technician code

New Text Document

First digit - the Hour of the day divided by 4

Hour	00.00 - 03.59	Code 0
	04.00 - 07.59	1
	08.00 - 11.59	2
	12.00 - 15.59	3
	16.00 - 19.59	4
	20.00 - 23.59	5

Second digit - the remainder when the day of the month is divided by 6

Day 1 - code 1, day 2 - code 2, 3 - 3, 4 - 4, 5 - 5, 6 - 0, 7 - 1, 8 - 2, 9 - 3, 10 - 4, 11 - 5, 12 - 0, 13 - 1, 14 - 2, 15 - 3, 16 - 4, 17 - 5, 18 - 0, 19 - 1..... and so on

Third digit - the day of the month divided by 6
Day 1,2,3,4,5 - Code 0
day 6,7,8,9,10,11 - code1
day 12,13,14,15,16,17 - code 2
day 18,19,20,21,22,23 - code 3
day 24,25,26,27,28,29 - code4
day 30,31 - code5

Fourth digit - Remainder of the month divided by 6
January - code1, february - 2, march - 3, april - 4, may - 5, june - 0, july - 1, august - 2 and so on

0130 127240 PriveSensor Failure

Horsell Mercury Plate Processor

Manual Code - t0205eAD

Technical Manual

Horsell Graphic Industries Ltd

Nepshaw Lane South, Gildersome
Morley, Leeds, LS27 7JQ England
Telephone: (0113) 2527227
Fax: (0113) 2529418 / 2529420

CONTENTS

MACHINE RATING LABEL

Horsell Graphic Industries Ltd
Morley Leeds England
Mercury Litho Plate Processor
220 - 240V 1 PH & N 50Hz 16 Amps
380 - 415V 3PH & N 50Hz 10 Amps
Year of manufacture 1995

pr-c-6488a

NOTE:

THIS MANUAL MAY ONLY BE USED WITH THE MACHINES HAVING A CORRESPONDING SERIAL NUMBER TO THAT ON THE ENCLOSED DECLARATION OF CONFORMITY.

HORSELL

DECLARATION OF CONFORMITY

HORSELL GRAPHIC INDUSTRIES LTD
NEPSHAW LANE SOUTH GILDERSOME
MORLEY LEEDS LS27 7JQ ENGLAND

CE

HORSELL

DECLARE UNDER OUR SOLE RESPONSIBILITY THAT PRODUCT

NAME	TYPE	SERIAL NUMBER
HORSELL MERCURY	demESABAA0111110	MG6116

TO WHICH THE DECLARATION RELATES
IS IN CONFORMITY WITH THE FOLLOWING SPECIFICATIONS

SPECIFICATION	NUMBER	EC DIRECTIVE
Safety of Machinery Basic concepts, general principles for design.	EN292-1-2: 1991	89/392/EEC
Safety of Machinery Electrical equipment of machines.	EN60204-1:1993	89/392/EEC
Safety of machinery	BS5304: 1988	89/392/EEC

CATEGORY : INDUSTRIAL

NAME OF AUTHORIZED OFFICER	POSITION OF AUTHORIZED OFFICER
D.SIMPSON	OPERATIONS MANAGER ENG. DIV'N

SIGNATURE OF AUTHORISED OFFICER DATE : 1/8/94

David H Simpson

WARNING

This is a class A product intended for use in an industrial environment.

If used in a class B environment this product should not be operated within 10m of any broadcast radio or television receiver as it may give rise to radiated electromagnetic interference.

In the event of this product giving rise to or being susceptible to electro-magnetic interference, when used in an industrial environment, additional in-line filtering may be required. If in doubt refer to the appropriate Horsell contact identified on page 7 of this manual.

CONTACTS

Horsell Graphic Industries
Nepshaw Lane South, Gildersome
Morley, Leeds, LS27 7JQ England
Telephone: (0113) 2522177
Fax No: (0113) 2527002

Ordering:	UK - Sales Administration Export - Export Correspondent
Service Issues:	UK Service Manager
Technical Issues:	Technical Service Manager
Quality Issues:	Technical Service Manager
Marketing Issues:	Equipment Marketing Manager

Horsell Graphic Industries
(Engineering Division)
Nepshaw Lane South, Gildersome
Morley, Leeds, LS27 7JQ England
Telephone (0113) 2527227
Fax No: (0113) 2529418

Second-hand equipment ordering :	Production Controller
Spares Ordering:	Production/Spares Coordinator

SAFETY

Operator Safety

Anyone operating the Mercury unit must take safety into consideration. Here are some points to be noted when operating the machine:-

1. The machine must be connected to the mains electrical supply by a suitably qualified technician. All electrical installations must conform to local statutory regulations. (See Installation p. 62).

2. The machine is designed for processing positive and negative working litho printing plates and must be operated as described in these instructions. It must not be modified or used for any other purpose.

3. Do not climb on the machine or stand on top of it.

4. The machine should be installed so that the operator can easily reach all parts. (See Installation p. 62).

5. If a machine is moved, use a fork lift or pallet truck with a minimum SWL of 800kg (1760 lbs). (See Specification sheet for details p. 72).

6. During operation, all covers, guards and doors must be closed and, where possible, kept locked.

7. The top covers may need to be removed, but only by authorised trained operators. Safety switches are fitted to stop the machine when the top covers are removed.

> NOTE: *the safety switches merely stop the machine - they do not isolate from the electrical supply.*

8. Always isolate from the electrical supply before carrying out maintenance work on the machine.

9. Access to the main electrical power isolator must not be obstructed by the developer waste pipe, container or any other waste material.

10. The area around the machine should be kept clean, dry and clear of any waste material.

11. Only authorised and suitably qualified engineers should be permitted to carry out maintenance work on this machine.
12. Guards, other than the top covers must NOT be removed by anyone other than an authorised, qualified engineer. When replacing these covers, the earth continuity wires must be re-connected correctly.
13. Always use the lifting hooks provided for roller removal.
14. Lithographic chemicals can be harmful - always refer to the manufacturer's safety notes. Follow the manufacturer's directions when handling chemicals, filling tanks and containers, and when disposing of chemicals.

Machine Protection

1. Do not run the machine dry - damage could be caused to the pumps.
2. Do not cover the ventilation slots on the sides of the machine.
3. Do not insert a plate into the machine unless the display indicates "READY".
4. The machine must NOT be connected to an IT electrical supply.

IMPORTANT

HORSELL GRAPHIC INDUSTRIES LIMITED CANNOT ACCEPT RESPONSIBILITY FOR ANY DAMAGE TO PERSONS OR PROPERTY, LEGAL INFRINGEMENT, OR CONSEQUENTIAL LOSSES ARISING FROM THE MISUSE OR MODIFICATION OF THIS PRODUCT BY UNAUTHORISED PERSONNEL.

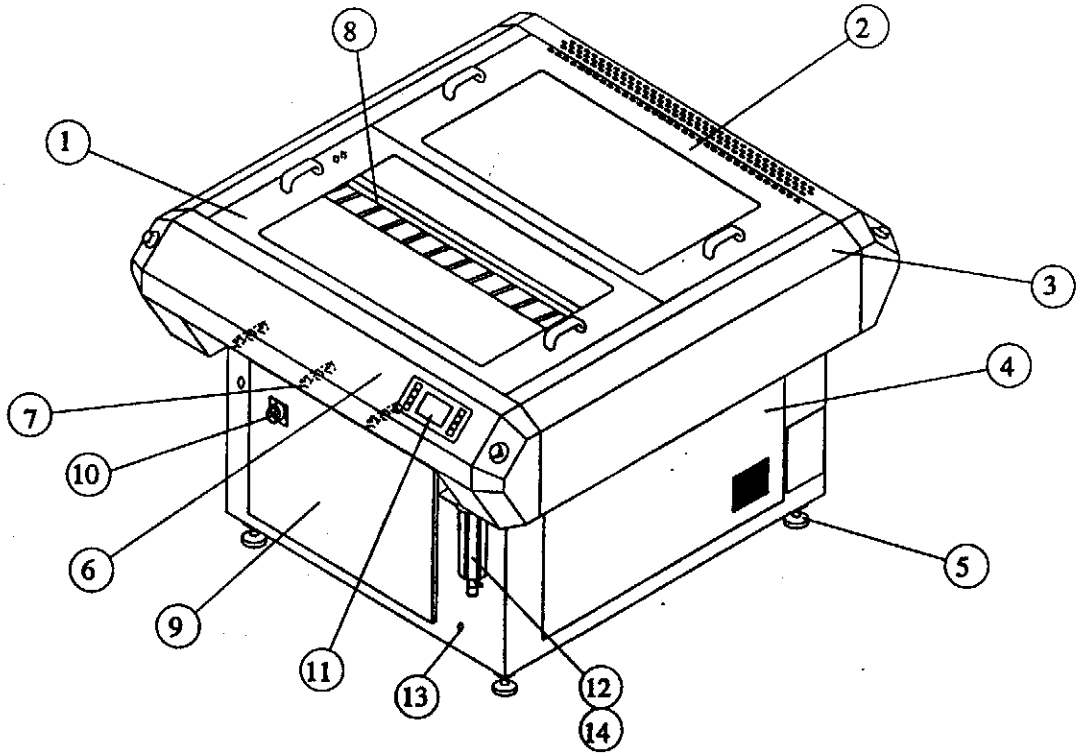
This product has been designed in accordance with relevant European Directives (detailed on Horsell's declaration of conformity, see p. 5) and other international standards in force at the time of manufacture.

To ensure that this product continues to comply with relevant requirements it is in the customers interests to ensure that any necessary remedial or maintenance works are carried out by suitably qualified and authorised personnel in the manner recommended by Horsell Graphic Industries.

It is essential that customers are aware of their obligations in respect of this matter and if in doubt should contact Horsell's service department for clarification.

GENERAL VIEW (Fig 1)

FRONT VIEW



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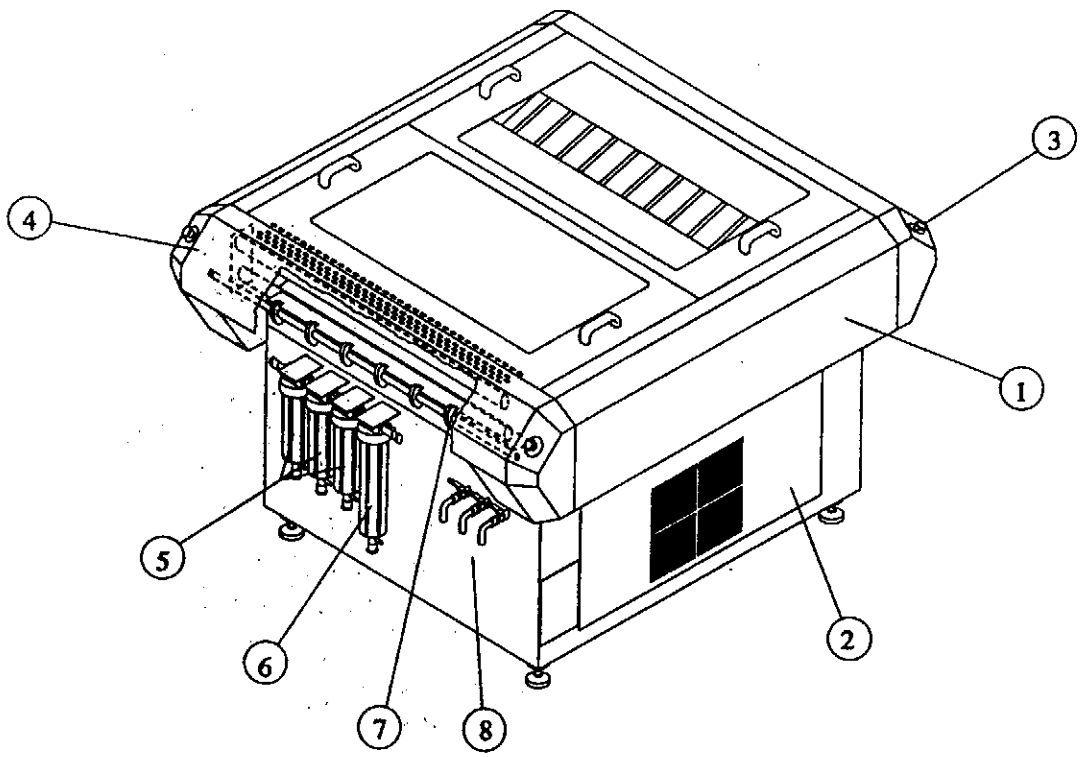
1. Top Front Cover
2. Top Rear Cover
3. Removable Side Cover
4. Removable Stand Access Cover
5. Adjustable Feet
6. Infeed Cover
7. Infeed Wheels
8. Re-entry Position
9. Control Panel
10. Main Power Isolator
11. EMS Display
12. Developer Filter
13. Main Water Inlet
14. Secondary developer filter (when optional chiller fitted)
(see page 93 for filter arrangement)

(Fig2)

REAR VIEW



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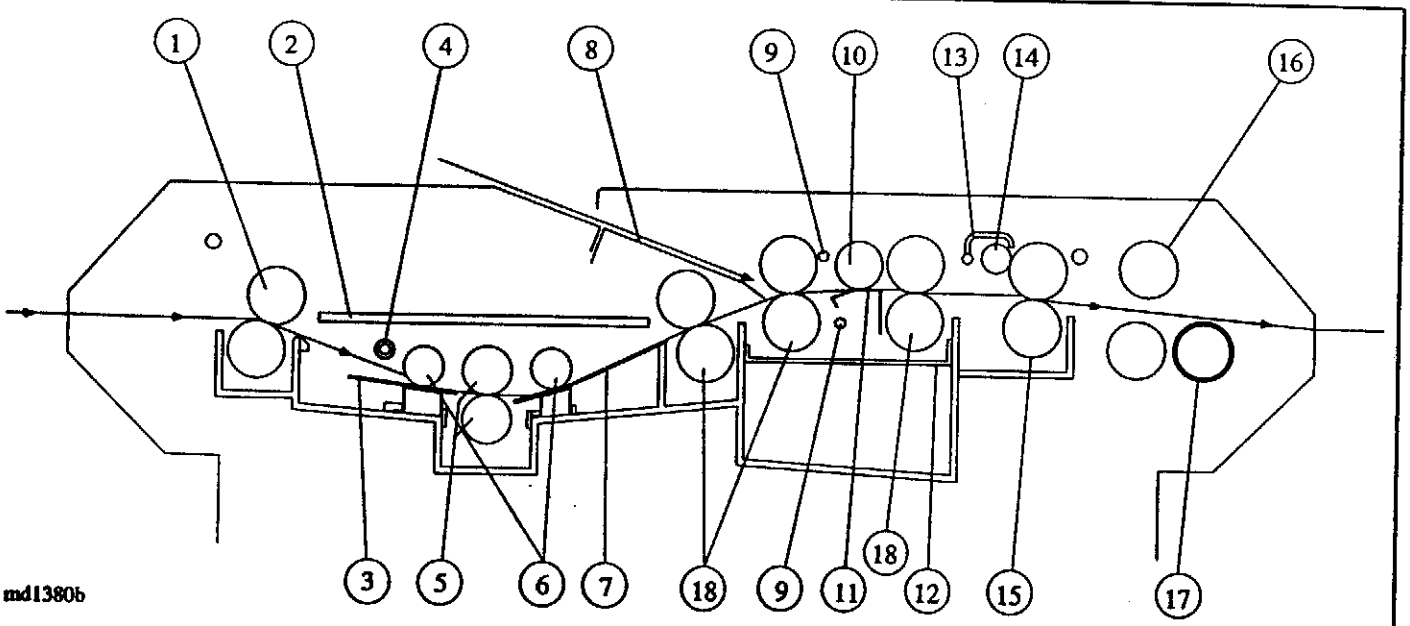
1. Removable Side Cover
2. Removable Stand Access Cover
3. Emergency Stop Pushbuttons
4. Rear Discharge Cover
5. Water Recirc Filters No.'s 2,3 & 4
6. Water Recirc Filter No. 1
7. Discharge Wheels
8. Waste Drain Taps

DESCRIPTION

GENERAL

The Horsell Mercury is an automatic plate processor for all Horsell positive and pos/neg plate development. It is available in three sizes: 850, 1250, and 1550, indicating the maximum width in mm of plates which can be processed. The unit develops, rinses, gums and then dries the plate, and provision is made for re-entry use. The unit is controlled by an Electronic Management System (EMS) to give a consistently high level of performance. Sequence See Fig 3.

PLATE PATH (Fig 3)



1. Infeed Nip Rollers
2. Developer Tank Cover
3. Front Developer Bed
4. Developer Spray Bar
5. Intermediate Developer Rollers (centre dev bed fitted when intermediate dev rollers are not)
6. Developer Section Brush(es)
7. Rear Developer Bed
8. Re-entry Tray
9. Rinse Spray Bar
10. Rinse Brush
11. Rinse Brush Pressure Tray
12. Rinse Water Filter Tray
13. Gum Spray Bar
14. Gum Doctor Roller
15. Gum Exit Rollers
16. Dryer Tubes
17. Discharge Pulley
18. Conveyor Rollers

The process is actuated whenever a plate is detected by a sensor in the infeed table.

The plate is gripped by rollers and fed into the temperature controlled developer, where sprays and rotating brushes assist in completing development. Developer exit squeegee rollers help to avoid carry over of developer, the plate is then rinsed by the action of twin water sprays and a rotating brush.

Surplus water is removed from the plate by rollers, and the plate passes into the gum section. Gum is delivered from a spray bar and is spread via a doctor roller, then the final gum rollers produce a thin even film of gum on the plate. Finally, the plate is dried on both sides by powerful jets of hot air.

The re-entry tray can be used when rinsing and gumming after manual deletions (and/or baking), without development of a plate. A sensor detects the plate, starts the rinse and gum cycle, but the developer section remains inactive to preserve the life of the developer.

If the machine is not being used for long periods of time the EMS can be programmed to run the conveyor and associated services as though a plate were being processed; this takes 1 minute. This automatic programme may be interupted at any time by the entry of a plate.

Optional Extras

Centre Drive rollers in developer section

Developer autofill

Additional developer brush

Developer condition meter

Developer cooler unit

Gum flush

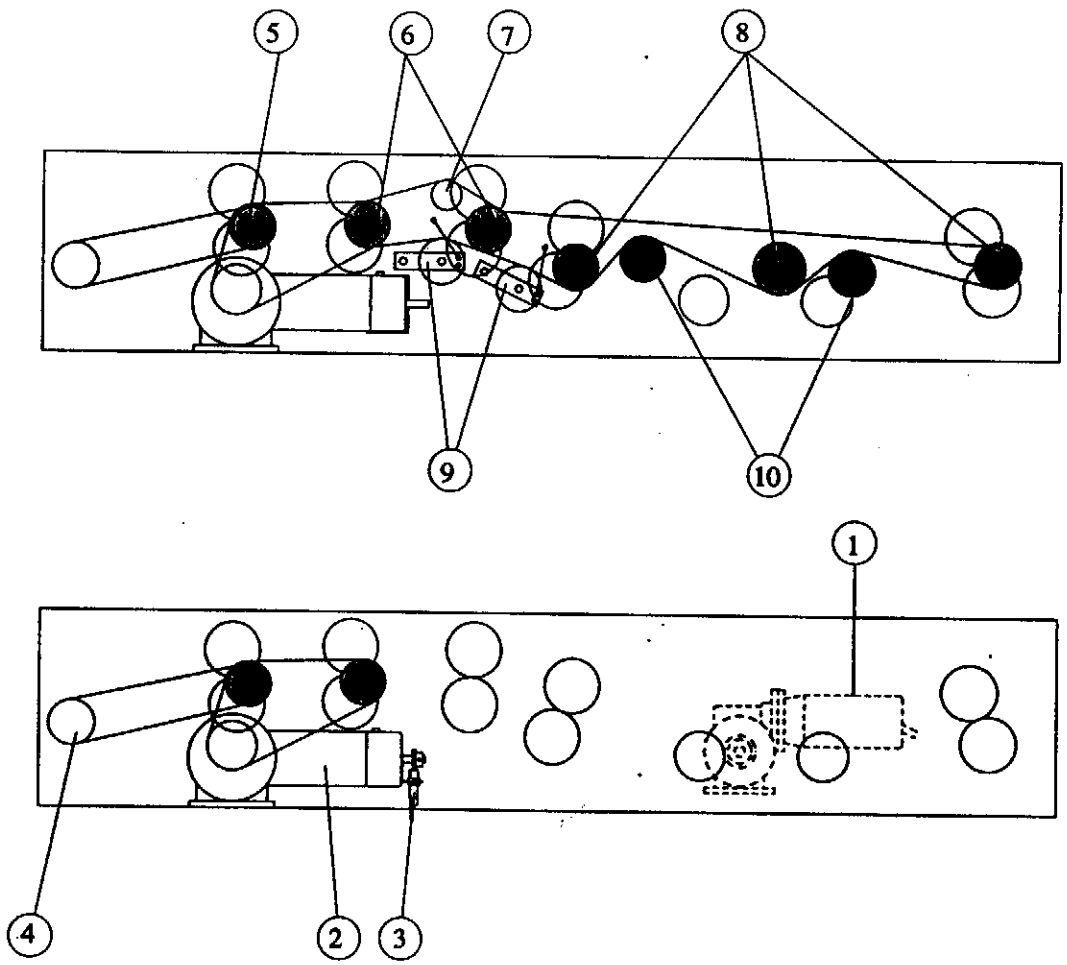
Extra infeed sensor

Rinse filter condition sensor

DRIVE

There are two geared drive motors, one on the RH tank wall which drives the developer brush or brushes by means of gears, the other on the gearplate at the LH side of the tank which powers the chain drives to the conveying, gum and rinse rollers, as well as the rinse brush and gum doctor roller.

DRIVE DETAILS (Fig 4)



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1. Developer Brush Motor
2. Conveyor Motor
3. Conveyor Motor Rotation Sensor
4. Discharge Wheel Drive
5. Gum Section Roller Drive
6. Rinse Section Roller Drive
7. Rinse Section Brush Drive
8. Developer Section Roller Drive
9. Idler Drive (Jockey Sprockets)
10. Drive Chain Tensioners

Chains are tensioned by jockey sprockets mounted in slots, and by spring loaded tensioners.

If it is required, to process short plates (minimum length 320mm) a further pair of drive rollers can be fitted in the centre of the developing section. These take the place of the centre plate guide.

DEVELOPING SYSTEM

A pump draws developer fluid from the tank, and pumps it continuously through a filter to the spray bar.

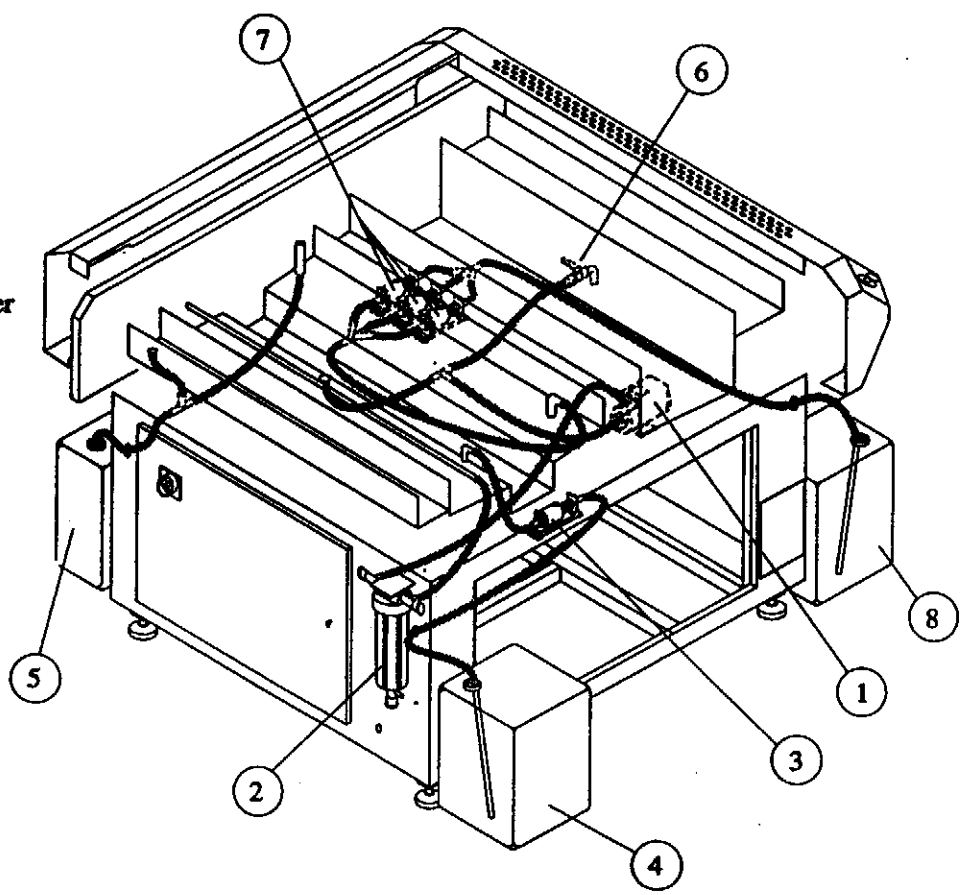
Sensors detect high and low levels of developer in the tank, and the level and concentration of the developer are maintained by a replenish pump, which supplies a set amount of fresh developer from a reservoir bottle. Replenishing can be in response to the level sensor, or by a fixed amount per plate.

The temperature of the developer is closely controlled. A temperature sensor and a heater enable the EMS system to maintain the optimum temperature. Whenever the heater is ON, the developer pump runs to prevent local overheating of the developer.

DEVELOPING SYSTEM (Fig 5)

1. Developer Pump
2. Developer Filter
3. Replenish Pump
4. Replenish Reservoir Bottle
5. Developer Overflow Bottle
6. Developer Tank Drain Tap
7. Developer Auto Fill Pumps
8. Developer Auto Fill Container

If chiller pipe work and filter are fitted, see page 93.



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If the level of developer falls below a set limit, a sensor signals the EMS to cut off power to the heaters.

When necessary to change developer or for cleaning, the tank can be drained into waste containers by means of a tap at the rear of the machine.

A mains water tap is provided for cleaning down the developer section.

Options

1. Chiller Unit

   For use in hot climates, this option comprises a pump and heat exchanger, situated within the frame below the tank, and a filter mounted adjacent to the developer filter. Developer is drawn from the tank through the filter, cooled and returned to the tank, to maintain the optimum temperature.

2. Autofill

   A pump assembly mounted within the lower body, allows the operator to fill the tank from containers on the floor.

> *SAFETY NOTE: Lithographic plate developers can be harmful; follow the instructions for use given in the Safety Section.*

3. Developer Condition Meter

   This is an option that measures the activity of the developer by measuring its electrical conductivity.

   For convenience the activity is shown as Normal when within, preset acceptable limits , LOW when nearly ready for change and the CHANGE DEV when the developer is spent.

RINSING SYSTEM

There are two options available: Type A (Water Recirculation)
Type B (Direct to Drain).

TYPE A WATER RE-CIRCULATION

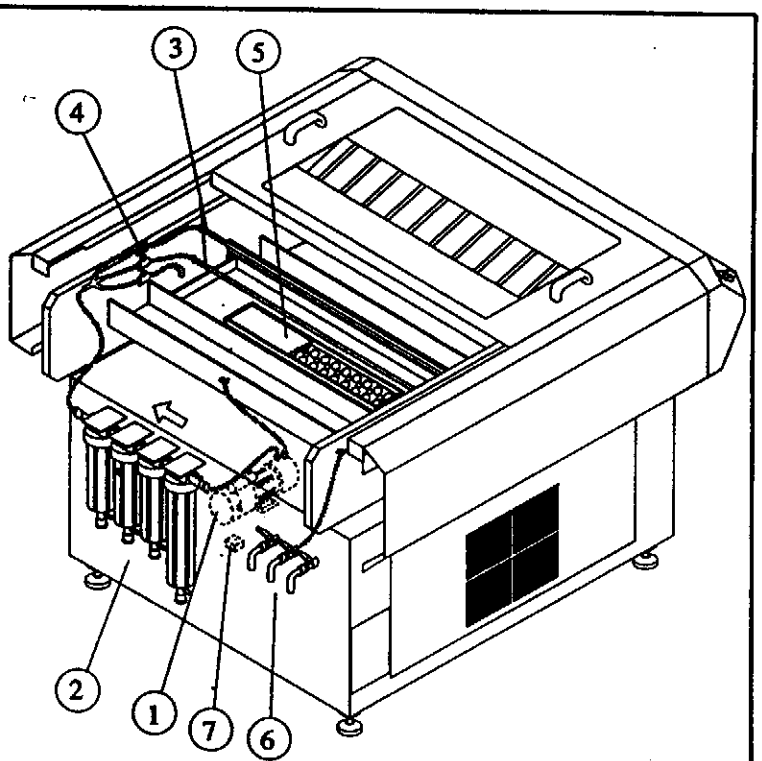
Initially, the tank is filled from the mains supply, and the mains tap is turned OFF again. A pump draws water from the tank, passes it through each of four filters in turn, then through two spray bars (and a bypass) to rinse the plate. A tap in each spray bar hose can be used to regulate the spray. Water collects in a tray to allow the bottom rollers to run in the water, and overflows the tray through a fibrous 'blanket' filter and into the lower part of the tank.

An optional pressure switch senses the increase in pressure when a filter becomes partially blocked, and sends a warning signal to the EMS.

When the tank is emptied it should be drained into a waste container for controlled disposal. A clean water tap is provided for cleaning down the rinse water section.

