

VELOPEX[®]

Automatic X-Ray Film Processor

Intra - X

Intra - XE



USER GUIDE

Operation and Maintenance manual

WARNING:

Do not plug into the electrical mains power supply before reading this manual – or before filling the machine with liquids

Register your machine by returning the Warranty Card to enable full customer support.



Machine serial number to be
quoted on all correspondence:

Introduction

Thank you for purchasing your automatic film processor from Velopex - we certainly appreciate your business.

In order to maintain the quality of our product and your processing it is important that you pay close attention to the instructions contained in this user manual. This will ensure a long life for your processor.

This manual is to be used with the following Velopex processors: Intra-X, Intra-XE.

The processor could be dangerous if incorrectly installed or maintained outside the guidelines set out in this manual and the warranty will be voided.

This equipment can only be serviced by technically qualified engineer, trained on Velopex machines, and is not designed to be serviced by the end user other than as specified by in this manual.

Caution: *Use assistance when unpacking and putting the machine in place.*

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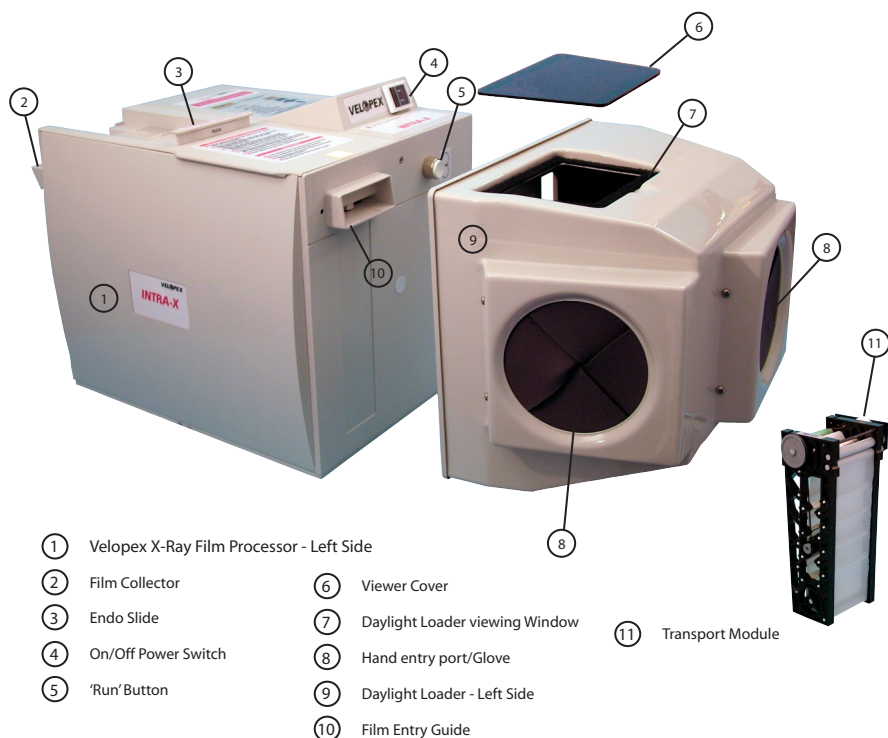
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Velopex Processor - Exterior



Machine Accessories and Extras Supplied

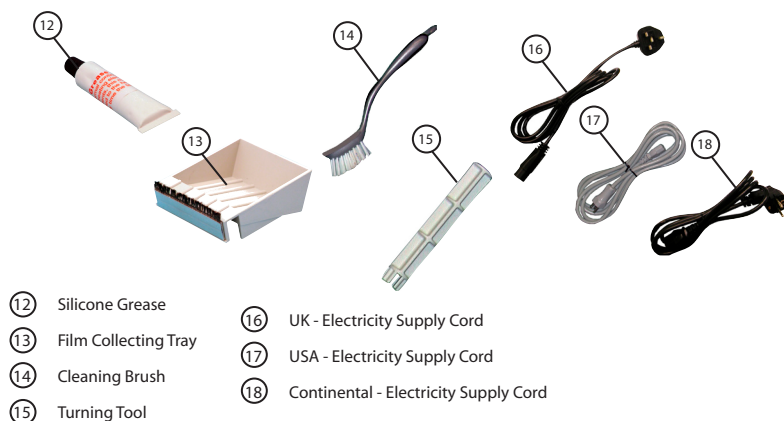


Table of Symbols

Symbol	Description
	Alternating Current
	Off (Power: Disconnect from the mains)
	On (Power: Connect to the mains)
	Type 'b' equipment
	'RUN' Button / Process switch
	Protective Earth (Ground)

Symbols used within Manual

	Tip
	Attention / Warning

Contents

Specification	2
Installation*	3
Pre Installation Instructions	3
Daylight Loader Installation (when required)	5
Filling with Chemicals	8
Operation	11
Maintenance	15
Trouble Shooting	19
Service Log	24

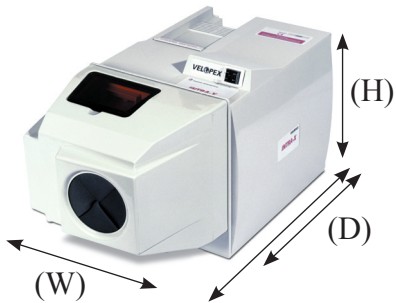
INSTALLATION

OPERATION

MAINTENANCE

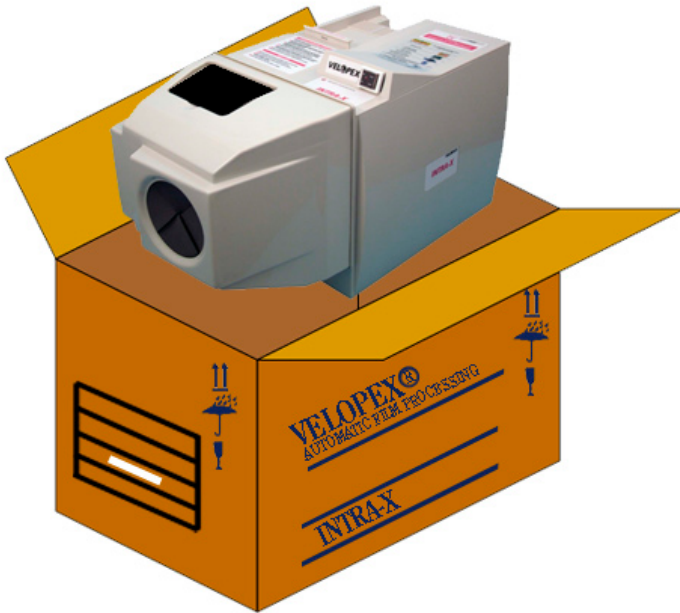
TROUBLE SHOOTING

Specification



Width (W)	290mm / 11½"
Depth (D) Inc. Loader	435mm / 17" 635mm / 25"
Height (H)	315mm / 12½"
Weight: Empty Full Tanks	12.1Kg / 26½lb 13.9Kg / 30½lb
Tank Capacity	1.4litres / 2½Imp Pints each
Standard Supply Voltage	220-240v 50Hz 110-120v 60Hz
Warm-up time	10 min. approx.
Film Feed Speed	470mm / 18½" per min.
Max film width	65mm / 2½"
Processing time: Dry Wet-Endodontic	4 min. approx. 2 min. approx.

Pre Installation Instructions



- **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, Operator's Manual, Silicone Grease, Electrical Cord, Transport Module Turning Tool, Cleaning Brush, Chemical Change Chart and a box of Cleaning Tablets (UK only), and Daylight Loader (as required).

1. Familiarise yourself with the layout of the machine by referring to the images 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.

Pre Installation Instructions (cont.)

• 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 80°F (27°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

- a. Use a stable and level counter that will support a weight of at least 100 lbs. (50 Kg.).
- 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. 115Vac 60Hz, 10A, 1150W (USA)/230Vac 50Hz, 10A, 1150W (World Wide).
- b. The power source must be within three (3) feet (1m) of the machine. It should be easily accessible for operation and maintenance.

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.

Daylight Loader Installation (as required)



1.

Bring the Lid to the upright position.



TIP: The Lid can be kept in the upright position while the machine is open, or lifted away.



2.

Remove Side Panel by Sliding it Upwards in its Runners.



3a.

Remove All Packing / Wrapping Material and Modules.



TIP: Start with the Dryer Module, then the Water Module followed by the Fixer and Developer Modules. Those should be removed by sliding the Tanks out.

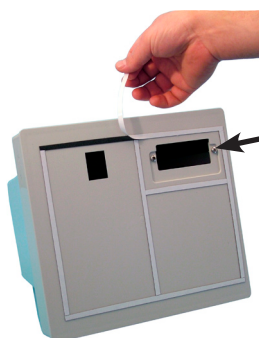
Daylight Loader Installation (cont.)



