



# Autolab ATL 2

Nov '93 p 246

# 4163 Provenor Support Table

Key 91 <sup>6</sup>215

+shipping

331 945 4192 ext 160

## AN INTRODUCTION TO THE JOBO AUTOLAB ATL-2

The Autolab ATL-2 from JOBO is a fully automated, microprocessor controlled, film and print processing machine. Virtually every process and format of film or paper can be developed in the ATL-2 when combined with the extensive variety of tanks and drums offered by JOBO.

The ATL-2 ensures consistency in processing from batch to batch. A sophisticated microprocessor maintains the whole process at a constant temperature, including the chemistry, rinse water, and the tank or drum, with a recirculating water bath. The machine can be started when it is not at operating temperature. The ATL-2 automatically waits until the programmed process temperature is achieved before starting.

The Autolab's microprocessor is also user-programmable and allows complete control over all the processing times from start to finish. Adding or changing an existing process can be done in seconds.

A recovery system allows reclaiming used chemistry in external bottles for re-use or easy disposal.

IN ORDER TO PREVENT OPERATING ERRORS  
PLEASE READ THIS INSTRUCTION MANUAL  
BEFORE USING THE ATL-2.

### TECHNICAL INFORMATION

Height: 55 cm (22 inches)  
Maximum height, when emptying largest drum (#3063): 110 cm (43 1/2 inches)  
Length: 123 cm (48 inches)  
Width: 44 cm (17 1/2 inches)  
Empty Weight: 15 kg (33 pounds)  
Voltage: available in 220 volts, 50 Hz or 240 volts, 50 Hz or 110 volts, 60 Hz  
Power consumption: 1300 watts  
Temperature ranges: 10 to 45.9 degrees C (45 to 121 degrees F)  
Water jacket: 18 1/4 3/4 gallons  
Minimum water pressure: 1 bar (15 p.s.i.)  
Maximum water pressure: 10 bar (150 p.s.i.)

*note include  
inst tanks*

### CONTENTS OF THE ATL-2 OUTPUT

Autolab ATL-2 processor  
Reclamation unit  
Six solution storage bottles and six reclamation bottles  
Front cover  
Spiral level  
Set of five double sided magnetic process cards  
Drain hoses  
Spare fuses  
Spare cog lid gaskets  
Warning indicator quick reference guide  
Hose removal tool

*single →  
drain →*

*(3) stopper 150 42 80¢  
(2) fuses, 1.6 amp T  
2700g  
\$ 200*

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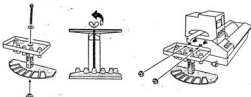
## RECLAMATION UNIT ASSEMBLY

A reclamation unit is provided to aid in replenishment of chemistry, or allow re-use of chemistry, or reclaim chemistry for subsequent silver removal. The unit must be attached to utilize these options. Otherwise the unit need not be installed.

If the assembly is not to be used, move the reclamation arm with your hand, towards the back. This will help to prevent chemical splattering. A detent will secure the arm in the appropriate position. A rubber band may be used to secure the drain arm in the furthest back position.

1.1 Carefully remove all of the contents of the shipping box.

Note : Retain the packaging. It should be used whenever the Autolab is moved or shipped.



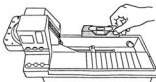
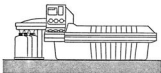
1.2 The reclamation unit consists of a base, a connecting column, a threaded rod with wing nut, and a trough and hood. To assemble, place the trough on top of the column and the column on top of the base. The column has a tapered hole on the top to guide the threaded rod through. The rod, with washer affixed, should run from the top of the trough to the bottom of the base. The wing nut attaches to the threaded end of the rod at the base. Turn the nut until it is finger tight.

Mount the reclamation unit on the processor after assembly. Remove the white nuts from the head end of the processor, leaving the washers in place. Place the reclamation unit with the side containing two holes facing the white bolts on the processor. Align the bolts with the two small holes in the trough. Replace the nuts on the bolts. Tighten finger tight. Check, and if necessary, release the chemical distribution arm from it's "locked" back-most position. It should be positioned closest to the front of the machine. The hood is installed after mounting the unit on the processor. The hood needs to be in place tightly to avoid splashing during use.

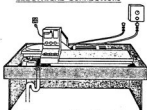
## INSTALLATION

2.1 The Autolab ATL-2 should be on a level surface. Make sure the Autolab and reclamation unit are level for proper operation.

Use the spirit level periodically to check level of the machine. Adjust the level with leveling wedges placed under the water bath.



## ELECTRICAL CONNECTIONS

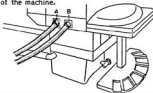


2.2 Plug the power cable into a grounded outlet of the proper voltage.

**CAUTION !** There is a potential shock hazard in using an ungrounded outlet.

## WATER SUPPLY CONNECTIONS

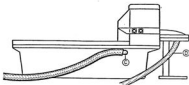
2.3 On the back of the ATL-2 head are two 3/4 inch male threaded fittings. The fitting closest to the lift (A) should be connected to a tempered water source. Connect a cold water source to (B), located closer to the reclamation unit. The JOBO ATL installation kit (#4161) comes with all the proper hoses for water intake and draining. The input hoses may be substituted with standard, washing machine type, high pressure 3/4 inch hoses. If the water supply has a high level of solid matter (sand, chalk, rust etc.), install a water filter before the input of the machine.