RINSE SYSTEM A (Fig 6)

1. Pump
2. Filters
3. Spray Bars
4. Flow Control and Bypass Valves
5. Blanket Filter
6. Tank Drain Tap
7. Water Recirculation Pressure Sensor SN12



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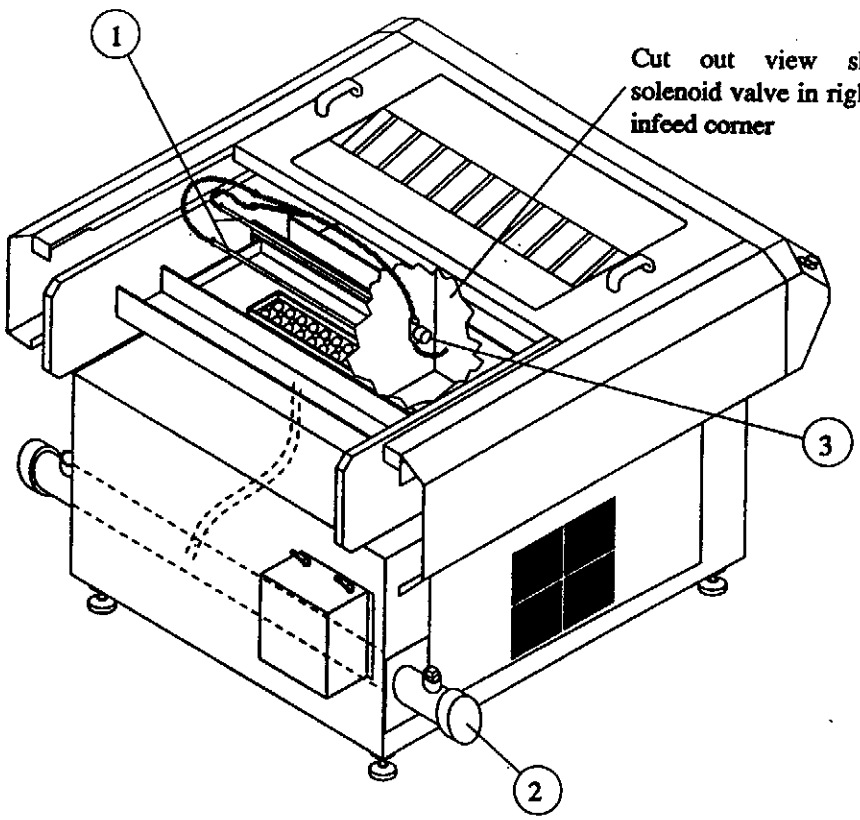
TYPE B DIRECT TO DRAIN

In certain countries it is permissible to allow rinse water to be drained to a sewer. In this case water is supplied into the machine directly from the mains pipe.

Water drains from the upper water tray and then into a 100mm (4in) drain manifold.

RINSE SYSTEM B (Fig 7)

1. Spray Bars
2. Drain Manifold
3. Solenoid Valve



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GUM SYSTEM

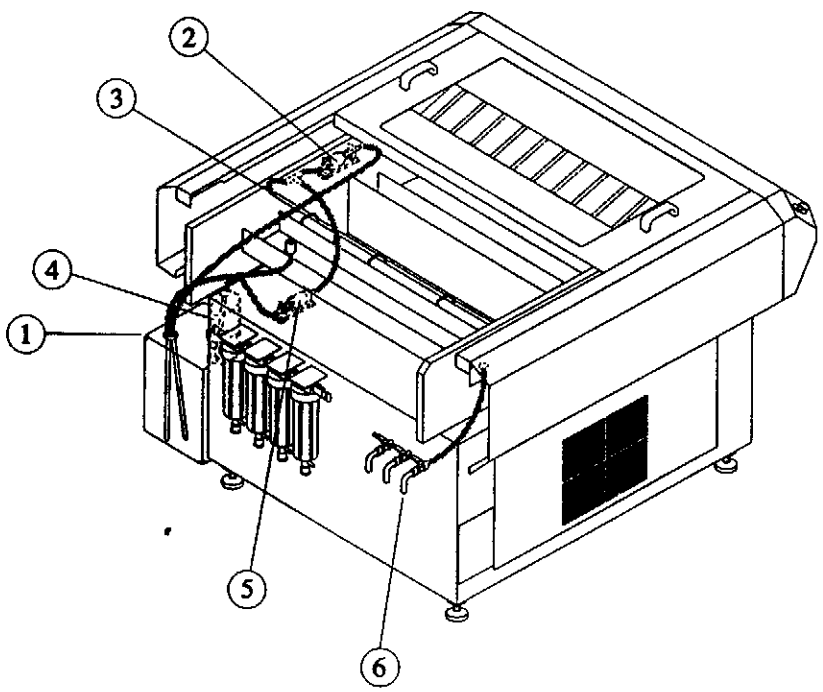
Gum is contained in an external gum reservoir. It is drawn by a pump to the spray bar onto the doctor roller and the gum rollers, then drains back to the reservoir. If the optional gum flush is installed, the pump draws clean water from a container on the side of the processor, and via a T connection to the spray bars. This prevents blockages when the machine is not in use for short periods, such as overnight.

A drain tap is fitted at the rear of the machine to allow the gum tank to be drained. A clean water tap is provided for cleaning down the gum section.

SAFETY NOTE: Lithographic solutions can be harmful; follow the instructions for use.

GUM SYSTEM (Fig 8)

1. Gum Reservoir Container
2. Gum Pump
3. Gum Spray Bar
4. Gum Flush Bottle
5. Gum Flush Pump
6. Gum Tank Drain Tap



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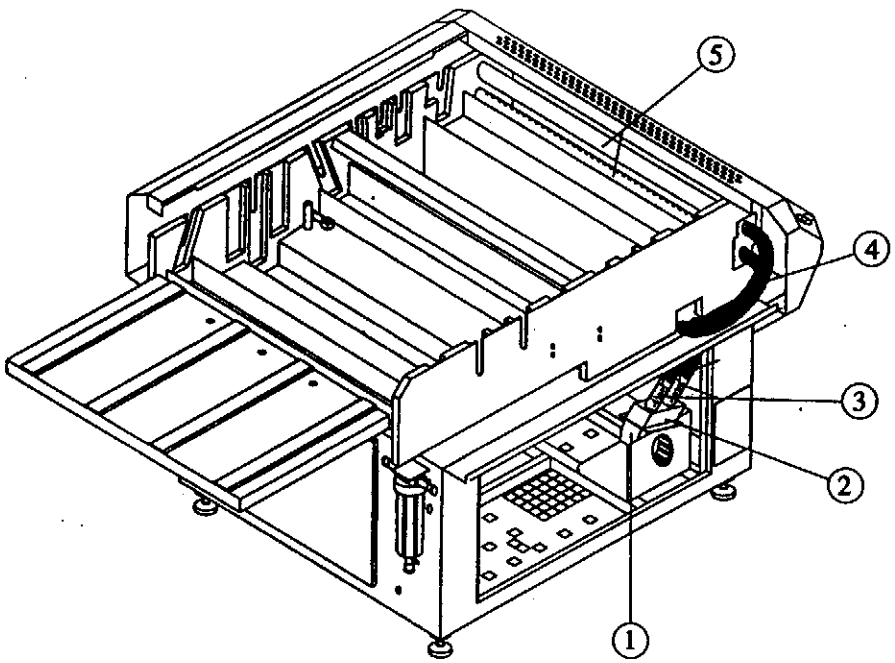
DRYING SECTION

As the plate leaves the gum section, it passes between powerful jets of hot air which effectively dry the gum to provide protection to the developed plate. The dryers are switched on and off automatically whenever a plate is processed. The output is adjustable via the EMS from 0 to 100%

DRYING SYSTEM (Fig 9)

1. Dryer Fan
2. Dryer Element Transition Box
3. Dryer Heating Elements
4. Hot Air Ducting
5. Dryer Tubes



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ELECTRICAL

The Horsell Mercury is available in a number of versions (listed below) to suit most countries' electrical requirements.

The electrical cabinet is located at the feed end of the machine, and is secured by two locks and an interlocked isolator switch.The door also carries a key switch which can be used by an authorised person to override the top cover safety switches. This would usually be used to remove a jammed plate or for maintenance purposes.

An EMS display panel comprising of a screen and eight operating keys is mounted on the sloping panel at the feed end of the upper covers.

Emergency stop buttons are fitted at each corner of the machine. These may be reset after use by turning them clockwise.

The machine is available in the following versions:

1. 220 - 240V single phase 50 or 60 Hz

2. 380 - 415V three phase 50 or 60 Hz

3. 190 - 240V single or two phase 50 or 60 Hz

All versions require an earth line and a neutral line unless two phase.

Safety Switches

1. Isolator

   This is mounted on the electrical cabinet door. The isolator must be turned to OFF before the door can be opened.

2. Top cover switches

   Two switches are fitted to each cover; they stop the machine if the top cover is lifted when the machine is running.

CAUTION:	*these switches do not isolate the machine from the mains supply.*

3. Emergency Stop

   A red button is mounted at each corner of the machine; when pressed, power to the machine is interrupted, but the machine is not isolated from the mains supply. The buttons must be turned to unlock and reset. (See Controls Section).

4. Keyswitch

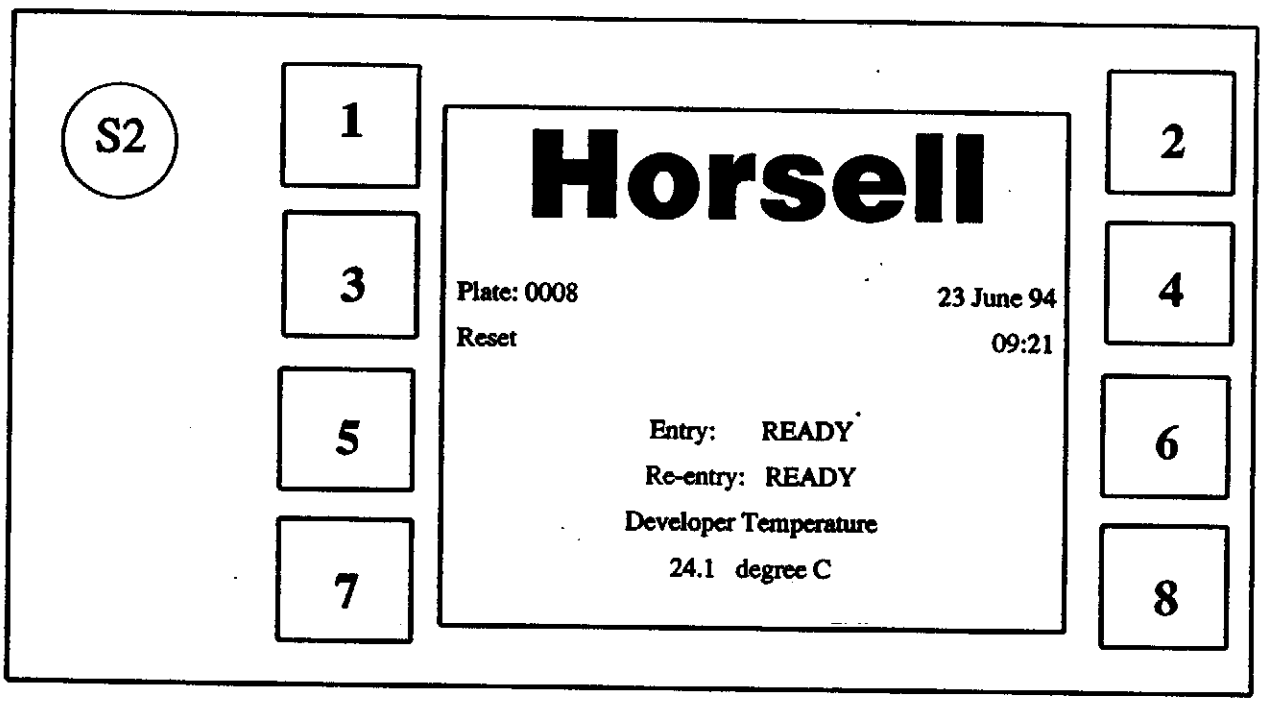
   This can be used to bypass the safety switches on the top cover. The drive can be inched only and auto features are disabled. It must always be set to automatic and the key removed when in normal operation. (See Controls Section).

MAKING SETTINGS

The EMS display panel comprises a screen and eight keys which enables the operator to enter all the settings for the machine process (see below).

(A full list of parameters appears on p. 32 - 38).

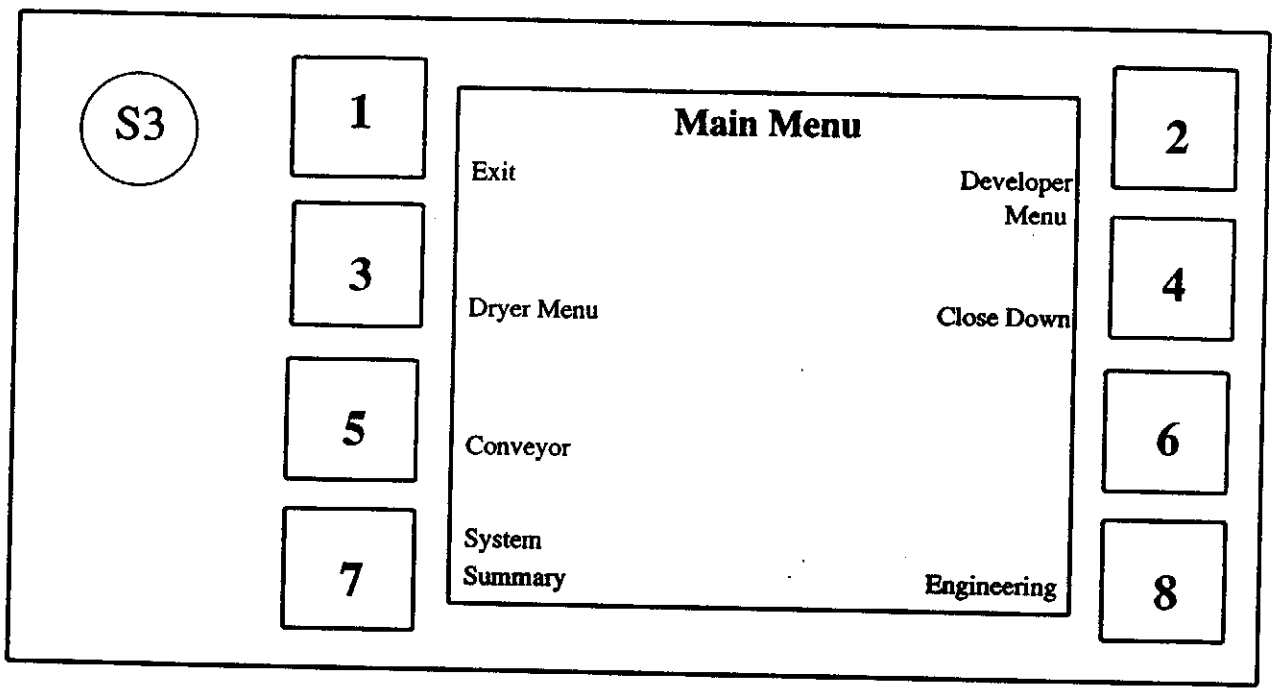
When the set Dev. temperature has been reached, the screen shows:



If you know that all settings are already entered and are correct, you can start processing plates.

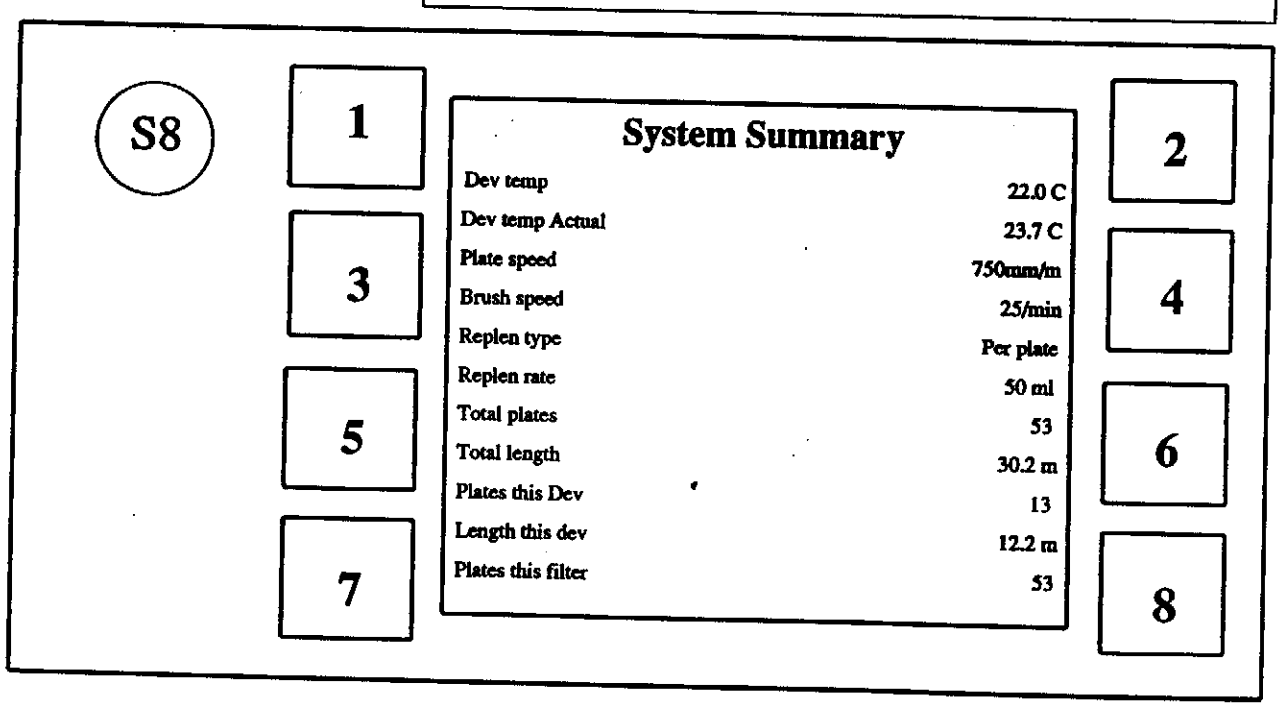
If you need to change or check any parameters, press any key (except key. 3, PLATES RESET) to move to the MAIN MENU.

The screen shows:



Select SYSTEM SUMMARY, the screen shows:

NOTE: *Numeric values are examples only.*

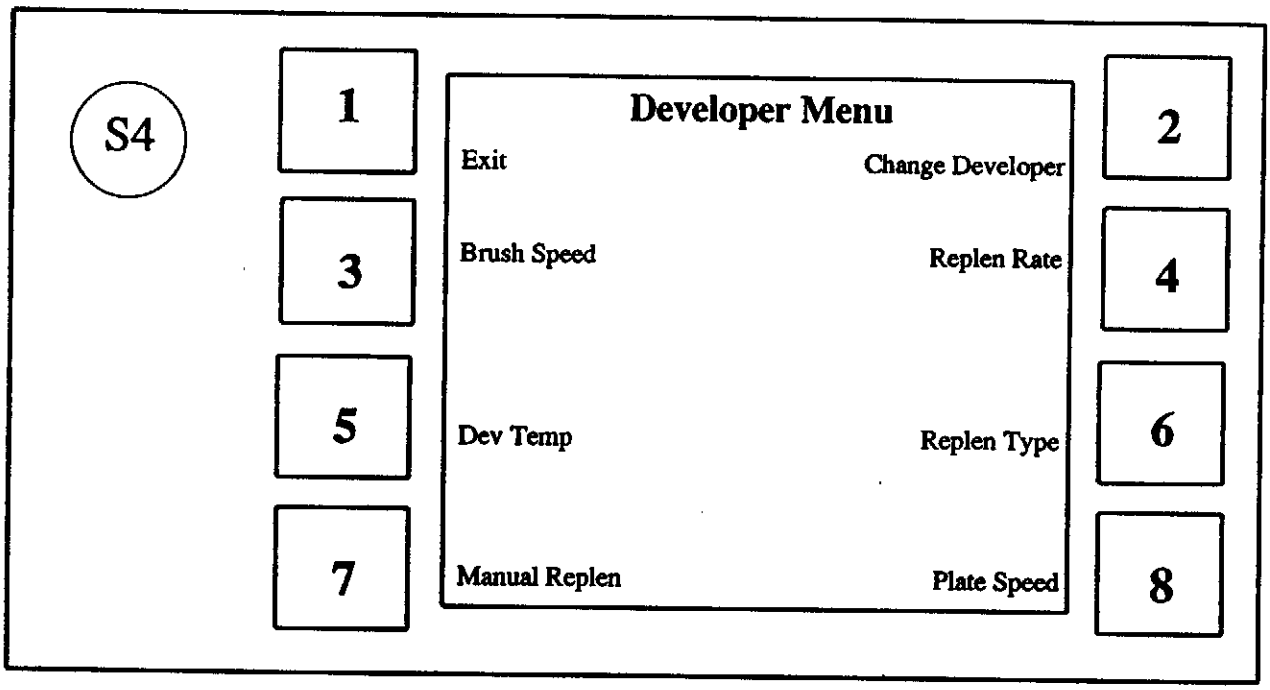


(The values shown cannot be changed via this screen and are not updated whilst the screen is displayed.)

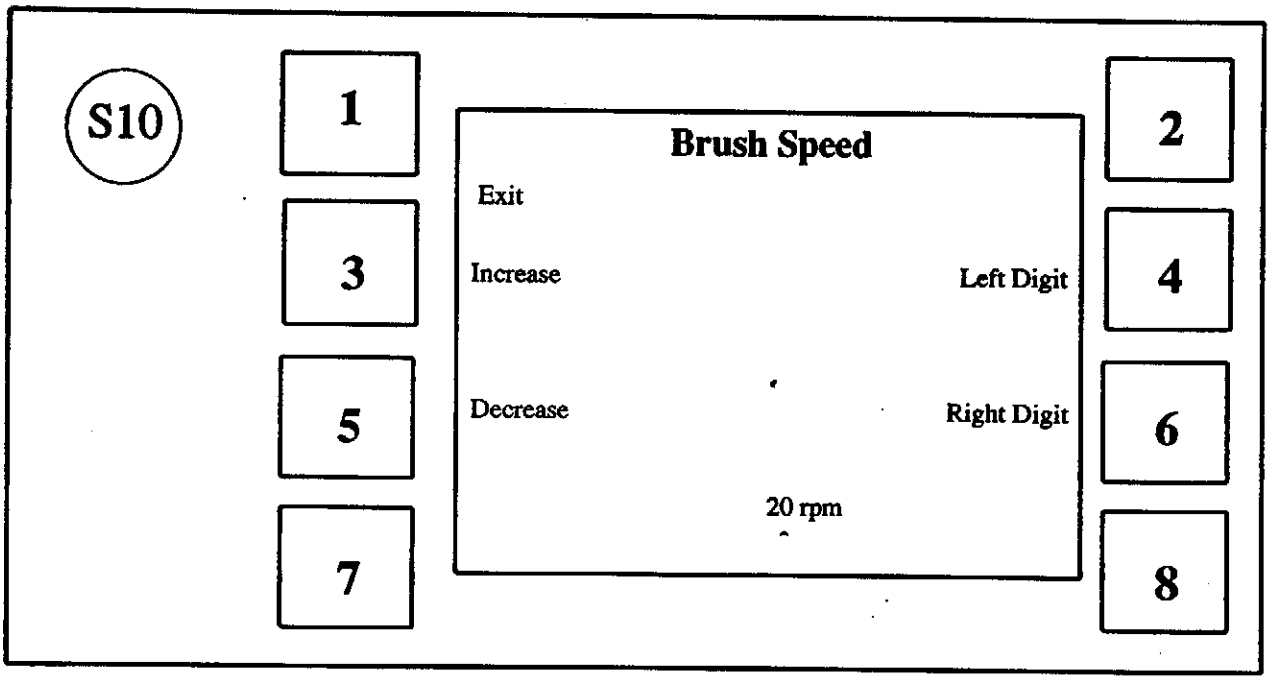
Make a note of any values which you need to change, then press any key to return to the MAIN MENU.

EXAMPLE 1 - To set the brush speed

Select DEV MENU, the screen shows:



Select BRUSH SPEED, the screen shows:



Select Left or Right Digit, (the cursor will indicate your selection) then press Increase or Decrease to set brush speed.

This screen is typical for setting values

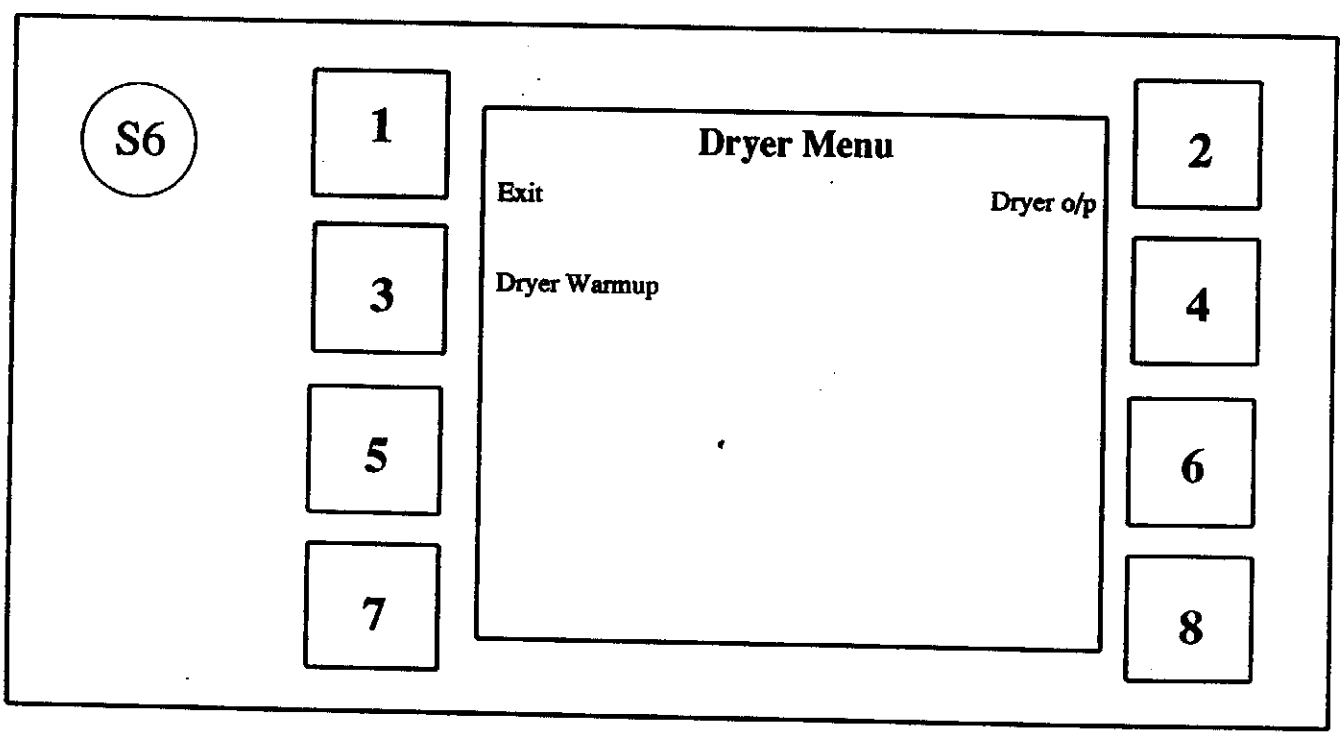
Press EXIT to return to the DEV MENU

Other settings can be carried out by selecting the following:

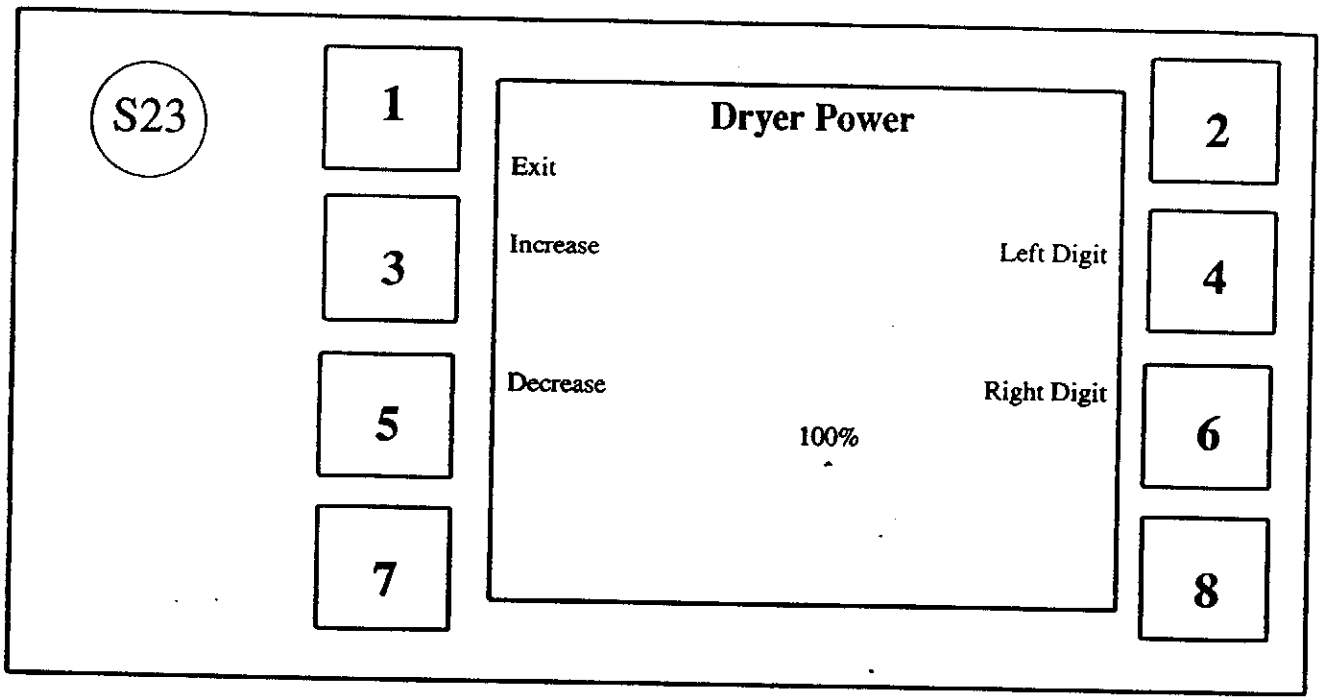
Select DEV TEMP, and set temperature on the SETTING SCREEN
Select REPLEN RATE and set the "shot" size
Select REPLEN TYPE and set how to replenish - by level or by plate
Select PLATE SPEED and set speed
For CHANGE DEVELOPER - see Maintenance
Press EXIT to return to MAIN MENU

EXAMPLE 2 - To set the dryer output power

Select DRYER MENU, the screen shows:



Select DRYER O/P, the screen shows:



Press increase or decrease to set DRYER O/P

A similar procedure is used to set the DRYER WARMUP TIME in seconds.

