ILFOLAB FP40

FLOOR STANDING PROCESSOR
FOR BLACK AND WHITE FILMS

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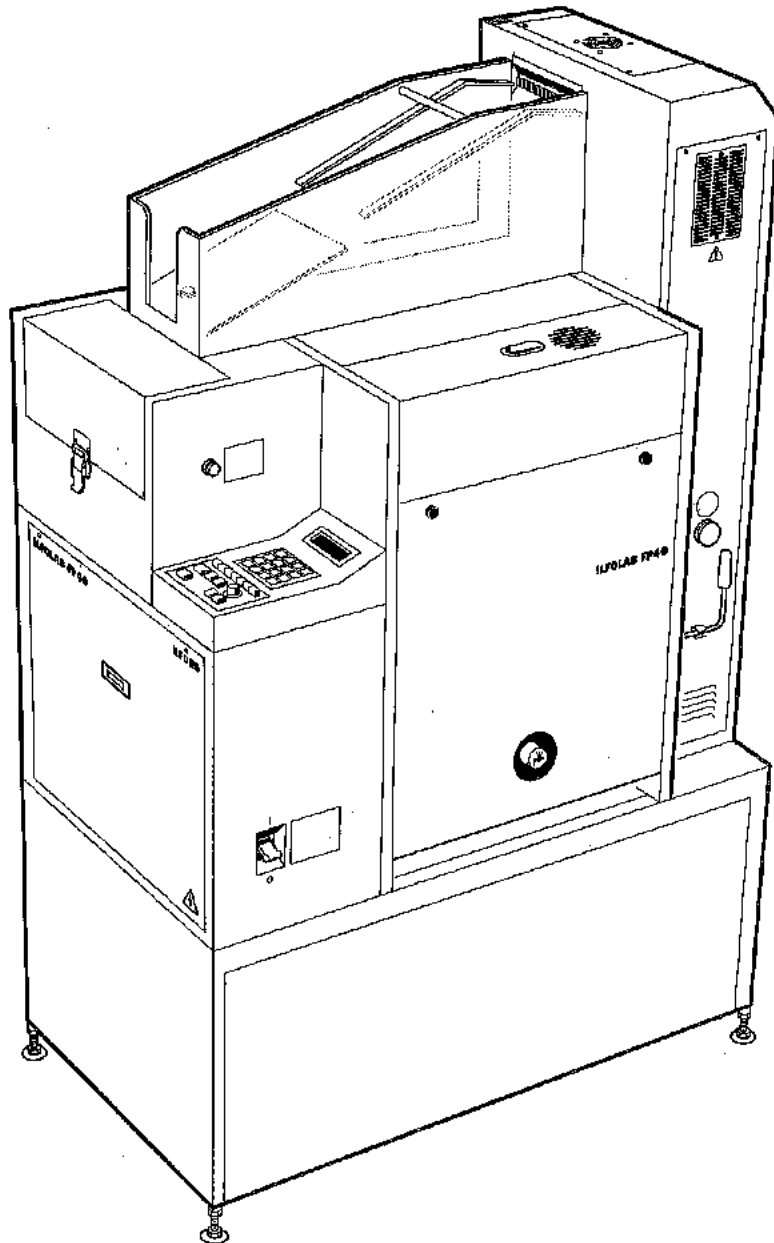
SAFETY PRECAUTIONS

Your photographic equipment is powered by mains electricity, and is designed to comply with international electrical safety standards. However, basic safety precautions must always be followed when operating electrical equipment, including the following:

1 Read and understand all instructions.

2 Observe labels on the equipment, particularly those advising of possible hazards.

3 Close supervision is necessary when the equipment is being used by inexperienced personnel.

4 Take care to avoid burns. Some internal parts of the equipment can become very hot with continuous use.

5 Do not operate equipment that has been dropped or damaged, or has damaged electrical leads. Have the equipment examined by qualified personnel.

6 Do not allow any electrical lead to touch hot surfaces.

7 Ensure the electrical cables are arranged such that they cannot be pulled or tripped over.

8 Ensure the air flow through the vents is not obstructed when operating the equipment. An obstructed air vent can lead to overheating.

9 Do not dismantle the equipment unless you are qualified to do so. Incorrect assembly can cause hazards both to yourself and to the equipment.

10 Always obey local codes of practice, particularly for installation requirements.

Do not destroy these instructions

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40236.7.GB	Maintenance Checklist
40409.GB	Fact Sheet ILFOTEC RT RAPID Process Control in Short Leader Processors
40388.1	Process Control Chart

Photochemicals Material Safety Data Sheet A10/A
ILFOTEC RT RAPID, Part A Film Developer, Two Part Kit

Photochemicals Material Safety Data Sheet A10/B
ILFOTEC RT RAPID, Part B Film Developer, Two Part Kit

Photochemicals Material Safety Data Sheet A11
ILFOTEC RT RAPID Starter for ILFOTEC RT RAPID Replenisher

Photochemicals Material Safety Data Sheet F1
HYPAM Film and Paper Fixer

Photochemicals Material Safety Data Sheet E7
ILFOTOL Wetting Agent for Black and White Films and Papers

PICTOGRAMS

The following pictograms are used on labels fixed to the processor. Please ensure you understand their meaning.

Film in processor

Orientation of cassette

Film in loading box

Drain valve

Rotate crank handle
one revolution in six seconds

Caution hot surfaces

General hazard

Electrical hazard

LS10
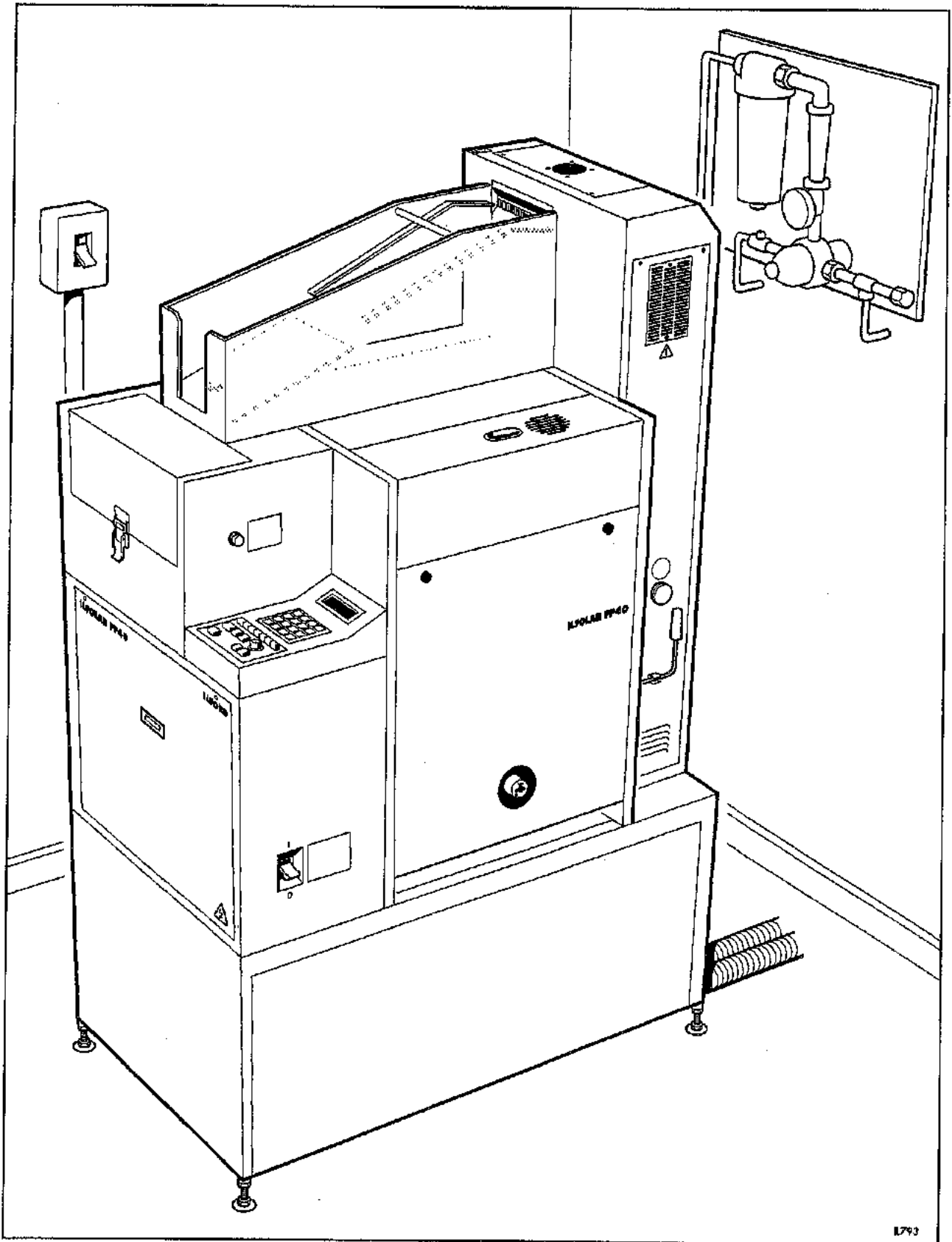
Figure 1.1   ILFOLAB FP40 processor - typical installation

1
INTRODUCTION

See figure 1.1.

The ILFORD ILFOLAB FP40 is a compact processor designed to process black and white cassetted and spooled films. It combines reliability with quality engineering to give consistent high quality results. It is simple and easy to use.

A control panel and display are used to input operating conditions for the films to be processed. The display shows the sequences to be followed and a key pad is used to input data. The display and audible signals alert the operator to abnormal situations so that action can be taken and processing can continue.

The processor will accept black and white films of panchromatic sensitivity and infra-red sensitive films as follows:

135, 120 and 220 films
Cut lengths of 16mm and 35mm films (125 microns, 0·005 inch) up to 30·5m (100ft) maximum length
Cut lengths of thin polyester base film (75 microns, 0·003 inch) up to 61m (200ft) maximum length

This manual gives full instructions for installing and operating the processor

For ease of description, it is assumed the left and right hand sides of the processor are determined when facing the processor loading box.

1.1 IMPORTANT INFORMATION

Chemicals
For optimum results always use recommended ILFORD chemicals. Health and Safety data sheets and effluent data sheets for all ILFORD chemicals recommended for use with the ILFOLAB FP40 processor are supplied with this manual. Please refer to the sheets before handling chemicals.

Component identification
Processor components are identified as follows:

Solution	Rack	Display	Colour coding
Developer	1	DEV	Red
Fixer	2	FIX	Green
Wash water	3	WS1	White
Wash spray	4	WS2	White
Rinse solution	5	WS3	White

Development times

Development times are adjustable between 40 and 388 seconds depending on the film to be processed. This is equivalent to transport speeds from 118 to 1116mm/minute (4·25 to 43·5 inches/minute). Six switches are pre-set with commonly used development times. Infrequently used times can be set with the manual development time control switch M.

Replenishment

Replenishment bottles are stored under the processor and provide replenisher to the developer, fixer and rinse solution tanks. Replenishment rates are set on the control panel and automatically adjusted by the processor to allow for differing film sizes. When the bottles need filling the display and an audible signal alerts the operator. The bottles can be filled while the machine is operating.

Replenishment bottle identification

The replenishment bottles and associated caps are identified as follows:

Bottle and cap	Colour coding
Developer	Red
Fixer	Green
Rinse solution	White

Wash water

The water storage tank provides a reservoir for the wash water supply and cooling water. The tank also separates contaminated wash water and fresh incoming water to prevent any contamination of the mains supply.

Cooling water is circulated from the storage tank to control the temperature of the developer and fixer tank solutions.

There are three wash tanks - a wash water tank (WS1), a wash spray tank (WS2) and a rinse solution tank (WS3), to provide thorough washing of the film after fixing.

Note

To save water the processor control system will only allow the water to flow when film is passing through the three wash tanks.

Drainage

Overflow from the developer and fixer tanks is collected separately in drain bottles stored under the processor. The display and an audible signal inform the operator when the bottles are full so that the overflow can be disposed of safely.

Drainage bottle identification

The drainage bottles and associated caps are identified as follows:

Bottle and cap	Colour coding
Developer	Red
Fixer	Green

Automatic processor switch on

The ILFOLAB FP40 can easily be programmed so that the processor is ready for use at the start of a day's work. This avoids lost production time due to warm up delays.

Saving time and film

Manual cut switches on the control panel can be used to guillotine a 135 film to save unexposed film and reduce processing times.

Film counter

A film counter displays the number of processed films by size (135 or 120) or by type (infra red films).
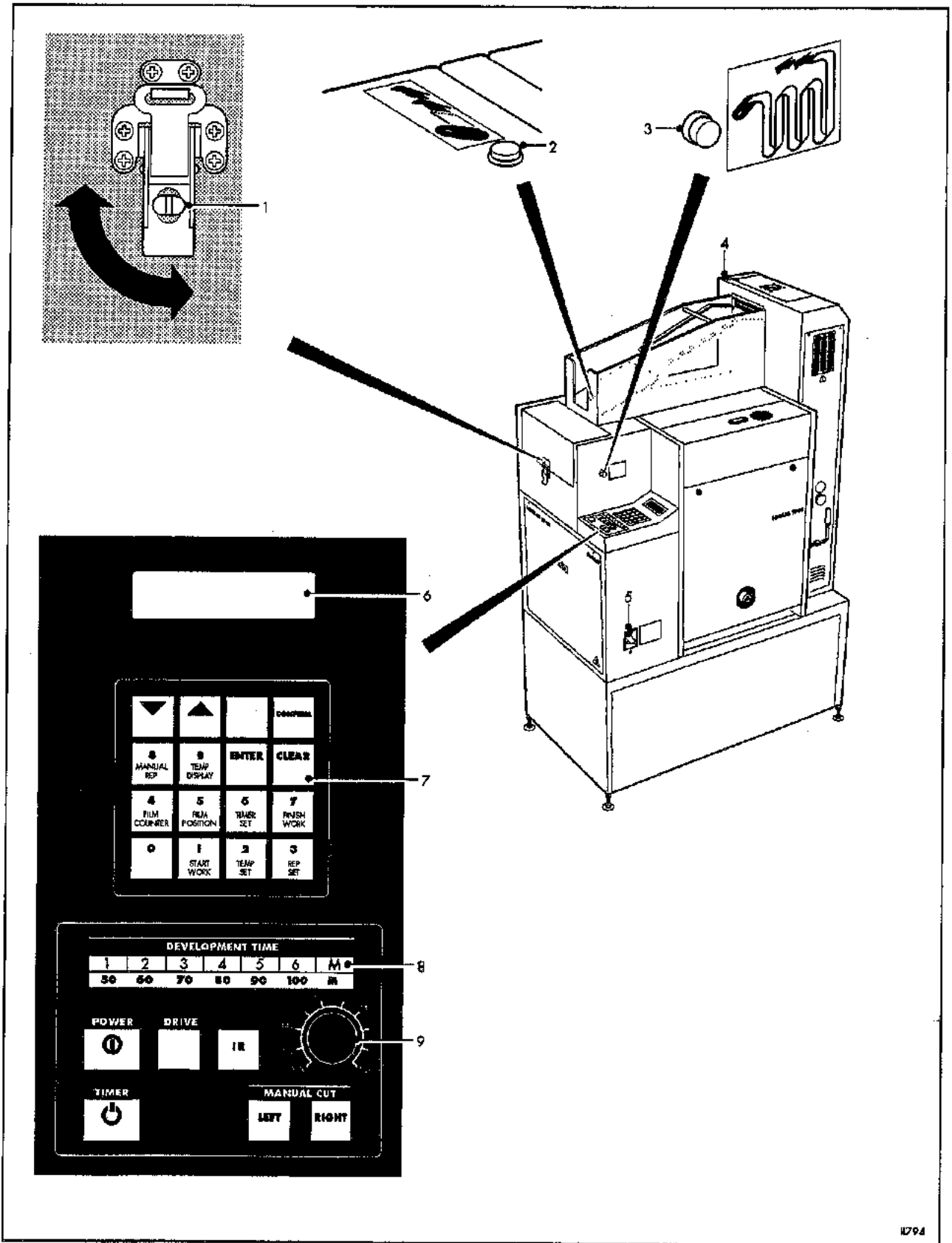
Figure 2.1

Controls and indicators

The control panel (item 7) contains the following keys:

▼	▲		CONTRAST
8 MANUAL REP	**9** TEMP DISPLAY	ENTER	CLEAR
4 FILM COUNTER	**5** FILM POSITION	**6** TIMER SET	**7** FINISH WORK
0	**1** START WORK	**2** TEMP SET	**3** REP SET

DEVELOPMENT TIME

1	2	3	4	5	6	M
50	60	70	80	90	100	m

POWER

DRIVE

IR

TIMER

MANUAL CUT — LEFT — RIGHT

1794

10

2
CONTROLS AND DISPLAYS

See figure 2.1.

The main power switch is located on the right hand side of the processor.

The controls and displays used to operate the processor are on the control panel. The displays, lamps and audible signals provide information to the user.

2.1 SWITCHES

'MAIN POWER SWITCH'
The main power switch must be switched on at all times when the processor contains chemistry. The exhaust fan operates continuously to vent fumes from the processor.

Switches on the control panel are illuminated when the processor is switched on.

'POWER'
When switched on at the start of a day's work, the wash water flows for 10 minutes to tanks WS1 and WS2. The solution heaters and circulation pumps operate.

When switched off, the drive motor stops and the dryer fans continue to operate for 5 minutes.

'DRIVE'
When switched on, the drive motor and air pump operates and the dryer heats to its standby or operating temperature. This switch operates only with the 'POWER' switch on.

'DEVELOPMENT TIME'
Switches 1 - 6 provide a range of pre-set development times. The development time selection knob with switch M allows manual selection of an alternative development time. The drive motor will not operate until a development time is selected (see section 4.4).

'TIMER'
When switched on, the processor is programmed for automatic switch on (see section 4.8).

'I R'
When switched on, infra-red films can be processed. The display will show *POSSIBLE TO PROCESS INFRA-RED FILM*

'MANUAL CUT'
Operation of the LEFT or RIGHT switch will guillotine 35mm

cassetted film as it leaves its cassette in the loading box (see section 7.4).

2.2 KEY PAD
See figure 2.1.

Each key, numbered 1 - 9, can be used to select a sequence. For example 1 START WORK will display the start work sequence. The numbers on the key pad can also be used to input their value when setting data.

Press ▼ to go forward through the sequence

Press ▲ to go back through the sequence

ENTER is used to record the new input data.

CONFIRM is used to verify the input data to memory.

CLEAR is used to clear the display to show the present state of the processor.

2.3 DISPLAY
See figure 2.1.

The display shows the processor state and is used in conjunction with the key pad to input data. It automatically displays abnormal conditions.

2.4 INDICATOR LIGHTS
See figure 2.1.

The red light on top of the processor is illuminated when a film is entering the processor and the loading box lid is locked. When the red light is not illuminated the loading box lid can be opened.

The orange light on the right hand side of the processor is illuminated when a film is at some position in the processor.

2.5 AUDIBLE SIGNALS
Audible signals combined with a warning message on the display alert the operator to abnormal situations.

2.6 PROGRAMMING SEQUENCES

This section gives full details of the programming sequences and shows examples of the keys and displayed messages with explanations to help the user. The table alongside each sequence shows the order in which the keys are pressed.

2.6a Start work

The following are tasks to be carried out before starting work. The 'POWER' switch is on.

CLEAR
1 START WORK
▼
▼
▼
▼
▼
▼
▼
CLEAR

CLEAR

1 START WORK *START WORK*

▼   *CLOSE WASH DRAIN VALVE*
Turn the wash drain valve clockwise to close

▼   *WET TOP ROLLERS WITH WASHING BOTTLE*
Wet the top rollers with water using the washing bottle (see section 5.5 and figure 5.1)

▼   *CHECK SOLUTION TANK LEVELS*
The solution in each tank should be level with the overflow. If the level is low through evaporation, top up with water through the temperature control tank (see section 4.9)

CAUTION
Do not overfill with water as this will overdilute the working strength solutions and give problems during processing.

▼   *CLOSE PROCESSOR LID*

▼   *CHECK BOTTLE LEVELS*
If the replenishment bottles are low, make up solution and refill (see section 4.9). If the drain bottles are full or are likely to become full during the working day, empty the bottles (see section 9)

▼   *SWITCH DRIVE ON*
The drive motor will not operate until a development time is selected (see section 4.4)

▼   *CHECK LEADER TRANSPORT*
Feed a leader into the processor, close the loading box lid. Check that the leader transports through the processor and feeds into the film receiving box

CLEAR

CLEAR
2 TEMP SET
▼
ENTER
CONFIRM
▼
ENTER
CONFIRM
▼
ENTER
CONFIRM
CLEAR

2.6b Temp set

The following are instructions for setting the solution and dryer temperatures. The 'POWER' and 'DRIVE' switches are on.

CLEAR

2 TEMP SET   *SET SOLUTION TEMPERATURES*

▼   *DEV: SET 00.0 °C*
Use the numbers on the key pad to input the temperature

ENTER
This enters the input temperature

CONFIRM
This confirms the input temperature

▼   *FIX: SET 00.0 °C*
Use the numbers on the key pad to input the temperature

ENTER
This enters the input temperature

CONFIRM
This confirms the input temperature

▼   *DRY: SET 00.0 °C*
Use the numbers on the key pad to input the temperature. The dryer minimum temperature is 45°C (113°F)

ENTER
This enters the input temperature

CONFIRM
This confirms the input temperature

CLEAR

CLEAR
3 REP SET
▼
ENTER
CONFIRM
▼
ENTER
CONFIRM
▼
ENTER
CONFIRM
CLEAR

2.6c Rep set

The following are instructions for setting the duration of the replenishment pump operation. The 'POWER' and 'DRIVE' switches are on.

