

WARRANTY

The Alphatek AX700 Series Film Processor is warranted for a period of two years from the date of installation, for all parts, against defects in material and/or workmanship. Should any such defect appear during the warranty period, notify your Alphatek dealer.

This warranty does not cover damage caused by accident, misuse or neglect.

This warranty is in lieu of, and supersedes all other representations, expressed or implied, by the manufacturer or any representatives.

This warranty is provided for the original purchaser and is not transferable.

This warranty is void if any service or re-installation has been done by any person or persons who are not authorized Alphatek dealers.

**AX700 SERIES FILM PROCESSOR
ALPHATEK CORPORATION
INSTALLATION AND SERVICE MANUAL**

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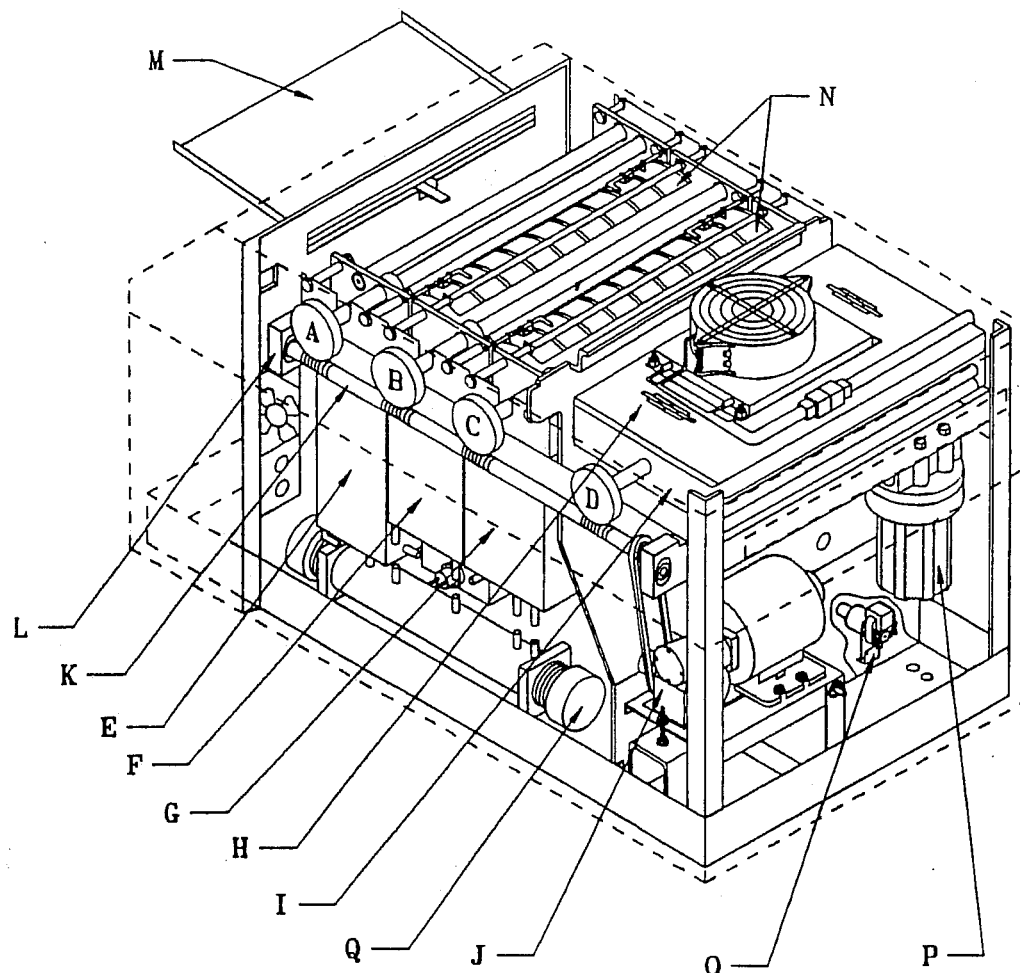
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SECTION ONE

INTRODUCTION

The AX700 LE is a 90 second general purpose x-ray film processor. The AX745 LE is a 45 second processor which requires the use of 45 second film. These processors are designed for simplicity of operation over a wide variety of circumstances. There is an "Automatic Standby System" which reduces electrical usage and water consumption, and also produces an appreciable reduction of the wear on the processor's component parts. Film transport is accomplished by solid acrylic rollers precisely engineered to provide an elimination of slippage or excess pressure during transport. Automatic metered replenishment assures consistent high film quality even when used to full capacity. All parts of the processor are manufactured with corrosion resistant material.

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LEGEND	120 VOLT	240 VOLT
A = DEVELOPER RACK ASSEMBLY	5543.700.01	5543.700.01
B = FIXER RACK ASSEMBLY	5543.700.02	5543.700.02
C = WASH RACK ASSEMBLY	5543.700.03	5543.700.03
D = DRYER RACK ASSEMBLY	5543.700.04	5543.700.04
E = DEVELOPER TANK	4548.700.02	4548.700.02
F = FIXER TANK	4548.700.03	4548.700.03
G = WASH TANK	4448.700.01	4448.700.01
H = UPPER BLOWER ASSEMBLY	5536.700.06	5536.700.14
I = LOWER BLOWER ASSEMBLY	5536.700.07	5536.700.13
J = MAIN MOTOR (AX700)	4183.600.06	4183.700.13
J = MAIN MOTOR (AX745)	4183.700.07	4183.700.07 (-)
K = DRIVE SHAFT ASSEMBLY	5236.700.03	5236.700.03
L = ADJUSTMENT BLOCK ASSEMBLY (2)	5136.600.01	5136.600.01
M = INFEED TRAY	4550.300.04	4550.300.04
N = CROSSOVER GUIDE ASSEMBLY	5236.700.07	5236.700.07
O = RECIRCULATION PUMP (2)	4183.700.01	4183.700.11
P = DEVELOPER FILTER ASSEMBLY	5236.700.01	5236.700.01
Q = DRAIN MANIFOLD ASSEMBLY	5436.700.01	5436.700.01

- 745 MOTOR AVAILABLE ONLY AS 120 VOLT CONFIGURATION
MOTOR MUST BE USED WITH STEP DOWN TRANSFORMER FOR 240 VOLT.

FIGURE 1-1
MAJOR COMPONENTS

SECTION TWO

SITE SPECIFICATIONS AND PREPARATION

NOTE: ALL INSTALLATIONS MUST COMPLY WITH ALL NATIONAL, STATE AND LOCAL BUILDING CODES FOR BOTH ELECTRIC AND PLUMBING. INSTALLATIONS MUST COMPLY WITH E.P.A. AND METROPOLITAN SANITARY DISTRICT REGULATIONS.

2.1 ELECTRIC

- 120 Volts, 20 Amp., 50/60 Hertz
- 240 Volts, 10 Amp., 50/60 Hertz (optional)
- 3 prong grounded outlet required
- Power Cord length is approximately 90 inches (2.3 M)

2.2 Darkroom Environment

- Room temperature should be maintained between 60°F-80°F (15°-27°C)
- Relative Humidity should be maintained between 40%-75%.
- Heat load from the processor is 7000 BTU's/hr.(maximum)
- Room must have an exhaust fan capable of 10 air changes per hour.

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2.3 PLUMBING

- 2.3.1** Water temperature from the incoming cold water supply should be maintained between 40°-95°F (4°-35°C).
- 2.3.2** Water pressure should be between 40-80PSI.
- 2.3.3** Water filtration may be required depending on local water conditions.
- 2.3.4** A sink with a hot and cold water source close to the processor or darkroom is suggested. The sink should be large enough to accommodate a transport rack.
- 2.3.5** The cold water should be provided through a valve located in the darkroom and no farther than 4ft.(1.2m) from the "Feed Side" of the processor. Processor is supplied with a 6' (1.8M) Water Inlet Hose. The hose has a ¾ inch garden hose fitting at each end. Hose washers (supplied) must be installed to prevent leaks.
- 2.3.6** A floor drain capable of accepting 2 gallons per minute (7.6L/minute) is required. The drain must be vented and must not be higher than 12 inches (30cm) from the floor.
- 2.3.7** Processor is supplied with a 5' (1.5m) Drain Hose. The hose attaches to the Drain Manifold located inside the electrical section of the processor.
- 2.3.8** The Drain Hose should be installed with a gradual slope to the floor drain, ensuring there are no kinks or bends. This will provide for efficient drainage and avoid air locks.

2.4 PROCESSOR DIMENSIONS:

- Length :42.75 Inches (108.6cm)
:45.5 Inches (115.6cm) (including feed tray)
- Height :21.125 Inches (53.7cm)
- Width :23 Inches (58.4cm)
- Base Height :23.75 Inches to 24.5 inches (60cm to 61cm)
- Weight :250 LBS. (114KG)
- With Solutions :298 LBS. (136KG)

2.5 ACCESS RECOMMENDATIONS

The processor should be installed in a location where proper servicing is achievable. Listed below are recommendations for proper clearance:

- Complete access to one side of the processor, preferably the "drive side" (Right hand side while facing Infeed Tray). Minimum clearance should be 24 inches (61cm).
- Feed side-30 inches (76cm).
- Top side-15 inches (38cm).