Press EXIT to return to: DRYER MENU

These new settings will be applied when a plate is fed into the machine.

PARAMETERS

The following is a full list of parameters the EMS displays for use by the operator.

MAIN MENU

Exit	returns to Horsell screen
Dryer Menu	opens menu
Developer Menu	opens menu
Close Down (Menu)	opens menu
Conveyor (Menu)	opens menu
System Summary	displays settings
Engineering Menu	for authorised persons only

DRYER MENU

Exit	returns to MAIN MENU
Dryer O/P	**% full power** *75% (default value)*
Dryer Warmup	Switches on before plate reaches heaters *0 seconds (default value)*

DEVELOPER MENU

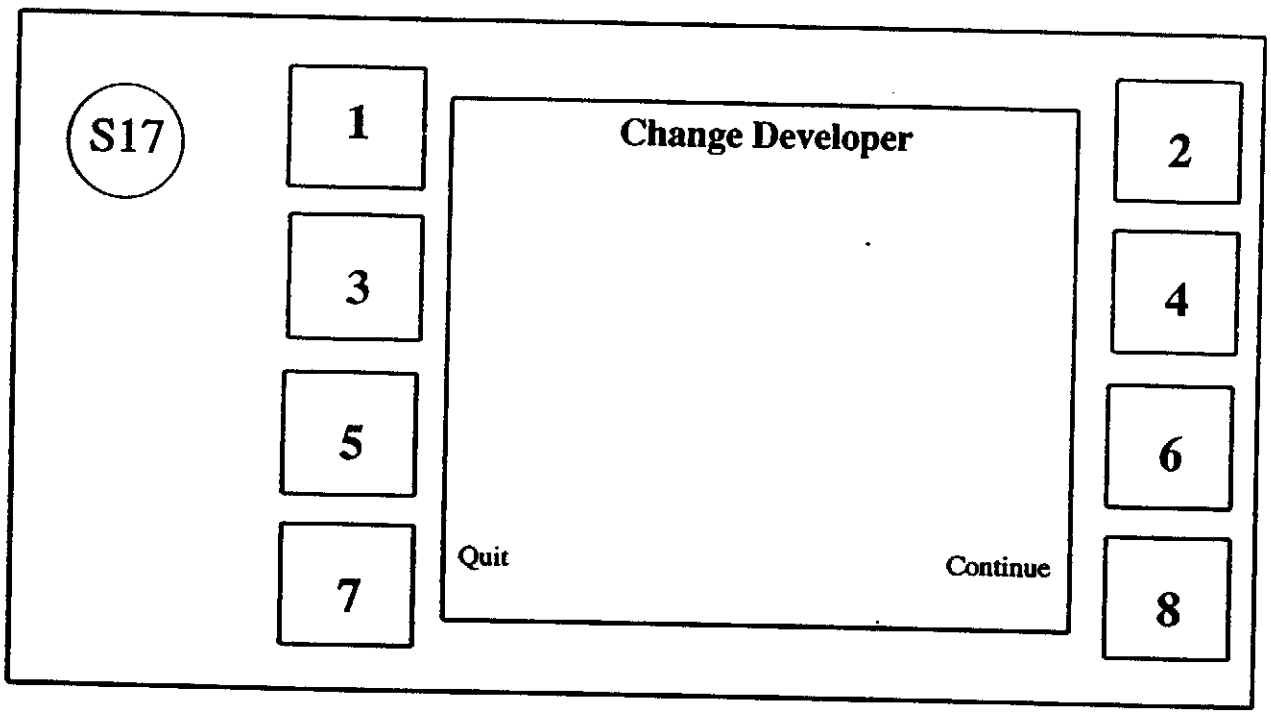
Exit	returns to MAIN MENU
Brush Speed	rpm *20 rpm (default value)*
Plate Speed	mm/min *800 mm/min (default value)*
Replen Type	per plate or level sense level *level (default value)*
Manual Replen	starts pump; press any key to stop
Replen Rate	10 - 100 ml or the equivalent in fl oz (pre-set) *30 ml (default value)*
Developer Temp	5 - 40 C or the equivalent in F (pre-set) *22 C (default value)*
Change Developer	opens DEVELOPER/FILTER CHANGE MENU (see Maintenance)

DEVELOPER/FILTER CHANGE (Use this to inform the EMS system, AFTER changing the developer or the filters.

Exit — To DEVELOPER MENU

Change Developer
Change main filter
Change 2nd filters
Reset conductivity

A typical screen shows:

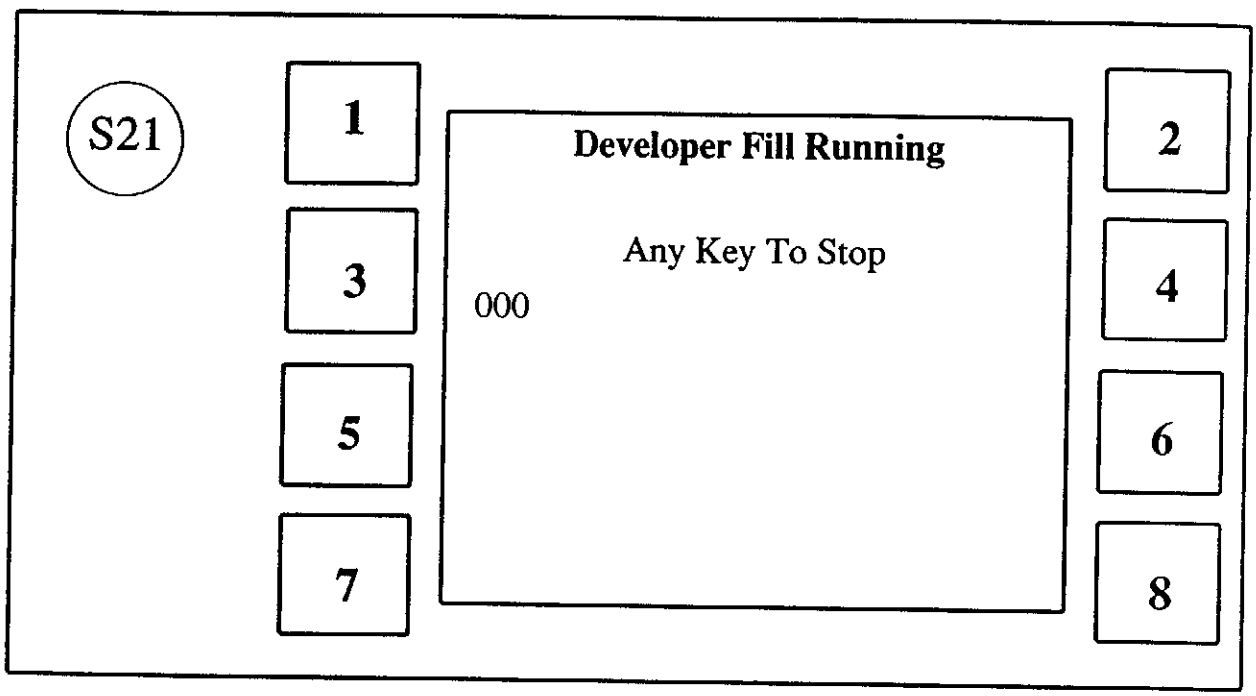


Select "Quit" to cancel and the display shows: "No Action Taken" and returns to the DEVELOPER/FILTER CHANGE menu (S16).

Select "Continue", if you have made a change, display shows: "Change Recorded" and returns to the DEVELOPER/FILTER CHANGE menu (S16). This function zero's the "plates this developer" in summary menu to allow operator details of plates processed per developer fill.

DEVELOPER FILL (for machines with AUTOFILL).

The developer fill pump starts as soon as the feature has been selected and the screen shows:



The pump will stop when the Developer sensor signals tank full.

Pressing any key will also stop the pump.

While filling, the developer recirculation pump will start when the low level sensor is covered. This will fill the filler bowls and associated pipework with developer.

NOTE: if the tank is already full, the display will show TANK FULL

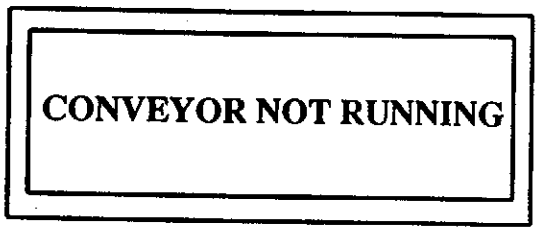
Press any key to return to the DEVELOPER/FILTER CHANGE menu.

CONVEYOR

Exit returns to MAIN MENU

Stop If machine was running this will stop the machine and display will return to the conveyor menu.

If machine was already stopped, the SCREEN will show:



Inch back }
Inch forward } Press and hold to run, release to stop

Restart If the machine was stopped during plate processing press restart and the display will return to the screen that was showing before the machine was stopped. If the machine was running during plate processing, the screen will show;

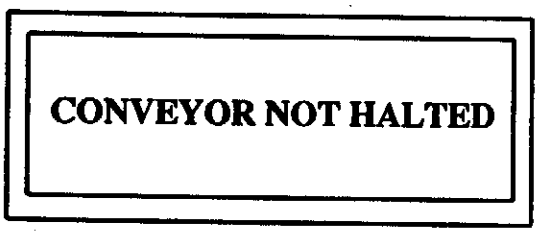


Plate speed 350-2000mm/min

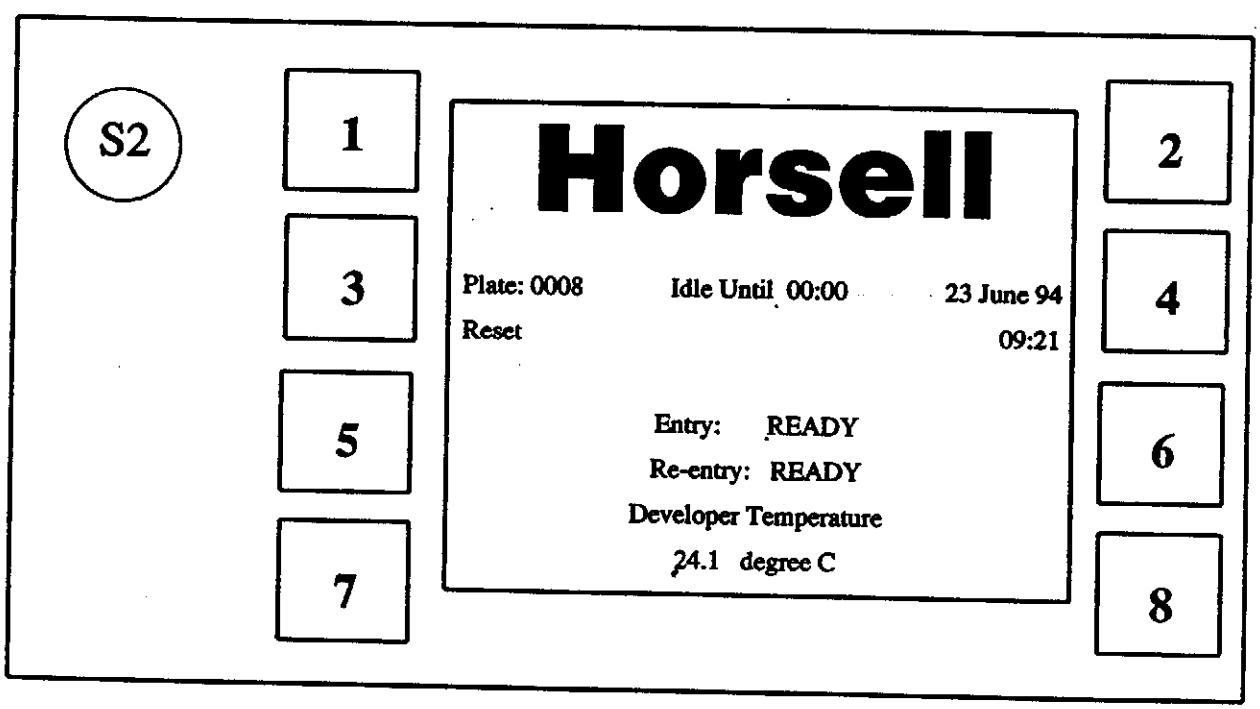
800mm/min (default value)

CLOSE DOWN

Exit	returns to MAIN MENU
Flush Gum	Water is pumped into spray bar to prevent blocking. (Pump stops automatically)
Set Idle	Halts machine operations normally used at end of shift; screen shows:

M/C IDLE

Display then returns to:



Press any key to return to CLOSE DOWN menu.

End Idle

Interrupts idle status and makes machine active; display shows "NORMAL OPERATION" and returns to Horsell screen (S2).

Set warmup times
00 00 00 00 00

Set next developer warmup time year/month/day/hour/minute

If warmup is to be used on a daily basis it is important to leave the year/ month/day at zero.

Set clock
YY MM DD hh mm
00 01 01 00 00

Set year/month/day/hour/minute

OPERATION

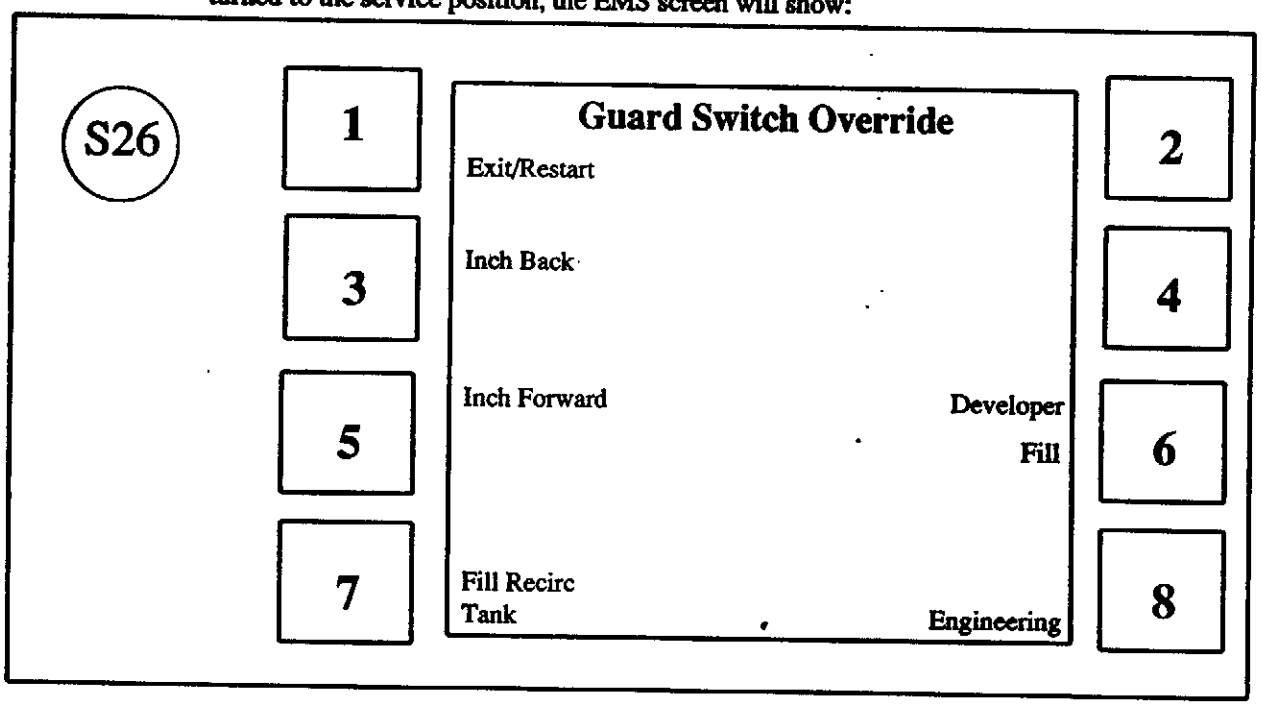
Before using the processor, the operator must read the Safety notes on p. 8 - 9.

CONTROLS

Isolator The mains ON/OFF switch to the machine when OFF, power is totally disconnected from the machine.

Rinse Water Spray Bar Taps These are factory set and should not need any adjustment Recommended setting: bypass closed, upper and lower rinse spray bars to give maximum flow without splashing.

Keyswitch For use by authorised persons only. When the key is turned to the service position, the EMS screen will show:

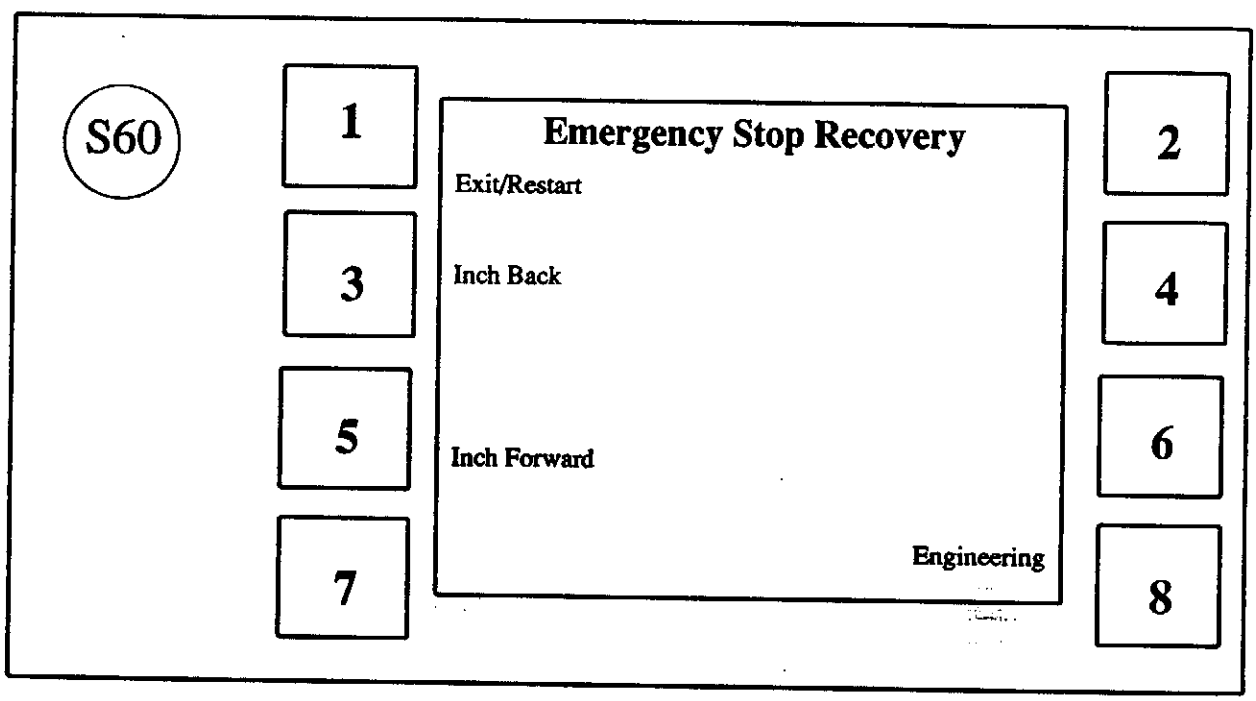


The top covers can be removed and the appropriate key pressed to Inch the roller drives, to enter the Engineering mode, to fill the Recirculating water tank, or to fill the Developer tank.

After any work has been carried out, the top covers must be replaced and the keyswitch turned to resume normal running.

Emergency Stop — When pressed, all machine operations are stopped. Reset by turning the button clockwise.

NOTE: If the emergency stop button has been pressed with a plate in the machine, when the button is reset the EMS display will show:



If the reason for using the emergency stop is quite simple, such as a jammed plate, then suitable, obvious corrective action can be taken, using the Inch Back and Inch Forward keys if needed.

Return to normal operation by resetting the emergency stop button then pressing the Restart key.

EMS

The Horsell Mercury is totally controlled by the EMS system. Sensors report on the state of the various sections of the process and the EMS ensures that levels, concentrations and temperatures are exactly right to process plates efficiently and economically.

BEFORE STARTING

1. Check that all brushes, rollers, spray bars and plate guides are in place in the tank and that there are no obstructions.

2. Check that the electrical cabinet doors are closed and locked. Check that all removable covers have been replaced.

3. Check that developer waste bottle is in position and the pipe is installed.

4. Check that the developer replenish bottle is in place and the probe installed.

5. Fill the Developer Section

NOTE:	***Fill the tank with rollers in place. If they are fitted after filling, some developer will be displaced to drain and so wasted.***

The tank can be filled from bottles by hand. Take care to avoid splashing developer around.

If a hand pump is used, place a full bottle of developer at the base of the machine and insert the fixed tube of the pump. Repeat the procedure with the required number of developer bottles until the level in the developer section is within 2mm of the top of the overflow stack pipe located in the rear left hand corner of the section.

If the machine is equipped with Dev Autofill, the tank can be filled using the controls in the DEVELOPER/FILTER CHANGE menu. (See Parameter Section p. 32)

Place a full bottle of developer at the left hand rear of the machine and insert the probe from the replenish pump.

6. Fill the Rinse Section

This is most easily done by using the EMS feature when the power has been switched 'ON'.

Turn the key switch to service position the EMS will display screen S26. Select "Fill Recirc Tank", screen S27 will be displayed.

Fill the rinse section using the tap provided.

NOTE:	*the pump will switch on automatically when there is sufficient water in the rinse section. This will fill the filter bowls and upper tray. When the correct level is reached the EMS will give an audible tone. Turn off the tap.*

7. **Fill the Gum Section**

1 Remove the doctor roller and spray bar and pour in gum from a bottle. Fill until the level is within 2mm of the top of the overflow stack pipe.

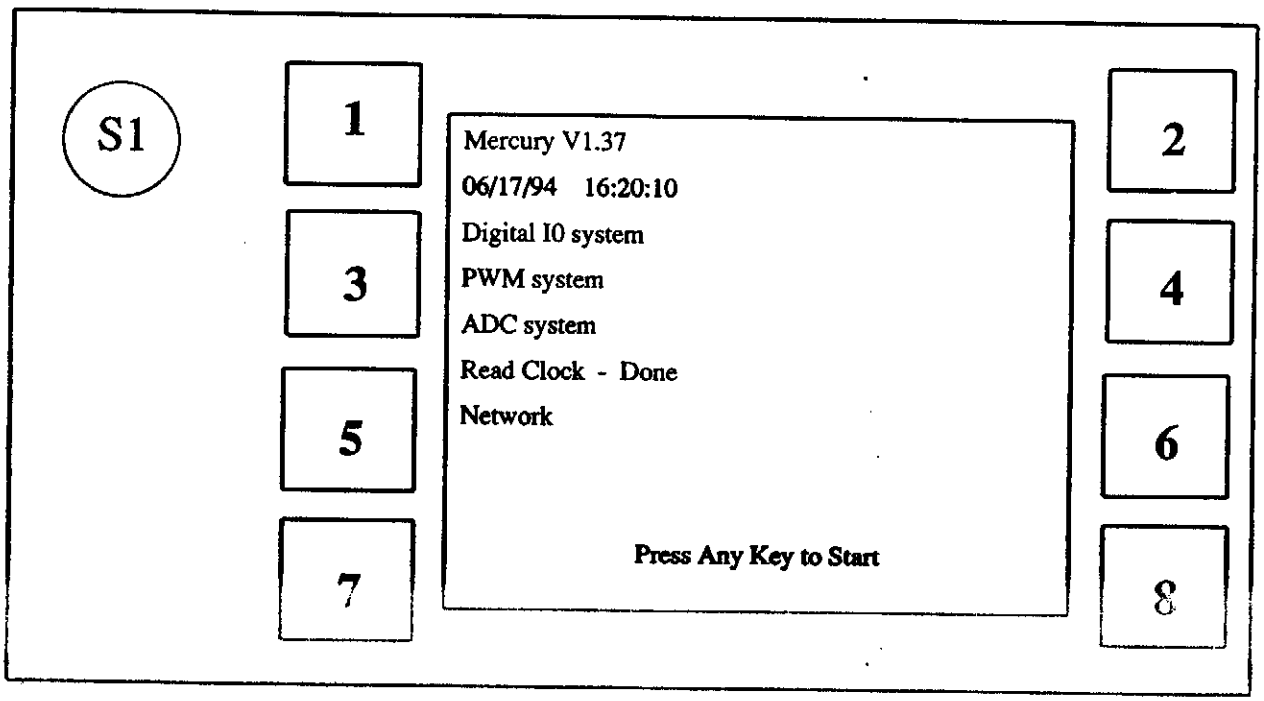
2 Replace the doctor roller and the spray bar.

3 Place a full bottle of gum at the right hand rear of the machine and insert the probe and return hose from the gum section.

4 If gum flush is fitted fill the small bottle mounted on the machine right hand side with water.

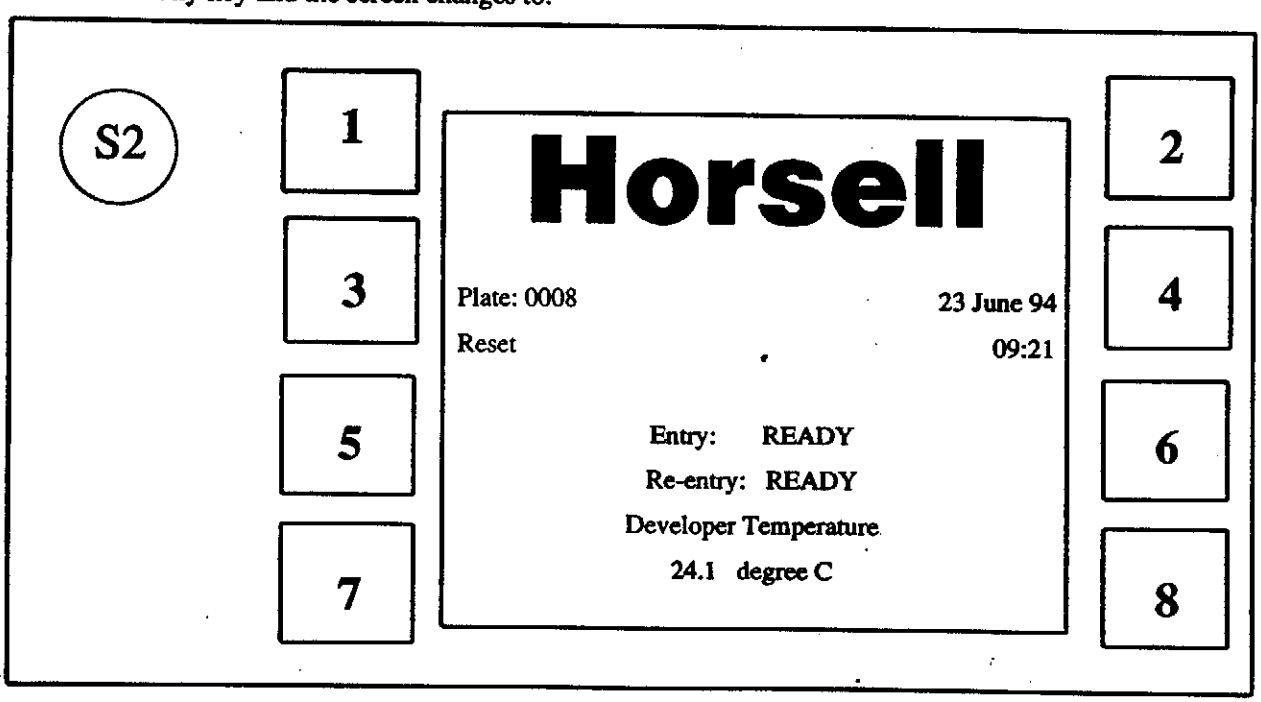
STARTING

1. Switch the machine ON at the isolator. The gum pump will run for a short period to prime the gum system and the EMS screen will show:



This is for information only.

Press any key and the screen changes to:



NOTE:	*This information display is intended to be shown during normal operation. It shows the temperature of the developer and indicates that the machine is ready for use. Press the Plate Count key to reset the count to zero.*

Press any key and the screen changes to:

Depending on the state of the machine, one of the following messages may be displayed:

1.	Idle until 00:00	The machine has been set to idle until the time shown. (To End Idle see CLOSE DOWN menu S5 in Parameter Section).
2.	Developer Temperature Low	Wait until temperature is correct before processing plates.
3.	Developer Conductivity Low	The developer is at a very low strength, and should be changed. (See Change Developer S17 and "Before Starting" item 5 on p.38)

When there are no messages displayed the screen shows that the machine is ready and plates can be processed.

Before entering a plate ensure that the correct temperature has been reached for the type of developer being used.