3b.



WARNING: When Removing the Fixer and Developer modules, slide tanks sideways until completely clear of the immersion heaters mounted on the machine internal wall.



(Retaining Screw X 2)

(Back of Loader)

4.

Unscrew the Two Retaining Screws and Remove White protective strip from sealing material on the back of the loader.



(Front of Loader)

5.

Remove Protective Film from Viewing Window Cover.

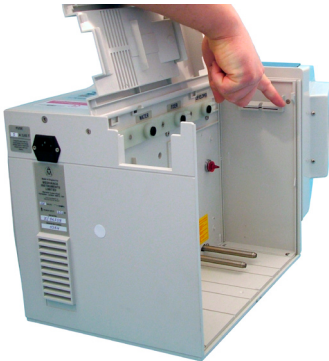
Daylight Loader Installation (cont.)



6.

Slide Loader over Film Entry Guide and 'RUN' Button, Press the Loader firmly against Machine.

INSTALLATION



7.

Secure Loader with the Two Retaining Screws.

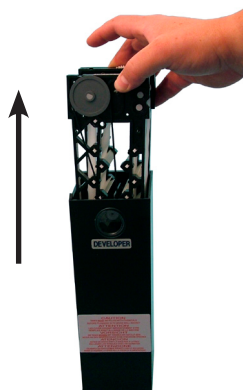


8.

Remove Modules (see Installation Sections 1-3b).



WARNING: Ensure machine is disconnected from mains power supply whilst filling. NEVER turn on the machine with the tanks empty.



9.

Lift the Transport modules from their respective tanks



WARNING: BEFORE filling with chemicals run the machine with clean water in the Developer, Fixer and Water tanks with Transport Modules in position – for a complete running cycle to remove all packing debris, dust etc.



10.

Fill tanks with their respective chemical solutions or water, Pouring in 1½ quarts (1400ml) of fluid.

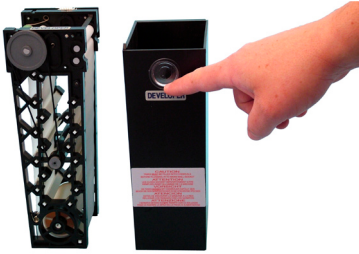


TIP: Use VELOPEX chemicals designed for your unit. If unobtainable use ONLY another proprietary chemical & always read and follow instructions on bottle.



WARNING: DO NOT use Chemistry or Film designed for manual processing.

Filling with Chemicals (cont.)



- 11.** Fill the tanks up to the lowest edge of the Sight Glass.

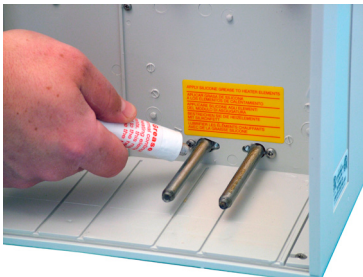
INSTALLATION



- 12.** Lower Transport Modules carefully into their respective tanks. Top up - the correct liquid level will show half way up the sight glass.



WARNING: This liquid level should be maintained at all times.



- 13.** Grease Immersion Heaters for Developer and Fixer tanks with the lubricant provided.



TIP: Spread a thin smear of lubricant over the two projecting metal heating elements.



WARNING: Do NOT over grease.



14.

To avoid spillage, carefully return tanks to the machine. Start with the Developer tank followed by the Fixer, Water and finally the Dryer tanks. Engage the module drive pins into the drive dogs, working from right to left.



TIP: Slide the Developer and Fixer tanks sideways onto the immersion heaters till backed up fully against the machine internal wall.



15a.

Return side panel and lid.



WARNING: Wipe dry any spilled solution.



15b.

The Machine may now be switched on.



TIP: Check that all modules are engaged and running smoothly by passing a 'clean-up film' through the machine. If it fails to exit the machine, check engagement of modules.



WARNING: The machine will not operate with the lid open.

Operating the Processor



1.



Plug in electric cord and switch on.

TIP: After approx. eight minutes the processor will go into 'stand-by' mode, by which time the chemicals will have reached their correct temperature.

WARNING: Always turn mains electricity switch off at night.



2.



Correct temperature is indicated when the red light is extinguished.

TIP: The time taken to achieve the correct temperature depends on the room temperature (usually 10-15 min.).

TIP: Intra-XE has no heating and therefore no temperature indicator. It relies on ambient room temperature of 20°C - 25°C.



3.



The Velopex is equipped with automatic stand-by mode. To initiate processing press the 'RUN' Button.

TIP: From time to time the temperature light will illuminate for short intervals as the machine requires heat throughout the day (Intra-XE excluded).

WARNING: Before placing in the machine, intra oral film packets should be wiped clean of all mouth contaminants.

(Image for instruction ONLY,
Viewing Window is closed when
operating machine)

Operating the Processor (cont.)



(Image for instruction ONLY,
Viewing Window is closed when
operating machine)



(Image for instruction ONLY,
Viewing Window is closed when
operating machine)



4.



**Put Hands through Loading
Ports and place Film inside
Daylight Loader.**

WARNING: Always remove old
film wrappers from inside the loader.

5.



**Press 'RUN' button, strip
Wrapping from Film, Insert
Film into Entry Slot.**

WARNING: A second film can
be inserted only after the first has fully
entered the machine. Do not remove
hands from loading section until
the film has completely entered the
machine.

6.



**Each day make sure Chemical
Levels are correct. If necessary,
top up Chemicals (See Installation
sections 10, 11 and 12)**

TIP: Before processing run
through "clean-up film" or any spare
strip of extra oral film. This helps to
clean the transport system.



WARNING: The same film may
be used for this purpose for one week,
after which discard the old film and use
a fresh one.

Operating the Processor (cont.)



7.

All films are collected in the Film Catcher at the rear of the machine.



WARNING: At the end of the day turn off mains power switch.



8.

For quick viewing of X-Rays use the Endo Slide, which will halve the time of processing. To use: press the Endo Slide FULLY down, by pressing the latch and lowering the slide.



TIP: This procedure is only "Dry-to-Wet", which means the film should be washed with water and hung up to dry when needed for archiving.



WARNING: The Endo Slide must be returned to the 'UP' position before further processing.



9.

Remove film from ENDO slot.



TIP: After film exits, you can view and then wash it with water and hang it up to dry.



WARNING: Make sure film does not fall back into the Velopex - remove it as soon as it emerges.

Operating the Processor (cont.)

10.

Film Feeding direction.

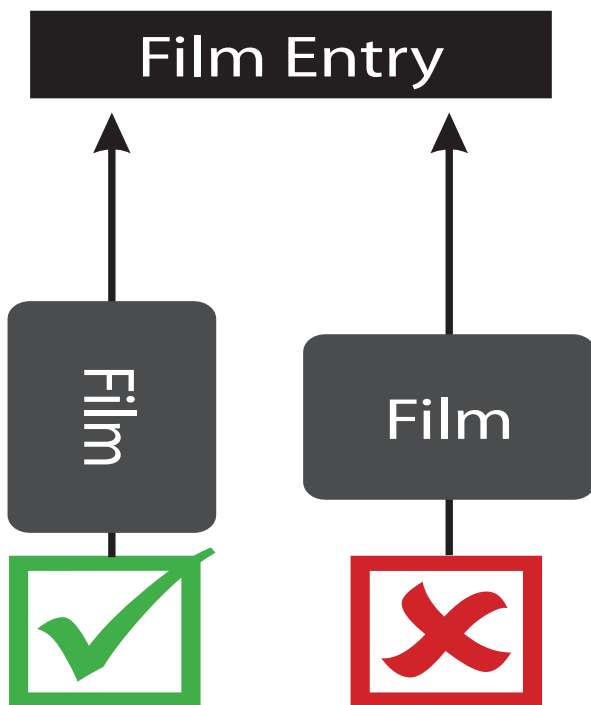


TIP: Centre the film on the guide provided to post the film through the processor.

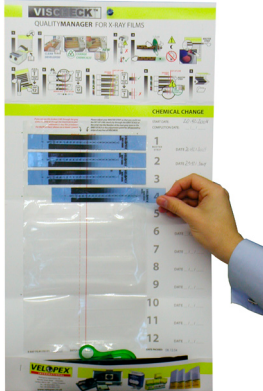


WARNING: Make sure the film is fed in squarely, and in the centre of the entry slot, short edge leading.

OPERATION



Velopex Processor Cleaning



1.

Quality Assurance - for instructions refer to back of VISCHECK Quality Manager board supplied with your machine.



TIP: Regular use of this product will ensure the quality of the film processing and reduce the risk of retakes. Visccheck will also tell you when to change the chemicals.



