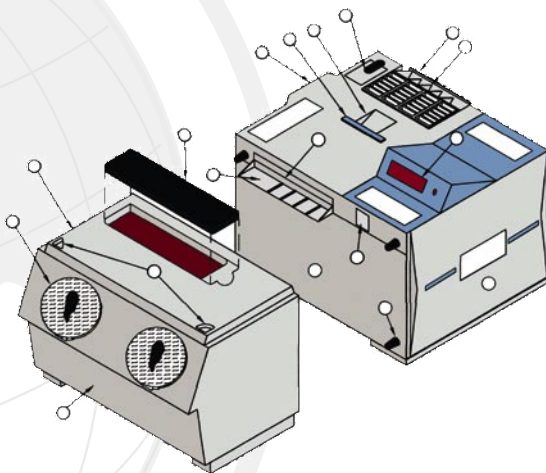


VELOPEX[®]

Automatic X-ray Film Processor

Extra - X MK5
Xtender



FOR TRAINED TECHNICAL PERSONNEL

Technical manual

CAUTION:

This Document is for use by a qualified technical representative ONLY.

Any use by unqualified personnel will void the VELOPEX warranty.



Machine serial number to be
quoted on all correspondence:

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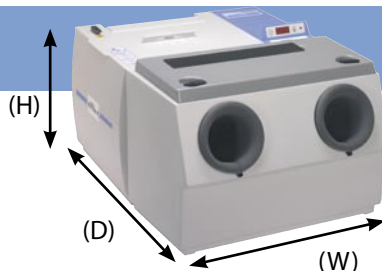
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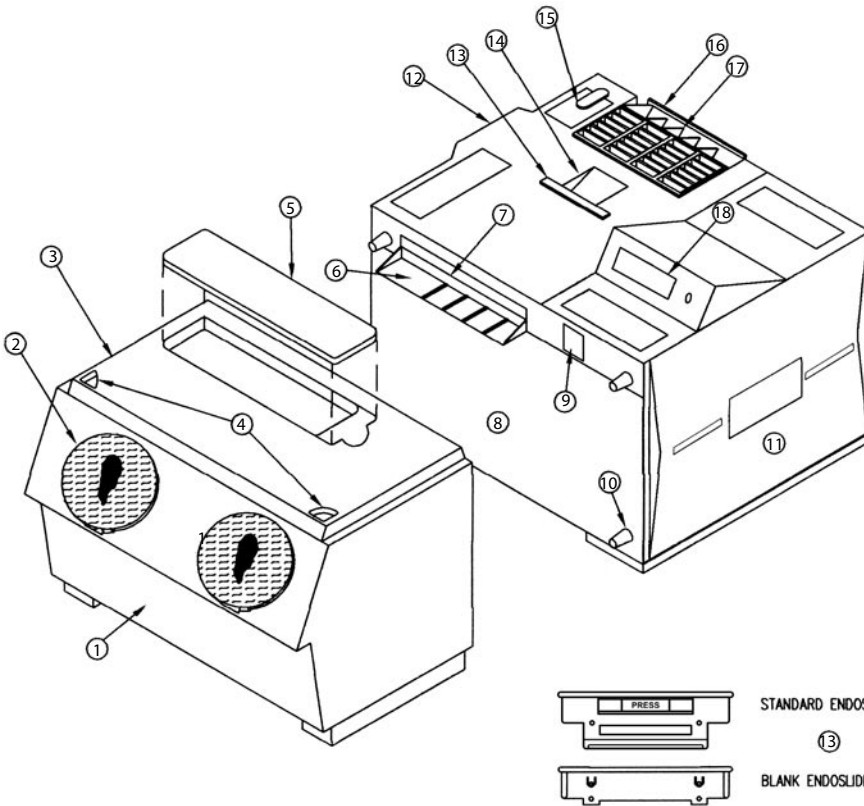
Specification



Width (W)	510mm / 20"
Depth (D)	470mm / 18½"
Inc. Loader	740mm / 29"
Height (H)	340mm / 13½"
Weight:	
Empty	21Kg / 46¼lb
Full Tanks	27Kg / 59½lb
Tank Capacity	3.8litres / 6¾Imp Pints each
Operating Temperatures:	<i>Water- should not exceed 28°C (82.4°F)</i>
Developer	25.5°C (77°F) / 30°C (86°F)
Fixer	30°C (86°F) / 33°C (91.4°F)
Electric Supply	100-120V, 200-240V, 50/60Hz
Warm-up Time	10 min. approx.
Film Feed Speed	470mm / 18½" per min.
Max. Film Width	260mm / 10¼"
Processing time*: Dry	4 min. approx.
Wet-Endodontic	2 min. approx.
High Speed	2 min. approx.
Input Power	1150W
Environmental Conditions:	Indoor use Only
Environment Temperature	5°C-26°C (41°F-78.8°F)
Maximum Relative Humidity	80%

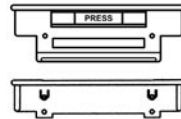
* in the unit's first few cycles, processing time can vary between four and five minutes, then the process time will stabilise.

External Components (Front View)



- ① Day Light Loader
- ② Hand Entry Ports
- ③ Loader Lid
- ④ Loader Lid Locks
- ⑤ Loader Lens Cover
- ⑥ Film Entry Tray/Guide
- ⑦ Beak Sensor
- ⑧ Front Panel
- ⑨ Initiation Sensor

- ⑩ Loader Coupling Points
- ⑪ Side Panel (Control)
- ⑫ Machine Lid
- ⑬ ENDO Slide
- ⑭ ENDO Film Collector
- ⑮ Machine Lid Lock
- ⑯ Film Collector Backplate
- ⑰ Film Collector
- ⑱ Digital Display

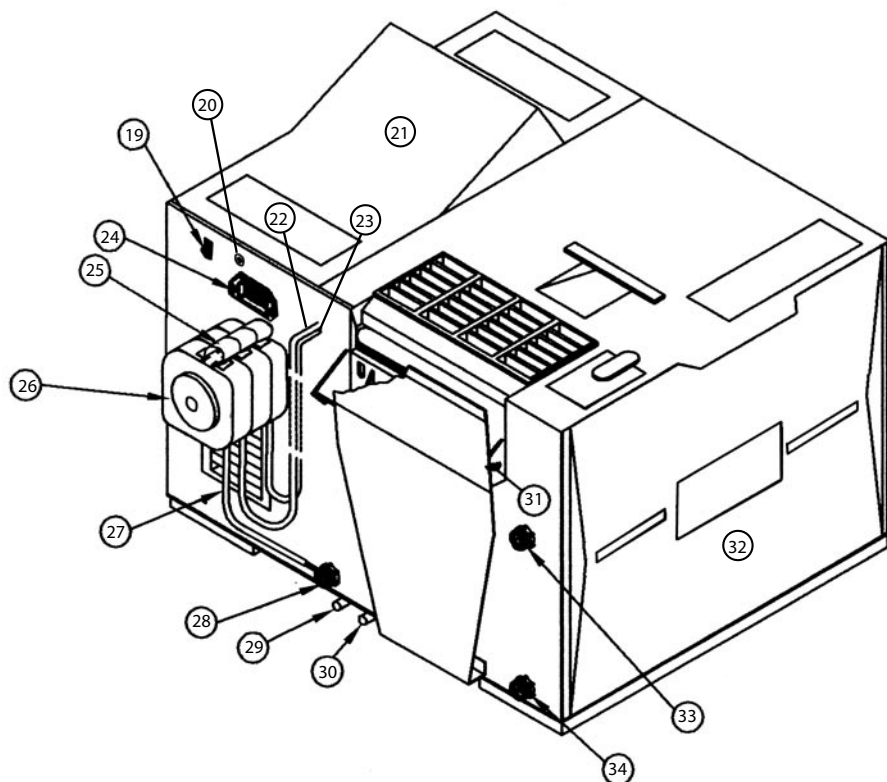


STANDARD ENDOSLIDE

⑬

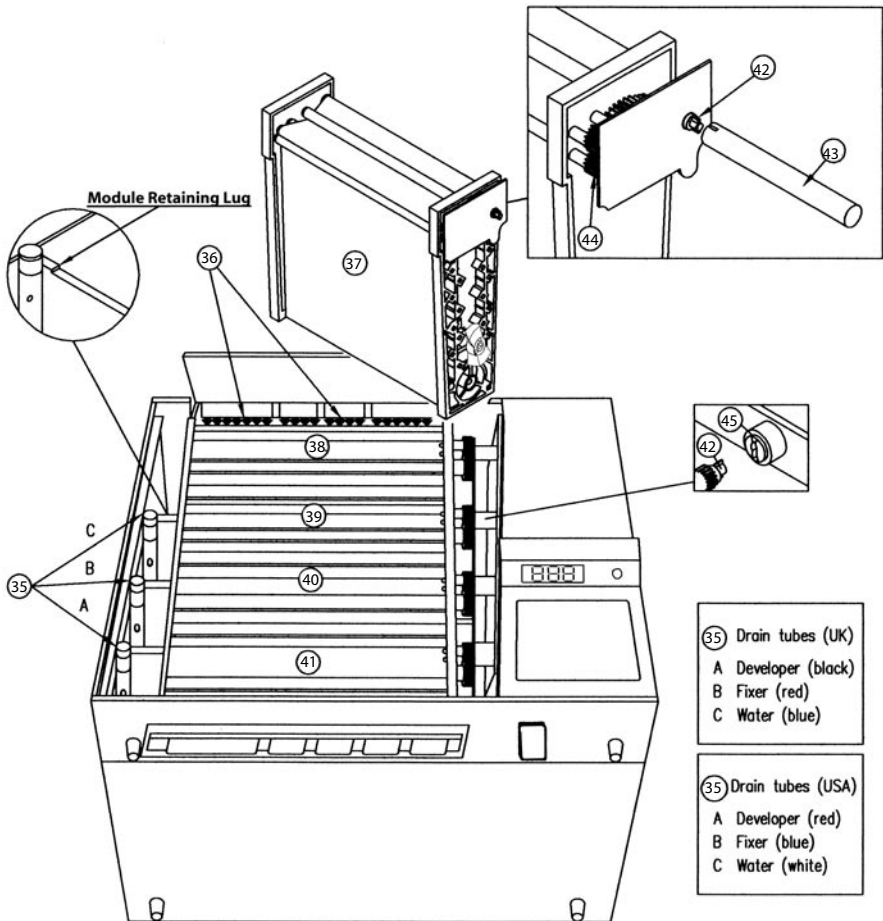
BLANK ENDOSLIDE (ALTERNATIVE)

External Components (Back View)



- | | |
|-------------------------------------|--|
| ①⑨ Main Switch | ②⑦ Water Replenisher Inlet Hose (Optional) |
| ②⑩ Control Panel Retaining Screw | ②⑧ Water Inlet |
| ②① Control Panel | ②⑨ Developer Waste |
| ②② Developer Replenisher Inlet Tube | ③① Fixer Waste |
| ②③ Fixer Replenisher Inlet Tube | ③② Film Catcher |
| ②④ Power Inlet Socket | ③③ Side Panel (Tank) |
| ②⑤ Doors Clip | ③④ Water Overflow |
| ②⑥ Replenisher Pump (Optional) | ③⑤ Water Waste |

