

# VELOPEX<sup>®</sup>

Automatic X-Ray Film Processor

**Extra - X**  
**Xtender**

(USA only)

**Freedom**

(UK only)

**Lynx**

**Extra - 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: Extra-X, Extra-XE, Lynx, Xtender, Freedom.

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.*

## Contacts



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### USA

#### **VELOPEX INTERNATIONAL INC.**

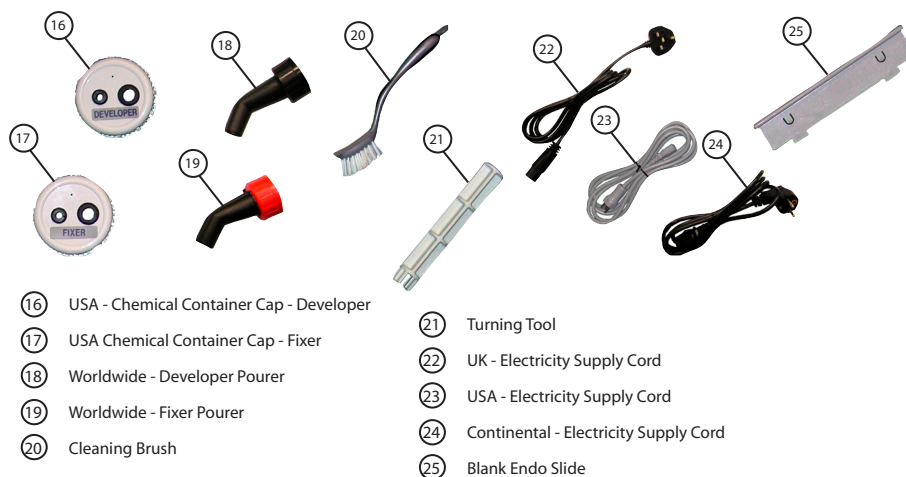
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# Velopex Processor - Exterior





## 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

## Chemical Tubes Colour Coding

Developer	USA - Red Worldwide - Black
Fixer	USA - Blue Worldwide - Red
Water	USA - White Worldwide - Grey/Blue



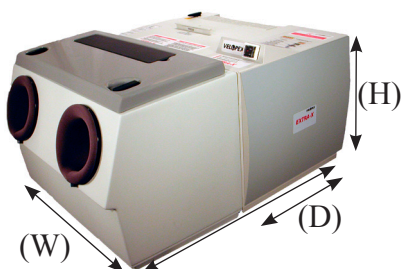
# Contents

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*\* For machine Installation and Plumbing requirements, refer trained technical personnel to sections 1 & 3 in the Technical Manual.*

**ATTENTION! Use only the hoses supplied with this machine.**

# Specification



Width (W)	510mm / 20"
Depth (D) Inc. Loader	470mm / 18½" 740mm / 29"
Height (H)	340mm / 13½"
Weight: Empty Full Tanks	21Kg / 46¼lb 27Kg / 59½lb
Tank Capacity	3.8litres / 6¾Imp Pints each
Standard Supply Voltages	220-240v 50Hz 110-120v 60Hz
Warm-up time	10 min. approx.
Film Feed Speed	470mm / 18½" per min.
Max film width	260mm / 10¼"
Processing time: Dry Wet-Endodontic	4 min. approx. 2 min. approx.

## Daylight Loader Installation



1.

**Remove White protective strip from sealing material.**

INSTALLATION



2.

**Remove Black Covers from the studs on the front panel.**



3.

**Slide Loader over projecting studs.**

## Daylight Loader Installation (cont.)

### INSTALLATION



4.

Release Locks and lift Lid.



5a.

Secure Loader with black knobs screwed onto Studs now positioned inside the Loader (as illustrated in 5b).



**TIP:** Black knobs are located inside the Loader.



5b.

## Filling with Chemicals



6.

Unlock the Lid by means of the Lid Lock.



7.

Bring the Lid to the upright position.



**TIP:** The Lid can be kept in the upright position while the machine is open.



**WARNING:** Remove internal and external transit packing from machine.



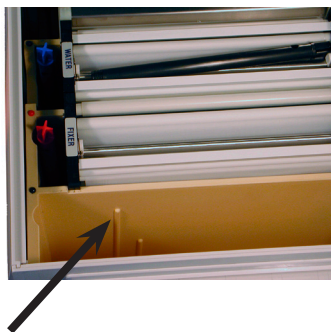
8.

Remove modules, starting with the Developer. Lift Module slightly, slide it to the left and lift it straight out.



**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.

## Filling with Chemicals (cont.)



9.

**When Filling with “ready to use” chemicals, the solution level required is marked by the longer rib inside the tank.**



**TIP:** Use VELOPEX chemicals designed for your unit. If unobtainable use **ONLY** a proprietary chemical available. When using “One Plus One” chemical, fill to lower rib in tank then top-up to the higher rib level with water. Always read and follow instructions on bottle.



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



10.

**Fill Fixer and Developer tanks in that order with their respective chemical solutions.**



**WARNING:** Ensure machine is disconnected from mains power supply whilst filling.



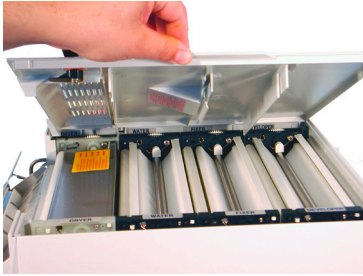
11.

**Lower Transport Modules carefully into their respective tanks. Top up if required – should be one inch (2.5cm) below the top of the tank, level with Drain Tube overflow.**



**WARNING:** Should there be any spillage of Fixer into Developer tank this **MUST** be wiped clean before filling Developer.

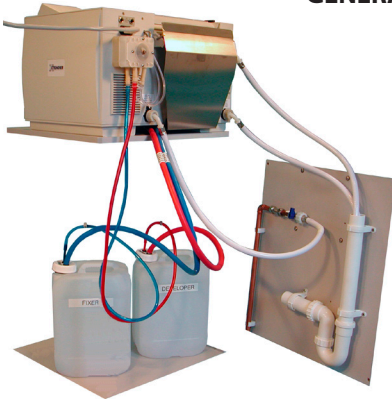
## Filling with Chemicals (cont.)



**12.** Replace the lid – lock into position.

INSTALLATION

### GENERAL PLUMBING LAYOUTS

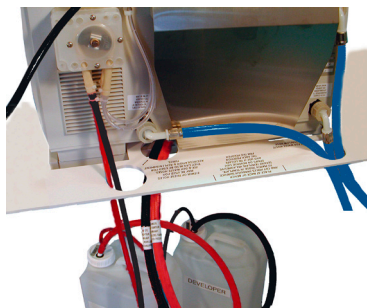


*(USA Re-Circulation Plumbing Layout)*

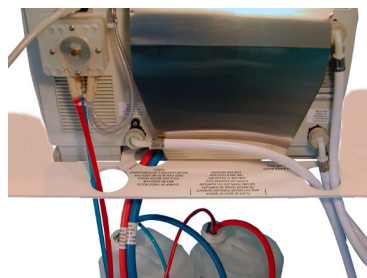


*(Worldwide Plumbing Layout **without** Replenisher / Re-circulation)*

## Replenisher/Re-Circulation Pump



(Worldwide Plumbing)



(USA Plumbing)

**13.** Insert tubes/hoses through holes in counter and into the appropriate chemical container, water supplies and drain pipes.



**TIP:** When attaching NEW chemical containers follow colour coding for appropriate chemicals, otherwise contamination will occur.



**WARNING:** Ensure that the tubes are in the correct chemical:  
Developer

USA - *Red*  
Worldwide - *Black*

Fixer

USA - *Blue*  
Worldwide - *Red*

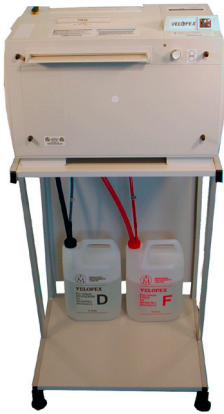


(Cutaway image for instruction ONLY)

**14.** The Replenisher Tube/Straw must be pushed to the bottom of the container.



## Replenisher/Re-Circulation Pump (cont.)



**15.** Each time the machine is initiated, a charge of chemical will be injected into the machine tank. The overflow will return to the same containers.



**TIP:** The machine can be linked up in a replenishment mode by diverting the waste chemicals into separate containers for both Developer and Fixer. This mode of replenishment is more costly to run than re-circulation.

INSTALLATION

(Worldwide Re-circulation layout)



**VERY IMPORTANT:**

*When changing chemicals, before draining chemical tanks in machine:*

*Remove full waste containers and replace with empty containers of at least 5 Litre/1 Gal capacity.*

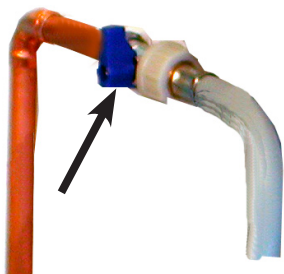
*Machine tanks may then be drained by unscrewing the drain tubes in each tank. While draining the machine tanks, ensure the containers receiving the waste remain upright.*

*When machine chemical tanks are completely empty, remove full waste containers, and replace with those appropriate for the system in use.*

*Remove cap assemblies from containers and replace drain tubes in tanks.*

*Refill machine (follow sections 6-16).*

## Operating the Processor



1.



**Turn on Water Supply** (if not already on).

**WARNING:** *Make sure all hoses are connected properly and drain pipes are in place.*  
**Always turn water supply off at night.**



2.



**Plug in electric cord and switch on.**

**TIP:** *After approx. eight minutes the processor will go into 'stand-by' mode, by which time the water will have reached its correct level.*



**WARNING:** **Always turn mains switch off at night.**



3.



**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 10-20 min.).*



4.

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.



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



5.

Open Daylight Loader and place film inside, Close and lock Lid.



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



6.

Put hands through Loading Gloves and press 'RUN' button, Strip wrapping from film, insert film into Entry Slot.



**TIP:** Intra oral film can be processed via the film guides across the width of the film entry slot for ease of patient identification.



**WARNING:** A second film can be inserted only after the first has fully entered the machine.

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

## Operating the Processor (cont.)



7.

**Extra Oral films – Ensure Loader Lid is correctly locked in place before loading cassette or processing film.**



**WARNING:** Extra Oral films are extremely light sensitive. When loading Extra-Oral film always have the viewer cover in place to avoid film fogging.

8.

**Make sure Chemical Level Indicators are NOT illuminated. If Indicators are Illuminated, top up Chemicals (See Installation sections 6-12)**



**TIP:** Before processing run through “clean-up film” or any spare 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.



9.

**Feed films squarely into the film entry slot.**



**TIP:** Use this opportunity to reload your cassette to minimise handling time.

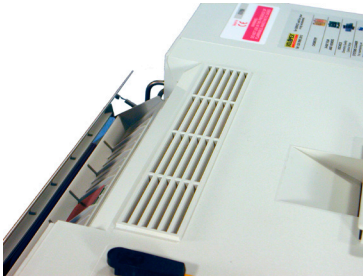


**WARNING:** Do not remove hands from loading section until the film has completely entered the machine. Remember to replace lid on the film storage box before removing hands.



