Digital Finishing for Digital Printers

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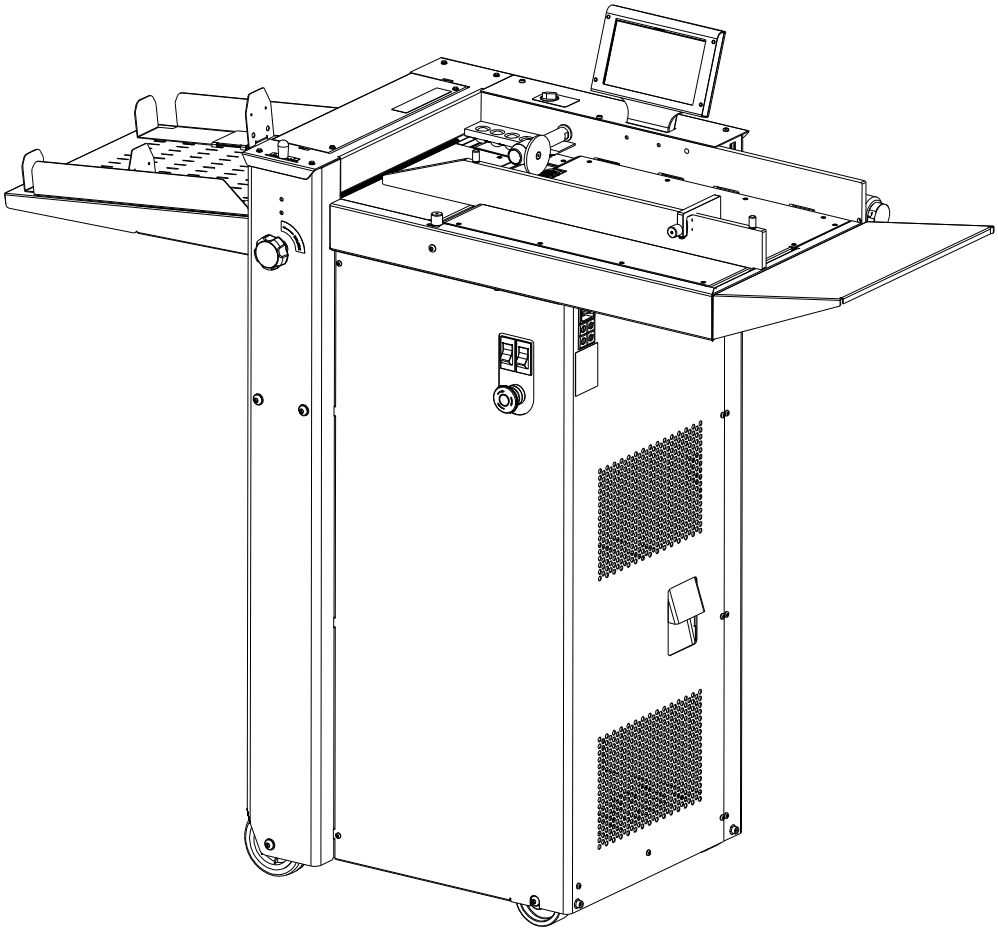
AutoCreaser Pro 33 (CB/UL)



DOCUMENT CREASING MACHINE

SERVICE MANUAL

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MORGANA AutoCreaser Pro 33

i ..... Introduction

The purpose of this manual is to explain the procedure for dis - mantling and re-assembly of the major assemblies on the Morgana Auto Creasing machine.

All the engineering adjustments are shown at the end of each relevant section.

Operator's adjustments and routine maintenance are explained in the appropriate operators guide which should always be used in conjunction with this manual.

It is always a good idea to have a copy of the machines illustrated parts manual available when servicing, as its illustrations provide an invaluable reference to the construction of the individual assemblies used to build the machine.

ii ..... Fasteners

All threaded fasteners are isometric & all nuts are isometric hexagon. All screws are hardened high tensile steel.

Cap head, Button head, Socket countersunk, Shoulder bolts and Grubscrews have internal hexagon drives which require isometric hexagon wrenches (allen keys). Ball drivers may be used, but care should be taken - particularly when releasing screws for dismantling - to avoid breaking the driver as they cannot cope with full tightening torques.

NOTE ..... Do not substitute fasteners with low grade alternatives which may fail or become irremovable.

Pan head and Cross - head countersunk screws all have metric Taptite threads and Pozi - drive recesses. Use No.2 point Pozidriv or Supadriv drivers for all screws M4 & above, and No.1 point drivers for M3 & below.

WARNING

WORK SHOULD BE CARRIED OUT BY A TRAINED AND COMPETENT ENGINEER AND ALL SAFETY PROCEDURES SHOULD BE ADHERED TO.

SWITCH OFF THE MAINS POWER BEFORE COMMENCING.

DO NOT USE PHILLIPS DRIVERS - THESE WILL DAMAGE THE SCREWS & MAY SLIP, CAUSING DAMAGE OR INJURY

iii ..... Identification

For general identification of areas of the machines, the following terms are used:-

Operator side (control consul facing)

Rear of machine (opposite to control consul)

Delivery end (to the left of the operator side)

Feeder end (on your right)

iv ..... New Machine Preparation

Remove all packaging materials

All metal parts, including the folding rollers have a protective coating and any excess should be removed.

Connect the power cable to the mains supply. The machine requires 230V 50Hz 10 Amps or 115V 60Hz 15 Amps.

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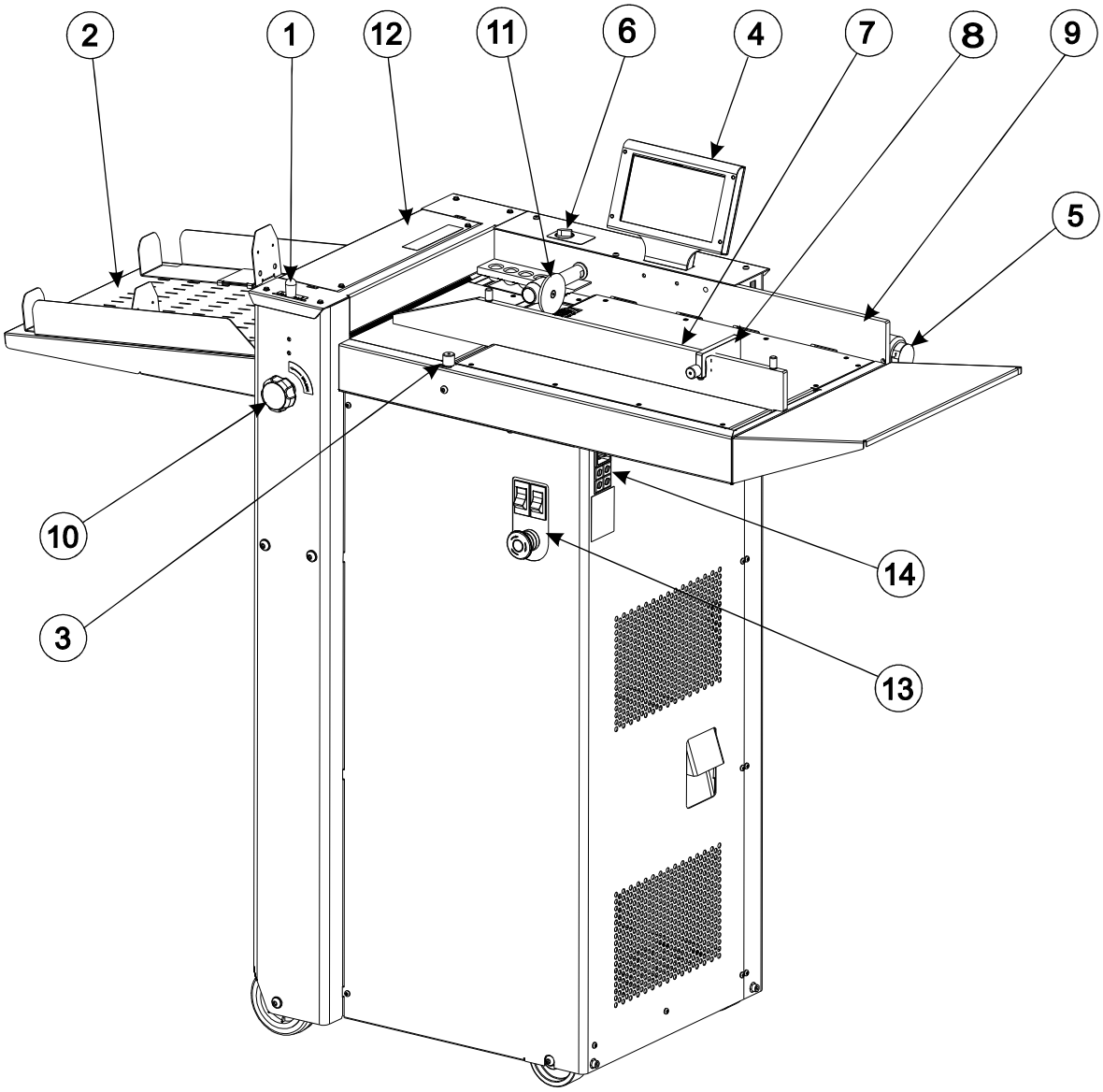
AutoCreaser Pro 33

DOCUMENT CREASING MACHINE

Key to photograph below

1	Roller tilt handle	6	Air seperation knob	11	Paper Gate
2	Stacker assembly	7	Adjustable side lay	12	Exit Guard
3	Suction slot knob	8	Back stop	13	Switch Panel
4	Touchscreen	9	Fixed side lay	14	Fuses
5	Air distribution knob	10	Roller tilt knob		



SECTION 1

1.1 The Front Cover

The front cover which is situated below the feed bed also covers the compressor and is secured by 13 taptite screws and is located by three tongues protruding into the main frame.