PROCESSING A PLATE

1. Place the plate image side up on the infeed table. Ensure that the plate is within the plate guides moulded into each side of the infeed table and that part of the plate passes above the infeed sensor.

   (Dual Plate Feeding - This is possible on machines fitted with dual infeed sensors. Plates should have a gap of at least 30mm between them).

2. Push the plate gently into the machine. The machine will sense the plate and start the drive automatically. Continue pushing the plate into the machine until the infeed rollers are felt to grip the plate.

3. The plate will be processed and fed automatically onto the out-feed table. The machine will then stop.

Re-entry Operation - (Plate rinsing and gumming after manual deletions).

NOTE:	*Ensure that all traces of deletion fluid/gel have been removed from the plate before using the re-entry section.*

1. Place the plate, image side up, in the re-entry slot.
2. The sensor will detect the plate and start the machine.
3. Push the plate gently into the machine until the drive rollers are felt to grip the plate.
4. The plate will be rinsed and gummed and fed automatically onto the out-feed table. The machine will then stop.

ALARM DISPLAYS

The message is superimposed on the current EMS screen display, and many of these are accompanied by an audible warning tone.

* indicates alarm conditions which stop the machine.
# these alarms are triggered by a pressure sensor.

* EMERGENCY STOP — relates to stop buttons and top covers
(display stays on)

* SAFETY LOCKOUT — indicates fault on emergency stop system

CONV. NOT RUNNING — (attempt made to stop stationary machine)
(display on for 5 sec)

LAST PLATE TOO CLOSE — (warning of potential plate overlap at infeed)
allows plates to go through

* RECIRC WATER LOW
(display on for 10 sec)

CHANGE DEVELOPER
(display on for 5 sec)

DEV CONDUCTIVITY LOW
(display is on for 5 sec)

CHANGE MAIN FILTER — (water filter No 1) indicates when the change filter plate length or count is reached.
(display on for 5 sec)

	CHANGE 2nd FILTERS	(water filters) same as filter no. 1 *(display on for 5 sec)*
*	SHORT PLATE	Indicates plate length is less than the distance between infeed and outfeed rollers machine stops if no other plate is being processed *(display on for 5 sec)*
*	CONV CURRENT LIMIT	overload on conveyor drive motor *(display stays on)*
*	BRUSH CURRENT LIMIT	overload on developer brush motor *(display stays on)*
	AUTOMATIC RUN DUE	if the machine is not used for a pre-set time period it automatically runs to prevent the rollers sticking *(display on 60 sec)*
#	RECIRC FILTER BLOCKED	water filter - advance warning *(display on 5 sec)*
*#	RECIRC FILTER BLOCKED	water filter - full warning *(display on 10 sec)*

SHUTTING DOWN - END OF SHIFT

At EMS panel

1. Press any key to display MAIN MENU (S3).
2. Select CLOSE DOWN display (S5).
3. Press FLUSH GUM key.
4. Remove the top clear covers.
5. Remove the re-entry tray.
6. Apply cleanser to the nip rollers and wipe all the rollers with clean water. Use the service key and select the maintenance position, the rollers can now be inched for cleaning with the top guards removed.
7. Replace the re-entry tray and the top clear covers ensuring the safety guard switches locate correctly. Turn the service key into the automatic position and remove the key.
8. Select SET IDLE screen then press any key.
9. Display returns to HORSELL screen (S2).

SHUTTING DOWN FOR LONGER PERIODS

Follow the same procedure as shutting down at end of shift, and switch the machine off at the isolator.

If the machine is to be left for a period of more than about 10 days it is recommended that all the tanks should be drained and the whole machine should be cleaned (see Maintenance).

Points to Remember

Regularly check the contents of the external developer replenish, developer waste, gum flush and gum bottles. Empty or replace as necessary.

The service key must be kept in a safe place away from the machine and must only be used by qualified personnel for service needs.

Always change the filter element when renewing the developer.

Keep the machine clean.

MAINTENANCE

SAFETY NOTE:	*Always switch OFF at the isolator before working on any part of the machine.*
WARNING:	*The safety guard switches do not isolate the machine from the electrical supply.*
NOTE:	*The service keyswitch is for use by qualified service persons only. This allows the drive to be inched with the top clear covers removed.*
SAFETY NOTE:	*Refer to the chemical manufacturer's safety notes when handling any chemicals.*

Some of the service operations should only be carried out by suitably qualified service persons as they require access to unprotected parts of the machine. These operations are covered at the end of this section and are marked accordingly.

If panels have been removed, make sure that all earthing wires are re-connected correctly.

PRESSURE PLATE ROLLERS & BRUSHES

NOTE:	*For convenience, it is recommended that two people should carry out these tasks.*

Top Covers

These are simply lifted off the machine. When replacing, make sure they are fitted the right way round.

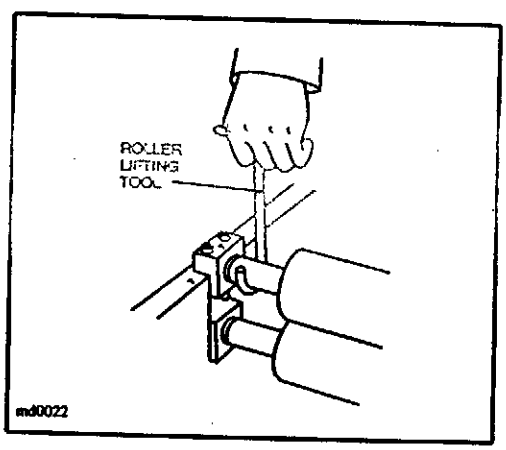
Developer Cover

Use the two handles to lift off the cover, taking care to avoid the water supply pipe on the right side of the tank. Lift up at the left hand side first for removal. Always replace the right hand side first.

Rollers

The rollers are removed in pairs by lifting straight up out of the guides. The bearing blocks and tank walls are numbered to show the correct location of the rollers. Use the roller lifting tools supplied.

To replace, lower the rollers gently into the guides.



Spray Bars

Remove by pushing in the grey collar to release the right hand end of the spray bar. The bar can now be pulled to the left and can then be lifted out of the tank. A plastic 'C' shaped tool is supplied to assist in spray bar removal. Placed over the spray bar it allows the grey collar to be pressed in more easily.

To refit, insert the left end of the bar into the recess, then push the right hand end firmly into the grey collar in the right hand tank wall.

Align the holes in the spray bars so that the spray is directed towards the nip of the rollers.

Note that the gum spray bar has a locating pin to engage in a hole in the right hand tank wall.

Developer Brush

Lift off the developer cover. Release the hand nuts securing the brush bearing blocks to the tank walls, then lift the brush out of the guides.

Refit the brush by lowering it gently until the bearing blocks seat correctly in their guides. Secure in place with the hand nuts, whilst pushing the bearing blocks down to ensure that they are correctly located.

Rinse Brush

Simply lifts straight out of the tank.

Doctor Roller

With the spray bar removed, the gum doctor roller can be lifted out of its guides; take care not to drop the loose end bushes.

To refit, make sure that the bushes are in place, and carefully lower the roller into its guides.

Rinse Pressure Plate

This simply lifts out of the tank. Make sure it is replaced correctly.

Rinse Tray

Can be lifted straight out of the tank. Make sure that it is replaced correctly. A filter element and retaining plate are fitted in a recess in the centre of the tray (only for Type A recirculating water systems).

Re-entry Guide

Simply lifts out of the tank. Make sure that it is replaced correctly on to the supports.

Developer Tank Plate Guides

Removal of the guides is simply a matter of pulling them out of their locations in the tank. These guides are located by means of stainless steel channel sections attached to the guides. The centre guide drops into the recess in the tank; the front and rear guides each have a flange which must be inserted into a slot in the tank base, before the front of the channel is pressed firmly down to lock it in place.

The centre guide is not fitted if intermediate dev rollers are fitted.

DRAINING TANKS

NOTE:	*Used developer, water and gum must not be poured down the drain, observe local regulations.*

1. To drain any of the tank sections place an empty bottle at the rear of the machine. Insert the hose from the appropriate drain tap, and drain off the contents of the tank section.

CLEANING

NOTE:	*Isolate machine before washing down.*

Regular cleaning is far more effective than prolonged sessions after weeks of use.

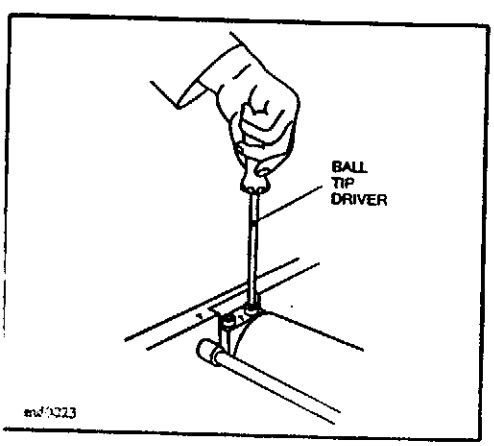
All rollers and brushes should be removed when a thorough tank cleaning is carried out. Ensure that all other side covers and guards are in position before washing out the tank.

1. **Drain all tanks.**
2. **Close drains and turn tap to supply rinse water.**
3. **Clean out the tank area.**
4. **Clean all the rollers. Use S500 cleaner on the rollers that are stained or heavily coated and thoroughly rinse with water. Wash all brushes thoroughly with water.**
5. Wipe small rollers on the inside of infeed cover to remove any collected dirt.
6. **Replace all tank fittings.**
7. **Drain water from tank and dry off.**

DEVELOPER BRUSH PRESSURE

Adjusting the screws in the bearing blocks can be used to raise or lower the brush to give a light even pressure across the plate.

ADJUSTING ROLLER NIP PRESSURE



A 6mm ball driver is supplied with the machine.

1. Slacken off all 4 bolts in the roller bearing blocks - 2 at each end.

2. Carefully screw in the bolt until all the free play has been taken up. Do this at both ends before proceeding to the next step.

3. Note the position of each bolt and tighten 1/3 of a complete turn.

The rollers should now be at their optimum setting.

CHANGING FILTERS

NOTE:	*When changing the 4 water filters, it is recommended that the blanket filter should be changed at the same time.*

To change a filter element.

1. Close the inlet and outlet taps on top of the filter unit.

2. Place an empty container under the filter housing and open the drain tap. Allow the contents to drain fully.

3. Close drain tap.

4. Unscrew the filter bowl from the top part of the unit by turning clockwise (a special spanner is supplied).

5. Fit a new filter element - make sure it locates correctly in the bowl.

6. Check 'O' ring seal in the filter bowl for damage and ensure that it is seated correctly in the groove. If in doubt fit a new seal.

7. Replace the filter bowl.

8 Fully open the inlet and outlet taps.

9. When replacing the rinse water filters it is recommended that these be replaced one at a time to ensure that the correct filter order is maintained.

ROLLER DRIVE

SAFETY NOTE: *This operation should only be carried out by suitably qualified service persons.*

Switch OFF at the isolator before working on the machine.

1. Remove the top covers.

2. Remove the left side guard.

3. Disconnect the earth connector at the front of the guard. Remove the inner drive guard.

4. There are four idler sprockets in the chain drives. Two of these sprockets are fitted on spring loaded arms and should not need to be adjusted. The other two are bolted into slots in the drive plate, and can be easily adjusted to correct chain tension.

5. Lightly oil the chains, making sure to keep oil away from the tank and plate path.

6. Replace the side guard, and earth connection.

RENEWING MOTOR BRUSHES

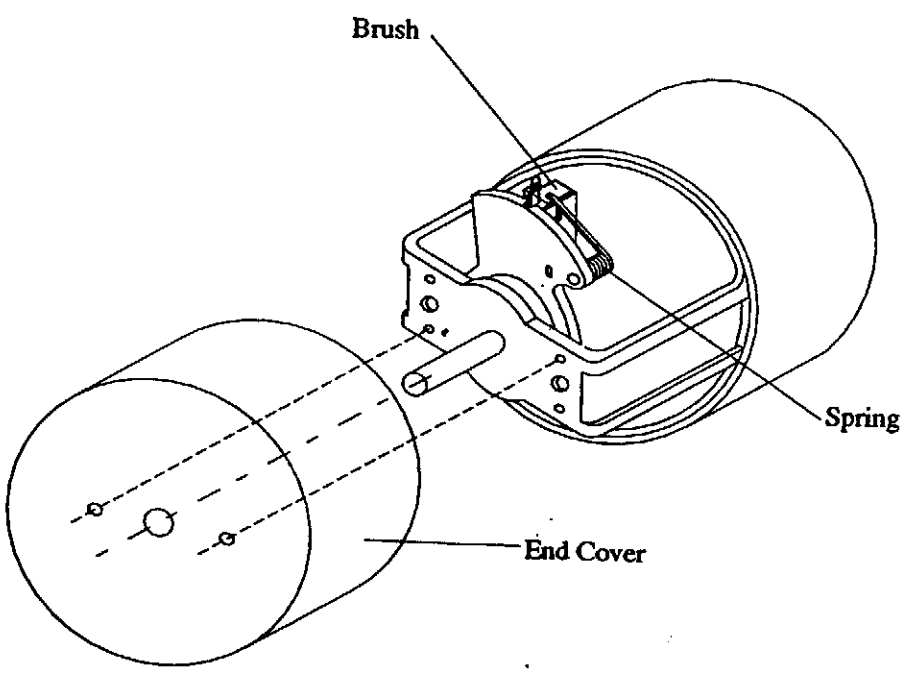
SAFETY NOTE: This operation should only be carried out by suitably qualified service persons.

Switch OFF at the isolator before working on the machine.

The brushes in the drive motors will need to be replaced at intervals depending on usage.

The procedure for both motors is the same.

1. Remove the black plastic cover on the rear of the motor.
2. Remove the terminal screw.
3. Release the spring pressure and take out the brush.
4. Fit a new brush and connect the lead to the terminal.
5. Repeat the procedure for the opposite brush.
6. Replace the cover.



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TROUBLESHOOTING

Any problems which arise are likely to be of a minor nature and easily rectified. The following is a brief guide:

NOTE:	*Access to "Engineering" in EMS is restricted, only authorised Horsell persons should be in possession of the password*

FAULT	CAUSE/REMEDY
Plate jammed in machine	Free by using INCH BACK function - in CONVEYOR MENU on EMS
Machine does not start	Covers not correctly positioned
	No mains power
	Fuse blown or MCB tripped
	Emergency stop button depressed
	Sensor faulty
	EMS on IDLE
Insufficient developer flow	Filter blocked
	Filter valve partially closed
	Air lock in hose
	Spray bar blocked with deposit
No rinse water Type A (recirculation)	Supply turned off
	Fuse blown
	Faulty pump
	Filter blocked
	Filter tap closed

FAULT	CAUSE/REMEDY
Type B (direct to drain)	Rinse taps closed
	Faulty solenoid valve
	Fuse blown
Rinse water runs continuously	Dirt under solenoid valve diaphragm
No gum flow	Gum bottle empty
	Air lock in hose
	Gum spray bar blocked
Plates not drying	Excessive gum flow
	Insufficient gum roller pressure
	Heater fuse blown
	Heater output % set too low in EMS
Plates not feeding correctly	Excessive brush pressure
	Infeed roller wet
	Insufficient roller pressure
Water in gum	Gum flush used too often
Machine switches off before plate exited	Restart machine by covering infeed sensor to exit plate.
	Infeed/Re-entry optical sensor dirty
	Contact HGI service, see p. 7
Plate not fully developed	Drive speed too fast (EMS)
	Developer too old and weak
	Developer replenish bottle empty
	Developer replenish faulty
	Developer brushes not correctly set

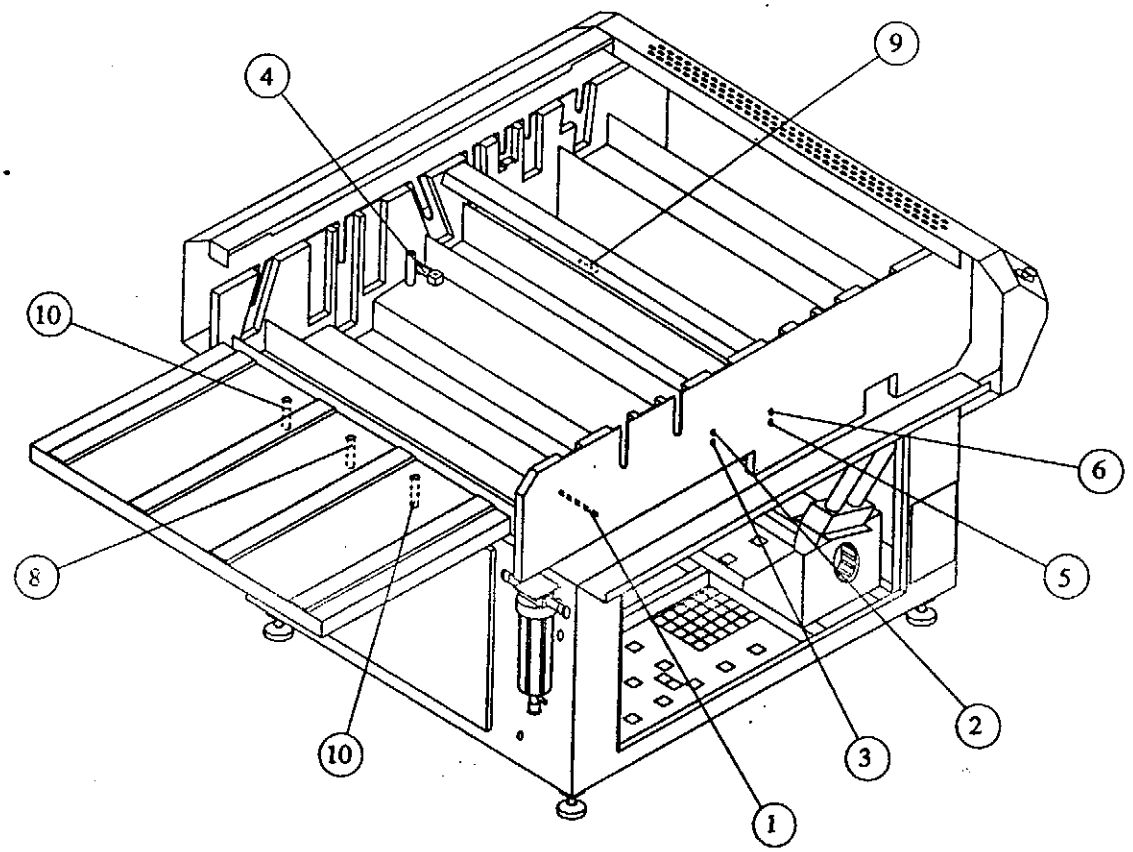
FAULT	CAUSE/REMEDY
Developer level slowly falls (Make sure there are no leaks)	Developer replenish bottle empty Developer replenish faulty EMS settings wrong Developer level sensor faulty Developer temperature too high (evaporation).
Developer temperature low	Developer level in tank too low EMS settings wrong Heater faulty Fuse blown
Developer temperature too high	Ambient temperature too high Cooler faulty EMS settings wrong
Emergency Stop Signal even when Emergency Stop Buttons released.	Lids not on correctly Guard switch strikers not located
'Last plate too close' warning keeps occurring	Feeding plates too close together Re-entry tray missing (re-entry sensor sees plate below)

NOTE: *Customer to inform HGI service department of any fault, see page 7.*

Sensors

The following sensors are located as shown in Fig 10

Fig 10



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1.	SN1	Developer Temperature Sensor
2.	SN2	Developer Fill Sensor
3.	SN4	Developer Low Sensor
4.	SN5	Conductivity Sensor
5.	SN6	Water Recirc Low Sensor
6.	SN7	Water Recirc Full Sensor
7.	SN8	Conveyor Motor Rotation Sensor (see Fig 4, p. 14)
8.	SN9	Infeed Photocell Sensor
9.	SN10	Re-entry Photocell Sensor
10.	SN11	2nd Infeed Photocell Sensor (if fitted)
11.	SN12	Water Recirc Pressure Sensor (if fitted) (see Fig 6, p.18)

INSTALLATION

GENERAL

The installation, connection of services and commissioning of the machine are normally carried out by HORSELL equipment service engineers, or qualified representatives.

> *WARNING:* *Electrical connections must only be made by suitably qualified persons.*

The installation site must be clean, dry and strong enough to support the unit. There must also be sufficient room to operate the machinery efficiently. It is recommended that the machine is at least 600mm from any wall or adjacent equipment to allow easy access for operation and servicing.

Electrical and water supply points must be available, and a suitable drain point, if type B (direct to drain version).

> *NOTE:* *The machine can be moved by using a forklift or pallet truck under the base frame. Always ensure the frame crossmembers are securely located on the forklift or pallet truck before moving.*

Water Supply

The user must provide a water supply which complies with local water authority regulations. Water pressure should be between 1.4 and 10 bar (21 to 147 psi).

The water inlet to the machine is located at the front of the machine - 3/4" BSP Copper or high pressure hose (protected as necessary) should be used for the connection.

A stopcock or gate valve must be connected in the supply line at a convenient point to allow local disconnection of the machine.

Ensure all wash drain taps are closed before turning on the water supply to the machine.

Electrical

The electrical connection to the main power supply must be carried out by a suitably qualified electrical engineer, and must be in accordance with the requirements laid down in the national electrical code of the country of installation.

For the UK these should include: The Electricity at Work Regulations 1989, IEE Wiring Regulations and BS7671:1992.

The machine is not suitable for safe connection to an IT electrical supply.

Refer to the rating label and check that the machine voltage corresponds to the supply voltage.

The power supply fuse ratings and minimum cable size are shown in the Electrical Technical Information Sheet.

If the power supply is in the range of 190V-250V 2 phase, a transformer is fitted in the machine; the power supply fuse rating is shown in the Electrical Technical Information Sheet.

A neutral conductor must always be installed with a 3 phase supply.

Provision has been made for the power supply and start control signal for the deletion table.

Power supply terminals are 3LI and N.

Start signal terminals are 142 and 143.

Where the deletion table or stacker is of an existing design an interface kit will be provided.

After connection but before power is switched ON, the machine must be tested to ensure that the earth loop impedance of the earth continuity conductor meets the required standard.

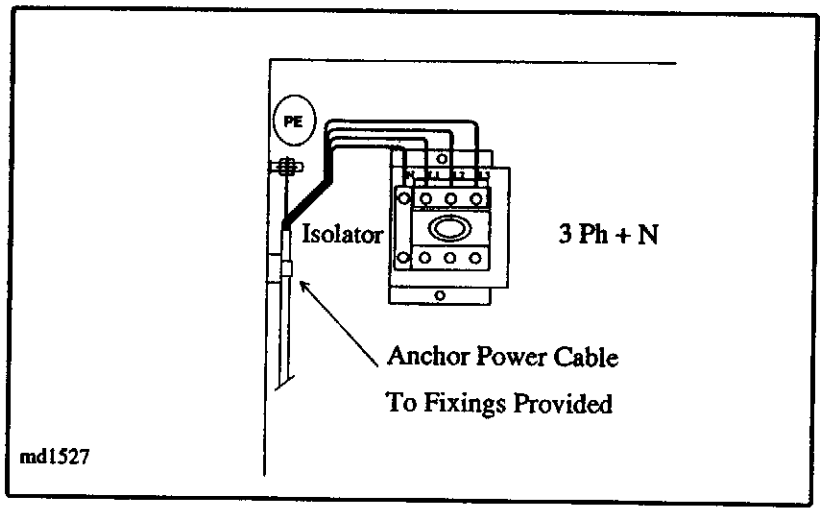
Before switching electrical power ON check that:

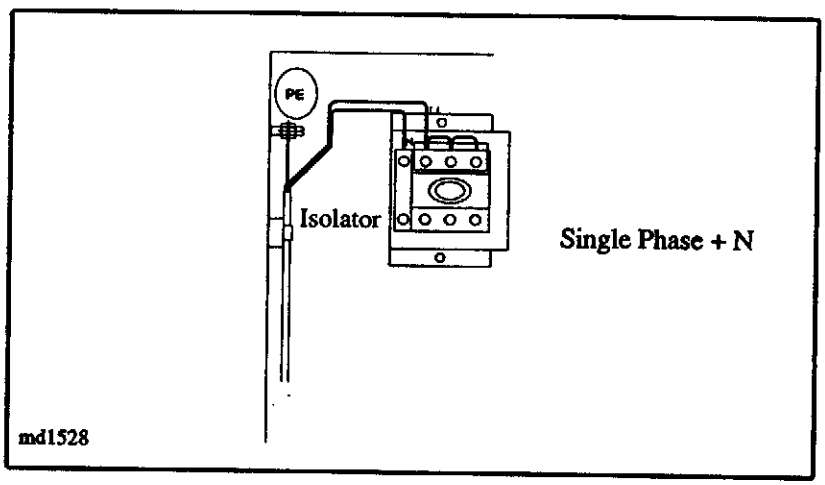
1. Machine and supply voltages are correct.
2. The transformer voltage selectors MS501 and MS502 on the power supply board PCB5 are selected for the correct voltage.
3. The correct fuses have been fitted.
4. Earth continuity test has been carried out.
5. All wiring connections are tight.
6. Cables have been secured by clips or covers.
7. All protective covers have been replaced.
8. Access to the isolator switch is clear.

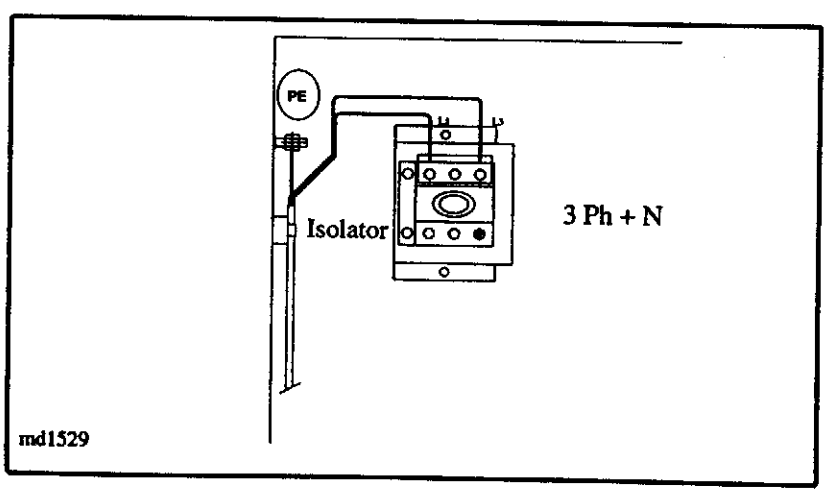
INSTALLATION PROCEDURE - NORMAL

1. Move processor into area required for installation.
2. Remove all top clear covers and dev. tank cover.
3. Fit all roller and developer brushes into correct places (bearing blocks and tank guides are clearly marked to ensure correct re-assembly).
4. Level processor using adjustable feet.
5. Connect power supply to machine. (See Fig 11).
6. Connect water supply to machine.
7. Close all drain valves.