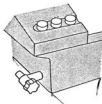
The tempered water supply should be maintained within five degree C (ten degrees F) of the process temperature. Water coming into the Autolab from (A) is tempered to the temperature of the water bath with an internal heat exchanger. The tempered water supply may be adjusted manually by mixing hot and cold at the faucet, or automatically with an optional external thermostatic mixing valve. The water should supply at least 1 bar (15 p.s.i.) pressure, and no greater than 10 bar (150 p.s.i.).

The cold water supply automatically cools the tempering bath if the bath temperature is higher than the process temperature. If the temperature of the water coming in from the cold water supply is higher than the temperature desired for a process, a water chiller (not available from JOBO) is required.

2.4 The Autolab has three water outlets. The reclamation unit (B) and the trough drain spigot are on the left side of the unit, and overflow elbow (C) is on the back.



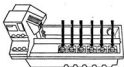
The reclamation unit drain purges used rinse water. Excess tempering bath water is run out of the overflow elbow. To purge the waterbath (for cleaning or storage) use the trough drain spigot. All three drains can be routed for disposal using the hose kit (#4161). If the ATL-2 is used in a sink, a drain hose attachment is optional.





## GETTING STARTED

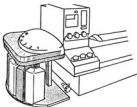
3.1 Remove the bottle cover and fill the chemistry bottles to be used with equal amounts of solution. JOBO recommends filling the bottles in the order of Kodak's E-6 process. For example, use bottle one for first developer, bottle three for color developer and bottle six for fixing bath. By doing this the chance of contamination is reduced.



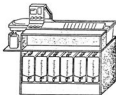
**CAUTION !** Observe the manufacturers recommendations for handling chemistry. Use protective laboratory gloves (JOBO #s 3344 or 3345) to protect hands from possible irritation when handling chemicals.



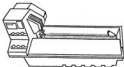
3.2 The bottle tops must be tightly screwed on. Hoses for the air and chemistry delivery should be securely fastened. These inspections are important because the pump system utilizes compressed air to deliver the required amount of chemistry to the tank. Improper connections will reduce the amount of chemistry delivered to the tank or drum.



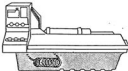
1.3 To utilize the reclamation unit, place the recovery bottles (in the proper numbered order) on the base of the unit. The step number for each position is identified on the top of the hood.



The optional JOBO Processor Support Table (#4143) is available to simplify use of the ATL-2. The table provides convenient storage space for up to six 13 liter reclamation/storage containers (#3384), and/or a selection of tanks/drums, and accessories.



1.4 Be sure the drain spigot is closed tightly and let the bottom trough fill with water. To shorten the time for the Autolab to reach processing temperature, fill the trough with water which is at the same temperature the process requires. Drain off untempered water first if necessary.

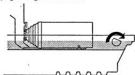


3.3 Adjust the temperature of the tempered rinse water entering the machine to within 3 degrees C (10 degrees F) of the desired processing temperature. The internal heat exchanger will temper the rinse water to that of the water bath. (Pressing the buttons 15 and 4 simultaneously will cause a flow of water from the lift. This will purge the off-temperature water from the supply during adjustment. Do this before attaching a loaded drum or tank.)

## PRE-OPERATION

4.1 Turn the Power Knob (23) to the "On" position and press the "Reset" button (12). The "I" light (18) will blink until the reset key is pressed.

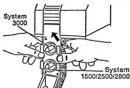
4.2 Select an existing program with knob (21), or enter the desired process temperature, and times for each step of the process into memory. For further instruction on programming, read section 3.



4.3 Set the water level in the red trough for tempering the tank/drum. The water level dial (27) is located on the back wall of the red trough. This dial controls the water level in the trough. Rotate the dial to attain the maximum height of water without causing the drum to float. If the drum/tank floats above the rollers, lower the water level.

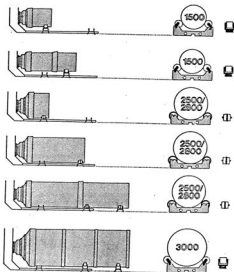
If room temperature is higher than the programmed process temperature, or if a quick change to a cooler process is required, automatic cooling will occur. When cooling procedure starts, a thermostatically-controlled valve opens to bring in cold water. Cooling starts approximately sixty seconds after the temperature exceeds the programmed temperature.

**Notes:** Water bath temperature should be slightly higher than the temperature displayed. This is to allow for temperature loss in the system.



4.4 Adjust the lift arm lever for the tank/drum series to be used. For the 1500, 2500, or 2800 series the lever should be pushed down, and when using the 3000 series the lever should be pulled up. Be certain that the lever is completely up or down, as appropriate.

**CAUTION** | The bottle cover must be in place when using the 3000 series to prevent damage to the chemical delivery hoses.



4.3 Adjust the roller block assembly for the tank/drum being used. The diagram shows proper location and configurations for each tank series.

4.6 Set the rotation motor for the appropriate speed. The Motor Speed Knob (24) adjusts rotation for six discrete speeds and rotation patterns. All settings except "Disc" have bi-directional rotation. When set on disc, the tank rotates at 100 rpm (revolutions per minute) in only one direction. The disc setting is recommended for disc film processing. The "Quick Start" setting provides an initial speed of 100 rpm for the first twenty seconds, then the speed is dropped to 25 rpm for the remainder of the process. "Quick Start" is recommended for Cibachrome processing. The remaining settings of "25", "30", "75", and "100" are constant in speed with bi-directional motion, at 25, 30, 75, and 100 rpm respectively. These numbered speeds are used for virtually all processes except those mentioned above.