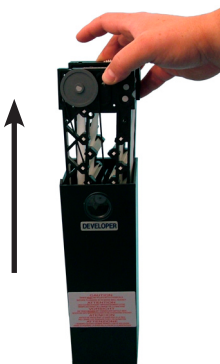
2.

Open Lid, remove side cover, and remove tanks & modules (see Installation sections 1-3b & 8-9)



WARNING: Carry out the cleaning routine each chemical change or approx. once every four weeks, according to use.

MAINTENANCE



3.

Drain Modules over the tanks before removing them.



TIP: Tip the Module and lean it on the edge of the tank letting it drain before completely removing.



WARNING: The Modules are wet with chemicals; handle with care. May cause staining or corrosion of surfaces, skin and eye irritation. Wipe away any spillage immediately and flush with copious amounts of water.

Velopex Processor Cleaning (cont.)



4.

Module cleaning - Immerse the Modules in a tank/sink filled with hot water and scrub with the supplied brush around the gears and roller ends.



TIP: Use the turning tool; turn the gears and belts by hand to assist in thorough cleaning.



WARNING: DO NOT use boiling water; it will damage the modules. Use ONLY cold water when cleaning the machine tanks.

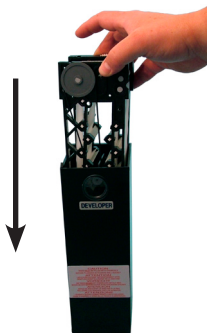


5.

Clean the Modules using the Velopex Cleaning Tablets: Empty Chemical and Water tanks. Re-fill with fresh cold water.



WARNING: Do not empty cleaning solution into containers containing processing chemicals - FOLLOW INSTRUCTIONS SUPPLIED WITH CLEANING TABLETS.



6.

Replace the modules in their tanks and run for one cycle. Empty tanks again, remove Modules and re-fill with fresh cold water.



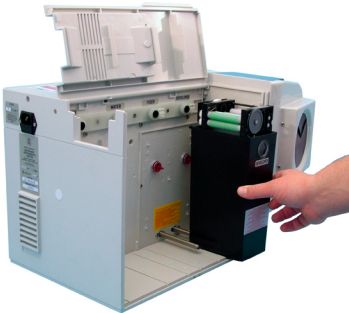
WARNING: Always return a Module to the tank it was removed from e.g. Developer-to-Developer.

Velopex Processor Cleaning (cont.)



7.

Add Velopex Cleaning Tablets one per tank..



8.

Replace Modules and run for TWO cycles at operating temperature.



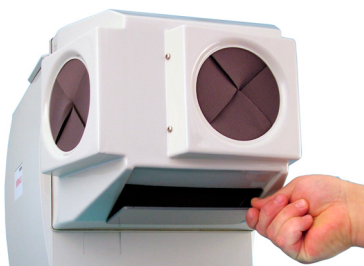
9.

Dryer Module Cleaning - Place Dryer Module in container or sink filled with fresh cold water. Add one Velopex Cleaning Tablet and soak for at least 10 minutes. Rinse thoroughly with water to remove all cleaning solution.



WARNING: *Make sure you drip-dry the module before replacing in the dryer compartment.*

Velopex Processor Cleaning (cont.)



10. Removal of film debris: Open Bottom hatch of Loader.



WARNING: Ensure hatch is securely closed and light - tight.



11. Remove old film wrappers from daylight loader. Wipe clean the interior of loader.



TIP: The interior of the daylight loader should be cleaned with cold sterilising solution, wipe dry after appropriate period.



12. Fill up with Chemicals (See Installation sections 10-12, pages 6-7). For best results, use VELOPEX chemicals.



TIP: Use the chart provided and keep a note of the date when chemicals were changed.
Process a Vischeck strip to produce the master reference strip and place in position on the Quality chart (follow Vischeck instruction for use).

No.	SYMPTOM	POSSIBLE CAUSE	ACTIONS
1	Machine does not operate	Power Supply	Check Mains Power is plugged in and supply switched on. NOTE - Velopex Machine will run one cycle when switched on and lid in correct position.
		Machine is in 'standby' mode	Check by pressing 'RUN' button that machine is not in 'standby' mode.
		Blown Fuse	Switch off Mains power supply and unplug machine. Check the two fuses in cord socket on back of machine, if either fuse is blown, call Service. USA - Reset Circuit Breakers (See Technical Manual, item 14 on page 2)
		Lid Open	The machine is fitted with a safety switch: if the lid is not correctly closed the safety switch will prevent the machine from operating. Check by opening and closing again.
		Cord	Check that cord is fully engaged in both plug and socket on the back of the machine.
2	Temperature Indicator Light stays on		(At normal room temperature average warm-up time is 10-15 minutes; in an unheated environment this time could lengthen): if light stays on for an abnormally long time, call for service.
3	Solution(s) overheating		DO NOT USE MACHINE - Call for Service.
4	Films Do Not Enter through Film Entry Guide.	Machine is in 'standby' mode	Press 'Run' button - machine may be in 'standby' mode.
		Transport Modules not in Place	Open machine lid and check correct engagement of transport modules.
5	Film Lost in the Machine	Transport Modules not in Place	Check individual Module by rotating with turning tool to manually feed film. Check that the transport modules are correctly located in their drive dogs and running correctly, if not, re-locate.
		ENDO 'interrupt' bar	Check that bar is fully in the 'up' position.
		Wrong Positioning of Transport Module Spring	Check the springs on the modules for correct positioning. Use the module turning tool to rotate the belts for inspection, and run a test film through the module using this tool.
		Dirty Transport Modules	Check that all transport modules have been put through the correct cleaning procedure.
		Damaged/Torn Belt	Replace a Module
		Static Electricity in the Dryer Section of the Machine	Add a little domestic fabric softener to the washing water when washing dryer module to avoid 'static'. IMPORTANT: Fabric softener should be used on the Dryer Module ONLY - do NOT use it on the Developer, Fixer or Water Modules.

TROUBLE SHOOTING

No.	SYMPTOM	POSSIBLE CAUSE	ACTIONS
6	Films too Dark:		
	Test for light fog by feeding an unexposed film through the machine. It should process as a transparent piece of film base and there should be no shadows or blackness on it. REGULAR USE OF VISCHECK IS THE BEST TOOL FOR EARLY DIAGNOSIS OF PROCESSING AND X-RAY PROBLEMS.		
There is Light Fog		Lid Open	Check that the top lid is firmly in place.
		Dark room not Light-Tight	Check that the dark room is light-tight, and that the safelight is sound (e.g. process a test film with safelight off).
		Daylight Loader not Secured	Check that the daylight loader is firmly secured, including removal of cover tapes from self-adhesive mounting.
			When the Daylight loader is used, ensure that the machine has not been sited in direct sunlight or in intense lighting conditions (e.g. directly under spotlights or strip lights).
		Light Leaks	Do not remove your hands out of the hand entry ports before the film has fed completely into the machine (fog at one end only of the film indicates premature removal of hands from daylight loader).
			Check that window cover on loader has been correctly replaced and check at hand entry ports to ensure there is a good light seal around the wrists - if not, call for service.
		Close to X-ray Source	Check whether films have been stored too close to X-ray source, and re-locate/replace.
		Film Expired	Check Expiry date on film box to ensure films are not out of date. (Keep films in cool, dry place: excessive heat can cause premature ageing of film).
		Chemical Contamination	Check that there has been no chemical mix-up, leading to cross-contamination.
		Mixing of Developer	Check that the Developer has been correctly mixed (if relevant).
Dark Film		Temperature (XE excluded)	Check temperature of Developer and Fixer tanks. These are generally set at: Developer 82°F (27.5°C), Fixer 82°F (27.5°C). If the Developer temperature is significantly higher, it could lead to dark film. Switch off the machine and call for service.

No.	SYMPTOM	POSSIBLE CAUSE	ACTIONS
7	Films too Light:	Chemicals Exhausted	Replace with fresh (this will depend on volume of film being processed and length of time since last chemical change).
		Chemicals Contaminated	Clean machine, replace chemicals with fresh solutions.
		Developer Incorrectly Mixed	Replace with fresh (if relevant).
		Chemical Level too Low	Top up.
		Temperature too Low (XE excluded)	If temperature indicator light does not go out, check with a thermometer - generally set at: Developer 82°F (27.5°C), Fixer 82°F (27.5°C) - if significantly below these temperatures, call for service.
8	Films Dirty or Marked	Film Exposure	Check films have been exposed correctly.
		Water Tank Dirty	Clean module thoroughly and change water daily (insufficient cleaning can lead to a build-up of algae).
		Transport Modules Dirty	Check transport modules are being cleaned correctly (see cleaning instructions above).
		Chemical Level too Low	Top up.
		Wrong Positioning of Modules	If found in wrong order, contamination will have occurred. Thoroughly clean modules and tanks; re-fill with fresh chemicals.
9	Sudden Change in Image Density	Light Leaks	Check for stray light entering machine - proceed as for fogging (see symptom # 6).
		Wrong Solutions	Make sure solutions are in correct tanks.
		Developer Contamination	Replace Developer if contaminated with Fixer.
		Temperature	Check Developer temperature.
		X-ray Unit.	Check X-ray unit.

