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:
NOTE: On completion of any servicing work ensure that electrical earth continuity is established and that all components are in place.
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External Components

1. Day Light Loader
2. Loader Lens
3. Hand Entry Ports
4. Waste Removal Hatch
5. Film Entry Tray/Guide
6. Beak Sensor
7. Initiation Sensor
8. Loader Locking Nut
9. Loader Retaining Screw-holes
10. Machine Lid
11. ENDO Slide
12. Digital Display
13. NOT IN USE
14. Side Panel (Controls Cover)
15. Film Catcher
16. Control Panel
17. Control Panel Retaining Screw
18. Main Switch
19. Power Inlet Socket
Internal Features

8 Loader Securing Nut
10 Lid
20 Lid Magnet (for Lid Sensor)
21 Lid Sensor Retaining Screw

22 Gear Train Assy.
23 Motor Board
24 Fixer Temperature Sensor
25 Developer Temperature Sensor
26 Dryer Grille Retaining Screw
27 Dryer Grille
28 Chemical Heaters
29 Developer Module
30 Liquid Level Sight Glass
31 In-tank Heater Sheath
32 Dryer Module
33 Water Tank
34 Fixer Tank
35 Developer Tank
## Specification

<table>
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<tr>
<th>Dimension</th>
<th>Measurement</th>
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<tbody>
<tr>
<td><strong>Width (W)</strong></td>
<td>290mm / 11½”</td>
</tr>
<tr>
<td><strong>Depth (D)</strong></td>
<td>435mm / 17”</td>
</tr>
<tr>
<td></td>
<td>635mm / 25”</td>
</tr>
<tr>
<td><strong>Height (H)</strong></td>
<td>315mm / 12½”</td>
</tr>
<tr>
<td><strong>Weight:</strong></td>
<td></td>
</tr>
<tr>
<td>Empty</td>
<td>9.5Kg / 21lb</td>
</tr>
<tr>
<td>Full Tanks</td>
<td>13.7Kg / 30lb</td>
</tr>
<tr>
<td><strong>Tank Capacity</strong></td>
<td>1.4litres / 2½Imp Pints each</td>
</tr>
<tr>
<td><strong>Operating Temperatures:</strong></td>
<td></td>
</tr>
<tr>
<td>Developer</td>
<td>Water should not exceed 28°C (82.4°F)</td>
</tr>
<tr>
<td>Fixer</td>
<td>25°C (77°F)</td>
</tr>
<tr>
<td></td>
<td>30°C (86°F)</td>
</tr>
<tr>
<td><strong>Electric Supply</strong></td>
<td>100-120V, 200-240V, 50/60Hz</td>
</tr>
<tr>
<td><strong>Warm-up Time</strong></td>
<td>10 min. approx.</td>
</tr>
<tr>
<td><strong>Film Feed Speed</strong></td>
<td>470mm / 18½” per min.</td>
</tr>
<tr>
<td><strong>Max. Film Width</strong></td>
<td>65mm / 2½”</td>
</tr>
<tr>
<td><strong>Processing time</strong>:</td>
<td></td>
</tr>
<tr>
<td>Dry</td>
<td>4.5 min. approx.</td>
</tr>
<tr>
<td>Wet-Endodontic</td>
<td>2.5 min. approx.</td>
</tr>
<tr>
<td><strong>Input Power</strong></td>
<td>1000W</td>
</tr>
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**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 around four and a half minutes.
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 26°C (78.8°F).

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
   a. Use a stable and level counter that will support a weight of at least 50 Kg (100 lbs.).
   b. 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
   a. See Spec. Table (page 4).
   b. The power source must be within 1m (3 feet) of the machine. It should be easily accessible for operation and maintenance.

• 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:

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. The transport modules are protected by internal packing pieces: these must be discarded.
Internal Layout

**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.

![Diagram of internal layout with labeled parts](image)

- 7 Initiation Sensor
- 16 Control Panel
- 18 Mains Switch
- 23 Motor Board
- 28 Chemical Heater Cartridge
- 36 Display PCB
- 37 Lid Sensor
- 38 IEC PCB
- 39 Drive Motor
- 40 Cassette
- 41 Cassette Lid
- 42 Cassette Lid Retaining Screw
Replacing Components

• **Access to Internal Components**
  1. To access internal workings of the machine unscrew control Panel retaining screw (item 17, page 2).
  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 on page 6).