Process used	Set speed at	Use lateral agitation with 3000 series ?
E-6, UK 6, AP 64	75	Yes (set speed at 30)
C-41	75	Yes (set speed at 30)
C-41 A	"Disc"	No (process is for disc film only)
Black and White	75	Yes (set speed at 30)
EP-2, F, PK	75	No
R-3, C4, UK 3	75	No
P-30	"Quick Start"	No

## PROGRAMMING

3.1 Five double sided magnetic process programming cards are provided for use as processing data references. Write on the cards with a grease pencil to allow future changes. Record the temperature and times of each step on the card. Draw a line through steps not used. Refer to the illustrations for examples.

Process 3-4	
Temp.	34.2
Pre-heat	2:30
Pre-heat	---
Solution 1	4:30
Rinse	2:30
Solution 2	2:30
Rinse	---
Interim, exp.	---
Solution 3	8:00
Rinse	---
Solution 4	2:00
Rinse	---
Solution 5	4:00
Rinse	---
Solution 6	4:00
Rinse	4:00
End	---

Process 3-41	
Temp.	34.2
Pre-heat	2:30
Pre-heat	---
Solution 1	---
Rinse	---
Solution 2	---
Rinse	---
Interim, exp.	---
Solution 3	2:15
Rinse	---
Solution 4	---
Rinse	---
Solution 5	4:00
Rinse	2:15
Solution 6	4:00
Rinse	2:00
End	---

The times may vary depending on the chemical manufacturers.

3.2 To enter a program the machine must be turned on (Power Knob 23). Place a magnetic card prepared for the intended process in its holder on the Autolab. Choose a program number and set the program dial (21) to the number. Press the reset button (12) and turn the Set/Run knob (20) to the "Set" position. To avoid confusion, be sure that the program card number corresponds with the number set on the program dial (21).



Number values are entered for each input by pressing entry buttons (3, 4, 5, and 6). Each press of one of these buttons will increment the digit by one. If a lower number is desired, continue pressing the button and after it reaches the highest digit it will start at zero again. If all zeros are desired for the four digit locations, press the "Set 0" button (13). Leaving them all at zero tells the microprocessor to bypass that particular step. The temperature and chemistry level cannot be set at zero for the program to run properly. To proceed down to the next step, press the "Step Button" (17). This will advance to the next input. Notice that an LED (Light Emitting Diode) will light next to the corresponding step the machine is presently being programmed for. If a mistake is noted on the previous step, or to review all the entered steps, press the "Reset Button" (12). Proceed down again through the steps with the "Step Button." The program is entered in the following order: chemistry quantity; temperature; pre-warm, pre-wet, time, and following rinse times after each of the six chemical steps.

**Notes:** After the rinse following chemistry two, there is a step called "Re-Exposure". This special step is explained in section 7.2. For virtually all contemporary processes the re-exposure step is bypassed (enter "00:00").



3.3 When entering a quantity of chemistry three digits will appear with a decimal place between the first and second digit. The number corresponds to the volume in liters. To figure the amount in ml (milliliters) drop the decimal point and add a zero to the right of the three digits. Thus a display of 0.70 is 700 ml, 0.13 is 130 ml, and 1.00 is 1000 ml (or 1 liter). The Autolab keeps a running total of the amount of solution remaining in the bottles in memory. If the volume set on the Fill Quantity switch (22), is greater than the amount displayed, the program will not start.



5.4 The process temperature is displayed as three digits with a decimal after the second digit. The display reads in centigrade. Refer to a conversion chart for the appropriate temperature in fahrenheit. The highest temperature that can be entered is 49.9 degrees C. The lowest temperature is 18 degrees C. Within this range the process temperature will be maintained at the set temperature, plus or minus .1 degree C. Note: Temperatures lower than 18 degrees can be initially entered into a program, but when the "Set/Run" switch is moved to "Run", any temperature lower than 18 degrees C will become 18 degrees C.

38.0

Note: If the lateral agitation function is to be used, it must be entered while setting the temperature. To activate this function press button (14). When lateral agitation is activated the "I" LED (18) will illuminate. By pressing (14) again, the function will be removed and the "I" LED (18) will be extinguished. Further information on the application of lateral agitation is located in section 7.1.

5.5 "Prewarm" is a dry incubation period before fluid enters the tank/drum. The prewarm allows the tank/drum and its contents to stabilize at the bath temperature. "Pre-rinse" introduces tempered water before the chemistry is utilized. A pre-rinse also allows the tank/drum and its contents to stabilize at the bath temperature. Use of "pre" steps depends on the requirements of the particular process.

19.59

Enter program time for all steps utilizing all four set function buttons (3, 4, 5, and 6). Time values are always displayed in minutes and seconds, with a colon (:) between. For example 2 minutes and thirty seconds displays as "02:30", 40 seconds displays as "00:40" and 19 minutes and 59 seconds displays as "19:59." Steps can be skipped by entering "00:00".

Important: If there is one or more of the given process steps which you do not want to use (marked with a dash on the magnetic card), you must enter the value 00:00 with button (15) when programming the respective step. These steps are simply skipped during the process run.

By once more pressing the step button (17) the next step can be programmed, which is indicated by the next control lamp (13). In this way, one by one the times are now entered for each step mentioned on the magnetic card. After having entered all the values, you can check all programmed values. To do this first press the "Reset" button (12). Now the quantity of the stock solutions is indicated which you have programmed first. With each press of the step button (17), the value you entered for the next step is indicated.