CLEAR

3 REP SET   *REPLENISHMENT RATE SETTING*

▼   *DEV: SET 00.0 SEC*
Use the numbers on the key pad to input the rate

ENTER
This enters the input rate

CONFIRM
This confirms the input rate

▼   *FIX: SET 00.0 SEC*
Use the numbers on the key pad to input the rate

ENTER
This enters the input rate

CONFIRM
This confirms the input rate

▼   *US3: SET 00.0 SEC*
Use the numbers on the key pad to input the rate

ENTER
This enters the input rate

CONFIRM
This confirms the input rate

CLEAR

CLEAR
4 FILM COUNTER
▼
▼
▼
▼
▼
▼
▼
▼
1 or 2
ENTER
CONFIRM
CLEAR

2.6d Film counter

This displays the number of films processed as daily and cumulative totals. The 'POWER' and 'DRIVE' switches are on.

CLEAR

4 FILM COUNTER   *PROCESSED FILM COUNTER*

▼   *FILMS PROCESSED TODAY*

▼   *135:0000 IR:000 120:000 TODAY*
Displays the number of films processed each day by size

▼   *TOTAL*

▼   *135:00000 TOTAL FILMS*
Total number of 35mm films, including cassettes and cut lengths

▼   *120:00000 TOTAL FILMS*
Total number of 120 and 220 roll films

▼   *135:00000 INFRARED TOTAL FILMS*
Total number of infra-red films

▼   *CLEAR FILM COUNTER*
Gives the opportunity to clear the total numbers

▼   *1:TODAY 2:TOTAL*
Select 1 to clear the daily total or 2 to clear the cumulative total

ENTER
To clear the daily or cumulative total

CONFIRM
To confirm

CLEAR

CLEAR
5 FILM POSITION
CLEAR

2.6e Film position

This displays the location of the film in the processor. The 'POWER' and 'DRIVE' switches are on.

CLEAR

5 FILM POSITION   *DEV FIX US1 US2 US3 DR*
                                          -    -   -

Displays the 5 tanks and the dryer. In this example the three cursors indicate that the leading edge of the film is in the spray tank and the trailing edge is in the fix tank

DEV FIX US1 US2 US3 DR
  -    -   -   -

In this example, the position of 2 films in the processor is shown, one in the dryer and rinse solution tank and the other passing from the developer to the fixer

CLEAR

CLEAR
6 TIMER SET
▼
ENTER
CONFIRM
▼
ENTER
CONFIRM
▼
▼
ENTER
CONFIRM
▼
0 or 1
ENTER
CONFIRM
CLEAR

2.6f Timer set

The following are instructions to programme the timer for automatic machine switch on. The solutions will be at the correct temperature to start processing at the beginning of a day's work. The 'POWER' and 'DRIVE' switches are on.

CLEAR

6 TIMER SET   *TIMER SETTING*

▼   *PRESENT TIME 00/00/00 00:00*
Use the numbers on the key pad to input the date and time. The date format is Year/Month/Day. The time is set using the 24 hour clock. For example, 6.00pm on 21st June 1993 would be set as 93/06/21 18:00. Use the numbers on the key pad. If a wrong number is set, press ▼, then ▲ to begin again

ENTER
To enter the date and time

CONFIRM
To confirm

▼   *START TIME 00:00*
Use the key pad to set the time you wish to start work

ENTER
To enter the start time

CONFIRM
To confirm

▼   *DAY OF THE WEEK TODAY*

▼   *0:SU 1:MO 2:TU 3:WE 4:TH 5:FR 6:SA*
Use the key pad to select the day, for example if today is Monday, press 1

ENTER
To enter the day

CONFIRM
To confirm

▼   *DAYS OF THE WEEK FOR WORKING*

▼   SU MO TU WE TH FR SA
      - ON ON ON ON ON -

Use the key pad to set the days you want the timer to operate. 0 for off, 1 for on. This example shows the timer set to operate from Monday to Friday but not on Saturday and Sunday

ENTER
To enter the days on which the timer will operate

CONFIRM
To confirm

CLEAR

CLEAR
7 FINISH WORK
▼
▼
▼
▼
▼
▼
▼
▼
▼
▼
▼
CLEAR

2.6g Finish work

The following are instructions for the procedure to be carried out before finishing work. The 'POWER' and 'DRIVE' switches are on.

CLEAR

7 FINISH WORK **FINISH WORK**

▼ **NEXT TIME ON**
WE 07:40

Displays the date and time set on the timer, see 2.6f if this display needs changing. In this example, the timer is set to operate on Wednesday morning at 7.40

▼ **SWITCH DRIVE OFF**

▼ **LIFT PROCESSOR LID**

▼ **OPEN LOADING BOX**

▼ **OPEN WASH DRAIN VALVE**
Turn the wash drain valve counter clockwise to open

▼ **CHECK REPL BOTTLE LEVELS**
If the levels in the replenishment bottles are low, make up solution and refill (see section 4.9)

▼ **WET TOP ROLLERS WITH WASHING BOTTLE**
Wet the top rollers with water using the washing bottle (see section 8.2 and figure 8.1)

▼ **CHECK SOLUTION TANK LEVELS**
The solution in each tank should be level with the overflow. If the level is low, check the replenishment system is operating correctly and that there are no leaks of solution through the drain valves

▼ **CHECK DRAIN BOTTLE LEVELS**
If the drain bottles are full, empty the bottles (see section 9)

▼ **SWITCH TIMER ON**
The switch will illuminate

▼ **SWITCH POWER OFF**
If the timer is not being used, make sure that the 'TIMER' switch is off

CLEAR

CLEAR
8 MANUAL REP
▼
ENTER
CONFIRM
▼
ENTER
CONFIRM
▼
ENTER
CONFIRM
CLEAR

2.6h Manual rep

Used for manual control of the replenishment pumps. The duration of replenishment pump operation is set by REP SET (see section 2.6c). The 'POWER' and 'DRIVE' switches are on.

CLEAR

8 MANUAL REP   *MANUAL REPLENISHMENT*

▼   *DEV: 00.0 SEC*
To display the developer replenishment time

ENTER

CONFIRM
To power the developer replenishment pump through one complete cycle

▼   *FIX: 00.0 SEC*
To display the fixer replenishment time

ENTER

CONFIRM
To power the fixer replenishment pump through one complete cycle

▼   *WS3: 00.0 SEC*
To display the rinse solution replenishment time

ENTER

CONFIRM
To power the rinse solution replenishment pump through one complete cycle

CLEAR

CLEAR
9 TEMP DISPLAY
▼
▼
▼
CLEAR

2.6i Temp display

This is used to display the set temperatures and to check the actual temperatures. The 'POWER' and 'DRIVE' switches are on.

CLEAR

9 TEMP DISPLAY   *CHECK SOLUTION TEMPERATURES*

▼   *DEV: SET 00·0 °C*
       ACTUAL 00·0 °C
To display the set and actual developer temperature

▼   *FIX: SET 00.0 °C*
       ACTUAL 00·0 °C
To display the set and actual fixer temperature

▼   *DRY: SET 00·0 °C*
       ACTUAL 00·0 °C
To display the set and actual dryer temperature

CLEAR   *READY FOR PROCESSING*
           DEV: 00·0 °C 000 SEC
This is displayed when the solutions and dryer have reached the set temperatures

2.7 WARNING DISPLAYS

The display alerts the operator when an abnormal situation occurs. Follow the instructions on the display to correct the problem.

REPL LEVEL LOW
DEV:
Check the developer replenishment bottle and top up if necessary (see section 4.9)

REPL LEVEL LOW
FIX:
Check the fixer replenishment bottle and top up if necessary (see section 4.9)

REPL LEVEL LOW
WSH:
Check the rinse solution replenishment bottle and top up if necessary (see section 4.9)

SOLUTION LEVEL LOW
DEV TANK
Check the developer solution tank level and top up if necessary (see section 4.9). Refer to section 11 for possible causes

SOLUTION LEVEL LOW
FIX TANK
Check the fixer solution tank level and top up if necessary (see section 4.9). Refer to section 11 for possible causes

SOLUTION LEVEL LOW
WS3 TANK
Check the rinse solution tank level and top up if necessary (see section 4.9). Refer to section 11 for possible causes

SOLUTION LEVEL LOW
WS1 TANK
Check the wash water tank level. Check the water drain valve is closed. If the alarm continues to sound for more than 3 - 5 minutes with the water valve closed and the 'POWER' switch on, refer to section 11 for possible causes

DEV: *SET 00·0 °C*
        ABNORMAL 00·0 °C
This is displayed when the developer temperature becomes 1°C higher or lower than the set temperature. Refer to section 11 for possible causes or reset the temperature (see section 4.3)

FIX: *SET 00·0 °C*
        ABNORMAL 00·0 °C
This is displayed when the fixer temperature becomes 3°C higher or lower than the set temperature. Refer to section 11 for possible causes or reset the temperature (see section 4.3)
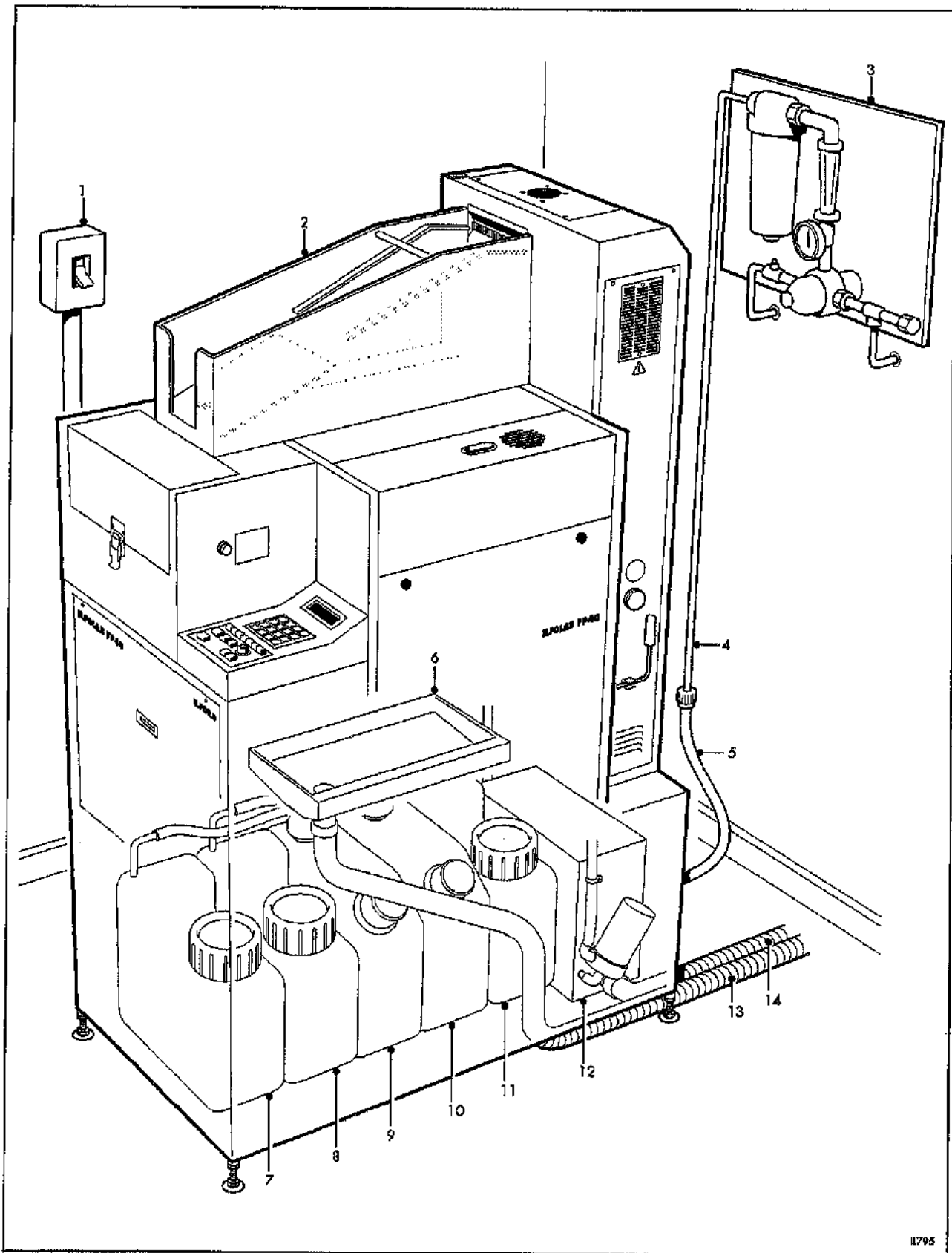
DRAIN BOTTLE FULL
Check the level in the developer and fixer drain bottles. Empty the bottle if required (see section 9)

NO WATER SUPPLY
Check the water supply to the water storage tank is on

2.8 AUXILIARY POWER SOCKET

An auxiliary power socket is located on the top of the dryer. It is used for supplying power to the winding unit when processing 35mm cut length films.

Figure 3.1   Installation

3

INSTALLATION

⚠ **CAUTION**
Do not attempt any of the following procedures unless you are qualified to do so. This applies particularly to the installation of electrical and water supplies. Ensure local regulations are observed at all times.

3.1 UNPACKING A NEW PROCESSOR

Note
Care must be taken when disposing of packaging materials. Ensure local regulations are observed.

1   Cut and remove the bands from around the packaging. Lift off the cardboard lid and remove the packaging.

2   Release the four screws securing the packaging to the pallet. Release the five screws and unwrap the cardboard packing. Remove the box containing the accessories. Refer to section 13 for details of standard and optional accessories. Lift off the plastic bag.

3   Press the top corners of the lower side panels to release the magnetic catches. Remove the panels. Withdraw the replenishment and drain bottles and water storage tank. Remove the bags of silica gel.

4   Carefully lift the processor off the pallet and position as recommended in section 3.2 and figure 3.2.

5   Release the piping and level sensors from the processor frame. Remove the plastic bags from all components.
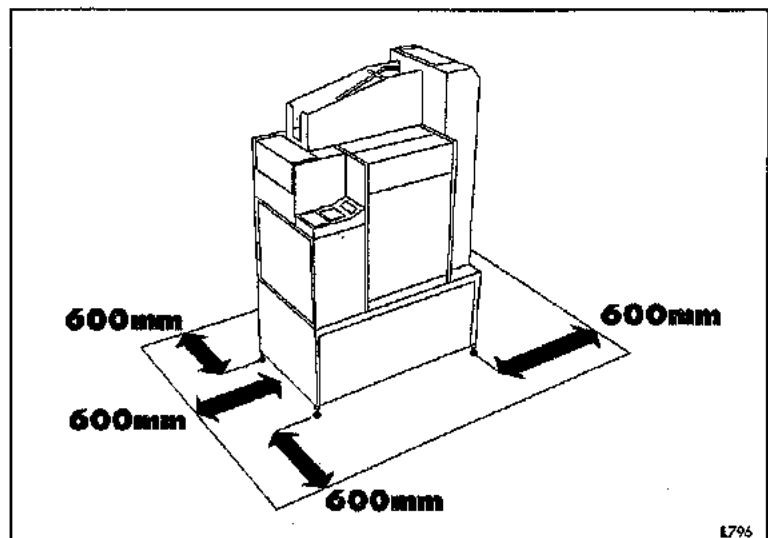

Figure 3.2   Siting the processor

25

6 Unpack the accessories box. Clip the crank handle onto the right hand dryer panel.

7 The three solution filter elements and temperature control tank covers, identified red for developer, green for fixer and white for rinse, are packed in the accessories box. Open the top panel of the processor and place each filter assembly in the correct temperature control tank. Place a tank cover on each filter.

3.2 SITING THE PROCESSOR
See figure 3.2.

1 Position the processor on a firm, level floor with adequate space for access to all parts of the processor. Ensure the electrical and
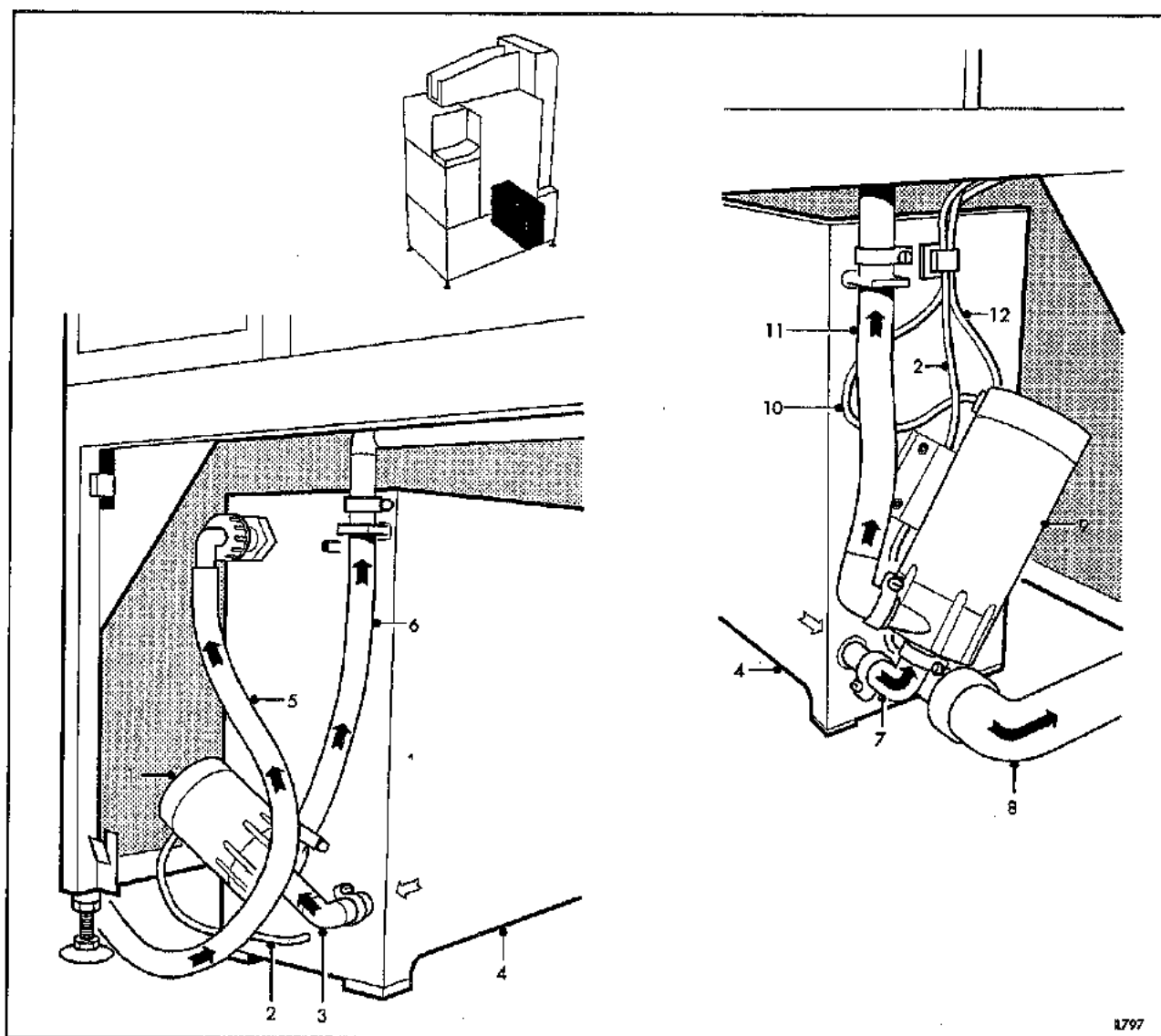
Figure 3.3   Installation of water storage tank

plumbing installations are not obstructed.

2 Access to the replenishment and drain bottles can be from either side of the processor.

3.3 VENTILATION
It is recommended that the room ventilation system should make 10 to 15 air changes per hour.

3.4 LEVELLING ADJUSTMENTS

1 The processor should be raised as high as possible to provide adequate access to the replenishment and drain bottles.

2 With the processor in its final position unscrew the four levelling feet clockwise to their maximum extent. Ensure that a full length of thread engagement remains in the processor frame.

3 Place a spirit level on the processor frame. Level the processor by adjusting the feet counter clockwise and tightening the locknuts as required.

## 3.5 INSTALLING THE WATER STORAGE TANK AND HOSES
See figures 3.3 and 3.7.

1 Unpack the pipe clips from the accessories box. Remove the packaging from the water storage tank. Position the tank under the machine with the larger circulation pump on the right hand side. Locate the two hoses from the processor which match the diameters of the connections on the tank. Connect both hoses to the tank and secure the hoses with pipe clips.

2 Two flexible hoses are provided in the accessories box. One is connected to the water drain tray, the other is connected to the water overflow on the water storage tank. Secure both hoses with pipe clips.

3 Identify the three cables from the water storage tank. Remove the dryer side panel. Pass the cables through the access hole at the base of the dryer cabinet. Identify the correct numbered terminals and connect the cables.