(Image for instruction ONLY)

## Operating the Processor (cont.)



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



**TIP:** You will find the small films collected in pockets, which are aligned with the entry slots on the front film entry guide.



**WARNING:** At the end of the day turn off water and main electric switch.



### 11. For quick viewing of intra oral 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. If not, a jam could occur particularly with extra-oral films.



### 12. When using Endo facility, feed in Endo film through the Fourth slot from the right on the film loading guide.

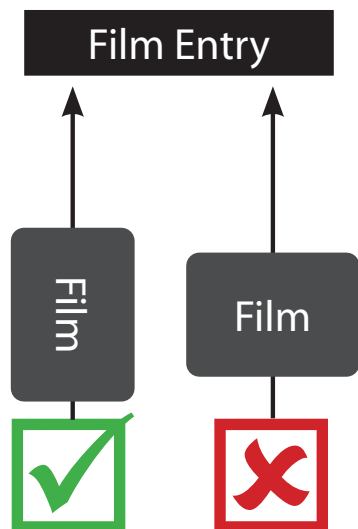


**TIP:** When using a daylight loader- it is easy to count the ribs on the entry slot and feel your way to the Fourth slot.

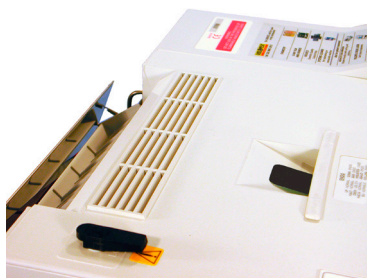
(Image for instruction ONLY)

## Operating the Processor (cont.)

OPERATION



**WARNING:** Make sure the film is fed in squarely, and the short edge is the leading edge.



# 13.

**Remove film from ENDO slot.**

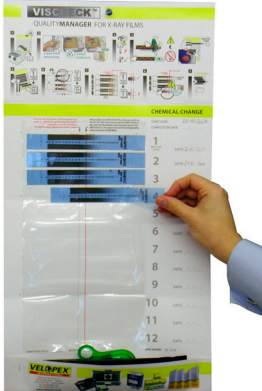


**TIP:** After film exits, you can view and then wash it with water and hang it up to dry.



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

# Velopex Processor Cleaning

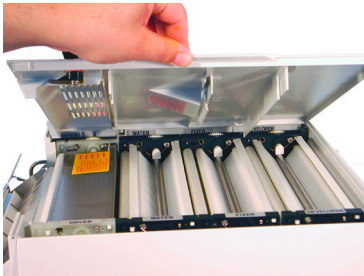


# 1.

**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.

**Unlock and open Lid (see section 6, page 4).**



**WARNING:** Carry out the cleaning routine each chemical change or approx. once every four weeks, according to use. If the Velopex is fitted with automatic replenishment, the complete chemical change cycle will be only every 4-6 weeks, according to use.



# 3.

**Drain Tanks by unscrewing drain tubes (refer to image in next section). Remove Modules (See section 8, page 4).**



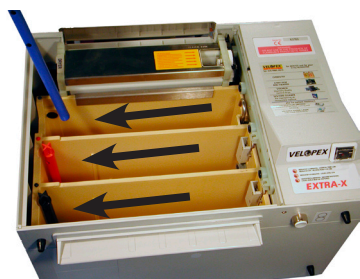
**TIP:** Tip the Module and lean it on the edge of the tank letting it drain before completely removing.



**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 or flush with copious amounts of water.



## Velopex Processor Cleaning (cont.)



(Worldwide drain tube)

4.

**Replace Drain Tubes. Hand screw the drain tubes in, do not over tighten them. Make sure the 'O'-Ring is at the bottom of the pipe.**



**WARNING:** Check that drain tubes are secure before refilling with Chemicals - FINGER TIGHT - Do Not Over Tighten.



5.

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



**WARNING:** Do not allow cleaning solution to drain into containers containing processing chemicals - FOLLOW INSTRUCTIONS SUPPLIED WITH CLEANING TABLETS.



6.

**Replace the modules in their tanks and run for one cycle. Drain 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 three per tank. Replace Modules and run for two cycles at operating temperature.**



**WARNING:** DO NOT FILL THE DRYER TANK WITH WATER...!



# 8.

**Dryer Module Cleaning - Place Dryer Module in container or sink filled with fresh cold water. Add three Velopex Cleaning Tablets 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.



# 9.

**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.

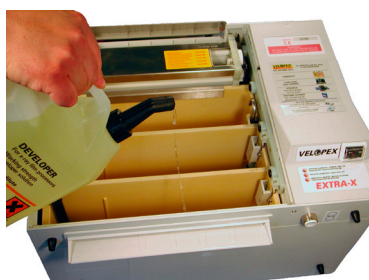
## Velopex Processor Cleaning (cont.)



### 10. 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.



### 11. Fill up with Chemicals (See section 9, page 5). 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 MC will run one cycle when switched on ad 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, part 23 on page 7).
		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.
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	Solutions) overheating		DO NOT USE MACHINE - Call for Service.
4	Films Do Not Enter though Film Entry Guide.	Machine is in 'standby' mode	Press 'Run' button - machine may be in 'standby' mode.
5	Film Lost in the Machine	Transport Modules not in Place	Open machine lid and check correct engagement of transport modules.
		Transport Modules not in Place	Check that the transport modules are correctly located in their drive dogs and running correctly. If not, re-locate.
		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.

No.	SYMPTOM	POSSIBLE CAUSE	ACTIONS
	Films too Dark:		
	Test for light fog by feeding an unexposed extra-oral 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 safe light is sound (e.g. process a test with safe light 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 spot-lights or strip lights).
		Light Leaks	Do not remove your hands out of the hand entry sleeves 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 Box Lid open	Check that lid has not been left off film box: i.e. process one film from a new box of film.
		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.
Dark Film		Mixing of Developer	Check that the Developer has been correctly mixed (if relevant).
		Temperature	Check temperature of developer and Fixer tanks. These are generally set at: Developer 77°F (25°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.
		Chemical Level too Low	Top up.
		Temperature too Low	If temperature indicator light does not go out, check with a thermometer - generally set at: Developer 77°F (25°C), Fixer 82°F (27.5°C) - if significantly below these temperatures, call for service.
		Film Exposure	Check films have been exposed correctly.
8	Films Dirty or Marked	Film Compatibility	Check that the films are compatible with the type of intensifying screen used with the x-ray machine.
		Water Tank Dirty	Clean module thoroughly (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.
		Light Leaks	Check for stray light entering machine - proceed as for fogging (see symptom # 6).
9	Sudden Change in Image Density	Wrong Solutions	Make sure solutions are in correct tanks.
		Developer Contamination	Replace Developer if contaminated with Fixer.
		Temperature	Check Developer temperature (and Replenishment rate).
		X-ray Unit.	Check X-ray unit.

## TROUBLE SHOOTING

No.	SYMPTOM	POSSIBLE CAUSE	ACTIONS
10	Film not Drying	Replenishment Rate	Check top-up/replenishment rates.
		Water Flow	Check wash water flow rate.
		Dryer	Make sure Dryer is working and blowing hot air.
		Humidity	Look for poor air circulation or HIGH humidity in processing area.
11	Deposits on Film:	Electrical Component	Switch off machine. Switch on again after 10 seconds. If still not drying, call for Service.
		Water Flow	Check for very low wash water flow rate.
		Fixer	Check for contaminated or wrongly mixed Fixer.
		Fixer Deposits	Check for Dryer Module contaminated by fixer deposits.
		Dirt	Clean entry slot or feed guides
	Black Parallel Lines		Clean bridge-over rollers.
			Clean Modules.
		Belts Jammed	Check belts are turning properly.
	Dark Areas on Film	Kinking the Film	Check Intensifying screens in cassette for dirt.
		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	<u>Light Areas on Film:</u>		
		Temperature	Check Fixer temperature.
		Fixer	Check for exhausted Fixer.
		Water Flow	Check water flow in wash tank.
		Dirt in Cassette	Check for dirt on intensifying screens in film cassette.
		Cassette Screen	Poor screen contact.

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 fault, contact your Velopex supplier.
16	Contamination	Chemicals	When changing Chemicals, make sure the tanks are drained down fully and rinsed out. Fresh chemical will be spoiled by contamination, leading to poor results.
			Should a tank fail to drain down fully when the drain tubes are removed, it will probably be because the waste outlet pipe is not lying flat but rising before entering the waste pipe. The tank will then take its level from this point. Correct this by ensuring that all waste exit pipes do not rise above counter top level. Check for kinks in pipes.
17	Abnormal Odour, Overheated or Unusual Noises		<b>Immediately switch processor off and unplug from Mains Power Supply. Contact your supplier.</b>

## Service Log:

[illegible]







## Component Part Numbers (cont.)

## COMPONENTS & PARTS

Balloon Number	Issue -5 5/1/2001 (Page,Part)	Part Description	Part Cat. Number
121 (11,8)		Hose Assembly (supplied as a pair)	I/ASS2141F(230v)
122 (11,8)		Peristaltic Tube	I/ASS2142F(115v)
123 (11,8)		Replenisher Inlet Tubes	
126 (11,8)		Replenisher Tube/Straw - FIXER	
126 (11,8)		Replenisher Tube/Straw - DEVELOPER	
125 (11,3)		Rotor Assembly X2	I/FT2153F
128 (22,-)		Mains Lead	I/ELC2148F(UK) / I/ELC2149F(USA) / I/ELC2147F(CONT)
130 (22,-)		Flexible Hose - Cold Water Supply	I/FT2026F(USA)/ I/FT2027F(WW)
131 (22,-)		Flexible Hose - Water Overflow	I/FT2034F(USA)/ I/FT2027F(WW)
132 (22,-)		Flexible Hose - Water Waste	I/FT2034F(USA)/ I/FT2027F(WW)
138 (22,18)		Deep Loader for Large Cassettes (Optional)	Use Description
139 (22,-)		Machine Stand (Optional)	I/MAC9104F
142 (-,-,-)		Module Turning Tool	I/MDG5145M
144 (-,-,-)		Anti-static Strip	I/FT2010F