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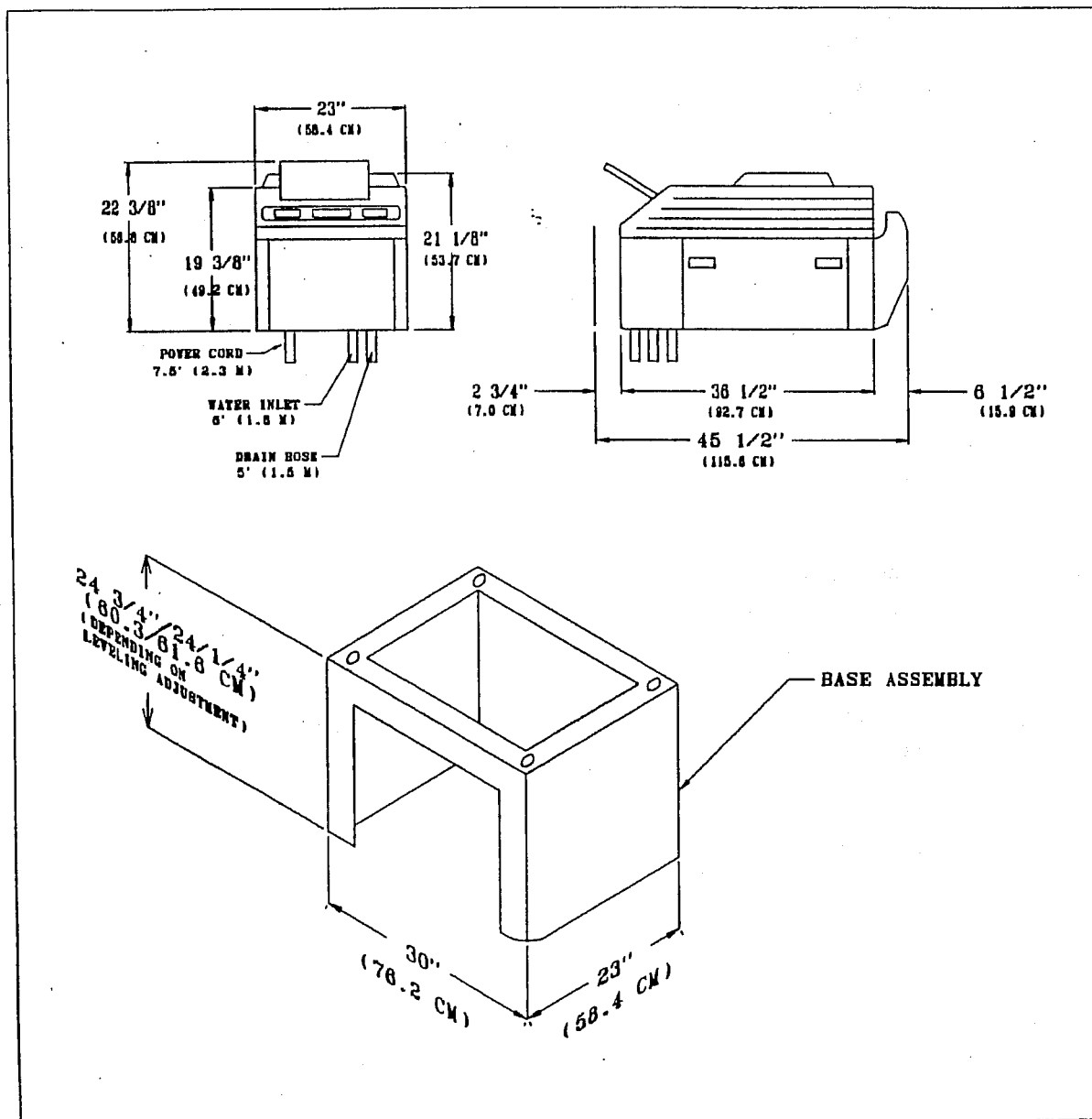


FIGURE 2-1
PROCESSOR DIMENSIONAL LAYOUT

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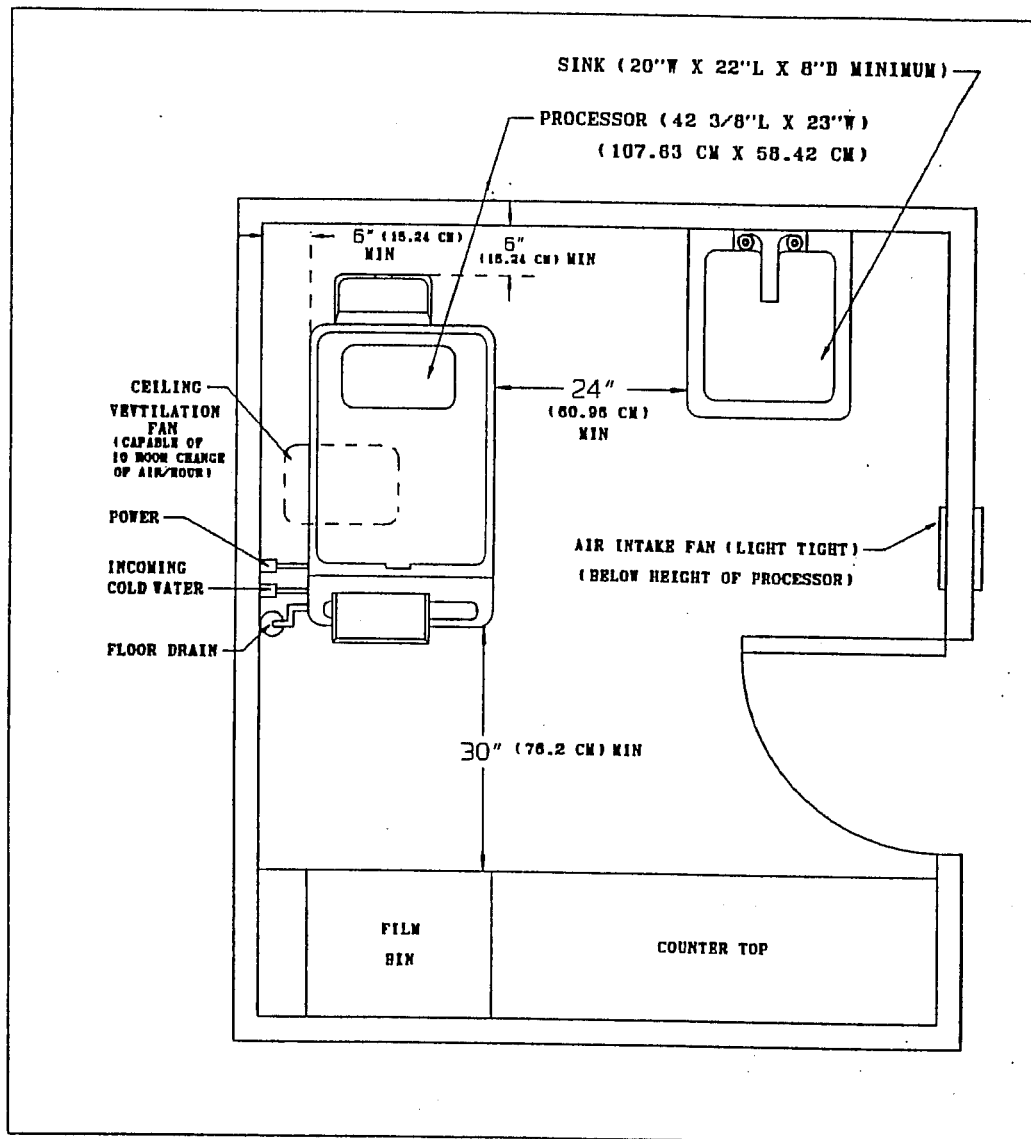


FIGURE 2-2
TYPICAL DARKROOM LAYOUT

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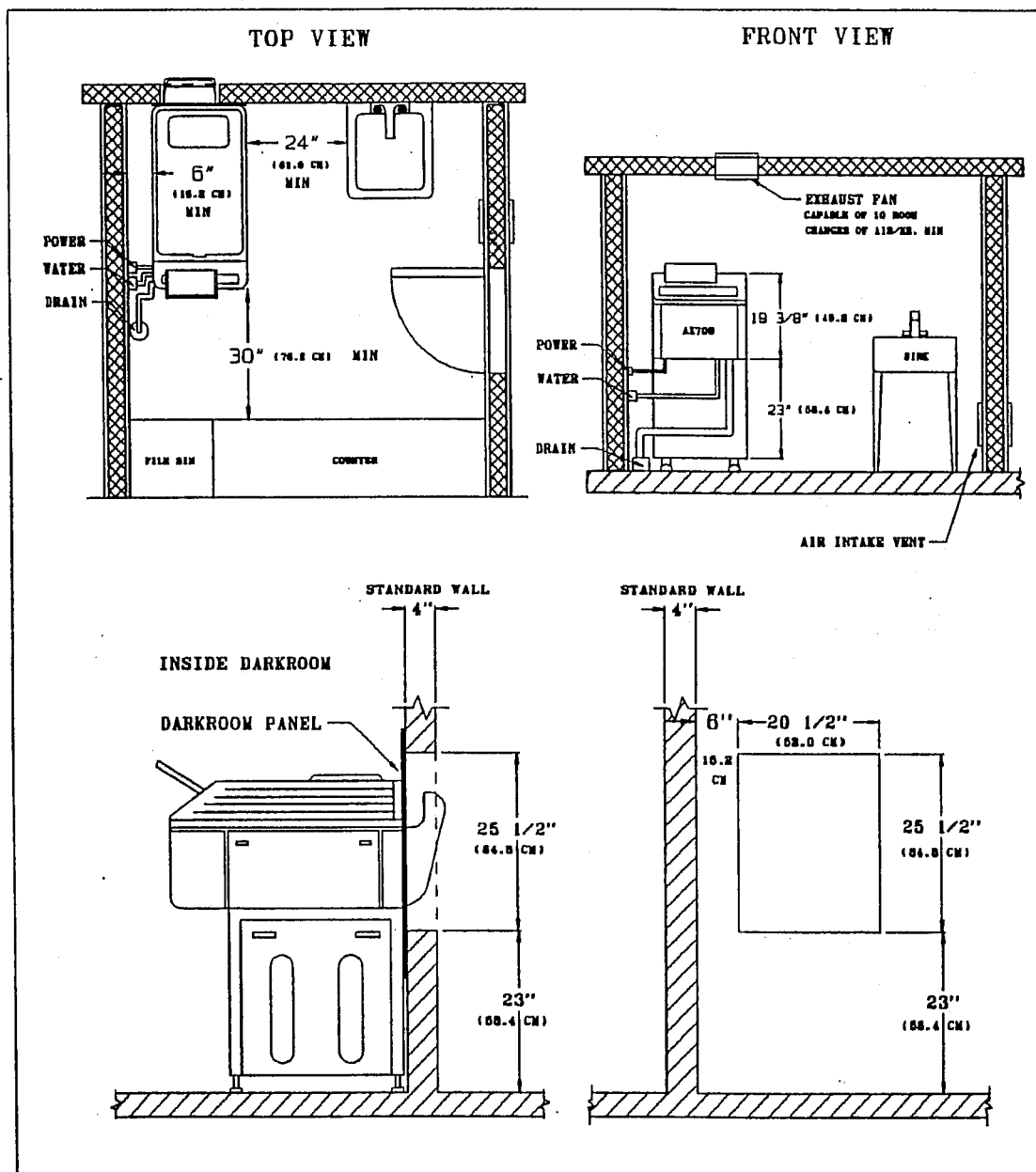