TROUBLE SHOOTING

No.	SYMPTOM	POSSIBLE CAUSE	ACTIONS
10	Film not Drying	Dryer Humidity Electrical Component	Make sure Dryer is working and blowing hot air. Look for poor air circulation or HIGH humidity in processing area. Switch off machine. Switch on again after 10 seconds. If still not drying call for Service.
11	Deposits on Film:		
	White Marks	Fixer	Check for contaminated or wrongly mixed Fixer.
		Fixer Deposits	Check for Dryer Module contaminated by fixer deposits.
	Black Parallel Lines		Clean entry slot or feed guides
		Dirt	Clean bridge-over rollers.
			Clean Modules.
12	Dark Areas on Film	Belts Jammed	Check belts are turning properly.
		Static Damage	Takes the form of dots, fern-like lines or lightening strikes; check for LOW ambient humidity in processing area. Clean area with anti static solution.
13	Light Areas on Film:		
	White Opaque Patches on Low Density Areas (Indicates Lack of Fixing)	Temperature	Check Fixer temperature.
		Fixer	Check for exhausted Fixer.

No.	SYMPTOM	POSSIBLE CAUSE	ACTIONS
14	Mottle	Dirty Transport Modules	Clean Modules.
		Film Expired	Check age and storage conditions of film.
		Light Fogging	See above, Symptom # 6.
15	Films coming Out Wet	Air Coming Out of the Vent is NOT Warm.	After the processor has been running for two minutes, check that the air coming out of the vent over the Dryer module is warm. If not, switch the processor off at the Mains Power Switch for two minutes and switch it on again. If that does not correct the
16	Contamination	Chemicals	When changing Chemicals, make sure the tanks are completely empty and rinsed out. Fresh chemical will be spoiled by contamination, leading to poor results.
17	Abnormal Odour, Overheated or Unusual Noises		Immediately switch processor off and unplug from Mains Power Supply. Contact your supplier.

Service Log:

[illegible]

Component Part Numbers (cont.)

Ballon Number	Issue 6-9/05 1/10/2002 (Page,Part)	Part Description	Part Cat. Number
38	(7,35)	Drive Motor	I/ELC2123F(230V) XE: I/ELC2189F(115V) I/ELC2101F(230V) I/ELC2102F(115V)
41	(8,32)	Main Drive Gear (1 supplied)	Drive Gear train(only supplied complete) I/ASS5206F
42	(8,30)	Module Drive Gears (4 supplied)	
61	(8,31)	Idle Gears (2 Supplied)	
48	(8,27)	Drive Dog Spring	Drive Dog Kit (only supplied complete) I/ASS5205F
49	(8,28)	Thrust Washer	
50	(8,29)	Drive Dog	
53	(8,26)	Drive Dog Shaft	
51	(8,22)	Drive Dog Cover Strip A	I/MDG2135F
54	(8,41)	Dryer Element	I/ELC2117F(230V) I/ELC2118F(115V)
57	(8,42)	Dryer Grille	I/ASS0051F
59	(9,E)	Retaining Screws	Module Gear Set (only supplied complete) I/MOD0100F
60	(9,F)	Gear Cover Plate	
61	(9,C)	Small Idle Round Hole Gear	
62	(9,B)	'D' Shaped Centre Gears X5	
63	(9,A)	Main Drive Gear	
64	(9,D)	Large Idle Gear	
65	(9,74)		
66	(9,-)	Water Module	I/MOD0071F
67	(9,-)	Fixer Module	I/MOD0068F
68	(9,-)	Developer Module	I/MOD0067F

Balloon Number	Issue 6- 1/10/2002 (Page,Part)	Part Description		Part Cat. Number
2	(2,10)	'RUN' Button (Initiation Switch + Button + Bezel)		I/ELC2005F
5	(2,3)	Machine Lid		I/MDG2017F
6	(2,4)	ENDO Slide		I/MDG2055F
8	(2,5)	Film Catcher (with Static Strip)		I/MDG2060F
11	(2,2)	Mains Switch		I/ELC2027F(230V) I/ELC2049F(115V)
13	(2,18)	Power Inlet Socket		I/ELC2072F(WW) I/ELC2071F(USA)
14	(2,19)	Power Inlet Fuse		I/ELC2217F(WW)
15	(2,7)	Side Panel (Motor)		I/MDG2045F
16	(2,11)	Daylight Loader		I/MAC6100F
18	(2,61)	Iris Glove Assembly/Hand Port		I/ASS0010F
19	(4,10)	Dryer Module		I/MOD0076F
22	(4,15)	Temperature Sensors		I/ASS5017F(DEV) I/ASS5019F(FIX.)
23	(4,9)	Water Tank		I/ASS2178F
24	(4,8)	Fixer Tank		I/ASS2177F
25	(4,7)	Developer Tank		I/ASS2176F
28	(4,11)	Heater Elements		I/ELC2097F(230V) I/ELC2098F(115V)
30	(4,1)	Paddle Drive Belt (supplied in a set of 6)		I/FTT0005F
31	(4,1)	Module Turning Tool		I/MDG5145F
32	(7,54)	PCB		I/ASS2500F(230V) I/ASS2501F(115V) XE: I/ELC2103F(230V) I/ELC2104F(115V)
33	(7,55)	Safety Switch		I/ELC2037F
37	(7,38)	Fan Unit		I/ELC2090F(230V) I/ELC2091F(115V)

SE TABLE

[illegible]

• Fuse

1. The power cord socket is located on the back of the machine. This contains a drawer section, which, when slid out, reveals both fuses on UK-Continental machines.
2. USA: no fuse drawer, but circuit breakers are fitted above socket.
3. After investigating cause of failure, replace Fuse according to Table:

FUSE

FUSE		SIZE	FUNCTION	INTRA-XE	INTRA-X	EXTRA-XE	EXTRA-X
F1	5x20	TANK HEATERS	/	3. 15A RS416-360 (/ELC1013P) GDB (S500)	1A RS416-297 (/ELC2154P) GDB (S500)	2A RS416-332 (/ELC2158P) GDB (S500)	2A RS416-332 (/ELC2158P) GDB (S500)
F2	5x20	DRYER HEATER	RS157-9737 T1A (/ELC2169P) GDC (S506)	3. 15A RS416-360 (/ELC1013P) GDB (S500)	1A RS416-297 (/ELC2154P) GDB (S500)	2A RS416-332 (/ELC2158P) GDB (S500)	2A RS416-332 (/ELC2158P) GDB (S500)
F3	5x20	DRIVE/FAN	RS157-9737 T1A (/ELC2169P) GDC (S506)	3. 15A RS416-360 (/ELC1013P) GDB (S500)	1A RS416-297 (/ELC2154P) GDB (S500)	2A RS416-332 (/ELC2158P) GDB (S500)	2A RS416-332 (/ELC2158P) GDB (S500)
F4	5x20	TRANSFORMER	/	3. 15A RS416-360 (/ELC1013P) GDB (S500)	1A RS416-297 (/ELC2154P) GDB (S500)	2A RS416-332 (/ELC2158P) GDB (S500)	2A RS416-332 (/ELC2158P) GDB (S500)
F5	5x20	RECTIFIER	RS157-9709 T500mA (/ELC2172P) GDC (S506)	3. 15A RS416-360 (/ELC1013P) GDB (S500)	1A RS416-297 (/ELC2154P) GDB (S500)	2A RS416-332 (/ELC2158P) GDB (S500)	2A RS416-332 (/ELC2158P) GDB (S500)
F6	5x20	SOLENOID	/	3. 15A RS416-360 (/ELC1013P) GDB (S500)	1A RS416-297 (/ELC2154P) GDB (S500)	2A RS416-332 (/ELC2158P) GDB (S500)	2A RS416-332 (/ELC2158P) GDB (S500)
INLET	5x20 2 off	MAIN FUSES OR CIRCUIT BREAKERS	T5A RS419-791 (/ELC2217P) LF215005 or LF215008	3. 15A RS416-360 (/ELC1013P) GDB (S500)	1A RS416-297 (/ELC2154P) GDB (S500)	2A RS416-332 (/ELC2158P) GDB (S500)	2A RS416-332 (/ELC2158P) GDB (S500)
PLUG (WIRE FITTED)	1"x1/4"	MAINS CABLE	10A RS412-598 (/ELC2153P)	3. 15A RS416-360 (/ELC1013P) GDB (S500)	1A RS416-297 (/ELC2154P) GDB (S500)	2A RS416-332 (/ELC2158P) GDB (S500)	2A RS416-332 (/ELC2158P) GDB (S500)