4 Connect the 1·5m water supply hose to the water inlet connection on the left hand side of the water storage tank.

Figure 3.3
1 Cooling water circulation pump
2 Cooling water circulation pump electrical connection
3 Cooling water
4 Water storage tank
5 Water supply
6 Cooling water
7 Wash water
8 Water storage tank overflow
9 Wash water circulation pump
10 Wash water circulation pump electrical connection
11 Wash water
12 Float switch electrical connection

3.6 INSTALLING THE REPLENISHMENT BOTTLES
See figures 3.4 and 3.7.
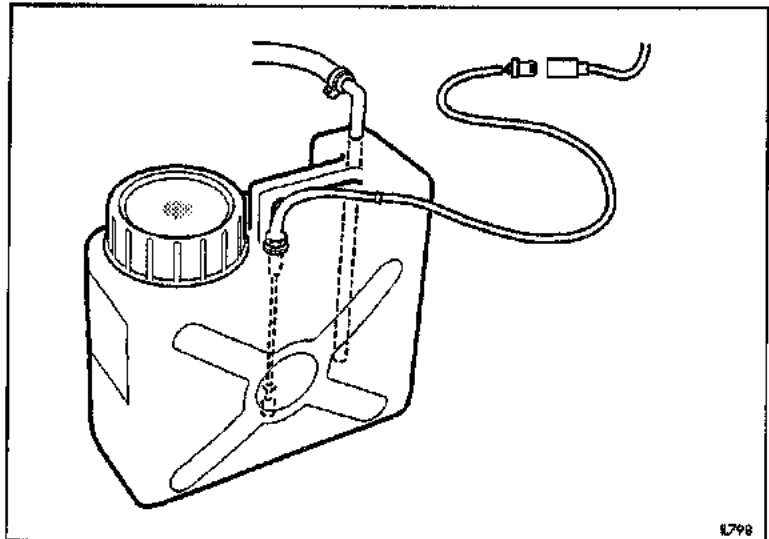
Figure 3.4   Installing replenishment bottles

The replenishment bottle level sensors and hoses, identified red for developer, green for fixer and white for rinse, are installed as follows:

1 Identify the sensor cable to be connected to the bottle. Connect the in-line connector.

2 Push the replenishment pipe from the processor into the hole in the top of the bottle, the end of the pipe should touch the base of the bottle.

3 Position the bottle under the processor. Ensure there are no kinks in the hoses.

3.7 INSTALLING THE DRAIN BOTTLES
See figures 3.5 and 3.7.

The drain level sensors and hoses, identified red for developer and green for fixer are installed as follows:

1 Remove and retain the top cap from the drain bottle. Insert and secure the cap assembly complete with drain level sensor.

2 Position the bottle under the processor.
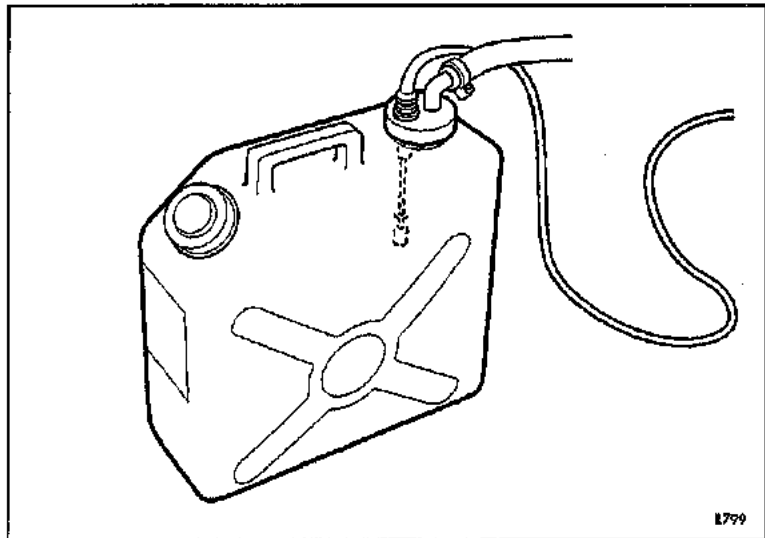
Figure 3.5   Installing drain bottles

3.8 CONNECTING THE ELECTRICAL SUPPLY
See figure 3.6.

⚠ **CAUTION**
Always follow the Safety Precautions at the front of this manual when installing electrical equipment. This installation must be made by a qualified engineer.

1   The processor must be hard wired to a 16A fused isolator switch. The location of the isolator must comply with local regulations. The supply cable from the isolator should be firmly held at the cable clamp in the base of the electrical cabinet. If the cable is run in conduit, remove the cable clamp and anchor the conduit at the electrical cabinet.

2   The electrical connections must be made to the Earth terminal ⏚ and to the Live L or L1 and Neutral N or L2 connections at the power input terminal block TB1.

3   The transformer is located in the electrical compartment and should be checked to ensure that the correct voltage tappings are being used. On delivery, the transformer is wired for a 220V supply. If your supply voltage is different, the 3 black wires on the transformer 220V terminal post must be moved to the terminal post corresponding to the correct supply voltage.

4   To change the voltage tapping, release the two screws and withdraw the transformer perspex cover. Release the nut and washer and remove the 3 black wires from the 220V terminal post. Refit the nut and washer. Select the correct supply voltage
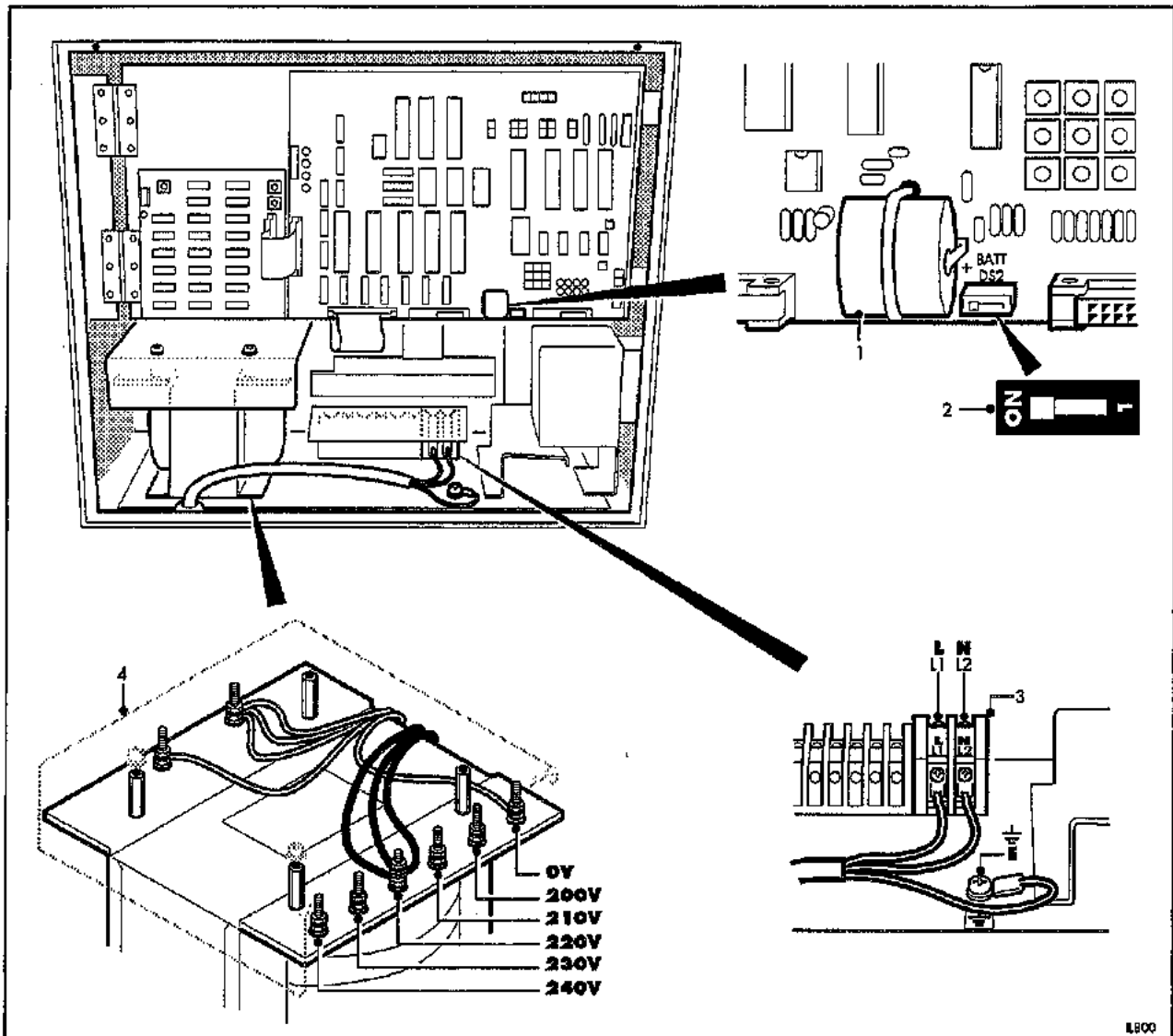
Figure 3.6   Electrical connections

terminal post, release the nut and washer and secure the 3 black
wires to the post. Refit the perspex cover.

5   A battery back-up switch is incorporated into the processor
    system to prevent the loss of pre-programmed information in a
    power supply failure. The switch is located on the CPU board.

6   To set the battery back-up, ensure the electrical supply is off.
    Open the electrical compartment access panel and set the switch
    to ON.

Figure 3.6

1 Battery
2 Battery back-up switch
3 Mains terminal block
   TB1
4 Perspex cover

3.9 CONNECTING THE WATER SUPPLY

See figures 3.1 and 3.7.

1 The water storage tank in the processor is connected to the mains water supply. The supply capacity must be at least 7·5 litres per minute. The processor automatically controls the water supply to wash tank WS1 at 4 litres per minute and to the wash spray tank WS2 at 1·5 litres per minute.

2 It is recommended that the water supply is connected via a temperature controlled flow meter assembly (available as an optional extra) mounted on the water control panel.

3 If large quantities of suspended solid particles are present in the water supply, a suitable filter (available as an optional extra) must be installed.

4 The incoming water supply temperature must not exceed 20 °C (68°F) or fall below 15°C (59°F). If the temperature is too high, a water cooling unit can be installed.

3.10 WATER COOLING UNIT

See figure 3.7, Detail A.

1 A cooling unit provides a reservoir of chilled water which is drawn on demand from the unit by the circulation pump. The water passes through the cooling coils in the temperature control tanks and returns to the cooling unit.

2 To install a water cooling unit, disconnect the hose from the circulation pump on the left hand side of the water storage tank. Connect the outlet pipe from the cooling unit to the circulation pump. Close the outlet on the water storage tank.

3 Connect the cooling water outlet pipe from the processor to the cooling unit inlet pipe. Ensure there are no kinks in the pipes.

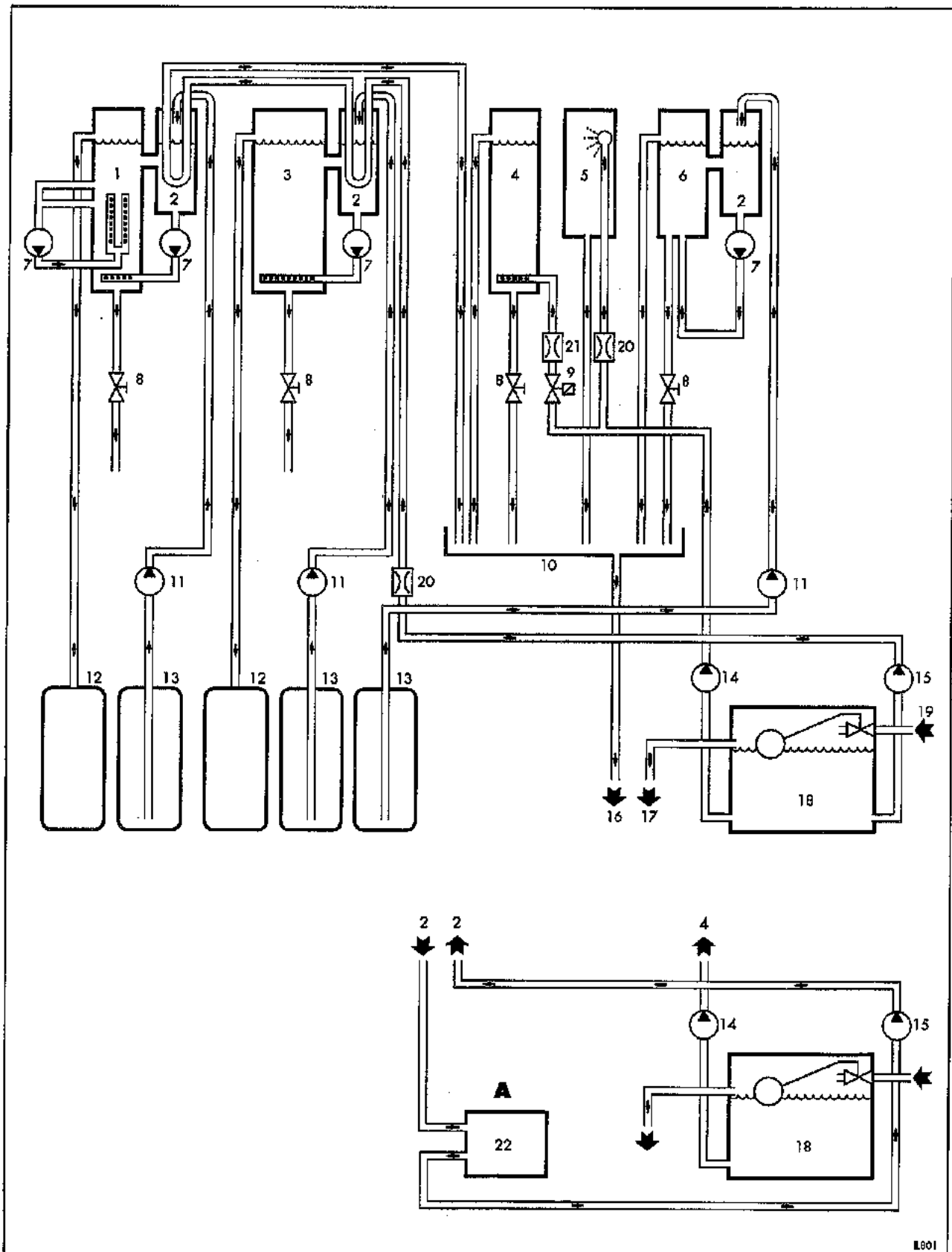4 The cooling water system is now independent of the water used for washing the film.

3.11 CONNECTING THE DRAINAGE

See figures 3.1 and 3.7.

⚠ **CAUTION**
Ensure your drainage arrangements comply with local regulations. Effluent Data Sheets are supplied with this manual.

Figure 3.7   Wet system schematic

Figure 3.7

1 Developer working tank
2 Temperature control tank
3 Fixer working tank
4 Wash water tank WS1
5 Water spray tank WS2
6 Rinse solution tank WS3
7 Circulation pump
8 Drain valve
9 Solenoid valve
10 Drain tray
11 Replenishment pump
12 Drain bottle
13 Replenishment bottle
14 Wash water pump
15 Cooling water pump
16 Drain tray overflow
17 Water storage tank overflow
18 Water storage tank
19 Mains water supply
20 Flow restrictor
21 Flow restrictor (60Hz only)
22 Water cooling unit (optional)

1 The overflow from the developer and fixer tanks is collected in drain bottles located in the base of the processor. The bottles are identified red for developer and green for fixer,

2 The drain tray and water storage tank overflow must be piped to the main drain of the building. The outlet from the flexible drain hoses must not be more than 100mm (4 inch) above the floor. Failure to observe this requirement may restrict the capacity of the drain and result in a spillage.

3.12 DRYER TEMPERATURE AND SOLUTION HEATER CONTROLS (ABNORMAL CONDITIONS)
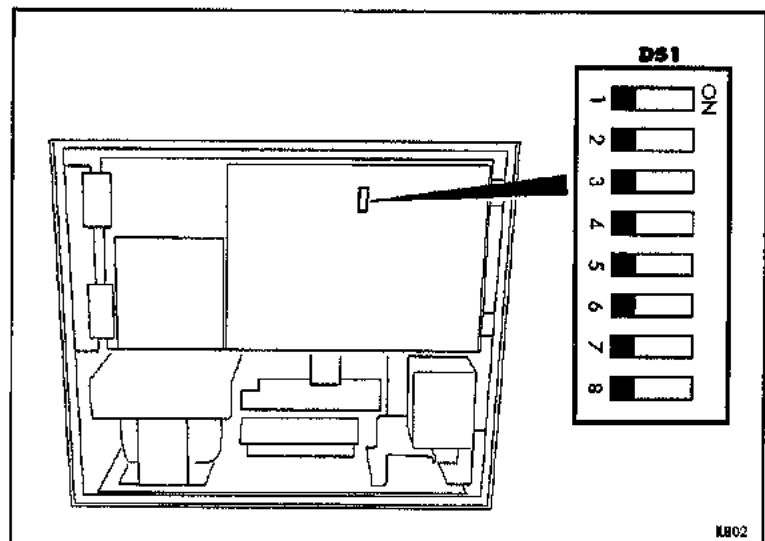See figure 3.8.

Figure 3.8   Temperature controls
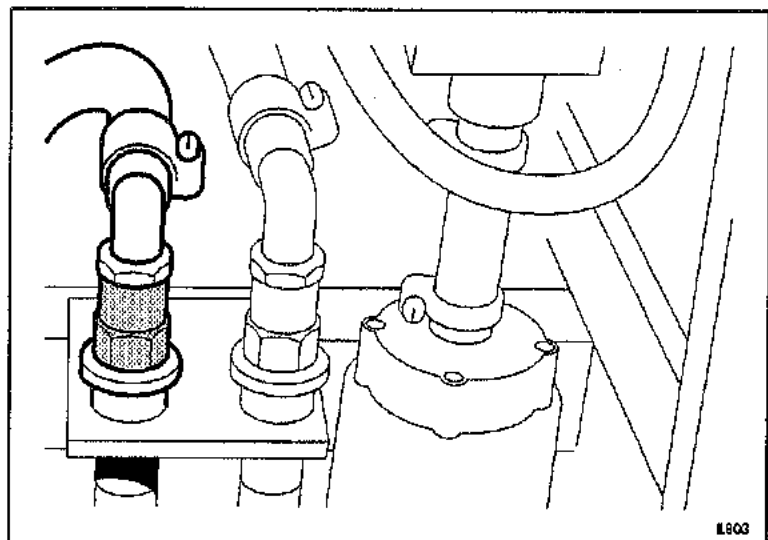
⚠ **CAUTION**
Do not attempt to carry out any of the following procedures unless you are qualified to do so. The power to the processor must be switched off. If a dip switch is changed when the processor is switched on, the processor memory may be corrupted.

1 When the processor is supplied and under normal operating conditions all switches are in the OFF position as shown on figure 3.8.

2 The dryer standby temperatures and the solution heater sequences are pre-set with two dip switches on the CPU board. When the processor is used in abnormally cold conditions, the dip switches can be changed to alter the settings.

3   With dip switch 1 in the OFF position the dryer standby temperature is maintained at 45°C (113°F). In very cold conditions and for films requiring short processing times and high dryer temperatures, the dryer may not reach the temperature set on the control panel in time to dry the film correctly. Select dip switch 1 ON to maintain the dryer at the set temperature at all times.

4   When work is finished and the 'POWER' switch is off, the solution heaters do not operate. If there is a risk that the solution temperature could drop below 5°C (41°F), dip switch 8 should be switched to ON to provide intermittent heating to the solution tanks.

3.13   WATER FLOW CONTROL (60Hz PROCESSOR)
See figure 3.9.

Figure 3.9   Installing flow regulator - 60Hz processors

⚠ **CAUTION**
Do not attempt to carry out the following procedure unless you are qualified to do so.

1   When the processor is connected to a 50Hz power supply, the water flow to the wash water tank is automatically controlled at 4 - 4·5 litres per minute. If you have a 60Hz power supply an additional flow regulator must be fitted as shown on figure 3.9.

2   Release the elbow joint. Install the water flow regulator. Ensure there are no leaks on the system.

3.14 CONTROL PANEL LABEL

1 On delivery the control panel is supplied with an English language label. Alternative language labels are provided in the accessories box.