FIG 2-3
AX700 SERIES TYPICAL DARK ROOM LAYOUT
PROCESSOR EXIT THRU-THE-WALL

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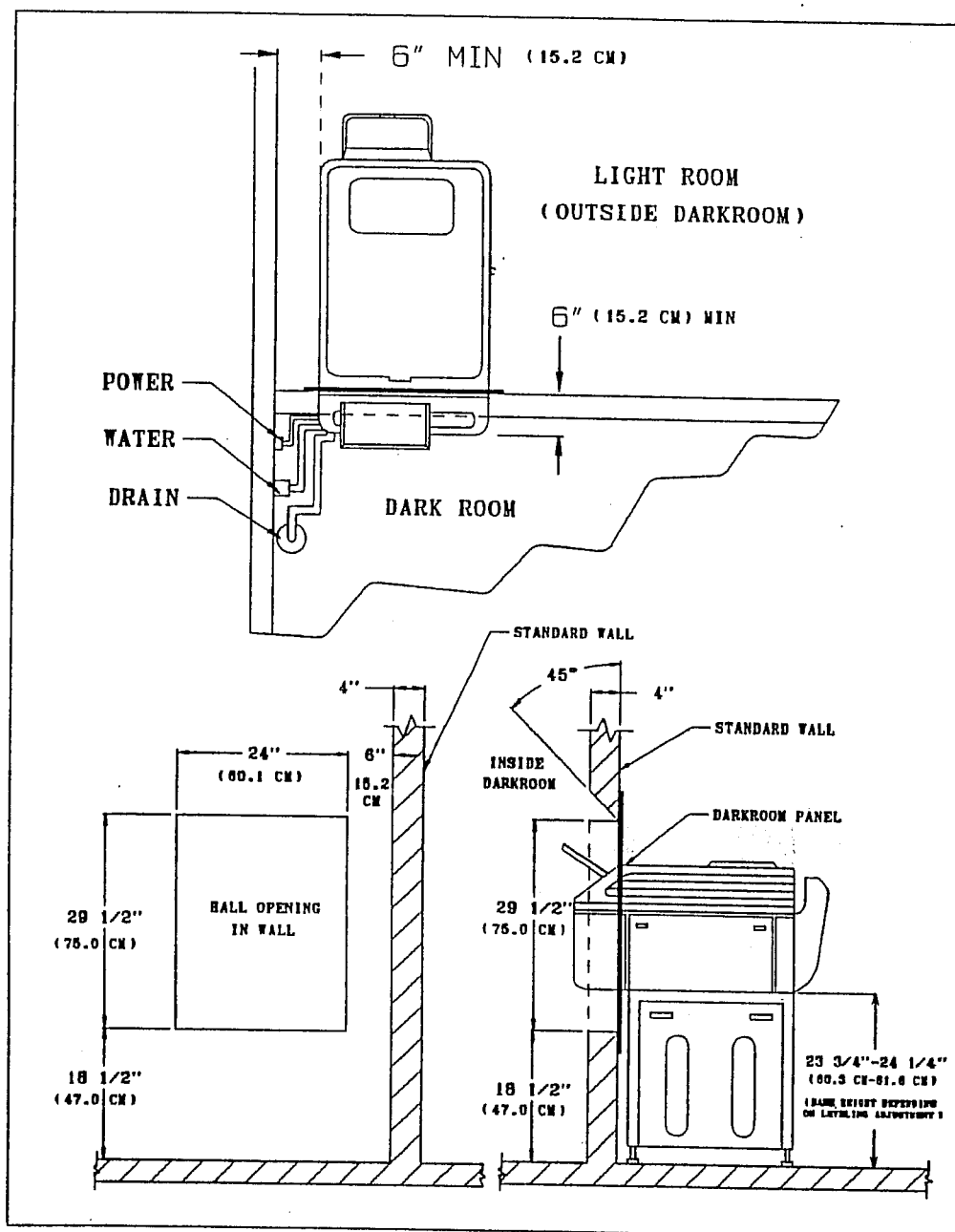


FIGURE 2-4
AX700 SERIES DARKROOM LAYOUT
PROCESSOR FEED THRU-THE-WALL

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SECTION THREE

INSTALLATION

3.1 TOOLS AND EQUIPMENT

NOTE: THE TOOLS LISTED ARE REQUIRED FOR PROPER SERVICE OF AN ALPHATEK PROCESSOR.

- 3.1.1 GRADUATE**
A graduated beaker marked in cubic centimeters (cc). A photographic graduate or a baby bottle with a capacity of at least 140cc's.
- 3.1.2 VOLTMETER**
A voltmeter with a 0-240 VAC range.
- 3.1.3 AMMETER**
A clamp-on A.C. Ammeter with a 0-20 Ampere range.
- 3.1.4 DIGITAL THERMOMETER**
A calibrated thermometer with a 70°-150°F(20°-65°C) range.
- 3.1.5 JEWELLER'S SCREWDRIVER**
Small "flat-tip" screwdriver with a maximum blade thickness of .020 of an inch (0.5mm) for adjusting the potentiometer on P/C Boards.

3.2 UNPACKING

NOTE: PRIOR TO OPENING ANY CRATES OR BOXES, INSPECT THE EXTERIOR OF ALL SHIPPING CONTAINERS FOR DAMAGE. IF ANY OF THE PACKAGES ARE DAMAGED CALL THE SHIPPING AGENT BEFORE PROCEEDING ANY FURTHER.

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- 3.2.1** Open all boxes and inspect components for any damage.
- 3.2.2** Verify receipt of all items as listed on the packing list.
- 3.2.3** Retain all shipping cartons in case the unit has to be returned for any reason. This will ensure the processor will be packaged properly.

3.3 INSTALLATION

3.3.1 BASE STAND

Attach processor to Base with hardware supplied.

3.3.2 PLUMBING CONNECTIONS

- 3.3.2.1** Attach the 6' (1.8m) Water Inlet Hose "gooseneck" to the Water Solenoid. Attach opposite side to the cold water supply.

CAUTION

CHECK THAT WATER SUPPLY AND DRAIN SYSTEMS COMPLY WITH ALL NATIONAL, STATE AND LOCAL CODES.

- 3.3.2.2** The processor is supplied with a 5' (1.5m) Drain Hose. This hose has a 1" (25mm) diameter at one end. Attach this end to the Drain Manifold. Secure with supplied clamp.
- 3.3.2.3** An optional elbow and nipple are supplied to help facilitate a better drain line installation. These parts are to be installed to the end of the Drain Manifold. You will have to remove one side of the Utility Section Bottom Cover to install fittings.

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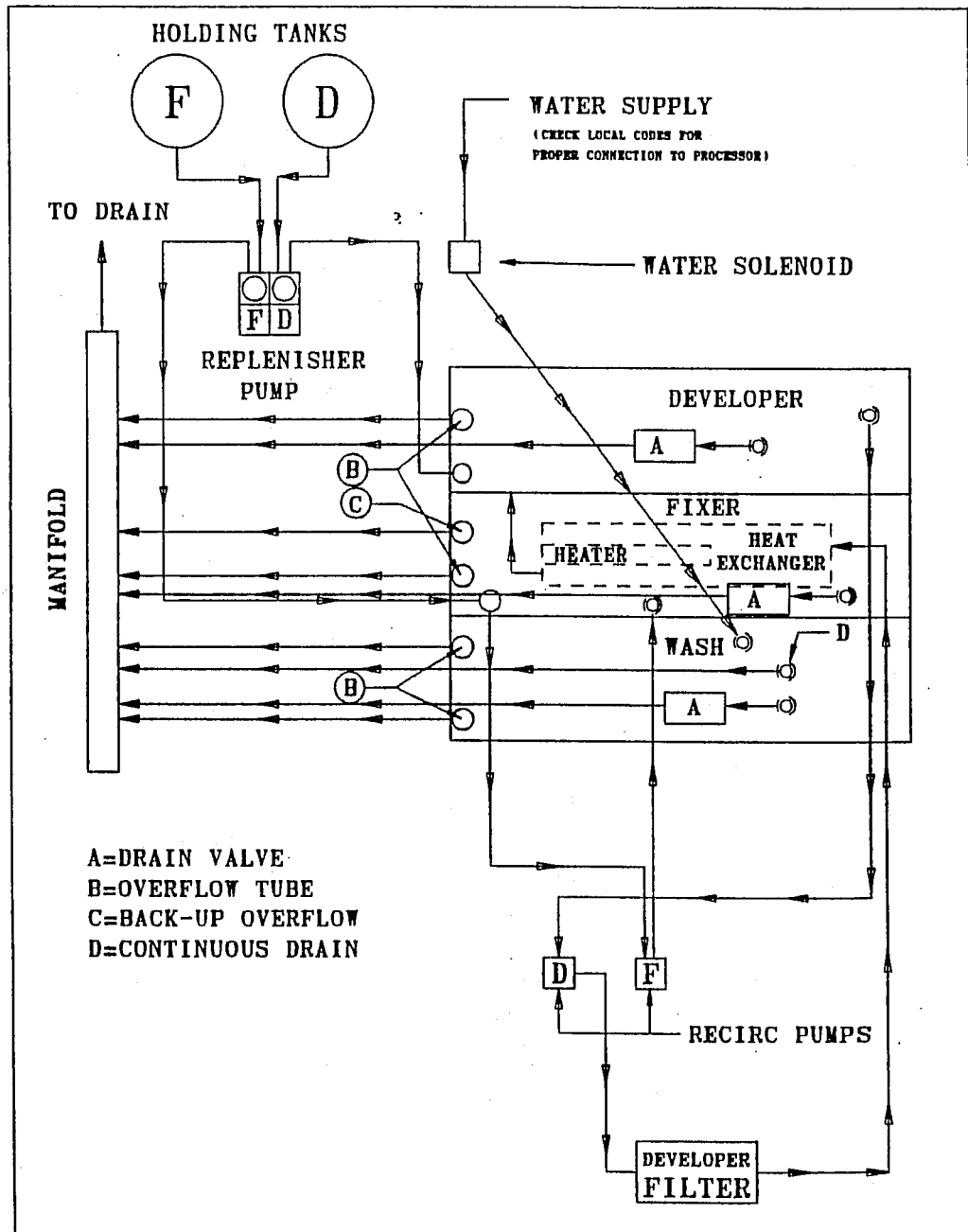


FIGURE 3-1
PLUMBING LAYOUT

3.3.2.3 Drain Hose should be installed with a gradual slope to a vented floor drain. This will ensure proper drainage and avoid air locks.

3.3.2.4 Drain Hose should be installed away from any traffic pattern to ensure the hose does not get pulled from the floor drain and cause flooding.

3.3.3 REPLENISHMENT SYSTEM CONNECTIONS

3.3.3.1 The replenishment system consists of a positive displacement pump, connecting tubing and optional replenisher tanks as shown in Figure 3-1.

3.3.3.2 Connect the vinyl tubes (2) from the replenisher tanks to the corresponding side of the pump. The pump is marked "D" for developer and "F" for fixer. Use the clamps that are supplied to secure the tubing from the tanks to the pump.

3.3.3.3 Fill replenisher tanks with fresh chemistry and check for leaks.

3.3.4 CLOSED LOOP SYSTEM (Optional)

Any of the 700 LE Series processors can be purchased with the "Closed Loop System". This package is available in either a "Wash Water" only or in a "Chemical/Wash" configuration. The tubing hook-ups are shown in Figure 3-2. The drain valves should be left slightly opened to allow the solutions to drain back into their respective holding tanks when the unit is shut down for the day. Turning the processor back on will automatically fill the solution tanks inside the processor.

CAUTION

ENSURE THAT THE OSCILLATING PUMP IS FILLING THE DEVELOPER TANK OTHERWISE DAMAGE TO THE DEVELOPER HEATER COULD RESULT.

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Because you are utilizing only 5 gallons (19 liters) of chemistry and/or water and not replenishing with fresh solutions eventually the solutions will become exhausted. The time it will take for this to occur is dependent on oxidation of chemicals, film size and film quantity. As a starting point you should assume the chemical activity will begin to fall off after 70-75 sheets of mixed film sizes. At this point the chemicals should be drained back into their respective 5 gallon (19 liters) holding tanks and set aside. Fresh 5 gallon (19 liters) containers should be inserted into the system. The water should be changed daily to ensure proper washing of film and to prevent the development of algae within the tank.