Once more compare all stored data with the prepared magnetic card for the process. If you notice a mistake, you can immediately correct the wrong figure by means of the entry buttons (3-6).

If all entered values are correct, turn the function selector switch "Set/Run" (20) to position "Run". With this, programming is switched off, so that entered values can not be changed, until the "Set/Run" switch is turned back to "Set".

## STARTING THE PROCESS

Begin by turning on power (23). Next turn "Set/Run" switch (20) to "Run". Press "Reset" button (12). As a protection against accidental operation of the button area, now only three functions are operational: fill quantity (22); program selection (21); start/stop (19).

6.1 Set the desired amount of chemistry to be used by the process with the filling dial (22). Refer to the label on the tank/drum for the required amount. If the quantity required is not listed on the dial, use the next higher amount. See section 7.10 for further detail.

The process will not start if the volume of chemistry set on the filling dial (22) is greater than the amount displayed in the program. If there is not enough chemistry to run the process, refill the bottles to be used and reset the program to the new volume.

6.2 With the appropriate magnetic processing reference card affixed for reference, do a final check of the program in the set mode. Below is a list of things to verify before running the process.

- Is the right program selected?
- Is the correct filling amount set?
- Is the solution quantity in stock bottles sufficient?
- Is the chemistry amount indicated on the display actually in the bottle?
- Is the rinse water on, and is it at the correct temperature?
- Is the lid on each bottle sealed tightly?
- Is the rotation speed correct?
- Is the temperature of the waterbath and chemistry correct?

6.3 Couple the cog of the tank/drum with the drive cog on the lift. Verify that the rollers are set properly. Check the water bath level to ensure coverage without floating the tank. See section 4.3 for details.

Press the "Start" button (19). The programmed temperature will display. If the water bath and chemistry are at the programmed temperature, the process will start with a beep.

When either the temperatures of the water bath or chemistry are not the same as the programmed temperature, the red LED (16) will illuminate and the process is delayed until both temperatures are correct. As soon as the temperatures are both equal, the process will start. To override this failsafe feature see section 7.7.

**Notes:** Once the process has started, turning the program selector switch (21) will not change to another program.



Once the "Start" button has been pressed, the Autolab will run the process automatically. During the process an LED will illuminate next to the current step. The remaining time of each step counts down on the digital display. At the end of the process, a beep will continue to sound until the reset button (12) is pressed, and then the remaining chemistry amount is displayed.

When the process is finished, remove the tank/drum from the processor. To do this, grasp the tank at its bottom and tilt it upwards and towards you. It is normal for the tank to make a snapping sound when the cog disengages from the lift. The processed print(s) or film(s) may now be removed from the tank/drum.

**Notes:** When a wetting agent or stabilizer is used at the end of a process, JOBO recommends removing the film from the reel, or print from the drum, before placing it in the bath. This optional step should be done outside of the processor. If either agent is used in a tank/drum on the processor, the solution will foam vigorously and reduce its effectiveness. Both chemicals are very tenacious, and will be difficult to wash off from the tanks or reels. If they are not thoroughly cleaned, the chances of "carry over" to the next process are great. Even a small buildup of these agents will hinder the loading of film reels.

**Notes:** When the processor is not in use, both the warm water and cold water supplies should be shut off to relieve pressure in the system.

## SPECIAL FUNCTIONS

- 7.1 Lateral agitation (rocking movement)
- 7.2 Reversal exposure (intermediate exposure)
- 7.3 Manual functions
- 7.4 Changes made during the process
- 7.5 Pre-rinse (pre-soak)
- 7.6 Intermediate/final rinse
- 7.7 Override of the temperature/start feature
- 7.8 Starting program with fault indicators No. 5 or No. 7
- 7.9 Quick tempering (the water bath)
- 7.10 Automatic filling quantity switch
- 7.11 Chemistry quantity remaining, calculation separate/together



7.1 An additional rocking movement can be added to the rotation function. Lateral agitation is beneficial to produce an even background or edge development when using a series 3000 tank or drum.

Lateral agitation is activated or removed by pressing button (14) when in the temperature set mode. The light (18), will indicate off or on status. See section 3.4 for further details on temperature setting.

Note : Use of this feature with tanks/drums other than the 3000 series could result in un-even development.

7.2 If a process requires re-exposure (reversal exposure), set the desired length of time for the exposure in the step between the "Rinse" following "Chemistry 2" and "Chemistry 3." When re-exposure is reached during the process a beeper sounds. Remove the tank from the lift open the tank and expose the contents. Press the start button. The time set for re-exposure will count down on the digital display. When the time has elapsed the beeper will sound. Re-seal the tank and mount it on the lift. Press the start button and the process will continue.

### 7.3



The lift arm can be raised manually by simultaneously pressing the Set 0 button (15) and the Set button (3).



The lift arm can be lowered by simultaneously pressing the Set 0 button (15) and Set button (4).



Tempered water can be pumped into a tank/drum by simultaneously pressing the Set 0 button (15) and the Set button (6).



Chemistry can be pumped manually at the rate of about 100 ml per second by simultaneously pressing the Set 0 button (15) and Set button (5). During a process run, the chemical bottle pumped from is the last (or current) chemistry step accessed.