2 To change the label, remove and retain the development time selection knob and the switch label. Select your language label and position it carefully on top of the existing label. Reposition the switch label. Refit the knob.
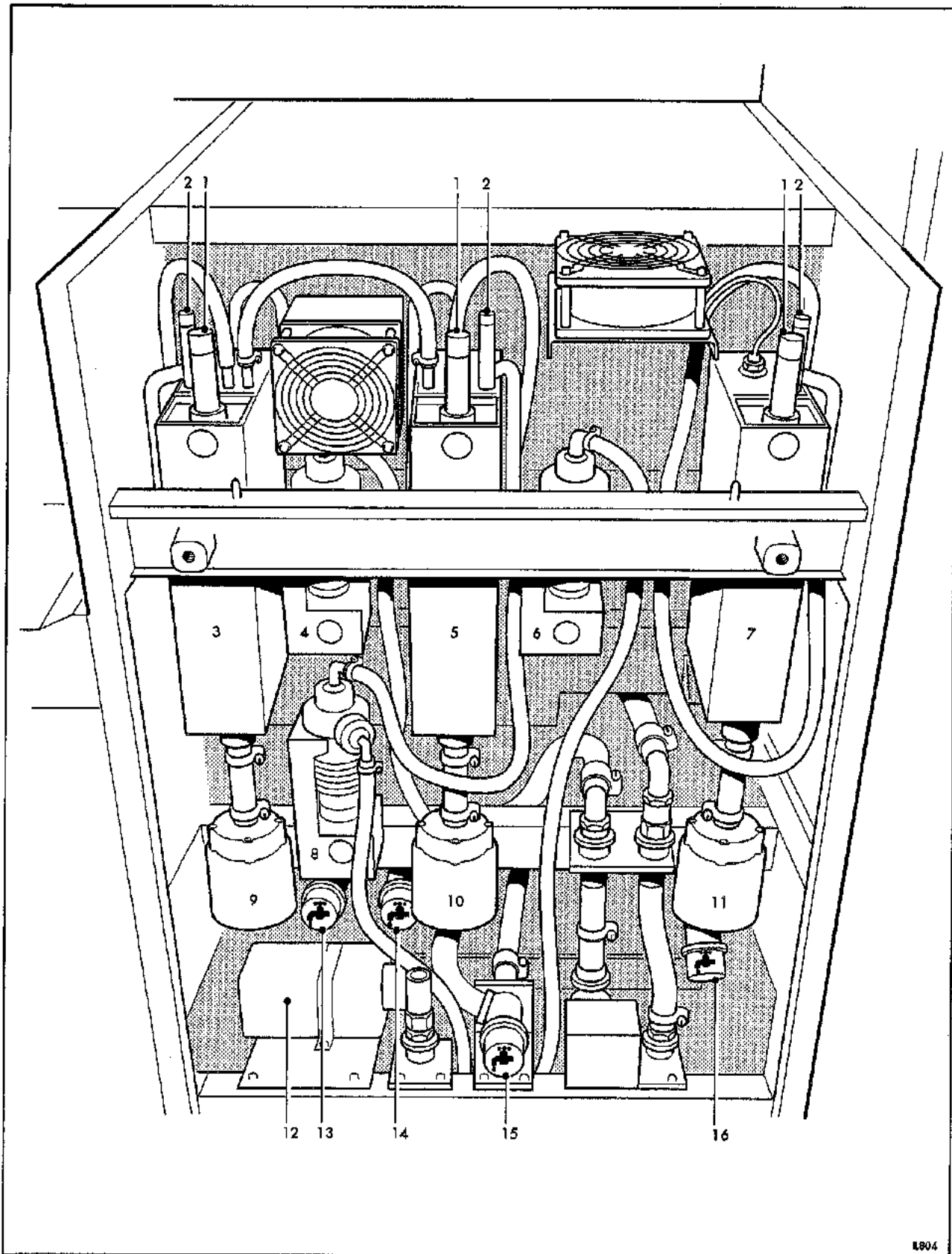
Figure 4.1

Internal view

4

COMMISSIONING

Figure 4.1

1 Filter assembly
2 Replenishment pipe
3 Developer temperature
   control tank
4 Developer
   replenishment pump
5 Fixer temperature
   control tank
6 Rinse solution
   replenishment pump
7 Rinse solution tank
8 Fixer replenishment
   pump
9 Developer circulation
   pump
10 Fixer circulation pump
11 Rinse solution circulation
   pump
12 Air pump
13 Developer tank drain
   valve
14 Fixer tank drain valve
15 Wash water WS1 drain
   valve
16 Rinse solution WS3
   drain valve

4.1 CHECKING PROCESSOR OPERATION

See figures 4.1 and 3.1.

When using the processor for the first time it is good practice to fill the processor with water instead of chemicals. This gives an opportunity to check the processor operation and allows the user to become familiar with the operating procedures without wasting chemicals.

1 Turn on the water supply to the processor at the water supply panel. Turn on the electrical supply at the 16A fused isolator switch. Select the main power switch on.

2 The racks are identified as follows:

   Developer   Rack 1
   Fixer   Rack 2
   Wash water   Rack 3
   Spray   Rack 4
   Rinse solution   Rack 5

   Check that the rack retaining plates are secured.

3 Fill each tank and replenishment bottle with water. This is the same procedure as filling with solutions described in section 4.9.

Note
Do not pour water directly into the working tanks. This will prevent spilling water on parts of the processor which must be kept dry.

4 Check that the wash water drain valve is closed.

5 Select the 'POWER' switch on, check that the switch is illuminated. Water will be supplied to tank WS1 and tank WS2, the solutions will start to heat up and the circulation pumps will operate.

6 Set and check the replenishment rates as described in section 4.2.

7 Set the processing temperatures as described in section 4.3.

8 Adjust the air pump as described in section 4.5.

9 Check for leaks on the system. If any are found, turn off the electrical supply and water supply and secure any loose connections.
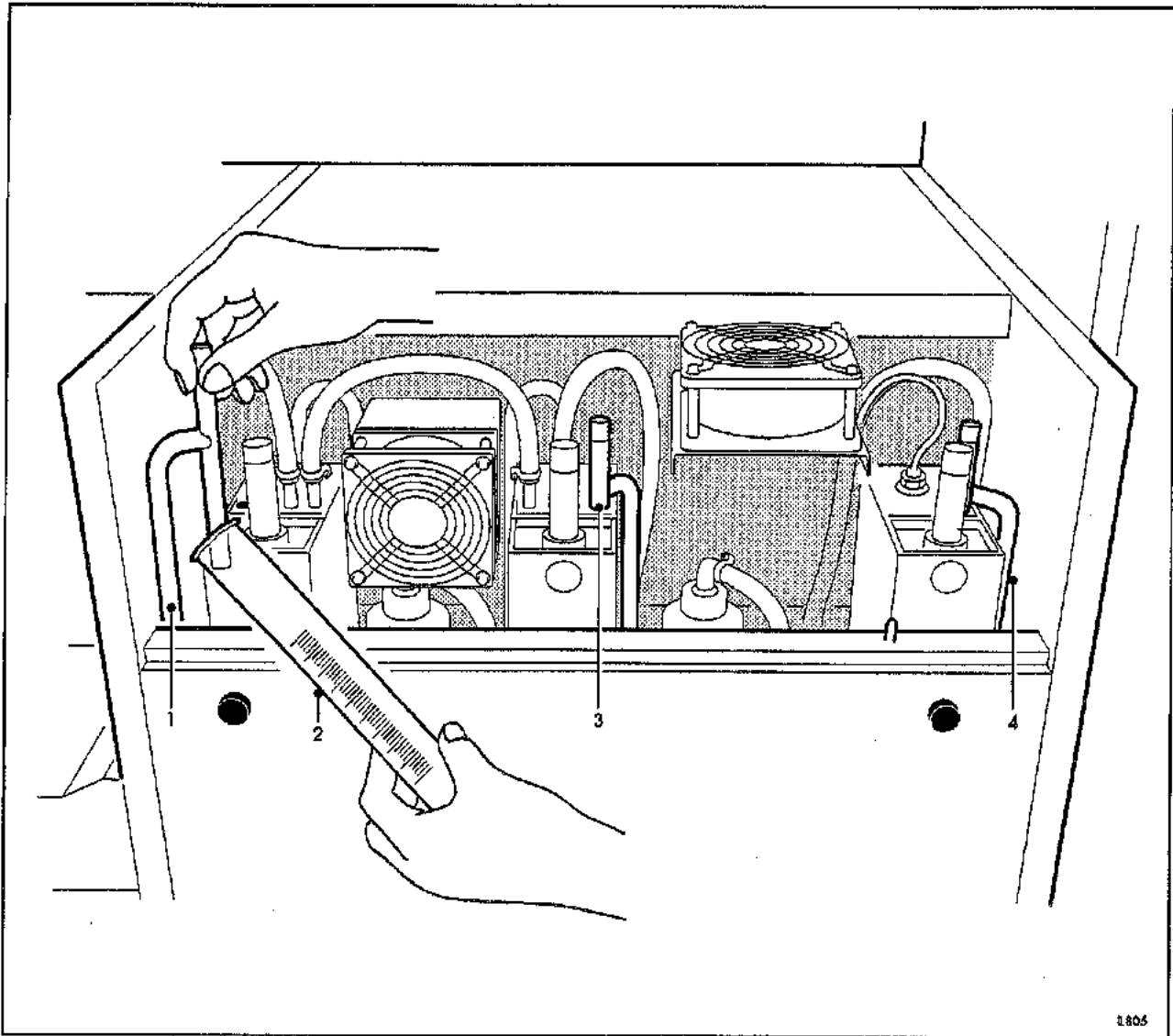
Figure 4.2   Checking replenishment rates

10   Position the film receiving box on the processor top lid between
      the locating brackets and in the film exit on the dryer.

11   The Start Work procedure prepares the processor for use each
      day. Press 1 START WORK on the key pad and follow the
      instructions on the display. Refer to section 2.6a or section 5 for
      more information.

12   The processor is now ready. Section 6 gives full details of film
      preparation and section 7 describes the processing sequence.

13   Drain the water from the processor. Empty the water from the
      replenishment and drain bottles. Refer to section 9 for more
      details.

Figure 4.2

1 Developer
   replenishment pipe
2 Measuring cylinder
3 Fixer replenishment pipe
4 Rinse solution
   replenishment pipe

4.2 SETTING AND CHECKING REPLENISHMENT RATES

See figure 4.2.

1 The replenishment rates for developer, fixer and rinse solution
   are set using the control panel. The correct rate for developer
   and fixer is the time required for the replenishment of one 36
   exposure 35mm film. The processor will automatically
   compensate the replenishment rate for other lengths and widths
   of film or for processing two films at a time. Table 4.1 gives the
   approximate flow rate with replenishment pump operating time.

Table 4.1 Replenishment pump flow rates and operating times

Replenishment volume (ml/36 exp)	Approximate replenishment time (seconds)	
	Fixer	Developer and rinse solution
10	2·4	3·3
20	4·8	6·6
30	7·2	9·9
40	9·6	13·2
50	12·0	16·5
60	14·4	20·8
70	16·8	22·0
80	19·2	-
90	21·6	-
100	23·0	-

2 On the control panel press CLEAR, then press 3 REP SET. Follow
   the instructions on the display to set the replenishment rates.
   Refer to section 2.6c for more details.

3 The replenishment rate for the rinse solution should be set at the
   maximum rate of 23 seconds.

4 After a replenishment rate has been set on the control panel the
   actual rate should be checked. Remove the top right hand panel.
   Withdraw the replenishment pipe from the temperature control
   tank and place the open end in a measuring cylinder.

5 On the control panel press CLEAR, then press 8 MANUAL REP.

6 Power the pump through a total of five operating cycles. Refer to
   section 2.6h for more details. Take an average reading of the
   volumes collected to find the actual rate. If the reading is too
   high reduce the replenishment rate, if the reading is too low
   increase the rate. Check the actual rate again. Refit the
   replenishment pipe.

Note

It is good practice to check the replenishment rates monthly to ensure the replenishment volume is correct and to stop solution wastage.

4.3 SETTING PROCESSING TEMPERATURES

1   The developer and fixer solutions and dryer temperatures are set using the control panel. Press CLEAR, then press 2 TEMP SET. Follow the instructions on the display. Refer to section 2.6b for more details.

2   The processing data sheet included with this manual gives recommended temperatures for ILFORD chemistry. The temperatures can be checked on the control panel. Press CLEAR, then press 9 TEMP DISPLAY to show the set and actual temperatures.

4.4 DEVELOPMENT TIMES
See figure 4.3.
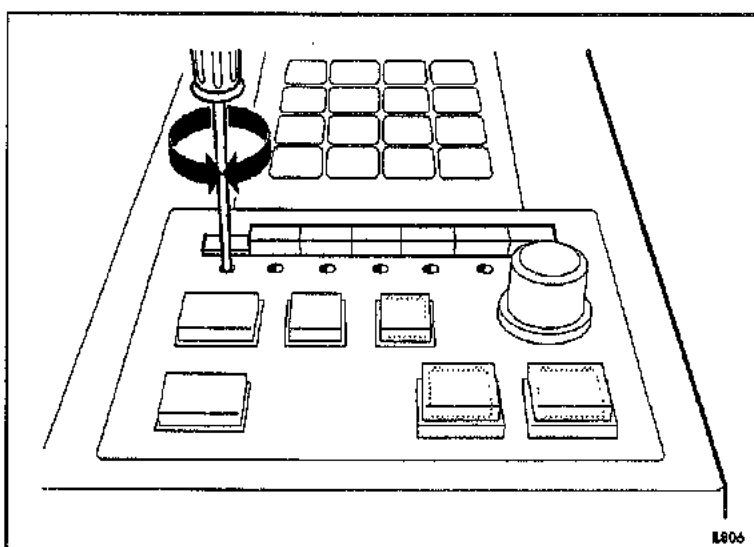
Figure 4.3   Adjusting pre-set development rates

1   Six numbered switches on the control panel are pre-set to provide development times as shown on the switch label and in table 4.2.

2   If other development times are used regularly the switches can be re-set by adjusting the control screw under the switch label. Table 4.3 gives the displayed times available from 40 seconds in increments up to 388 seconds.

Table 4.2 Pre-set development times

| Switch	Nominal time (seconds)	Displayed time (seconds)
1	50	50
2	60	60
3	70	69 or 71
4	80	78 or 81
5	90	88 or 91
6	100	100

3 Press CLEAR on the control panel and select the 'DRIVE' switch on. Press the development time switch to be re-set, the actual temperature and time will be displayed.

4 Remove the switch label. Use a screwdriver to adjust the development time. Turn the control screw clockwise to increase the time or counter clockwise to reduce the time. There will be a delay of approximately 10 seconds before the actual time is shown on the display. Write the selected times on the blank switch label provided. Reposition the new switch label.

5 The development time can also be set using the development time selection knob. Press CLEAR on the control panel and select 'DRIVE' on. Press switch M, turn the knob clockwise to reduce the time and counter clockwise to increase the time. There will be a delay of approximately 10 seconds before the actual time is shown on the display.

Table 4.3 Development times

Displayed dev time	Displayed dev time	Displayed dev time	Displayed dev time
40	53	73	127
41	54	75	134
42	56	78	142
43	57	81	153
44	58	84	166
45	60	88	176
46	61	91	188
47	63	95	210
48	65	100	232
49	67	104	257
50	68	108	288
52	71	115	332
		120	388

4.5 AIR PUMP ADJUSTMENTS
See figure 4.4.
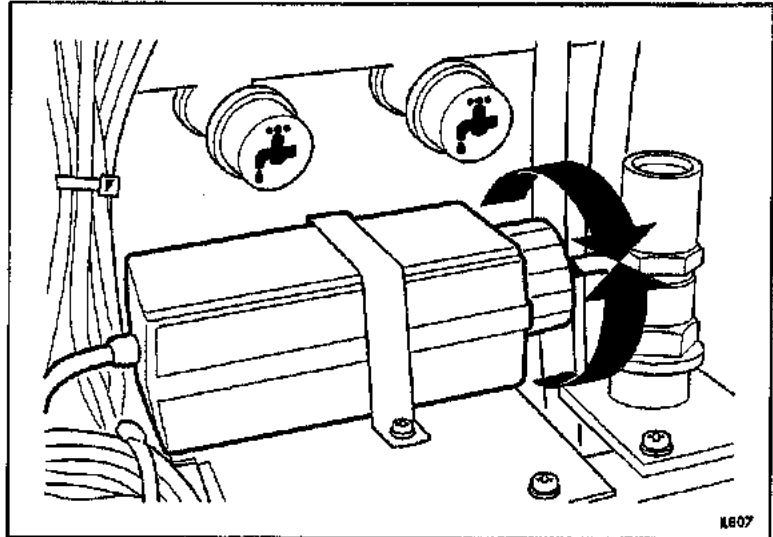
Figure 4.4   Adjusting air pump

1   The air pump controls the flow of air through the water in tank
    WS1 to agitate the water with no splashing. The flow can be
    changed by adjusting the air pump.

2   Remove rack 3 (refer to section 10.2a) to see the amount of
    agitation. With the 'DRIVE' switch on, rotate the air pump
    adjusting knob clockwise to decrease the flow of air or counter
    clockwise to increase the flow. Ensure there is no splashing in the
    tank.

3   Replace rack 3 and secure it with the retaining plates.

4.6 SETTING THE CLOCK

1 The date and time can be set using the control panel. Press CLEAR, then press 6 TIMER SET. Follow the instructions on the display. Refer to section 2.6f for more details.

4.7 SETTING THE FILM COUNTERS

1 The processor counts the number of films processed as daily and cumulative totals.

2 Press 4 FILM COUNTER and follow the instructions on the display. Refer to section 2.6d for more details.

Note
The daily total may be cleared at the end of each day or before starting work.

4.8 PROGRAMMING OPERATING TIMES

1 The processor can be programmed to automatically re-start at a pre-set time to enable the solutions to reach operating temperature at the beginning of the day's work. Press CLEAR on the key pad, then press 6 TIMER SET.

2 Follow the instructions on the display. Refer to section 2.6f for more details.
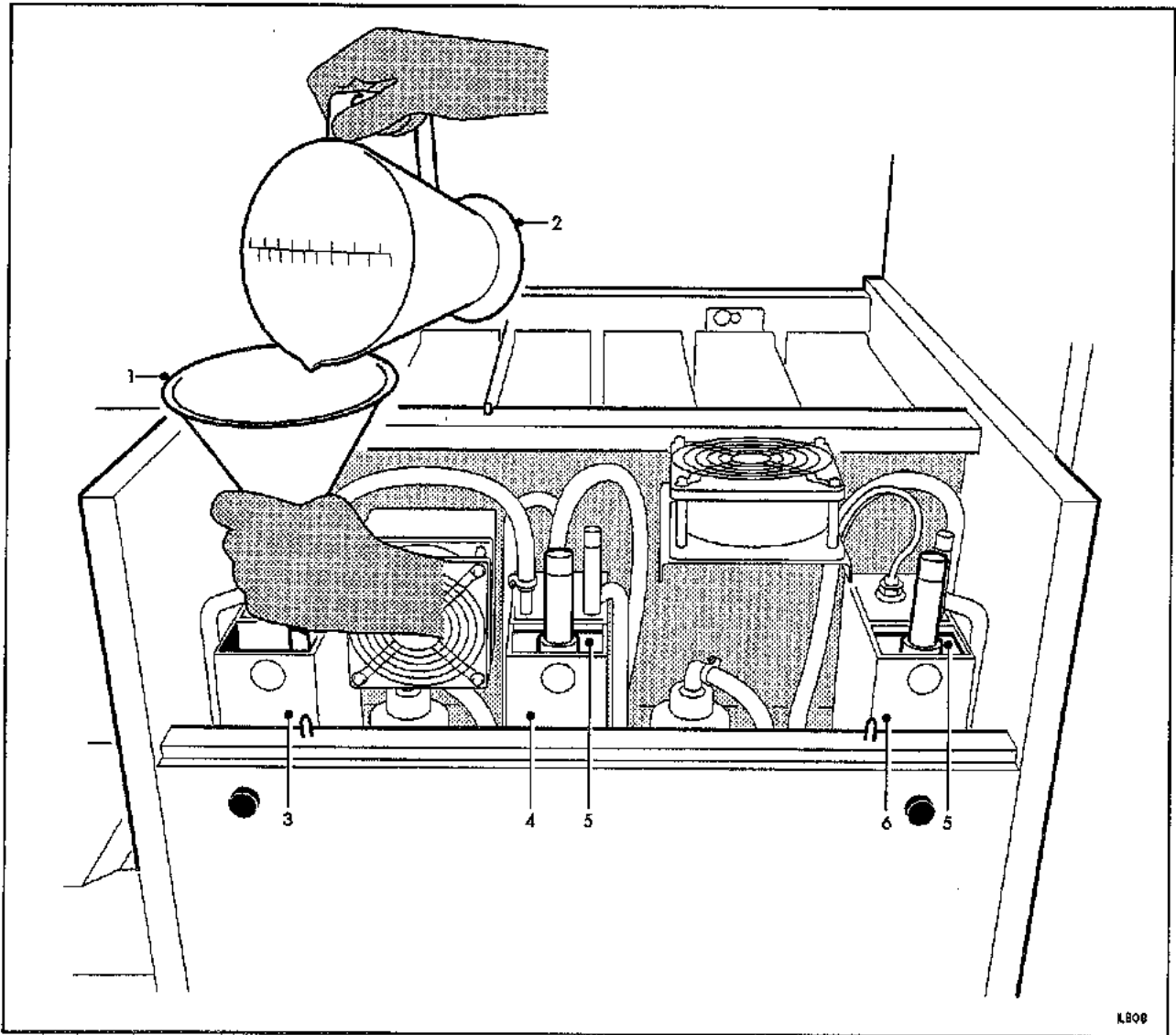
Figure 4.5   Adding solution

4.9 FILLING WITH SOLUTIONS
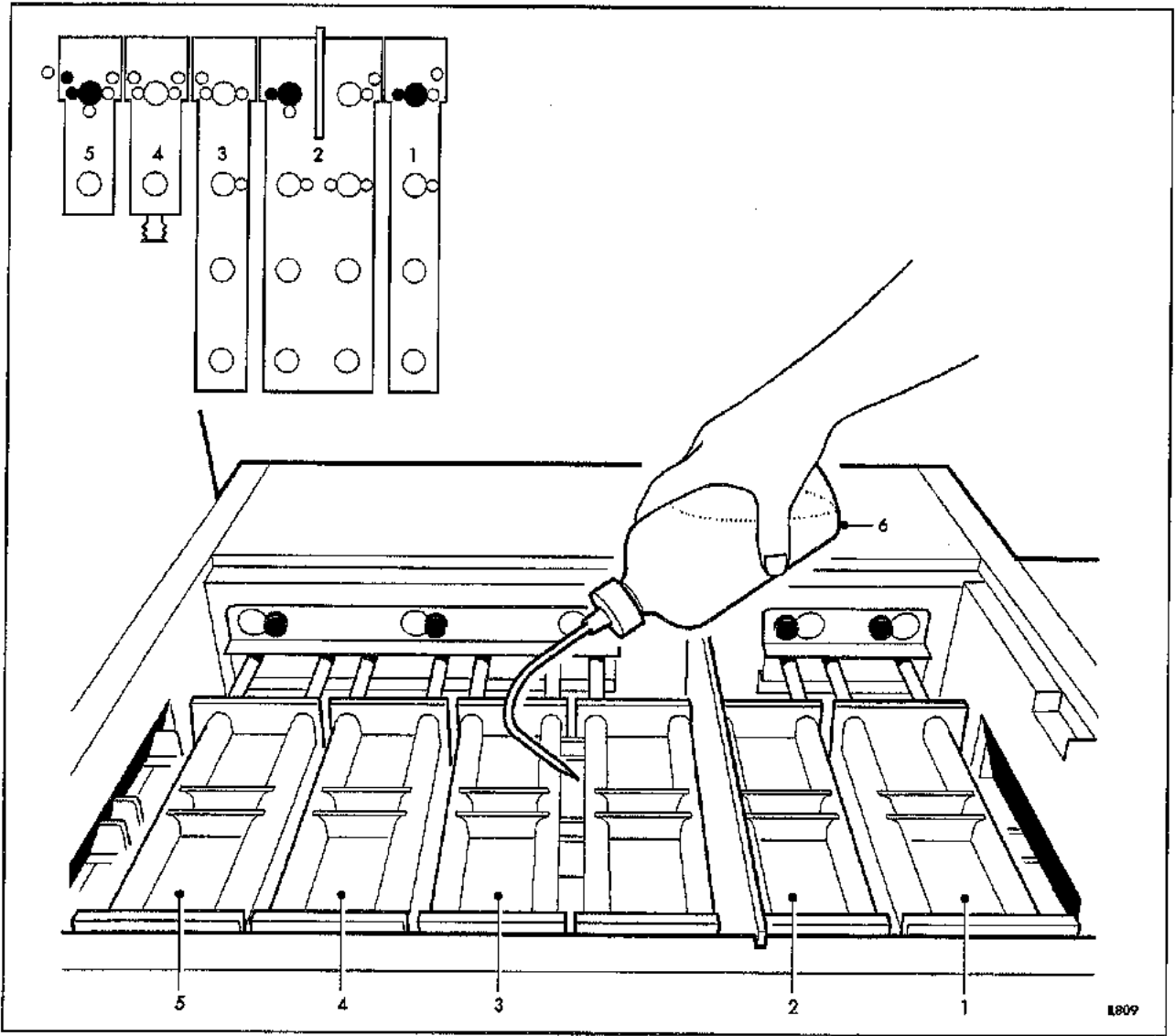
See figure 4.5.

⚠ **CAUTION**

Care must be taken when making up or emptying solutions. Protective clothing, safety glasses and gloves must be worn.