## Component Part Numbers (cont.)

Balloon Number	Issue -5-12/04 (Page,Part)	Part Description		Part Cat. Number
93	(21,9)	Connector Locking Nut	I/MDG3075F	
94	(21,10)	Pipe Connectors X3	I/MDG2085F	
97	(21,19)	Foot Tray	I/MDG2047F	
99	(21,-)	Rotation Stop (Retainer)	See Item 25	
<b>Module Gear Set (only supplied complete)</b>				
101	(19,6)	Gear Cover Plate	I/MOD0100F	
102	(19,4)	Large Idler Gear		
103	(19,1)	Main Drive Gear		
104	(19,2)	'D' Shaped Centre Gears X4		
105	(19,3)	Small Idler Round Hole Gear X2		
109	(19,-)	DEVELOPER Module	I/MOD007F	
110	(19,-)	FIXER Module	I/MOD008F	
111	(19,-)	WATER Module	I/MOD0012F	
112	(19,-)	DRYER Module	I/MOD0017F	
<b>20 Replishser Pump Set (supplied complete)</b>				
113	(11,10)	No.8 unc Screw X4	I/REP0002F(230v) I/REP0001F(115v)	
114	(11,7)	Cover Plate (With Brass Bush)		
115	(11,6)	Rotor Housing (Outer)		
116	(11,5)	Cover Plate		
117	(11,9)	M5 Screw X3		
118	(11,2)	Rotor Housing (Inner)		
119	(11,11)	Back Panel		
120	(11,1)	Pump Motor		

## Component Part Numbers (cont.)

## COMPONENTS &amp; PARTS

Balloon Number		Part Description	Part Cat. Number
Issue -4 5/1/2001 (Page,Part)			
65	(20,4)	Heater Manifold	I/ASS5011F(230v)
67	(20,5)	Thermal Cut-out	I/ASS5018F(115v)
72	(20,11)	Heater Element Seal	
73	(20,10)	Pump Coupling Nuts	
74	(20,9)	Tank Manifold Seals	
75	(20,13)	Heater Clamping Nut	
69	(20,14)	Tank Wall Stiffener	I/FIT2045F
70	(20,1)	Tank (supplied with manifold assy.)	I/ASS5009F(230v) / I/ASS5006F(115v)
70	(20,1)	Tank (supplied without manifold assy.)	I/ASS5005F(230v) / I/ASS5008F(115v)
70	(20,1)	Tank (supplied with manifold but no Pump)	I/ASS5007F(230v) / I/ASS5004F(115v)
76	(20,7)	Temperature Sensor Assemblies	I/ASS5016F
84	(--,--)	Solenoid Valve Kit	I/ASS2111F(115v)
77	(21,8)	Solenoid Connector	I/ASS2105F(230v)
78	(21,13)	Washer Rubber	
79	(21,14)	Connector Locking Cap	
80	(21,7)	Solenoid Valve	
81	(21,15)	Straight Connector	
83	(--,--)	Solenoid Coil	
86	(21,11)	Replenisher Tube - DEVELOPER (Stainless Steel)	I/FIT4045F
87	(21,12)	Replenisher Tube - FIXER (Stainless Steel)	I/FIT4050F
88	(21,3)	Water Inlet Pipe	I/FIT2145F
89	(21,2)	Drain Tubes (Supplied as a set of 3)	I/ASS5210F(230v)
		Developer Drain Tube	I/ASS5211F(115v)
		Fixer Drain Tube	
		Water Drain Tube	

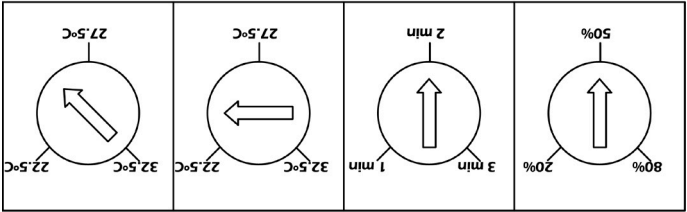
## Component Part Numbers (cont.)

Ballon Number	Issue 5- 12/04 (Page,Part)	Part Description	Part Cat. Number
33	(17,9)	Control PCB	I/ELC2400F(230v)/ I/ELC2401F(115v) XE: I/ELC2410F(230v)/ I/ELC2420F(115v)
34	(17,8)	Safety Switch	I/ELC2037F
35	(18,7)	Main Drive Gear (1 supplied)	I/ASS5206F (only supplied complete)
43	(18,5)	Module Drive Gears (4 supplied)	
61	(18,6)	Idle Gears (2 supplied)	
38	(17,2)	Motor Drive	I/ELC2124F / I/ELC2188F(USA)
40	(17,4)	Dryer Fan	I/ELC2090F / I/ELC2091F(USA)
44	(18,8)	Thrust Washer	I/ASS5205F (only supplied complete)
45	(18,9)	Drive Dog Spring	
47	(18,10)	Drive Dog	
50	(18,13)	Drive Dog Shaft	
48	(18,2)	Drive Dog Cover Strip A	
53	(18,19)	DRYER Grille	I/ASS0050F
54	(18,17)	DRYER Elements	I/ASS2117F / I/ASS2118F(USA)
62	(2,24)	Water Waste (Incl. Connector, Nuts, Rings)	I/MDG2085F
63	(2,25)	Water Overflow (Incl. Connector, Nuts, Rings)	I/MDG2085F
64	(20,12)	Heater Element	I/ELC2096F (USA) / I/ELC2095F(UK)

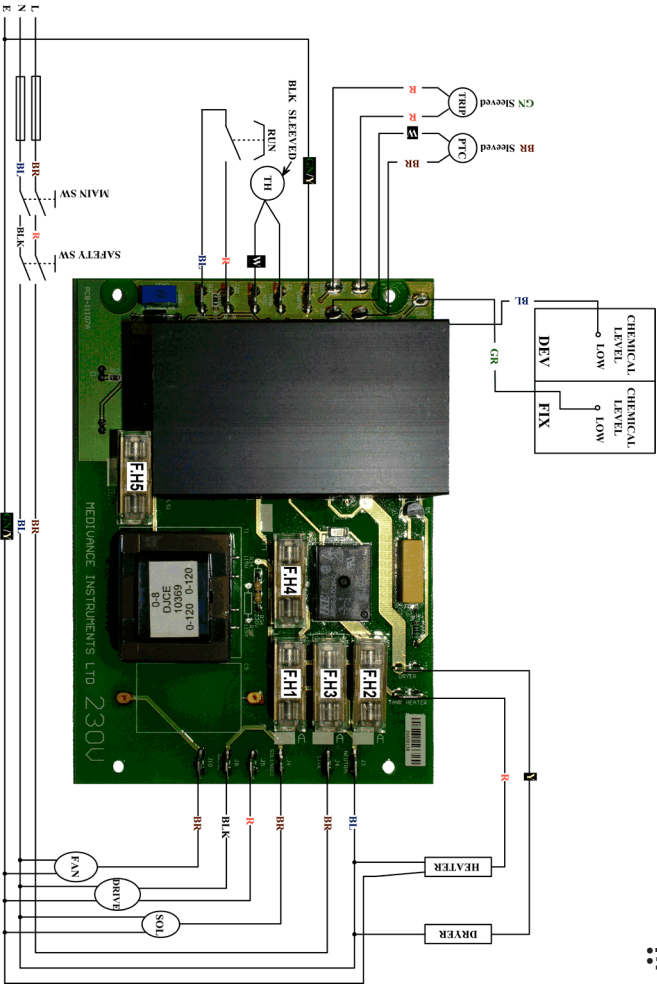
Balloon Number		Part Description	Part Cat. Number
Issue -4 5/1/2001 (Page,Part)	12/04		
1	(2,16)	Daylight Loader	I/MAC6000F
2	(2,18)	Hand Entry Ports/Gloves	I/FIT3002F
4	(2,20)	Daylight Loader Lid (incl. locks' hinge' covers)	I/MDG3009F
6	(2,30)	Film Entry Guide	I/MDG2080F
8	(2,9&11)	Machine Lid	I/MDG2040F
9	(2,35)	Endoslide (See Alternatives)	I/MDG2056F
11	(2,10)	Machine Lid Lock (2 supplied)	I/MDG2155F
12	(2,13)	Film Collector Stainless Steel Backplate	I/FIT5015F
13	(2,12)	Film Collector	I/MDG2152F
14	(2,32)	Side Panel	I/MDG2045F
15	(2,2)	On/Off Power Switch/Mains Switch	I/ELC2027F/ I/ELC2049F(USA)
19	(2,6)	'RUN' Button (Initiation Switch + Button + Bezel)	I/ELC2005F
22	(2,7)	Double Fused Chassis Plug (Europe)	I/ELC2071F
23	(2,7)	Socket Non Fused (Circuit Breakers) USA only	I/ELC2069F
24	(2,14)	Film Collector Backplate Spring (6 supplied)	I/SPR0001F
25	(2,23)	Water Inlet Connector (+ item 99)	I/MDG2085F
26	(2,27)	FIXER Waste (Red - Europe/Blue - USA)	I/FIT2025F(BL)/ I/FIT2030F(RD)/ I/FIT2031F(BLK)
27	(2,26)	DEVELOPER Waste (Black - Europe/Red- USA)	Use Description
28	(2,22)	Chemical Replenisher Inlet Tubes	I/FIT4042F
29	(17,14)	Circulation Pump FIXER (with Impeler)	I/ELC2150F / IELC2051F(USA)
30	(17,13)	Circulation Pump DEVELOPER (with Impeler)	I/ELC2150F / IELC2051F(USA)

## Component Part Numbers

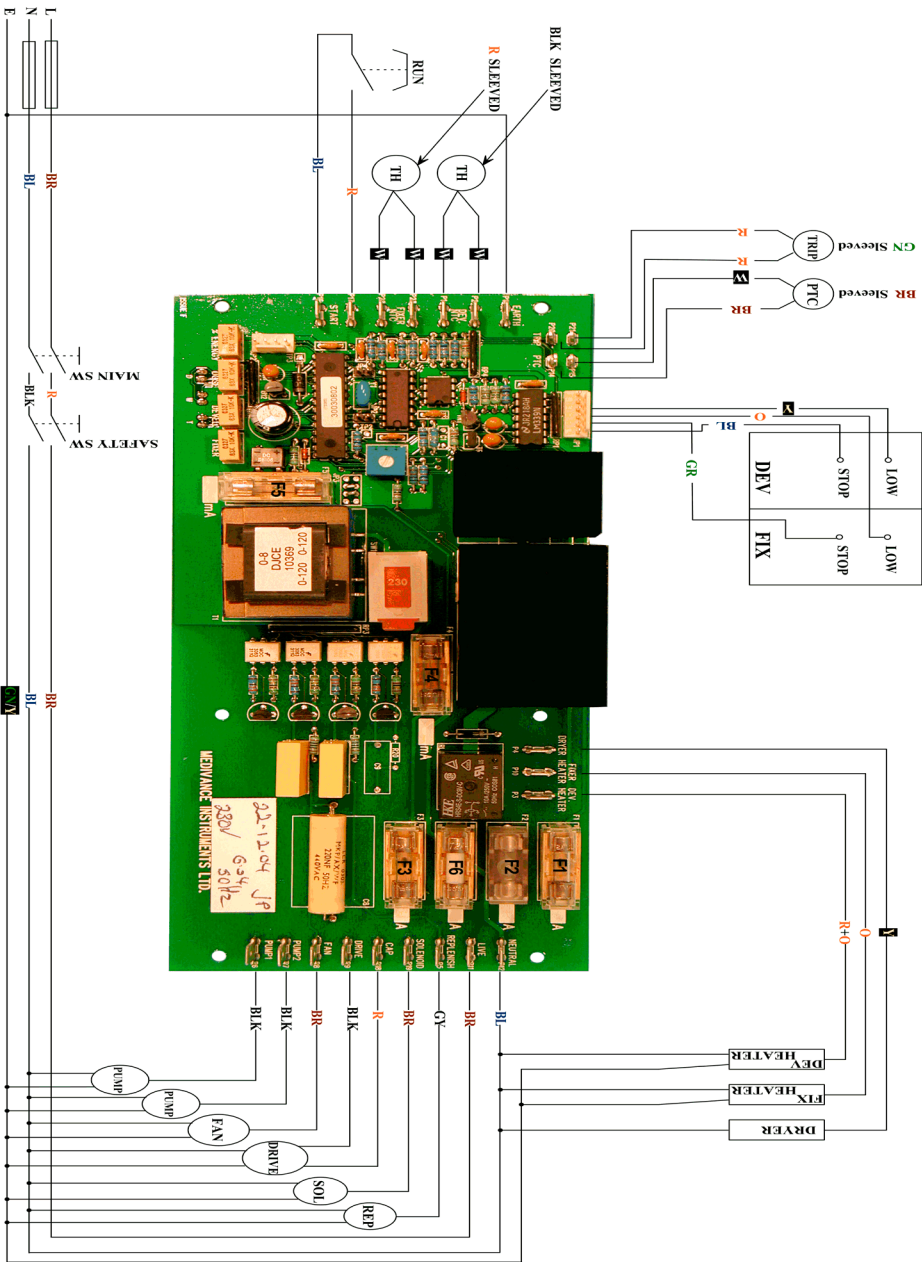
Figure 1:



Extra - XE:







PCB Connection Diagram

3. The chemicals in the Dev. and Fix. tanks are kept at a set temperature by means of a thermostat in each tank. These temperatures are set to 77°F/25°C (Developer) and 81°F/27°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 (see **Temperature and Replenisher** section on page 24).



## MICRO PROCESSOR PCB OPERATION

The PCB performs the 8 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. At turn on, or whenever the 'RUN' button is pressed, the replenisher runs for two minutes. This is adjustable.
3. The dryer is controlled to an output temperature of 158°F/70°C.
4. The Developer and Fixer tank heaters are independently controlled to a preset temperature whenever the mains power switch is on.

5. The liquid levels in the 2 chemical tanks are monitored to protect the heaters and ensure good film processing by indicating when either is low and then indicating when the developer or fixer is too low to continue processing. At this point the processor will run to the end of its time period and shutdown until the tanks are completely filled again.
6. 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.
7. The pumps are switched on whenever the processor is running or the tank heaters are on.
8. 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 50% and is adjustable between 20% and 80% by means of the %ENERGY potentiometer (Figure 1, page 28).
2. The safety shutdown of the dryer element is achieved by means of a "Trip" sensor in the heater housing. This is automatically reset by switching the

4. Fill the machine tanks with fresh chemicals.
5. Each time the 'RUN' button of the machine is pressed a charge of chemical from the external reservoir will be injected into the machine tanks.

#### VERY IMPORTANT:

When chemicals are exhausted and require replacement, before draining machine chemical tanks:

Remove cap assemblies from both reservoir containers.

Insert cap assembly into empty containers of at least 5 Litre/1 Gal capacity.

Drain Machine tanks by removing the screw-in drain tubes in each tank.

While draining the machine tanks, ensure that the drain containers remain upright.

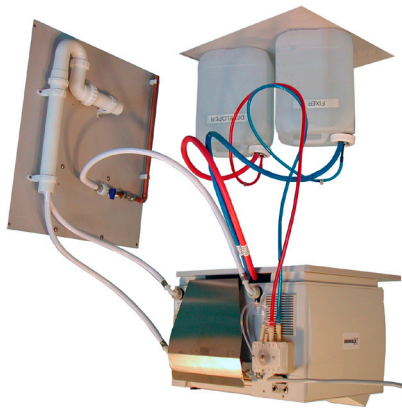
When machine chemical tanks are completely empty, remove cap assemblies from waste containers and replace screw-in drain tubes in tanks.

Refill machine and replace external reservoir as from 3 above.

#### • Temperature and Replenisher

Temperature and replenisher are located on the PCB (item 33). These are pre-set at time of manufacture and are not customer adjustable. Normal factory settings are: Developer 77°F/25°C; Fixer 81°F/27°C and 2 minutes (replenisher). For XTENDER machines chemical temperature will be set at 82°F/27.5°C in both Dev and Fixer tanks. For LYNX machines chemical temperature will be set at 30°C in both Dev and Fixer tanks.

#### RE-CIRCULATION PLUMBING DIAGRAM (USA LAYOUT)



### • Electrical Connections

replenisher tube protruding through the back panel of the machine, and fix with the two remaining hose clips provided. Again it will be found easier to put the lower of the two clips on first.

1. Connect ground/earth wire (green + yellow) on pump motor to terminal block (item 39).
2. Connect live wire (grey) on pump motor to PCB (item 33) position REPLENISH (P5).
3. Connect neutral wire (blue) on pump motor to terminal block (item 39).

### • Finally

1. Replace all panels.
2. Position machine to its final working position, re-connect water and drain tubes.
3. Remove the fixer bottle cap and replace with the dip tube with the red bung and cap.
4. Remove the developer bottle cap and replace with the dip tube with the black bung and cap.

### REPLENISHER UNIT

Whether supplied as a factory installed unit or as a kit for retro fitting the unit can be used to re-circulate chemicals through the machine utilising an external reservoir:

1. Remove the white bungs from both Red (Blue – USA) and Black (Red – USA) bottle caps.
2. Insert a length of white plastic tubing into each chemical drain hose. Pass the white tubing into each bottle cap. ENSURE THAT BLACK (RED – USA) DRAIN HOSE IS CONNECTED TO BLACK (RED – USA) BOTTLE CAP AND RED (BLUE – USA) DRAIN HOSE IS CONNECTED TO RED (BLUE – USA) BOTTLE CAP
3. Insert the re-circulator suction pipes into fresh containers of chemical - the dip tubes **must** be pushed to the **bottom** of the containers. ENSURE THAT THE BLACK (RED – USA) TUBE IS IN THE DEVELOPER AND THE RED (BLUE – USA) TUBE IS IN THE FIXER

• **Replenisher Pump Mounting Instructions**

1. With pump motor (item 120) inside, and inner rotor housing (item 118) outside the machine, screw together using three M5 screws (item 117).

2. Put a washer (item 124) onto the motor shaft.

3. With the open end of the spring clip facing outwards, push a rotor assembly (item 125) onto the motor shaft along the longest flat of the shaft.

4. With the rotor assembly in a vertical position, push a hose assembly (item 121), leaving approximately 65mm (2½") hanging outside, into the right hand slot of the rotor housing. Feed the remainder of the hose assembly into the rotor housing by turning the rotor assembly by hand, in a counter-clockwise direction. Finally, press the hose assembly into the left hand slot of the rotor housing where it will be held captive. The two ends should now be of equal length - if not, re-position.

5. Place cover plate (item 116) in position locating on bosses on the inner rotor housing (item 118).

6. Place outer rotor housing (item 115) in position, locating on bosses on the inner rotor housing (item 118).

7. Put the remaining washer (item 124) onto the motor shaft.

8. With the open end of the spring clip facing outwards push the remaining rotor assembly (item 125) onto the motor shaft along the shortest flat of the shaft i.e. ensure that the two rotor assemblies are at right angles to one another.

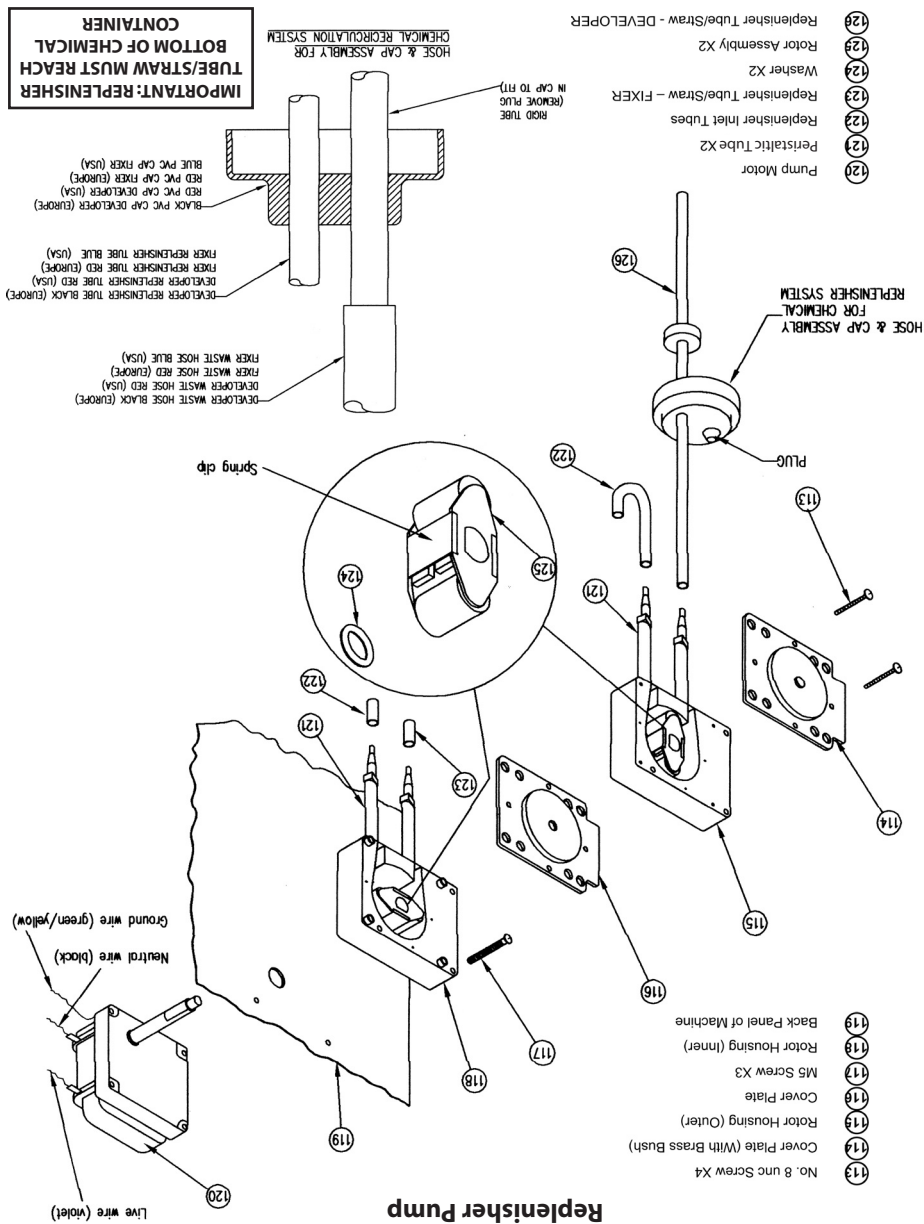
9. Fit the remaining hose assembly (item 121) following note 4 instructions.