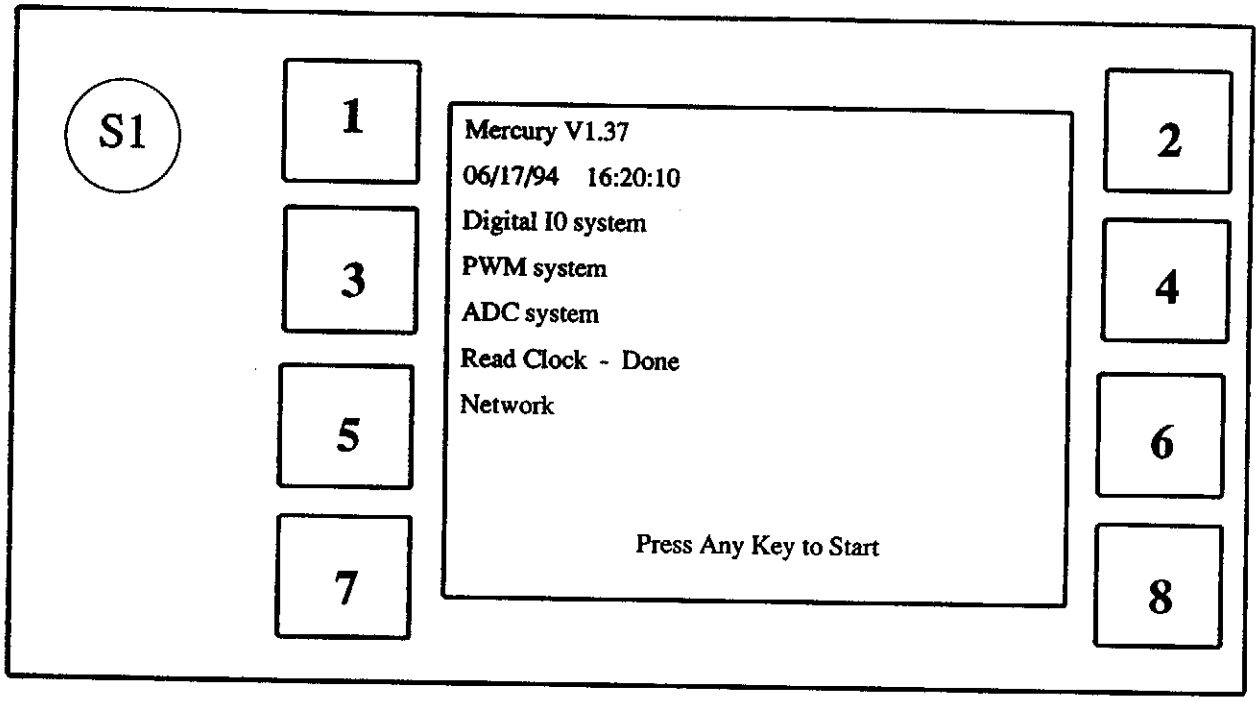
POWER SUPPLY CONNECTIONS (Fig 11)



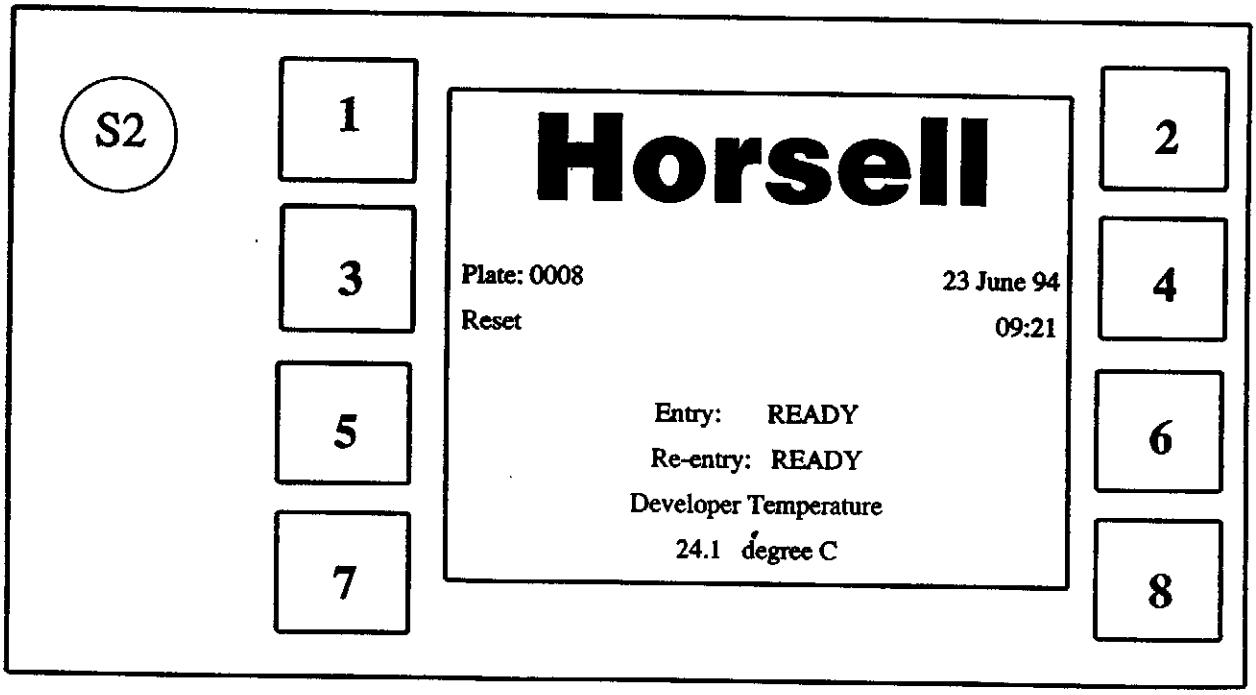




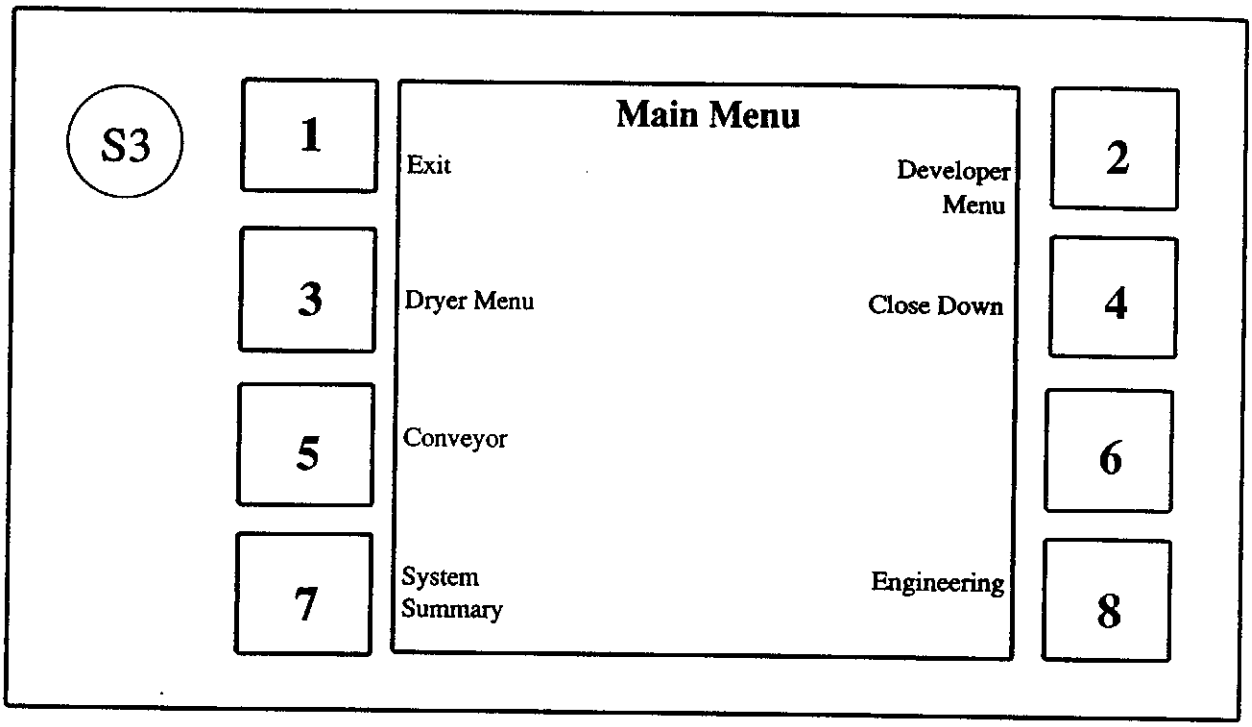
8. Switch on machine and check that EMS screen shows:



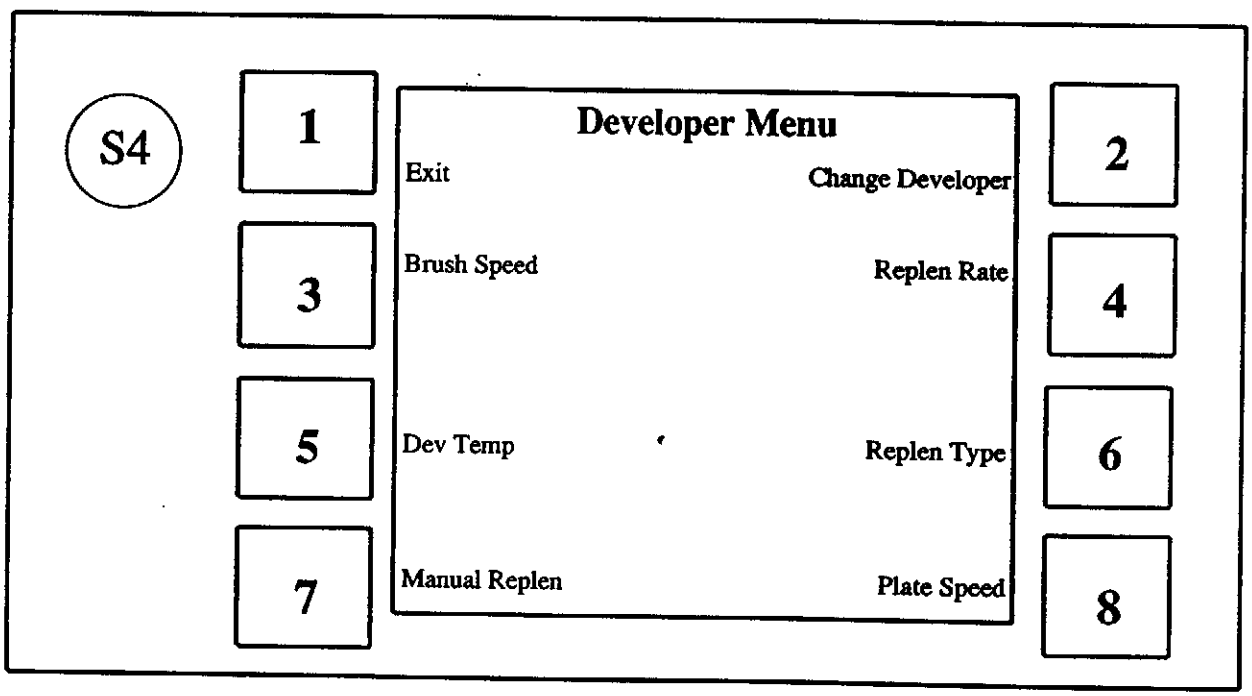
press any button, screen will show:



press any button, screen will show:



9. To set the required conveyor and brush speeds, developer temperature and replenish type, press the Developer Menu button and the screen will show:



10. Pass plate through processor and check all m/c functions are operating correctly.
11. If everything is operating correctly, drain water.

INSTALLATION PROCEDURE - LIMITED ACCESS

Where access to the final machine location is restricted, the machine will require stripping down. This must be carried out by Horsell or its agents as a machine stripdown by anyone else will invalidate the warranty.

INSTALLATION - TEST

1. Ensure all three drain taps on the rear of the machine are closed.

2. Ensure that the drain tap at the base of each of the filter units is closed, and that the inlet and outlet taps on top are fully open.

3. Check that there is a filter element in each filter, unscrew the blue filter bowl from the top part of the unit. If a filter is not already in the bowl add the appropriate type of filter element. See parts list section for the precise type, page 104.

4. Refit the filter bowl.

5. Place an empty bottle (25ltr), at the front left corner of the machine and insert the developer waste pipe.

6. Remove the top clear covers and fill all tanks with water - use the mains water cocks. Check for any leaks in the tank or pipework, then drain the tanks and make sure the mains watercocks are closed.

ELECTRICAL TECHNICAL INFORMATION

Market	Specification	Full Load Current	Recommended Protected Device Rating	Min. Cable Size
A	380-415v 3 Ph + earthed neutral 50 Hz	10A	10A	1.5mm²
	220-240v 1 Ph + earthed neutral 50 Hz	15A	16A	1.5mm²
B	380-415v 3 Ph + earthed neutral 60Hz	10A	10A	1.5mm²
	220-240v 1 Ph + earthed neutral 60Hz	15A	16A	1.5mm²
C	190-240v 1 Ph with or without earthed neutral 50 Hz #	15A	32A †	2.5mm²
D	190-240v 1 Ph with or without earthed neutral 60 Hz #	15A	32A †	2.5mm²
E	190-240v 1 Ph with or without earthed neutral 60 Hz #	15A	20A *	14AWG

Wire Sizes

The wire sizes shown are a **minimum** size only. The actual size required should be calculated in accordance with local electrical codes.

Intended Market

A: United Kingdom, almost all of Europe, excluding Norway, majority of the world.
B: Saudi Arabia etc
C: Japan (East), Norway etc
D: Japan (West), Saudi Arabia etc
} IEC SPEC

E: USA, Canada, Mexico, Philippines, Brazil etc } UL / CSA SPEC

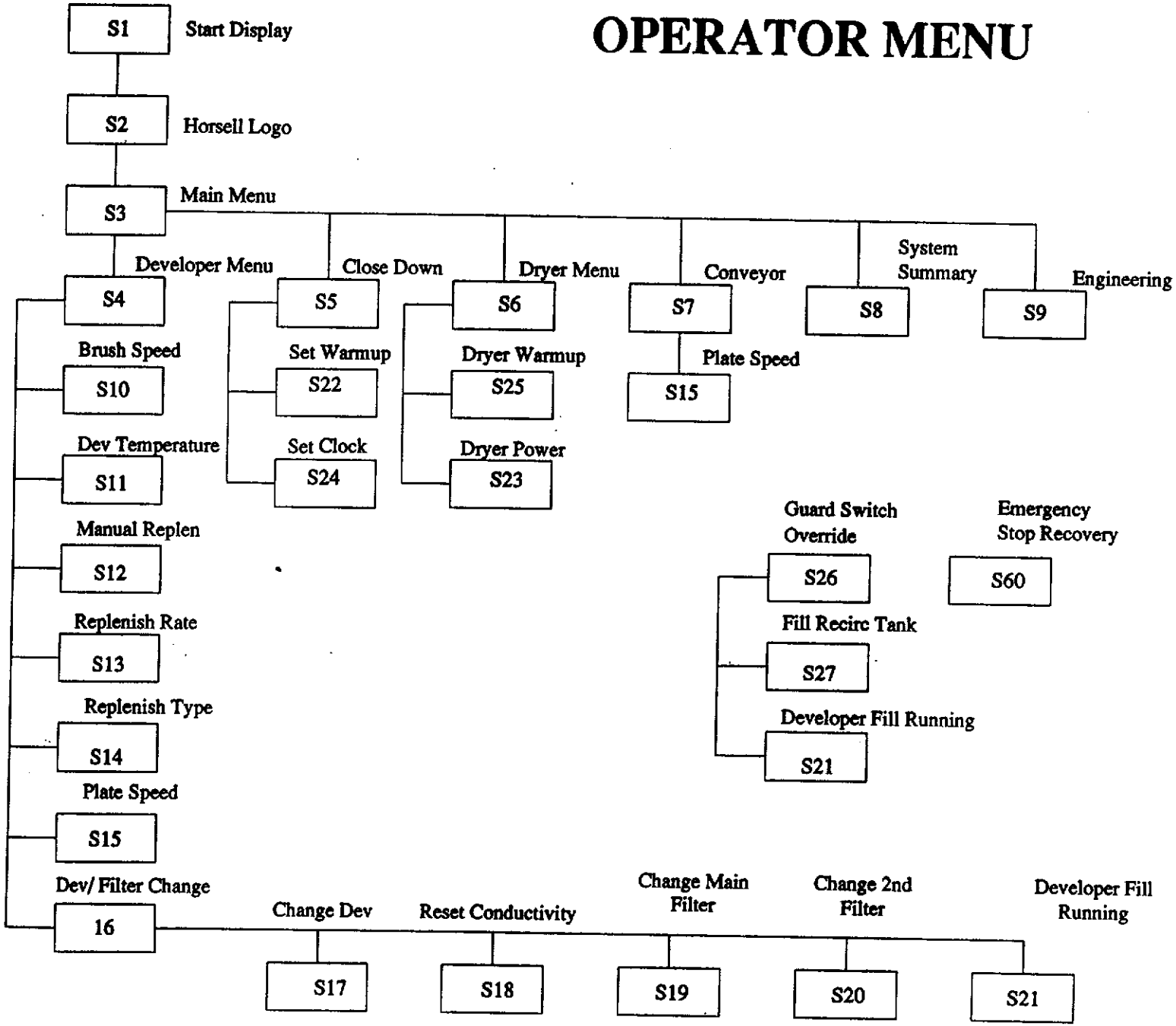
NOTES:-

† Industrial fuse link to IEC269

* Fuse to be dual Element Time Delay UL Class RK5

Derived from 2 phases of a 3 phase system via a power transformer.

OPERATOR MENU



HORSELL MERCURY

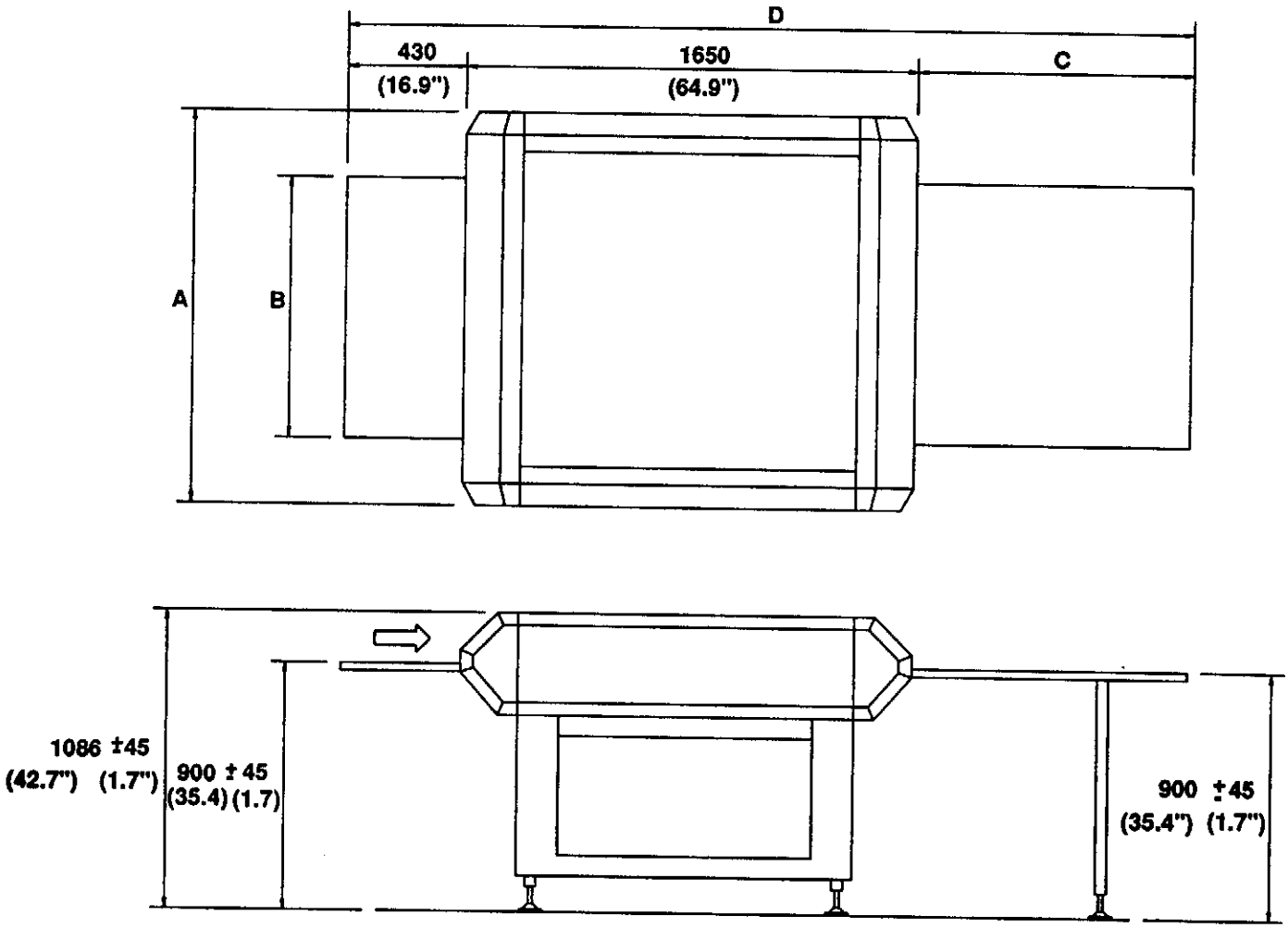
HORSELL MERCURY SPECIFICATION

	850	1250	1550
Max. plate width	850mm (33.4")	1250mm (49.2")	1550mm (61")
Min. Plate length*	620mm (24.4")	620mm (24.4")	620mm (24.4")
* With centre dev. rollers	320mm (12.6")	320mm (12.6")	320mm (12.6")
Body length	1650mm (64.9")	1650mm (64.9")	1650mm (64.9")
Machine width	1423mm (56")	1823mm (71.7")	2123mm (83.5")
Machine height	1086mm (42.7")	1086mm (42.7")	1086mm (42.7")
Water connection: UK/EURO	3/4" BSP	3/4" BSP	3/4" BSP
USA	3/4" BSP	3/4" BSP	3/4" BSP
Drains: UK/EURO	None	None	None
USA	2" NPT	2" NPT	2" NPT
Water Pressure	Min 1.4 bar / Maximum 10 bar		
	Min 21 PSI / Maximum 147 PSI		
Power Supply	(See Electrical Technical Information sheet)		
Weights			
Base m/c (no tables, no liquid)	439 kg (966 lbs)	541 kg (1190 lbs)	620 kg (1364 lbs)
Infeed table	5 kg (11 lbs)	8 kg (18 lbs)	9 kg (20 lbs)
Discharge table (with legs)	15 kg (33 lbs)	28 kg (62 lbs)	44 kg (97 lbs)
Power Transformer	32 kg (70 lbs)	32 kg (70 lbs)	32 kg (70 lbs)
Chiller Unit	23 kg (50 lbs)	23 kg (50 lbs)	23 kg (50 lbs)
Centre developer rollers	14 kg (31 lbs)	19 kg (42 lbs)	25 kg (55 lbs)
2nd developer brush	6 kg (13 lbs)	8 kg (18 lbs)	10 kg (22 lbs)
Developer auto fill	2 kg (4.4 lbs)	2 kg (4.4lbs)	2 kg (4.4 lbs)
Gum flush	1 kg (2.2 lbs)	1 kg (2.2 lbs)	1 kg (2.2 lbs)

Horsell

	850	1250	1550
Capacity (US gallons)			
Top gum tank capacity	5 ltr (1.3 gl)	6.5 ltr (1.7 gl)	8 ltr (2.1 gl)
Developer tank capacity: -			
With developer centre rollers	43 ltr (11.3 gl)	65 ltr (17.2 gl)	80 ltr (21.1 gl)
Without developer centre rollers	51 ltr (13.5 gl)	75 ltr (19.8 gl)	94 ltr (24.8 gl)
Rinse section	33 ltr (8.7 gl)	48 ltr (12.6 gl)	60 ltr (15.8 gl)
Developer replenish rate	0 - 100 ml/plate		
Plate transport speed	0-2000mm/min		
	0-6.5 FT/min		
Developer brush speed	0-45 RPM		
Filters	Developer circulation filter, 10" Particulate 50 micron		
	Developer cooling filter, 10" Particulate 50 micron		
	Rinse section blanket filter, 568 x 94mm Foam		
	Water recirc filter 1, 20" Particulate 10 micron		
	Water recirc filter 2, 10" Particulate 5 micron		
	Water recirc filter 3, 10" Carbon		
	Water recirc filter 4, 10" Resin		
Noise level @ 1 metre	<70 dB (A)		
Plate Gauge	0.152mm minimum - 0.5mm maximum		
	0.006 inch minimum - 0.02 inch maximum		

HORSELL MERCURY DIMENSIONS



mg1208

M/C SIZE	A	B	C	D
850	1423 (56")	950 (37.4")	990 (39")	3070 (120.8")
1250	1823 (71.7")	1350 (53.1")	1440 (56.7")	3520 (138.5")
1550	2123 (83.5")	1650 (64.9")	1890 (74.4")	3970 (156.3")

ALL DIMENSIONS IN BRACKETS ARE IN INCHES

CONSUMABLES

WATER FILTERS (1, 2, 3, 4)

An 850 size Horsell Mercury processing Horsell Capricorn and Goldstar consumables under Horsell recommended operating conditions will typically give a filter life of between 250 and 750m^2, typically 500m^2.

Variations in machine size, water quality, plate, chemistry and regular machine maintenance may effect filter life.

It is in the interests of the customer to optimise processor operating conditions to maximise further performance.

(If in doubt refer to your technical contact at Horsell, see p. 7).

DEVELOPER FILTER

An 850 size Horsell Mercury processing Horsell Capricorn and Goldstar consumables under Horsell recommended operating conditions will typically give a maximum filter life of 1400 m^2.

Variations in machine size, water quality, plate, chemistry and regular machine maintenance may effect filter life.

It is in the interests of the customer to optimise processor operating conditions to maximise further performance.

(If in doubt refer to your technical contact at Horsell, see p.7)

WATER CHANGE

An 850 size Horsell Mercury processing Horsell Capricorn and Goldstar consumables under Horsell recommended operating conditions will typically give a maximum water life of 1000 m^2.

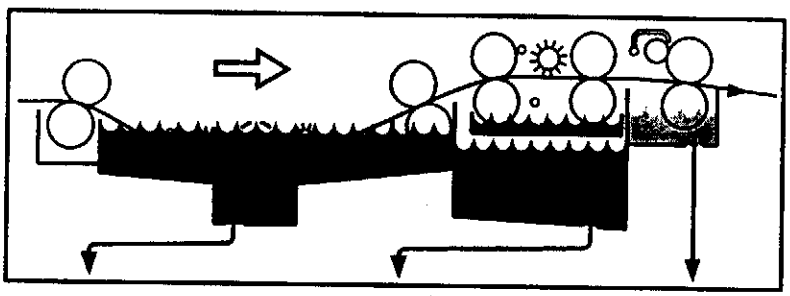
Variations in machine size, water quality, plate, chemistry and regular machine maintenance may effect water life.

(If in doubt refer to your technical contact at Horsell, see p.7).

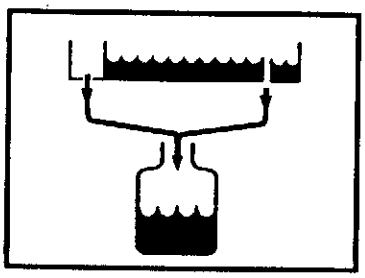
CHILLER UNIT (IF FITTED)

Change at the same time as the developer filter.

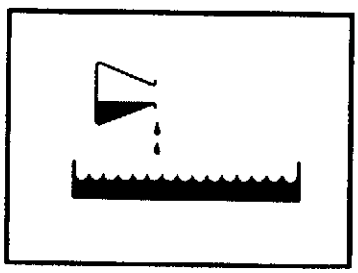
MACHINE LABEL KEY



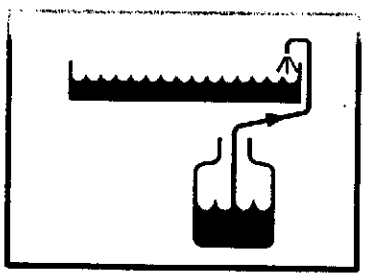
Waste Section to Drain



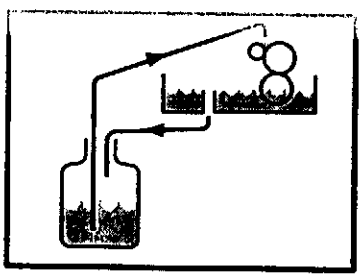
Developer Waste



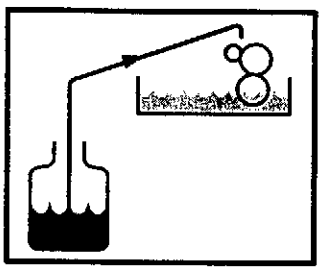
Developer Replenish



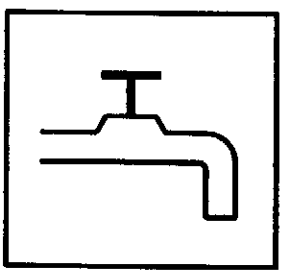
Developer Auto Fill



Gum



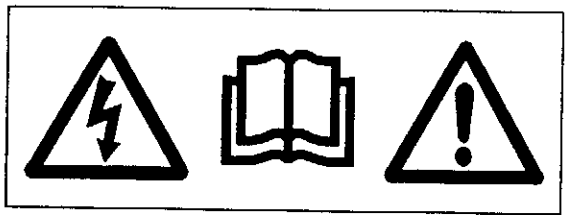
Gum Flush



Mains Water Inlet

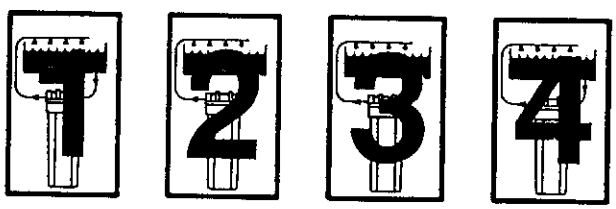
md1300

Machine Label Key (cont.)