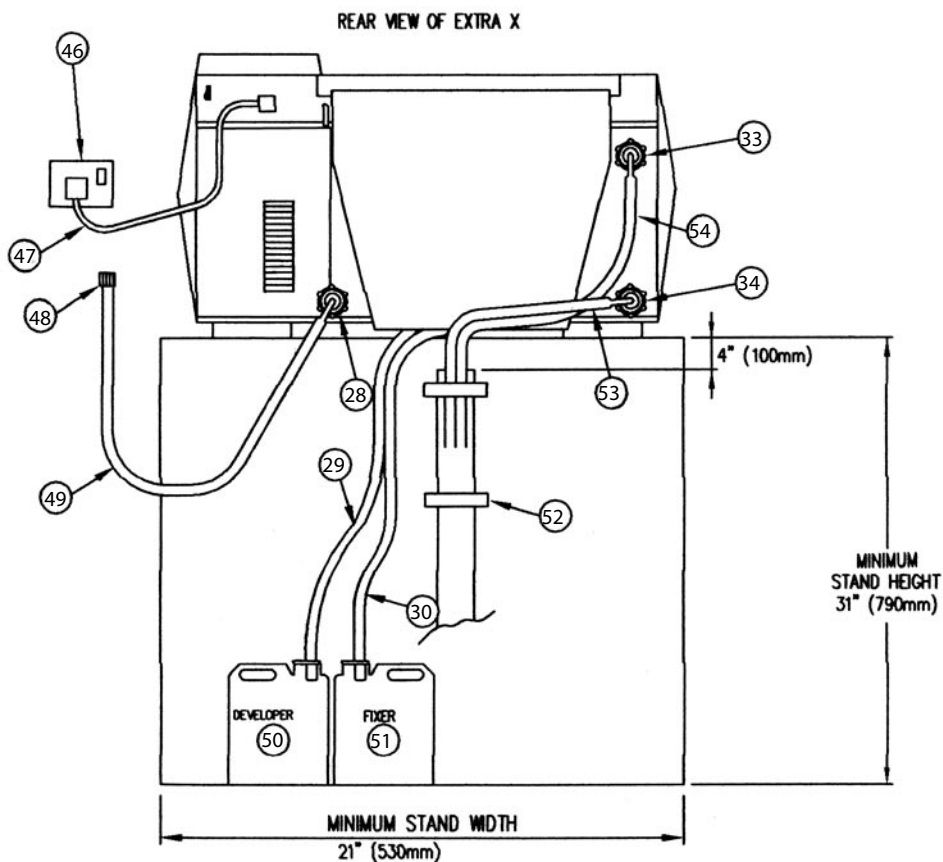
Internal Components



- 35 Drain Tubes
- 36 Anti Static Strip
- 37 Module Belt
- 38 Dryer Module
- 39 Water Module
- 40 Fixer Module

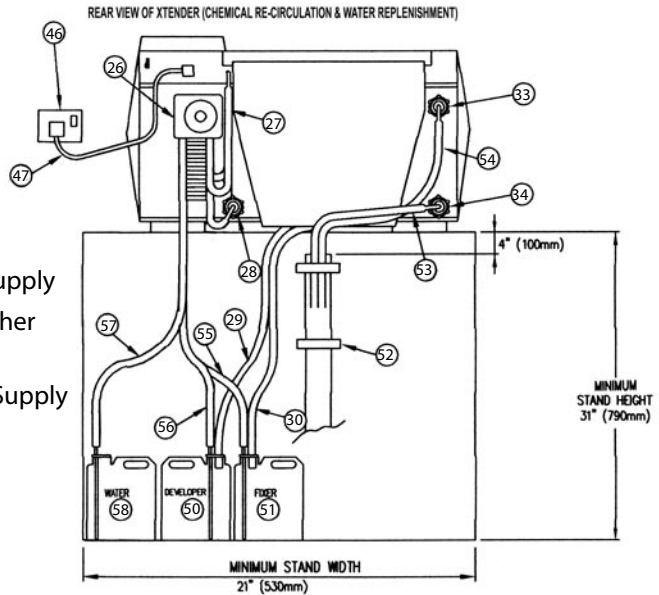
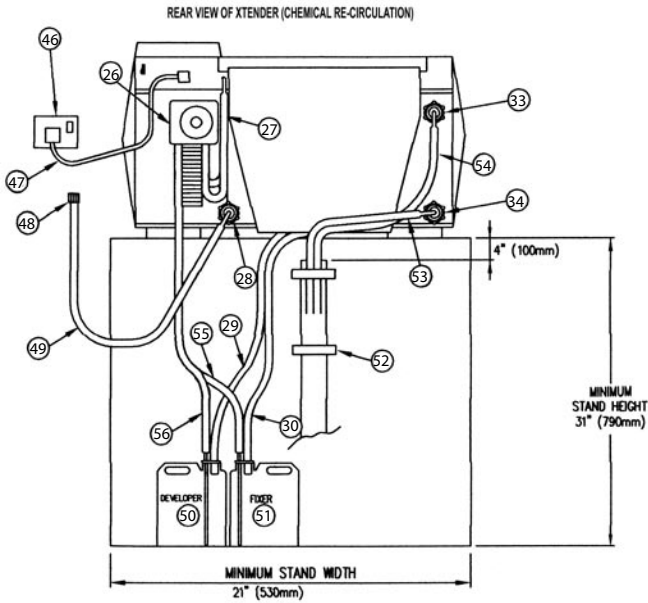
- 41 Developer Module
- 42 Main Drive Gear
- 43 Turning Tool
- 44 'D' Shaped Centre Gears
- 45 Drive Dog

Plumbing Layout



- | | |
|------------------------|--|
| (28) Water Inlet | (48) Cold Water Hose Union |
| (29) Dev. Waste | (49) Flexible Hose - Cold Water Supply |
| (30) Fix Waste | (50) Dev. Chemical Container |
| (33) Water Overflow | (51) Fix. Chemical Container |
| (34) Water Waste | (52) Water Waste Drain Pipe |
| (46) Electrical Supply | (53) Flexible Hose - Water Waste |
| (47) Mains Lead | (54) Flexible Hose - Water Overflow |

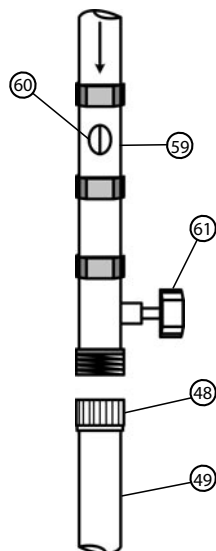
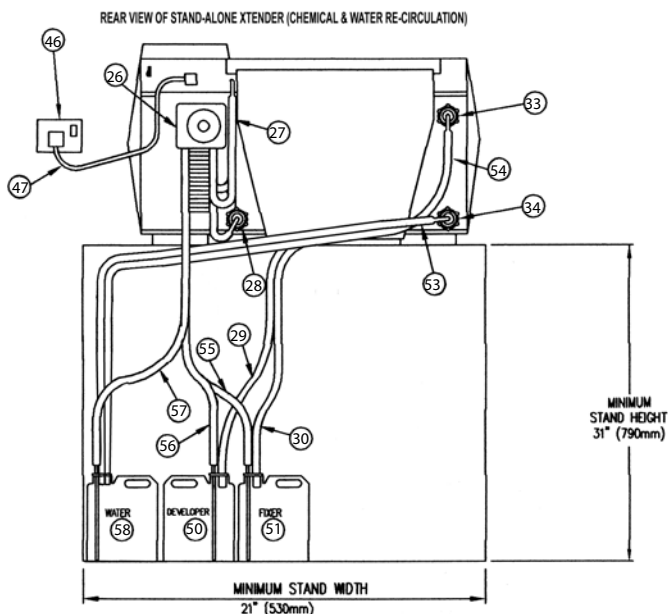
Plumbing Layout (Cont.)



- 27 Chemicals Inlet
- 55 Fixer Replenisher Supply
- 56 Developer Replenisher Supply
- 57 Water Replenisher Supply
- 58 Water Container

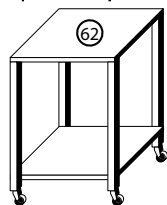
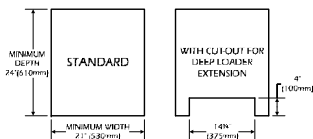
Plumbing Layout (Cont.)

DIAGRAMS



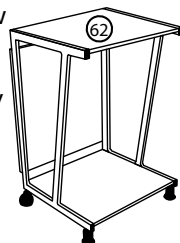
MACHINE STAND
(OPTIONAL) USA

WORKTOP DIMENSIONS
FOR STAND ONLY



DEPTH - 15.5" (394 mm)
WIDTH - 23.5" (597 mm)
HEIGHT - 31.0" (787 mm)

MACHINE STAND (OPTIONAL)
WORLDWIDE



DEPTH - 16.5" (419 mm)
WIDTH - 26.0" (660 mm)
HEIGHT - 31.0" (787 mm)

27 Chemical Inlet

28 Water Inlet

29 Dev. Waste

30 Fix Waste

33 Water Overflow

34 Water Waste

46 Electrical Supply

47 Mains Lead

48 Cold Water Hose Union

49 Flexible Hose - Cold Water Supply

50 Dev. Chemical Container

51 Fix. Chemical Container

52 Water Waste Drain Pipe

53 Flexible Hose - Water Waste

54 Flexible Hose - Water Overflow

55 Fixer Replenisher Supply

56 Developer Replenisher Supply

57 Water Replenisher Supply

58 Water Container

59 Isolator Valve

60 Valve Control

61 Domestic Appliance Service Valve / Faucet

62 Machine Stand

Pre Installation Instructions

• Siting of the VELOPEX



When using the machine in daylight or a darkroom, avoid sources of intense light. Do not mount the unit under a window, fluorescent light or flood lamp.

IMPORTANT NOTE: A well ventilated position is mandatory.

The ambient temperature must be below 78.8°F (26°C).

Prevent siting the machine above or near other electrical or mechanical equipment. Surfaces susceptible to water or chemical damage should be avoided, such as carpeted areas.

1. COUNTER PLAN (REFER ALSO TO MACHINE LOCATION & DRILLING TEMPLATE IL-31)

- Use a Counter that will support a minimum of 200 lbs. (91 Kg.).
- With a min. Height of 31 in. (79cm.).
- With a min. Width of 21 in. (53cm.).
- With a min. Depth of 24 in. (61cm.).

This will give you a working area of 3.5 sq.ft (0.32 sq. m.) (See page 8).

When the machine is filled with chemicals, make sure the stand does not rock or shake. NEVER move the machine with chemicals in the tanks.

2. ELECTRICAL SUPPLY

- See Spec. Table (page 2).
- The power source must be within three (3) feet (1m) of the machine above the counter and well separated from the water supply. It should be easily accessible for operation and maintenance.

3. COMMERCIAL WATER SUPPLY

ATTENTION! Use only the hoses supplied with this machine.

- Water temperature no higher than 82.4°F (28°C).
- A Faucet adjusted to a water flow rate of 0.27gal/min (1.0 ltr./min).
- The supply should be fitted with an Isolating Valve just prior to the main On/Off faucet/valve which should be adjusted **before installation** to limit water flow to delivery rate of 0.27gal/min (1.0ltr./min).
- The output side of the Main On/Off faucet/valve must have a ¾" male thread (see diagram on page 8). The faucet/valve should be situated in such a position that can be easily turned off each day.

Pre Installation Instructions (Cont.)

IMPORTANT NOTE: *The water inlet hose supplied with this machine is not a standard Domestic Appliance Hose. It is fitted with a water flow restrictor valve designed to deliver water at a max. rate of 0.27gal/min (1.0ltr./min). It is suitable for all installations where the mains water supply is rated between 0.2 & 10 Bar. However, for installations without mains water supply, e.g.: where a header tank is employed (min. height 6ft. (1.83m) above machine) a standard hose without restrictor must be used and the flow regulated to 0.27gal/min (1.0ltr/min) by a separate Control Valve.*

4. DRAIN

- a. A corrosion resistant PVC drainpipe 1.5 in. (38mm) diameter with a length of 22-24 inches (56-61 cm).

NOTE: The Drain Pipe should not rise higher than four (4) inches below the bottom of the machine (see page 1).

5. VELOPEX free standing Machine Stand

USA:

- a. Shelf dimensions 15.5in. (39.4cm) by 23.5 in. (59.7cm).
- b. Shelf height "lower" 9in. (22.9cm) and "upper" 31in. (78.7cm).