10. Place cover plate (with brass bush) (item 114) in position.
11. Finally screw completed assembly together using four no. 8 screws (item 113).

• **Hose Connections** (items 86-87, page 19)

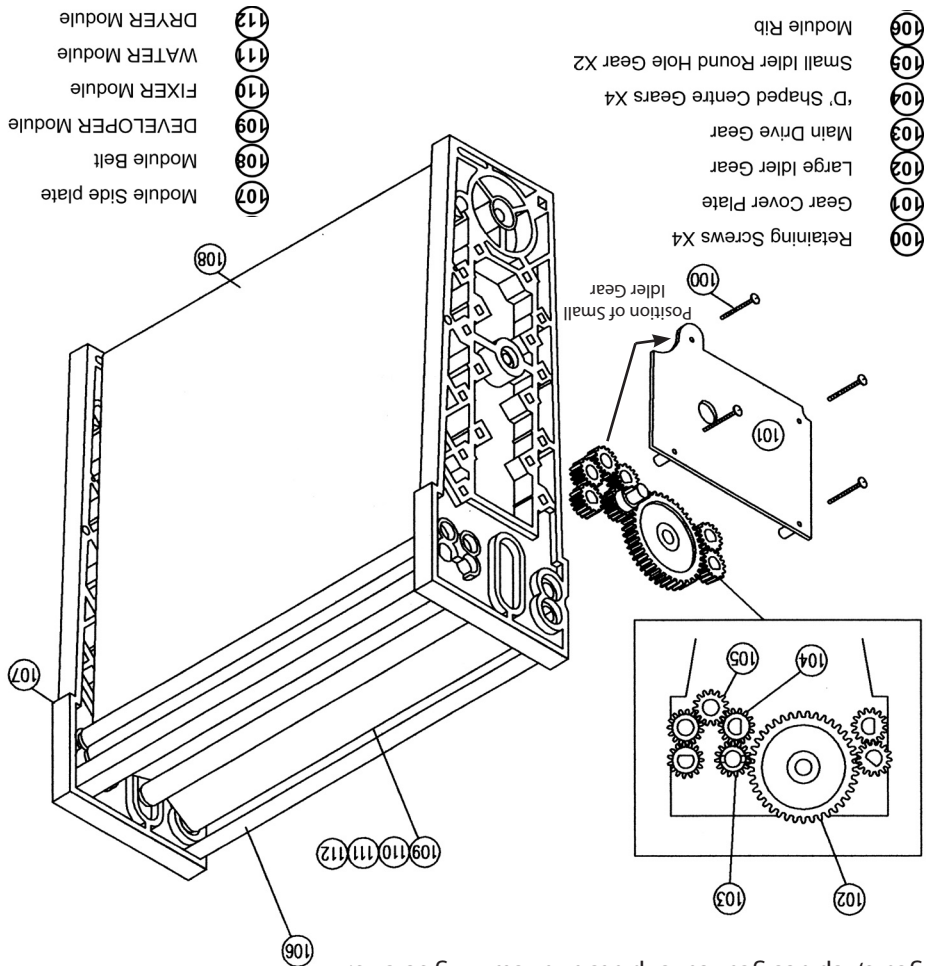
1. Push the end of the red (blue - USA) hose assembly onto the shortest replenisher tube protruding through the back panel of the machine, and fix with two of the hose clips provided. It will be found easier to put the lower of the two clips on first.
2. Push the end of the black (red - USA) hose assembly onto the longest

## Replenisher Pump



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

gears; replace gear cover plate and retaining screws.





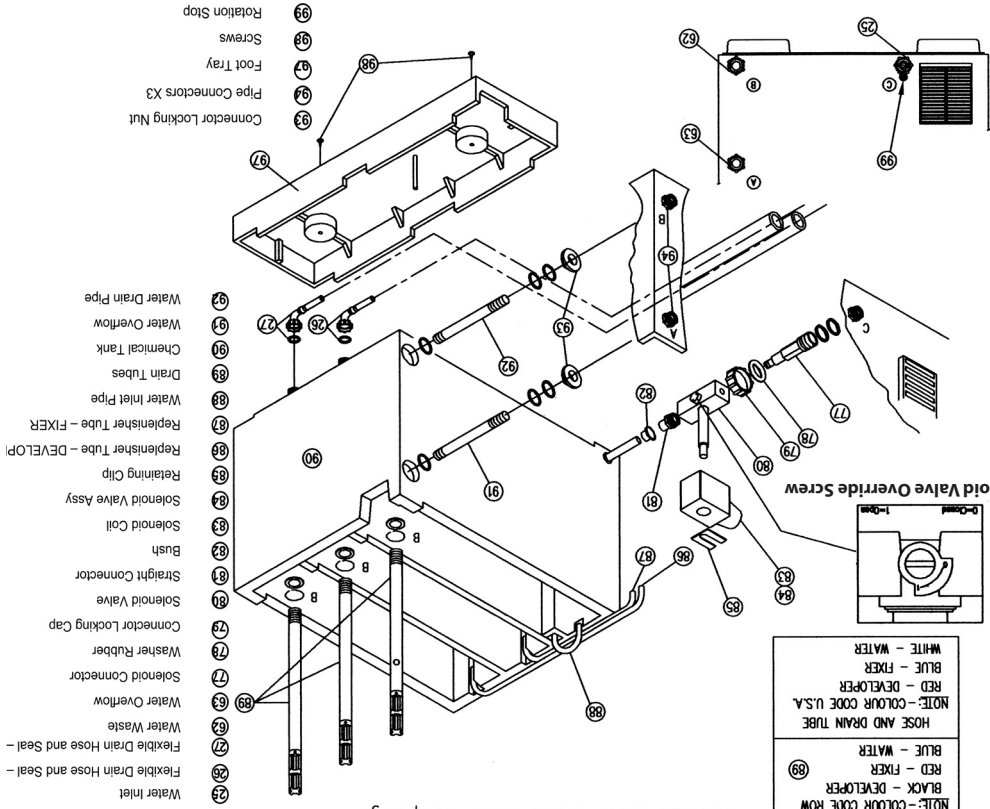
## • Solenoid Valve Assembly

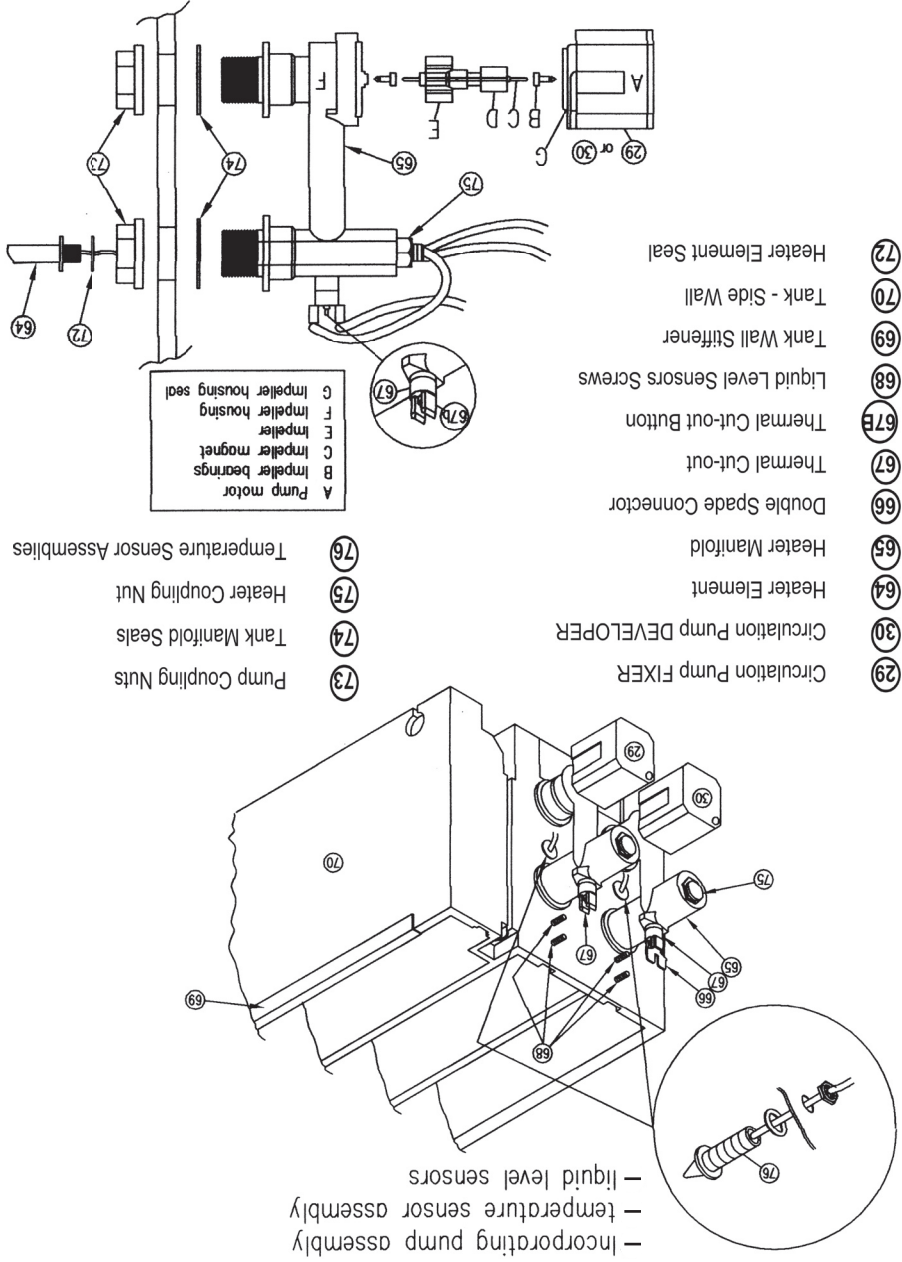
The solenoid connector (item 77) is screwed into the main valve body (item 80) using PTFE tape to effect water sealing. The male stud coupling (item 81) is screwed into the other end of the main valve body. The stud coupling has its own special seal and does not require the use of PTFE tape.

NOTE: When installing the solenoid ensure that the **valve override screw** faces out into the cabinet of the machine for access.

Current Models are fitted with an on board Flow Controller situated within Component 25. This device controls the water flow to a rate of 1 litre per minute.

Detail incorporating: – Solenoid Valve Assembly  
– Overflow and drain assemblies  
– Flexible tank drain down couplings





## • Tank Removal and Installation

1. To replace tank, drain down fully all three sections.
2. Remove pump and manifold assemblies from both developer and fixer sections by undoing pump coupling nuts (item 73).