To remove this cover, remove all screws and twist forwards to clear emergency stop button and mains socket, pull out to release the tongues.
This allows access to the suction valve assembly and the compressor.

1.2 The Rear Cover

The rear cover is at the opposite side and is secured by four screws. This cover is removed by lifting up and outward to unhook the keyhole locations on the opposite side to the screw fittings.
This allows access to the electronic plate assembly.

1.3 The Creaser Mechanism Cover

The creaser mechanism is situated towards the delivery end of the machine and is covered by a fixed and a hinged guard.

To remove these guards just remove the four screws (M4 x 8 long) beneath the infeed guard.
Pull off the rubber handle from the tilt lever, and remove the knurled knob, the infeed guard can now be lifted upwards and removed.

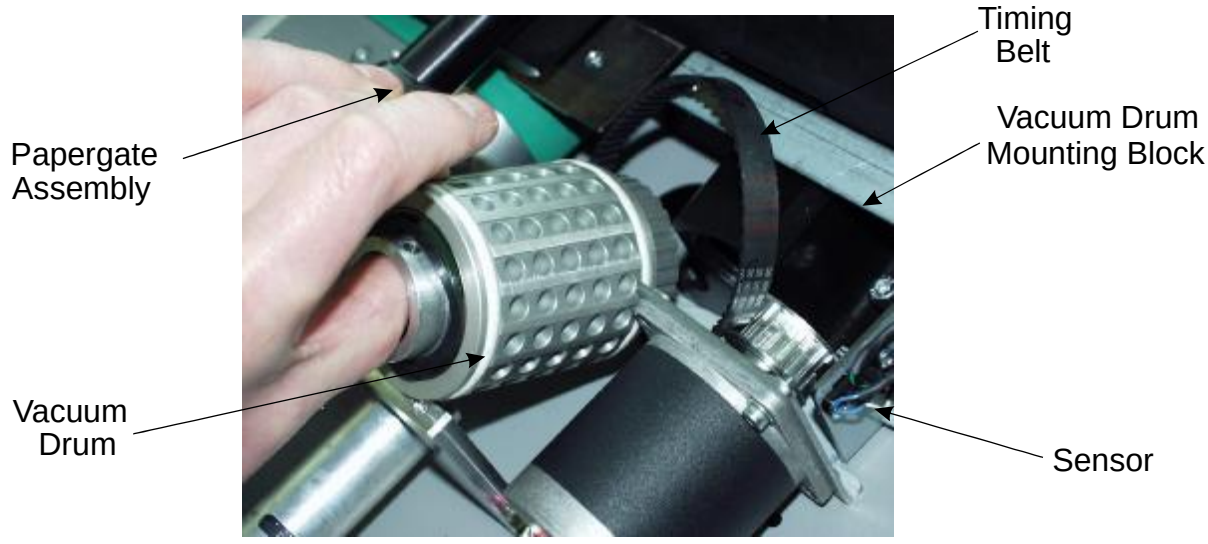
SECTION 2
VACUUM DRUM REMOVAL / REPLACEMENT.

1.Remove the Compressor cover below the feed bed.
2.Remove the top stainless steel feed bed.
3.Remove the moving side guide.
4.From the underside of the fed table loosen the valve assembly by unscrewing the two M5 posi pan head screws, allow the assembly to hang on its two pipes.
5.Inside the feed table to the rear, locate the two M4 soc cap head screws that 'position' the black delrin housing in place, this is the support block for the drum and the choke.
6.Using a 4mm A/F ball ended allen key loosen the two screws until they are flush with the underside of the mounting block, this will enable the delrin block to slide to the rear of the machine.
7.Locate the M4 soc set screw in the bearing plate that is used to lock the choke tube to the choke and using a 3mm A/F allen key unscrew until clear of the plate.
8.Twist the vacuum drum towards the motor to clear the bearing plate location hole and withdraw the drum assembly clear of the machine.

Replacing the Vacuum Drum assembly.

Replacement is the reverse procedure.
1.Place the delrin block loosely in position .
2.Ensuring the end plug is correctly located in the end of choke tube the vacuum drum can be manoeuvred into position, ensure the wavey washer is correctly positioned between the drum and the bearing plate.
3.Ensure the drive belt is in place and thew 'O'ring is in the lock, slide the delrin bloc k over the choke tube end. Using the 4mm A/F ball ended allen key tighten the two locating screws into the feed table clearance holes.
4.Refit the vlave assembly beneath the feed table ensuring the 'O' ring is correctly located and the two M5 posi pan head screws are tight.
5.The feed bed and compressor cover can then be refitted.

FIG.2.1



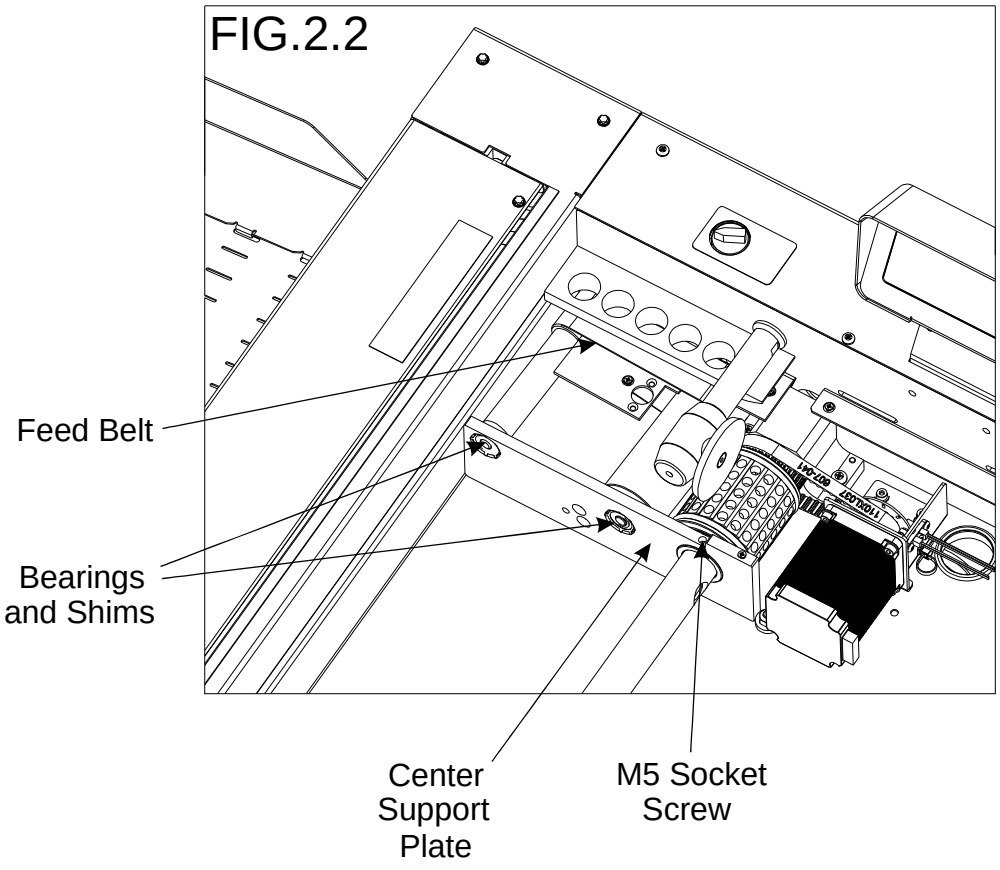
VACUUM DRUM FEED BELT REMOVAL / REPLACEMENT.

Drum Drive Belt replacement.
1.Following stages 1 to 6 above, the belt can be removed from the vacuum drum.
2.Remove the slot sensor from the motor mounting bracket.
3.The belt can now be removed from the machine.
Replacement is the reverse procedure.
To tension the belt loosen the three screws fixing the bracket to the feed table,
adjust the tension to allow a quarter of a twist along its run and retighten the cap head screws.

Replacing the drive motor or sensor.
1.Remove the Compressor cover below the feed bed and the rear cover
2.Remove the top stainless steel feed bed.
3.Remove the moving side guide.
4.Unplug the motor or the sensor from the respective PCB at the rear of the machine
and feed the wire up through the access holes.
5.Unscrew the motor or the sensor from the motor mounting bracket and remove.

Replacement is the reverse procedure.
To tension the belt loosen the three screws fixing the bracket to the feed table,
adjust the tension to allow a quarter of a twist along its run and retighten the cap head screws.
Note. care should be taken not to over tighten the slot sensor as it is plastic.

FIG.2.2



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SECTION 3

Removal of Butterfly Valve Assembly.

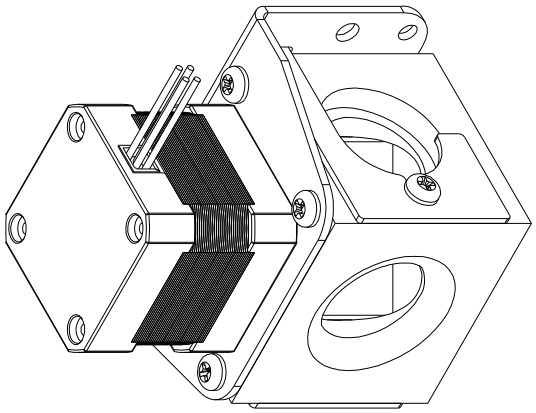
The Butterfly Valve assembly is located on the underside of the feed bed, towards the back of the machine.

