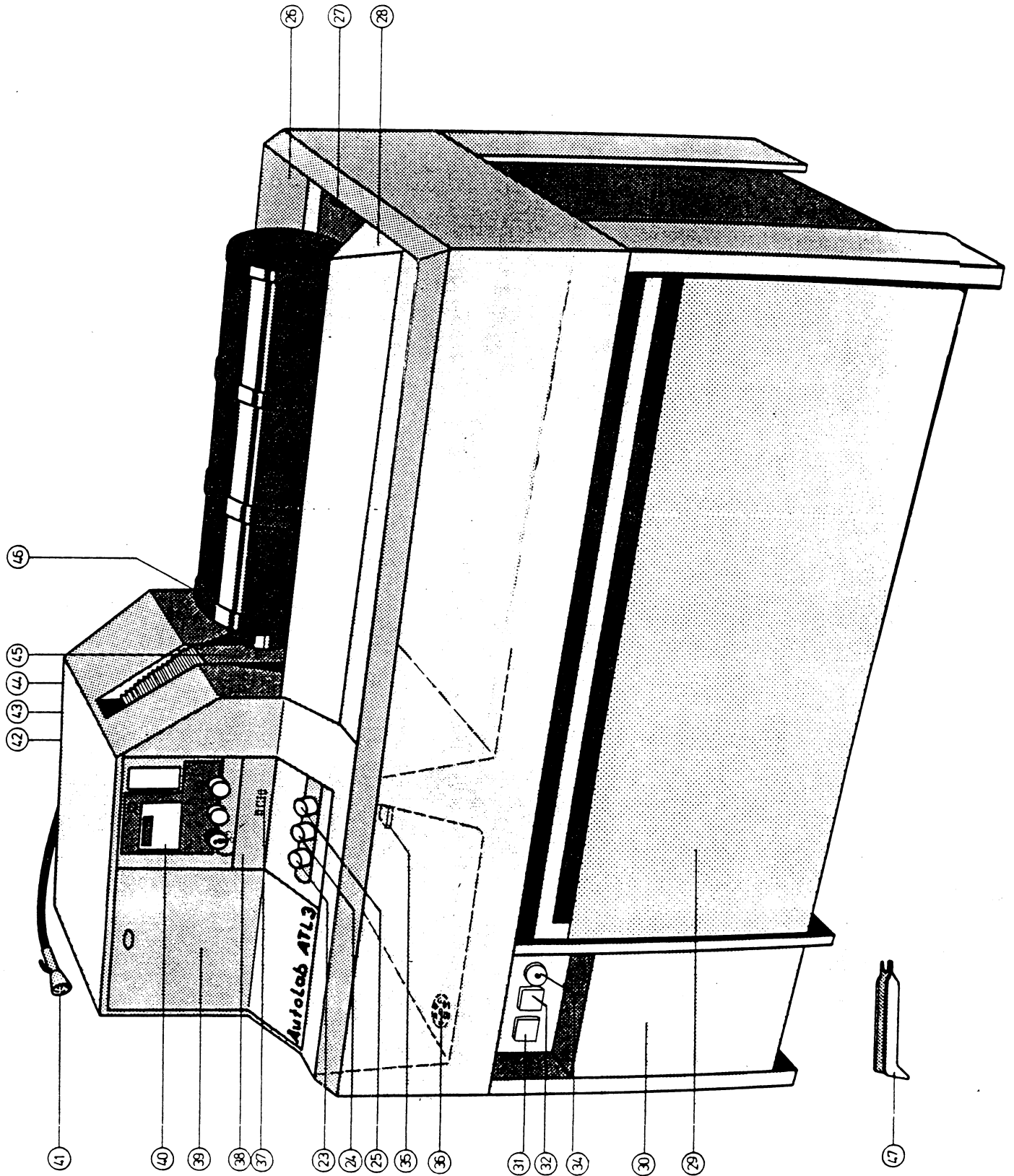
Please refer any other servicing needs to your authorized JOBO AutoLab dealer or call **JOBO Fototechnic at 1-800-525-2821** and ask for the repair department.

Legend

- 1 Bottle temperature key
- 2 Water bath temperature key
- 3 Dual function:
 - entry key
 - manual lift arm key
- 4 Dual function:
 - entry key
 - manual lower arm key
- 5 Dual function:
 - entry key
 - manual chemical fill key
- 6 Dual function:
 - entry key
 - manual rinse water fill key
- 7 Digital display
- 8 "TEMP C" light
- 9 Photocell

- 10 "LITER" light
- 11 "min:sec" light
- 12 Programming LED's
- 13 Reset key
- 14 Set Full key
- 15 Dual function:
 - display clear "SET 0" key
 - universal manual key
- 16 Temperature pause LED
- 17 Step down key
- 18 Warning triangle LED
- 19 Start/Stop key
- 19a Start/Stop LED
- 20 Set/Run switch
- 21 Program selector dial
- 22 Fill quantity dial
- 23 Main power switch
- 24 Agitation speed dial
- 25 Automatic fill quantity dial
- 26 Rear bottle cover
- 27 Water level dial
- 28 Front bottle cover
- 29 Chemical cart
- 30 Lower access door
- 31 Power switch for automatic refilling
- 32 Power switch for rinse water heater
- 34 Rinse water mixing valve
- 35 Water trough drain valve
- 36 Drain
- 37 Fuses and dip switches
- 38 Front access panel
- 39 Reclamation unit door
- 40 Membrane panel for keys 1 through 19
- 41 Spray wand
- 42 Drain
- 43 Water inlet connections
- 44 Power cord
- 45 Tank system lever
- 46 Front/Back selector switch
- 47 Hose removal tool





ATL-3 Owners Spare Parts Kit

Part #	Quantity	Part Description	List Price
63002	1	ATL-3 Owners Spare Parts Kit	\$198.85
		(Includes items listed below)	
06017	1	Pump Housing	11.40
07007	2	Roller for roller bearing	2.25
07135	4	White roller with grove	2.50
34056	4	O-ring for white roller	1.00
07067	4	Roller extensions for roller base	2.40
07083	4	White retaining clip for lift arm	2.00
27008	2	800 mA fuse, type T 250 volt	2.00
27009	2	1.6 amp fuse type T	2.00
34056	4	O-ring for white roller	1.00
95081	1	Pump Shaft	9.25
95200	2	Transfer gear assembly	4.50
05066	2	Bottle cap with hole	
95313	2	1.8 Liter bottle, 1 hole	13.40
95314	1	1.8 Liter bottle, 2 holes	18.10
3375	3	2 Liter bottle, white	4.25
03042	2	Funnel/light trap	4.75
04043	2	Center core for 1510	3.10
04044	2	Center core for 1520 or 2523	4.75
04045	2	Extension core for all tanks	6.25
07095	6	Cog lid washer	1.40
15042	1	Cog lid stopper	0.80
95522	1	Print separators	4.75
93008	2	Replacement pump hoses	25.00

January 1990

Prices subject to change without notice