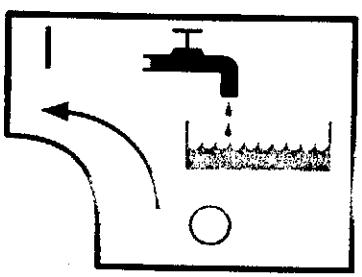


Caution: Read the Instruction Manual

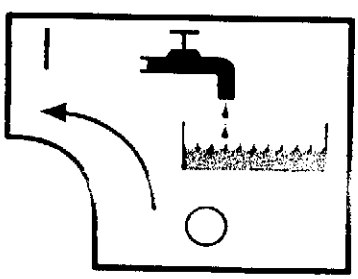
Isolator OFF / ON



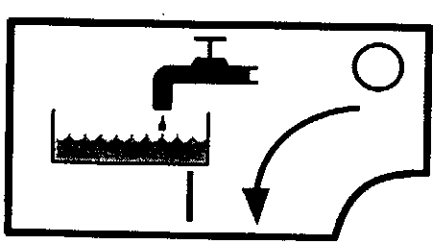
Water Re-Circ Filters



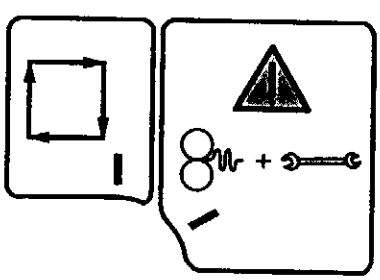
Developer Rinse (green)



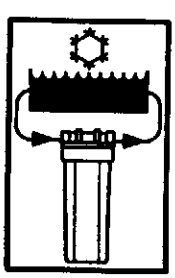
Water Rinse (blue)



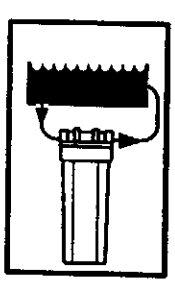
Gum Rinse (yellow)



Service Key Switch



Developer Cooling Filter



Developer Filter

md1300

EMS DEFAULT SETTINGS AND RECORD SHEET

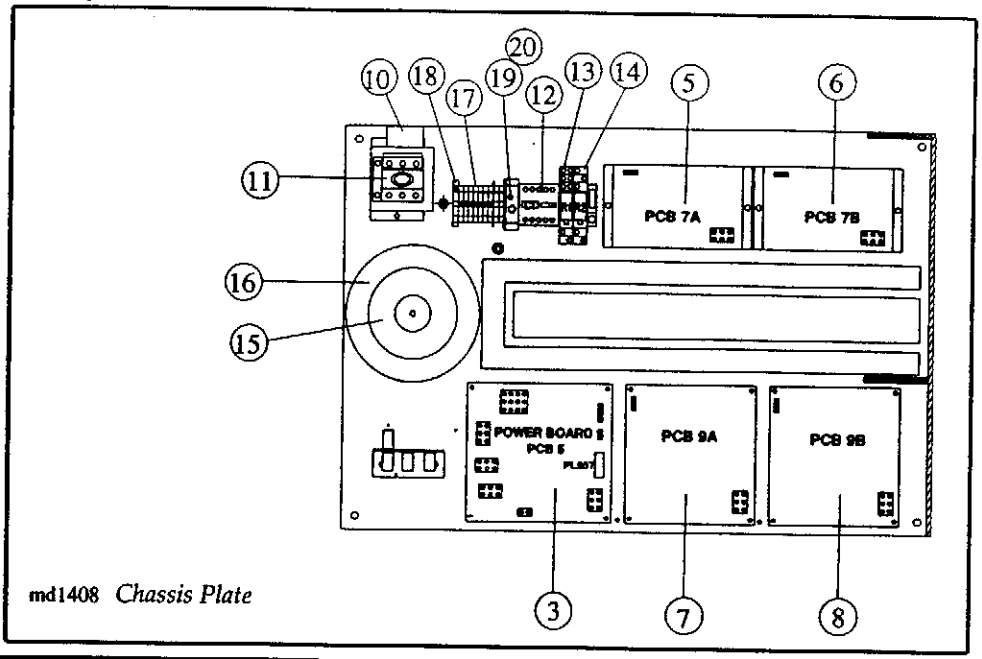
MAIN software version : DISPLAY software version :						
PARAMETER	RANGE	DEFAULT	ACTUAL	ACTUAL	ACTUAL	ACTUAL
Date	-	-				
Brush Speed	10 to 45 RPM	20				
Dev Temp	5 to 40 C	22				
Plate Speed	350 to 2000 mm/min.	500				
Replen Type	Per plate or Level	Level				
Replen Rate	10 to 100 ml/plate	30				
Dryer O/P	0 to 100%	75				
Dryer Warm-up	0 to 20 Seconds	0				
Warm-up Time	YYMMDDHHMM	0000000000				
Plate Size	Short or Long,	Short				
Entry Sensors	1 or 2	1				
Conductivity Span	0 to 100%	75%				

EMS DEFAULT SETTINGS (Cont.)

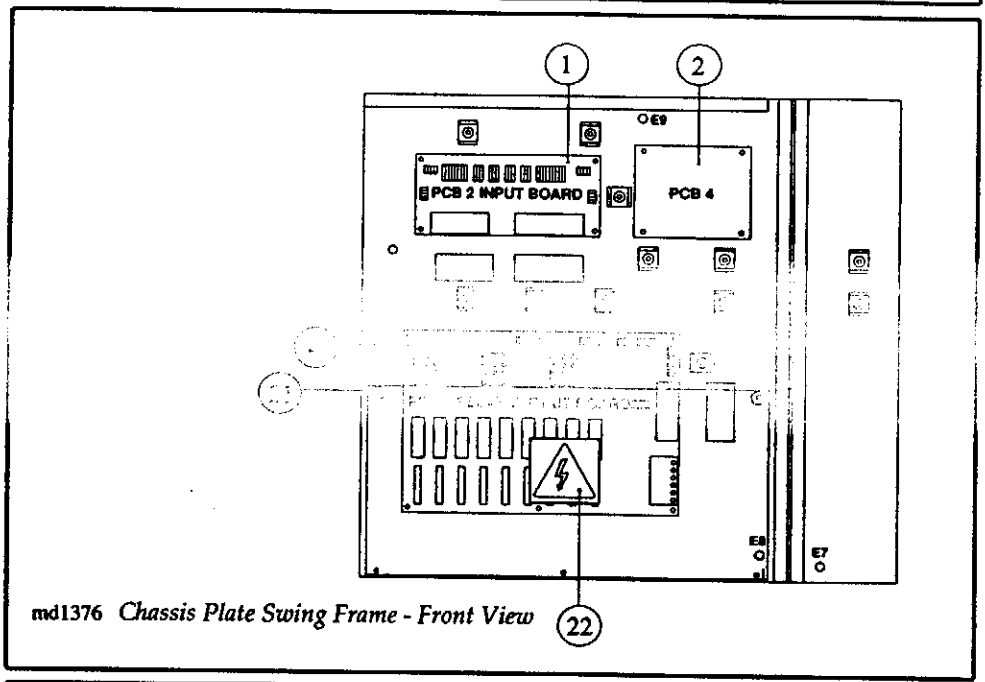
PARAMETER	RANGE	DEFAULT	ACTUAL	ACTUAL	ACTUAL	ACTUAL
Plate Speed	mm or in/min	mm/min				
Replen Rate	ml or fl oz/plate	ml/plate				
Temperature	C or F	C				
Language		English				
Dev Change	Count or Length	Count				
Count or length	10 to 10000	0				
Filter Change	Count or Length,	Count#				
Count or length	10 to 10000	0				
Pressure Warn Level	0 to 1024	200				
Pressure Stop Level	0 to 1024	500				
Autorun	6 to 480 min	60 min				

ELECTRICAL PARTS LIST

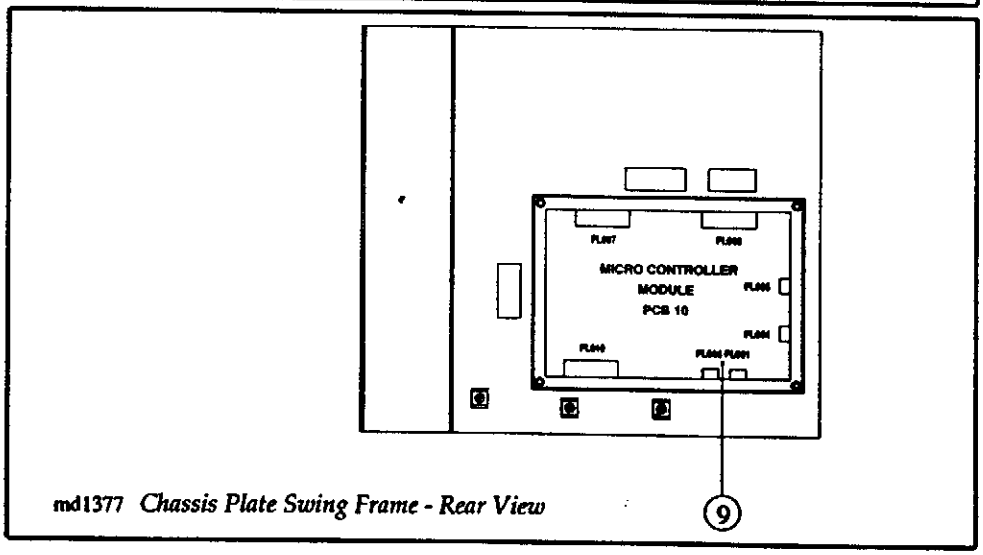
PANEL LAYOUTS



md1408 *Chassis Plate*



md1376 *Chassis Plate Swing Frame - Front View*



md1377 *Chassis Plate Swing Frame - Rear View*

ELECTRICAL PARTS LIST

NO	DESIGNATOR	DESCRIPTION	TYPE	MANUFACTURER	RATING	QTY	ORDER CODE
1	PCB2	Signal Input Module	-	H.G.I.		1	mb 6167
2	PCB4	Conductivity pcb	-	Williamson Pumps Ltd		1	mb 6073
3	PCB 5	Power Supply Module	-	H.G.I.		1	mb 6170
4	PCB 6	Relay Output Module	-	H.G.I.	240V/415V	1	mb 6166
5	PCB7A	Developer Heater Control Module	-	H.G.I.	240V 50/60 Hz 16A	1	mb 6168
6	PCB7B	Dryer Heater Control Module					
	PCB8	Brush Motor Drive Module					
7	PCB9A	Motor Drive Module	-	H.G.I.	50V DC	1	mb 6171
8	PCB9B						
9	PCB10	Micro Control Module	-	H.G.I.		1	mb 6165
10		M.O.V. Suppression Module	-	H.G.I.	240V 50/60 Hz	1	mb 6330
11	SW1	Mains Power Isolator	P1-25/V/SVB	Klockner Moeller	380-440V 25A	1	EL/012/125
		Isolator switched neutral	N-P1	Klockner Moeller	380-440V 25A	1	EL/012/307
		Isolator Shroud	H-P1	Klockner Moeller	-	1	EL/012/404
12	C1	Safety contactor	K1-09D10	IMO	660V 20A	1	EL/010/140
13	R1	Safety relay	G2R-2-SN	Omron	380V 10A	1	EL/010/141
		Safety relay base	P2RF-08-E	Omron	-	1	EL/010/142
14	R2	Deletion table relay	G2R-1-SN	Omron	380V 10A	1	EL/010/143
		Deletion table relay base	P2RF-05-E	Omron	-	1	EL/010/144
15	TX1	Control circuit transformer	mg 11166	JJ Transformers	240V	1	mb 6075
16	TX2	Motor circuit transformer	mg 11166	JJ Transformers	240V	1	mb 6076
17		Terminal	8WA1 201	Siemens	750V 26A	9	EL/006/047

NO	DESIGNATOR	DESCRIPTION	TYPE	MANUFACTURER	RATING	QTY	ORDER CODE
18		Earth terminals	8WA10 11 IPG	Siemens	-	1	EL/006/043
19	FS301	DT Fused terminal	SAKS3/35	Klippon	440V 16A	1	EL/006/011
20	FS301	DT Fuse	70-065-063	Siba	415V 5A	1	EL/001/269
21		Clear pvc cover	-	H.G.I.	-	1	mf 6319
22		Yellow warning triangle	552-955	RS	-	1	EL/007/158

FUSES FOR MACHINE TYPES A, B, C, D & E

NO	DESIGNATOR	DESCRIPTION	TYPE	MANUFACTURER	RATING	QTY	ORDER CODE
	FS501	+9V-NET	TDS500	Bussmann	FIA 250V 20 x 5	1	EL/001/272
	FS502	+9V	TDS500	Bussmann	T2A 250V 20 x 5	1	EL/001/273
	FS503	± 20V for RS232	TDS500	Bussmann	FIA 250V 20 x 5	1	EL/001/272
	FS504	± 20V for RS232	TD3500	Bussmann	FIA 250V 20 x 5	1	EL/001/272
	FS505	- 20V - 150	TDS500	Bussmann	FIA 250V 20 x 5	1	EL/001/272
	FS506	- 50V - Motor	TDS500	Bussmann	T6.3A 250V 20 x 5	1	EL/001/274
	FS507	PELV	TDS500	Bussmann	FIA 250V 20 x 5	1	EL/001/272
	FS701A	Developer Heater	70-125-[illegible]	Siba	FF16A 415V 1.1/4" x 1/4"	1	EL/001/268
	FS701B	Dryer Heater	70-125-[illegible]	Siba	FF16A 415V 1.1/4" x 1/4"	1	EL/001/268

FUSES FOR MACHINE TYPES A, B, C & D (EUROPEAN)

	FS508	TX1 primary	70-065-63	Siba	F2A 415V 1.1/4" x 1/4"	1	EL/001/270
	FS509	TX2 primary	70-065-63	Siba	F10A 415V 1.1/4" x 1/4"	1	EL/001/271
	FS601	Dev circ. pump	70-065-63	Siba	F5A 415V 1.1/4" x 1/4"	1	EL/001/269
	FS602	Water cir. pump	70-065-63	Siba	F5A 415V 1.1/4" x 1/4"	1	EL/001/269
	FS603	Dev replenish pump	70-065-63	Siba	F2A 415V 1.1/4" x 1/4"	1	EL/001/270
	FS604	Dev fill pump	70-065-63	Siba	F2A 415V 1.1/4" x 1/4"	1	EL/001/270
	FS605	Dev cooling compressor	70-065-63	Siba	F10A 415V 1.1/4" x 1/4"	1	EL/001/271
	FS606	Dev cooling pump	70-065-63	Siba	F5A 415V 1.1/4" x 1/4"	1	EL/001/269
	FS607	Gum pump	70-065-63	Siba	F2A 415V 1.1/4" x 1/4"	1	EL/001/270
	FS608	Gum flush pump	70-065-63	Siba	F2A 415V 1.1/4" x 1/4"	1	EL/001/270
	FS609	Dryer fan motor	70-065-63	Siba	F5A 415V 1.1/4" x 1/4"	1	EL/001/269

FUSES FOR MACHINE TYPE E (USA, CANADA ETC)

NO	DESIGNATOR	DESCRIPTION	TYPE	MANUFACTURER	RATING	QTY	ORDER CODE
	FS301	DT Supply	ABC 5	Bussmann	5A 250V 1.1/4" x 1/4"	1	EL/001/073
	FS508	TX1 primary	ABC 2	Bussmann	2A 250V 1.1/4" x 1/4"	1	EL/001/075
	FS509	TX2 primary	ABC 10	Bussmann	10A 250V 1.1/4" x 1/4"	1	EL/001/066
	FS601	Dev circ. pump	ABC 5	Bussmann	5A 250V 1.1/4" x 1/4"	1	EL/001/073
	FS602	Water circ. pump	ABC 5	Bussmann	5A 250V 1.1/4" x 1/4"	1	EL/001/073
	FS603	Dev replenish pump	ABC 2	Bussmann	2A 250V 1.1/4" x 1/4"	1	EL/001/075
	FS604	Dev fill pump	ABC 2	Bussmann	2A 250V 1.1/4" x 1/4"	1	EL/001/075
	FS605	Dev cooling compressor	ABC 10	Bussmann	10A 250V 1.1/4" x 1/4"	1	EL/001/066
	FS606	Dev cooling pump	ABC 5	Bussmann	5A 250V 1.1/4" x 1/4"	1	EL/001/073
	FS607	Gum pump	ABC 2	Bussmann	2A 250V 1.1/4" x 1/4"	1	EL/001/075
	FS608	Gum flush pump	ABC 2	Bussmann	2A 250V 1.1/4" x 1/4"	1	EL/001/075
	FS609	Dryer fan motor	ABC 5	Bussmann	5A 250V 1.1/4" x 1/4"	1	EL/001/073

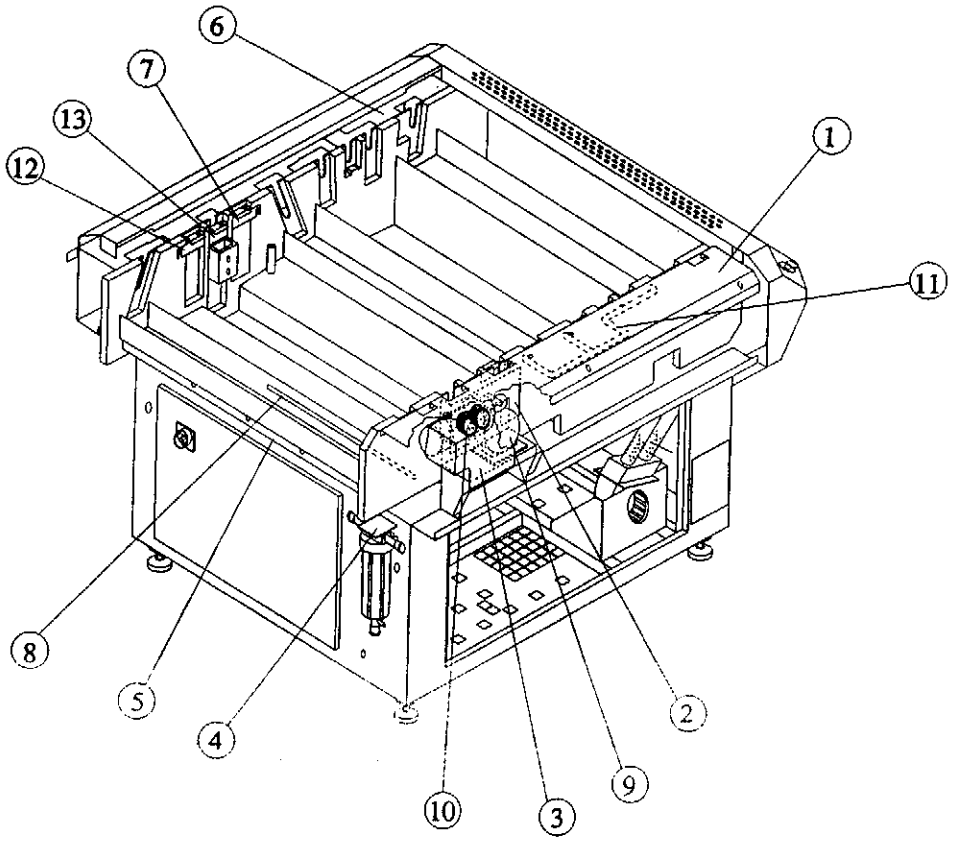
ELECTRICAL PARTS SHOWN IN MECH[illegible]L PARTS LIST

NO	DESIGNATOR	DESCRIPTION	TYPE	MANUFACTURER	RATING	QTY	ORDER CODE
	H1	Developer Heater	-	IRCA Heating Elements	230V 1000W	1	sa 6472
	H2	Dryer Heater	NM2[illegible]	Watlows Ltd	240V 1250W	2	sa 6473
	M1	Conveyor Motor	6A-[illegible]	Parvalux	50Vdc 3.8A	1	sa 5914
	M2	Developer Brush Motor	2A-L[illegible]	Parvalux	50Vdc 2A	1	sa 6095
	M3	Developer Pump Motor	NDP [illegible]	Totton Pumps Ltd	220-240V 50/60 Hz 84W	1	sa 6089
	M3	Developer Pump Motor	2-MD	Little Giant	230V 60 Hz	1	sa 6090
	M4	Water Recirc. Pump Motor	AF1H[illegible]	Universal Electric	220-240V 50 Hz 0.55A	1	sa 6091
	M5	Developer Replenish Pump	15000-[illegible]	Gormann Rupp Ind	230V 50/60 Hz 0.18A	1	sa 6093
	M9	Gum Pump	15000-[illegible]	Gormann Rupp Ind	230V 50/60 Hz 0.18A	1	sa 6093
	M10	Gum Flush Pump	15000-[illegible]	Gormann Rupp Ind	230V 50/60 Hz 0.18A	1	sa 6093
	M6A, M6B, M6C	Developer Fill Pump	17000-[illegible]	Gormann Rupp Ind	230V 50/60 Hz 0.21A	3	sa 6094
	M7	Chiller Unit Compressor	50Hz				sa 6428
	M8	Chiller Unit Circulation Pump	50Hz				sa 6428
	M7	Chiller Unit Compressor	60Hz				sa 6429
	M8	Chiller Unit Circulation Pump	60Hz				sa 6429
	M11	Dryer Fan Motor	52BT[illegible]	Airflow	240V 50Hz 0.61A	1	sa 6162
		Dryer Fan Motor	T25E00[illegible]	Baldor	220-240V 60 Hz 0.75A	1	sa 6315
	SN1	Developer Temperature Sensor	PT100	CAL Controls	-	1	EL/007/021
	SN2	Developer Fill Sensor	LL103[illegible]	Honeywell	5-16V 90mA	1	EL/012/387
	SN4	Developer Low Sensor	LL103[illegible]	Honeywell	5-16V 90mA	1	EL/012/387

NO	DESIGNATOR	DESCRIPTION	TYPE	MANUFACTURER	RATING	QTY	ORDER CODE
	SN 5	Conductivity Sensor	-	Williamson Pumps Ltd	-	1	mb 5831
	SN6	Water Recirc Low Sensor	LL103101-2	Honeywell	5-16V 90mA	1	EL/012/387
	SN7	Water Recirc Fill Sensor	LL103101-2	Honeywell	5-16V 90mA	1	EL/012/387
	SN8	Conveyor Motor Rotation Sensor	PM1-AN-1A	IMO	10-30V	1	EL/012/388
	SN9	Infeed Photocell Sensor	SA2-ON-2C	IMO	10-30V	1	EL/002/309
	SN10	Re-entry Photocell Sensor	P15D-NU	IMO	10-30V	1	EL/012/393
	SN11	Infeed Photocell Dual Sensor	SA2-ON-2C	IMO	10-30V	1	EL/002/309
	SN12	Water Recirc Pressure Sensor	26PCDFAID	Micro Switch	10-16V	1	mb 6245
	SV1	Water Solenoid Valve	EVSI 15U	Danfoss	240V 60 Hz 9.5W	1	VA/000/197
	SW3 - SW6	Guard Switches	11090	Guardmaster	250V 2A	4	EL/012/405
	PCB8	Marshalling Box	-	H.G.I.		1	mb 5929
	SW2	Maintenance keyswitch	K2/3-9	Burgess/Tok	250V 2A	1	EL/012/075
		Carbon brushes for conveyor and brush motors	S231	Paravalux	-	2	MO/000/087

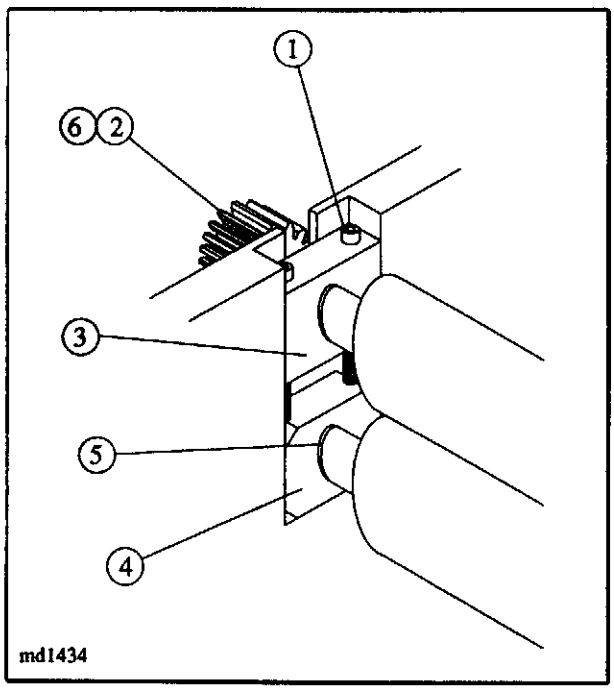
MECHANICAL PARTS LIST

FRONT VIEW - COVERS REMOVED



md1459

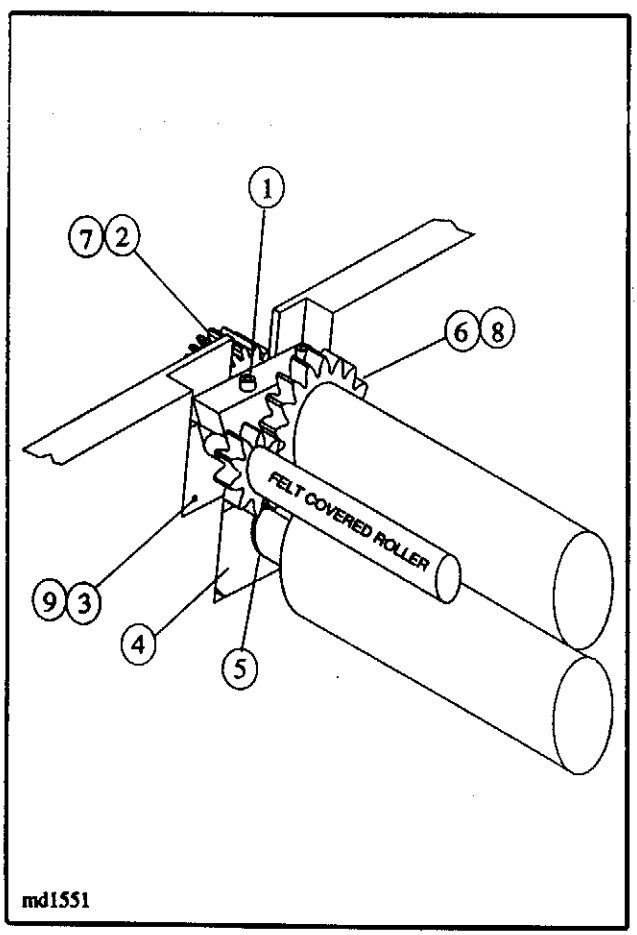
1.	Splash Guard - Upper Right	mf 5740
2.	Splash Guard	mf 5739
3.	Splash Guard	mf 6328
4.	Developer Filter Bracket	mf 5912
5.	Front Infill Cover	mf 5747
6.	Splash Guard - Upper Left	mf 5741
7.	Fastening Plate	mf 5784
8.	Immersion Heater	sa 6155
9.	Dev Brush Drive Motor Assembly	sa 5829
10.	Idler Assembly	sa 5862
11.	Mains Water Inlet Plumbing	sa 6224
12.	Fastening Plate	mf 5783
13.	Lifting Handle	mf 5928



DRIVE ROLLER ASSEMBLY

1)	M8 x 90 Cap Screw	FS/001/061
2)	M3 x 20T Spur Gear	dr 0881
3)	Upper Roller Bearing Block	ta 5798
4)	Lower Roller Bearing Block	ta 5799
5)	Flanged Bush	FT/030/803
6)	4 x 50 Roll Pin	FS/013/020

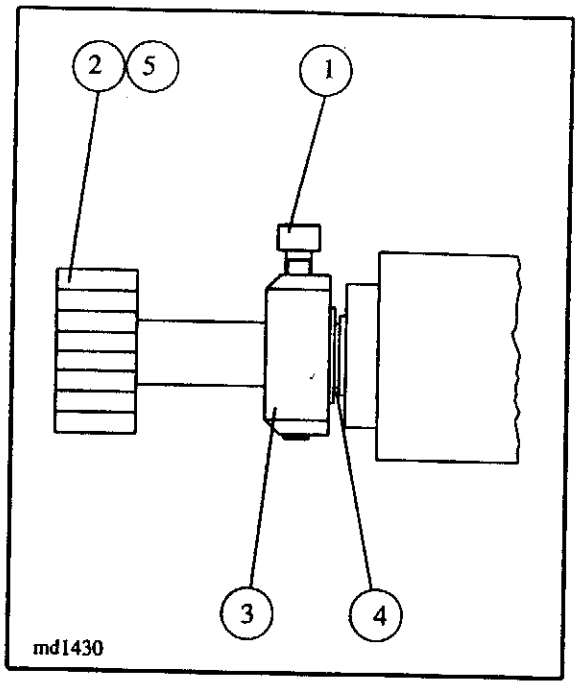
GUM ROLLER ASSEMBLY



1)	M8 x 90 Cap Screw	FS/001/061
2)	M3 x 20T Spur Gear	dr 0881
3)	Upper Roller Bearing Block	ta 5778
4)	Lower Roller Bearing Block	ta 5799
5)	Flanged Bush	FT/030/803
6)	M4 x 19T Conveyor Roller Gear	dr 0110
7)	4 x 50 Roll Pin	FS/013/020
8)	M8 x 12 Setscrew (19T Gear)	FS/003/011
9)	M8 x 12 Setscrew (doctor roller jacking screw)	FS/003/049

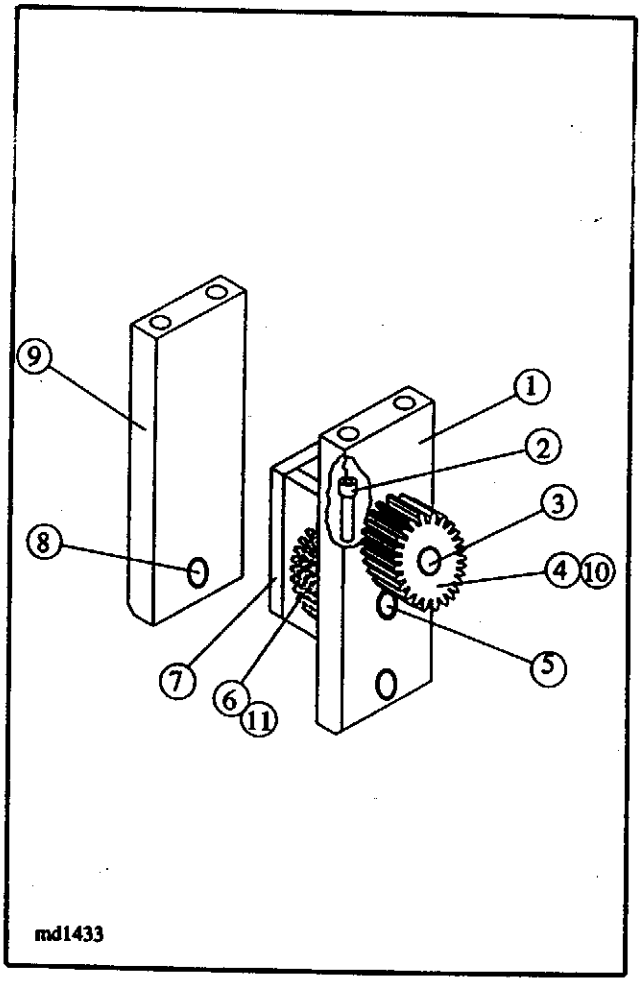
RINSE BRUSH ASSEMBLY

1)	M8 x 65 Cap Screw	FS/001/062
2)	M3 x 15T Spur Gear	dr 0882
3)	Lower Roller Bearing Block	ta 5799
4)	Flanged Bush	FT/030/803
5)	4 x 35 Roll Pin	FS/013/021