• **Replacing Cassette**
  2. Remove Control’s Side Panel.
  3. Remove Cassette Lid – Unscrew Seven retaining Screws.
  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**
  2. Remove Control’s Side Panel.
  3. Remove Cassette Lid – Unscrew Seven retaining Screws.
  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.
  7. To Insert New Motor Board Reverse Procedure.
Replacing Components (Cont.)

• Replacing Heater Element & Grille
  1. Heater Element -
     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 –
     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 –
     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).
     g. Plug into Control PCB.
Replacing Components (Cont.)

2. Beak Sensor –
   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 –
   b. Remove Control’s Side Panel.
   c. Remove Cassette Lid – Unscrew Seven retaining Screws.
   d. Unplug Temp. Sensor from Control PCB.
   e. Unscrew Four Cassette Retaining Screws.
   f. Shift Cassette Back Away from the Motor Board.
   g. Slide ‘O’ Ring off the Sensor.
   h. Pull Sensor Out of Motor Board Through the Hole.

• Replacing PCBs

   1. **DC Power Supply** –
      b. Remove Control’s Side Panel.
      c. Remove Cassette Lid – Unscrew Seven retaining Screws.
      d. Unplug IEC Wire and DC Input Wire.
Replacing Components (Cont.)

e. Unscrew Four Retaining Screws and Pillars/Feet.
f. To Insert New DC Power Supply PCB, Reverse Procedure.

2. Control –
   b. Remove Control’s Side Panel.
   c. Remove Cassette Lid – Unscrew Seven retaining Screws.
   e. Unscrew Nylon Retaining Screw and Remove PCB.
   f. To Insert New Control PCB, Reverse Procedure.

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

4. IEC –
   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
  2. Remove Control’s Side Panel.
  3. Remove Cassette Lid – Unscrew Seven retaining Screws.
  4. Unplug Chemical Heater Wires from Power PCB.
Motor Board and Gear Train Assembly

- Motor Board
- Dryer Grille Retaining Screw
- Dryer Grille
- Drive Motor
- Cassette
- Cassette Lid
- Dryer Heater Element
- Drive Dog Cover Strip ‘A’
- Support Bar
- Module Drive Gears (x4)
- Motor Support Strip ‘C’
- Idler Gears (x2)
- Main Drive Gear
- Gear Support Strip ‘B’

- Chemical Heater Cartridge Retaining Screw
- Chem. Heater Retaining Washer
- Chem. Heater Retaining Nylock Nut
- Chem. Heater Retaining Spring
- Chem. Heater Trip Reset Button
- Gear Strip Screw
- Drive Dog Strip Retaining Screw
- Drive Dog
- Thrust Washer
- Drive Dog Spring
- Drive Dog Shaft
- Clamping Nut
Replacing Components (Cont.)

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 –
   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.
   f. Remove Motor & Unscrew Third Retaining Screw from Stud/Foot.
   g. To Insert New Drive Motor Reverse Procedure.

2. Gear Train –
   b. Remove Control’s Side Panel.
   c. Follow Instructions:
      i. The assembly consists of three strips (items 51, 54 and 48) and the motor board (item 23) which is clamped between gear strips 54 and 48. It is essential to maintain this assembly order. To replace the main drive gear (item 53) on the motor shaft, do not dismantle the gear strip assembly. Simply remove the motor (item 39) 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 50 and item 53) follow the procedure as for replacing the drive dogs:

3. Drive Dogs –
   b. Remove Control’s Side Panel.
   c. Follow Instructions:
      i. Remove the four clamping nuts (item 66).
      ii. Remove the motor support strip ‘C’ (item 51) and the gear support
Replacing Components (Cont.)

strip ‘B’ (item 54 along with the drive dog shaft (item 65).

iii. Remove the gears (item 53 and 50), the drive dog springs (item 64) and the thrust washers (item 63).

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 50) onto the drive dog shafts (item 65).

vii. Feed the shafts through the gear support strip ‘B’ (item 54) and apply a little silicone grease to the shafts before fitting the thrust washers (item 63) and the drive dog springs (item 64). The grease will hold the springs in place during re-assembly.

viii. Fit the module drive gears (item 50) onto their spigots on the gear support strip ‘B’ (item 54) and assemble the motor support strip ‘C’ (item 51) into place.

ix. Remove the old drive dogs (item 62) from the motor side of the motor board (item 23) and wipe clean the holes in the drive dog cover strip ‘A’ (item 48).