3.1 Remove the two pipe mounting clip plates (ITEM 5 on page 11) so that the hoses can be detached from the valve.

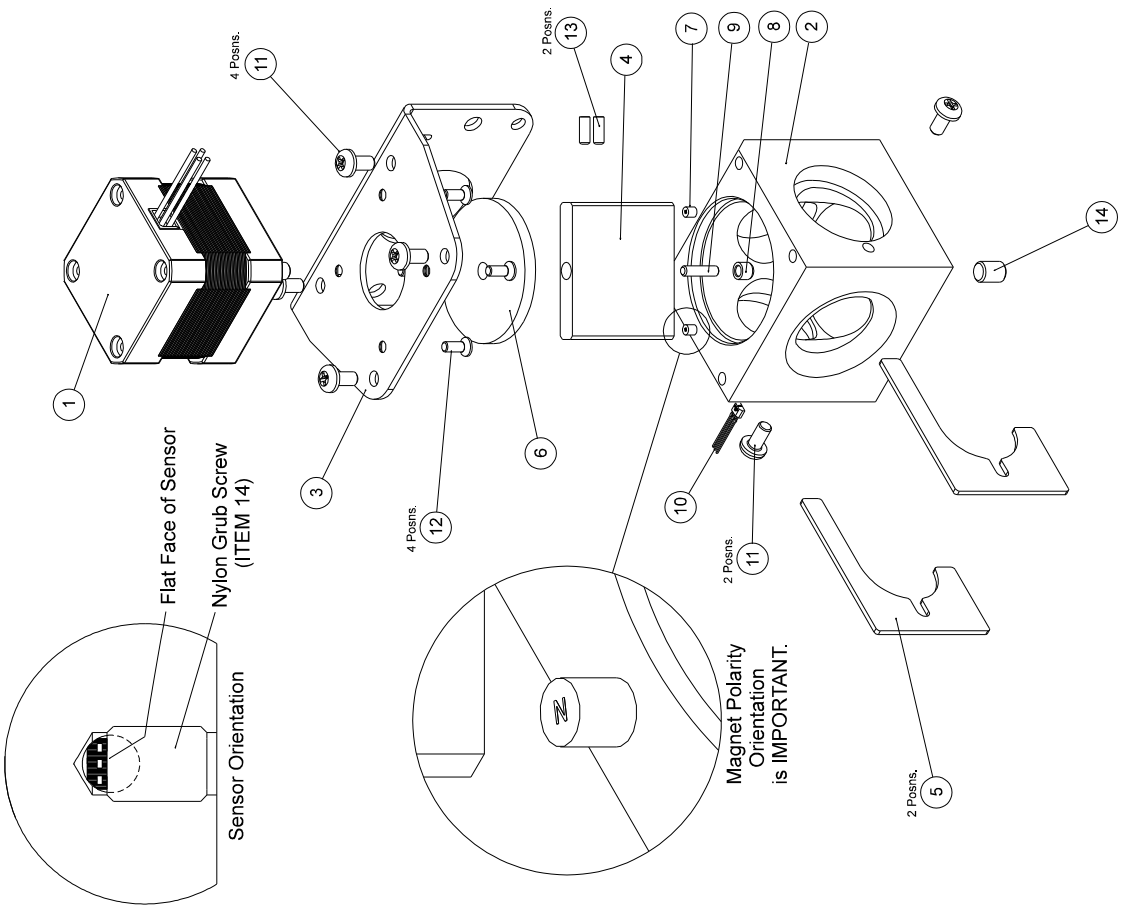
3.2 Remove the two screws that secure the valve to the underside of the feed bed.

NOTE.
When refitting the valve ensure that the ends of the hoses are clear of nylon fibres and that the ‘O’ ring is in place.

BUTTERFLY VALVE ASSEMBLY (175-28-01)



ITEM NO.	PART NUMBER	QTY.	Description
1	173-65-01	1	Valve Motor & Lead Assembly
2	175-164-01	1	Valve Block Tube - Stepper
3	175-165-01	1	Valve Mounting Plate
4	175-166-01	1	Solid Butterfly
5	175-176-01	2	Pipe Mounting Clip
6	175-177-01	1	Upper Valve Spacer
7	601-168	2	Magnet - Ø3 x 3 Long
8	602-178	1	Bearing - Igldur Plain Ø3 X Ø5 x 4 Lg.
9	603-108	1	Dowel Pin Ø3 x 12 Lg.
10	173-67-01	1	Lead - Valve Sensor
11	401-02-040-008	6	Screw - Pan Pozi Tapbite - M4 x 8 Lg.
12	404-01-030-008	4	Screw - Socket Countersunk Hd - M3 x 8 Lg.
13	409-01-030-008	2	Screw - Skt set - Flat Pt - M3 x 8 Lg.
14	416-01-060-008	1	Grub Screw - Slotted Nylon M6 x 8 Lg.



NOTES.

1. Items 7 Should Be Secured Into Item 4 using a Suitable High Strength Adhesive.
2. Magnet Polarity Orientation is IMPORTANT.

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SECTION 4

MAIN CREASER MECHANISM

REMOVAL OF UNIT

4.1 First access should be gained by removing the top infeed and outfeed guards (*See Section 1)*

4.2 Detach guard micro switch by removing two screws, taking care not to drop them.

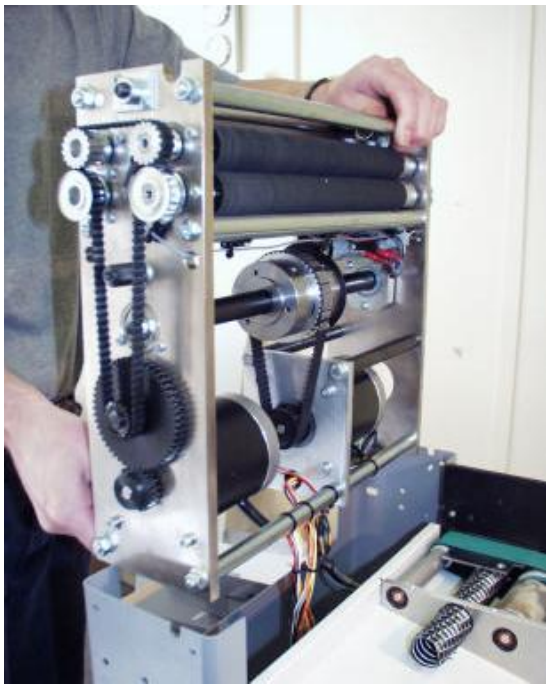
4.3 Cut and remove cable ties from cable mounting, retaining wiring loom. Ensure that the mains is unplugged.

4.4 From the rear of the machine, remove two button socket screws with their washers.

4.5 Remove the 'unlock' knob from the front of the machine.

4.6 Remove the polycord drive belt from the suction drum.

4.7 The unit can be lifted by two people vertically out of the main frame with care. One person should be guiding the wiring and plugs to ensure they do not get trapped during the lifting.



4.8 Place the unit on a solid and clear bench ensuring no wires are trapped beneath the metal side plates.

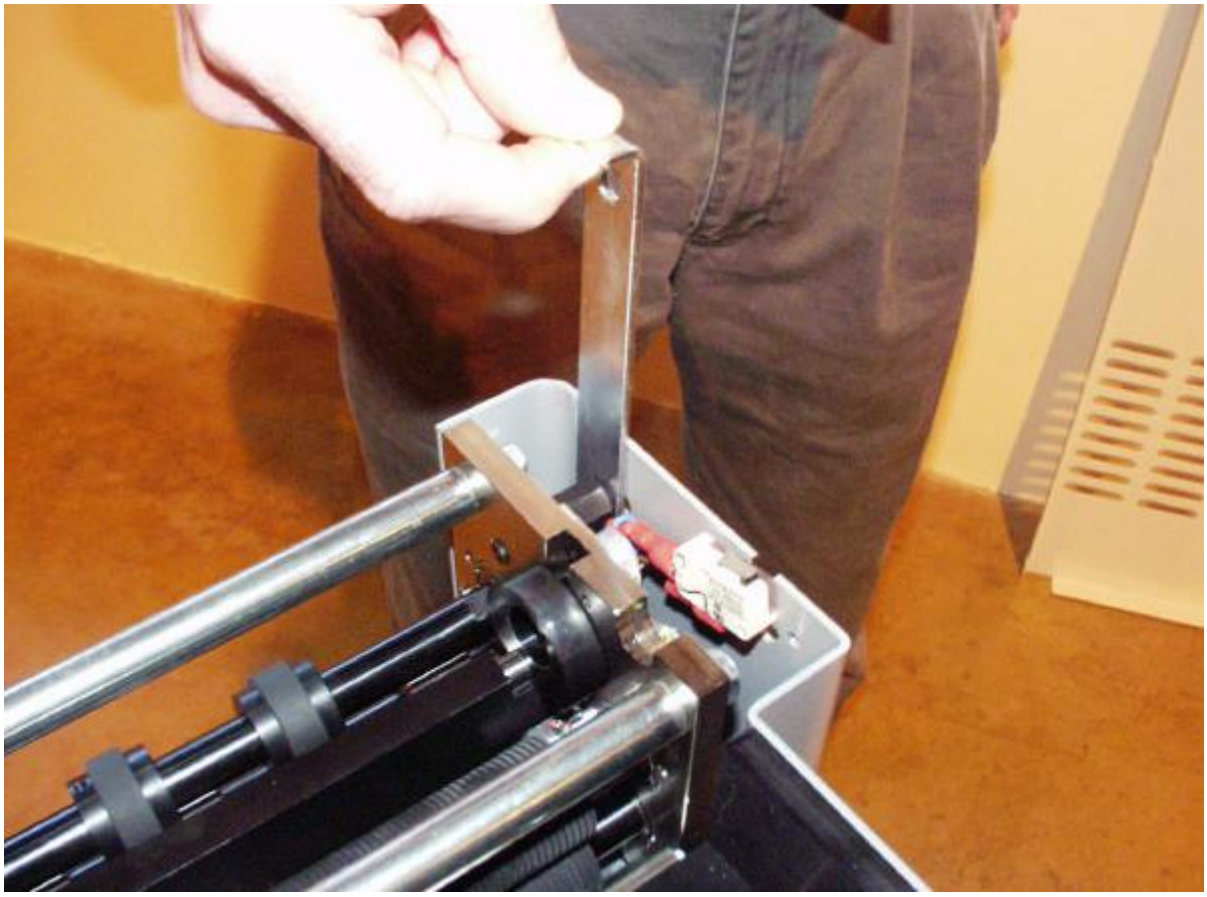
4.9 Assemble loosely the green drive belt to the pulley

4.10 Replace the unit ensuring the wiring harness is threaded as it was removed

4.11 Attach the belt to the drive shaft.

4.12 Fit the tilt lever to the inside front frame with the bottom button head and screw in tilt knob.

4.13 Slide rear spacer bar down in position (see below). Fix the bottom screw in and align the top screw and fit loosely. Replace cable ties to mountings. Align the roller set square with the fixed lay edge while the front tilt lever is in the centre position. (Use the rear slots to adjust square) Tighten the screws and replace the top covers.