7.4 The process may be paused by pressing the Start/Stop button (19). The green LED on the button (19) will illuminate. After completing the current step, the processor will idle. Pressing the Start/Stop button again will continue the process (the green LED will extinguish).

The remaining steps in the process can be aborted by pressing the Reset button (12). All remaining steps are canceled and the machine resets for the next run. It is not possible to continue the process where it left off after pressing the Reset button. The chemistry remaining will need to be reset.

Starting or stopping the lateral agitation during processing is accomplished by turning the "Set/Run" switch (20) to "Set", pressing the lateral agitation button (14), and returning the "Set/Run" switch (20) to "Run". The current status of the lateral agitation mode can be verified (when in the "Set" mode and in the temperature step) by the indicator light (18) which will illuminate when the function is active.

The amount of chemistry pumped can be changed during a process. Set the desired quantity with switch (22) and change the "Set/Run" switch (20) to "Set" and then to "Run." If the new amount exceeds the original amount, the current (under filled) step will have the additional amount required to bring its total to the new amount, pumped into the tank. All following chemistry steps will deliver the new amount.

Correcting the time setting of a current step can be done by first pressing the "Start/Stop" button (19). The green light in the upper left corner of that button (19) should light. Switch the "Set/Run" button (20) to "Set." The digital display will show the programmed time that was originally set for the current step. Change the time to the desired setting (or use the Set 0 button to cancel all remaining time). Return the "Set/Run" button (20) to "Run" and press the "Start/Stop" button (the green light on button (19) will extinguish). The internal clock will keep track of the elapsed time. The new, corrected time will be completed on the step running.

Adding or removing remaining process steps during a run is also possible. Press the "Start/Stop" button (19) (the green LED in the upper left corner of the button will illuminate). Allow the step currently running to finish and the tank/drum to drain. Set the "Run/Set" switch to "Set" and use the "Step Button" to access the step for change. Alter the time or add a step by using the 3, 4, 5, and 6 buttons as necessary. To skip a step use the Set 0 button (13). Turn the "Set/Run" switch back to "Run" and press the "Start/Stop" button (the green light will extinguish). The process will continue with the altered times.

Note: All steps except the final rinse can be changed by following the above procedure. When the last rinse step is reached and the "Step" button is pressed, the LED returns to the step where the process was interrupted. It is not possible to regress to a step that has already been passed. Do not press the "Reset" button during the changes, it will cancel the remaining steps (for the current run) and reset the Autolab for the next process run. Changes may be made when the machine indicates there is a problem, (ie; the LED (18) is blinking, the beeper is sounding, or the green LED is blinking). If any changes are made during the process, it is recommended that all the steps in that process be confirmed before using the process again.

Changes can be made during a process except when; one of the solenoids is functioning (letting water into the machine), the air pump is operating (pumping chemistry), or the lift arm is in the raised position (draining).

7.5 When a pre-rinse is used, water is pumped into the drum for the set time.

7.6 Each programmed rinse step (except pre-rinse) follows a cycle. Water is pumped in, and the tank is drained about 15 seconds. The time used to drain depends on the quantity of water pumped, typically 33 to 46 seconds. This cycle of fill and drain is repeated for the duration of the rinse step.

7.7 To override the temperature delay feature, press the bottle temperature button (1) and the "Start/Stop" button (19) together and hold for five seconds until the LED (16) blinks. Release the buttons and the process will start in about 10 seconds, with a beep. The LED (16) will continue to blink for the duration of the process.

7.8 Starting program with fault indicators 3 or 7. Please reference section 7.7.

7.9 The Quick Tempering feature may be used to decrease the time it takes to raise the temperature of the chemistry bottles to the programmed processing temperature. The feature should be set before the processing run is started. Press the reset button (12), and push the step button (17) once (the temperature step should be displayed). Press button (6), the letter "U" will appear on the digital display above button (6). Push the Reset button (12) again. To remove this feature repeat the procedure and the "U" will extinguish.

Note: Quick Tempering is done by comparing the present chemical temperature and the pre-programmed temperature. When the temperature of the chemicals is lower than the programmed temperature, the water bath overheats (by a maximum of 3 degrees C). As soon as the chemical temperature is close to the programmed temperature, the bath is cooled to the correct temperature by pumping in cold water. The chemicals and the bath are stabilized at the programmed temperature. When the Quick Tempering feature is active the temperature display (7) will blink.

7.10 The automatic filling quantity switch (25) may be used when processing with a 2500 series tank and using 2502 Duo-set reel(s). The quantity switch (22) must be set to "A" (Automatic) for the fill function switch (25) to be activated. The tanks 2523, 2553, and 2563 may be used. There are two symbols for each tank, one set of symbols indicates a full tank (all black) and the other indicates a half full tank (bottom half black and top half white). The full symbol setting may be used for any combination of film(s) that fit the 2502 reel. The half full symbol may only be used if the reel(s) are loaded with 120 roll film (one to a reel, on the outside of the reel). The half full setting uses the minimum amount of chemistry required to safely cover the outside portion of the reel(s). A full quantity of rinse water is used with either of the automatic settings. With the 2501 and 2509 reels, do not use the automatic switch.