RS = RS Components, LF = Littlefuse, GDB or

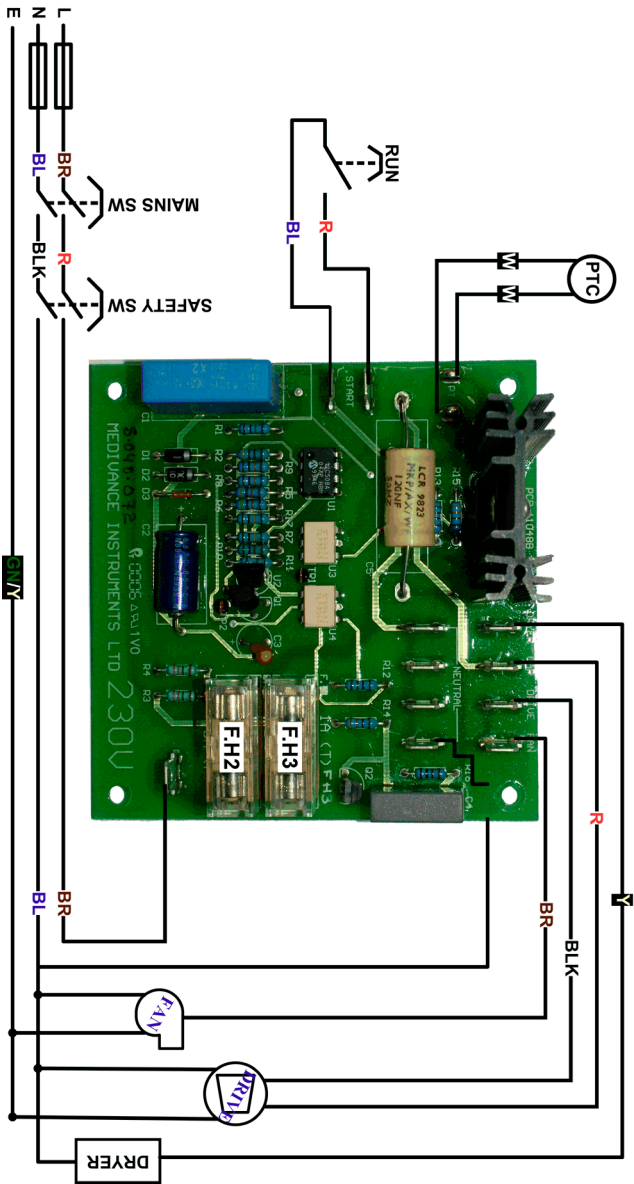


Figure 3

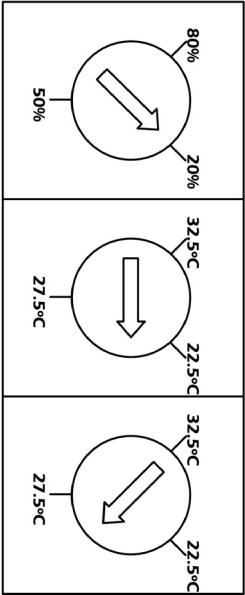


Figure 1

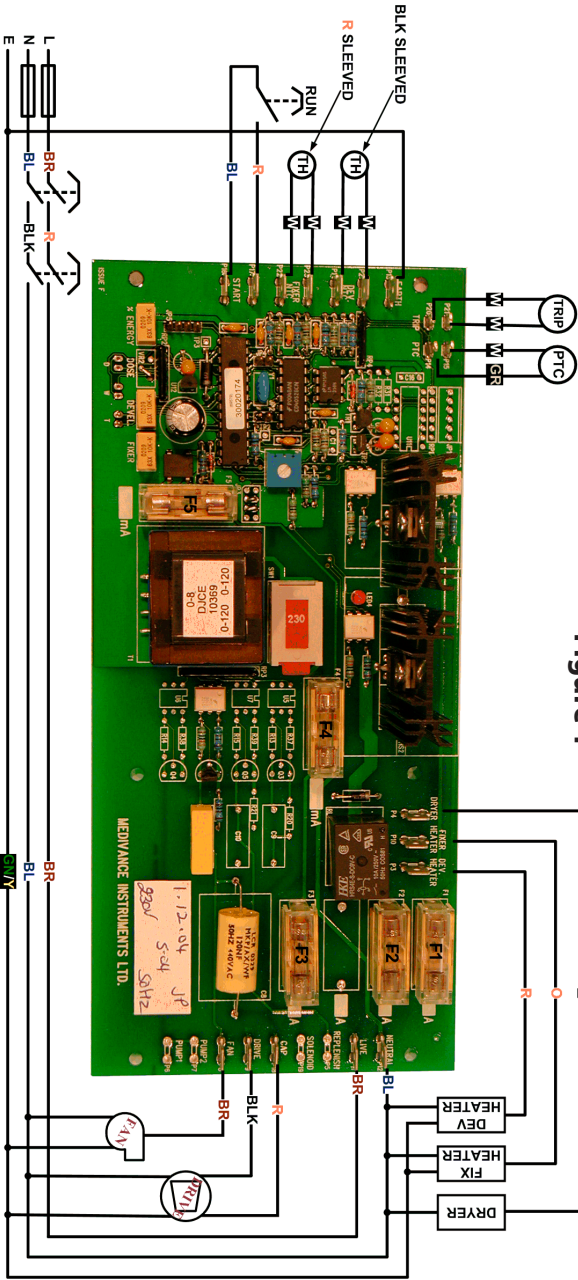


Figure 2

MICRO PROCESSOR PCB OPERATION

The PCB performs the five functions listed below:

1. At switch on, or whenever the start button is pressed, the drive motor and the dryer run for 8 minutes.

2. The dryer is controlled to an output temperature of 147°F/60°C.

3. The Developer and Fixer tank heaters are independently controlled to a pre-

4. If either of the temperature sensors controlling the two tank heaters

- becomes open circuit or short circuit, the ready LED on the PCB will flash

- once a second(XE excluded).

5. If the dryer fan stops or its air inlet grill (on the rear face of the processor)

- is obstructed, the dryer element will be switched off automatically before

- it overheats.

Settings and Adjustments:

1. The dryer is controlled by means of a thermostat in the hot air stream,

- which switches the dryer element between full power and a reduced

- power level. This reduced power is achieved by switching the element on

- and off 60 times a minute for a proportion of the time. This proportion

- is set to 20% and is adjustable between 20% and 80% by means of the

- %ENERGY potentiometer (Fig 1, page 13).

2. The safety shutdown of the dryer element is achieved by means of a "Trip"

- sensor in the heater housing. This is reset by unplugging the processor, and

- then plugged in again after a 10 second pause.

3. The chemicals in the Dev. and Fix. tanks are kept at a set temperature

- by means of a thermistor in each tank. These temperatures are set to

- 82°F/27.5°C (Developer) and 82°F/27.5°C (Fixer) and are adjustable by

- means of the DEVELOPER and FIXER potentiometers between 72.5°F/22.5°C

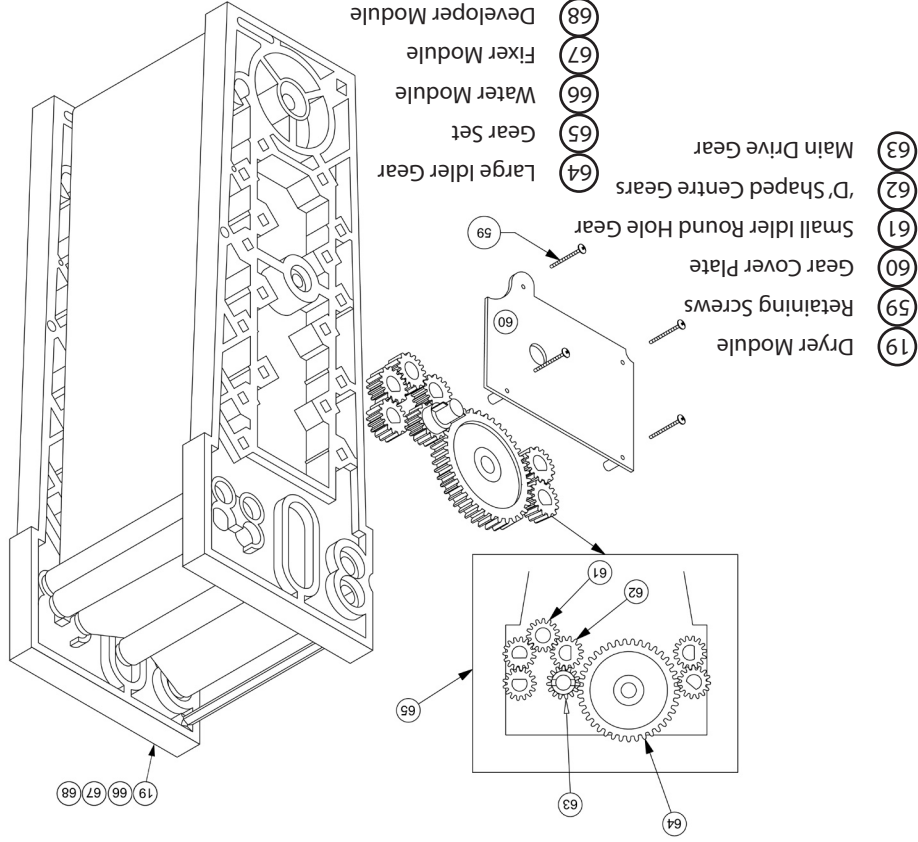
- and 90.5°F/32.5°C.