Do not pour solutions directly into the working tanks. This will prevent cross contamination of solutions or spilling solutions on parts of the processor which must be kept dry.

1 The procedure for filling the tanks and replenishment bottles is identical for developer, fixer and rinse solution. Instructions for preparing ILFORD chemicals is given on the instruction leaflet supplied with the chemicals.

2 The amounts of solution required are as follows:

Developer	Working tank	10 litres
Developer Replenisher	Replenishment bottle	10 litres
Fixer	Working tank	13 litres
Fixer	Replenishment bottle	10 litres
Rinse solution	Working tank	4 litres
Rinse solution	Replenishment bottle	10 litres

3 Ensure the drain valves are closed.

4 Unscrew the filter element assembly and withdraw it from the temperature control tank. Place the assembly on a tray to prevent drips or cross contamination. Pour the solution through a funnel into the temperature control tank until the solution in the working tank overflows to the drain. Refit the filter element.

5 Withdraw the replenishment bottle, remove the cap and fill the bottle with solution. Refit the cap and replace the bottle.

Fig 5.1

Processing racks - wetting top rollers

STARTING WORK

Figure 5.1

1   Developer working tank
2   Fixer working tank
3   Wash water tank WS1
4   Wash spray tank WS2
5   Rinse solution tank WS3
6   Washing bottle

See figure 5.1.

1   The processor must be prepared when starting a day's work.

Note

The processor may be programmed to automatically re-start at a pre-set time to enable the solutions to reach operating temperature at the beginning of the day's work. Switch the TIMER off.

2   Close the wash water drain valve.

3   Select 'POWER' switch on. The control panel can now be used and water flows for 10 minutes to tanks WS1 and WS2. The solution heaters and circulation pumps operate.

4   Press 1 START WORK and follow the instructions given on the display. Refer to section 2.6a for more information.

5   The top rollers identified on figure 5.1 require wetting during the START WORK procedure. Wet the top rollers with water using the washing bottle.

Note

Care must be taken when wetting the rollers as there are parts of the processor which must be kept dry. Do not allow the velvet in the feed section of the processor to become wet. Always use the washing bottle.

6   *CHECK LEADER TRANSPORT* is displayed during the START WORK procedure. This is an opportunity to check the operation of the processor. Feed a leader sheet into the processor and close the loading box lid. The leader will be transported through the processor. If there are any problems refer to section 11.

Note

Do not use a damaged or defective leader sheet as this can damage the rollers and lead to problems during processing.

7   When the START WORK sequence is completed press the CLEAR key.

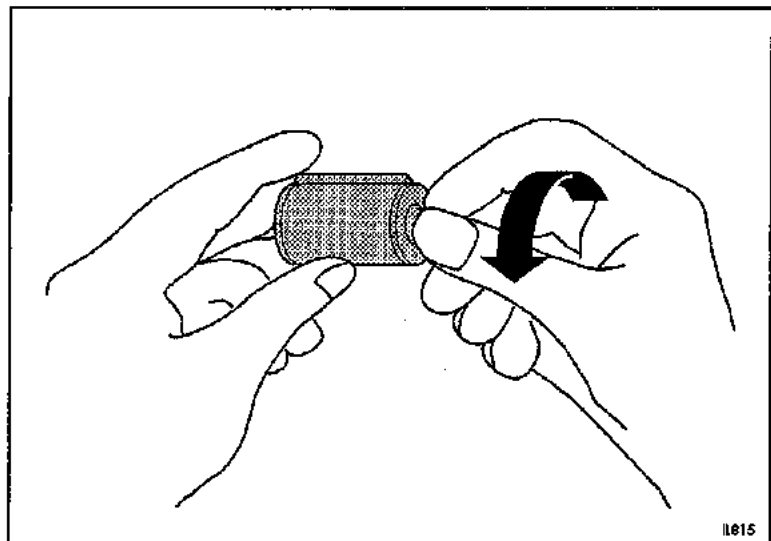# FILM PREPARATION
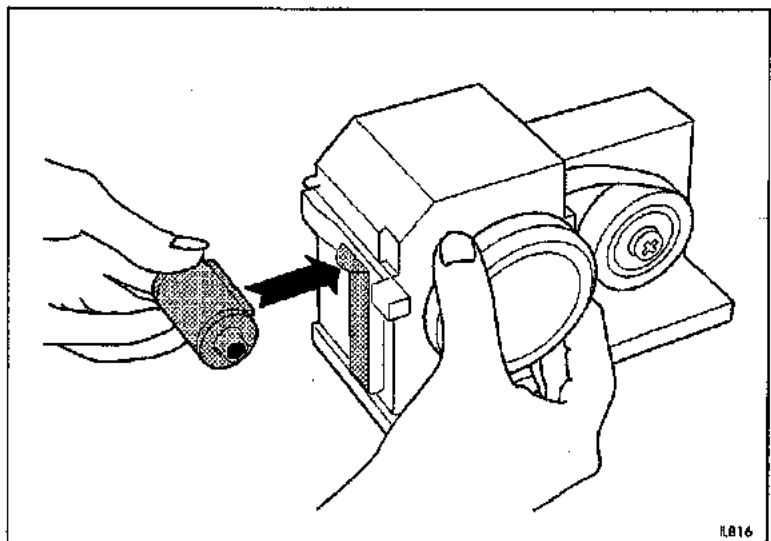
Films must be prepared before processing as follows:

Note
Do not splice cassettes and roll films on the same leader.
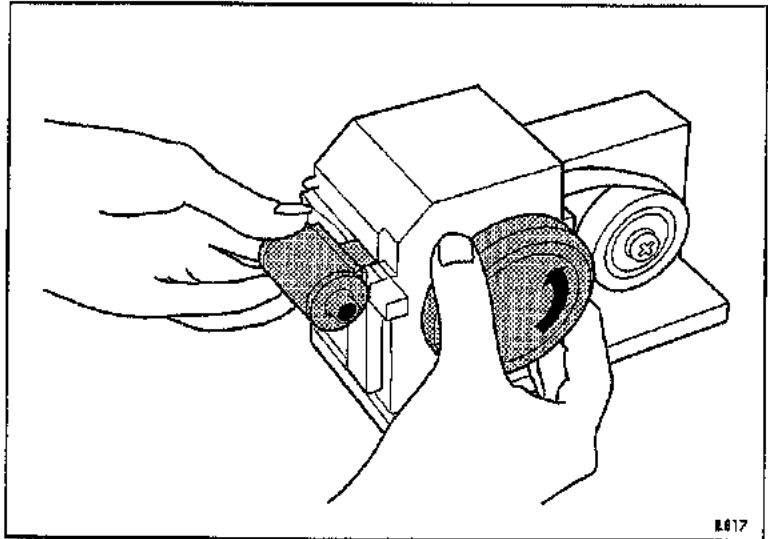
1 Turn the cassette spindle several times.

2 Position the right hand side of the cassette mouthpiece on the green lip on the film extractor. Ensure the lip is inside the cassette.
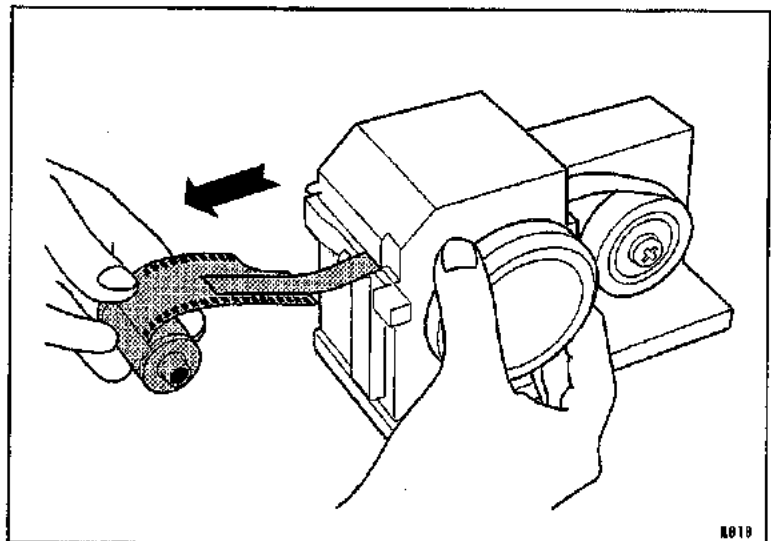
USING THE 35mm CASSETTE FILM EXTRACTOR

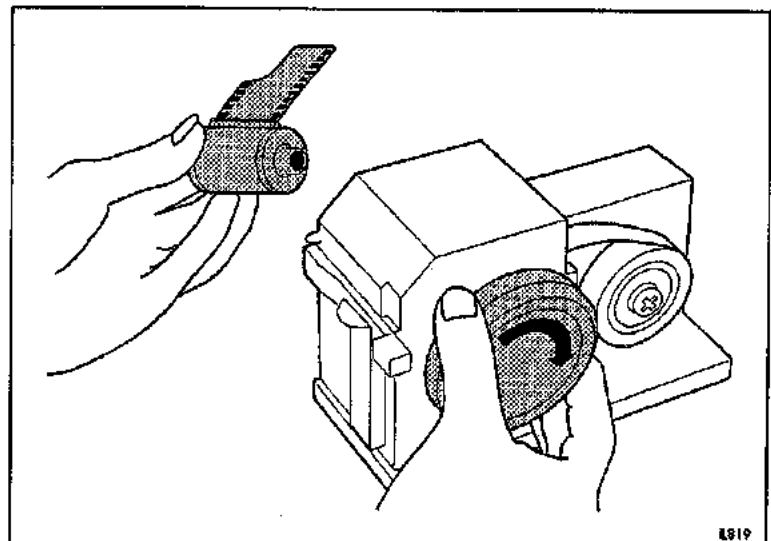3 Turn the wheel counter clockwise to feed tape into the cassette. When the tape stops, hold the wheel.

4 Pull the cassette away to withdraw the film.
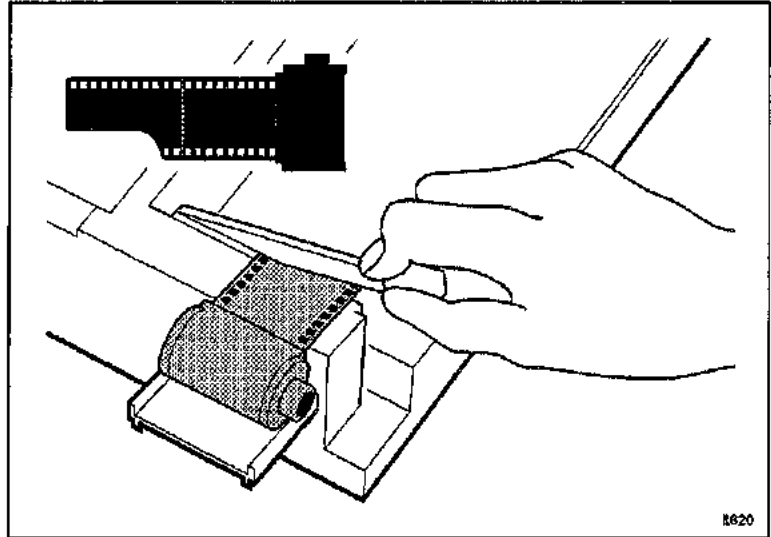
5 Remove the tape from the film. Rewind the tape.

Note
Trim the tape if it becomes damaged or looses its stickiness.
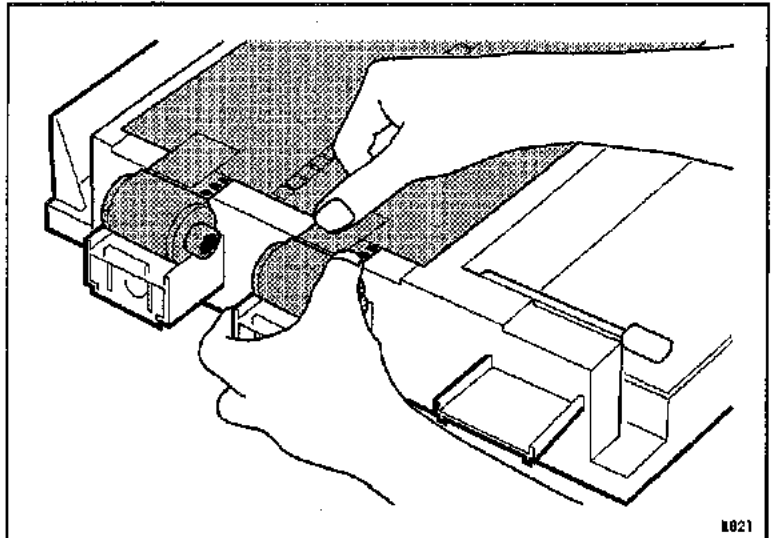
SPLICING A 35mm CASSETTED FILM

1 Place the film on the splicer. Cut with the guillotine between perforations to give a straight edge.

2 Rotate the cassette/magazine holders to accept cassetted film. Place cassette and leader on splicer. Butt the film and leader together, do not overlap. Cut 25-30mm of tape and position as shown.
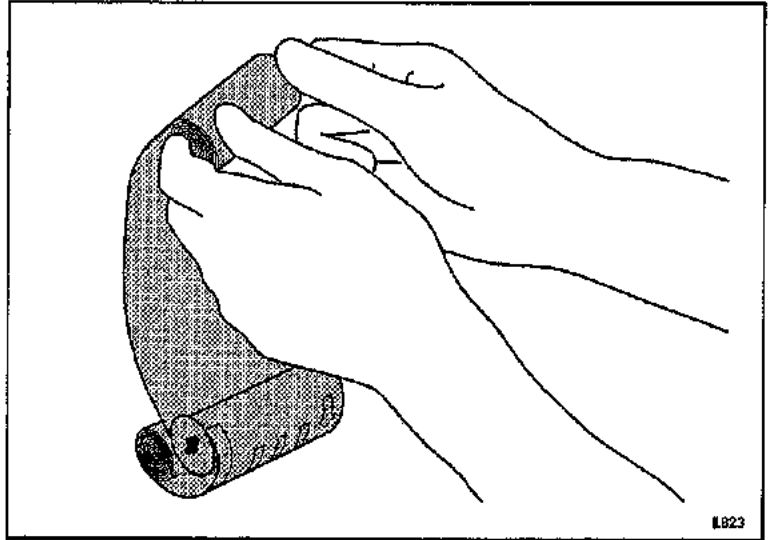

3 Turn the film and leader over and lay them on the splicer. Cut 25-30mm of tape and position as shown. The two pieces of tape must be offset to make film removal from the leader easier and to prevent damage to the leader.
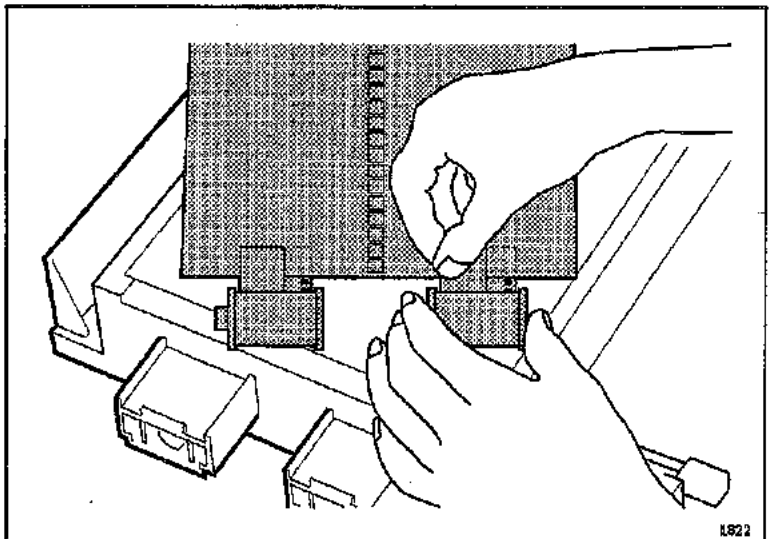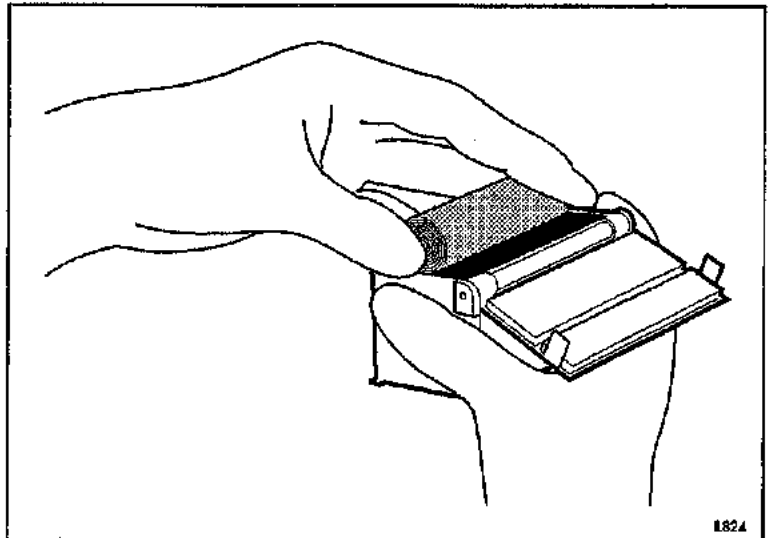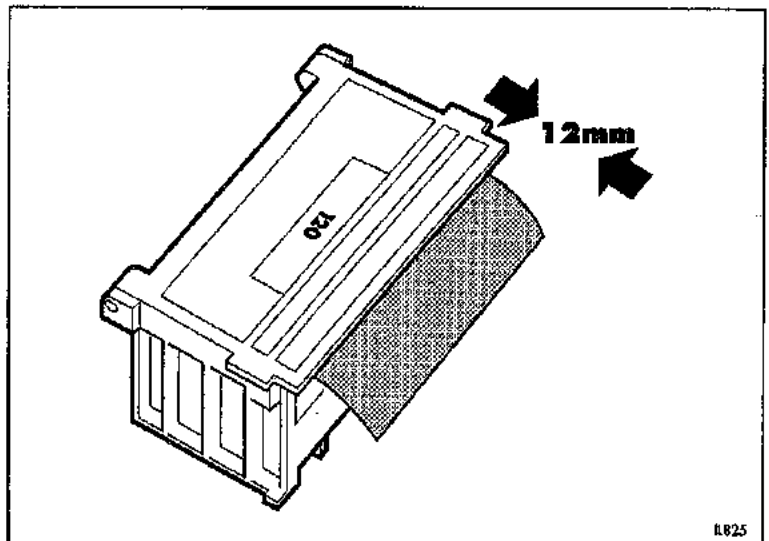
LOADING A 120/220 ROLL FILM

1   In a darkroom or dark box, take the film off the spool and wrapper. Roll the film emulsion side in with taped end outermost.