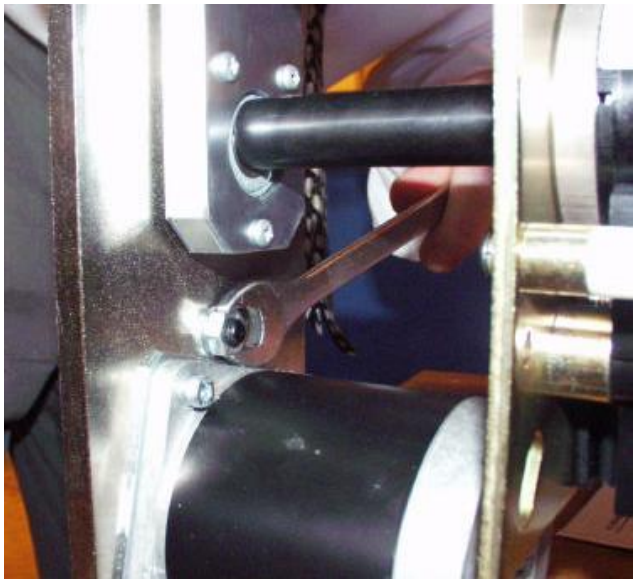
SECTION 5

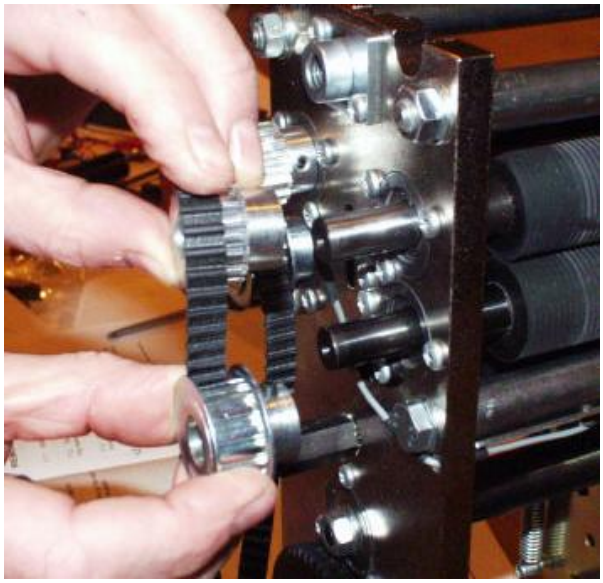
REMOVAL/REPLACEMENT STEPPER DRIVE BELT/ PULLEYS

5.1 Loosen the adjuster nut from the inside unit and slide the belt off.

5.2 Loosen the securing socket set screws in the drive pulley on the roller for it to be removed (**NOTE** there is one screw located in a hole in the shaft)

5.3 Refitting the belt is a reverse procedure. To tighten the belt, first adjust the drive motor down to allow 'feel' of belt tightness; then re-adjust the motor / gear mesh to allow minimum backlash.





SECTION 6

REMOVAL/REPLACEMENT OF TOP INFEED ROLLLER

6.1 With the unit on a bench
6.2 Remove the drive belt and flanged pulley from the bottom infeed roller.
6.3 Viewing on the outside of the sideplate, align the lug on the eccentric with cutout in the sideplate.
6.4 Using a soft mallet gently tap the roller assembly from the opposite side supporting its length as it emerges.

REMOVAL/REPLACEMENT OF BOTTOM INFEED ROLLLER

6.5 Remove the drive belt and top infeed roller assembly and the bottom flanged pulley as above.
6.6 Remove the cap head screw from the rear of the roller shaft, and then remove the pulley.
6.7 Gently tap the roller from the rear, this will extract the outer race of the needle bearing from the front side plate.
6.8 The roller can now be withdrawn inwards through the mechanism.
6.9 Remove the bearing retaining screw on the inside of the rear side plate, the deep grooved ball race can now be extracted.

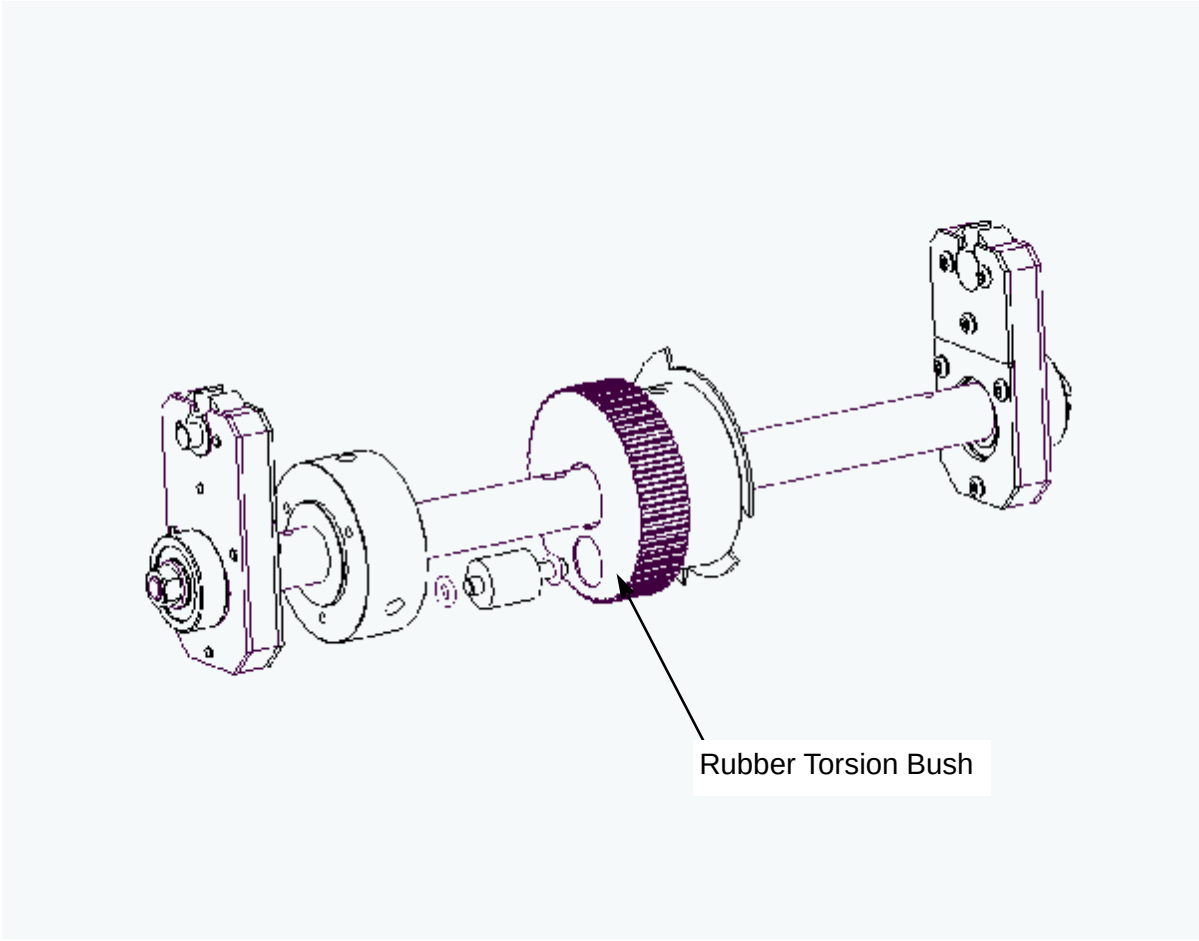
SECTION 7

DRIVE HUB: REPLACE RUBBER TORSION BUSH (SHOCK ABSORBER).