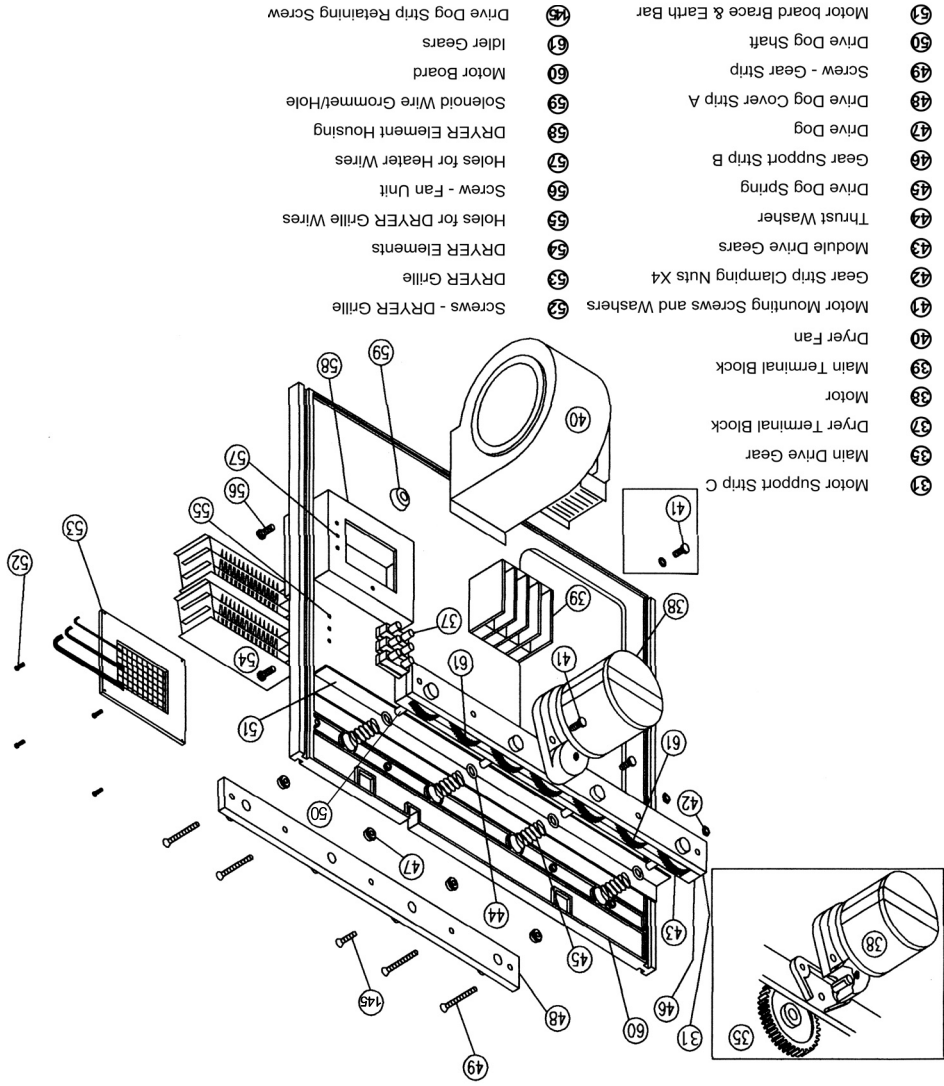
**3. N.B. Beneath the machine: locate the 'tank retaining screw' found on the base of the machine adjacent to the RIGHT HAND foot and next to the motor board locating slot: this is a 'dome-headed' Phillips screw (not flat-headed or counter-sunk). FAILURE TO REMOVE THIS TANK RETAINING SCREW WILL CAUSE SERIOUS DAMAGE TO THE TANK.**

4. Release lower flexible drain tubes (items 95, 96, page 19), located under foot of machine (item 97, page 19) which is retained by two (counter-sunk) screws (item 98, page 19).
  5. Unscrew connectors (item 94, page 19) from locking nuts (item 93, page 19). Connectors can then be pulled clear of back panel, allowing the removal of all the connecting pipe work including the water waste and overflow drain pipes (items 92 and 91, page 19) and solenoid assembly (item 80, page 19).
  6. Be sure to disconnect Temperature Sensor leads from PCB.
  7. The tank may then be lifted clear of the machine.
  8. To install simply reverse the above procedure.
  9. The water connector has the flow controller inserted and should be replaced in the same position on left rear of machine (water inlet - item 25).
- IMPORTANT:** After installation check thoroughly for leaks by filling the tanks with water and inspecting.

## • Temperature Sensor Assemblies

- 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.

Detail incorporating – Motor Mounting – General  
drive strip – Drive dog and spring assembly  
Fan and heater assembly – Terminal blocks



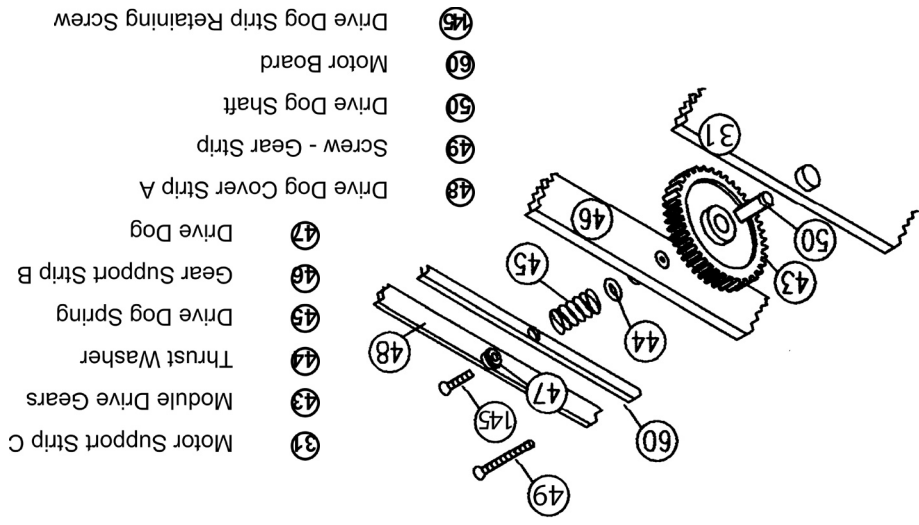
## • Motor Mounting

1. Disconnect wires from PCB (item 33, page 10) and terminal block (item 39).
2. Release and withdraw the motor by removing screws (item 41).
3. To replace, reverse procedure.
4. Ensure ground/earth continuity is maintained by replacing serrated washer between motor body and ground/earth lead termination.

## • Fan and Heater Assembly

1. To Replace Fan
  - a. Disconnect wires from main terminal block (item 39), PCB (item 33) and dryer terminal block (item 37).
  - b. Remove grille (item 53) retained by four screws (item 52).
  - c. Remove heater assembly. Fan unit may then be released by removing two screws (item 56) located at the back of the dryer element housing (item 58).
  - d. To replace, reverse procedure.
2. To Replace Heater Element
  - a. Disconnect wires from terminal block (item 37).
  - b. Remove grille (item 53) retained by four screws (item 52).
  - c. Slide out heater element withdrawing wires through the holes (item 57) at the back of the element housing (item 58).
  - d. To replace, reverse the above procedure.

- 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 60) taking care that the motor mounting holes are at the bottom of the motor support strip (item 31).
- a. Starting at one end, align and centre the drive dog shaft (item 50) into the drive dog (item 47).
- b. Hold the assembly in position and fit the end clamping nut (item 42, page 16) loosely to its gear strip assembly screw (item 49).
- c. Work along the other three drive dog shafts (item 50) aligning and entering them into their drive dogs (item 47) and fitting the clamping nut (item 42, page 16) loosely to each gear strip assembly screw (item 49), as you go.
- d. Finally tighten all four clamping nuts (item 42). 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 35, page 16) into place in the centre of the gear train and refit the motor as described in *Motor Mounting* section.



## • Replacing Components on the Gear Strip

The assembly consists of three strips (items 48, 46 and 31) and the motor board (item 60) which is clamped between gear strips 48 and 46. It is essential to maintain this assembly order.

To replace the main drive gear (item 35, page 16) on the motor shaft, do not dismantle the gear strip assembly. Simply remove the motor (item 38, page 16) by referring to the **Motor Mounting** section (page 15). Withdraw the main drive gear upwards from the gear strip assembly and replace with the new gear. Finally refer to **Motor Mounting** section and replace the motor.

To replace the other gears (items 61, page 16 and item 43) follow the procedure as for replacing the drive dogs (item 47):

## • Replacing the Drive Dogs

1. Remove the four clamping nuts (item 42, page 16).

2. Remove the motor support strip (item 31) and the gear support strip

(item 46) along with the drive dog shaft (item 50).

3. Remove the gears (items 43 and 61, page 16), the drive dog springs (item 45)

and the thrust washers (item 44).

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 43) onto the drive dog shafts

(item 50).

c. Feed the shafts through the gear support strip (item 46) and apply a little

silicone grease to the shafts before fitting the thrust washers (item 44)

and the drive dog springs (item 45). The grease will hold the springs in

place during re-assembly.

d. Fit the idler gears (item 61, page 16) onto their spigots on the gear

support strip (item 46) and assemble the motor support strip (item 31)

into place.

5. Remove the old drive dogs (item 47) from the motor side of the motor board

## 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		T1A RS157-9737 (/ELC2169P) GDC (S506)	5A RS416-376 (/ELC2155P) GDB (S500)	5A RS416-376 (/ELC2155P) GDB (S500)	5A RS416-376 (/ELC2155P) GDB (S500)
F3	5x20	DRIVE/FAN	/	T1A RS157-9737 (/ELC2169P) GDC (S506)	1A RS416-297 (/ELC2154P) GDB (S500)	2A RS416-332 (/ELC2158P) GDB (S500)	2A RS416-332 (/ELC2158P) GDB (S500)
F4	5x20	TRANSFORMER		T50mA RS157-9670 (/ELC2156P) GDC (S504)	1A RS416-297 (/ELC2154P) GDB (S500)	2A RS416-332 (/ELC2158P) GDB (S500)	2A RS416-332 (/ELC2158P) GDB (S500)
F5	5x20	RECTIFIER	/	T500mA RS157-9709 (/ELC2172P) GDC (S506)	1A RS416-297 (/ELC2154P) GDB (S500)	2A RS416-332 (/ELC2158P) GDB (S500)	2A RS416-332 (/ELC2158P) GDB (S500)
F6	5x20	SOLENOID		T5A RS419-791 (/ELC2217P) LF215005	1A RS412-598 (/ELC2153P)	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	1A RS412-598 (/ELC2153P)	2A RS416-332 (/ELC2158P) GDB (S500)	2A RS416-332 (/ELC2158P) GDB (S500)
PLUG (WIRE FITTED)	1"x1/4"	MAINS CABLE		T5A RS419-791 (/ELC2217P) LF215005	1A RS412-598 (/ELC2153P)	2A RS416-332 (/ELC2158P) GDB (S500)	2A RS416-332 (/ELC2158P) GDB (S500)