3.3.5

SILVER RECOVERY

The AX700 LE Series Fix Tank is equipped with two overflow tubes. One tube is positioned lower than the other. Disconnect the vinyl tubing from the lower tube to the manifold. Connect new vinyl tubing (not supplied) to the lower tube and attach to silver recovery system. The hook-up at the manifold must be plugged. (Plug is supplied). The higher overflow tube functions as a backup should the silver recovery system become clogged for any reason. This will prevent spillage from the Fixer Tank.

3.3.6

POWER CONNECTION

The processor is supplied with a 3 prong, polarized power cord. The receptacle should be a grounded 20 Amp, polarized outlet. The processor will draw up to 18 Amps. It is imperative that this processor be the only draw on this line.

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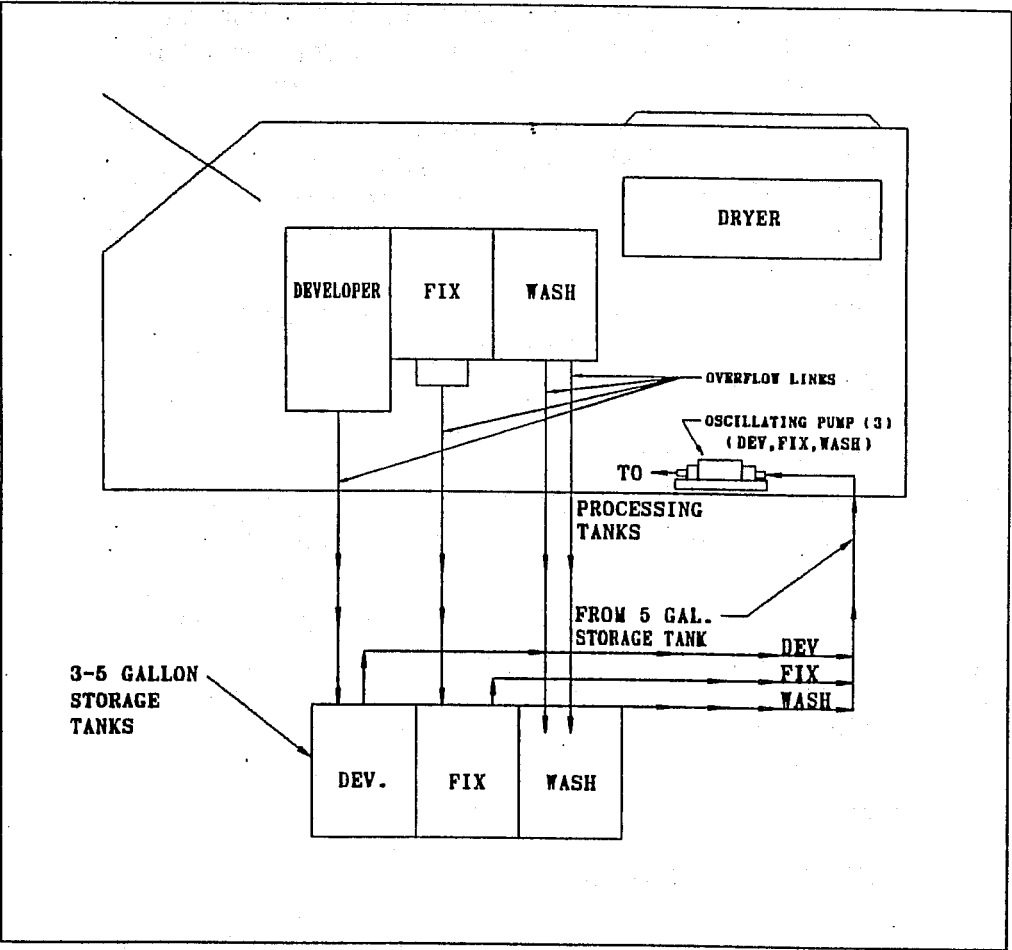


FIGURE 3-2
CLOSED LOOP SYSTEM

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3.3.7

OPERATOR CONTROLS

**3.3.7.1 20 AMP ON-OFF BREAKER (Fig. 3-3, Item A)
10 AMP ON-OFF BREAKER (240V Processor)**

This switch acts not only as a on-off switch but also as a circuit breaker. To turn the unit on, simply depress the rocker arm marked "ON". Reverse the procedure to turn the processor "OFF". If the breaker has been tripped, the rocker arm will float between the ON/OFF position. To reset, depress the arm to the OFF position and retry. If the breaker trips again, check for an internal short.

3.3.7.2 DEVELOPER TEMP. DISPLAY (Fig. 3-3, Item B)
This L.E.D. will display the temperature of the developer chemistry. Accuracy of the display is $\pm 1^\circ$ degree fahrenheit. The display will turn off when a film is fed. The display will return after the film has cleared the feed switch and is into the Developer Rack. Once the display has re-illuminated, another film can be processed or the technician can exit the darkroom. The developer temperature can only be adjusted in the "Service Mode". (See Microprocessor Programming Section). The "FEED" light will not come on until both the developer and the dryer thermostat settings are reached. The developer temperature should be set at the film manufacturer's recommendation for a 26 second developer immersion time. (The AX745 immersion time is 13 seconds).

3.3.7.3 DRYER TEMP DISPLAY (Fig. 3-3, Item C)
This L.E.D. will display the temperature of the dryer section. The dryer is equipped with adjustable buttons next to the display. This allows the technician to increase or decrease the Dryer Thermostat setting. The Standby dryer temperature is only adjustable in the "Service Mode". (See Microprocessor Programming Section).

3.3.7.4 DRYER TEMP. CONTROL PADS (Fig. 3-3, Item D)

These buttons allow the operator to set the dryer thermostat. The dryer temperature should always be set to the lowest setting possible while still achieving dry film. To change the dryer thermostat setting, depress the appropriate button (up/down arrow) and hold down until the desired temperature setting is reached. To determine the dryer temperature setting, momentarily depress either the up or down pad. The current setting will momentarily display. Holding the pads down too long will change the setting. If the ambient conditions change (i.e. humidity) an increase in dryer temperature may be required. If the dryer display is different than the actual temperature in the dryer section, see the Microprocessor Programming Section for proper calibrating procedure.

3.3.7.5 FEED INDICATOR DISPLAY (Fig. 3-3, Item E)

This display will remain off until both developer and dryer temperatures have reached their pre-set levels after each start-up. This display will visually indicate when the processor is ready to receive a film. When film is fed into the processor, the "Feed Sensor" will sense the film and extinguish all displays and lights on the control panel. This system is designed to give the technician a visual indication that a film is in process and to ensure no possibility of fogging from the display. After the film has passed the "Feed Sensor" and is safely into the processor, all displays and lights on the control panel will relight and an audible signal will sound. This will alert the technician to either process another film or leave the darkroom.

Note: There is an eight second delay after a film has passed the "Feed Sensor" to ensure proper spacing between films. If overlapping of film or fogging occurs, adjust the "Feed Sensor Arm".

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3.3.7.6 STANDBY/FULL-ON BUTTON

(Fig. 3-3, Item F)

This allows the operator to by-pass the "Standby" mode and activate the processor to the "Full-On" condition. Only one mode will be lit at any time. If the unit is in "Standby" and a film is processed, the "Full-On" light will come on until the film has exited the processor. If another film is not run, the processor will revert to the "Standby" mode. When the processor goes into "Standby" the main drive will stop, the incoming water supply will be reduced, and the dryer temperature will lower. These features are designed to save wear and tear on the moving parts, and reduce water and power consumption.

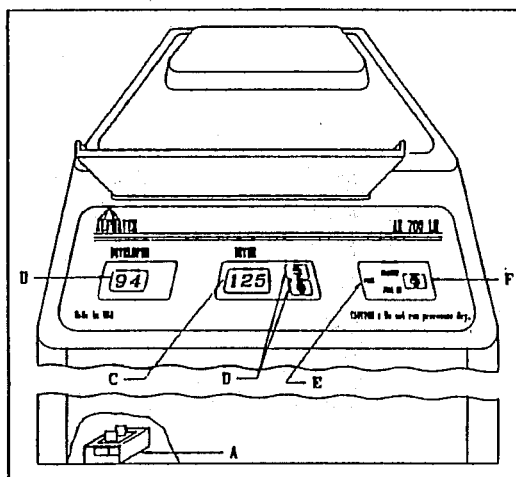


FIG 3-3 OPERATOR CONTROL LAYOUT

LEGEND	120 VOLT	240 VOLT
A.ON-OFF BREAKER.(UNDER SIDE FRONT SECTION)	5185.700.03	5185.700.05
B.DEVELOPER THERMOMETER (LED).	---	---
C.DRYER THERMOMETER AND THERMOSTAT DISPLAY.	---	---
D.DRYER TEMPERATURE CONTROL PADS.	---	---
E.FEED INDICATOR DISPLAY.	---	---
F.STANDBY/FULL ON SWITCH.	---	---
PRINTED CIRCUIT BOARD PART #	5585.700.07	5585.700.08
• C-F PART OF MICROPROCESSOR PCB		

FIGURE 3-3 OPERATOR CONTROLS

3.3.8 FILLING PROCESSOR WITH CHEMISTRY AND WATER

CAUTION

ALWAYS FILL THE FIX TANK FIRST OTHERWISE YOU MAY CONTAMINATE THE DEVELOPER CHEMISTRY.

3.3.8.1 Fixer Chemistry

Ensure the Fix Drain Valve is closed (valve handle is perpendicular to the body of the valve). Pour chemistry into tank up to the fill line formed into the wall of the tank. Place Fix Rack into its proper position within the solution area. Once rack has been inserted bring level up to the overflow tubes.

3.3.8.2 Developer Chemistry

Repeat procedure as noted in Section 3.3.8.1. Fill the Developer Tank approximately $\frac{3}{4}$ full. There is a thermowell/heat exchanger that is located under the Fix Tank. Before inserting rack turn processor on to fill the thermowell. Developer level in the tank will drop. Refill tank to fill line and install rack.

3.3.8.3 Water

Water will flow from the "source" to the Wash Tank via the Water Solenoid. The solenoid will only allow $\frac{1}{2}$ gallon/minute (1.9L) into the processor during the "Full-On" mode. This is achieved by a flow restrictor, internal to the Water Solenoid that allows $\frac{1}{2}$ gallon/minute (1.9L) when processing a film. When the processor reverts to "Standby", water consumption is reduced to $\frac{1}{4}$ gallon/minute (.95L). The Wash Tank has a perpetual drain that is designed to keep fresh water within the tank and help prevent algae build-up.

CAUTION:When the processor is turned off, the water flow must be turned off at the wall otherwise water will continue to flow.