7.1 Loosen grub screws in one half of hub.

7.2 Slide hub outward & remove rubber torsion bush.

7.3 Replace in reverse order.



SECTION 8

DRIVE LINK REFURBISHMENT

8.1 Remove the drip tray by removing the four securing screws fixed to the tie bars.

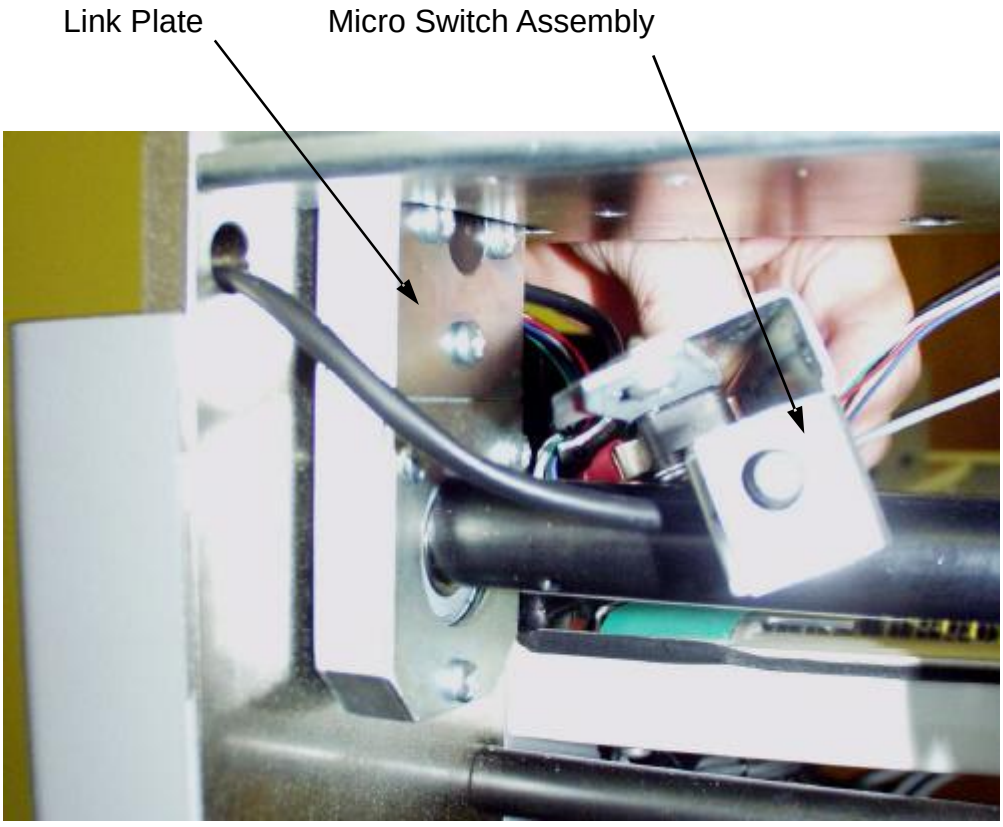
8.2 Remove both tie bars and drip tray.

8.3 Remove the micro switch assembly to gain access to the rear drive link.

8.4 Using a short dumpy posi drive screwdriver, unscrew the three screws from the side of the link plate. Slide the side off ('O' Rings should be maintained in position). The plastic drive link can be removed by sliding it forward.

8.5 Replace the drive link and outer plate.

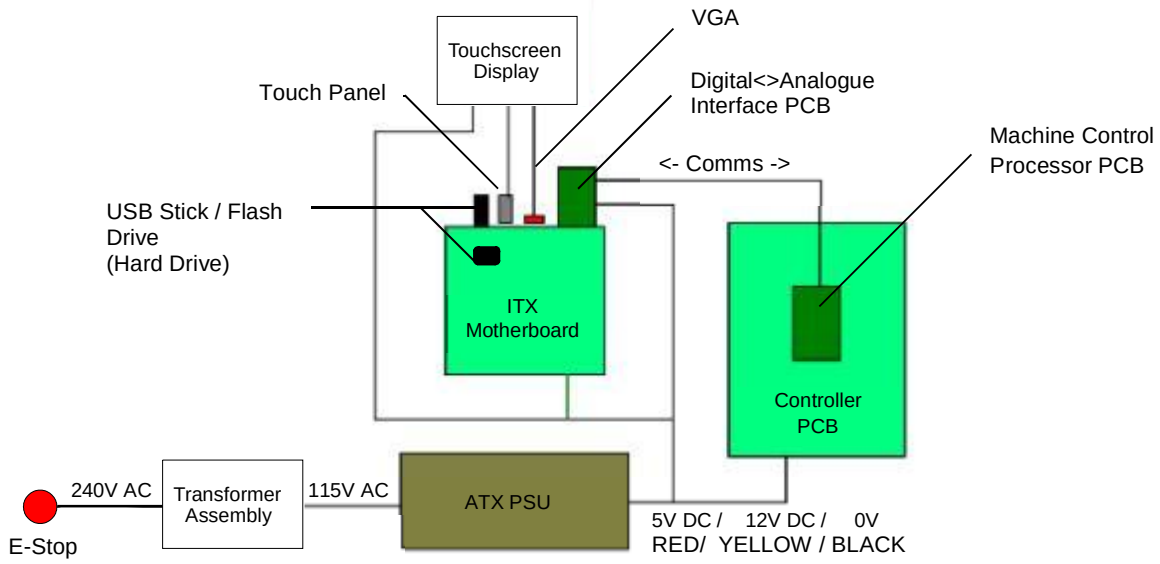
8.6 Re-assemble in reverse order.



SECTION 9

ELECTRICS: The PRO Control System.

The Morgana PRO control system is essentially a computer system just like the PC you use at home. Unlike your Microsoft Windows PC, the PRO system uses a LINUX operating system and runs only one program, which is the machine control program for the particular machine that it is installed on.



Block Diagram of the PRO Control System

SECTION 9

ELECTRICS: REMOVAL/REFITTING PCB/POWER SUPPLY ASSEMBLY

All the Electric controls and pcbs are located within the rear cover mounted on a common base plate.

REPLACEMENT OF MAIN CONTROL P.C.B.

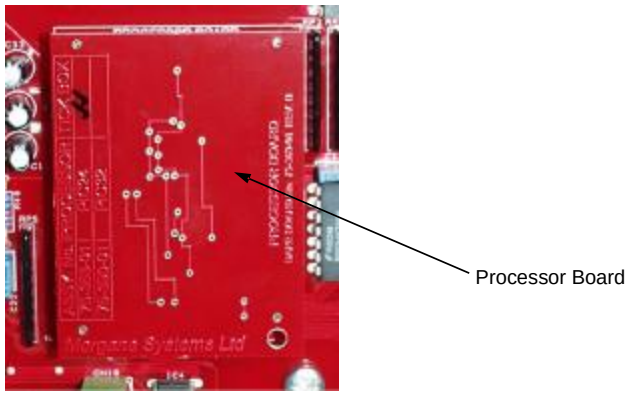
This PCB controls all functions of the machine and houses the Main Program PCB.
The use of an antistatic wrist band should be used during work on the main control PCB.
Switch the mains power off and disconnect from the mains supply.
Unplug all the green plugs from the PCB.
Using a posi-drive screw driver, unscrew the five fixing screws and carefully remove the PCB.

REPLACEMENT OF PROCESSOR BOARD

This Small PCB is plugged onto the face of the Main Control PCB and houses the Program Chip.
The use of an antistatic wrist band should be used during work on this Processor PCB.
Switch the mains power off and disconnect from the mains supply.
To remove care should be used, lifting from the bottom and gently rocking from side to side seems to work the best.

Replacement is the reverse procedure, care should be taken that the correct orientation is observed.

Note. When changing the above board it may be necessary to recalibrate the machine
Take note of any calibration settings.



REPLACEMENT OF USB FLASH DRIVE.

The USB Flash Drive controls all functions of the graphics and touch screen operation.

The External USB Flash Drive and the Internal USB Flash Drive devices (shown in FIG.2 below) have the same functionality. Either one of these devices could be supplied as a replacement.

IMPORTANT!
When fitting an Internal USB Flash Drive its orientation is important. Note the position of the Lock Recess shown in FIG.2 below. The lock must also be in the unlocked position. Ensure that the device fits securely and is fully inserted.
If the Internal Flash Drive is fitted the wrong way round it will not be damaged, it just won't work. Power down the machine and turn it round.

Installation Procedure.

1. Note the current machine calibration settings.
2. Power down the machine and remove the power cord.
3. Change the USB Flash Drive (Red or Green depending on what is currently fitted).

NOTE.
It is important to choose the right colour in accordance with the machine you are upgrading. See TB2705 for further information on when to use Red or Green USB Flash Drives. As a general rule replace like for like (i.e. Green for Green and Red for Red).

4. Power the machine up.
5. To access the machine menu, open the calculator and type 608888; then press X to exit the calculator screen.
6. Choose the machine type from the list and perform a power cycle when prompted.
7. Re-enter the calibration settings.

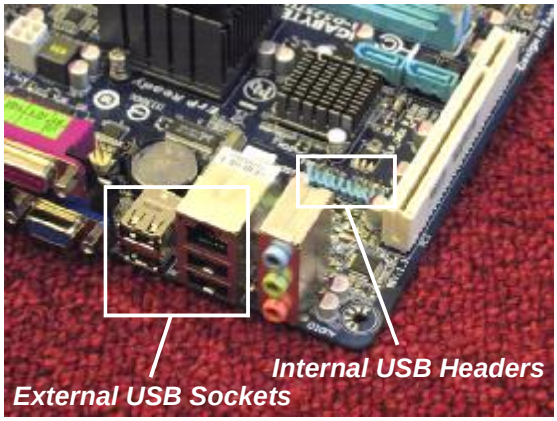


FIG.1

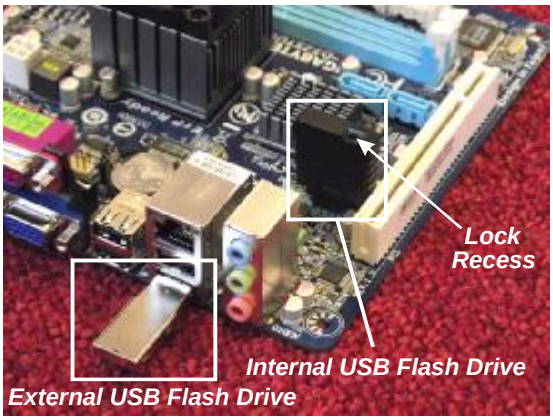


FIG.2

FIG.1 and FIG.2 above show the Internal USB Flash Drive position for the current Gigabyte ATX mother board. FIG.3 and FIG. 4 below show the Internal USB Flash Drive positions for the previously used Jetway and Asrock ATX mother boards.