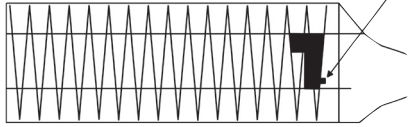
• Module Gear Replacement

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

Remove retaining screws on gear cover plate.

The gear cover plate (item 60) can now be gently eased off; remove old gears, and replace with new gears to their correct positions.
To ensure smooth running, ALWAYS replace complete gear set - not individual gears; replace gear cover plate and retaining screws.





NOTE: Refer to the PCB operating instructions (page 10) for details on how to set the over-temperature cut-out now fitted to the PCB.

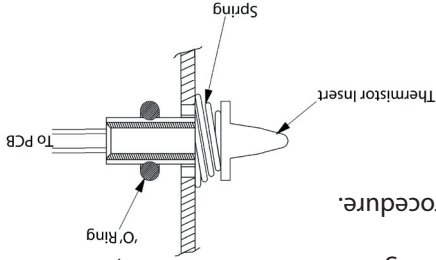
• Fan and Heater Assembly

1. To Replace Fan
 - a. Disconnect wires from terminal strip (item 36, page 6), PCB (item 32, page 6) and terminal block (item 35, page 6).
 - b. Remove grille (item 57, page 7) retained by four screws (item 58, page 7).
 - c. Remove heater assembly. Fan unit may then be released by removing two screws (item 55, page 7) located at the back of the dryer element housing.
 - d. To replace, reverse procedure.
2. To Replace Heater Element
 - a. Disconnect wires from terminal block (item 35, page 7).
 - b. Remove grille (item 57, page 7) retained by four screws (item 58, page 7).
 - c. Slide out heater element (item 54, page 7) withdrawing wires through the holes at the back of the element housing.
 - d. To replace, reverse the above procedure.

• Thermistor/Temperature Sensor Assemblies (XE excluded)

NOTE: Before starting to replace the Developer or Fixer temperature sensor, be sure to drain the relevant tank of all liquid.

1. Disconnect sensor leads from the PCB and unscrew the sensor assembly nut.
2. Pass the sensor leads through the nut one at a time, and remove the sensor from the tank.
3. To replace, reverse this procedure.



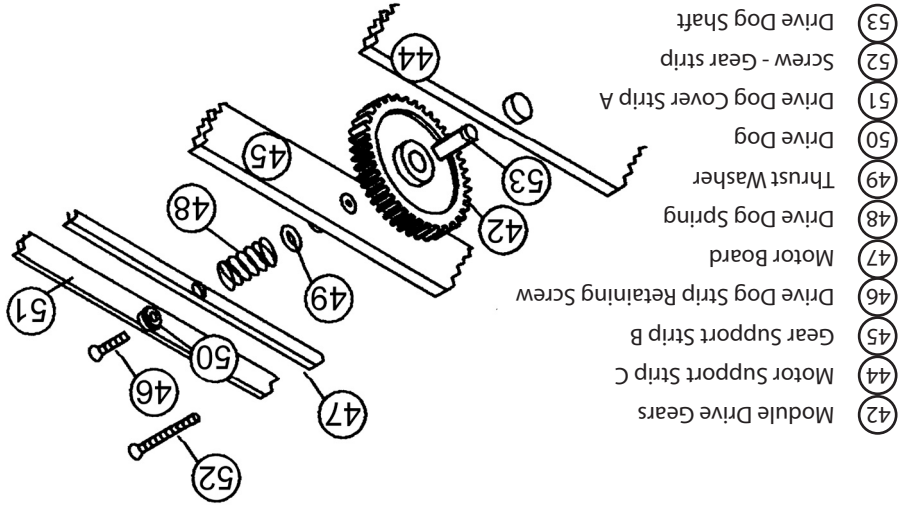
• Resetting the Chemical Heater Thermal Cut-Out (XE excluded)

If the chemicals do not come up to temperature in the normal time and the temperature indicator light stays on, it may be that the thermal cut-out (page 6) has tripped and needs to be re-set. Refer to the diagram on page 6 and the instructions on page 5, to gain access to the thermal trip/reset button (item 28, page 6). To re-set the trip, simply press the re-set button firmly.

• Dryer Element Cut-Out Re-set Operation

Dryer Elements have a small re-set button on the rear of the small black switch inside the Element. If at any time the fan should slow or stop, the Dryer Element will switch off

6. Insert new Drive Dogs, smear the outside with silicone grease.
7. Offer up the above assembly to its position on the motor board (item 47) taking care that the motor mounting holes are at the bottom of the motor support strip (item 44).
 - a. Starting at one end, align and centre the drive dog shaft (item 53) into the drive dog (item 50).
 - b. Hold the assembly in position and fit the end clamping nut (item 43, page 7) loosely to its gear strip assembly screw (item 46).
 - c. Work along the other three drive dog shafts (item 53) aligning and entering them into their drive dogs (item 50) and fitting the clamping nut (item 43, page 7) loosely to each gear strip assembly screw (item 52), as you go.
 - d. Finally tighten all four clamping nuts (item 43). Check that all the gears turn freely and the drive dogs return freely to their outer position after being compressed.
 - e. Slip the main drive gear (item 41, page 7) into place in the centre of the gear train and refit the motor as described in *Motor Mounting* section.



Module Drive Gears

Motor Support Strip C

Gear Support Strip B

Drive Dog Strip Retaining Screw

WORLD BOARD

guide dog and

.....

2

Screw - Gear strip

Drive Dog Shaft

1. Remove the four clamping nuts (item 43, page 7).
2. Remove the motor support strip (item 44) and the gear support strip (item 45) along with the drive dog shaft (item 53).
3. Remove the gears (items 41 and 42, page 7), the drive dog springs (item 48) and the thrust washers (item 49).
4. Now dismantle the assembly for cleaning. Be careful not to lose any of the components.
 - a. Wipe away the old grease from the springs, thrust washers and the drive dog shafts.
 - b. Assemble the module drive gears (item 42) onto the drive dog shafts (item 53).
 - c. Feed the shafts through the gear support strip (item 45) and apply a little silicone grease to the shafts before fitting the thrust washers (item 49) and the drive dog springs (item 48). The grease will hold the springs in place during re-assembly.
 - d. Fit the module drive gears (item 42) onto their spigots on the gear support strip (item 45) and assemble the motor support strip (item 44) into place.
5. Remove the old drive dogs (item 50) from the motor side of the motor board (item 47) and wipe clean the holes in the drive dog cover strip (item 51).