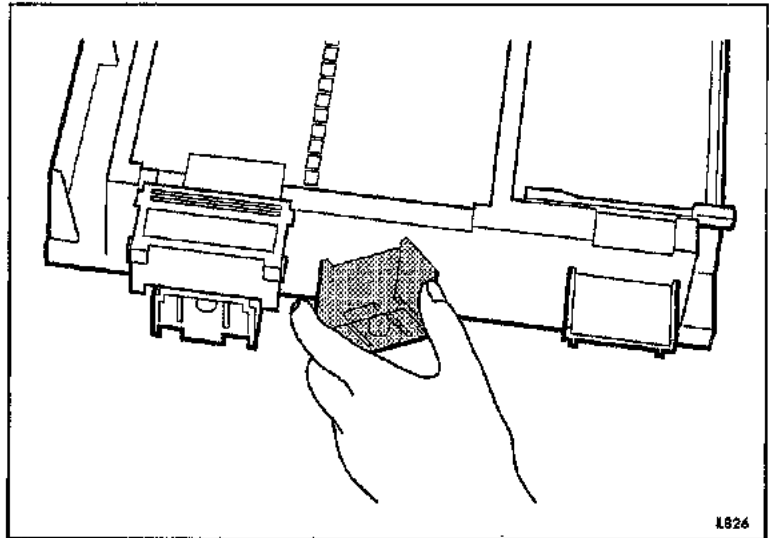2   Open the 120/220 film magazine. Load the film into the magazine.

3   Position the film with about 12mm out of the holder, emulsion side down. Close the lid of the magazine. Remove all the old tape from the end of the film.

SPLICING A 120/220 ROLL FILM

1 Rotate cassette/magazine holders to accept 120/220 magazines.

2 Place magazine and leader on splicer. Butt the film and leader together, do not overlap. Cut 45mm of tape and position as shown.
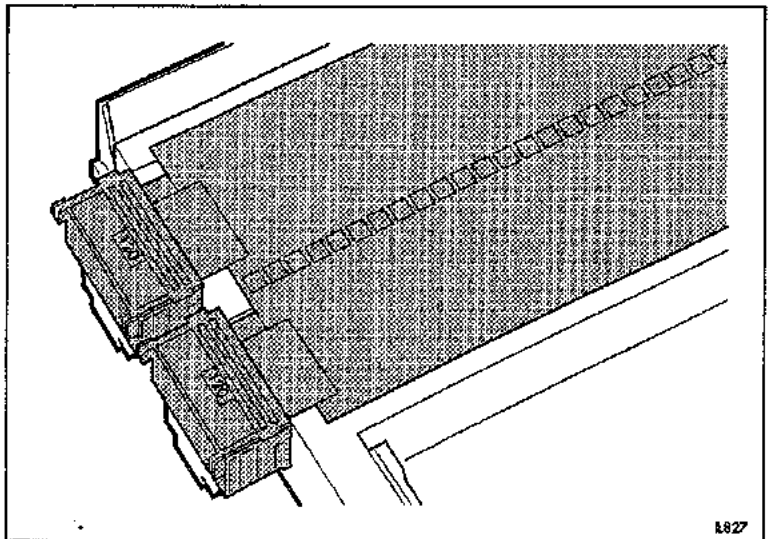
3 Turn the magazine and leader over and lay them on the splicer. Cut 45mm of tape and position as shown. The two pieces of tape must be offset to make film removal from the leader easier and to prevent damage to the leader.
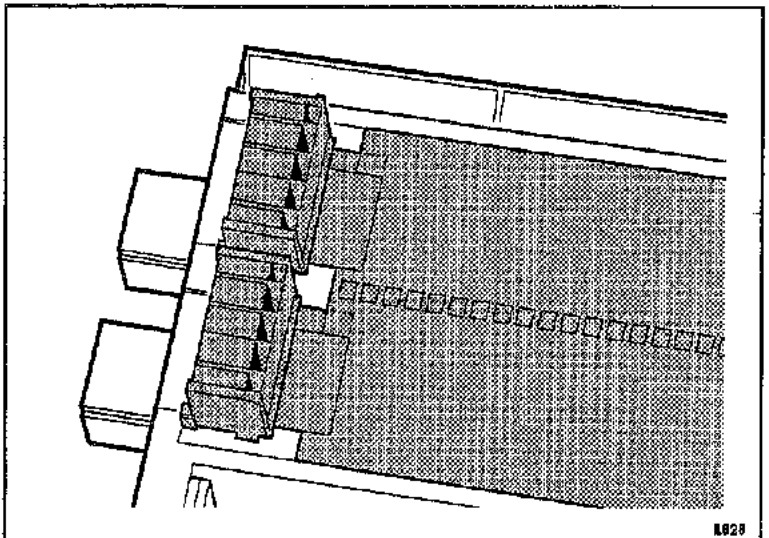
LOADING A 35mm OR 16mm CUT LENGTH FILM

1   In a darkroom, wind the film from its spool or core onto the correct size magazine spool for the film. Use the correct size flange to hold the spool. Ensure the emulsion side is out.
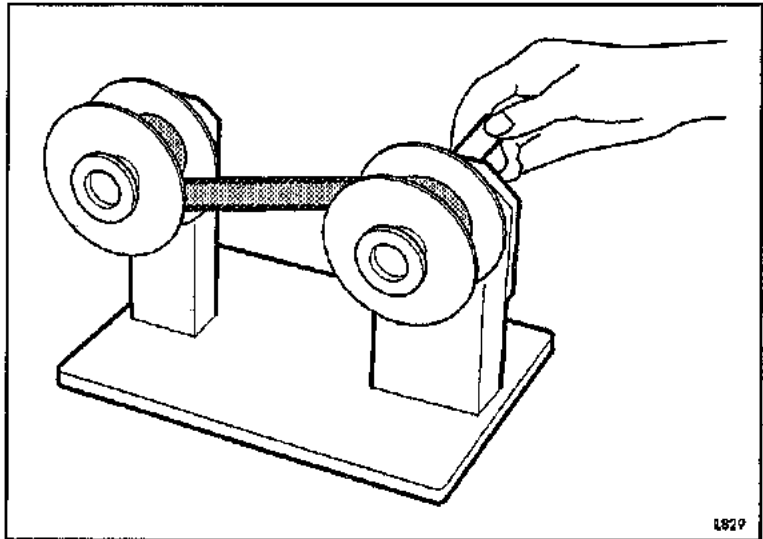
2   Open the 35mm film magazine. Lay the magazine flat. Hold the magazine spool and flange securely. Load spool into magazine with the flange uppermost.
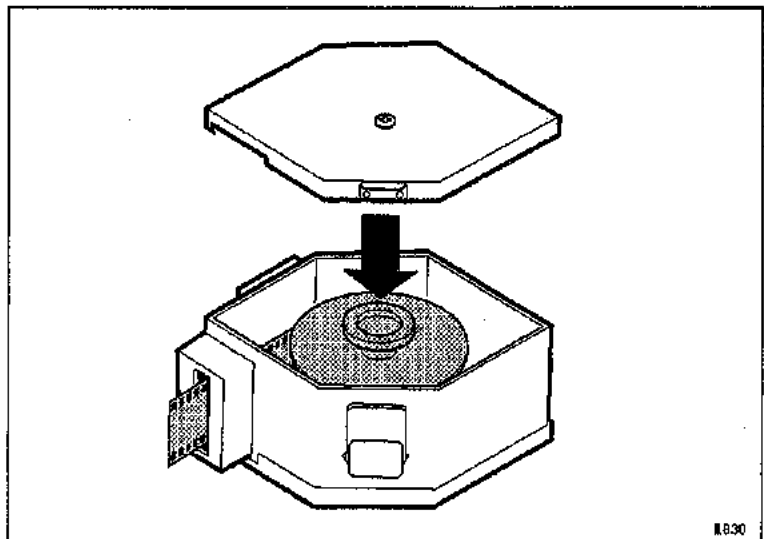
3   Remove the flange. Feed the film emulsion side down through the exit slot with 20-30mm out of the magazine. Replace the flange. Close and secure the lid.

20 to 30mm
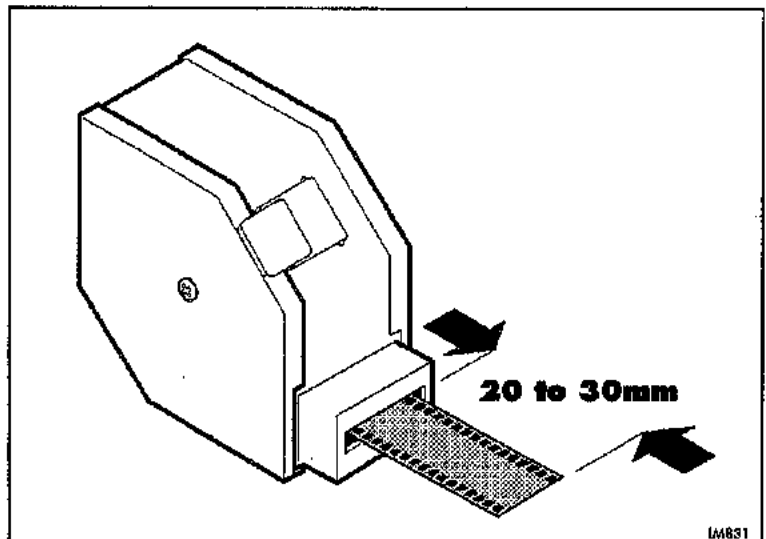
SPLICING A 35mm OR 16mm CUT LENGTH FILM

1 Position the magazine on the right hand cassette holder on the splicer. Place leader on splicer.

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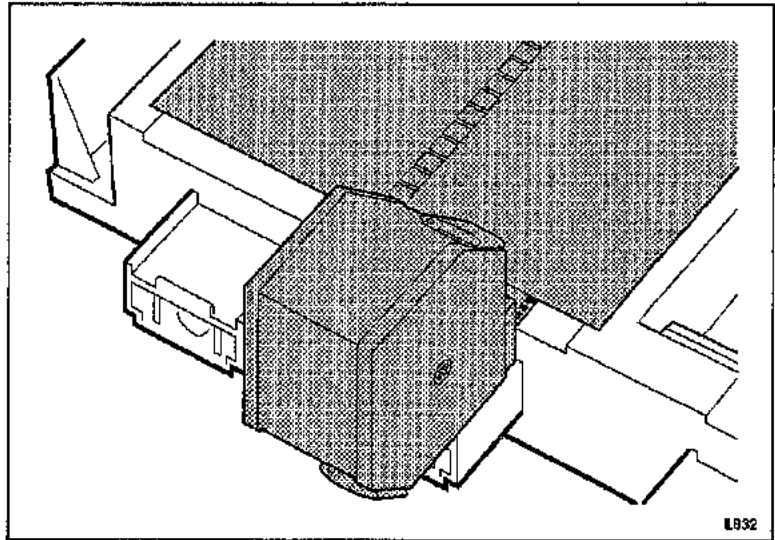
2 Butt the film and leader together, do not overlap. Cut 25-30mm of tape. On 35mm film position the tape as shown. On 16mm film position the tape centrally over the film.
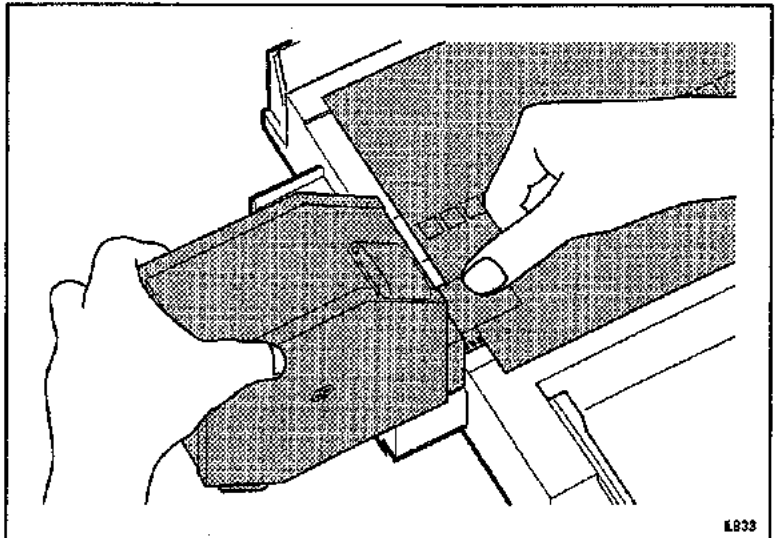

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3 Turn the magazine and leader over and lay them on the splicer. Cut 25-30mm of tape. On 35mm film the two pieces of tape must be offset as shown to make film removal from the leader easier and to prevent damage to the leader. On 16mm film position the tape centrally over the film.

Note

Care must be taken when removing the processed 16mm film from the leader.

L834

7
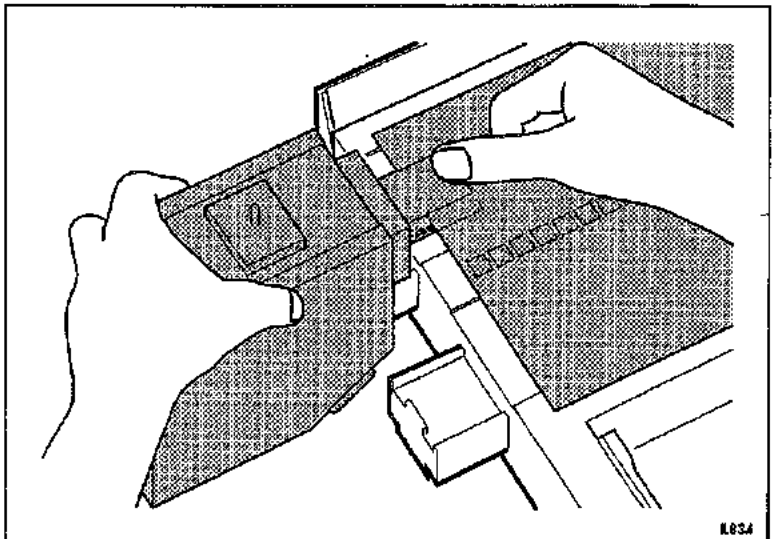
PROCESSING

1 The control panel display and indicator lights give the user information during processing.

2 The display will show **READY FOR PROCESSING** and display the developer temperature and development time when the solutions are at the correct operating temperature.

3 When the display shows **WARM UP**, the actual temperature of the developer is shown. Wait until the solutions are at the correct operating temperatures.

⚠ **CAUTION**
Film will be accepted into the processor before the set temperature is reached. Wait for the **READY FOR PROCESSING** display or films may be incorrectly processed.

4 The red light on top of the processor will be illuminated when a film is in the loading box and the loading box lid is locked.

5 The orange light on the side of the processor is illuminated when a film is in the processor.

⚠ **CAUTION**
Check the orange light before changing any processor settings. If the light is on, check that the film to be processed requires the same development times and settings as the film in the processor. If the films are the same, start processing. If the next film requires different settings these will override the existing settings. This may lead to incorrect processing of the film already in the processor. If in doubt wait until the first film is processed before changing the processor settings.

6 The display shows the type of film in the left and right hand tracks in the loading box. The frame number being fed into the processor is shown for 35mm films. This display allows the film to be manually guillotined at the required position. Refer to section 7.4 for more details.

7 Infra-red films are processed in the same way as 35mm cassetted films. Select the IR switch on. The display will then read **POSSIBLE TO PROCESS INFRA-RED FILM**. The processor will automatically return to the conventional film mode when the infra-red film has left the loading box.

8 A red cam lever press bar holds the first set of rollers apart and must be fitted in the loading box when 120/220 roll films or cut length films are processed.

9   With a new processor, the strong grip of the feed rollers may start to extract film from the cassette or magazine before the loading box lid is closed. Be prepared to close the lid as soon as the cassettes or magazines are located in position. After several films have been processed the grip of the rollers will reduce and film will not be extracted until the lid is closed.

10 It is always useful to keep a log of the number of processed films and a record of the date on which the processor was filled with new chemistry.

7.1   PROCESSING 35mm CASSETTES

35mm cassettes are fitted into holders in the loading box. The red cam lever press bar must not be fitted. The film must feed into the processor emulsion side down.

Note
Do not process cassetted and roll films on the same leader.

When the complete film has fed into the processor a guillotine automatically cuts the film. The red light will go out and the loading box can then be opened. Remove the empty cassettes. The film guillotine can also be manually operated to prevent unexposed film being processed. Refer to section 7.4 for more details.

The processed films feed out into the film receiving box positioned on top of the processor.

1   Open the loading box lid. Position the cassette holders by locating the peg in the track. Select the development time for the film to be processed.
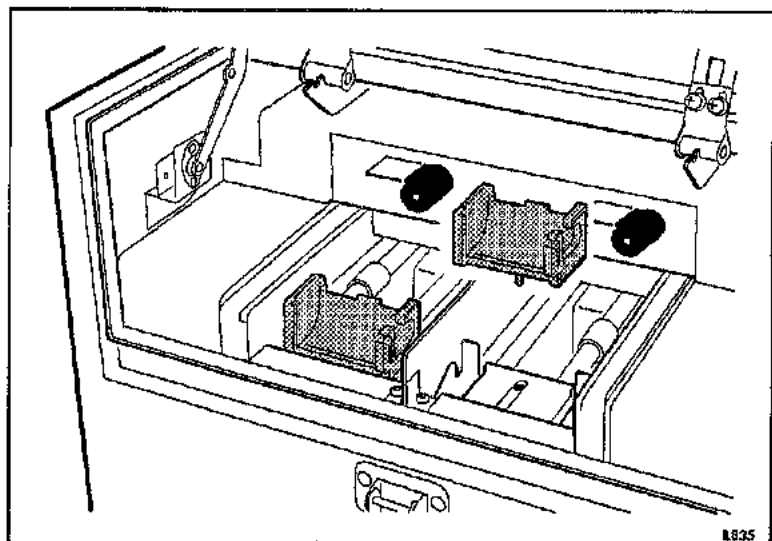
2   Hold the cassettes and feed
    the leader into the processor.

3   The leader will stop. Place
    the cassettes in the film
    holders.
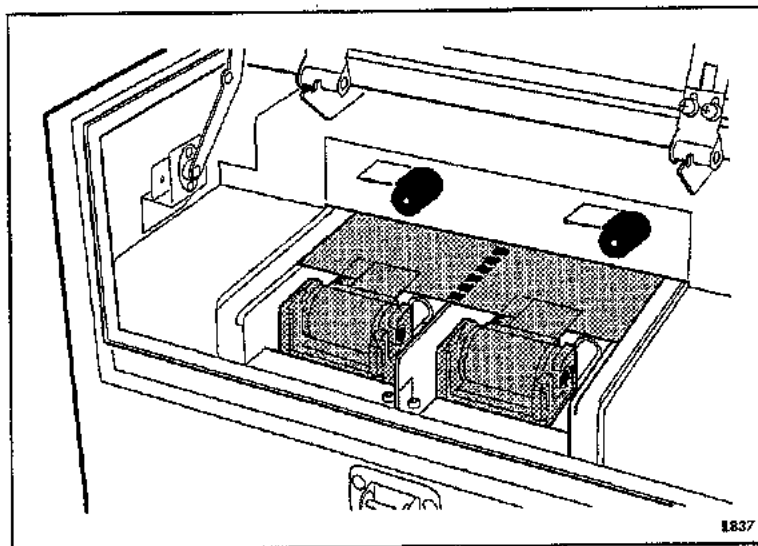
4   Close and secure the loading
    box lid. The red and orange
    lights are illuminated and the
    film enters the processor.
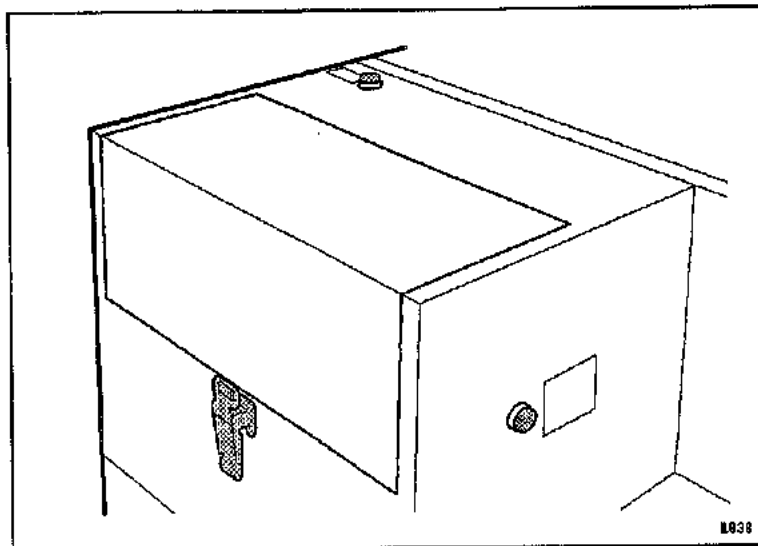
7.2 PROCESSING 120/220 ROLL FILM

Roll films are loaded into magazines which locate in the loading box. The film must feed into the processor emulsion side down.