RS = RS Components, LF = Littlefuse, GDB or

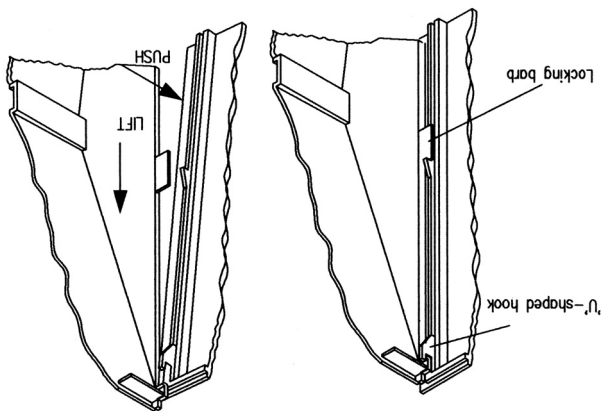
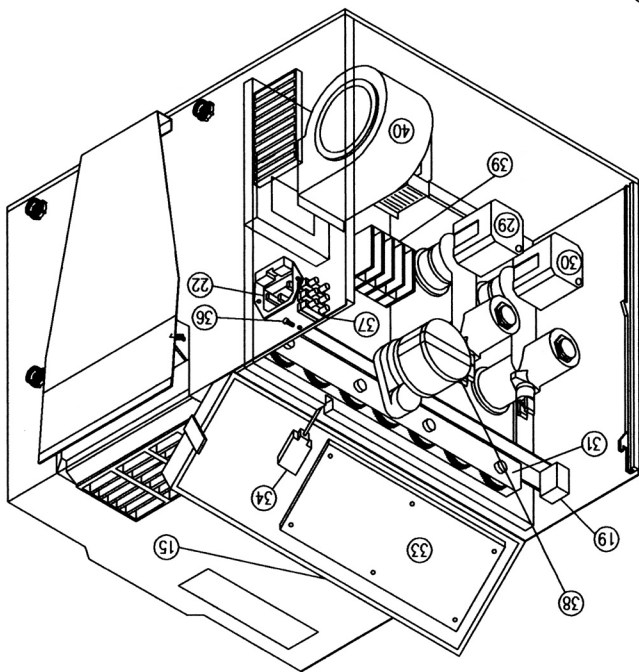


Diagram of side panel lock



- 19 'RUN' Button
- 22 Double Fused Chassis Plug (Europe)
- 29 Circulation Pump FIXER
- 30 Circulation Pump DEVELOPER
- 31 Gear Drive Strip
- 33 Control PCB
- 34 Safety Switch
- 36 Control Panel Retaining Screw
- 37 Dryer Terminal Block
- 38 Drive Motor
- 39 Main Terminal Block
- 40 Dryer Fan

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

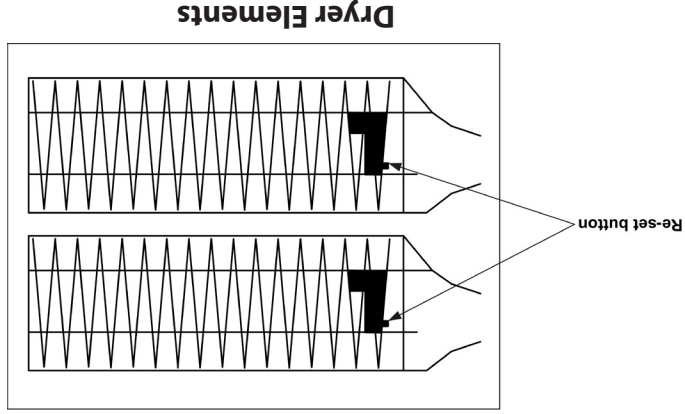
#### • Access to Internal Components

1. To access internal workings of the machine unscrew control Panel retaining screw (item 36).
2. The control panel may then be hinged upwards.
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.

#### • Dryer Element Cut-Out Re-set Operation

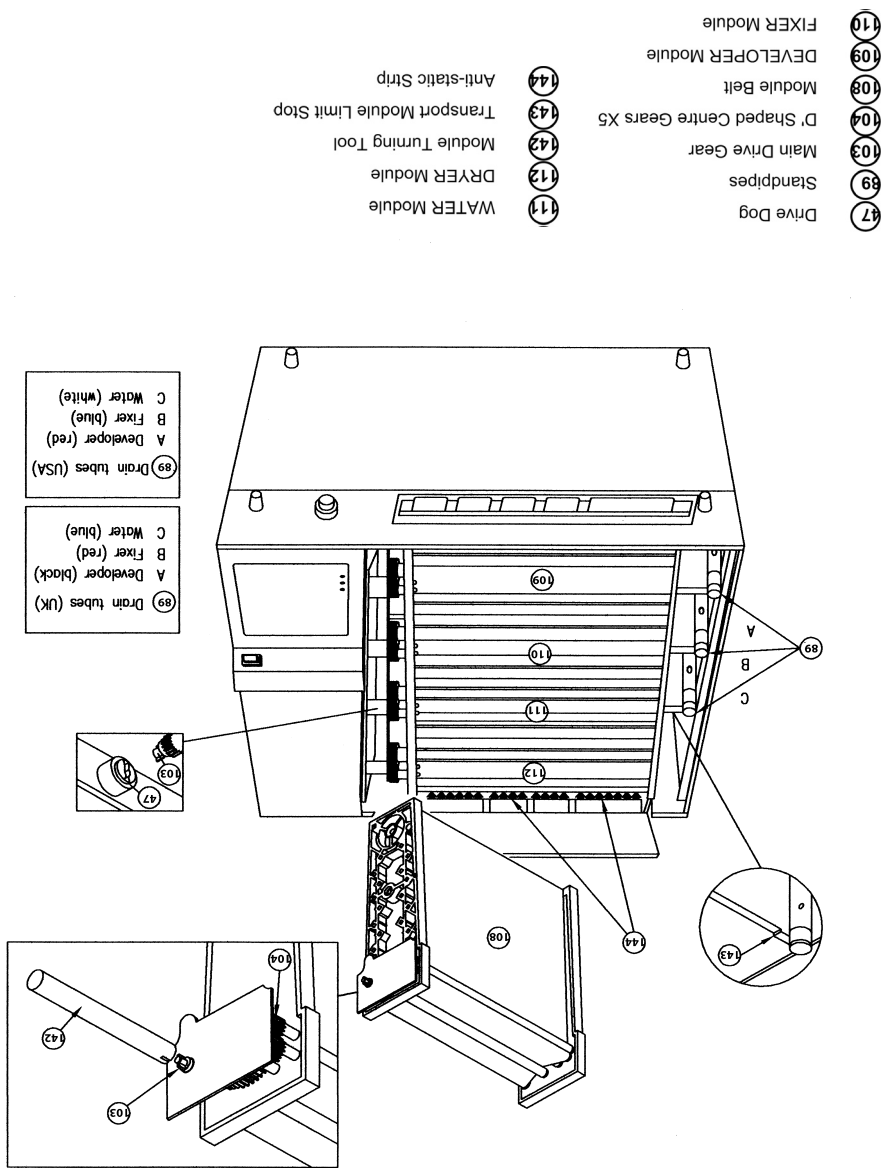
Dryer Elements have a small re-set button on the rear of the small black switch inside the Element. If at any time the fan should slow or stop, the Dryer Element will switch off and stay off until re-set button has been operated.

NOTE: Refer to the PCB operating instructions at rear of manual for details of a further over-temperature cut-out now fitted to the PCB.