WORLDWIDE:

- a. Shelf dimensions 19.5in. (49.5cm) by 20.3 in. (51.7cm).
- b. Shelf height "lower" 9in. (22.9cm) and "upper" 31.9in. (81.0cm).

6. STAND ALONE UNIT USING A WATER RECIRCULATION KIT

- a. Supplied Replenisher Pump.
- b. Supplying 5 liq.oz./min. (150 ml/min.).
- c. Supply Tubing.
- d. Water Container 2.5 gal. (9.4 ltr.) capacity.

• Unpacking the VELOPEX

NOTE: *For unpacking and lifting the machine into position it is important to have assistance.*

The machine comes in a single carton containing:

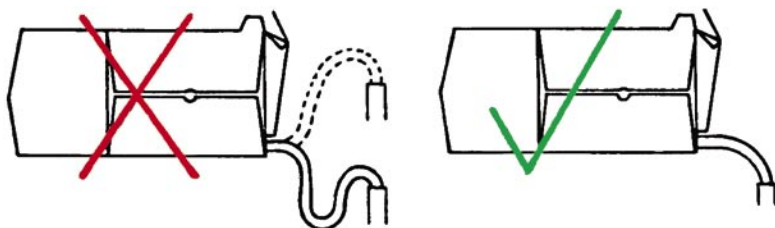
Machine in "darkroom" configuration, Operator's Manual, Hoses, Electrical Cord, Transport Module Turning Tool, Cleaning Brush, Chemical Change Chart and a box of

Pre Installation Instructions (Cont.)

Cleaning Tablets (UK only).

1. Familiarise yourself with the layout of the machine by referring to illustrations at the front of this manual. It is useful to refer to these illustrations as you progress through the manual.
2. Lift the machine from the carton and position on counter top. Remove outer and inner packaging, including carry-straps and tape securing film-catcher. The transport modules are protected by internal packing pieces: these must be discarded.
3. Connect the two Water Waste hoses to the back of the machine (labelled 'water overflow' and 'water drain').
4. Cut hoses to allow 8-12 inches (200–300mm) to be inserted into the waste outlet stand-pipe, ensuring no loops or kinks are left in them. Place hoses in drain, and see diagram – they must not rise higher than the outlet on the back of the machine.

WARNING: Any rise in the height of these pipes above the level of the outlet on the machine will cause incomplete drainage, and could cause the machine to flood.



WARNING: X-ray radiation can be harmful to patient, technician and dentist. Inadequate lead shielding of the darkroom or film storage area will also cause fogging from exposure of films to stray x-ray radiation. Consult your local codes, Health Department or Dental Equipment Dealer for proper construction of darkroom or placement of film processing equipment in the vicinity of x-ray radiation sources.

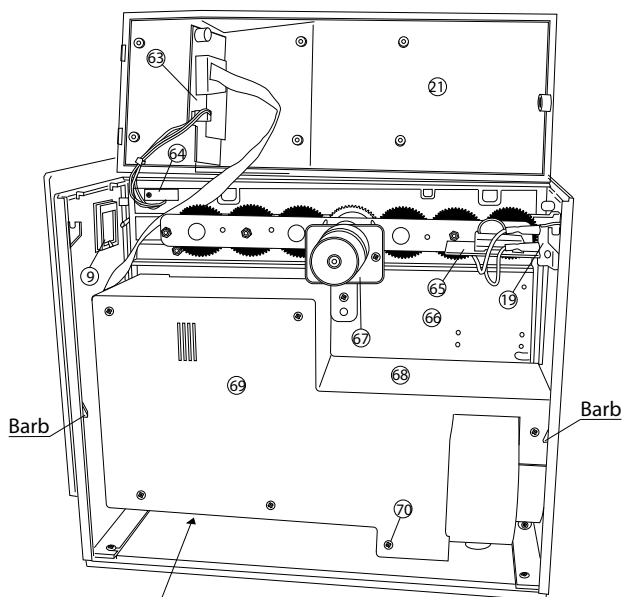
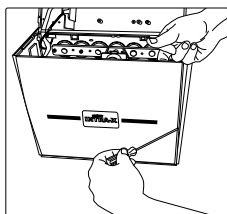
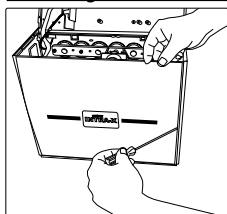
NOTE: Always Switch off Mains Power and Remove Electricity Plug before beginning any work or inspection procedure.

Internal Layout

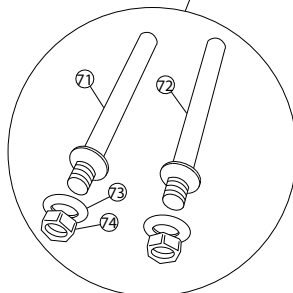
• Access to Internal Components

1. To access internal workings of the machine unscrew control Panel retaining screw (item 20, page 4).
2. The control panel may then be hinged upwards and lifted away if needed.
3. The side panel may then be removed by releasing one side of the panel at a time and by pushing out the front and back to disengage the barbs (see diagrams below).

Removing the Side Panel



- ⑨ Initiation Sensor
- ①⑨ Mains Switch
- ②① Control Panel
- ⑥③ Display PCB
- ⑥④ Lid Sensor
- ⑥⑤ IEC PCB
- ⑥⑥ Motor Board
- ⑥⑦ Drive Motor
- ⑥⑧ Cassette
- ⑥⑨ Cassette Lid



- ⑦⑦ Cassette Lid Retaining Screw
- ⑦① Dev. Chemical Heater
- ⑦② Fix. Chemical Heater
- ⑦③ Chem. Heater Retaining Washer
- ⑦④ Chem. Heater Retaining Nut

Replacing Components

• Replacing Cassette

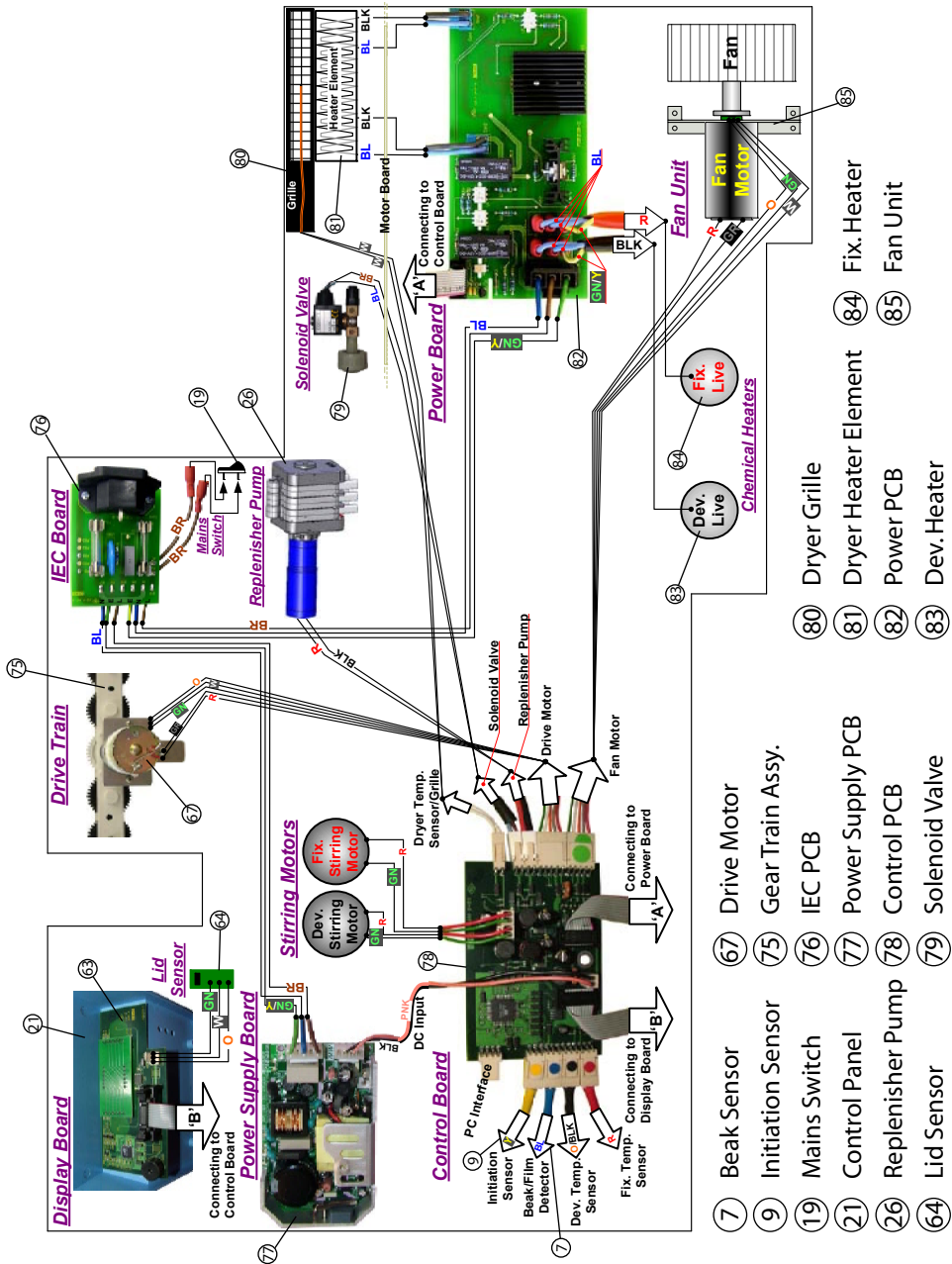
1. Remove Control Panel – Unscrew Retaining Screw.
2. Remove Control's Side Panel.
3. Remove Cassette Lid – Unscrew Seven retaining Screws.
4. Unplug all External Components – Four Sensors (Coloured Sleeves), Drive Motor, IEC Wires, Chemicals Heaters, and Display.
5. Slide Power PCB out – Enough to Reach the Screw hidden underneath.
6. Unscrew Four Cassette Retaining Screws and Remove Cassette.
7. To Insert New Cassette Reverse Procedure.

• Replacing Motor Board

1. Remove Control Panel – Unscrew Retaining Screw.
2. Remove Control's Side Panel.
3. Remove Cassette Lid – Unscrew Seven retaining Screws.
4. Unplug all External Components – Beak Sensor, Initiation Sensor, Display, and IEC Wires.
5. Unscrew Eight Motor Boards Retaining Screws – Three on External Back Panel, Three on Bottom Base Panel, One on External Front Panel, and One on Internal Front Panel.
6. Lift Motor Board Out.
7. To Insert New Motor Board Reverse Procedure.

PCBs/Wiring Diagram

MAINTENANCE



Replacing Components (Cont.)

• Replacing Heater Element & Grille

1. Heater Element -
 - a. Remove Control Panel – Unscrew Retaining Screw.
 - b. Remove Control's Side Panel.
 - c. Remove Cassette Lid – Unscrew Seven retaining Screws.
 - d. Release Heater Element Wires (2 x Blue & 2 x Black) from Power PCB.
 - e. Remove Lid, Side Panel, Tanks, and Dryer Module.
 - f. Unscrew Four Grille Retaining Screws & Carefully Pull away the Grille.
 - g. Slide the Heater Element Out.
 - h. To Insert New Heater Element Reverse Procedure.
2. Grille –
 - a. Remove Control Panel – Unscrew Retaining Screw.
 - b. Remove Control's Side Panel.
 - c. Remove Cassette Lid – Unscrew Seven retaining Screws.
 - d. Remove Dryer Temperature Sensor from Control PCB.
 - e. Release the Crimps from the Molex Connector Shell.
 - f. Remove Lid, Tanks Side Plate, and Dryer Module.
 - g. Unscrew Four Grille Retaining Screws & Carefully Pull away the Grille.
 - h. To Insert New Grille Reverse Procedure.