Use



For fully loaded 2502 (2X120 or 1X135)

Use



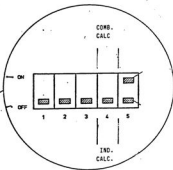
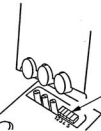
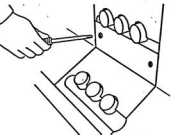
For outside loaded 2502 (1X120)

Tank 2523		170 ml		300 ml
Tank 2553		400 ml		730 ml
Tank 2563		500 ml		1000 ml

7.11 The way the ATL-2 calculates remaining chemistry can be adjusted. Normal operation of the Autolab has each process (1 through 10) calculate the remaining chemistry individually. This is suitable for machines that have more than one series of chemicals within the six bottles (for example Black and white film chemicals for the first three bottles, and color negative film chemicals for the last three). With Kodak E-6 process (and some others) there may only be one set of chemicals to use. Sometimes it is desirable to use different process number settings for modified times of the same process. For example, push or pull processing may use the same chemicals and only the times used are changed. When the same bottles of chemistry are used with different process number settings the displayed amounts of chemistry will not be accurate unless an adjustment is made to the machine.



To make this change in quantity calculation, refer to the accompanying illustration. First unplug the Autolab. Remove the security cover (30). Locate the dip switch (bank of 5 switches) under the cover. Gently set switch number 4 to the "ON" position (switch toggle facing up). Replace the cover, and plug the power cord back into the outlet. To restore the original calculation system, reset the number 4 dip switch "OFF."



## SPECIFIC PROCESSING INSTRUCTIONS

- 8.1 Using process control strips
- 8.2 Reversal process E-6, UK 6, AP 44
- 8.3 Negative process C-41 (A)
- 8.4 Black and white film processing
- 8.5 Paper process EP-2, Agfa P, Tetenal PK
- 8.6 Paper reversal process Kodak R-3, Agfa Cu, Tetenal UK 3
- 8.7 Ciba P 30

8.1 Pre-exposed process control strips are available from film manufacturers and can be purchased through photographic supply dealers. Control strips can be processed in the Autolab and compared against the manufacturer's pre-processed strip. Variations between the 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. Control strips should be stored in a freezer and be allowed to thaw thoroughly before use.

Use a densitometer to make accurate evaluations of control strips. Read the density from the exposed density of each processed control strip. Log the results and compare them to charts obtained from the chemistry manufacturer.

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

3.2 The process E-6 (and equivalents) are used to process Kodak E-6 Ektachrome (and compatible) films. The processing steps and a brief description of each follows. Use speed 75 with 2500 series tanks and speed 50 with 3000 series tanks (with lateral agitation). Times for the steps may vary from different manufacturers. Set temperature to 38.2 C.

Prewarm, 3:00 minutes

First developer (FD), 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.

Rinsing, 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 (Rev), bottle position 2, 2:00 minutes

This chemical 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 below.

Color developer (CD), bottle position 3, 6:00 minutes

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 below.

Conditioner bath "intermediate bath" (Con), bottle position 4, 2:00 minutes

The metallic silver is prepared for bleaching and the PH of the film is adjusted to equal the bleach. Color developer is prevented from contaminating the bleach. Improper conditioning produces silver retention and fog.

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

E-6	No.
temp.	38.2
prewarm	3:00
prel. rinse	—
chemistry 1	6:30
rinse	2:30
chemistry 2	2:00
rinse	—
re-exposure	—
chemistry 3	6:00
rinse	—
chemistry 4	2:00
rinse	—
chemistry 5	6:00
rinse	—
chemistry 6	4:00
rinse	6:00
end	

UK 3	No.
temp.	38.2
prewarm	3:00
prel. rinse	—
chemistry 1	6:30
rinse	2:30
chemistry 2	6:30
rinse	2:30
re-exposure	—
chemistry 3	6:00
rinse	—
chemistry 4	—
rinse	—
chemistry 5	—
rinse	—
chemistry 6	—
rinse	6:00
end	

Bleach bath (BL), bottle position 3, 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, high maximum density for blue.

Note : It is possible to regenerate the bleach for re-use.

Fixing bath (FX), 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 and contains a wetting agent to promote spot free drying. This bath should be replaced periodically to prevent scum from forming.

Note: 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.

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

Note: Stabilizer should always be used outside of the processor to avoid contaminating tanks and reels. Use a separate container for stabilizing film. 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	No.
temp.	59-68
developer	6:00
prel. rinse	—
chemistry 1	4:30
rinse	2:30
chemistry 2	2:00
rinse	—
re-developer	—
chemistry 3	6:00
rinse	—
chemistry 4	2:00
rinse	—
chemistry 5	6:00
rinse	—
chemistry 6	4:00
rinse	6:00
end	—

## Process control

Color characteristics and rendering 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 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. They may not be acceptable for critical work.

## Processing faults

### Slide too dark

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

### Slide too light

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

### Slide is too light and blue

First developer contaminated with fixing bath (FX)

### Slides with yellow spots and/or high minimum density

Contamination of chemicals with stabilizer or silver retention. Clean all equipment. Extend bleach and fixer times.

8.3 The process C-41 (and equivalents) is used to develop Kodacolor, or Vericolor (and C-41 compatible) films. Use speed 75 for 2500 series tanks and 30 for 3012-3023 tanks (with lateral agitation). Times for the steps may be different from other manufacturers. Set the temperature to 38.2 C.

C-41	No.
temp.	38.2
develop	3:00
prel. rinse	—
chemistry 1	—
rinse	—
chemistry 2	—
rinse	—
re-exposure	—
chemistry 3	—
rinse	—
chemistry 4	3:15
rinse	—
chemistry 5	2:00
rinse	3:15
chemistry 6	2:00
rinse	2:00
and	

Prewarm, 3:00 minutes

Color developer (CD), bottle position 3, 3:15 minutes

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

Bleach bath (BL), bottle position 5, 6:00 minutes

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 do 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 and completing the process again.