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 23) taking care that the motor mounting holes are at the bottom of the motor support strip ‘C’ (item 51).

f. Starting at one end, align and centre the drive dog shaft (item 65) into the drive dog (item 62).

g. Hold the assembly in position and fit the end clamping nut (item 66) loosely to its gear strip assembly screw (item 60).

h. Work along the other three drive dog shafts (item 65) aligning and entering them into their drive dogs (item 62) and fitting the clamping nut (item 61) loosely to each gear strip assembly screw (item 60), as you go.

i. Finally tighten all four clamping nuts (item 66). Check that all the gears
Replacing Components (Cont.)

... turn freely and the drive dogs return freely to their outer position after being compressed.

j. Slip the main drive gear (item 53) into place in the centre of the gear train and refit the motor as described in Motor Mounting section.

• Replacing Fan
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
2. Remove Control’s Side Panel.
3. Unplug Lid Sensor from Display.
4. Unscrew Lid Sensor Retaining Screw.
5. Remove Lid Sensor.

• Replacing Display
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.**
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 72).
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.
  4. Unplug Control Cable from Display.
  5. Close Control Panel.
  7. Switch Machine On – **Caution: Live Electric Elements are Reachable.**
  8. Wait for a Minimum of Two Minutes.
 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 –
     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.
  2. Display Software –
Errors - Cause and Action

- 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

![Error Codes Diagram]

- E03 Dryer Temp. Sens. S/C
- E04 Dryer Temp. Sens. O/C

- Connected properly?
  - Yes
  - No → Re-Connect / Re-Crimp

- Does Sens. Res. \( \geq 50 \ \Omega \) (at 25°C)?
  - Yes
  - No → Replace Grille (page 9)

- Replace Control PCB (page 11)

Re-Set / END
Errors - Cause and Action (Cont.)

E05/E07
Fix./Dev. Temp. Sens. S/C

Does Sens. Res. $\approx 50 \pm 10$ k$\Omega$? (at 25°C)
- Yes: Replace Control PCB (page 11)
- No: Re-Connect / Re-Crimp

E06/E08
Fix./Dev. Temp. Sens. O/C

Connected properly?
- Yes: Replace Chem. Sensor (page 10)
- No: Re-Connect / Re-Crimp
Errors - Cause and Action (Cont.)

E10
Fan Sens. Inactive

Motor Disconnected?
Yes → Re-Connect / Re-Crimp

No → Fan Jammed?
Yes → Clear Jamming / Replace Fan Unit (page 15)

No → Is the Sensor Magnet missing from the Disc? Is the Sensor damaged? Is the disc too far away from the Sensor?
Yes → Replace Fan Unit (page 15)

No → Is the Fan or the Adaptor Rubbing against the Cassette?
Yes → Re-Align

No → Replace Control PCB (page 11)

Check Sensor position

Check Grille/Dryer Temp. Sens. – NOT distorted or damaged

Re-Set / END
Errors - Cause and Action (Cont.)

**E11**
Drive Turns Count not Zero

- Could occur if Drive Turned manually / Drive Motor not halted
- Turn M/C off and then back on
- Is Gear Train overloading motor?
  - Yes: Replace Control PCB (page 11)
  - No: Clear / Replace Gear Train (page 13)

- E11?
  - Yes
  - No

**E12**
Drive Motor Overloaded

- Motor power detects high power demand – Gear Train seized up
- Check and clean Gear Train and Check that Modules turn freely
- END

END
Errors - Cause and Action (Cont.)

E13
Trans. Motor Sens. Inactive

Motor Disconnected?

Yes
Re-Connect / Re-Crimp

No

Motor Jammed?

Yes
Clear Jamming / Replace Motor (page 13)

No

Is the Sensor Magnet missing from the Disc? Is the Sensor damaged?

Yes
Replace Motor (page 13)

No
The Sensor Magnet is too far away from the Sensor (check tightness)

Re-locate the Sensor Disc – Closer to the Sensor
Max D = 1.5 mm

END
Errors - Cause and Action (Cont.)

**E14**
Chem. Temp. > 44°C

- Is Chem. Poured in hot – over 44°C?
  - Yes: Allow Chem. To cool down
    - Yes: Re-arrange the Sensors/Heaters Wires
    - No: Is Sensor's Resistance \( \approx 50 \pm 10 \, \text{kΩ} \) (at 25°C)?
      - No: Replace Sensor (page 10)
      - Yes: Replace Control PCB (page 11)

- Re-Set / END
Errors - Cause and Action (Cont.)