• Replacing Sensors

1. **Initiation Sensor** –
 - a. Remove Control Panel – Unscrew Retaining Screw.
 - b. Remove Control's Side Panel.
 - c. Remove Cassette Lid – Unscrew Seven retaining Screws.
 - d. Unplug Sensor (Yellow) from Control PCB.
 - e. Remove Sensor from Inner side of Front Panel (it is held by Double-Sided Tape).
 - f. Locate New Sensor in same location – Strip off the Double-sided Tape on back of Sensor and Press against Panel.
 - g. Plug into Control PCB.

Replacing Components (Cont.)

2. **Beak Sensor –**

- a. Remove Control Panel – Unscrew Retaining Screw.
- b. Remove Control's Side Panel.
- c. Remove Cassette Lid – Unscrew Seven retaining Screws.
- d. Unplug Sensor (Blue) from Control PCB.
- e. Unscrew Retaining Screw on External Side of Front Panel.
- f. Remove Bottom Film Entry Guide, then Remove Top Beak.
- g. To Insert New Beak Reverse Procedure.

3. **Chemical Temp. Sensor/s –**

- a. Remove Control Panel – Unscrew Retaining Screw.
- b. Remove Control's Side Panel.
- c. Remove Cassette Lid – Unscrew Seven retaining Screws.
- d. Unplug Temp. Sensor from Control PCB.
- e. Unscrew Plastic Nut from Sensor in the Tank.
- f. Pull Sensor Out of Tank Through the Motor Board Hole.
- g. To Insert New Temp. Sensor Reverse Procedure.

• **Replacing PCBs**

1. **DC Power Supply –**

- a. Remove Control Panel – Unscrew Retaining Screw.
- b. Remove Control's Side Panel.
- c. Remove Cassette Lid – Unscrew Seven retaining Screws.
- d. Unplug IEC Wire and DC Input Wire.
- e. Unscrew Four Retaining Screws and Pillars/Feet.
- f. To Insert New DC Power Supply PCB Reverse Procedure.

2. **Control –**

- a. Remove Control Panel – Unscrew Retaining Screw.
- b. Remove Control's Side Panel.
- c. Remove Cassette Lid – Unscrew Seven retaining Screws.
- d. Unplug Four Sensors, Display, DC Input, Stirring Motors, Power Board, Fan Motor, Drive Motor, and Dryer Temp. Sensor.
- e. Unscrew Nylon Retaining Screw and Remove PCB.
- f. To Insert New Control PCB Reverse Procedure.

Replacing Components (Cont.)

3. **Power** –

- a. Remove Control Panel – Unscrew Retaining Screw.
- b. Remove Control's Side Panel.
- c. Remove Cassette Lid – Unscrew Seven retaining Screws.
- d. Unplug Chemicals Heaters, IEC, Control, and Unscrew Dryer Heater Element Connections.
- e. Slide Power PCB Out.
- f. To Insert New Power PCB Reverse Procedure.

4. **IEC** –

- a. Remove Control Panel – Unscrew Retaining Screw.
- b. Remove Control's Side Panel.
- c. Remove Cassette Lid – Unscrew Seven retaining Screws.
- d. Unplug IEC Wires from DC Power Supply & Power PCBs.
- e. Unplug Wires from Switch.
- f. Unscrew Two Retaining Screws.
- g. Remove IEC PCB.
- h. To Insert New IEC PCB Reverse Procedure.

• **Replacing Heater Cartridge**

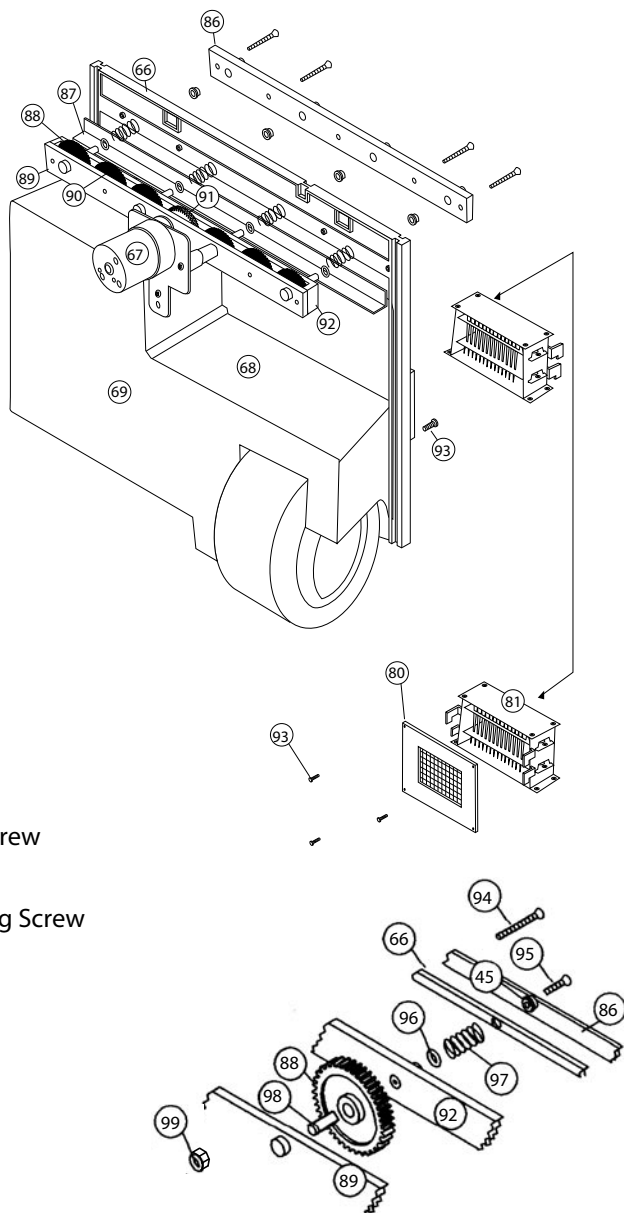
1. Remove Control Panel – Unscrew Retaining Screw.
2. Remove Control's Side Panel.
3. Remove Cassette Lid – Unscrew Seven retaining Screws.
4. Unplug Chemical Heater Wires from Power PCB.
5. Unscrew Both Retaining Screws and springs on Heater Cartridge.
6. Pull Cartridge Out.
7. To Insert New Cartridge Reverse Procedure.

• **Replacing Drive Mechanism**

1. Drive Motor –
 - a. Remove Control Panel – Unscrew Retaining Screw.
 - b. Remove Control's Side Panel.
 - c. Remove Cassette Lid – Unscrew Seven retaining Screws.
 - d. Unplug Drive Motor from Control PCB.
 - e. Unscrew Two Retaining Screws on Motor.

Motor Board and Gear Train Assembly

- ④⑤ Drive Dog
- ⑥⑥ Motor Board
- ⑥⑦ Drive Motor
- ⑥⑧ Cassette
- ⑥⑨ Cassette Lid
- ⑧① Dryer Grille
- ⑧② Dryer Heater Element
- ⑧⑥ Drive Dog Cover Strip 'A'
- ⑧⑦ Support Bar
- ⑧⑧ Module Drive Gears (x4)
- ⑧⑨ Motor Support Strip 'C'
- ⑨① Idler Gears (x2)
- ⑨② Main Drive Gear
- ⑨③ Gear Support Strip 'B'
- ⑨③ Dryer Grille Retaining Screw
- ⑨④ Gear Strip Screw
- ⑨⑤ Drive Dog Strip Retaining Screw
- ⑨⑥ Thrust Washer
- ⑨⑦ Drive Dog Spring
- ⑨⑧ Drive Dog Shaft
- ⑨⑨ Clamping Nut



Replacing Components (Cont.)

- f. Remove Motor & Unscrew Third Retaining screw from Stud/Foot.
- g. To Insert New Drive Motor Reverse Procedure.
- 2. Gear Train –
 - a. Remove Control Panel – Unscrew Retaining Screw.
 - b. Remove Control's Side Panel.
 - c. Follow Instructions:
 - i. The assembly consists of three strips (items 86, 89 and 92) and the motor board (item 66) which is clamped between gear strips 92 and 86. It is essential to maintain this assembly order. To replace the main drive gear (item 91) on the motor shaft, do not dismantle the gear strip assembly. Simply remove the motor (item 67) by referring to Drive Motor Replacing section above. Withdraw the main drive gear upwards from the gear strip assembly and replace with the new gear. Finally refer to Drive Motor Replacing section and replace the motor. To replace the other gears (items 88 and item 91) follow the procedure as for replacing the drive dogs:
- 3. Drive Dogs –
 - a. Remove Control Panel – Unscrew Retaining Screw.
 - b. Remove Control's Side Panel.
 - c. Follow Instructions:
 - i. Remove the four clamping nuts (item 99).
 - ii. Remove the motor support strip 'C' (item 89) and the gear support strip 'B' (item 92 along with the drive dog shaft (item 98).
 - iii. Remove the gears (item 91 and 88), the drive dog springs (item 97) and the thrust washers (item 96).
 - iv. Now dismantle the assembly for cleaning. Be careful not to lose any of the components.
 - v. Wipe away the old grease from the springs, thrust washers and the drive dog shafts.
 - vi. Assemble the module drive gears (item 88) onto the drive dog shafts (item 98).
 - vii. Feed the shafts through the gear support strip 'B' (item 92) and

Replacing Components (Cont.)

- apply a little silicone grease to the shafts before fitting the thrust washers (item 96) and the drive dog springs (item 97). The grease will hold the springs in place during re-assembly.
- viii. Fit the module drive gears (item 88) onto their spigots on the gear support strip 'B' (item 92) and assemble the motor support strip 'C' (item 89) into place.
 - ix. Remove the old drive dogs (item 45) from the motor side of the motor board (item 66) and wipe clean the holes in the drive dog cover strip 'A' (item 86).
 - d. Insert new Drive Dogs; smear the outside with silicone grease.
 - e. Offer up the above assembly to its position on the motor board (item 66) taking care that the motor mounting holes are at the bottom of the motor support strip 'C' (item 89).
 - f. Starting at one end, align and centre the drive dog shaft (item 98) into the drive dog (item 45).
 - g. Hold the assembly in position and fit the end clamping nut (item 99) loosely to its gear strip assembly screw (item 94).
 - h. Work along the other three drive dog shafts (item 98) aligning and entering them into their drive dogs (item 45) and fitting the clamping nut (item 95) loosely to each gear strip assembly screw (item 94), as you go.
 - i. Finally tighten all four clamping nuts (item 99). Check that all the gears turn freely and the drive dogs return freely to their outer position after being compressed.
 - j. Slip the main drive gear (item 91) into place in the centre of the gear train and refit the motor as described in Motor Mounting section.

Replacing Components (Cont.)

• Replacing Fan

1. Remove Control Panel – Unscrew Retaining Screw.
2. Remove Control's Side Panel.
3. Remove Cassette Lid – Unscrew Seven retaining Screws.
4. Unplug Fan from Control PCB.
5. Unscrew Two (or Four in an earlier Version) Retaining Screws.
6. Remove Fan Unit.
7. To Insert New Fan Reverse Procedure – ***Make Sure to Align the Fan's Shaft with the Centre of the Round Slot in the cassette.***

• Replacing Lid Sensor

1. Remove Control Panel – Unscrew Retaining Screw.
2. Remove Control's Side Panel.
3. Unplug Lid Sensor from Display.
4. Unscrew Lid Sensor Retaining Screw.
5. Remove Lid Sensor.
6. To Insert New Sensor Reverse Procedure.

• Replacing Display

1. Remove Control Panel – Unscrew Retaining Screw.
2. Unplug Control Cable and Lid Sensor Wire from Display.
3. Pull Display away from Control Panel, Held by Double Sided Tape.
4. To Insert New Display – Remove Coating from double-Sided Tape on New Display PCB.
5. Stick Display PCB onto Control Panel – Make Sure the Digits are Central in Label Aperture.
6. Reconnect Wires – ***Make Sure Lid Sensor Wire is wrapped around Control Cable and Positioned Away from Drive Gear Train.***

Replacing Components (Cont.)