Note

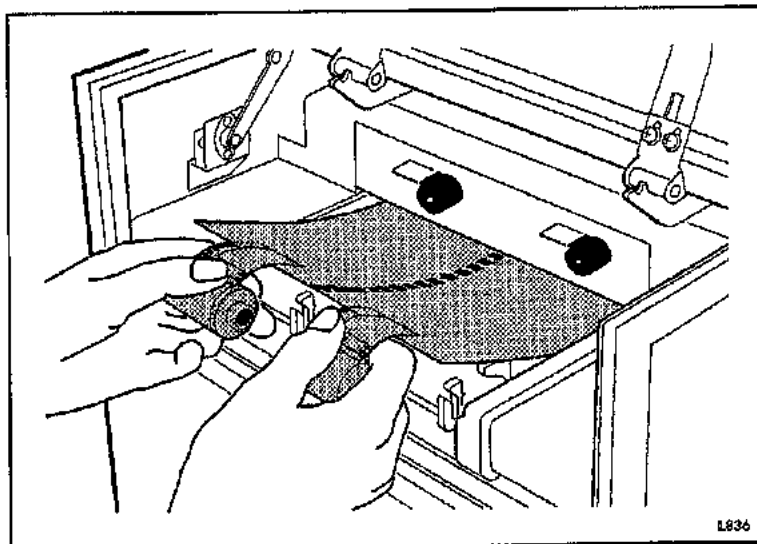Do not process cassetted and roll films on the same leader.

The red cam lever press bar must be fitted.

The display will show the position of a roll film in the right or left hand track but will not show frame numbers. The manual guillotine cannot be used.

The processed films feed out into the film receiving box positioned on top of the processor.

1 Open the loading box lid, position the cam lever press bar. Remove the cassette holders if fitted. Select the development time.
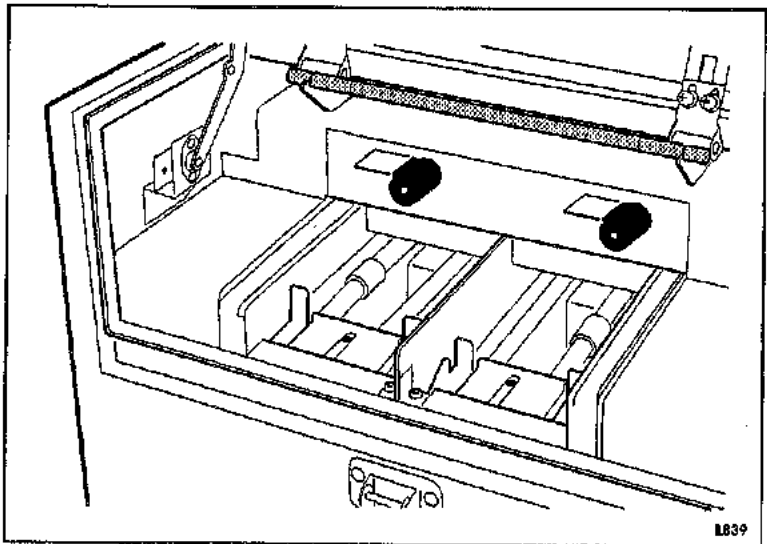
2 Hold the film magazines and feed the leader into the processor.
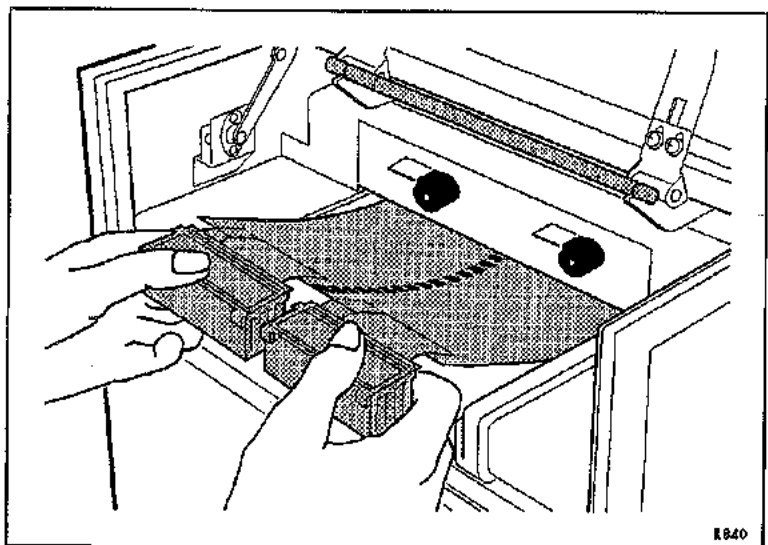
3   The leader will stop. Place
    the film magazines on the
    locators.
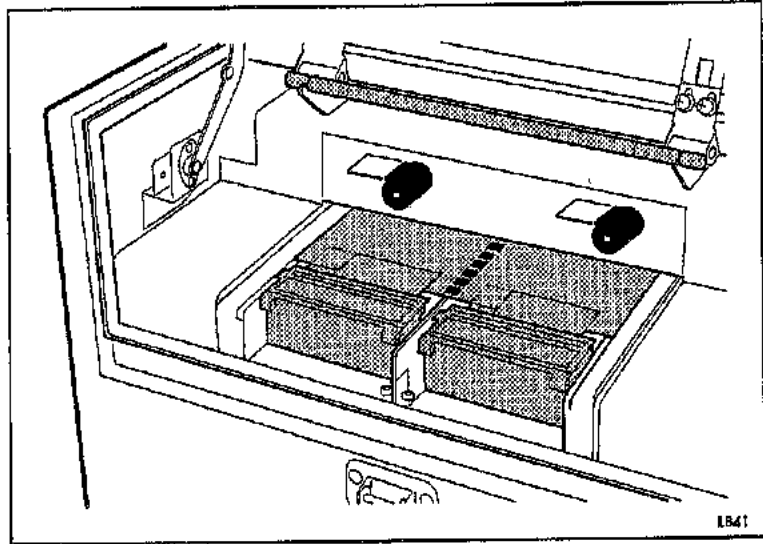
4   Close and secure the loading
    box lid. The red and orange
    lights are illuminated and the
    film enters the processor.
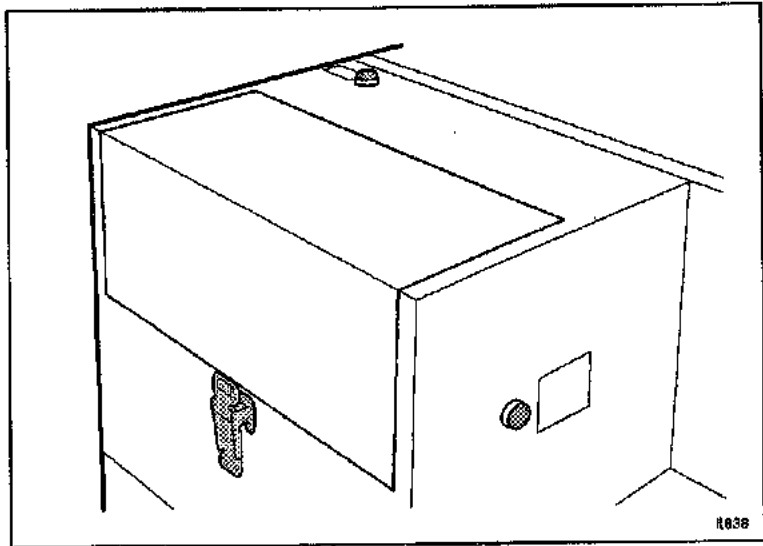
7.3 PROCESSING 35mm OR 16mm CUT LENGTH FILMS

35mm or 16mm cut length film is loaded into a magazine which must be located on the right hand track of the loading box. The film must feed into the processor emulsion side down. A winding unit is plugged into the auxiliary supply on top of the dryer and used to collect the processed film.

Note

The winding unit collects film processed in the right hand track only. The left hand track must remain empty.

The red cam lever press bar must be fitted. The display will show the position of the film in the right hand track and will show frame numbers for 35mm films, repeating from 1 to 99.

1 Lift off receiving box. Release the two screws on the processor frame. Locate winding unit and tighten the screws to secure. Plug the unit into the auxiliary supply socket. Select the development time.
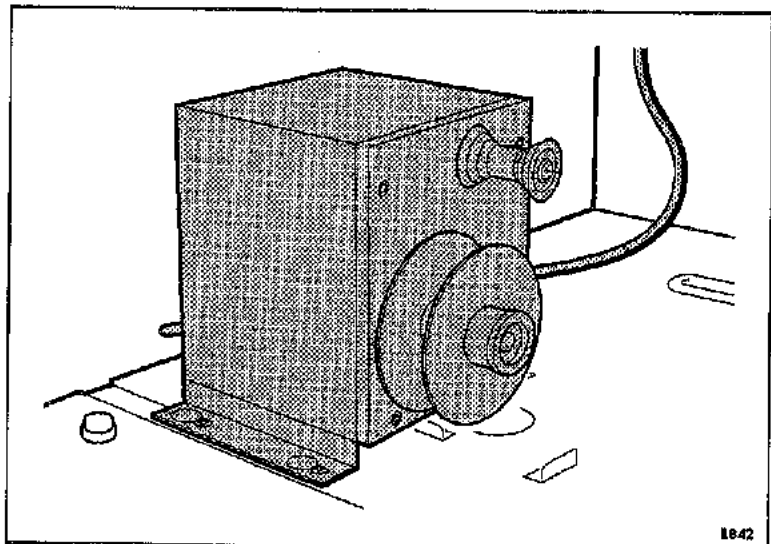
2 Open the loading box lid. Remove the cassette holder if fitted. Hold the film magazine and feed the leader into the processor.
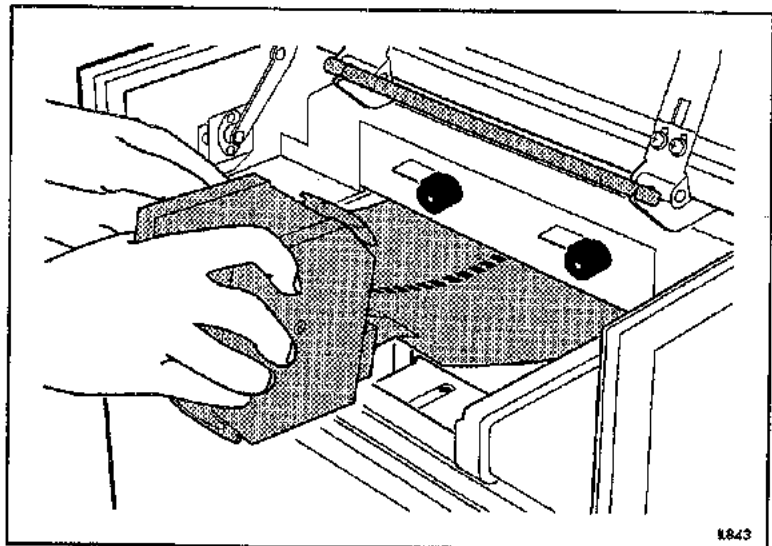
3 The leader will stop. Place
   the film magazine on the
   right hand track.
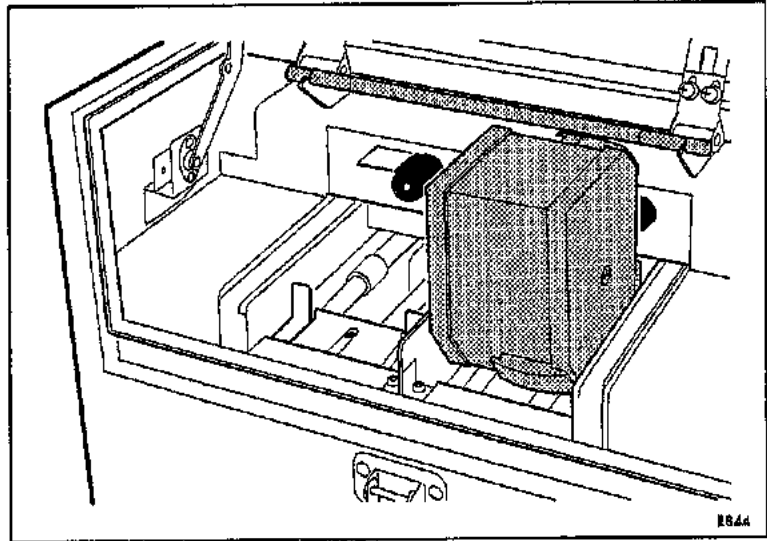
4 Close and secure the loading
   box lid. The red and orange
   lights are illuminated and the
   film enters the processor.
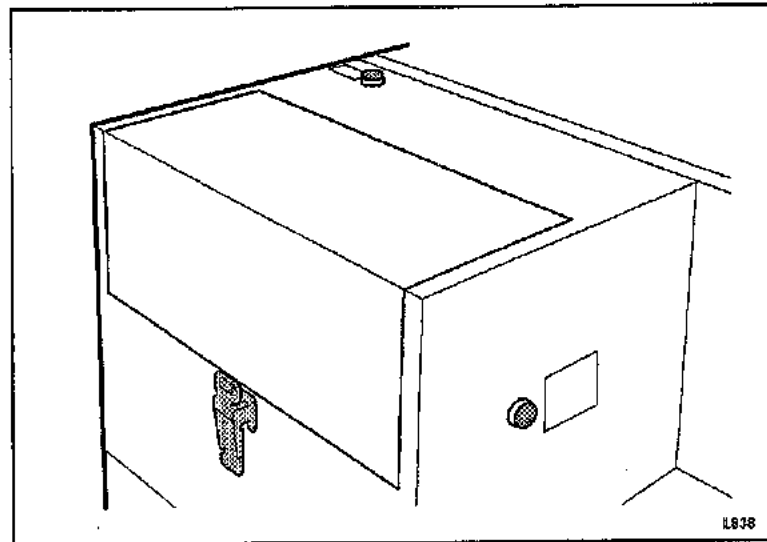
5 When the processed film
   feeds out, remove the tape
   and leader. Attach film onto
   a take-up spool or core,
   switch winding unit on.
   Switch unit off when
   processing is complete.
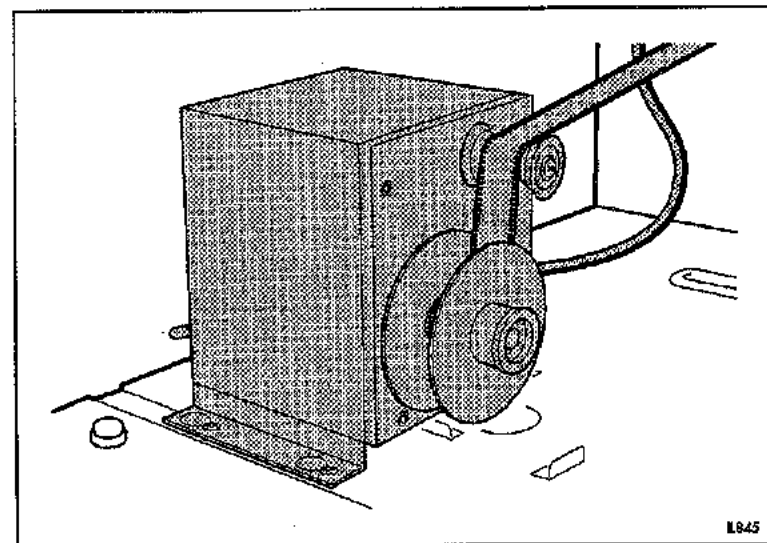
7.4 FILM GUILLOTINE

1   35mm cassetted film is automatically guillotined when the film has been taken into the processor.

2   The guillotine can also be used to stop any unexposed 35mm cassetted film being processed.

For example - 8 frames have been exposed on the film in the right hand track and 15 frames on the film in the left hand track. The display will show the number of frames taken into the processor. Always allow 1 extra frame to be taken in. When R 9 is displayed press MANUAL CUT RIGHT. This will guillotine the film in the right hand track so that at least the first 8 frames are processed. When L 16 is displayed press MANUAL CUT LEFT.

3   When the red light goes out, open the lid and remove the 35mm cassettes for re-use.

7.5 PROCESS CONTROL

To process film to a consistently high standard, it is essential that the condition and activity of the processing solutions are monitored. The ILFORD process control system is a method of monitoring the state of ILFORD replenishable film developers.

The fact sheet supplied with this manual gives detailed information for applying the ILFORD process control system to the ILFORD developer recommended for use in the ILFOLAB FP40 processor.

8
FINISH WORK

See figure 5.1.

1 The processor main power switch must remain on between working periods. At the end of the working period a simple sequence of actions prepares the processor for its next operation. Press 7 FINISH WORK and follow the instructions on the display. Refer to section 2.6g for more details.

2 The top rollers require wetting during the FINISH WORK procedure to ensure that any chemistry picked up on the rollers is washed back into the solution. Wet the top rollers identified on figure 5.1 with water using the washing bottle.

Note
Care must be taken when wetting the rollers as there are areas on the processor which must be kept dry. Always use the washing bottle.

3 With the 'POWER' and 'DRIVE' switches off and the 'TIMER' switch on, the 'TIMER' switch will be illuminated. The processor will automatically start at the pre-programmed time and the solution heaters will be switched on.

⚠️ **CAUTION**
The main power switch, the mains electrical supply and the water supply to the processor must remain on. This will enable the automatic timing sequences to operate and keep the fume extractor fans operating to prevent condensation in the processor.

4 The processor counts the number of films processed each day. If required this total may be cleared at the end of each day or before starting work. Refer to section 4.7 for more details.
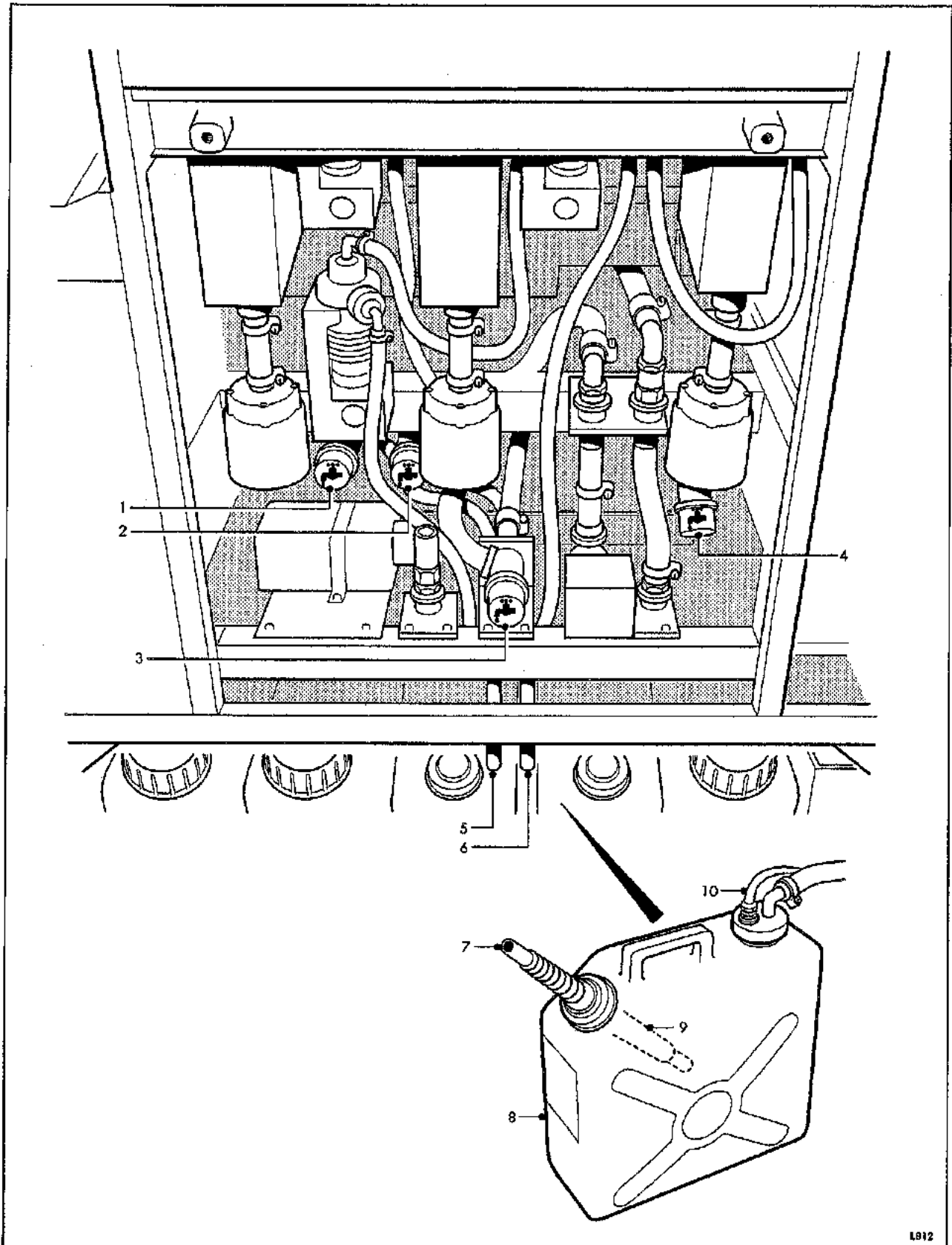
Figure 9.1   Draining the processor

DRAINING

Figure 9.1
1 Developer tank drain valve
2 Fixer tank drain valve
3 Wash water WS1 drain valve
4 Rinse solution WS3 drain valve
5 Developer working tank drain pipe
6 Fixer working tank drain pipe
7 Nozzle
8 Drain bottle
9 Nozzle (stored position)
10 Top cap and level sensor assembly

See figure 9.1.

⚠ **CAUTION**
Ensure your drainage arrangements comply with local regulations. Effluent Data Sheets for ILFORD recommended chemistry are supplied with this manual. Care must be taken when handling chemical solutions. Protective clothing, safety glasses and gloves must be worn.

1 The developer and fixer overflow is collected in separate drain bottles. The float switch in each bottle is triggered to give an audible signal when the bottle is almost full. The display shows *DRAIN BOTTLE FULL*.