FIG.3

FIG.4

SECTION 9

ITX BOARD REPLACEMENT.

The ITX mother board supplies the graphics to the touch screen display, to remove.-
1. Switch the mains power off.
2. Cut cable ties and unplug the all plugs.
3. Unscrew the four fixing screws attaching the board to the plate and remove from the machine.

Note. the RAM should stay with the board.

Refitting is a reverse procedure to the above.
If using the existing USB stick the machine calibration will be as before but using a new stick will lose the settings and will mean recalibrating the machine.

ITX BOARD PSU REPLACEMENT.

The ITX PSU supplies power to the mother board and the main control PCB and is housed within the compressor compartment, to remove.-
1. Switch the mains power off.
2. Remove both the compressor cover and rear cover.
3. Cut cable ties and unplug all plugs including the mains supply plug in the rear.
4. Unscrew the four fixing screws attaching the bracket to the main frame and remove from the machine.
5. Remove the four fixing screws attaching the PSU to the bracket and slide the units apart.

Refitting is a reverse procedure to the above, ensure the power switch is in the on position prior to replacing the compressor cover .

BOARD REPLACEMENT. STEPPER DRIVE PCB

The Stepper Driver board supplies the power to both Blade motor and main Drive motor and can be removed whilst located on the machine.
Switch the mains power off.
Cut cable ties and unplug the four green plugs.
Take note of the two spade terminals on each board and remove.
Unscrew the five fixing screws attaching the board to the plate and remove from the machine.

Refitting is a reverse procedure to the above.
IMPORTANT:-
Check that the switch positions on SW1, SW2, SW3, and SW4 are correct, see wiring diag.

BOARD REPLACEMENT. SMALL STEPPER DRIVE PCB's

The two Small Stepper Driver boards supply power to the Motorised Valve and the Vacuum Drum Motor.
1. Switch the mains power off.
2. Unplug the green plugs and spade terminals.
3. Unscrew the four fixing screws attaching the board to the plate and remove from the machine.

Refitting is a reverse procedure to the above.
IMPORTANT:- Check that the switch positions on SW4, and SW5, are correct, see wiring diag.

SECTION 9

Replacing the Touch Screen Assembly

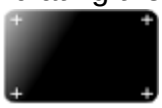
Replacing the Touch Screen Assembly.
Ensure the mains power is turned off but with the plug in the socket, this maintains an earth to reduce static damage.

1. Remove the rear cover to expose the electrical panel.
2. Unplug the USB connector and nine way “d” type plug from the ITX board, then carefully remove the white power connector (this is tight and the wires can easily be pulled from the plug)
3. Through the rear of the metal support loosen the two socket head screws using a 4mm A/F Allen key.
4. Carefully lift the unit up and through the top cover aperture.

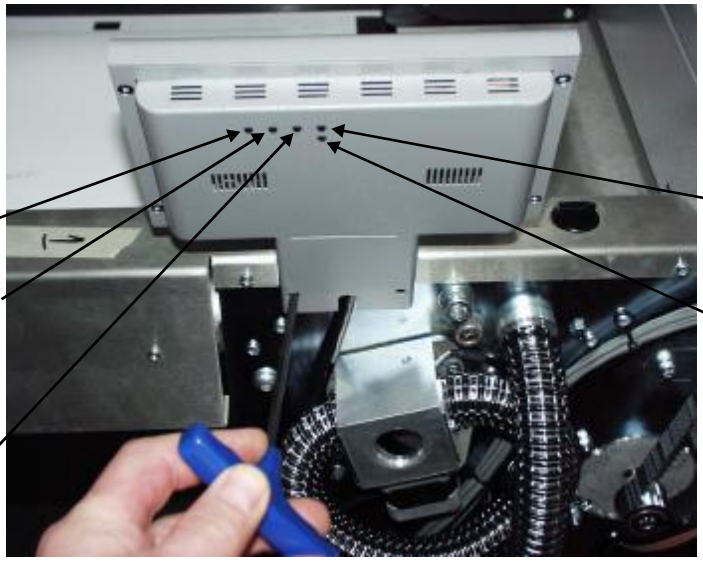
Replacement is the opposite procedure.

Calibration of the Touch Screen.

1. Switch on the power and await for the main screen to appear before commencing to check the horizontal and vertical position of the display.
   The position of the display within the surround is achieved by operating the centre button at the rear of the housing, press this a number of times to obtain the correct orientation required, move to the next button to move the position to centralize horizontal.
2. With the engineering plug plugged into the engineers socket at the rear of the machine select the tools menu on the screen. Continue the selection until the graphic for calibrating the touch panel is seen and follow the procedure on screen.



Note. a plastic pointer should be used, a soft leaded pencil or biro cap may be used with gentle pressure.

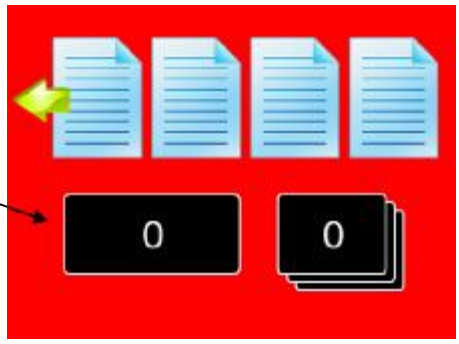


DIAGNOSTICS and CALIBRATION TOOLS.

To enter the engineers tools menu.
Turn the Machine on.
Insert the Engineers Plug into the Socket located at the rear of the machine.
Select Tools on the Display and continue to select required tool.

SET THE TOTAL COUNT TO ZERO.

To set the total counter to zero.
Turn the Machine on.
Insert the Engineers Plug into the Socket located at the rear of the machine.
Select Tools on the Display and select this button,
this value denotes the Machine total count.



SET THE MEASUREMENT SYSTEM (METRIC / IMPERIAL SETTINGS).

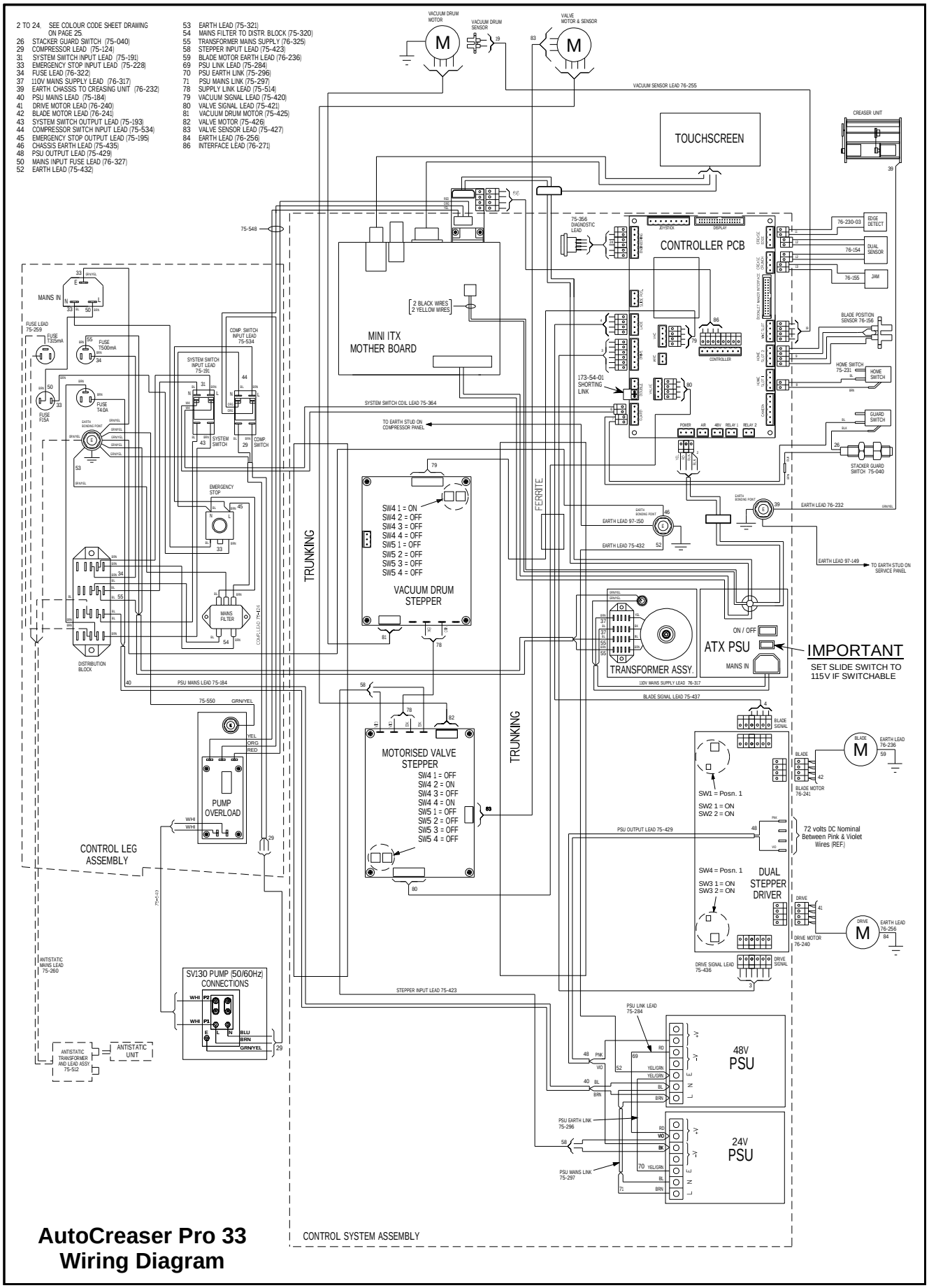
To set the measurement system for Imperial (Inch) or Metric (mm) the following procedure Is necessary.
Turn the machine on.
Insert the Engineers Plug into the Socket located at the rear of the machine.
Select Tools on the Display and select
'METRIC or IMPERIAL' by toggling the button.
Return to the main screen and remove the engineers plug.