• Replacing Solenoid

1. Remove Control Panel – Unscrew Retaining Screw.
2. Remove Control's Side Panel.
3. Remove Cassette Lid – Unscrew Seven retaining Screws.
4. Remove Solenoid Valve Connection from Control PCB.
5. Release the Crimps from the Molex Connector Shell.
6. Release Valve as Seen in the Diagram Below.
7. Pull Solenoid Out.
8. To Insert New Solenoid Valve Reverse Procedure.

22 Dev. Rep. Inlet Tube

23 Fix. Rep. Inlet Tube

28 Water Inlet

29 Dev. Waste and Washer

30 Fix. Waste and Washer

33 Water Overflow

34 Water Waste

35 Drain Tubes

100 Rotation Stop

101 Water Inlet Pipe

102 Retaining Clip

103 Solenoid Coil

104 Straight Connector

105 Water Overflow Pipe

106 Chemical Tank

107 Solenoid Valve

108 Connector Locking Cap

109 Rubber Washer

110 Solenoid Connector

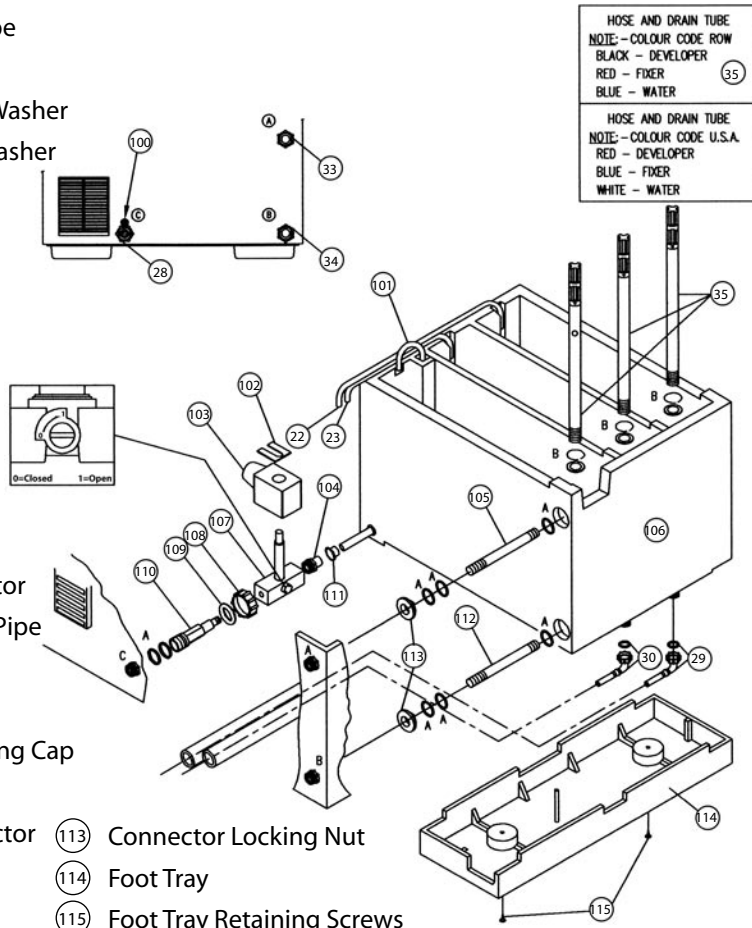
111 Bush

112 Water Drain Pipe

113 Connector Locking Nut

114 Foot Tray

115 Foot Tray Retaining Screws



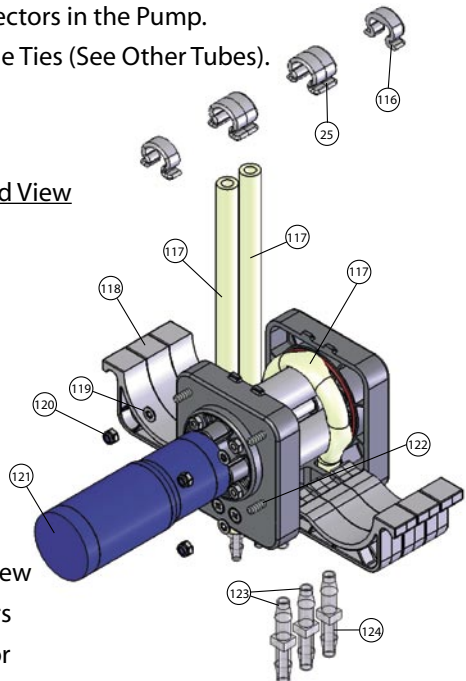
Replacing Components (Cont.)

• Replacing Replenisher Pump

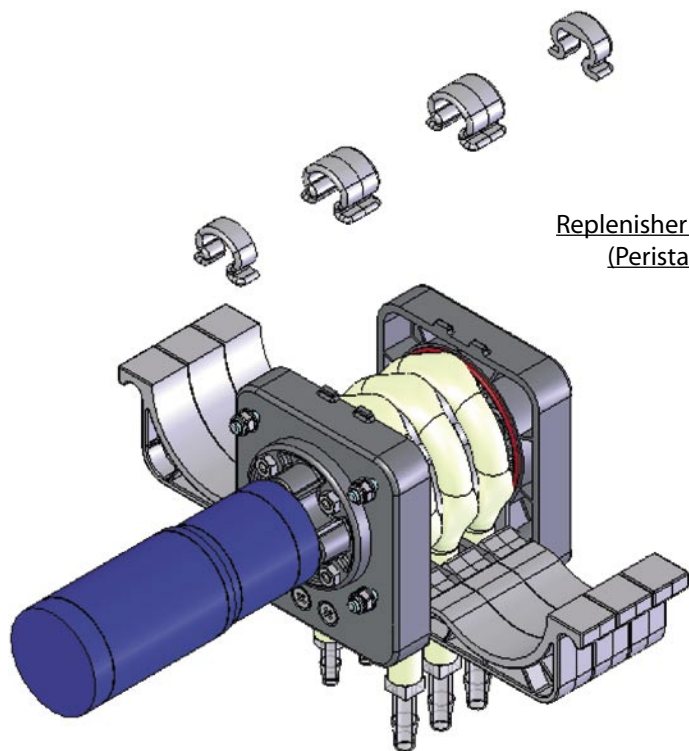
1. Remove Control Panel – Unscrew Retaining Screw.
2. Remove Control's Side Panel.
3. Remove Cassette Lid – Unscrew Seven retaining Screws.
4. Remove Replenisher Pump Connection from Control PCB.
5. Remove Clips from Pump and Open Doors - Let Remaining Liquids to drain.
6. Remove Hoses from Replenisher Tubes (Item 27, page 7 - Both Dev. & Fix.).
7. Remove Water Inlet Connection.
8. Unscrew Three Retaining Screws (See Diagram Below).
9. Pull Pump Out.
10. To Insert New Replenisher Pump Reverse Procedure. When Re-Circulating Water, Make Sure to Turn the Screw on the Solenoid Valve to Position '1' (See Illustration on page 22).
11. Fitting Water Re-Circulating Tubes (Page 25) on to the Pump:
 - a. Insert Both Tubes in to Boiling Water for 30 seconds.
 - b. Fit Tubes on to the Free Connectors in the Pump.
 - c. Secure Connections with Cable Ties (See Other Tubes).

Replenisher Pump - Exploded View

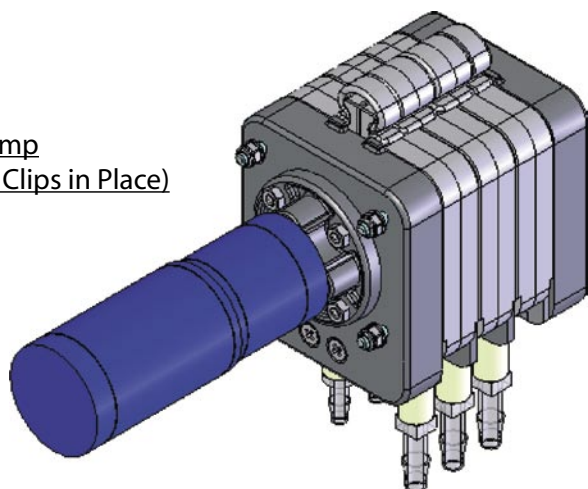
- (25) Doors Clip
- (116) Half Door Clip
- (117) Peristaltic Tube
- (118) Doors
- (119) Washer
- (120) M4 Nylock Nut
- (121) Rep. Motor
- (122) M4X18 Retaining Screw
- (123) Thin Tube Connectors
- (124) Thick Tube Connector



Replacing Components (Cont.)

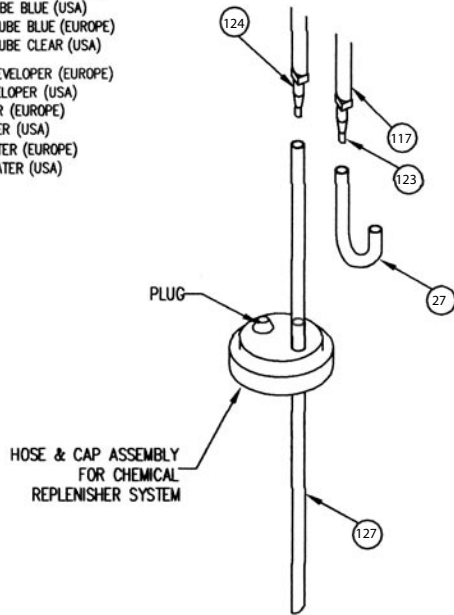
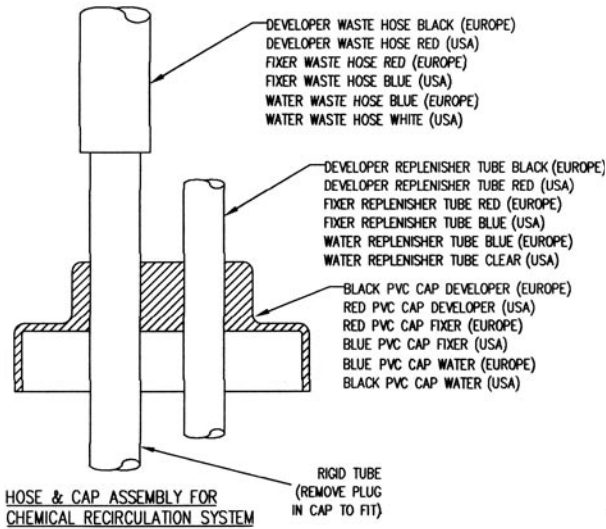


Replenisher Pump - Exploded View
(Peristaltic Tubes in Place)

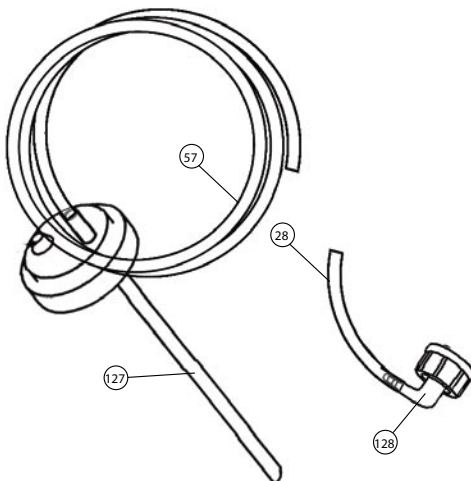


Replenisher Pump
(Peristaltic Tubes, Doors & Clips in Place)

Replacing Components (Cont.)