2 Remove the lower panel to gain access to the bottles. Withdraw the bottle and remove the top cap and level sensor assembly. Place a tray under the assembly to collect any drips.

3 Each drain bottle is supplied with a nozzle to give better control when emptying the bottles. Remove the drain cap and fit the nozzle. Pour the effluent out.

4 Replace the nozzle and refit the drain cap. Refit the top cap and level sensor assembly. Place the bottle under the processor. Refit the panel.

5 Each working tank can be drained by opening the appropriate drain valve.

6 Water from tanks WS1, WS2 and WS3 drains into the main drain via the drain tray.

7 Drain pipes from the developer and fixer tanks are located on the right hand side of the processor. Place the appropriate drain bottle under the drain pipe and open the valve.

Note
The fixer tank capacity is 13 litres (2·86 gallons) and the drain bottle capacity is 10 litres (2·2 gallons). Care must be taken to avoid spilling fixer solution.
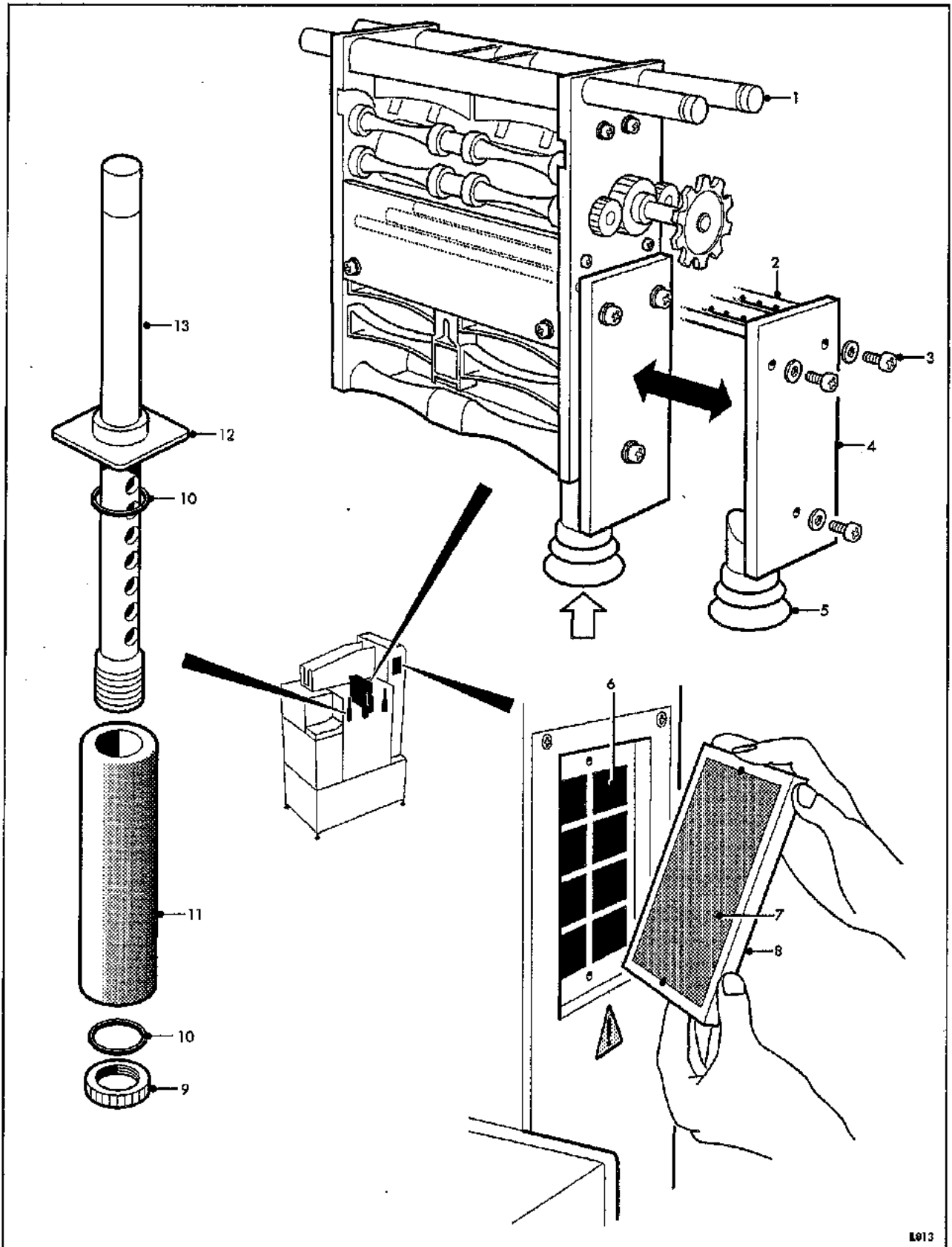
Figure 10.1   Cleaning

10

CLEANING AND SIMPLE REPAIRS

Figure 10.1

1   Rack 4
2   Spray bar
3   Screw
4   Grey side panel
5   Water supply pipe
6   Dryer compartment
7   Dryer filter
8   Holder
9   Nut
10 'O' ring
11 Filter element
12 Cover
13 Filter assembly

Cleaning is the only regular maintenance required on the ILFOLAB FP40 processor. Regular cleaning will ensure correct operation and consistently high processing quality.

⚠ **CAUTION**
Care must be taken when working with solutions. Protective clothing, safety glasses and gloves must be worn.

10.1 DAILY ROUTINE
The daily routines of 1 START WORK and 7 FINISH WORK are the only actions required to maintain the processor in good condition ready for processing.

10.2 WEEKLY ROUTINE

10.2a Racks
See figure 10.1.

1   Processing with dirty racks may cause transportation problems and scratches on the film.

2   Release the screws and remove the retaining plates. Lift the rack carefully.

Note
Always place a tray under the rack to prevent cross contamination of solutions, and to avoid splashing the areas of the processor which must be kept dry.

3   Wash each rack in clean running water with a brush and a cloth or sponge. Do not use soap solutions or solvents. Care must be taken to avoid damaging the rollers.

4   Rack 4 in tank WS2 is fitted with a spray bar. An uneven water spray can lead to marks on the film. Visually check that the spray bar is providing an even spray by inverting the rack and running water into the rack water supply pipe.

5   To clean the spray bars, release the three screws and withdraw the grey side panel complete with the bars. Clean out the spray bar holes with a length of fine wire. Refit the spray bars.

6   Refit each rack and secure the retaining plates.

Note

Always check that the racks are inserted correctly and secured with the retaining plates. This will prevent possible leader jams.

10.2b Leader sheets

1   Check the leaders for any damage. Do not use leaders with damaged perforations or any leader that is bent or has been cut.

Note

Damaged leaders can cause transport problems and damage to rollers.

10.3 MONTHLY ROUTINE

10.3a Racks

1   Remove the racks as described in section 10.2a. Visually check all rack components for damage, especially the surface of the rubber roller coverings. Damaged roller coverings will give marks on the film and must be replaced.

10.3b Replacing filter elements
See figure 10.1.

Note

The filter elements remove debris from the processing chemistry. This is essential for continued high quality processing.

1   The filter elements in all the processing tanks should be changed to permit free flow of circulated chemistry and removal of debris.

2   Remove the top panel. Unscrew the filter element assembly and withdraw it from the temperature control tank. Place the assembly in a tray to prevent drips or cross contamination. Release the nut and 'O' ring. Withdraw the filter.

3   Fit the new filter and secure in place with the 'O' ring and nut. Refit the filter assembly.

10.3c Cleaning the dryer filter element
See figure 10.1.

1   The filter element in the dryer unit should be cleaned.

Note

The dryer filter removes dust from the atmosphere before air passes onto the film. A heavily contaminated filter could lead to

the dryer heaters failing to operate.

2   Release the two cross head screws. Remove the filter holder and remove the filter. Wash the soiled filter under running water and dry it thoroughly between paper towels or tissues. Insert the filter into the holder, refit the assembly and secure the screws.

10.4   SIX MONTHLY ROUTINE

10.4a   Tanks
See figures 10.1 and 9.1.

1   Tanks should be drained and cleaned. Each tank can be drained by opening the appropriate drain valve (see section 9).

2   Release the screws and remove the retaining plates. Carefully lift out the racks. When each tank is empty, clean the sides of the tank with clean water and a cloth or brush.

3   Remove the top panel. Unscrew the filter element assembly and withdraw it from the temperature control tank. Place the assembly in a tray to prevent drips or cross contamination. Release the nut and 'O' ring. Withdraw the filter.

4   Close the drain valves and fill each tank with water. Refer to section 4.9 for more details.

⚠ **CAUTION**
Always fill each tank via the temperature control tank, not directly into the working tank. There are areas on the processor which must be kept dry.

5   Select the 'POWER' switch on to operate the circulating pumps for 2 to 3 minutes, then open the drain valves to drain the tanks.

6   Refit each rack and secure the retaining plates.

Note
Always check that the racks are inserted correctly and secured with the retaining plates. This will prevent possible leader jams.

7   Fit each new filter and secure in place with the 'O' ring and nut. Refit the filter assemblies.

8   Fill the tanks with solution as described in section 4.9.

11
FAULT FINDING

This section provides a list of checks to make if there are any faults in the processed films. The checks can be made by any competent person. If the remedy proves to be ineffective, contact your nearest ILFORD Selling Company, the address of which can be found on the back cover of this manual.

⚠️ **CAUTION**

If in doubt about making any of the checks consult a competent engineer. Any further repair work carried out by unqualified personnel could cause a hazard both to yourself and to the equipment, and may invalidate any guarantees applicable to the equipment.

Note

An interlock prevents the processor main drive from operating if the processor lid is raised.

	Symptom	Possible cause	Remedy
1	**Dirty negatives**	Dirty filter elements	Replace element. See section 10.3b
		White salt deposits in tank WS3	Change the rinse solution. Use recommended ILFORD rinse solution
		Rubber squeegee rollers in rack 5 are damaged	Replace rubber coverings
		Dust sticks to emulsion surface due to inadequate drying	Increase dryer temperature
		Developer contaminated	Drain tank and refill with fresh developer solution. See section 4.9
2	**Drying marks**	Spray bar holes blocked in rack 4	Clean the spray bars. See section 10.2a
		Rubber squeegee rollers in rack 5 are damaged	Replace rubber coverings
		Dirty filter elements	Replace element. See section 10.3b
		No wetting agent in final rinse	Drain tank WS3. Refill with fresh rinse solution. See section 4.9

Symptom	Possible cause	Remedy
	Dryer temperature is too high	Check the dryer temperature control. See section 4.3
	Using hardener in fixer solution	Use recommended ILFORD fixer solution without hardener
	Wetting agent is too concentrated	Drain tank WS3. Refill with recommended ILFORD rinse solution
	Unsuitable wetting agent	Drain tank WS3. Refill with recommended ILFORD rinse solution
3 Negative density incorrect	Developer temperature incorrect	Check developer actual temperature. See section 2.61
	Development time incorrect	Check selected development time. See section 4.4
	Inadequate developer solution	Check the developer tank level. Top up with water through the temperature control tank if evaporation has occurred. See section 4.9. If the loss is excessive, ie greater than 10mm in depth, check the drain valve is closed. Top up with fresh solution
	Developer incorrectly prepared	Drain the tank and refill with fresh developer solution. See section 4.9
	Developer replenisher incorrectly prepared	Drain the tank and bottle. Refill tank with fresh developer solution. Refill bottle with fresh developer replenisher solution. See section 4.9
	Developer replenishment rate incorrect	Check and adjust. See section 4.2
	Developer contaminated	Drain the tank and flush with water. See section 9. Refill with fresh developer solution. See section 4.9

| Symptom	Possible cause	Remedy
	Developer solution overdiluted	Drain tank and refill with fresh developer solution. See section 4.9. When solution level is low through evaporation, do not overfill with water when topping up. This will overdilute the working strength solution
4 **Negatives not fully fixed**	Fixer solution exhausted	Drain tank and refill with fresh fixer solution. See sections 9 and 4.9. Check and adjust the fixer replenishment rate. See section 4.2
	Fixer temperature low	Check fixer actual temperature. See section 4.3
	Fixer incorrectly prepared	Drain tank and refill with fresh fixer solution. See sections 9 and 4.9
	Fixation time is too short	Reduce the developer temperature and increase the development time. This will increase the fix and wash times. See sections 4.3 and 4.5
	Fixer solution overdiluted	Drain tank and refill with fresh fixer solution. See section 4.9. When solution level is low through evaporation, do not overfill with water when topping up. This will overdilute the working strength solution
5 **High solution temperature**	Developer does not maintain set temperature	Disconnect the cooling water return pipe from the water storage tank and feed it directly into the drain tray. See section 3.5
	High ambient temperatures	Check incoming water temperature is 15-20°C (59-68°F). Install a water cooling unit to chill the supply if required. See section 3.10

	Symptom	Possible cause	Remedy
6	**Wet films**	Dryer cuts out	Clean the dryer filter element. See section 10.3c
		Inadequate dryer temperature	Increase dryer temperature. See section 4.3
		Drying times too short	Reduce the developer temperature and increase the development time. This will increase the drying time. See sections 4.3 and 4.4
7	**Static discharge marks on 120/220 roll films**	Static from input rollers	Ensure the red cam lever press bar is in position. See section 7.2
		Operator handling static	Avoid creases or rapid unspooling and spooling of film
8	**Damaged leader sheet**	Incorrectly positioned splicing tape	Check the splicing tape is positioned correctly. See sections 6.2, 6.4, 6.6
		Racks not assembled correctly or incorrectly located	Check
9	**Film does not remain attached to leader**	Film and leader not spliced correctly	Use correct splicing method. See sections 6.2, 6.4, 6.6
		Incorrect tape used	Use correct splicing tape
10	**Heavy coloration of negatives**	Unacceptable level of residual sensitising dye stain	See symptoms 4 and 18
11	**Processor drive stops with a film in the processor**	Power cut	Operate the processor manually. See section 12.2a
12	**Processor will not show READY FOR PROCESSING**	Solution temperatures do not rise	Contact your nearest ILFORD Selling Company
13	**Scratches on processed film**	Velvet surfaces in loading box have been contaminated	Contact your nearest ILFORD Selling Company

Symptom	Possible cause	Remedy
	Roller not rotating freely	Check and wash all racks. See section 10.2a
14 Leader jams in processor	Racks not assembled correctly or incorrectly located	Check
	Crystal formation in leader guide slots	Clean the racks. See section 10.2a
	Damaged leader sheet	Discard leader sheet
15 Excessive curl on processed film	Dryer temperature is incorrect	Adjust the dryer temperature. See section 4.3
16 Noises in loading box, red light does not go out, guillotine does not operate	Film retained by cassette or film holder	Press the manual cut switch. Darken the room or cover the loading box. Unlock the loading box lid by turning the screw on the lid catch. Cut film away from cassette
17 Water splashing from tank WS1	Air pump flow rate set too high	Adjust air pump. See section 4.5
18 Film incorrectly washed	Water flow rate is too low	Check that the total wash water drain volume exceeds 5 litres (8·8 pints)/minute
	Air pump flow rate set too low	Adjust air pump. See section 4.5
	Spray bar holes blocked in rack 4	Clean spray bars. See section 10.2a
	Water supply temperature too low	Check incoming water temperature is 15-20 °C (59-68 °F)
19 Processing streaks on leading frames	Poor splicing. Surplus developer retained in the splice	Ensure there are no wrinkles in the splicing tape. See section 6
	Failure to remove tape from 120/220 film	Remove all old tape
	Film overlaps leader	Butt the film and leader together, do not overlap. See section 6

EMERGENCY PROCEDURES

12.1a Emergency manual operation of processor

See figure 12.1.
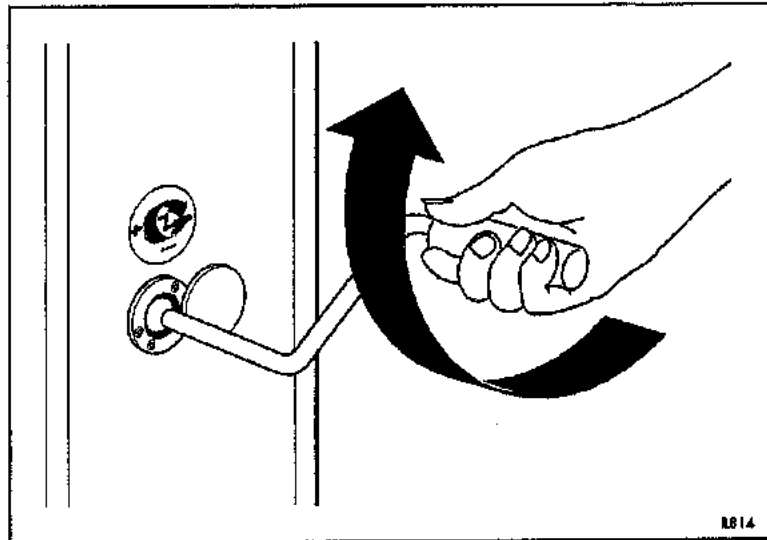
Figure 12.1   Emergency film retrieval

1 If the processor drive stops due to a power failure or malfunction when a film is in the processor, processing can be continued manually.

2 Slide the cover from the manual drive on the right hand side of the processor as shown in figure 12.1. Locate the hand crank handle in the housing.

3 Turn the handle clockwise steadily so that each turn takes six seconds. The film will progress through the processor.

4 Guide the wet film carefully out of the processor. The film may require additional fixation and washing and will have to be dried.

12.1b Film jam

1 A film may jam when being withdrawn from the loading box. If it is a 35mm cassetted or cut length film, use the MANUAL CUT switch to guillotine the film. Refer to section 7.4.

2 For 120/220 roll films, darken the room or cover the loading box. Unlock the loading box lid by turning the lid catch. Cut the jammed film. Close the loading box lid and continue processing.

3 If the leader jams in one of the racks, darken the room or cover the processor. This is not necessary if the film has passed fully into the fixer. Remove the film receiving box and lift the

processor lid. Release the retaining plates and lift the rack. Place a tray under the rack to prevent cross contamination. Pull the leader sheet and film through the rack by hand.

⚠️ **CAUTION**
The film will be wet with solutions and care must be taken when handling the film. Protective clothing, safety glasses and gloves must be worn.

4 Continue processing the film by hand. Refit the racks and secure them with the retaining plates.

13
SPECIFICATION

PERFORMANCE DATA

Developing time	40-388 seconds (adjustable)
Noise level	56-57 dB(A)

FILMS ACCEPTED

Cassettes and roll films	135, 120, 220
Lengths	16mm, 35mm (30·5m (100 ft) x 125µ (0·005 inch) base thickness) (45m (147 ft) x 100µ (0·004 inch) base thickness) (61m (200 ft) x 75µ (0·003 inch) base thickness)
Types	Black and white panchromatic films Black and white infra red sensitive films

PROCESSING CAPACITY (ROLLS/HOUR)

Film	Development time			
	60 seconds	90 seconds	120 seconds	190 seconds
135-36 exposure	46	30	22	14
135-24 exposure	62	40	30	18
120	76	50	38	24
220	44	28	22	14

DIMENSIONS

Height	1540mm (60·63 inches)
Width	530mm (20·87 inches)
Length	997mm (39·25 inches)

WEIGHTS

Processor with solutions	218 kg (480·60 lbs)
Processor without solutions	184 kg (405·65 lbs)

ELECTRICAL

Voltage	200V	210V	220V	230V	240V
Frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz
Phase	Single	Single	Single	Single	Single
Rated current	13·5A	14·1A	14·6A	13·0A	13·4A
Capacity	2·7KVA	2·9KVA	3·2KVA	3·0KVA	3·2KVA

This equipment must be connected to the power supply via a circuit breaker fused at 16A

TANK CAPACITIES

Developer	10 litres (2·2 gallons)
Fixer	13 litres (2·86 gallons)
Wash water WS1	7 litres (1·54 gallons)
Wash spray WS2	–
Wash rinse WS3	4 litres (0·88 gallons)

WATER SUPPLY

Water supply	7·5 litres/min (1·65 gallons/min) maximum
Water supply temperature	15°C (59°F) minimum 20°C (68°F) maximum
Wash bath	4 litres/min (0·87 gallons/min)
Wash spray	1·5 litres/min (0·33 gallons/min)
Cooling water	2 litres/min (0·44 gallons/min)

REPLENISHMENT

Replenishment	Developer, fixer and rinse
Number of bottles	1 each for developer, fixer and rinse
Bottle capacity	10 litres (2·2 gallons)

	DRAINAGE
Maximum capacity	7·5 litres/min (1·65 gallons/min)
Overflow	Developer and fixer
Number of bottles	1 each for developer and fixer
Bottle capacity	10 litres (2·2 gallons)

	ACCESSORIES
Standard accessories Supplied with the ILFORD ILFOLAB FP40	Hand crank handle Leader sheet (15) Splicer Tape Washing bottle Filter assembly (3) Tank covers (3) Fuse (4) Hose (3) Pipe clip (6) Elbow joint, 90° (3) Film receiving box Replenishment bottle (3) Drain bottle (2) Film holder (2) Red cam lever press bar Water storage tank Control panel label - French, German, Italian Tool set with tool bag comprising Screwdriver (2) Spanner (2) Allen key (2) Pozidrive screwdriver Holding tool
Optional accessories Contact your nearest ILFORD Selling Company for details	35mm or 16mm film processing kit comprising a 35mm film magazine with 35mm and 16mm spool assemblies and a winding unit with 35mm and 16mm spool assemblies Tape dispenser Film extractor Film extractor tape 110 film magazine 120/220 film magazine 126 film magazine Film winder Water control panel Dark box

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