SETTING THE VACUUM DRUM POSITION.

To set the vacuum drum start position the following procedure Is necessary.
Turn the machine on.
Insert the Engineers Plug into the Socket located at the rear of the machine.
Select Tools on the Display and select 'Vac Drum Trim' by toggling the button.
Input a value and run, repeat until start position is correct under the papergate.
Return to the main screen and remove the engineers plug.

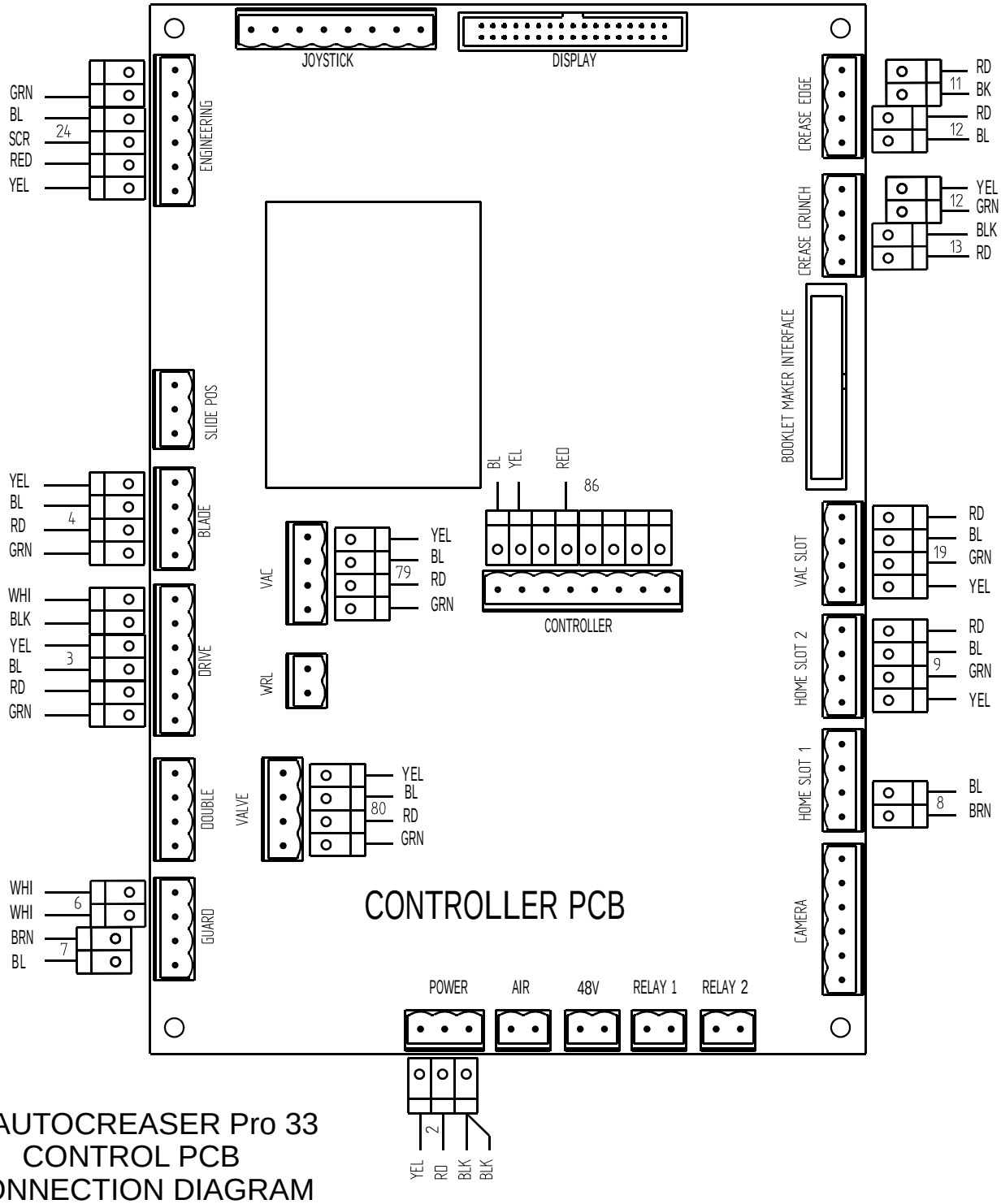
SETTING THE VACUUM DRUM SUCTION DELAY.

To set the vacuum drum suction start time the following procedure Is necessary.
Turn the machine on.
Insert the Engineers Plug into the Socket located at the rear of the machine.
Select Tools on the Display and select 'Vac Suck Trim' by toggling the button.
Input a value and run, repeat until start delay is correct.
Return to the main screen and remove the engineers plug.



AutoCreaser Pro 33
Wiring Diagram

2 PSU ASSEMBLY (76-272)
3 DRIVE SIGNAL LEAD (75-436)
4 BLADE SIGNAL LEAD (75-437)
6 SYSTEM SWITCH COIL LEAD (75-364)
7 STACKER GUARD SWITCH LEAD (75-232)
8 HOME SWITCH LEAD (75-231)
9 BLADE POSITION SENSOR LEAD (76-156)
11 EDGE DETECT LEAD (76-230-03)
12 DUAL SENSOR LEAD (76-154)
13 PAPER JAM DETECTOR LEAD (76-155)
19 VACUUM SENSOR LEAD (76-255)
24 ENGINEERING LEAD (75-356)
79 VACUUM SIGNAL LEAD (75-420)
80 VALVE SIGNAL LEAD (75 421)
86 INTERFACE LEAD (76-271)



AUTOCREASER Pro 33
CONTROL PCB
CONNECTION DIAGRAM

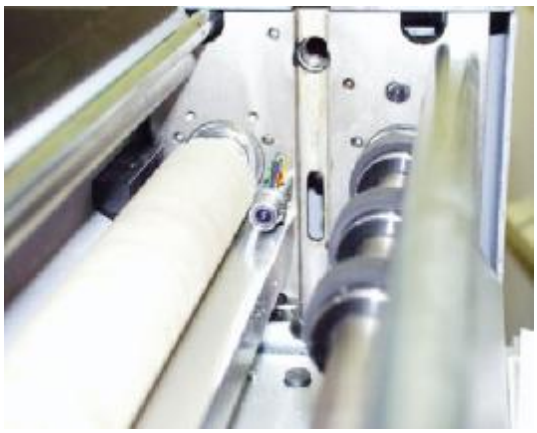
BLANK
PAGE

SECTION 10

Cleaning Sensors

With blades removed the optical sensors are accessible for cleaning on either side of the creaser unit - use a soft brush or cloth to remove any dust that may have collected onto the sensor lens.

Setting the Sensors



The Sensors all have indicator LED's on the Main Control Board & their operation can be checked from the Tools Menu. The sensitivity of the Sensors can be adjusted individually by adjusting the appropriate Potentiometer on the Main Control Board using a small insulated electrical screwdriver. The Detectors have no adjustments. Check the operation of each Sensor or Detector in turn by entering the Tools Menu & toggling down until the display reads **'Sensor Check'**

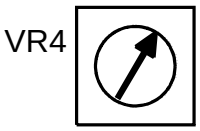
The ***Lead Edge Sensor*** registers the lead edge of the sheet to within 0.1mm. Its correct setting is extremely critical to the performance of the machine and ***any adjustment of its sensitivity will require re-calibration of the machine.***

10.1 Ensure the Red LED3 on the Main Control Board is Off. Place an 80gsm sheet on the Loading Table with its Lay Edge against the Fixed Side Lay. Slide the sheet up to the Input Rollers & rotate the machine by hand to drive the sheet through the Lead Edge Sensor - the display should read **'Paper Edge'** and LED3 should come on as the sheet passes through the sensor beam.

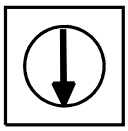
10.2. Ensure there is no paper in the machine before setting the sensitivity. This is done by adjusting the Crease Edge pot (VR4) on the Main Circuit Board. Turn the pot fully anti-clockwise. Turn the pot clockwise until LED3 is just On, and then back anti-clockwise 60° (i.e. about 10 clock minutes).

Note.-

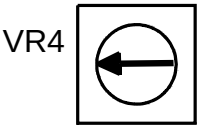
If LED3 does not illuminate when VR4 is turned fully clockwise then set at the 6 o'clock position.



Fully anti-clockwise Posn.



6 o'clock Posn.



9 o'clock Posn

The ***Crunch Sensor*** uses a beam projected across the machine just in front of the blade and above the paper path, when the beam is broken the machine will stop. The receiver is housed in the Side Plate of the machine and is on the Operator Side, whilst the transmitter is housed in the Side Plate of the machine on the Lay Side.

10.3 Ensure there is no paper in the machine before adjusting the sensitivity control pot on the Main Circuit Board, fully anticlockwise.

10.4 Ensure the appropriate Yellow LED is off and feed a folded sheet of paper down between the Input Roller & the Creasing Blade until it crumples - the display should read **'Crunch'** and the indicator LED should come on as the paper breaks the beam.

SECTION 11 Trouble Shooting

Calibration of creasing position

The length between the leading edge of the sheet and the 1st crease position can be calibrated in the event of the machine creasing out of position.
Also the last crease closest to the back of the sheet can be adjusted relative to the 1st crease position this compensates for the inaccuracy of manufacture of the input roller Diameters.