E15
Dryer Temp. > 80°C

Is Sensor out of position (see Diagram)?

- No

Is Sensor’s Resistance ρ50 Ω ±10KΩ? (at 25°C)

- Yes

Is the Grille distorted or damaged?

- Yes → Replace Grille / Sensor (page 9)

- No → Unplug Power PCB, Use meter to check for short circuited Triac

- Yes → Replace Power PCB (page 11)

- No → Replace Fan (page 15) & Control PCB (page 11) as a pair

- Re-Set / END
Errors - Cause and Action (Cont.)

**E18**
Dryer Power Duty Cycle Too Low

High Volts into Parallel Heaters

Replace Control PCB (page 11)

**E33 / E34**
Watchdog Relay Test Failure (Low / High)

Is the Grey Cable connecting the Power PCB to the Control PCB unplugged?

Yes → Re-Connect / Plug in

No

Replace Control PCB (page 11)

END
**Errors - Cause and Action (Cont.)**

**tLo**
Dev. Tank Temp < 25.5°C and/or Fix. Tank Temp. < 30°C

- In Case the Display shows “tLo” for longer than 60 min.

Does switching M/C off and on again fix it?

- **Yes**: Resets the Chem. Heaters’ Internal Trip (T > 60°C)

  - The Heater Elements will be Discoloured – Yellow instead of Silver. This is caused by starting the M/C without liquid in the Tanks or by not having the tanks in place.

- **No**: Press the Resetting Button (Intra-X Only)

  - Use a Meter to Check the Triacs Output (while M/C is Operating). Pulsing Output = Normal; Steady Output = S/C; No Output = O/C.

  - Replace Control PCB (page 11)

  - Charge the Customer for negligence

  - Does switching M/C off and on again fix it?

  - **Yes**: Press the Resetting Button (Intra-X Only)

    - Use a Meter to Check the Triacs Output (while M/C is Operating). Pulsing Output = Normal; Steady Output = S/C; No Output = O/C.

    - Replace Control PCB (page 11)

    - Charge the Customer for negligence

  - **No**: Press the Resetting Button (Intra-X Only)

    - Use a Meter to Check the Triacs Output (while M/C is Operating). Pulsing Output = Normal; Steady Output = S/C; No Output = O/C.

    - Replace Control PCB (page 11)

    - Charge the Customer for negligence

- **Is the Chem. Heater Tripped?**

  - **Yes**: Press the Resetting Button (Intra-X Only)

    - Use a Meter to Check the Triacs Output (while M/C is Operating). Pulsing Output = Normal; Steady Output = S/C; No Output = O/C.

    - Replace Control PCB (page 11)

    - Charge the Customer for negligence

  - **No**: Replace Chem. Heater (page 11)

    - Use a Meter to Check the Triacs Output (while M/C is Operating). Pulsing Output = Normal; Steady Output = S/C; No Output = O/C.

    - Replace Control PCB (page 11)

    - Charge the Customer for negligence

- **Is the Chem. Heater O/C?**

  - **Yes**: Replace Chem. Heater (page 11)

    - Use a Meter to Check the Triacs Output (while M/C is Operating). Pulsing Output = Normal; Steady Output = S/C; No Output = O/C.

    - Replace Control PCB (page 11)

    - Charge the Customer for negligence

  - **No**: Replace Control PCB (page 11)

    - Use a Meter to Check the Triacs Output (while M/C is Operating). Pulsing Output = Normal; Steady Output = S/C; No Output = O/C.

    - Replace Control PCB (page 11)

    - Charge the Customer for negligence

- **Are the Chem. Heaters Triacs O/C?**

  - **Yes**: Replace Power PCB (page 11)

    - Use a Meter to Check the Triacs Output (while M/C is Operating). Pulsing Output = Normal; Steady Output = S/C; No Output = O/C.

    - Replace Control PCB (page 11)

    - Charge the Customer for negligence

  - **No**: Replace Control PCB (page 11)

    - Use a Meter to Check the Triacs Output (while M/C is Operating). Pulsing Output = Normal; Steady Output = S/C; No Output = O/C.

    - Replace Control PCB (page 11)

    - Charge the Customer for negligence

**The Heating Rate is Approximately 0.5°C (0.9°F) Per Minute. The Heating Time Will Vary at Extreme Low Temperatures, and Very Cold Chemistry**
Errors - Cause and Action (Cont.)