• Replacing the Drive Dogs

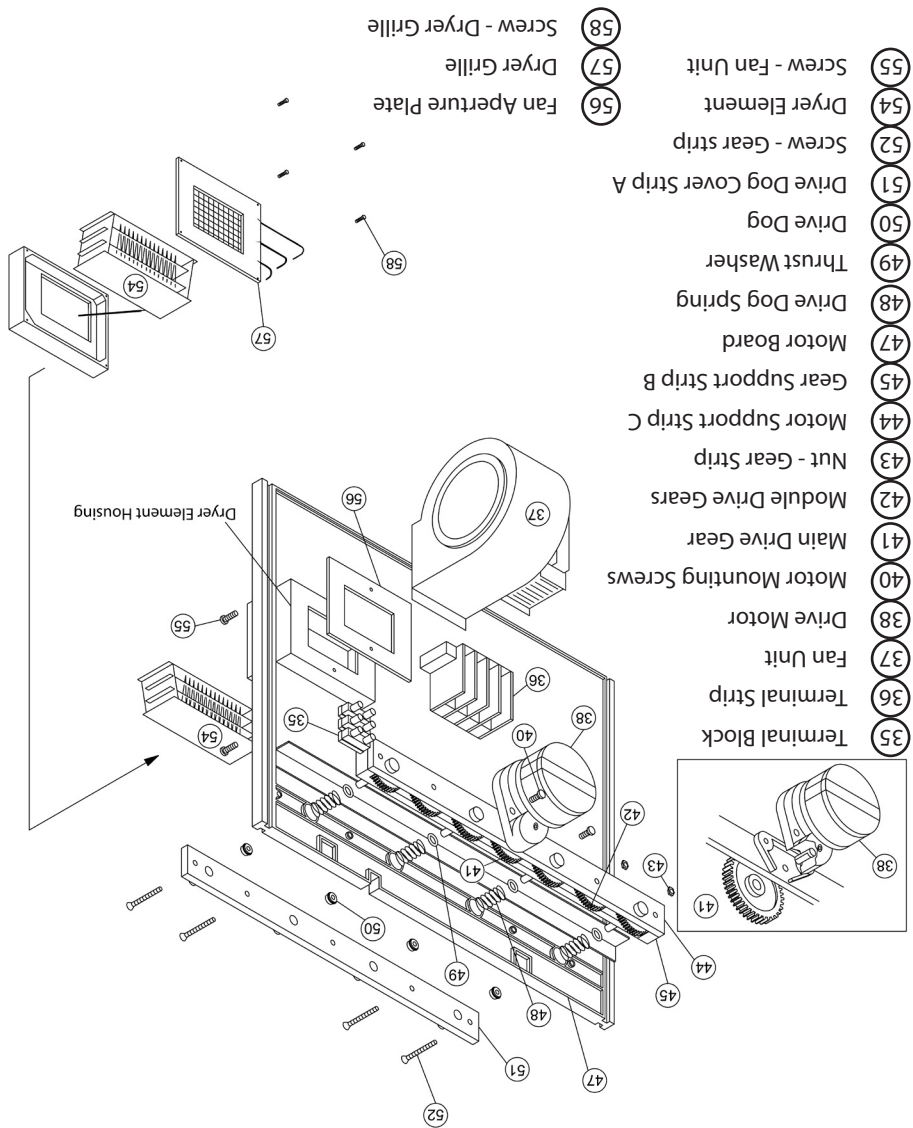
To replace the other gears (items 42, page 7 and item 41) follow the procedure as for replacing the drive dogs (item 50):

refer to **Motor Mounting** section and replace the motor.

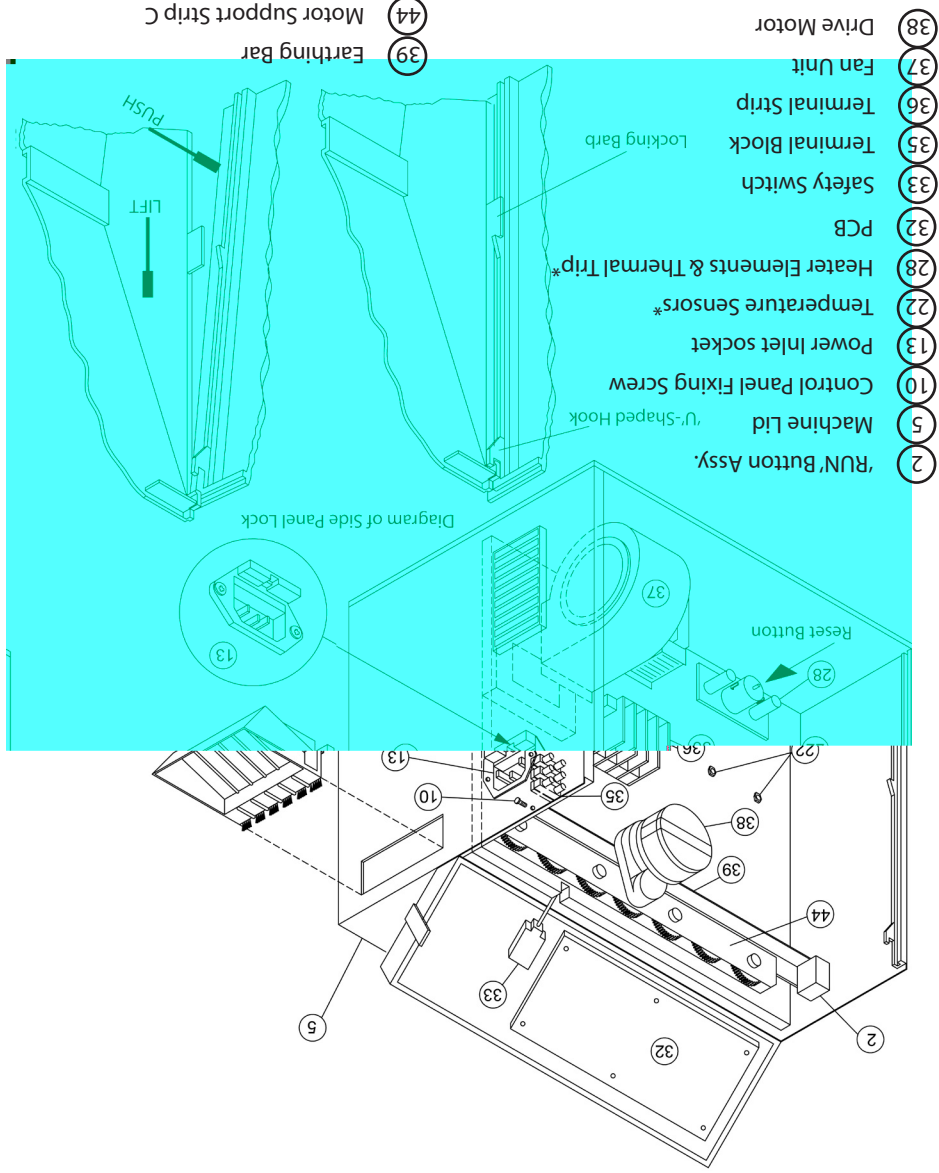
gear upwards from the gear strip assembly and replace with the new gear. Finally page 7) by referring to **Motor Mounting** section (page 5). Withdraw the main drive shaft, do not dismantle the gear strip assembly. Simply remove the motor (item 38, this assembly order. To replace the main drive gear (item 41, page 7) on the motor (item 47) which is clamped between gear strips 45 and 51. It is essential to maintain the assembly consists of three strips (items 44, 45 and 51) and the motor board

• Replacing Components on the Gear Strip

Motor Board Assembly.



Internal Layout



*Items 22 & 28 are not included in Intra-XE

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.

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.

• Replacing the Mains Input Fuses

Refer to the diagram on page 2. The power inlet socket (item 13) is located on the back of the machine; this contains a drawer section (item 14) which slides out revealing the two fuses.

• Access to Internal Components

1. To access internal workings of the machine unscrew control Panel retaining screw (item 10).
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 by pushing out front and back panel to disengage the bars (page 6).

• Motor Mounting

1. Disconnect wires from PCB (item 32, page 6) and terminal strip (item 36).
2. Release and withdraw the motor by removing screws (item 40, page 7).
3. To replace, reverse procedure.
4. Ensure ground/earth continuity is maintained by replacing serrated washer between motor body and ground/earth lead termination.

Pre Installation Instructions

• Sitting 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 80°F (27°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

- a. Use a stable and level counter that will support a weight of at least 100 lbs. (50 Kg.).

- 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. 115Vac 60Hz, 10A, 1150W (USA)/230Vac 50Hz, 10A, 1150W (World Wide).
- b. The power source must be within three (3) feet (1m) of the machine. It should be easily accessible for operation and maintenance.