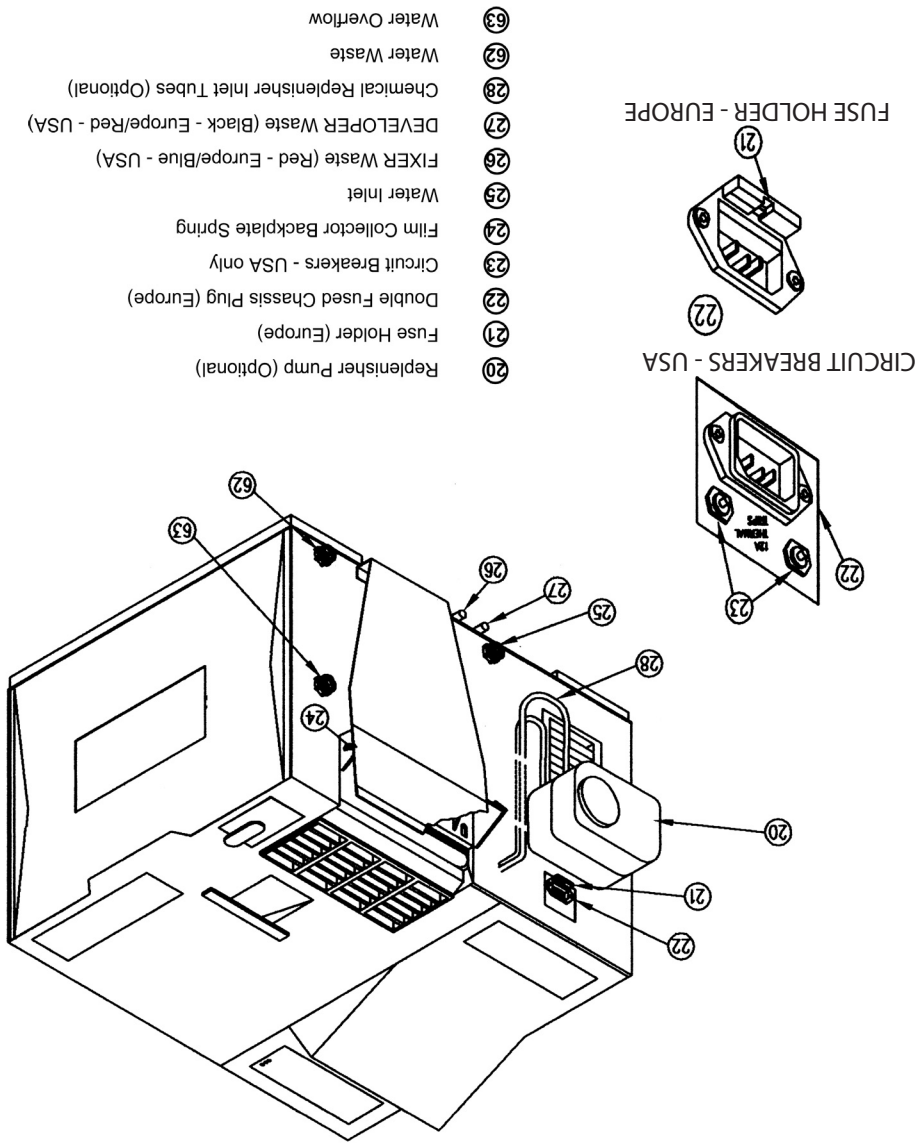


DIAGRAMS

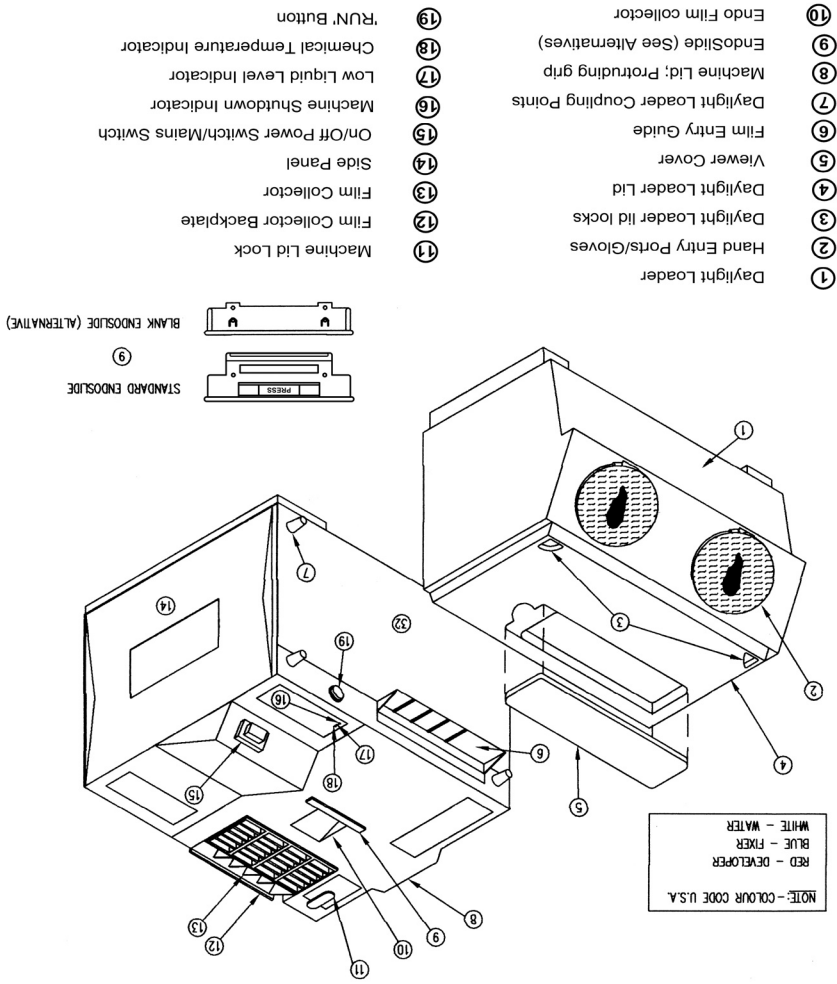
Internal Components



## External Components - Back View



## External Components - Front View



## Pre Installation Instructions (Cont.)

**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:** 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 Cleaning Tablets (UK only).

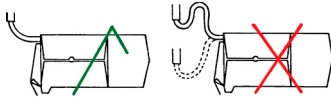
1. Familiarise yourself with the layout of the machine by referring to illustrations at the front of this manual. It is useful to refer to these illustrations as you progress through the manual.

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.



c. 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).

d. The output side of the Main On/Off faucet/valve must have a ¾" male thread (see diagram on page 2). The faucet/valve should be situated in such a position that can be easily turned off each day.

**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 & 10Bar. 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 19.5in. (49.5cm) by 20.3 in. (51.7cm).

b. Shelf height "lower" 9in. (22.9cm) and "upper" 31 in. (78.7cm).

WORLDWIDE:

a. Shelf dimensions 15.5in. (39.4cm) by 23.5 in. (59.7cm).

b. Shelf height "lower" 9in. (22.9cm) and "upper" 31.9in. (81.0cm).

6. STAND ALONE UNIT USING A WATER RECIRCULATION KIT

a. Anko Water Pump (USA).

b. Supplying 1.5 liq.oz./min. (0.051 ml/min.).

c. Supply Tubing.

d. Water Container 2.5 gal. (9.4 ltr.) capacity.



## 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 82°F (27.7°C), and above 44°F (7°C) to prevent lengthy warm-up times.

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 2).

### 2. ELECTRICAL SUPPLY

- 115Vac 60Hz, 15A, 1150W (USA)/230Vac 50Hz, 15A, 1150W (World Wide).
- 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.
- If the unit is to stand alone (unplumbed), a second power source will be required for the water pump reservoir.

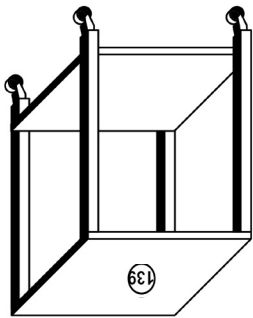
### 3. COMMERCIAL WATER SUPPLY

**ATTENTION! Use only the hoses supplied with this machine.**

- Water temperature no higher than 79°F (26°C).
- A Faucet adjusted to a water flow rate of 0.27gal/min (1.0 ltr./min).

DIAGRAMS

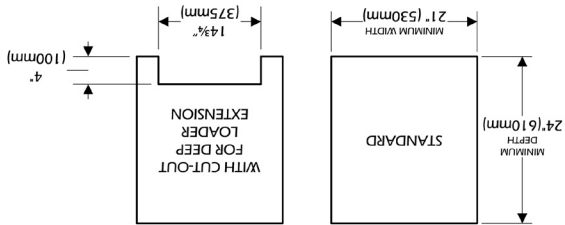
MACHINE STAND (OPTIONAL) USA



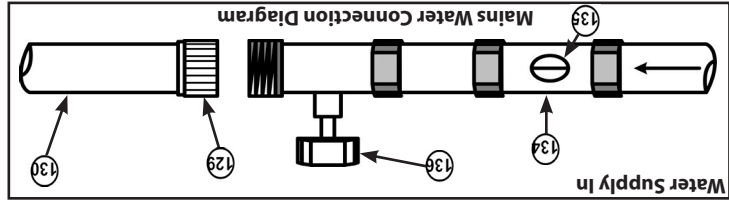
DEPTH - 15.5" (394 mm)  
WIDTH - 23.5" (597 mm)  
HEIGHT - 31.0" (787 mm)



WORKTOP DIMENSIONS



NB: FOR FIXED COUNTER INSTALLATIONS  
REFER TO PAPER TEMPLATE IL 31.



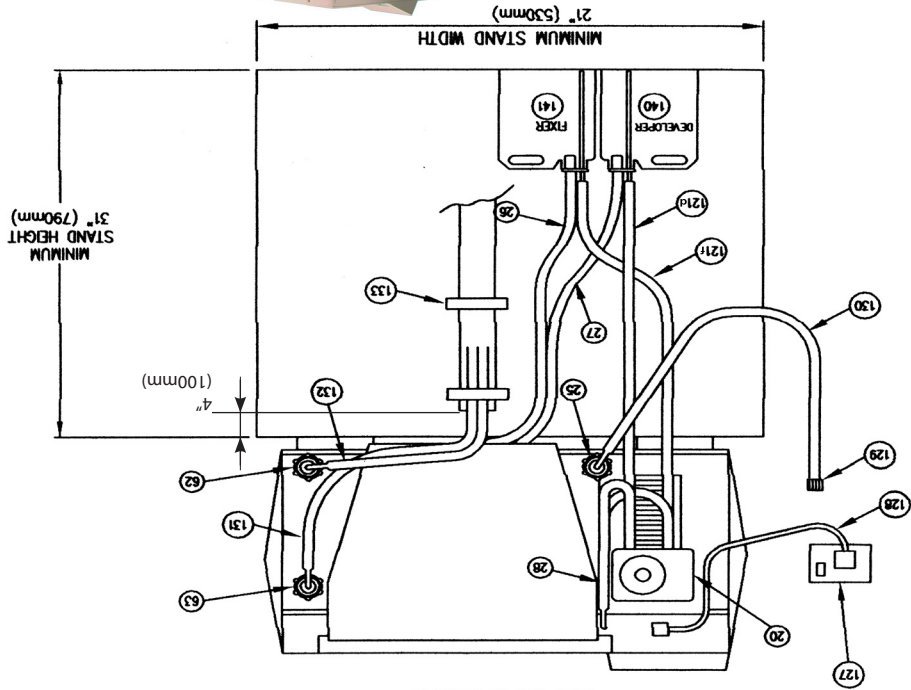
MACHINE STAND (OPTIONAL) - WORLDWIDE

- 129 Cold Water Hose Union
- 130 Flexible Hose - Cold Water Supply
- 134 Isolator valve
- 133 Valve Control
- 136 Domestic Appliance Service Valve / Faucet
- 139 Machine Stand (Optional)

DEPTH - 19 1/2" (495mm)  
WIDTH - 20 1/8" (517mm)  
HEIGHT - 31 7/8" (810mm)

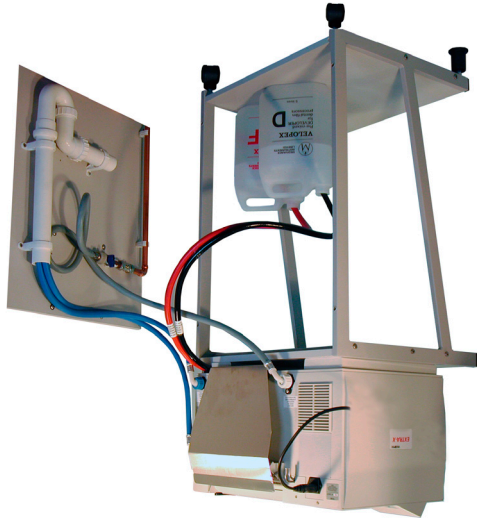
Plumbing Layout Diagrams

REAR VIEW OF EXTRA X



- 20 Replenisher Pump (Optional)
- 25 Water Inlet
- 26 FIXER Waste (Red - Europe/Blue - USA)
- 27 DEVELOPER Waste (Black - Europe/Red - USA)
- 28 Chemical Replenisher Inlet Tubes (Optional)
- 63 Water Waste
- 62 Water Overflow
- 121 Developer Replenishment Supply
- 121 Fixer Replenishment Supply
- 127 Electrical Supply
- 128 Mains Lead
- 129 Cold Water Hose Union
- 130 Flexible Hose - Cold Water Supply
- 131 Flexible Hose - Water Overflow
- 132 Flexible Hose - Water Waste
- 133 Waste Water Drain Pipe
- 140 DEVELOPER Chemical Container
- 141 FIXER Chemical Container

(Worldwide Plumbing Layout without Replenisher / Re-circulation)



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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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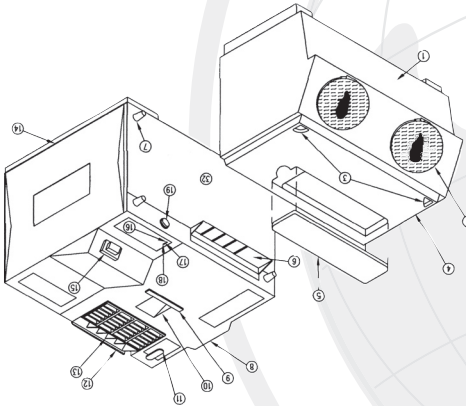
Machine serial number to be  
quoted on all correspondence:



**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

Extra - X  
Xtender  
Freedom  
(USA only)  
Lynx  
(UK only)  
Extra - XE