Water Re-Circulating Tubes (to be fitted on to the pump)



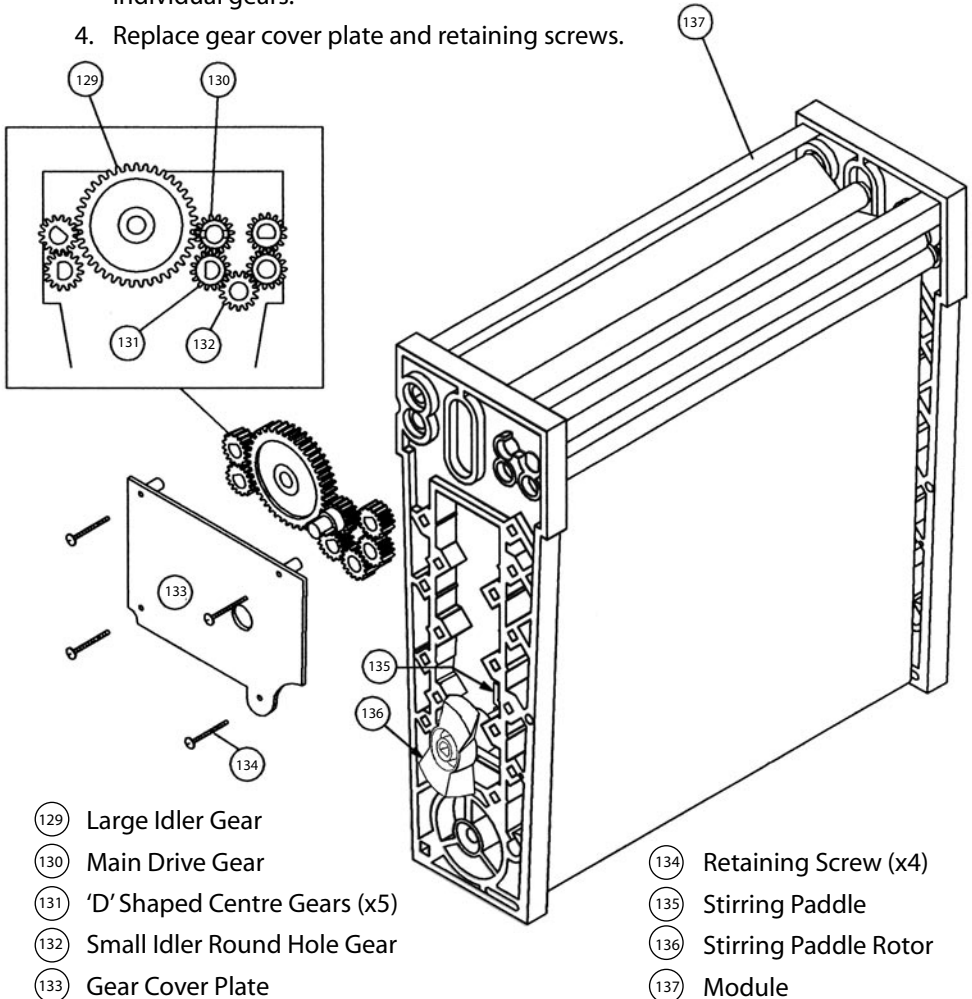
- 27 Chemical Inlet
- 28 Water Inlet Hose
- 57 Water Replenisher Supply Hose
- 117 Peristaltic Tube
- 125 Thin Tube Connectors
- 126 Thick Tube Connector
- 127 Rigid Tube/Straw
- 128 3/4" Elbow Connector

Module Gear

• Replacing Module Gear

NOTE: Only Gears and Tension Springs are replaceable on the Transport Module. For any other fault, replace complete Module.

1. Remove retaining screws on gear cover plate (item 133).
2. The gear cover plate can now be gently eased off; remove old gears, and replace with new gears to their correct positions.
3. To ensure smooth running, ALWAYS replace complete gear set - not individual gears.
4. Replace gear cover plate and retaining screws.



Replacing Components (Cont.)

• Re-Setting Machine

1. Make Sure that the Fault is Fixed Before Re-Setting the Machine.
2. Disconnect Mains Lead.
3. Remove Control Panel – Unscrew Retaining Screw.
4. Unplug Control Cable from Display.
5. Close Control Panel.
6. Reconnect Machine's Main Cord.
7. Switch Machine On – **Caution: Live Electric Elements are Reachable.**
8. Wait for a Minimum of Two minutes.
9. Switch Machine off.
10. Unplug the Main Cord.
11. Remove Control Panel.
12. Re-Connect Control Cable to display.
13. Close Control Panel and Screw with Tamper Resistant Screw.
14. Re-Connect the Main Cord.
15. Switch Machine on.
16. Run through an Initiation Cycle and at Least One More Normal Cycle to test the Functionality of the Machine.

• Re-Programming

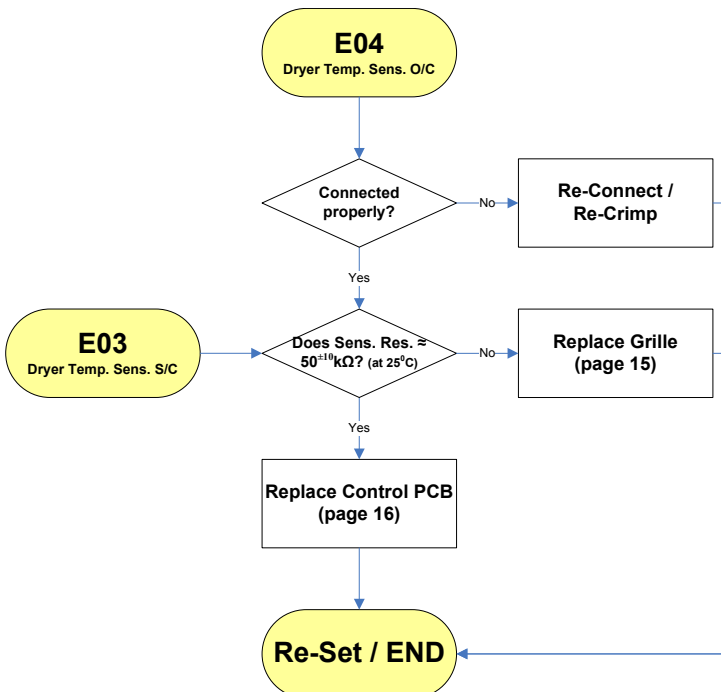
1. Control Software –
 - a. Remove Control Panel – Unscrew Retaining Screw.
 - b. Unplug Control Cable and Lid Sensor Wire from Display.
 - c. Plug Control Cable into Key Fob Board – Middle Socket.
 - d. Switch M/C on – LED will flash for a Part of a Sec.
 - e. Press Button on Key Fob – LED will Flash for 30 Sec. Approx.
 - f. When Light Goes Out, Switch M/C off.
 - g. Re-Connect Control Cable to Display – Make Sure that the Clips “Click” on Connection.
 - h. Locate Control Panel and Secure with Tamper Proof Screw.

Errors Cause and Action

2. Display Software –

- a. Remove Control Panel – Unscrew Retaining Screw.
- b. Unplug Control Cable and Lid Sensor Wire from Display.
- c. Plug Control Cable into Key Fob Board – Top Smaller Socket.
- d. Plug Loose Grey Cable into the Middle Socket on Key Fob Board.
- e. Plug the Other End of the Cable into the Display Board.
- f. Switch M/C on – LED will flash for a Part of a Sec.
- g. Press Button on Key Fob – LED will Flash for 20 Sec. Approx.
- h. When Light Goes Out, Switch M/C off.
- i. Re-Connect Control Cable to Display – Make Sure that the Clips “Click” on Connection.
- j. Locate Control Panel and Secure with Tamper Proof Screw.

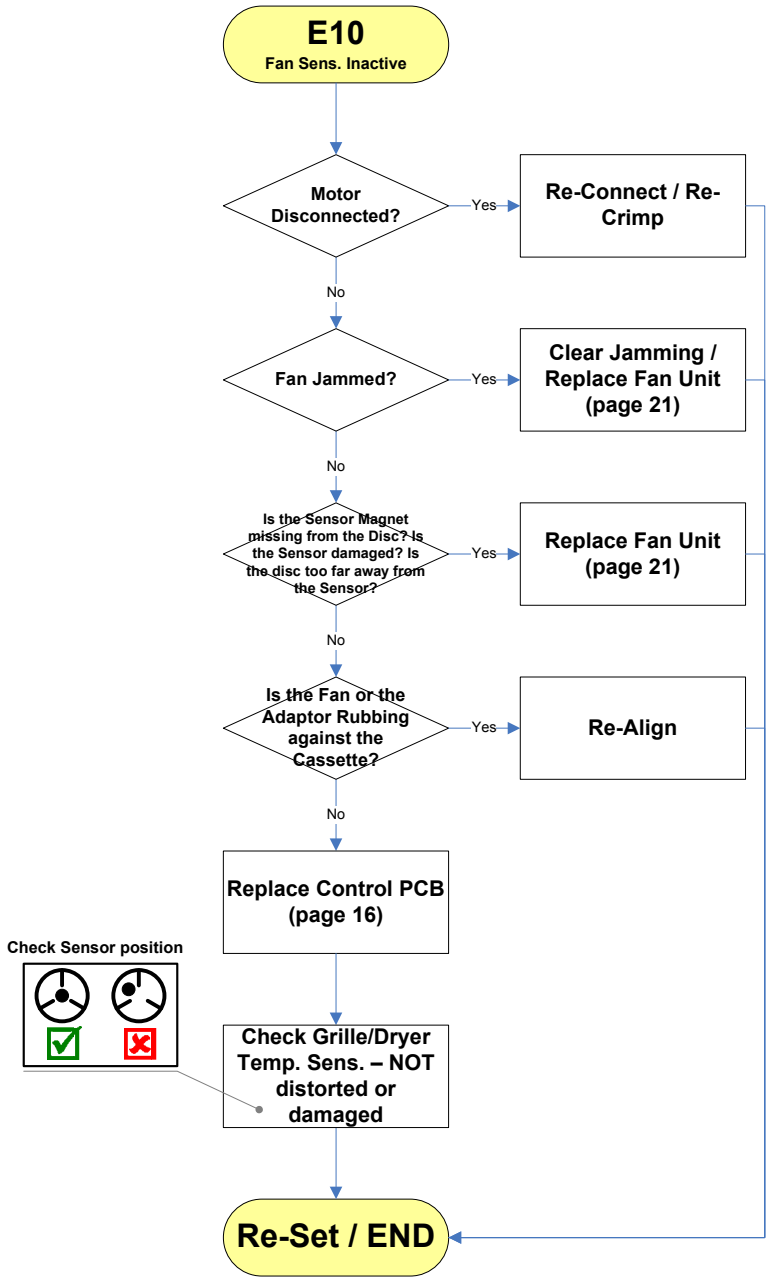
• Error Codes – Cause and Action



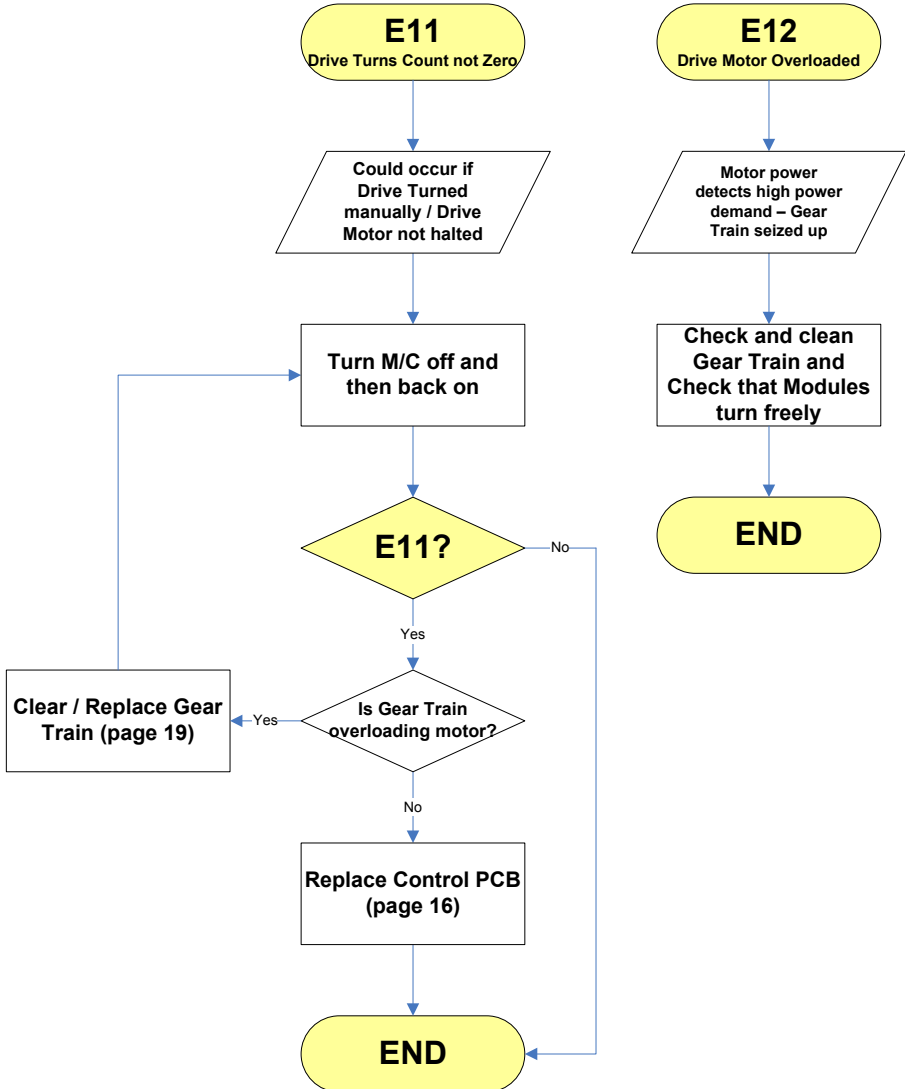
Errors Cause and Action (Cont.)