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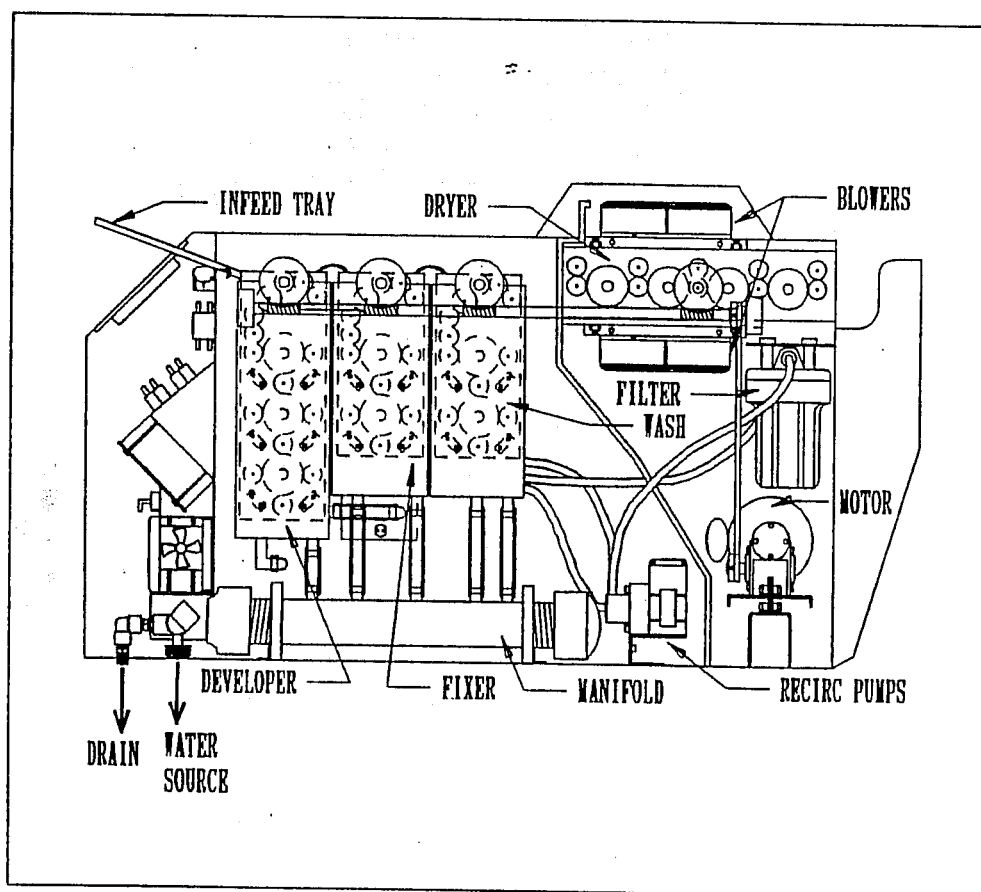


FIGURE 3-4

AX700LE SERIES INTERIOR SIDE VIEW

3.3.9 INSTALLATION OF TRANSPORT RACKS

3.3.9.1 Solution Racks

The Developer, Fix and Wash Racks should be installed and removed by holding one finger on opposite corners of the rack under the Support Pins. Each rack has corresponding slots on the Main Frame that the Support Pins slide into. These Support Pins are designed to suspend the racks over the solution tanks. Ensure that the pins are seated all the way down in their slots.

Each rack is color coded:

Developer - Yellow

Fix - Green

Wash - Clear

3.3.9.2 Dryer Feed Guide

This guide is shipped loose on the Wash Rack to prevent possible damage to the guide or the side plates of the rack. For proper alignment see Figure 3-5.

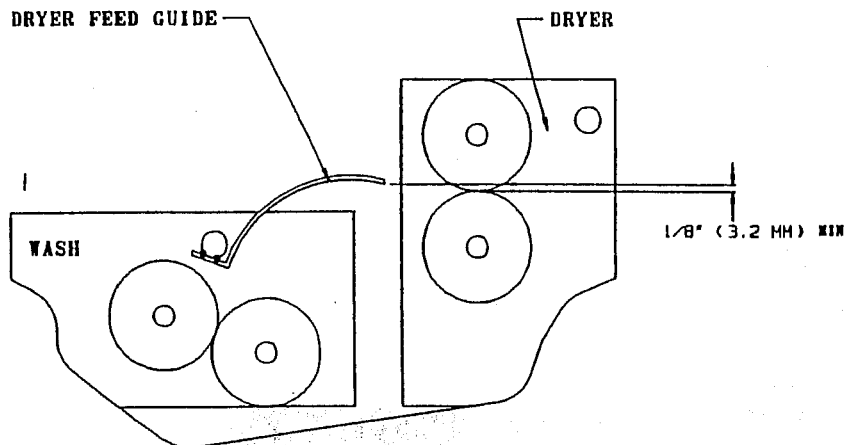


FIGURE 3-5 DRYER FEED GUIDE ADJUSTMENT

3.3.9.3

Dryer Rack

The dryer rack is shipped in place on top of the Lower Blower Assembly. Prior to shipping, the Upper Blower Assembly and Dryer Rack are strapped down to the Lower Blower Assembly. This is to ensure that the rack and blower do not move around during shipping. This packaging also is designed to protect the Dryer Thermostat sensing unit from damage. Remove this strapping.

3.3.9.4

Crossover Guides (Pre-1993)

The crossover guides are designed to transport the film from the developer to the fixer and from the fixer to the wash. Each crossover is marked for easy installation. The developer to the fix has the letter "D" in the center of the guide. The fix to wash has the letter "F" in the center of the guide. These guides are identical to each other but have been tested and marked and should not be switched. To install guides, line up the slots on the guides end plates to their corresponding support pins and push down evenly on each side. Ensure that the arrows on the guides are pointed toward the Dryer Section. To remove the guides, special care must be taken so as not to twist or knock the guide out of square. Gently pull up on both sides of the guide simultaneously and slide up off the pins. For proper adjustment of guides see Figure 3-7.

3.3.9.5

Crossover Guides (Post-1993)

These guides are an integral part of the Fix and Wash racks. Pivot the guide down while pulling back the pins for insertion into the positioning holes in the preceding racks. (Figure 3-8)

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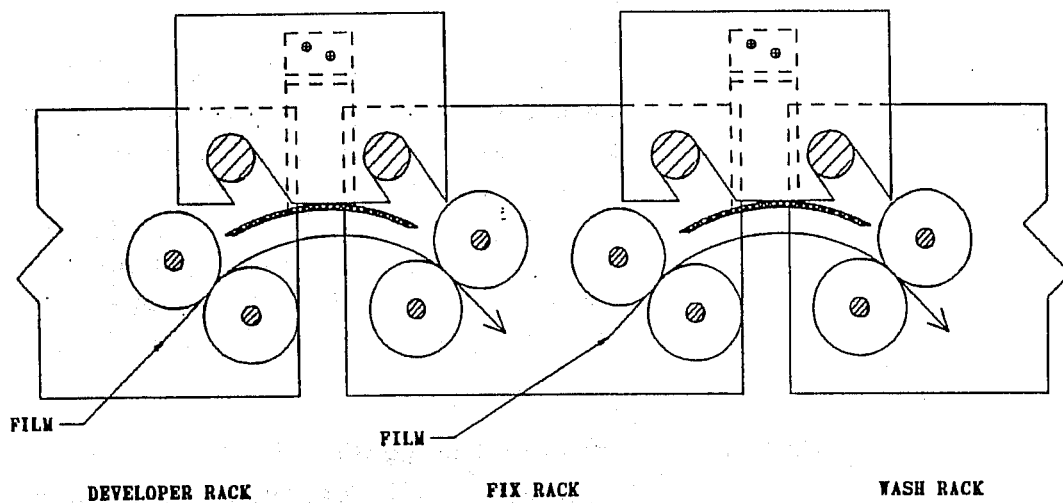


FIGURE 3-7
CROSSOVER GUIDE SETTING (PRE-1993)

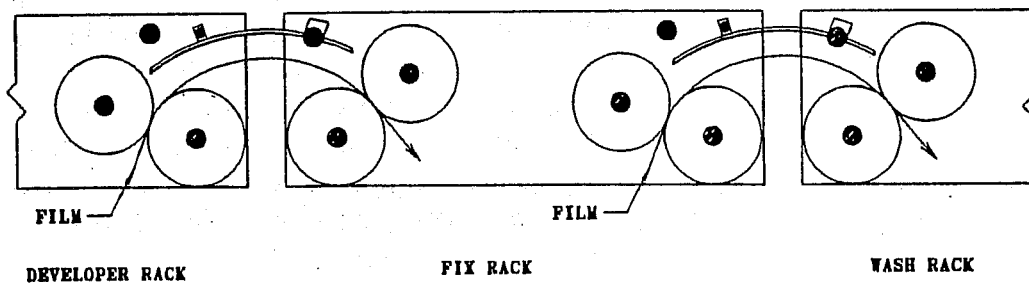


FIGURE 3-8
CROSSOVER GUIDE SETTING (POST-1993)

FIGURE 3-7, 3-8
CROSSOVER SETTING

SECTION FOUR

CIRCUIT FUNCTION, OPERATION, CALIBRATION AND SETTINGS

4.1 TURN-ON PROCEDURE

The AX700 LE Series operates as follows:

4.1.1 TURN PROCESSOR ON

- o Dryer fans will start. (Fans run continuously)
- o Recirculation Pumps will start. (Pumps run continuously)
- o Water Solenoid valve will open. ($\frac{1}{2}$ gal/min. (1.9L) in Full-On and $\frac{1}{4}$ gal/min. (.95L) in Standby)
- o Replenisher Pump will run for 8 seconds.
- o Dryer elements will begin heating.
- o Developer Heater will begin warming chemistry.
- o Main Drive Motor will engage and drive the transport racks.
- o The Control Panel will display current developer and dryer temperatures along with Standby/Full-On condition.
- o After the developer and dryer have reached their pre-set temperatures the "FEED" light will display.

CAUTION: PROCESSING MUST NOT BEGIN UNTIL DEVELOPER AND DRYER HAVE REACHED THEIR PRE-SET TEMPERATURES.

4.1.2 PROCESSING

- o Insert film. (Note: Single emulsion film must be processed emulsion side-down)
- o Film enters Infeed Tray and activates Feed Sensor. Sensor will activate Main Drive and Replenishment Pump.
- o The Sensor will extinguish the Control Panel's lights and L.E.D.s. This will indicate to the operator not to feed another film or leave the darkroom until film has cleared and the Control Panel has re-illuminated.

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○The Replenisher Pump will continue to pump until the film has passed the Feed Sensor. There is a delay of 8 seconds after the film has cleared the Feed Sensor to ensure proper spacing of films. At this time the Pump will stop and the display will re-light and an audible signal will sound. This will instruct the operator to process another film or leave the darkroom.

4.1.3 STANDBY/FULL-ON SELECTION

The processor is equipped with an automatic "Standby Mode". The selection of either Standby or Full-On modes are made on the Control Panel. If the processor is set for "Full-On" the unit will never go into "Standby". If the processor is set for "Standby", water consumption is reduced, dryer temperature is lowered and the Main Drive Motor will stop after the last film exits the processor. (See LE-P/CB Programming Section).