Intermediate rinse, 3:15 minutes

Fixing bath (FX), bottle position 6, 6:00 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 life of the film.

Final rinse, 3:00 minutes

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

Stabilizer bath, (time not critical) 1:00 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.

### 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 (#1317 for 17 discs and #1344 for 44 discs). In order to obtain spot free drying, we recommend the JOBO disc film dryer.

8.3 EP-2 (or its equivalents Agfa P<sub>1</sub> and Tetenal PK) processes color prints made from color negatives. The process steps are listed below. Use speed 75. Times for the steps may be different from other manufacturers. Set temperature to 38.2 C.

EP-2	No.
temp.	38.2
prepave	1:00
prel. rinse	—
chemistry 1	2:00
rinse	—
chemistry 2	0:30
rinse	—
fix-exposure	—
chemistry 3	2:30
rinse	—
chemistry 4	—
rinse	—
chemistry 5	—
rinse	—
chemistry 6	—
rinse	2:10
end	

Prewarm, 1:00 minute

Color developer (CD), bottle 1, 2:00 minutes

Stop bath (ST), bottle 2, 0:30 minute

Bleach/fixing bath (BFX), bottle 3, 2:30 minutes

Rinse, 2:30 minutes

### Process problems

If the shadows are blue then either the developer is old, the development time was too short, the process temperature was too low, or the developer is exhausted.

If the prints show low contrast and color shifts, the developer is contaminated by bleach/fixer.

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.

8.6 Kodak R-3 (along with Agfa CU, and Tetenal UK 3) is used to process prints made from color slides. Below is a listing of the steps. Use speed 73. Times may be different for other manufacturers. Set temperature to 38.2 C.

R-3	No.
temp.	38.2
prepura	1:30
prel. rinse	—
chemistry 1	0:30
rinse	2:30
chemistry 2	2:30
rinse	2:30
re-exposure	—
chemistry 3	2:30
rinse	—
chemistry 4	—
rinse	—
chemistry 5	—
rinse	—
chemistry 6	—
rinse	3:00
end	

First developer (FD), bottle 1, 1:30 minutes

Thorough rinse, 2:30 minutes

Color developer (CD), bottle 2, 2:30 minutes

Bleach/Fixing Bath (BFX), bottle 3, 2:30 minutes

Rinse, 3:00 minutes

### Processing problems

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

If maximum density blacks are blue and colors look gray, then the color developer was contaminated with first developer, increase the wash 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.

Note : The Tetenal UK 2 process works like UK 3, but requires a re-exposure to light after the first developer.



**3.7 Cibachrome P-30 process uses an azo dye-destructive process to produce prints from color slides. This process yields prints with good color saturation, sharpness, and excellent keeping qualities. Use speed "Quick Start." Set temperature to 30.0 C.**

**Prewarm, 1:00 minute**

**First Developer (FD), 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 wash, 0:30 minute**

Ceases development and prevents developer carryover into the bleach.

**Bleach bath (BL), bottle 5, 3:00 minutes**

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

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

**Intermediate rinse, 0:30 minute**

Residual bleach is removed.

**Fixing Bath (FX), 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.

P30		No.
temp.	30.0	
prewarm	1:00	
prel. rinse	-	
chemistry 1	-	
rinse	-	
chemistry 2	-	
rinse	-	
re-exposure	-	
chemistry 3	-	
rinse	-	
chemistry 4	3:00	
rinse	0:30	
chemistry 5	3:00	
rinse	0:30	
chemistry 6	3:00	
rinse	3:00	
end		

**Note :** Insufficient amounts of chemistry will produce streaks. Use the manufacturer's recommended quantity of chemistry (75ml per 3X10 print). Extending the time of the rinse between developer and the bleach steps beyond 30 seconds will cause brown spots on the front and back of the print. Too small a quantity or a short bleach time will produce dark stripes.

## CLEANING AND MAINTENANCE

9.1 The final rinse at the end of the process washes the entire tank (or drum) along with the common solution path within the ATL head.

Entering a rinse program into one of the ten program channels permits cleaning of the chemistry delivery hoses. Fill the stock solution bottles with one liter of water. Enter a time of ten seconds for each of the chemistry steps and set the intermediate rinse times to zero. Attach a tank or drum capable of holding a liter of water. The water pumped from the bottles will rinse the hoses. Different chemistry may now be filled into the bottles without contamination after this purging process.

9.2 A tool is enclosed in the ATL-2 accessory bag that is used to make removal of the chemistry hoses easier. Removing the hose from the bottle makes removal of the chemistry bottle from the trough easier.

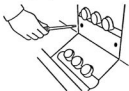


9.3 The water jacket should be drained and refilled at least once a week to prevent algae buildup. If the processor will not be used for an extended period of time, leave it empty.

**CAUTION** | Do not add any type of anti-algae products to the water bath. Bleaches and disinfectants will oxidize internal parts of the recirculation motor, and damage the processor.

Replace the orange cog lid washers when worn. To prevent a leak in the tank/lid seal, replace the orange cog lid washers when wear is apparent. Replacement washers are supplied in the ATL accessory bag. Additional washers may be ordered (07095).