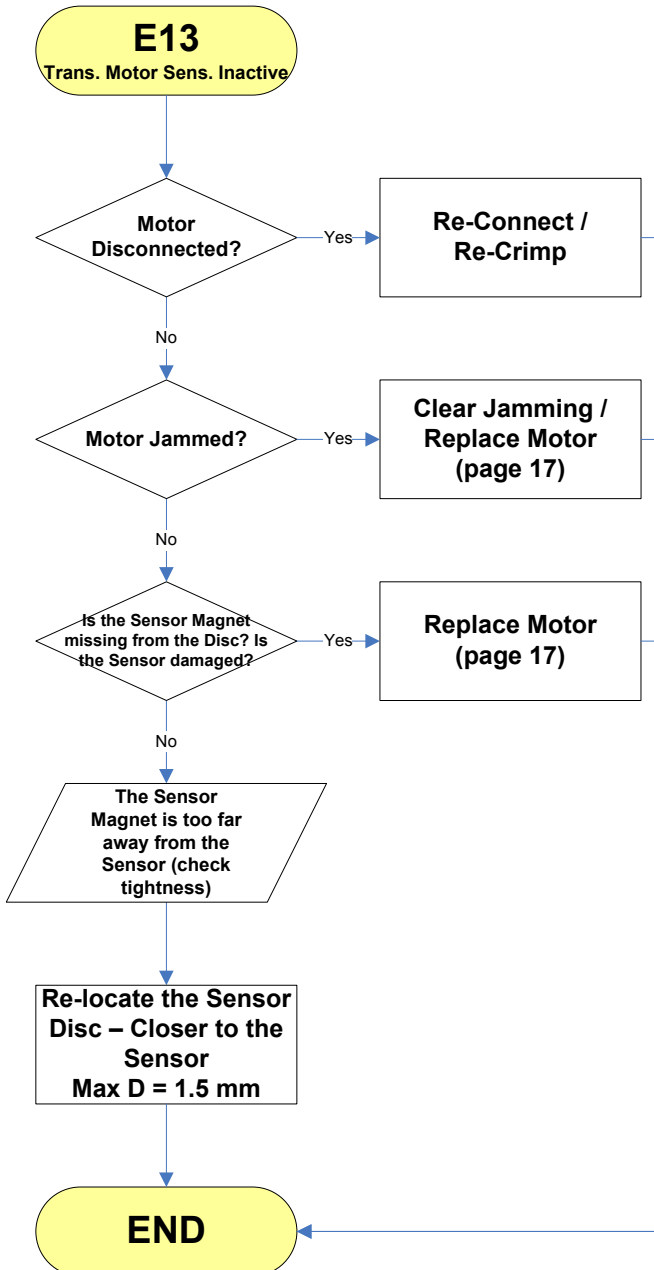
Errors Cause and Action (Cont.)



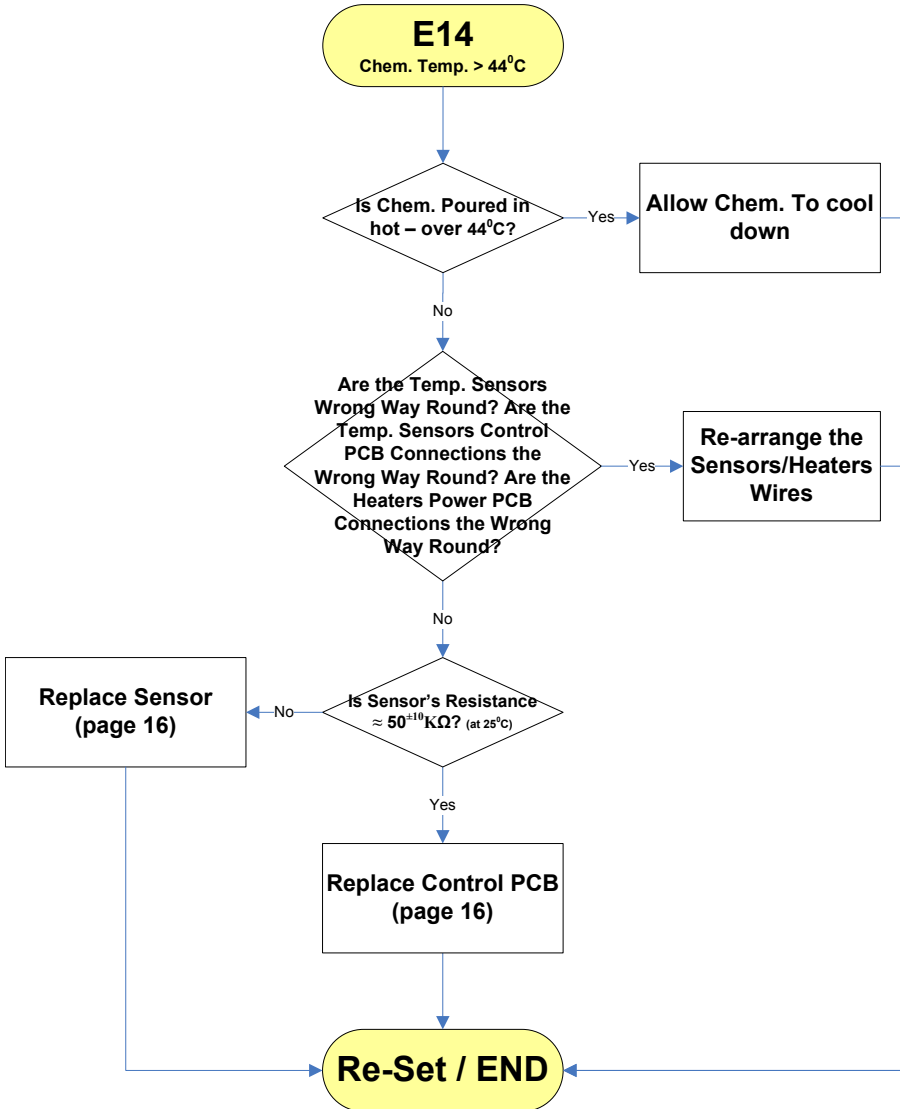
Errors Cause and Action (Cont.)



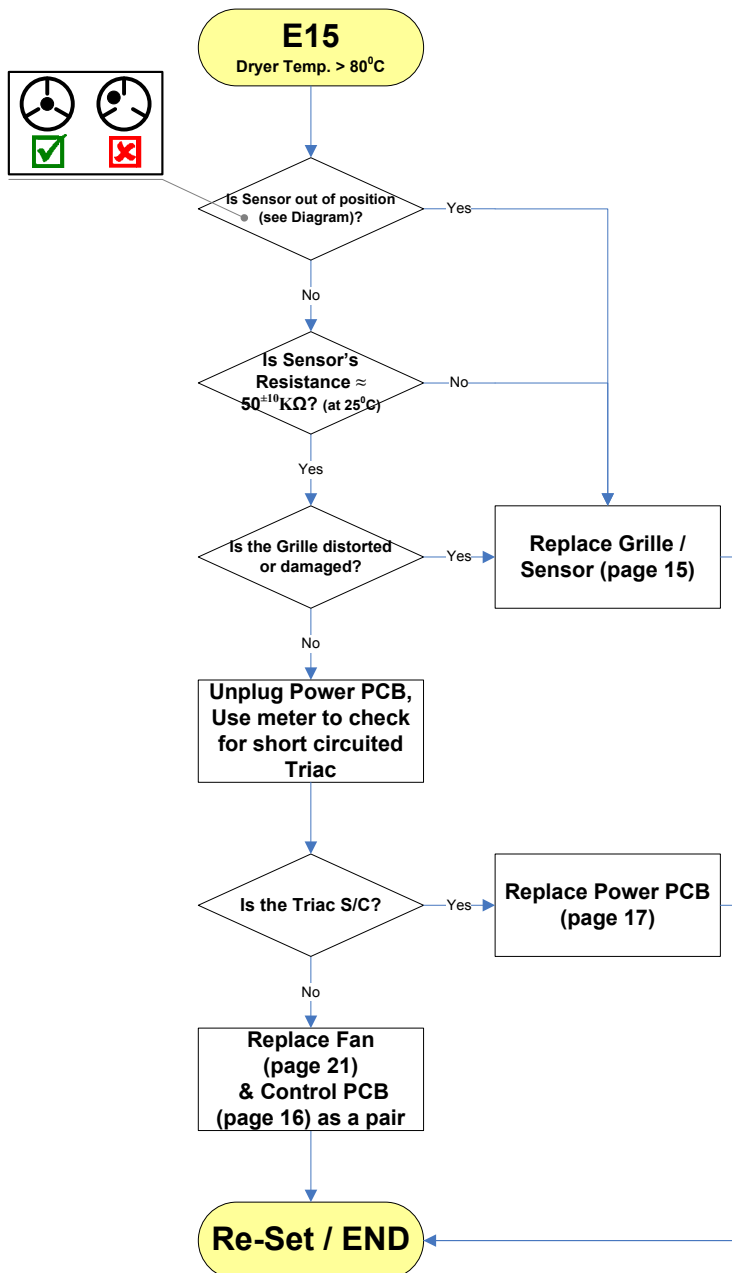
Errors Cause and Action (Cont.)