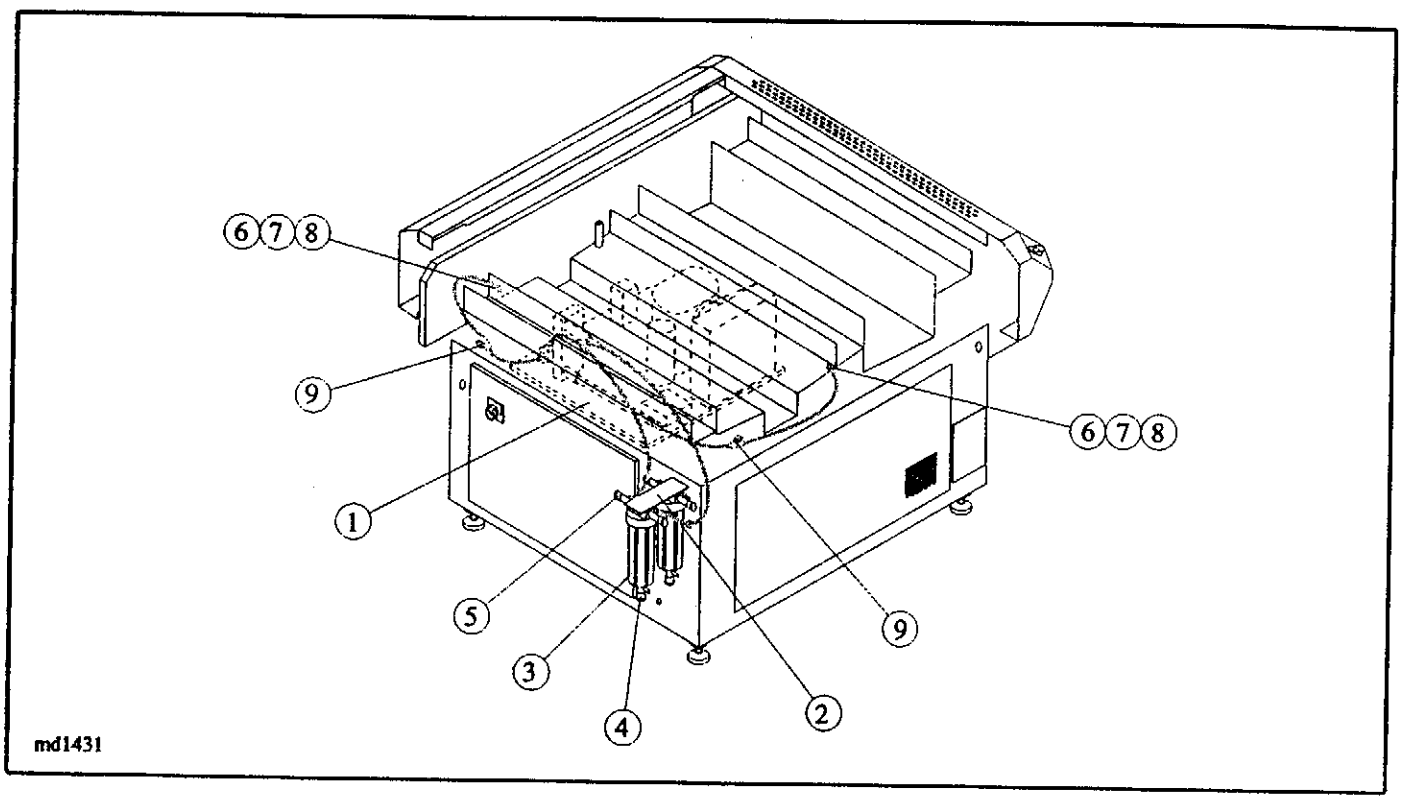


DEV BRUSH SLIDER AND GEARBOX

1)	Brush Gear Housing	ta 5866
2)	M8 x 160 Cap Screw	FS/001/060
3)	020 x 94 Shaft	mf 5802
4)	M3 x 20T Gear	dr 0881
5)	020 x 59 Shaft	mf 5801
6)	M2.5 x 18T Gear	dr 5863
7)	Flange Bearing (Short)	FT/030/804
8)	Flange Bearing (Long)	FT/030/803
9)	Brush Slider	ta 5867
10)	4 x 50 Roll Pin	FS/013/020
11)	4 x 35 Roll Pin	FS/013/021

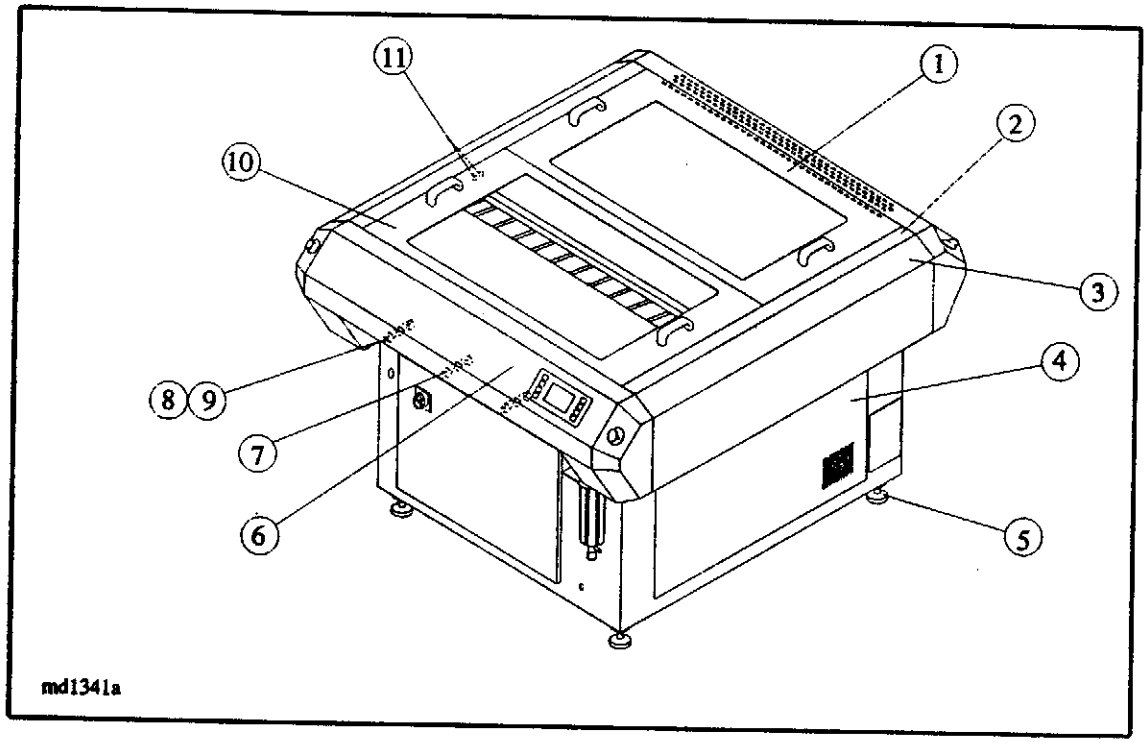


CHILLER



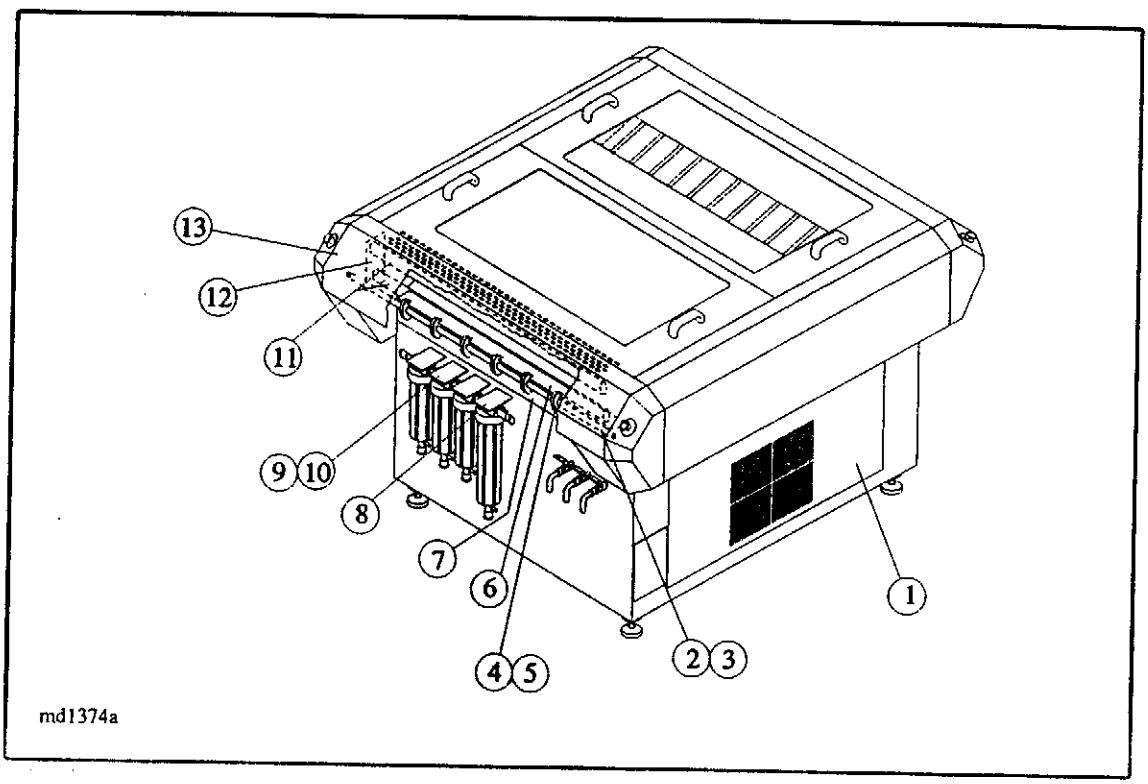
1)	Developer Cooling Unit	mb 6227
2)	Chiller Filter Bracket	mf 5938
3)	1/2" Filter Housing MSG	PW/001/005
4)	3/8" Bib Tap	VA/000/195
5)	1/2" Bib Tap	VA/000/011
6)	Bulkhead Fitting	PW/001/074
7)	1/2" Stem Elbow	PW/001/146
8)	1/2" Tube Stem	PW/001/071
9)	Ball Valve	VA/000/191

GENERAL VIEW - FRONT



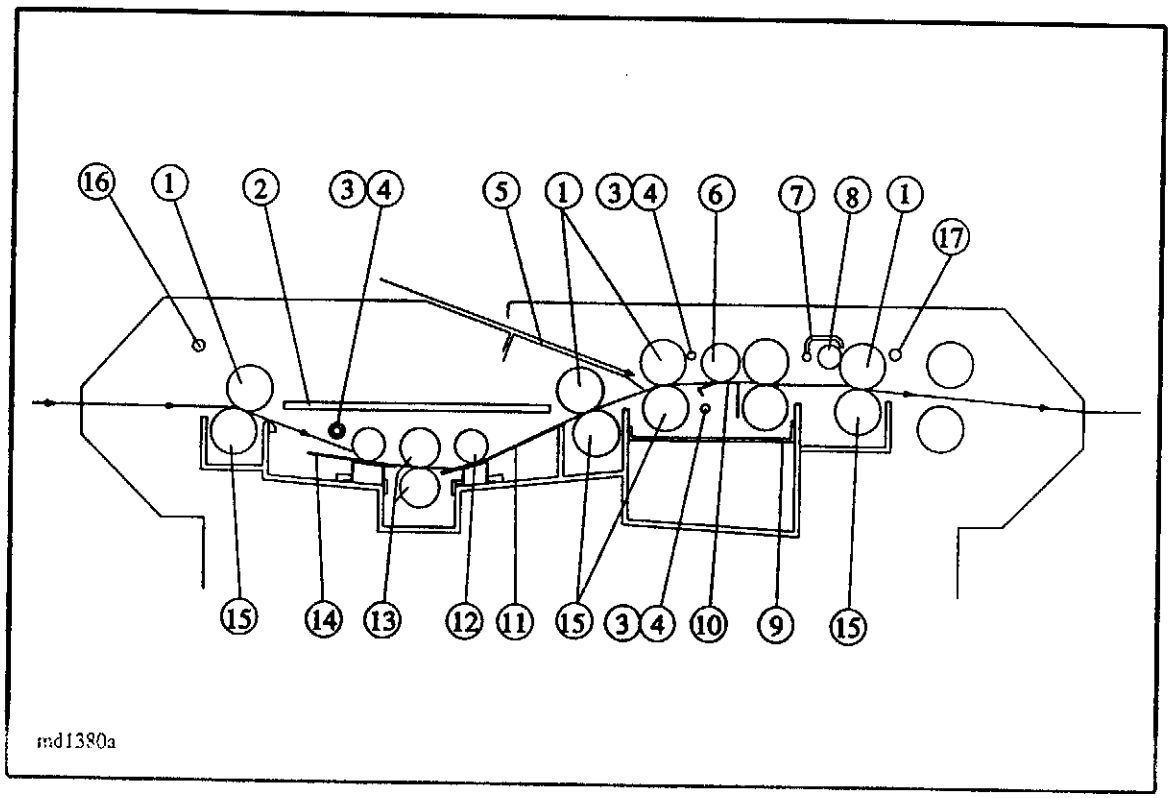
1)	Top Clear Cover - Rear	mf 5921
2)	Top Side Cover	mf 5855
3)	Removable Side Cover	mf 5853
4)	Stand Access Cover R/H	mf 5918
5)	Adjustable Feet - M16 x 120	FT/030/809
6)	Infeed Cover	mf 5851
7)	Wheel Bracket	mf 5737
8)	Wheel	FT/030/752
9)	Tyre	FT/030/644
10)	Top Clear Cover	mf 5920
11)	Cover Switch Striker Mounting Pillar	mb 6400

GENERAL VIEW - REAR



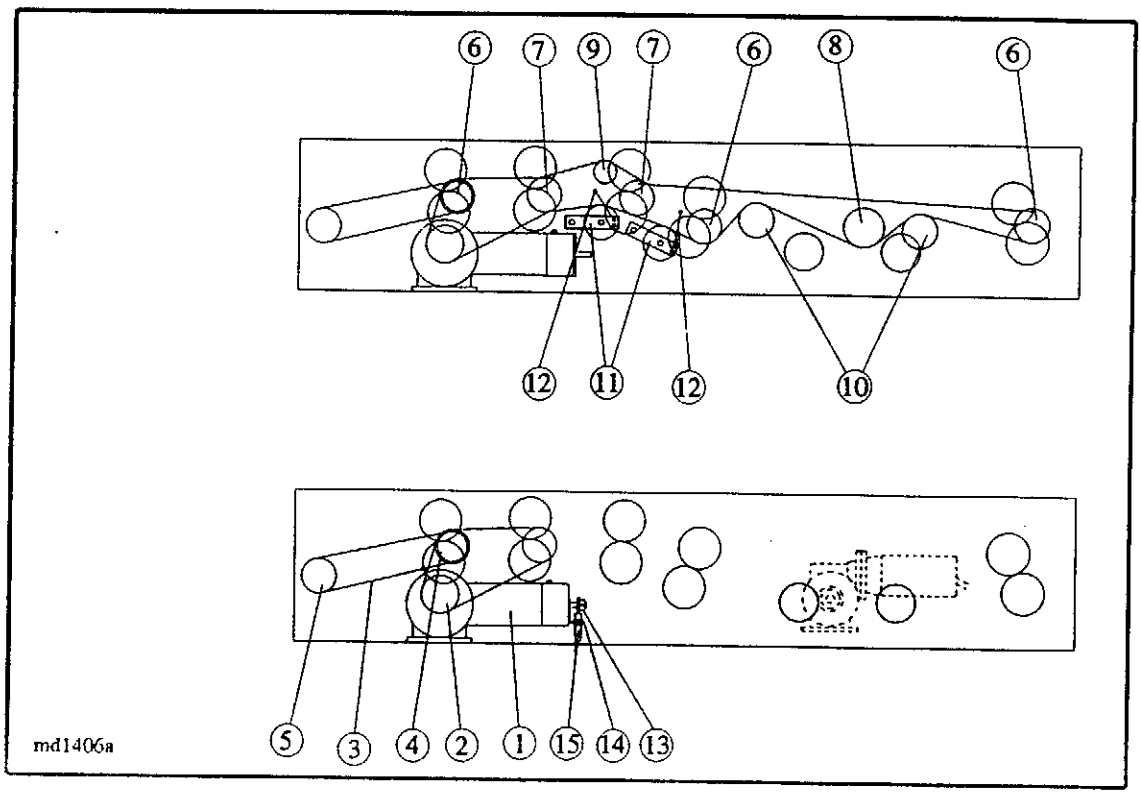
1)	Stand Access Cover L/H	mf 5919
2)	Pulley Shaft	mf 5785
3)	Locking Collar	mb 5880
4)	Pulley Wheel	dr 5879
5)	Pulley Tyre	dr 1593
6)	Plate Guide	mf5746
7)	Splash Cover	mf 5748
8)	20" Recirc Filter Bracket	mf 6371
9)	Recirc Filter Bracket	mf 5911
10)	Filter Bracket Packing	mf 6392
11)	Dryer Tube	sa 6161
12)	Support Plate	mf 5945
13)	Exit Cover	mf5852

PLATE PATH



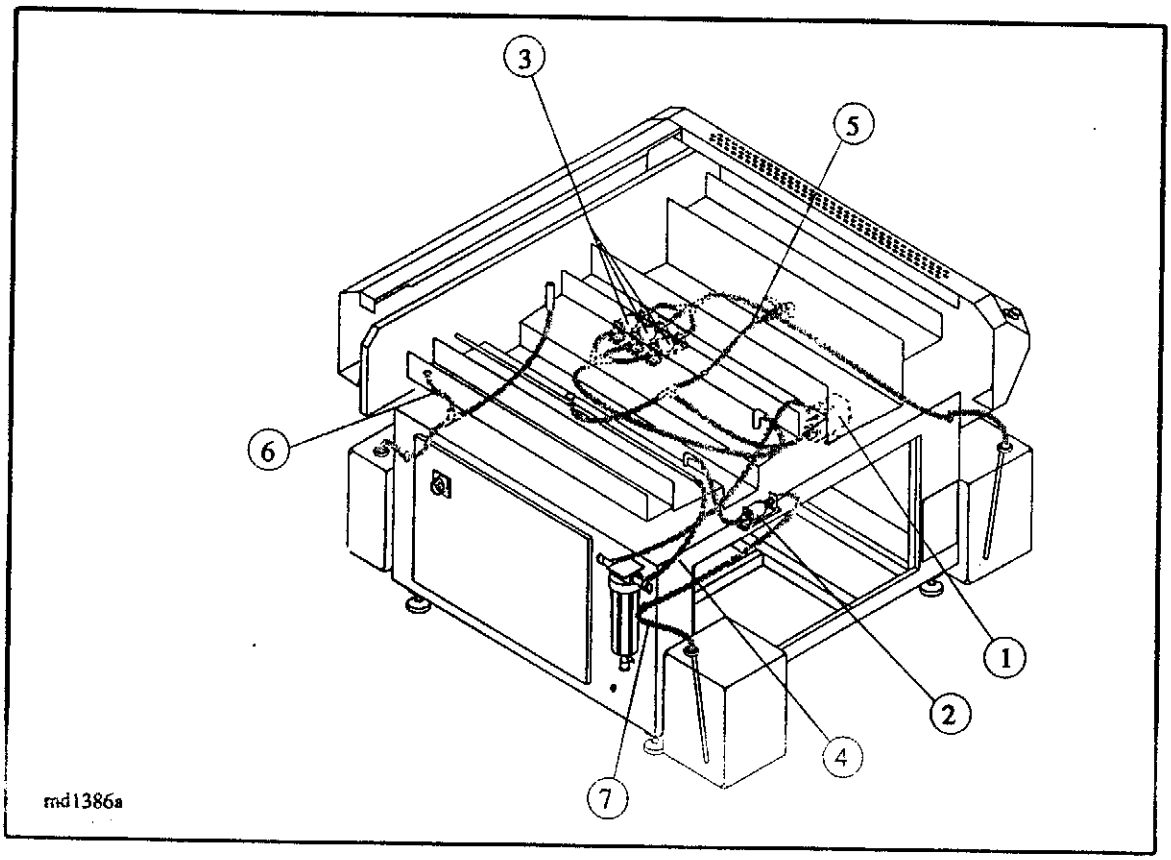
1)	Upper Roller	ro 5750
2)	Developer Tank Cover	ta 5775
3)	Spray Bar	mf 3617
4)	End Plug	mb 0032
5)	Re-entry Tray	sa 6138
6)	Rinse Brush	br 5787
7)	Gum Spray Bar	mf 5782
8)	Gum Doctor Roller	sa 6405
9)	Rinse Water Filter Tray	ta 5780
10)	Rinse Brush Pressure Tray	mf 5776
11)	Rear Developer Bed Assembly	sa 5820
12)	Developer Section Brush	sa 6403
13)	Intermediate Developer Roller	ro 5860
14)	Front Developer Bed Assembly	sa 5819
15)	Lower Roller	ro 5751
16)	Tank Tie Bar	mb 5834

DRIVE DETAILS



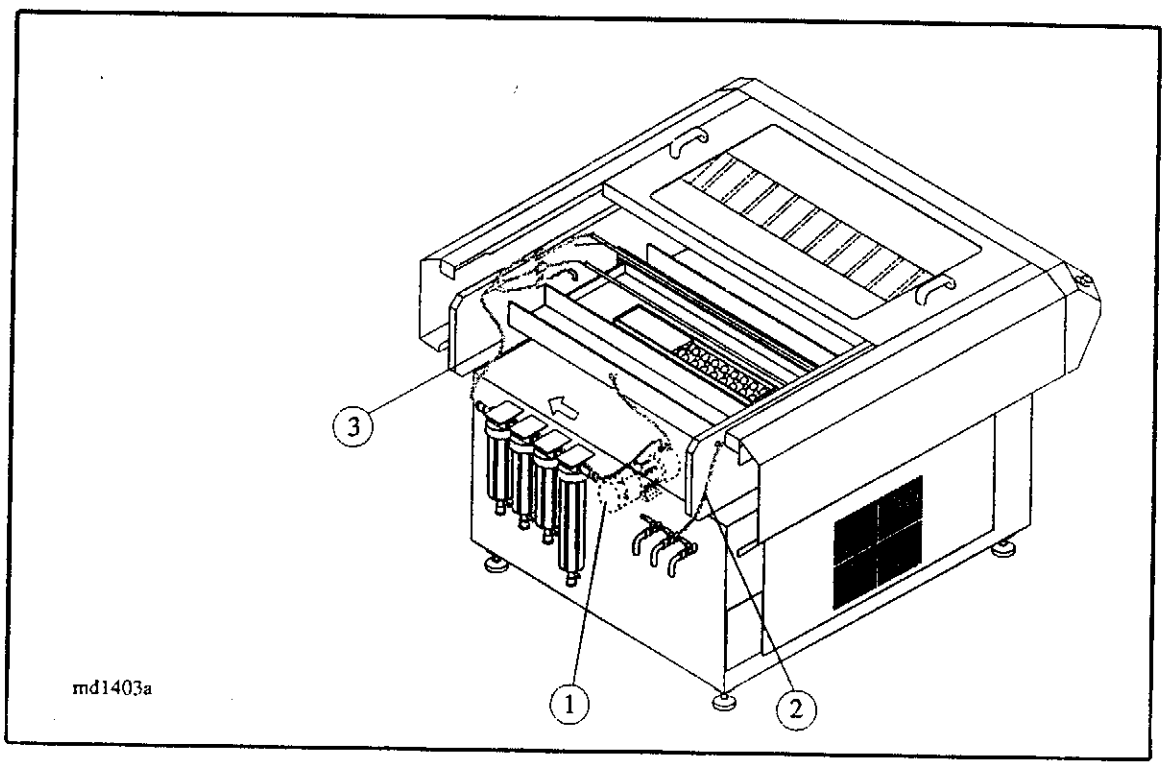
1)	Conveyor Drive Motor Assembly	sa 5914
2)	23T Drive Sprocket	dr 5931
3)	0 Ring Pulley Drive	FT/030/795
4)	056 Drive Pulley	dr 5929
5)	064 Driven Pulley	dr 5879
6)	Roller Drive Shaft Assembly	sa 6409
7)	Rinse Section Roller Drive Shaft	sa 6410
8)	Developer Roller Drive Shaft	sa 6408
9)	Rinse Brush Drive Shaft	sa 6407
10)	Idler Assembly	sa 5810
11)	Tensioner Assembly	sa 5806
12)	2 1/2" Extension Spring	FT/030/792
13)	Rotation Sensor Wheel	mb 5916
14)	Rotation Sensor Bracket	mf 5915
15)	Rotation Sensor	EL/012/388

DEVELOPER SYSTEM



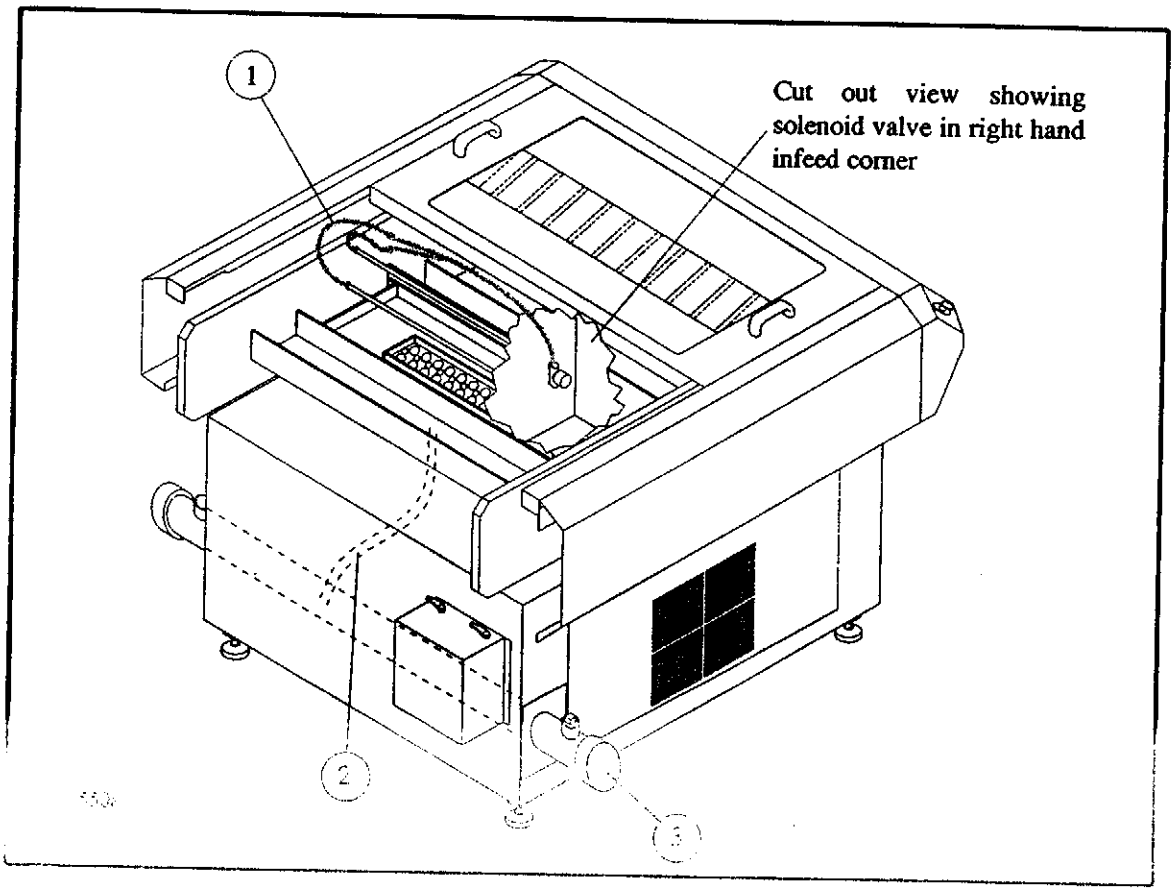
1)	Developer Pump	sa 6089
2)	Oscillating Pump (Replenish)	sa 6093
3)	Oscillating Pump (Autofill)	sa 6094
4)	Developer Exit Pipe	sa 6417
5)	Developer Drain Pipe	sa 6419
6)	Developer Waste Pipe Assembly	sa 6425
7)	Developer Replenish Pipe	sa 6424