9.4 To change the fuses on the ATL-2 unplug the processor and remove the security cover (30). Use a straight edged screw driver to unthread the cover of the fuse holder.

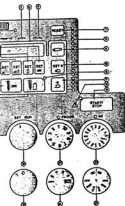


9.5 The tolerances in filling quantities are  $-5\%$  to  $+10\%$ . These variations will not affect the processing results. It is not unusual when pumping 1 liter of chemistry, that some of the bottles have no solution left, while others may have a small amount remaining.

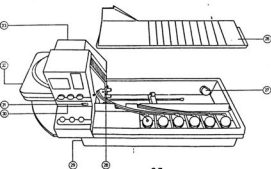
## FAULTS

INDICATION	CAUSE	REMEDY
A "2" on LEDs and beeping	Drum motor stopped	Within 5 seconds the unit will reverse to free from obstruction. If not call for service.
A "2" on LEDs and beeping	Relay is sticking	Problem is diagnosed and corrected by micro-processor. Rotation motor reverses quickly to free relay.
Motor turns at 50 rpm and does not reverse or respond to changes	Motor is overburdened	Let the motor cool off. If this occurs often, call for service.
A "3" on LEDs and beeping	Air distributor defect	Call for service
A "4" on LEDs and beeping	Lift arm can not raise	Empty the tank manually, replace it and press the "start" button (19). Stay with the unit until the end of the process. Call for service.
A "5" on LEDs and beeping	Defective water sensor	Press button (11), the bottle temperature sensor. If the display is less than 2.3 or greater than 49.9 call for service.
A "6" on LEDs and beeping	Quantity of solution pumped is insufficient	Simultaneously press buttons (5) and (15). 100 ml per second will be pumped. This will refill the tank where process stopped.

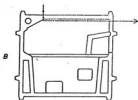
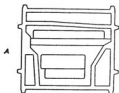
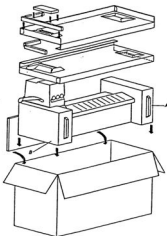
INDICATION	CAUSE	REMEDY
A "7" on LEDs and beeping	Chemical sensor is defective	Disengage "quick heat" feature. The process may be run with temperature override (see 7.7). Call for service.
Water bath does not heat up	"Reset" not pressed after programming	Press reset (12)
Water bath does not heat up	"Set/Run" left on "Set"	Turn "Set/Run" switch (20) to "Run".
Program will not start	Insufficient quantity of chemistry in the stock bottles	Refill the bottles and enter the new amount in the program.
Red triangle blinking and beeping	Either the rinse water is not on, or the stock bottles are empty, or the bottle caps are loose.	Check all three and make appropriate adjustments.
Red triangle blinking and beeping with an LED blinking next to one of the chemical steps	The chemistry bottle indicated by the LED blinking has insufficient chemistry	Fill the bottle and press the "Start" button (19).
Blinking red triangle	A momentary power loss occurred	The process will not be effected if the power was out for only a few seconds.
Blinking yellow triangle	Unit detects and corrects internal program failure	



- 1 Bottle temperature
- 2 Water bath temperature
- 3 Double function button for lifting
- 4 Double function button for lowering
- 5 Double function button for filling
- 6 Double function button for rinse water
- 7 Temperature indicator
- 8 Photocell
- 9 Quantity indicator
- 10 Digital display
- 11 Minute/second indicator
- 12 Reset button
- 13 LED control string
- 14 Lateral agitation button
- 15 Double function button: Set-0/manual
- 16 Holding indicator
- 17 Step button
- 18 Warning triangle
- 19 Start/Stop
- 20 Set/Run
- 21 Program selector switch
- 22 Fill quantity switch
- 23 Power switch
- 24 Motor speed switch
- 25 Automatic filling quantity
- 26 Bottle cover
- 27 Water level dial
- 28 Tank/drum system switch
- 29 Drain
- 30 Access panel
- 31 Fuses and DIP switches (under 30)
- 32 Power cord
- 33 Water inlet
- 34 Hose removal tool



## REPACKAGING INSTRUCTIONS



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## IMPORTANT SAFEGUARDS

When operating your processor, basic safety precautions should be observed, including the following:

1 DO NOT ATTEMPT TO OPERATE THE ATL-2 UNTIL READING AND UNDERSTANDING THIS INSTRUCTION MANUAL !

2 RETAIN THESE INSTRUCTIONS FOR FUTURE REFERENCE !

3 DO NOT OPERATE THE ATL-2 PROCESSOR WITHOUT ATTACHING TO A PROPERLY GROUNDED OUTLET. FAILURE TO DO THIS COULD POSE A SHOCK HAZARD !

4 HEED ALL WARNINGS ON THE PROCESSOR AND IN THE INSTRUCTIONS.

5 Do not operate the unit if the power cord is damaged or frayed, or if the unit has been dropped or damaged, until inspected by a qualified service person.

6 Power cords should be routed so they are not likely to be stepped on, pinched, or accidentally submersed in water.

7 If an extension cord is necessary, a cord with a suitable current rating should be used. Cords, rated for less amperage than the processor, can overheat and become a fire hazard.

8 Never operate this unit without all covers and hardware in place.

9 Avoid splashing of water, chemicals, or other liquids on motor control unit.

10 Do not leave the processor running unattended for long periods.

11 The power cord of the unit should be unplugged from the socket if the unit will not be used for a long period of time.

12 Do not attempt servicing beyond that described in this manual. All other service should be referred to qualified personnel.