• Unpacking the VELOPEX

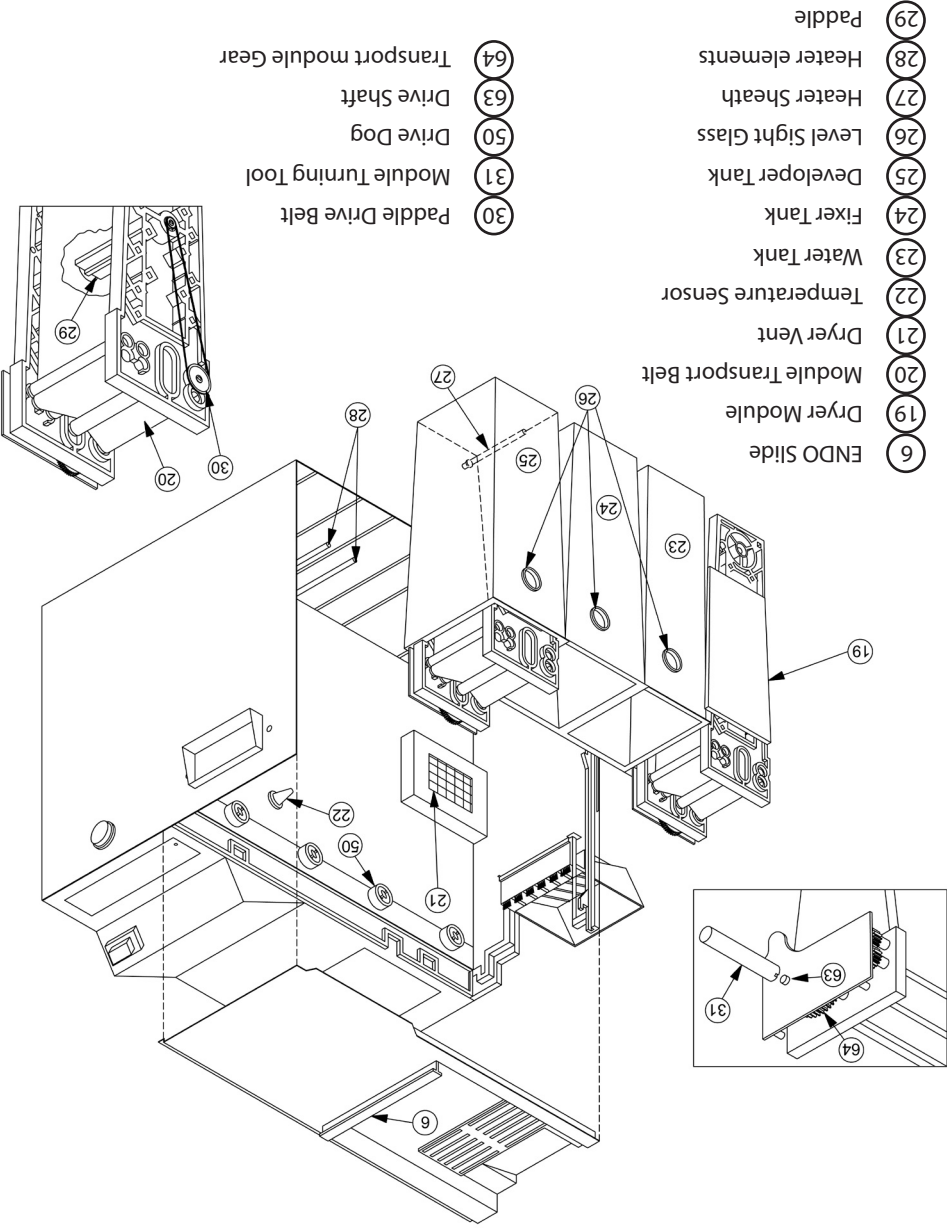
NOTE: For unpacking and lifting the machine into position it is important to have assistance.

The machine comes in a single carton containing:

Machine, Operator's Manual, Silicone Grease, Electrical Cord, Transport Module Turning Tool, Cleaning Brush, Chemical Change Chart and a box of Cleaning Tablets (UK only).

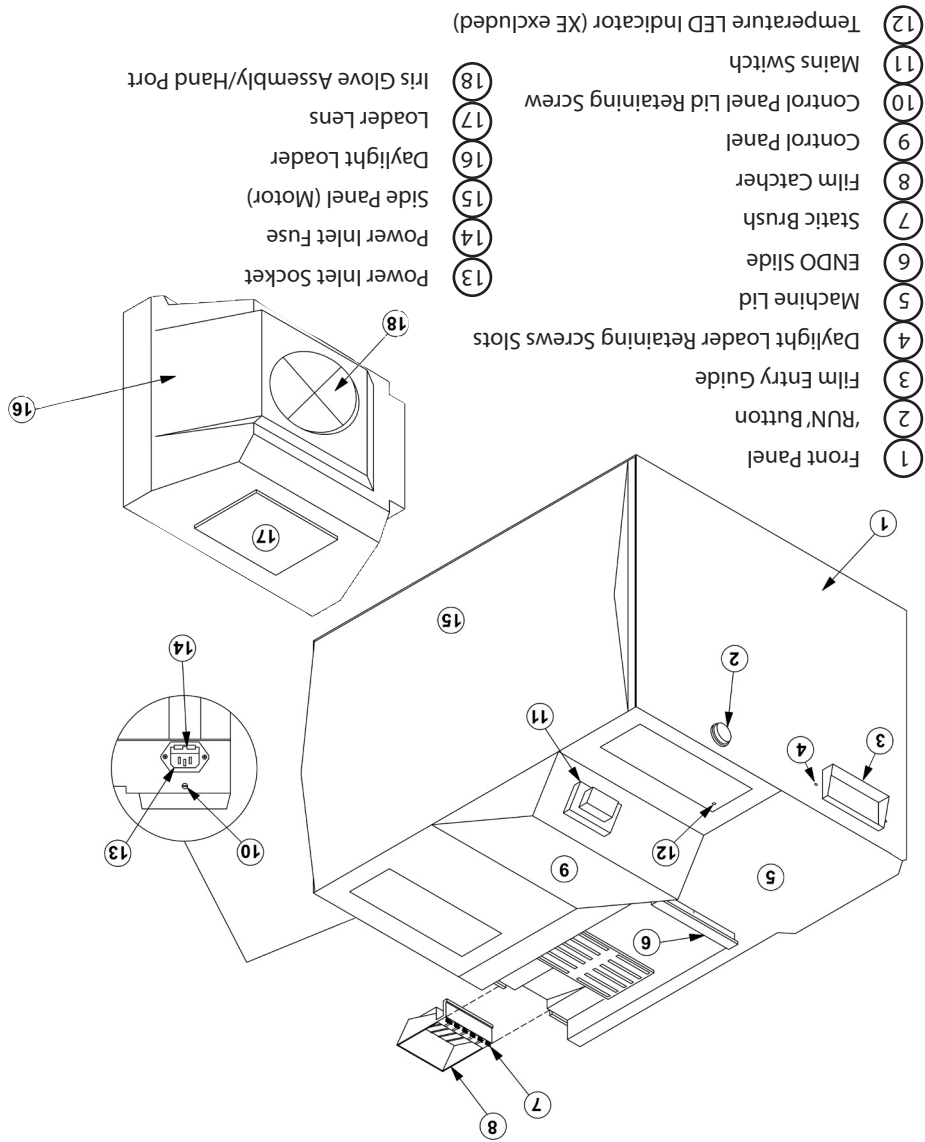
1. Familiarise yourself with the layout of the machine by referring to illustrations at the front of this manual. It is useful to refer to these illustrations as you progress through the manual.

Internal Features



External Components

DIAGRAMS



Contents

Diagrams/Pre Installation.....	2
External Components.....	2
Internal Features.....	3

Maintenance.....	4
Pre Installation Instructions.....	5
Replacing the Mains Input Fuses.....	6
Access to Internal Components.....	6
Motor Mounting.....	6
Replacing Components on the Gear Strip.....	7
Replacing the Drive Dogs.....	7
Fan and Heater Assembly.....	9
Dryer Element Cut-Out Re-set Operation.....	9
Temperature Sensor Assemblies.....	11
Resetting the Chemical Heater Thermal Cut-Out... ..	11
Module Gears Replacement.....	12
Micro Processor PCB Operation.....	13
PCB Connection Diagram.....	14
PCB Connection Diagram (Intra-XE).....	15
Fuse Table.....	16

Components & Parts.....	18
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NOTE: All Part Numbers in this manual have been revised. Reference to previous manuals can be found in the Components & Parts section.

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Issue 6 OM13 I/LIT3601M

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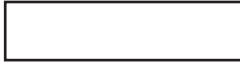
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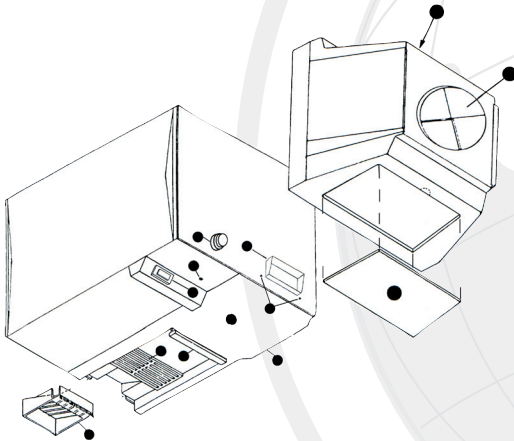
Machine serial number to be
quoted on all correspondence:



CAUTION:
This Document is for use by a qualified technical
representative ONLY.
Any use by unqualified personnel will void the
VELOPEX warranty.

FOR TRAINED TECHNICAL PERSONNEL

Technical manual



Automatic X-ray Film Processor

Intra - X
Intra - XE