RINSE SYSTEM A



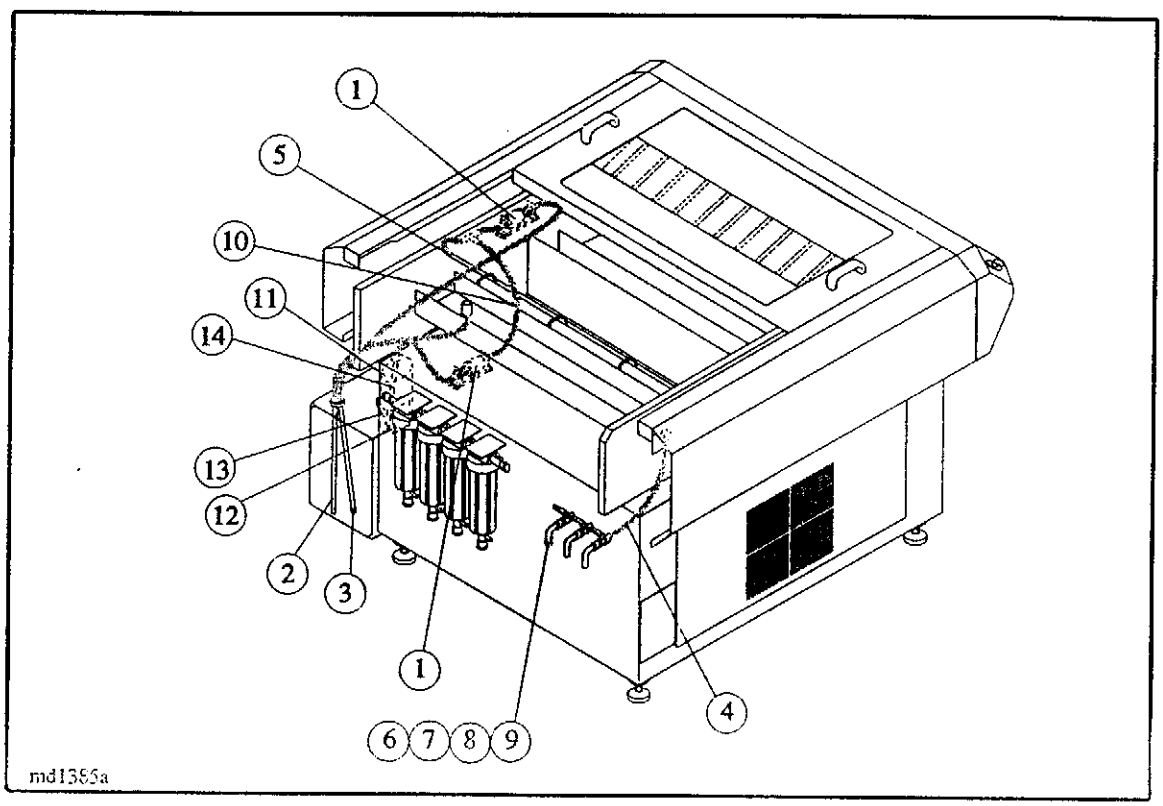
1)	Recirc Pump	sa 6091
2)	Rinse Drain Pipe	sa 6421
3)	Rinse Pipes Assembly	sa 6426

RINSE SYSTEM B



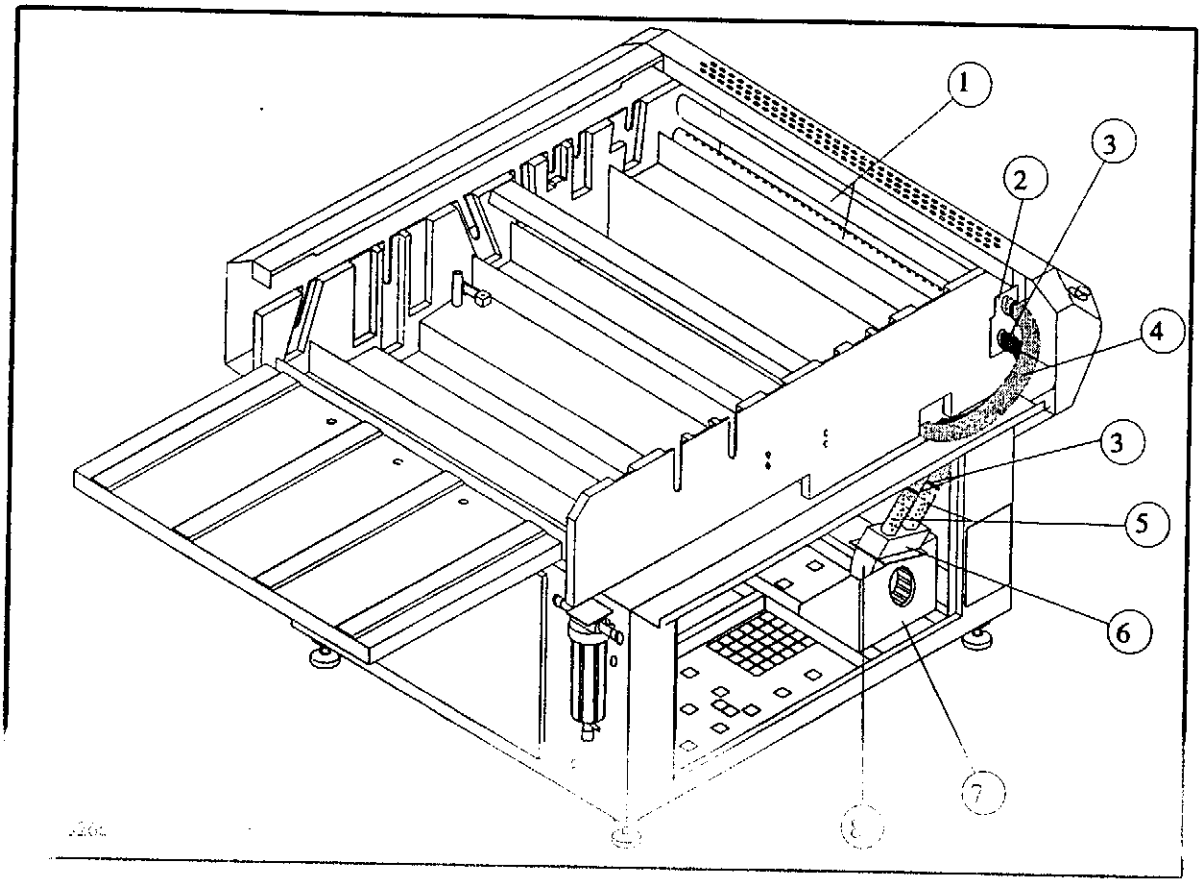
1)	Rinse Pipe Assembly	sa 6447
2)	Rinse Drain Pipe	sa 6446
3)	Drain Manifold	sa 6160

GUM SYSTEM



1)	Oscillating Pump	sa 6093
2)	Gum Inlet Pipe Assembly	sa 6423
3)	Gum Return Pipe Assembly	sa 6418
4)	Gum Drain Pipe Assembly	sa 6420
5)	Gum Exit Pipe Assembly	sa 6422
6)	Elbow	PW/001/188
7)	3/4" BSP Ball Valve	VA/000/192
8)	3/4" BSP Threaded Tube	mb 6083
9)	3/4" BSP Brass Nut	PW/001/231
10)	Gum Flush Pipe & Fittings	sa 6465
11)	Bottle	FT/030/800
12)	Support Clip	mf 5736
13)	Spring Clip	mb5947
14)	Spear - Gum Flush	mf 5733

DRYING SYSTEM



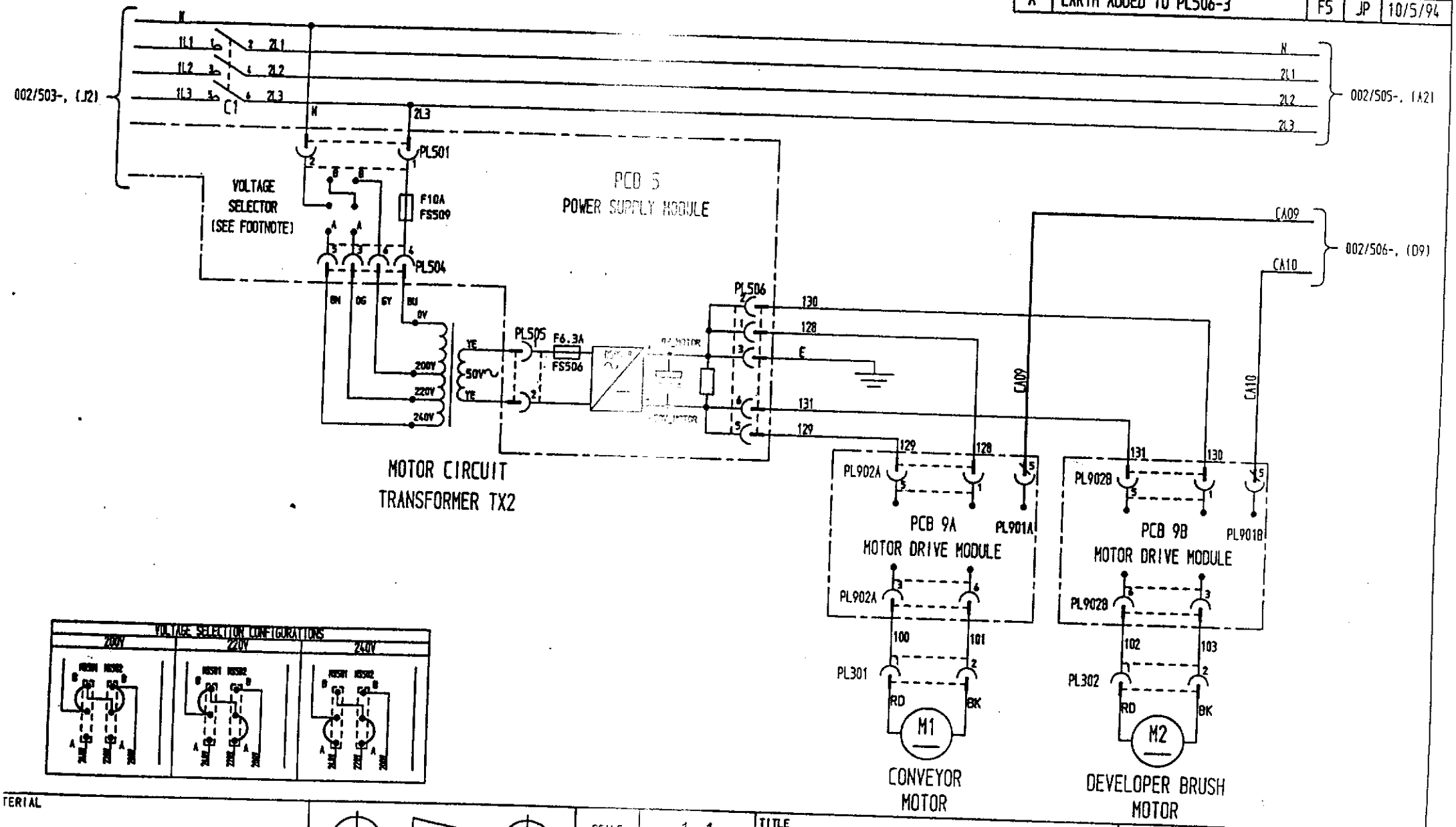
1)	Dryer Fan	mf5922
2)	Support Plate	mf 5945
3)	Hose Clips	PW/000/016
4)	Ducting	PW/000/013
5)	Heating Element	EL/003/076
6)	Dryer Element/Transition Box	mf 5924
7)	Fan Mounting Bracket	mf 5901
8)	Dryer Fan	FA/000/000

MECHANICAL PARTS LIST

NO	DESIGNATOR	DESCRIPTION	TYPE	MANUFACTURER	RATING	QTY	ORDER CODE
	-	Water recirc filter 1	Particulate	H.G.I.	20" 10 micron	1	PW/001/235
	-	Water recirc filter 2	Particulate	H.G.I.	10" 5 micron	1	PW/001/192
	-	Water recirc filter 3	Carbon	H.G.I.	10" Carbon	1	PW/001/194
	-	Water recirc filter 4	Resin	H.G.I.	10" Resin	1	PW/001/195
	-	Rinse section blanket filter	Foam	H.G.I.	568 x 94 mm	1	mb 6072
	-	Dev circ filter	Particulate	H.G.I.	10" 50 micron	1	PW/001/006
	-	Dev cooling filter	Particulate	H.G.I.	10" 50 micron	1	PW/001/006

APPENDIX 1
Electrical Wiring Diagrams

NO.	ALTERATION	ZONE	SIG.	DATE
A	EARTH ADDED TO PL506-3	F5	JP	10/5/94



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UNTOLERANCED DIMENSIONS MACHINED ± 0.2 UN-MACHINED ± 1.0

FIRST ANGLE PROJECTION

THIRD ANGLE PROJECTION

SCALE 1:1

DRAWN J Ford

DATE 10 MAY 94

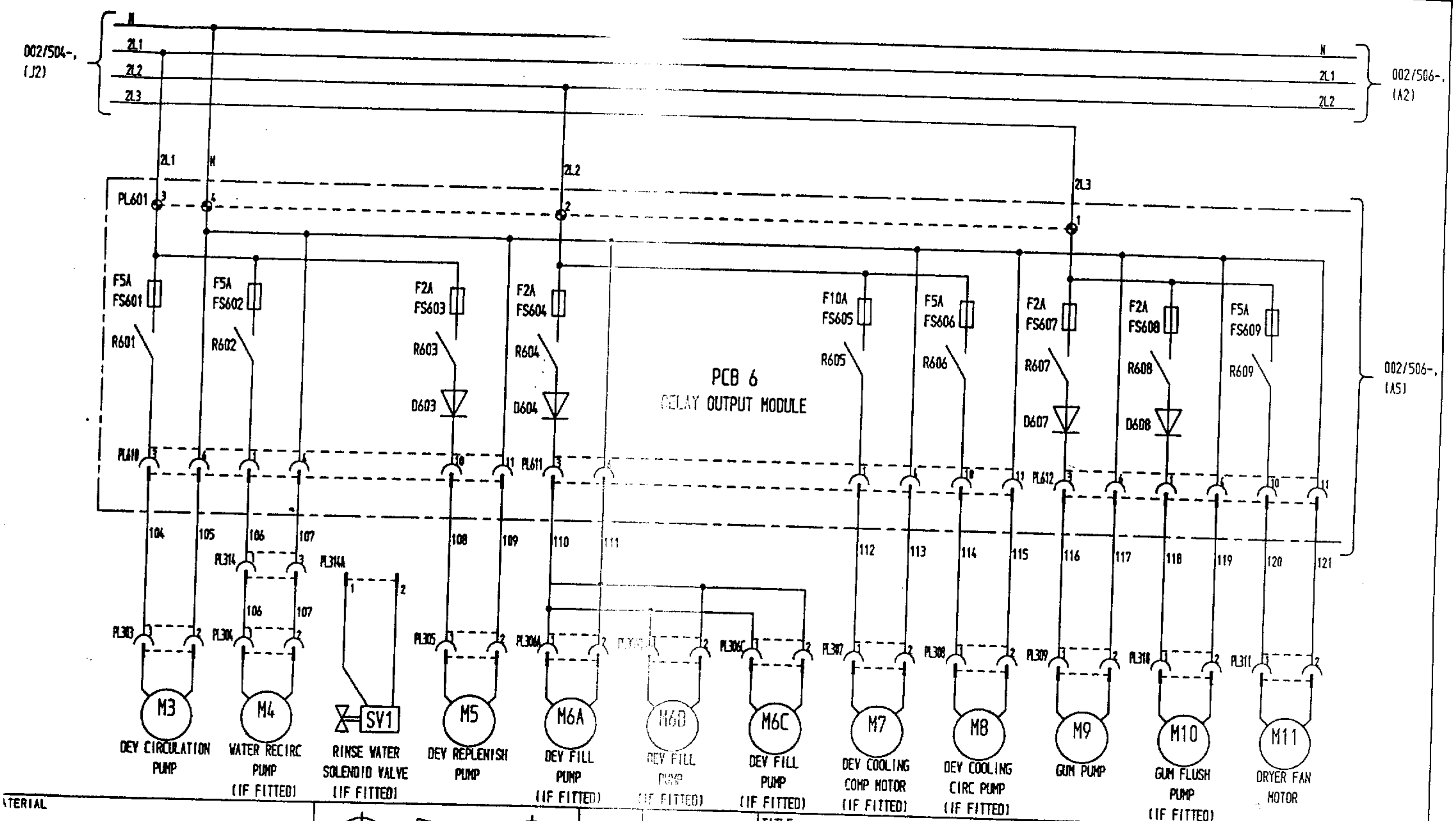
TITLE HORSELL MERCURY SCHEMATIC OF PWM DRIVES

DRG.No. 002/504A

CHECKED

APPROVED

Horsell Graphic Industries
ENGINEERING DIVISION
HEPSHAW LANE SOUTH
GILDERSOME, MORLEY
LEEDS LS27 7JB
TEL.: (0532) 527227
FAX.: (0532) 529418



MATERIAL	
DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED	UNTOLERANCED DIMENSIONS MACHINED ± 0.2 UN-MACHINED ± 1.0
FIRST ANGLE PROJECTION	THIRD ANGLE PROJECTION
SCALE	1 : 1
DRAWN	Kirley
DATE	24 Feb 94
TITLE	HORSELL MERCURY SCHEMATIC OF MOTORS
CHECKED	
APPROVED	
DRG. No.	002/505-

Horsell Graphic Industries
ENGINEERING DIVISION
NEPSHAW LANE SOUTH GILDERSOME, MORLEY LEEDS LS27 7JQ
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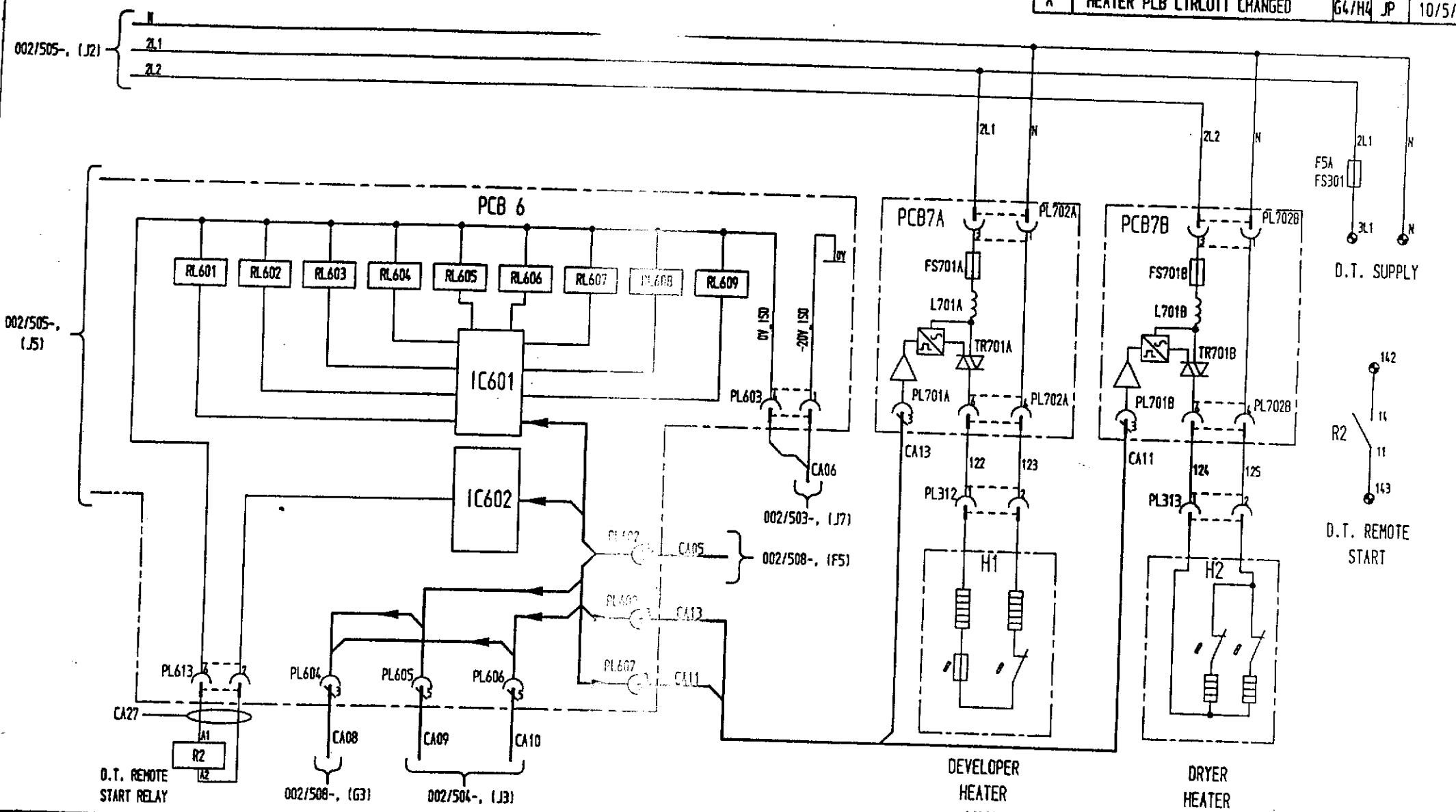
NO.	ALTERATION	ZONE	SIG.	DATE
A	HEATER PCB CIRCUIT CHANGED	G4/H4	JP	10/5/94



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UNTOLERANCED DIMENSIONS MACHINED ± 0.2 UN-MACHINED ± 1.0

FIRST ANGLE PROJECTION

THIRD ANGLE PROJECTION

SCALE 1:1

DRAWN J Ford

DATE 10 MAY 94

TITLE

HORSELL MERCURY
SCHEMATIC OF P.C.B. 6
OUTPUT RELAYS AND HEATERS

CHECKED

APPROVED

DRG.No. 002/506A

Horsell Graphic Industries
ENGINEERING DIVISION
NEPSHAW LANE SOUTH
GILDERSOME, MORLEY
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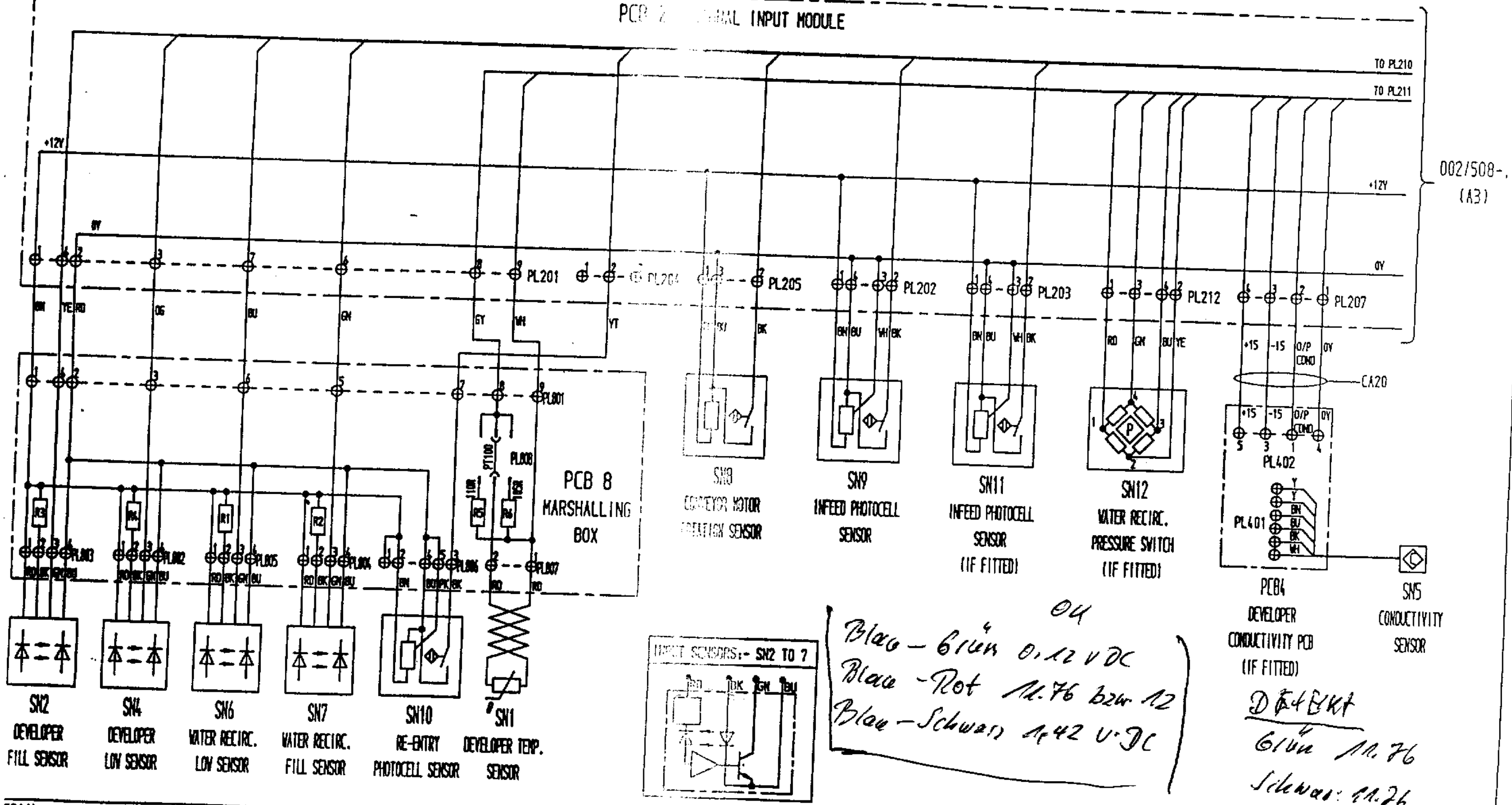
TEL: (0532) 527227
FAX: (0532) 529418

No.	ALTERATION	ZONE	SIG.	DATE
A	PT100 CAL RESISTORS ADDED	D6	JP	2/9/94



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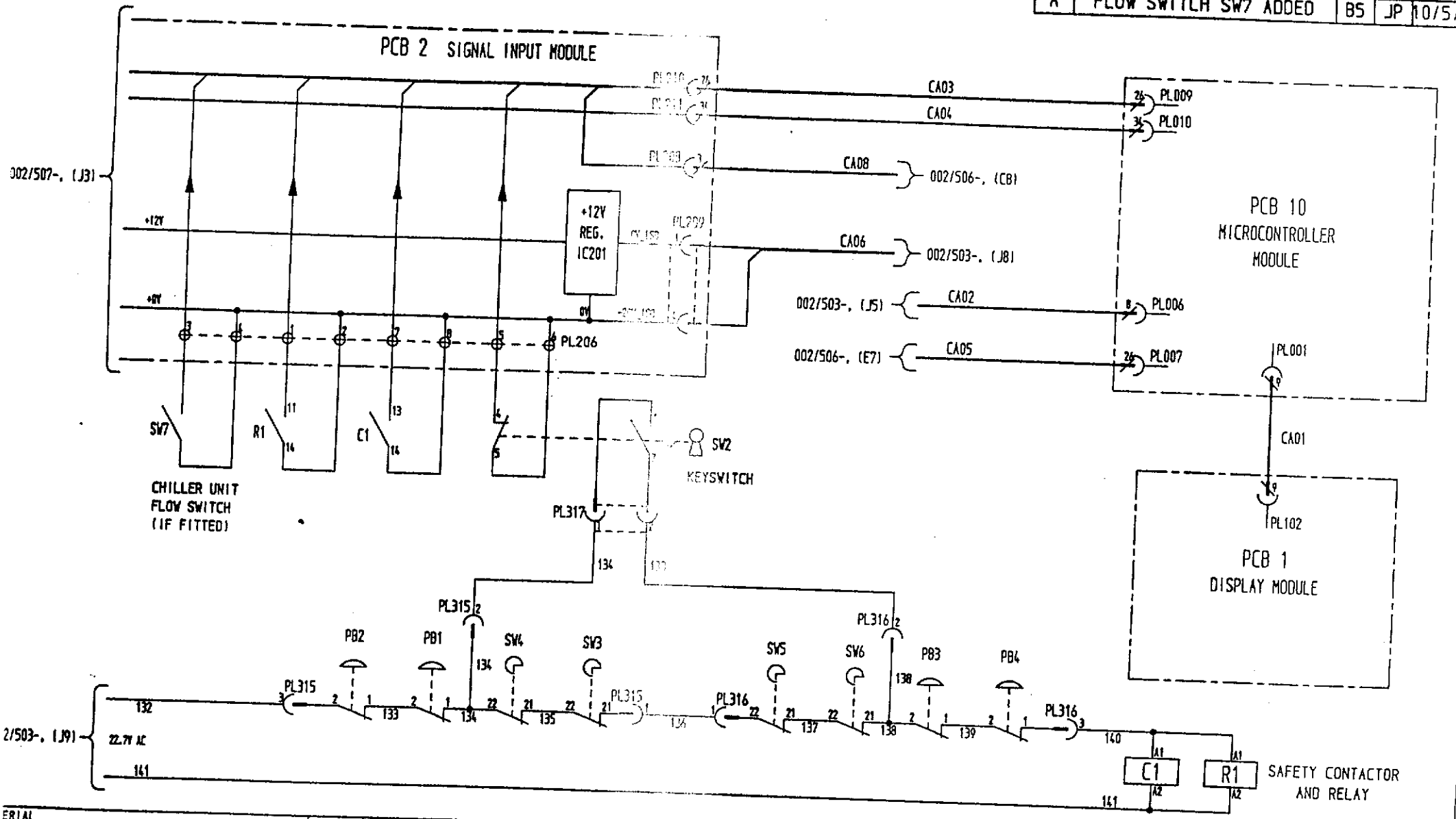
UNTOLERANCED DIMENSIONS MACHINED ± 0.2 UN-MACHINED ± 1.0	DRAWN	[illegible signature]	DRG. No. 002/507A
FIRST ANGLE PROJECTION / THIRD ANGLE PROJECTION	DATE	8 Mar 94	CHECKED / APPROVED

Horsell Graphic Industries

ENGINEERING DIVISION
NEPSHAW LANE SOUTH
GILDERSOME, MORLEY
LEEDS LS27 7JQ
TEL: (0532) 527227
FAX: (0532) 529418

NO.	ALTERATION	ZONE	SIG.	DATE
A	FLOW SWITCH SW7 ADDED	B5	JP	10/5/94



SERIAL

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DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED

UNTOLERANCED DIMENSIONS MACHINED ± 0.2 UN-MACHINED ± 1.0

FIRST ANGLE PROJECTION

THIRD ANGLE PROJECTION

SCALE	1 : 1
DRAWN	J Ford
DATE	10 MAY 94

TITLE

HORSELL MERCURY
SCHEMATIC OF SAFETY CIRCUIT, MICROPROCESSOR & PCB2

CHECKED | APPROVED

DRG.No. 002/508A

Horsell Graphic Industries
ENGINEERING DIVISION
HEPWORTH LANE SOUTH
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