4.1.4 JOG CYCLE

Processor is equipped with a "Jog Cycle" that instructs the unit to turn on 30 minutes after the last film has exited. This option is designed to maintain chemical activity and assist in re-wetting the top rollers of each rack. If no film has been processed for 30 minutes, the processor will automatically replenish for 8 seconds and start the Main Drive Motor. The processor will be active for one processing cycle. This is determined by the Standby time setting. After the processor has reached the Standby time, the unit will revert back to the "Standby" condition.
(See LE-P/CB Programming Section).

4.2 MUFFIN FAN

This fan is installed in the electrical section on the right-hand side of this compartment. The fan is attached to a bracket that is bolted to the back of the electrical plate. (See Fig. 4-1). This fan blows air into the processor to assist in keeping the heated dryer air toward the exit of the processor. This airflow is the reactive force that allows control of the developer temperature.

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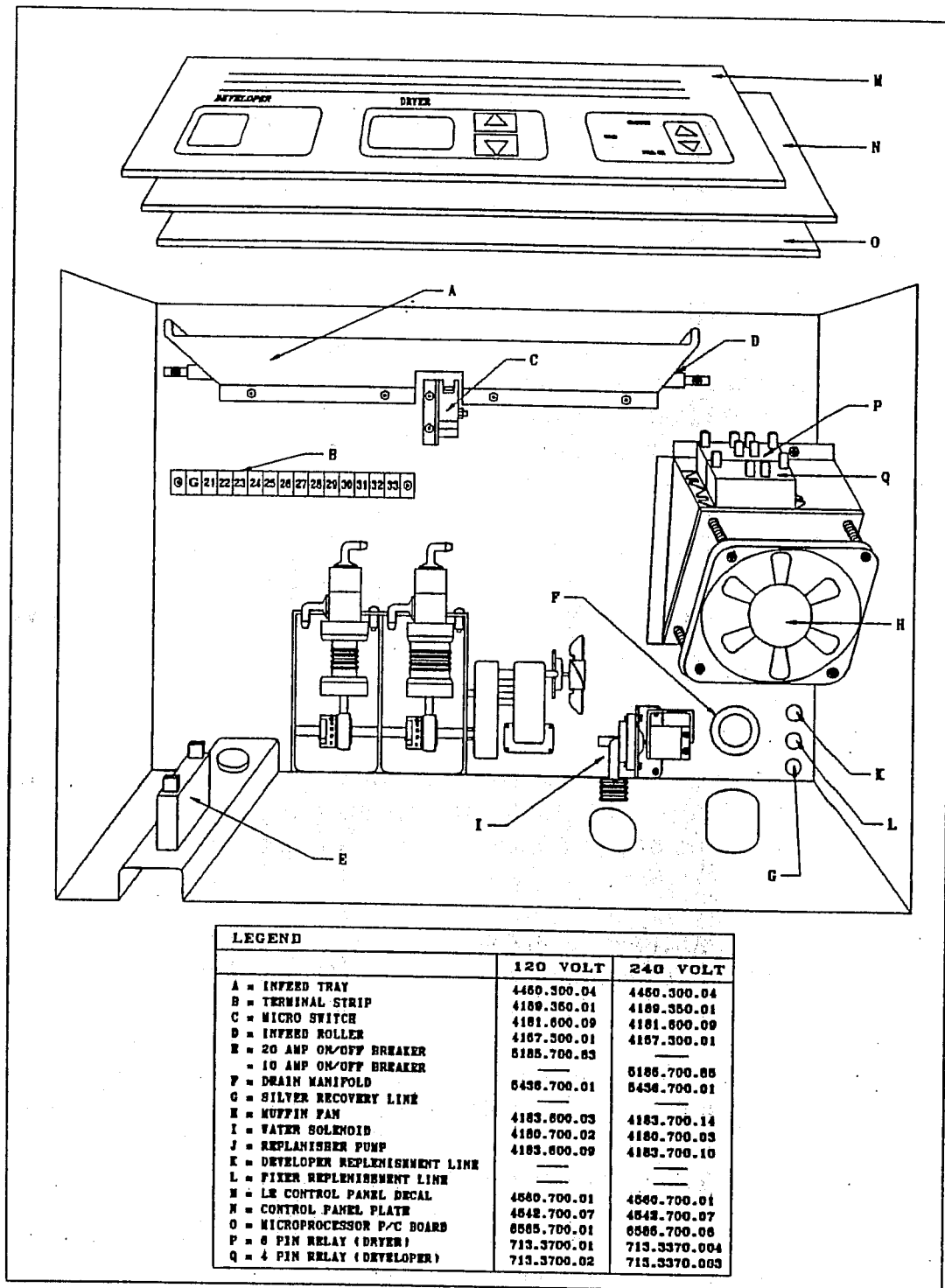


FIGURE 4-1
ELECTRICAL COMPONENT IDENTIFICATION

CAUTION

DARKROOM LAYOUT AND INSTALLATION MUST ALLOW FOR A MINIMUM OF 10 ROOM CHANGES OF AIR PER HOUR. THE AMBIENT ROOM TEMPERATURE MUST NOT EXCEED 80°F (27°C) AS DESCRIBED IN SECTION 2.2.. IF THE TEMPERATURE SHOULD EXCEED 80°F (27°C) A RISE IN DEVELOPER TEMPERATURE MAY OCCUR.

4.3 RECIRCULATION

Recirculation of the developer and fixer is achieved by magnetic drive pumps which operate continually while the processor is on. If a Recirculation Pump has failed, first check for air gaps. Secondly, check the internal workings of the pump head to ensure no foreign materials are impeding the movement of the impeller.

4.4 DRYER SECTION (See Fig. 4-2)

This section is comprised of a Upper Blower Assembly which has a fan and heating element, and a Lower Blower Assembly which has the same components as the Upper Blower.

4.4.1 BLOWER FANS

These fans run continuously while the processor is on. When checking operation of either fan be careful not to be misled by airflow from one fan turning the other. Remove Upper Blower from top of Dryer Rack, while still electrically connected to check airflow from either blower.

4.4.2 DRYER HEATING ELEMENTS

The AX700 LE and the AX745 LE have 600 watt, 120V heating elements for both the Upper and Lower Dryer Assemblies. You cannot determine their operation by manually sensing the air flow. An unrestricted air flow will cool the heating elements. If there is a drying problem, check the chemistry; not just the fixer but also the developer. Recheck the replenishment rates. Check the heating elements by measuring the amperage and/or the resistance. If 120 volts is being supplied to the 600 watt heater, the draw should be 5.0 amps. The tolerance on the amp draw is $\pm .5$ amps. Their resistance value in a cold condition is 24 ohms. If the processor is operating on 240V, the amp draw will be 2.5 amps. and a resistance of 96 ohms. The heating elements have power supplied to them through two relays: one on the P/C Board, the other is remote from the P/C Board. (See Fig. 4-1)

The P/C Board's microprocessor will instruct the small relay on its board to close. This will supply current to the larger relay located remote from the P/C Board. The large relay will close. Once closed voltage will be supplied to the heaters.

4.4.3 DRYER THERMOSTAT

The setting of the Dryer Thermostat should always be at the lowest temperature possible while still developing dry films. Each film and chemistry combination have different drying characteristics and may require more heat than others. Due to the uncertainty of different combinations there is no specific temperature where the dryer should be set. (For Dryer Thermostat setting, see Section 3.3.7 Operator Controls).

The dryer temperature is controlled by the Microprocessor Board by comparing voltages based upon the varying resistance from the Dryer Thermistor located on top of the Lower Dryer Assembly. The Thermistor advises the microprocessor when the heaters should turn on and off. The Thermistor varies its resistance based on temperature. The Thermistors resistance decreases as the temperature increases.

Example:

120°F (49°C)	=	847 ohms
130°F (54°C)	=	686 ohms
140°F (60°C)	=	560 ohms

If the L.E.D. displays broken numerals or is illegible, check the Dryer Thermistor connections at the 10 pin connector on the microprocessor board.

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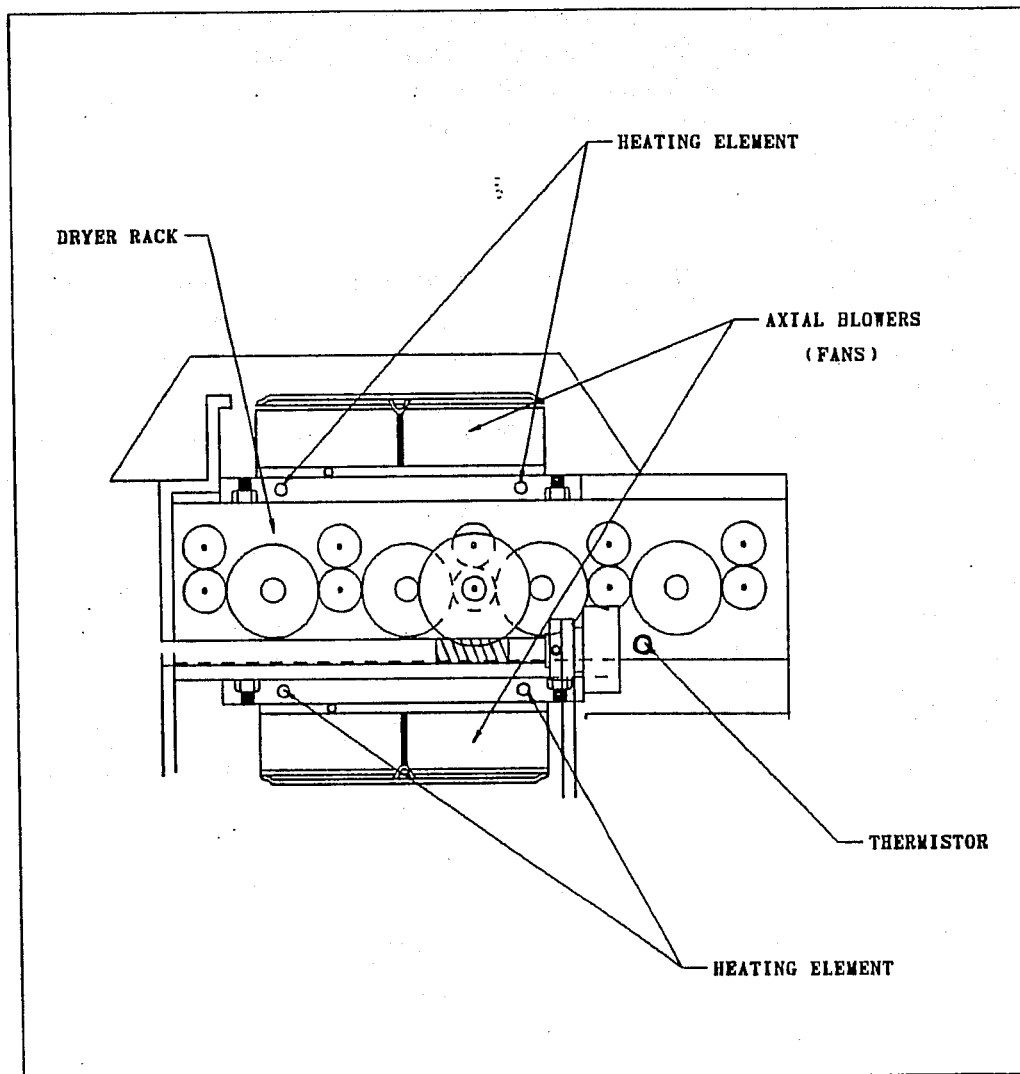


FIGURE 4-2
DRYER SECTION

4.5 DEVELOPER TEMPERATURE CONTROL SYSTEM

The developer temperature is controlled by the Microprocessor Board, by comparing voltages based upon the varying resistance from the Thermistor in the front of the Developer Tank. The Thermistor has a variable resistance which decreases as the temperature increases within the Developer Tank.