Lid
Lid Switch Open

In Case it Displays “Lid” even after the Lid is closed

Is the Lid / Magnet Housing Distorted or damaged?
Yes → Replace Lid
No

Is the Lid Sensor O/C? Connection Faults?
Yes → Re-Connect / Re-Crimp
No →

Lid Sensor Failure?
Yes → Replace Lid Sensor (page 15)
No → Replace Display (page 15)

END
## Component Part Numbers

<table>
<thead>
<tr>
<th>Balloon Number</th>
<th>Part Description</th>
<th>Part Cat. Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Day Light Loader</td>
<td>I/MAC6100F</td>
</tr>
<tr>
<td>3</td>
<td>Hand Entry Ports / Iris Glove Assy.</td>
<td>I/ASS0010F</td>
</tr>
<tr>
<td>6</td>
<td>Beak Sensor</td>
<td>I/ASS7208F</td>
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<tr>
<td>7</td>
<td>Initiation Sensor</td>
<td>I/ELC7200F</td>
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<tr>
<td>8</td>
<td>Loader Securing Nut</td>
<td>I/FIT2035F</td>
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<tr>
<td>10</td>
<td>Machine Lid</td>
<td>I/ASS2017F</td>
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<tr>
<td>11</td>
<td>ENDO Slide (Blue Label)</td>
<td>I/MDG2055F</td>
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<tr>
<td>12</td>
<td>Side Panel</td>
<td>I/MDG2061F</td>
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<tr>
<td>13</td>
<td>Film Catcher (with Static Strip)</td>
<td>I/MDG2060F</td>
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<tr>
<td>16</td>
<td><strong>Control Panel</strong> (only supplied complete):</td>
<td>I/ASS2059F</td>
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<tr>
<td>17</td>
<td>Control Panel Retaining Screw (T25 M5x10)</td>
<td>I/FIX5002F</td>
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<td>18</td>
<td>Main Switch</td>
<td>I/ELC7201F</td>
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<tr>
<td>22</td>
<td><strong>Gear Train Assy.</strong> (only supplied complete):</td>
<td>I/ASS5206F</td>
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<tr>
<td>23</td>
<td>Motor Board</td>
<td>I/MDG2016F</td>
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<tr>
<td>24</td>
<td>Fixer Temperature Sensor</td>
<td>I/ASS7202F</td>
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<tr>
<td>25</td>
<td>Developer Temperature Sensor</td>
<td>I/ASS7203F</td>
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<td>27</td>
<td>Dryer Grille/Temperature Sensor</td>
<td>I/ELC7204F</td>
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<td>29</td>
<td>Developer Module</td>
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<tr>
<td>32</td>
<td>Dryer Module</td>
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<td>33</td>
<td>Water Tank</td>
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<td>Fixer Tank</td>
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<td>35</td>
<td>Developer Tank</td>
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<tr>
<td>37</td>
<td>Lid Sensor</td>
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<td>38</td>
<td>IEC PCB</td>
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<td>39</td>
<td>Drive Motor</td>
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<td>40</td>
<td>Cassette</td>
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<td>Balloon Number</td>
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<td>Cassette Lid</td>
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<td>Power Supply PCB</td>
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<td>Control PCB</td>
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<td>Drive Dog Cover Strip ‘A’</td>
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<td>51</td>
<td>Motor Support Strip ‘C’</td>
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<td>Gear Support Strip ‘B’</td>
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<td>Chemical Heater Cartridge</td>
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<td>55</td>
<td>Chemical Heater Cartridge Retaining Screw</td>
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<td>56</td>
<td>Chem. Heater Retaining Washer</td>
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<td>Chem. Heater Retaining Nylock Nut</td>
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<td>Chem. Heater Retaining Spring</td>
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<td>Chem. Heater Trip Reset Button</td>
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<td>Drive Dog</td>
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<td>Thrust Washer</td>
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<td>Drive Dog Spring</td>
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<td>Drive Dog Shaft</td>
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<tr>
<td>69</td>
<td>Gear Set</td>
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<td>Large Idler Gear</td>
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<td>Main Drive Gear</td>
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<td>‘D’ Shaped Centre Gears (x5)</td>
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<td>Small Idler Round Hole Gear</td>
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<td>--</td>
<td>Water Module</td>
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