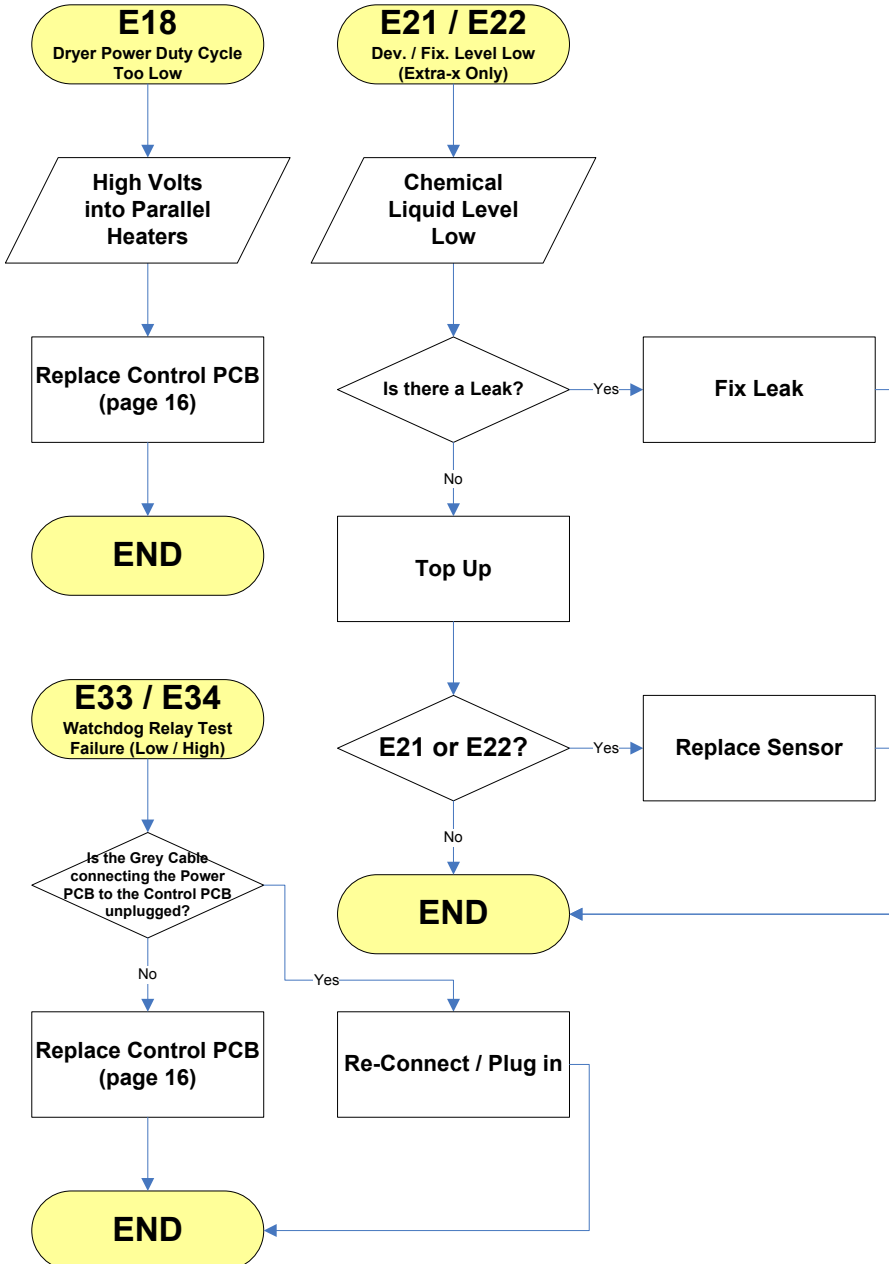
Errors Cause and Action (Cont.)



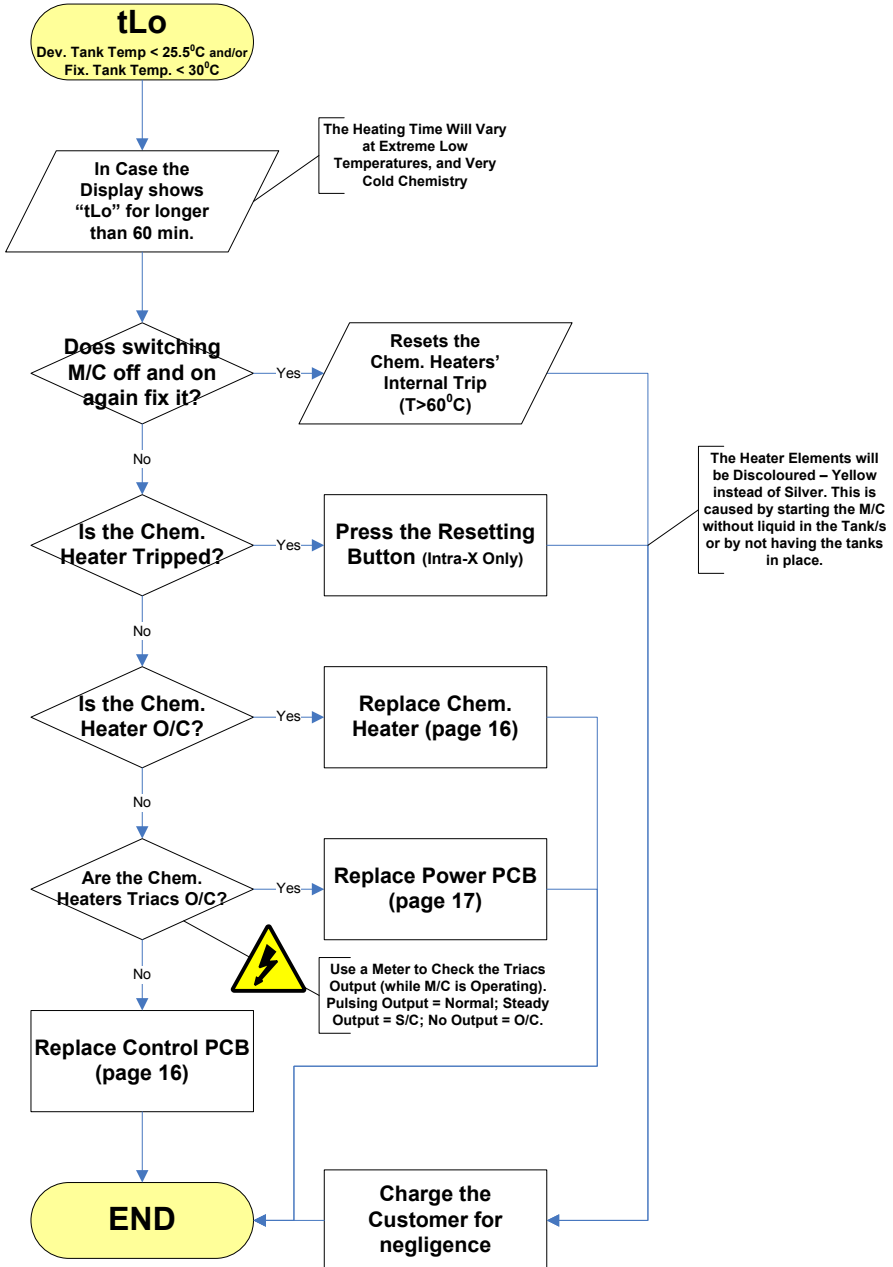
Errors Cause and Action (Cont.)



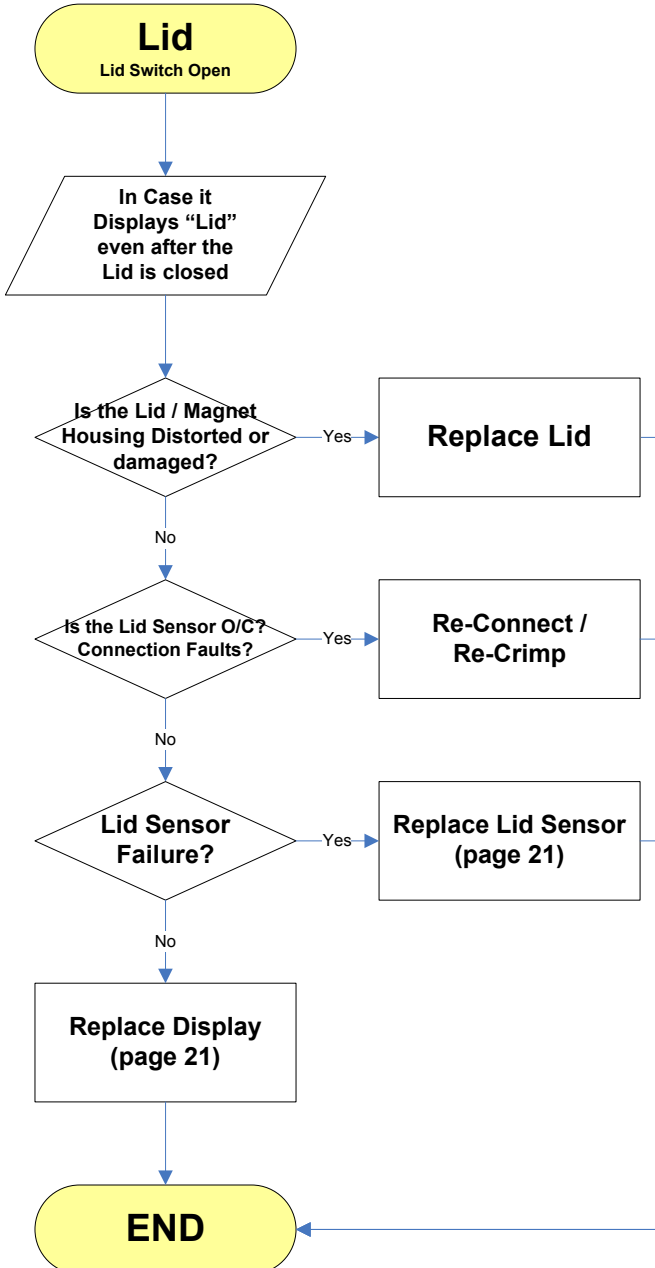
Errors Cause and Action (Cont.)



Errors Cause and Action (Cont.)



Errors Cause and Action (Cont.)



Component Part Numbers

Balloon Number	Part Description	Part Cat. Number
1	Day Light Loader	I/MAC9300F
7	Beak Sensor	I/ASS7308F
9	Initiation Sensor	I/ELC7200F
11	Side Panel (Control)	I/MDG2061F
12	Machine Lid	I/MDG2040F
13	ENDO Slide	I/MDG2056F
21	Control Panel	I/ASS2061F
26	Replenisher Pump(Only Supplied as a Set):	I/ASS5000F
27	Water Replenisher Inlet Hose	
55	Fixer Replenisher Supply	
56	Developer Replenisher Supply	
57	Water Replenisher Supply	
121	Replenisher Motor	
32	Side Panel (Tank)	I/MDG2061F
35	Drain Tubes (Only Supplied as a Set):	I/MDG5211F (USA)
	Developer	I/MDG5210F (WW)
	Fixer	
	Water	
38	Dryer Module	I/MOD0087F
39	Water Module	I/MOD0086F
40	Fixer Module	I/MOD0085F
41	Developer Module	I/MOD0084F
	Module Gear Set	I/MOD0100F
43	Turning Tool	I/MDG5145F
47	Mains Lead	I/ELC2147F(CONT) I/ELC2148F(UK) I/ELC2149F(USA)
49	Flexible Hose - Cold Water Supply	I/FIT2026F(USA) I/FIT2027F(WW)

Component Part Numbers (cont.)

Balloon Number	Part Description	Part Cat. Number
53	Flexible Hose - Water Waste	I/FIT2034F(USA) I/FIT2027F(WW)
54	Flexible Hose - Water Overflow	I/FIT2034F(USA) I/FIT2027F(WW)
62	Machine Stand	I/MAC9104F
65	IEC PCB	I/ELC7206F
67	Drive Motor	I/ELC7207F
68	Cassette	I/ASS5001F
69	Cassette Lid	I/ELC7216F
71	Dev. Chemical Heater	I/ASS2093F
72	Fix. Chemical Heater	I/ASS2094F
75	Gear Train Assy. (Only Supplied as a Set):	I/ASS5206F
45	Drive Dog (x4)	
86	Drive Dog Cover Strip 'A'	
88	Module Drive Gears (x4)	
89	Motor Support Strip 'C'	
90	Idler Gears (x2)	
91	Main Drive Gear	
92	Gear Support Strip 'B'	
97	Drive Dog Spring	
98	Drive Dog Shaft	
77	Power Supply PCB	I/ELC7211F
78	Control PCB	I/ELC7209F
79	Solenoid Valve	I/ASS2106F
80	Dryer Grille	I/ELC7217F
81	Dryer Heater Element	I/ELC2700F
82	Power PCB	I/ELC7210F
85	Fan Unit	I/ELC7212F
106	Chemical Tank (Supplied with Heaters)	I/ASS5061F

Notes

[illegible]

Notes (Cont.)

[illegible]