Example:

95°F (35°C)	=	1470 ohms
93°F (34°C)	=	1530 ohms
90°F (32°C)	=	1640 ohms

If the display has broken numerals or is illegible, check the connections on the 10 Pin Connector.

The Developer Heater is rated at 800 watts which will draw 6.7 amps +/- .5 amps at 120 volts. If the processor is rated at 240 volts the amperage will be 3.3 amps.. The resistance for a "cold" heater will be 18 ohms for 120 volts and 64 ohms for 240 volt operation.

When the Thermistor senses a temperature drop in the tank, it will instruct the microprocessor to send power to the heater. The microprocessor will instruct the small relay on the board to close which will in turn instructs the large remote relay to close. Once both relays have closed, power will be supplied to the heater.

There is a light parallel to the Developer Heater on the terminal strip which will illuminate when power is supplied to the heater. (See LE-PCB , Programming Section for temperature setting).

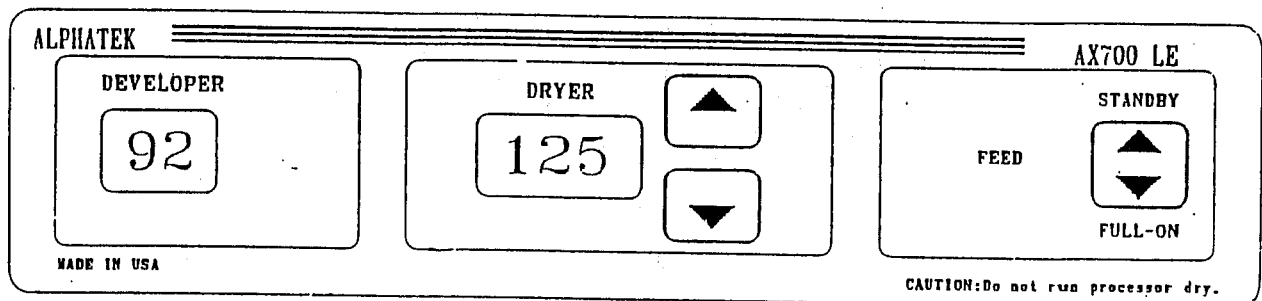


FIGURE 4-3 DEVELOPER TEMPERATURE DISPLAY

4.6 DEVELOPER TEMPERATURE SETTING

The developer temperature is factory set at the following:

AX700 LE: 94°F (34°C)

AX745 LE: 95°F (35°C)

The developer immersion times (leading edge into the developer to leading edge out) of the Developer Rack for the 700 Series are as follows:

AX700 LE: 26 seconds

AX745 LE: 13 seconds

NOTE: Check with film and chemical manufacturers for recommended developer temperature based on above immersion times.

4.7 REPLENISHER PUMP

The Replenisher Pump is activated by the feed Microswitch. The pump will remain on as long as the Microswitch is depressed by the film, plus an additional eight second delay allowing the film to submerge into the developer solution. Replenishment rates for the AX700LE and AX745LE are factory set at 70 cc's for Developer and 120 cc's for Fixer for a 35cm X 43cm film.

Note: Check with film and chemical manufacturers to determine proper rate setting based on processing volume.

4.8 STANDBY CONTROLLED COMPONENTS

The Standby System turns off the Main Drive Motor, Water Solenoid and lowers the dryer heat. This system activates after a pre-set time from when the film clears the feed Microswitch. The factory set time is 120 seconds. (See LE-PC/B Programming Section for alternate selections). These components are activated by feeding another film and closing the Microswitch.

4.8.1 DRIVE MOTOR AND WATER SOLENOID

The Main Drive Motor and solenoid will remain on as determined by the setting on the Microprocessor Board. (See Programming Section for Standby Time setting).

4.8.2 STANDBY DRYER THERMOSTAT

This setting determines the Dryer Temperature during Standby". This setting should be within 10°F (6°C) of the "Full-On" Dryer Thermostat setting. (See LE-P/CB Programming Section for setting procedure).

SECTION FIVE

LE-PCB PROGRAMMING

The AX700 LE and AX745 LE are controlled by a microprocessor driven printed circuit board. This electronic package is programmable which allows the service technician to program the processor to the customer's specific needs. The following will detail the Service Modes available:

Service Modes:

- Mode 1** **DEVELOPER TEMPERATURE ADJUSTMENT:** Setting of the Developer Temperature. Range: 66°F(19°C)-98°F(37°C).
- Mode 2** **STANDBY TIME ADJUSTMENT:** For setting the "run time" after a film has been fed into the processor before reverting to a "Standby Condition". Range: 61-180 seconds.
- Mode 3** **DEVELOPER TEMPERATURE CALIBRATION:** This mode is designed to ensure that the L.E.D. readout corresponds to the actual developer temperature. (Example: Your calibrated thermometer indicates that the developer temperature is 97°F(36°C), while the processor L.E.D. reads 93°F(34°C). Increase the number in this Mode by 4 digits for Fahrenheit and 2 digits for Celsius. If the display reads "06", you would increase the number to "10" for Fahrenheit and "08" for Celsius. The developer temperature L.E.D. should now also be 97°(36°C). The range in this program is "00-14").
Note: When checking developer temperature always insert probe on the non-drive side between tank and rack side plate.
- Mode 4** **DRYER TEMPERATURE CALIBRATION:** This mode is designed to ensure that the L.E.D. readout corresponds with the actual dryer temperature. (Follow the same procedure as is Mode 3). The range in this program is "00-25".

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- Mode 5** **STANDBY DRYER TEMPERATURE ADJUSTMENT:** For setting the dryer temperature while the processor is in the "Standby Mode".
Note: Standby dryer temperature should be no less than 10°F (6°C) of "Full-On" temperature.
- Mode 6** **JOG CYCLE OPTION:** The Jog Cycle brings the processor out of "Standby", activates the Main Drive, and replenishes fresh chemistry if no films have been processed for thirty minutes. This feature can be by-passed if desired. "00" display indicates "Jog Cycle"; "01" indicates no "Jog Cycle".
- Mode 7** **CENTIGRADE/FAHRENHEIT OPTION:** This mode allows the L.E.D. displays to read in either Centigrade or Fahrenheit. "00" display indicates Centigrade; "01" indicates Fahrenheit.

Programming Procedure:

1. Place processor into the "Standby Mode". The Main Drive Motor must be in stopped prior to programming.
2. Locate the "Service Button". Button is located under the Control Panel. (See Fig. 5-1).
3. Press the "Service Button" to access the programming modes. When the button is pressed, an audible "beep" will sound.
4. After the "beep", the Developer Window will display "01". This indicates "Mode 01" (Developer Temperature Adjustment).

NOTE: Every time you press the "Service Button", "01" will appear. If you need to program Modes 02-07 you must press the "Up Arrow" next to the Dryer Display to advance to the desired Mode.

5. Once the "Mode" you desire has been selected (01-07), press the "Standby/Full-On Button" located to the right of the dryer temperature display window. Pressing the "Standby/Full-On Button" will allow you to program the "Mode" selected. Pressing the "UP/DOWN" pads to the right of the dryer temperature display window will allow adjustment to that mode.

6. Once the programming has been completed, press the "Service Button" and this will store your selection to memory.

Example: Processor is going into Standby too soon:

Set Standby Time (Mode 2)

- A. Put processor into "Standby". Ensure that the Main Drive Motor has stopped.
- B. Press "Service Button"(under the Control Panel) "01" will appear in the developer temperature display window.
- C. Press the "Up Button" next to the dryer temperature display window once. The developer temperature display window will display "02".
- D. Press the "Standby/Full-On Button". This locks you into Service Mode #2.
- E. The dryer temperature display window will now display the "Run" time, indicating how long the processor will run prior to reverting to the "Standby" condition.
- F. Set the "Standby Time" using the "Up or Down" arrow next to the dryer temperature display window. (Factory set "Standby Time" is 120 seconds for 90 second processing).
- G. Once the desired setting has been achieved, press the "Service Button". The P/C board will "beep" and the developer and dryer temperature display windows will revert back to their normal displays. Programming is now completed.

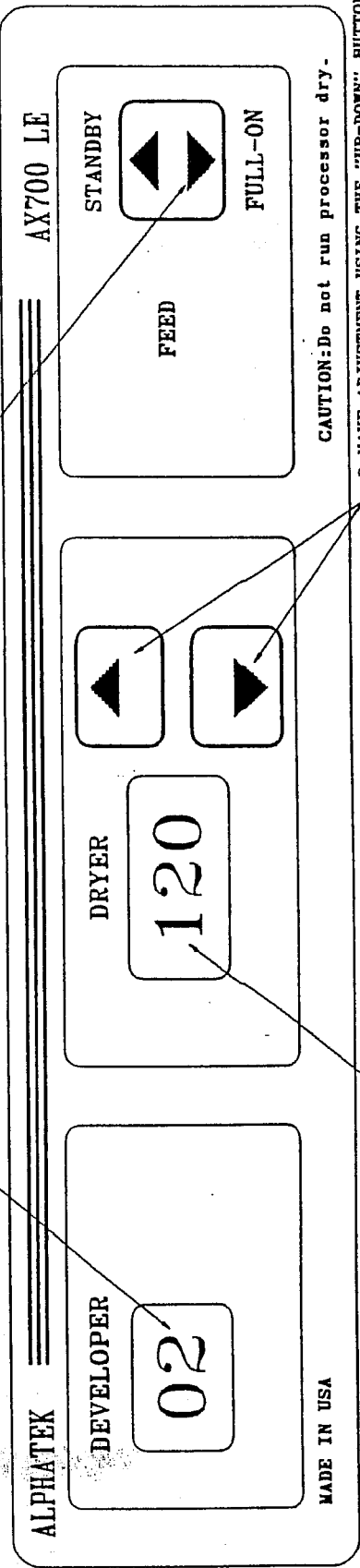
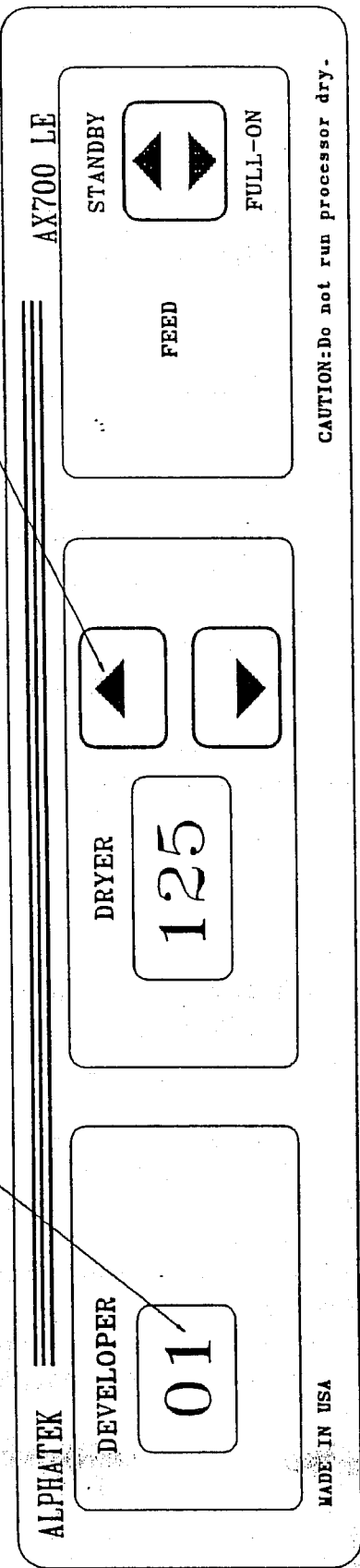
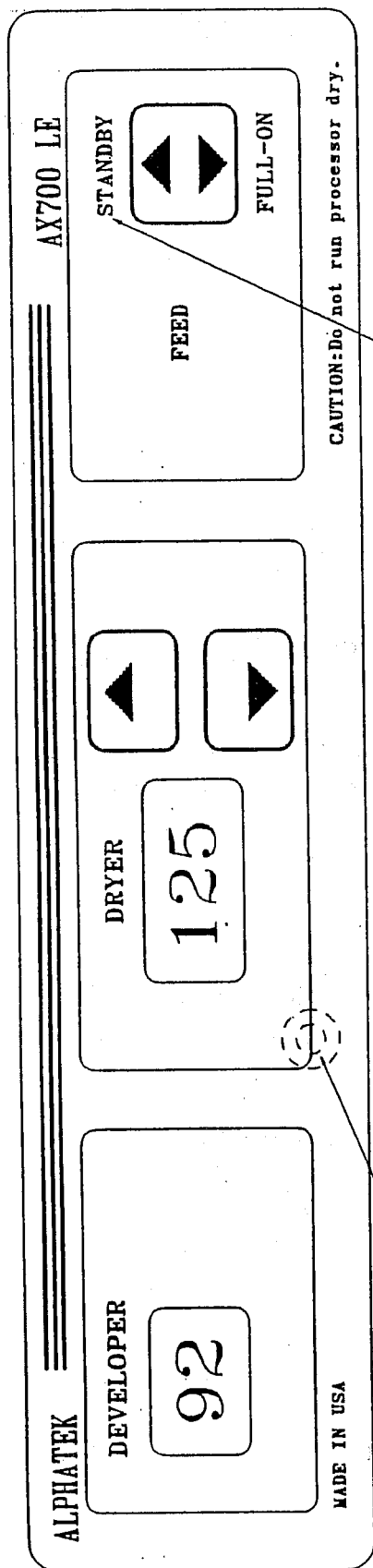


FIGURE 5-1 MICROPROCESSOR BOARD

SECTION SIX

TRANSPORT SYSTEM

6.1 MAIN DRIVE MOTOR

The motor is a capacitor-start, thermally protected motor. If the motor overheats for any reason the motor will shut itself off. If this occurs check for tightness in the transport rack, the Main Drive Shaft, or the Main Drive Chain which may create an excessive load on the motor.

6.2 MAIN DRIVE CHAIN

The motor mount is adjustable allowing a determination of the chain tension. The proper setting of the motor mount will allow you to almost squeeze the chain together with your thumb and forefinger.

6.3 MAIN DRIVE SHAFT

This shaft is suspended by two adjustable bearing blocks. This adjustment allows you to ensure a proper meshing of the Worm Gears on the Main Drive Shaft with the main Rack Drive Gears. If the meshing is too loose the racks will jump and if the meshing is too tight a squeak will occur. When adjusting the bearing height with the top and bottom set screws do not over-tighten as this will impede the floating of the bearing in the block.

6.4 TRANSPORT RACKS (FIGURE 6-1)

The film is guided by a series of rollers and guides through the various solutions and the Dryer Assembly. Extreme care must be taken in the handling and maintenance of the transport racks. (Refer to the Maintenance Section and the Troubleshooting Section if processing problems occur).

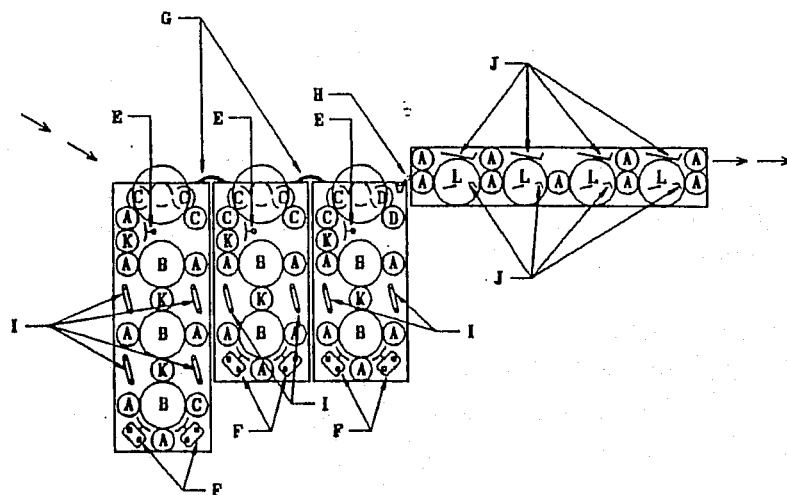
6.4.1 RACK CONFIGURATION

Refer to Figure 6-1 for proper roller placement.

NOTE:

Each pair of rollers in the developer, fix and wash racks should be wet except for the entrance pair of the developer rack and the exit pair of the wash rack.

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- A = SMALL ROLLER ASSEMBLY (1" ACRYLIC) 5282.600.07
- B = LARGE ROLLER ASSEMBLY (2" ACRYLIC) 5282.600.06
- C = SQUEEGEE ROLLER ASSEMBLY (BLACK RUBBER) 5236.600.01
- D = SILICON ROLLER ASSEMBLY (ORANGE RUBBER) 5236.700.04
- E = INNER RACK GUIDE 4242.700.04
- F = S.S. CROSSOVER GUIDE 4242.600.03
- G = CHEMICAL CROSSOVER GUIDE ASSEMBLY '93 5236.700.07
- H = DRYER FEED GUIDE 4241.600.16
- I = LADDER GUIDE 4253.600.03
- J = DRYER GUIDE 4242.600.04
- K = IDLER GEAR SMALL 4153.600.04
- L = IDLER GEAR LARGE 4153.600.01

FIGURE 6-1
TRANSPORT SYSTEM

6.4.2 ROLLER TENSION ADJUSTMENT

The exit and entrance rollers of the Developer, Fix and Wash Racks have set screw adjustments (excluding the entrance of the Developer Rack.) This adjustment helps facilitate proper transportation of film from one rack to another. This adjustment also ensures proper squeegeeing of the film. Proper adjustment is achieved when the rollers are touching one another. Too much tension will create difficulty in turning the rack. After adjustment, manually turn the rack to determine that it turns freely.

6.4.3 ROLLER SUSPENSION

Each roller is suspended by a bearing which is either mounted in the rack Side Plate or in a Rubber Grommet. These grommets will absorb the tension created by the passing of a film between two opposed rollers. These grommets should be checked to verify they have maintained their resiliency. Each roller should move freely side-to-side between the Side Plates. If they do not check the mounting in their bearings, for rollers "out of round", or for some other mechanical obstruction.

6.4.4 RACK DRIVE TRAIN

Each rack is driven by a gear on the Rack Drive Shaft which meshes with a gear on the Main Drive Shaft (Refer to Section 5.3 for proper alignment). Each roller within the rack is gear driven. In addition there are Idler Gears which are mounted on a bearing. When replacing an Idler Gear do not over-tighten or you might expand its bearing creating tightness in the rack. Check to ensure the rack freely spins by manually turning the Rack Drive Gear after replacement of an Idler Gear.

6.4.5 RACK SIDE PLATES

These plates are transparent which allow for observation of the internal operation of each rack. These plates should be kept clean to allow you to utilize this feature. (i.e. guide alignment, checking the gaps between rollers etc.)

6.4.6 GUIDE ALIGNMENTS

These are a number of different guides within the transport system. Some guides correct the film path and some guides determine the film path. The guides that determine the film path are the Dryer Feed Guide, top Crossover Guides, bottom Crossover Guides and Inner Rack Guides. These guides have to be positioned so that when the film is picked up by the next pair of rollers after a guide, the film pulls off the surface of the guide. If the film rides on the ribs of a guide, scratches will occur. If a guide is positioned so the film is fed directly into the junction point of two opposing rollers, the film will not be given the opportunity to pull away from the guide. The guide must be positioned so that only the lead edge of the film rides the ribs of the guide, then contacts the next roller and then pulls into the junction point of these rollers and simultaneously away from the guide. The film path correction guides (plastic Ladder Guides and Dryer Rack Guides) correct the film path if something else is wrong. For example, if one blower has stopped functioning the Dryer Rack Guides will keep the film on its proper path even though there is pressure to move the film in one direction.

6.4.7 INFEED ROLLER

This roller is mounted above the Infeed Tray prior to the Developer Rack. This roller must spin freely when a film is being fed. Otherwise, a marring of the film surface will occur.

SECTION SEVEN

CHEMICALS

All rapid processing chemicals are compatible with any Alphatek processor. Replenishment rates previously mentioned in Section 4.7 are merely guidelines. You must check with the film and chemical manufacturer to determine the proper replenishment rates based on processing volume.

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SECTION EIGHT

MAINTENANCE

8.1 TRANSPORT SYSTEM

We recommend a monthly cleaning of the transport racks. Systems cleaner or hot water may be used with a synthetic pad to clean any part of the transport system. Never use any material which will mar or scratch the surface of a transport roller. Never use any cleaning material outside of systems cleaner on the transport racks.

CAUTION: Do Not use the green "Scotch-Brite" pads, these will scratch the surface of the rollers. Use the white "Scotch-Brite" pads only.

8.2 PROCESSING TANKS

Any spilled, splashed or oxidized chemicals should be cleaned on a daily basis.

CAUTION

Never use chlorine or bromide in the cleaning, or for the prevention of algae as these chemicals will adversely affect the integrity of the stainless steel.

8.3 LUBRICATION

Do not lubricate any internal gears of the transport racks. For lubrication of the Main Drive Motor and Main Drive Shaft bearings, a lubricating oil such as Gulf Harmony #44 or non-detergent SAE-10 or 20 weight oil may be used.

8.4 DEVELOPER FILTER

The Developer Filter is located under the Dryer Section. This filter should be changed every time the chemistry is replaced. Ensure "O" Ring (seal) is lubricated for proper seal.

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