Crease Positions
The first crease should be 50 mm from the lead edge (less than 1 revolution of the in-feed roller) & the last crease should be 370 mm from the lead edge.(320mm Stretch)

Using the test stock if available, setup 'Crease' at 50 and 370.
Check the crease positions and using the
'Stretch' And 'Lead Edge' Settings
in the 'Tools' menu,
adjust the crease positions until they are correct.

Change the value, a higher value will move the crease further from the lead edge.

NOTE - Always Set the Stretch first i.e. 320mm between creases.
Insert the Engineers Plug into the Socket located at the rear of the machine.

Run machine and check crease positions, repeat above procedure until accurate crease position is achieved.

Section 11 Trouble Shooting

Fault	Reason	Solution
Erratic register of the Creaser	Damaged roller surface	Replace rubber rollers
	Check Gap Setting	Reset & tighten to ensure rollers are driving card.
	Faulty Drive motor	Remove and replace motor assembly.
No Power or No Display	Fuse Blown	Replace with correct value.
	Check Power supply input on	Voltages should read 240V or 110V AC
		Check cables for continuity to Emergency stop button.
		Replace Faulty wire or connection.
	Check power supply output	Black lead of meter to Black wire.
	Voltage on CN2=5V dc	Red lead of meter to Red wire.
	Voltage on CN2=24V dc	Red lead of meter to Yellow wire.
	If supply has input but no output	Replace PSU.
	Check voltage on main PCB CN6 Brown and Blue	If no voltage then check for damaged wire or connection. Replace as required.
No Drive or Motors Pulsing	Low or No Power to Motors	Check green light is illuminated on both PSUs
		Check 240/110V AC input to Large PSUs (Meter across L & N terminals)
No LED on Stepper PCB	Low or No Power from PSU	Meter across V+ & V- of SP-150-24 reading 24V dc
		Meter across V+ & V- of SP-150-48 reading 48V dc
		Replace PSU if no or low reading
		Meter across V+ of SP-150-48 & V- of SP-150-24 reading 72V dc
		If voltage is correct but no light on stepper then check cable integrity.

Section 11 Trouble Shooting

Fault	Reason	Solution
Edge & Crunch Sensors - Transmitters	Check supply voltage Should read 1.3Vdc	Black lead of meter on tab IC8 (Main PCB) Red lead of meter on red wire of CN8 and yellow wire of CN16
	To Adjust these voltages	Adjust VR4 Edge sensor & VR8 Crunch sensor.
Crunch Sensor - Receiver	Check voltage 1Vdc	Meter across Red/Black of CN16 (Obstruct Beam and Voltage will rise to approx 4.2 Vdc)
	Voltage will increase/decrease by adjusting intensity of transmitter (pot VR8)	
Edge Sensor - Receiver	Check voltage 0.46Vdc	Meter across Red/Blue of CN8(Obstruct Beam and Voltage will rise to approx 5 Vdc)
	Voltage will increase/decrease by adjusting intensity of transmitter (pot VR4)	
Safety Circuit Faulty No Drive.	Check Voltage on CN7 =10/12 Vdc	Any Switch or Wire, Open circuit will be 0Vdc
	To Check PCB.	Black lead of meter on tab IC8 (Main PCB) Red lead of meter on brown wire plug6 CN7 should read 12Vdc
	To Check Cable	Unplug CN7 (meter set to Ohms) place probes across plug If no continuity then check each switch.
Error Double Sheet Detected. Error 3	Check link on CN13 is correct.	Replace link, check wiring diagram.
Slot Sensor Blade	CN3	Black lead of meter on Yellow (ground) Red lead of meter on Green = 0.2Vdc obstructed Approx 4Vdc not obstructed. Red lead of meter on Blue = 5Vdc Red lead of meter on Red = 1.2Vdc
Home Position Switch	Remove plug from CN13	Check continuity across wires (make and break switch)

FAULT:- 'NO SYNC' appears on touchscreen. (Machine will not boot up).

1. CHECK THE ATX POWER SUPPLY AS FOLLOWS:-

(i) Disconnect the 20/24 way ATX power supply connector from the ITX Motherboard.

(ii) Using a piece of tinned copper wire, short out the GREEN and BLACK wires of the connector as shown in FIG.1 below

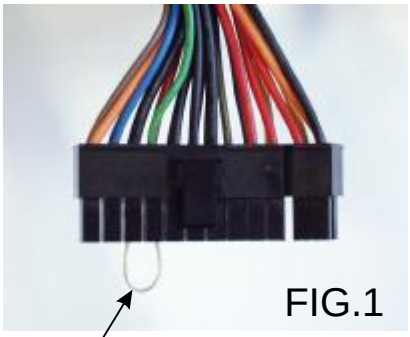


FIG.1

TINNED COPPER WIRE LINK

(iii) With the ATX power supply switched on, use a multi meter to measure the voltage across the RED and BLACK wires of one of the 4 way connectors.
The measured voltage should be between 4.75V to 5.25V. Anything below 4.7V should be regarded as suspect and the power supply should be replaced.

(iv) With the ATX power supply switched on, use a multi meter to measure the voltage across the YELLOW and BLACK wires of one of the 4 way connectors.
The measured voltage should be between 11.75V to 12.25V. Anything below 11.7V should be regarded as suspect and the power supply should be replaced.

2. CHECK THE ITX MOTHER BOARD AS FOLLOWS:-.

(i) Remove the 3V lithium disc battery from the ITX mother board and check the voltage using a multi meter. If the voltage is less than 1.5V replace the ITX mother board. If the voltage is more than 1.5V refit the battery to the board.

CAUTION.

1. RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
2. DISPOSE OF BATTERIES ACCORDING TO THE MANUFACTURERS INSTRUCTIONS.

(ii) With the power to the machine turned on, link pins 3 & 4 of the connector shown in FIG.2 with a small flat bladed screwdriver. The fan on the board will start spinning, wait for 30 seconds and the machine will restart and boot up as normal.

NOTE.

When the power to the machine is turned off and back on again the procedure of linking pins 3 & 4 must be repeated to restart the machine. This is therefore only a short term fix to get the customer up and running, if a replacement ITX mother board is not readily available.

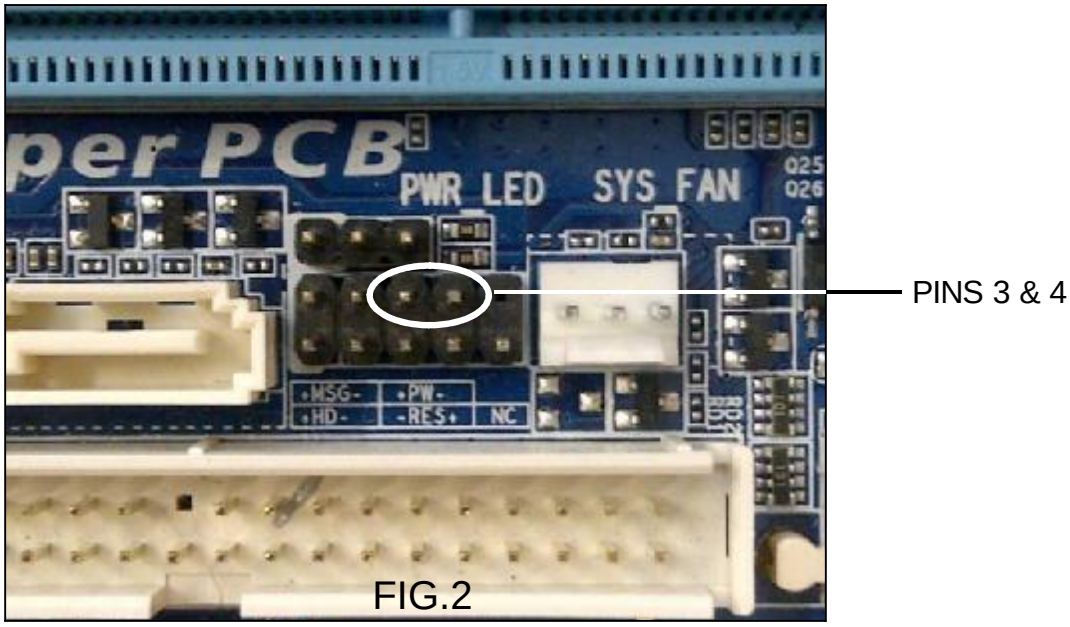


FIG.2

IMPORTANT RECYCLING NOTE:-

The ITX mother board has a lithium battery fitted, the board together with its battery must be recycled in compliance with agreed national Procedures. Please contact your local disposal authority for information.

CAUTION.
DISPOSE OF BATTERIES ACCORDING TO THE MANUFACTURERS INSTRUCTIONS.

FAULT:- No Touchscreen Display, (Machine will not boot up).

When you release the E-stop switch, the control system should receive power and begin to boot-up. After a short period of time you will see the touchscreen become active and display the boot-up sequence.

If the touchscreen remains blank, check that there is mains power to the machine and to the E-stop switch, then use the RAP that follows.

Is there power to the ATX PSU?

- Check that there is V AC across the ATX PSU power cord.

Yes **No**

Identify reason for no power to ATX PSU.

- Check 500mA fuse, below the Mains Input connector (See Page 36). **IMPORTANT.** If this fuse has blown replace it must be replaced with a T500mA fuse, Morgana part number 681-020.

Is there a V DC output from the ATX PSU? (See page 32).

Yes **No**

Replace the ATX PSU.

Does the cooling fan run on the mini-ITX motherboard? (See page 32).

Yes **No**

Replace the mini-ITX motherboard.

Is there a V DC power to the Touchscreen?

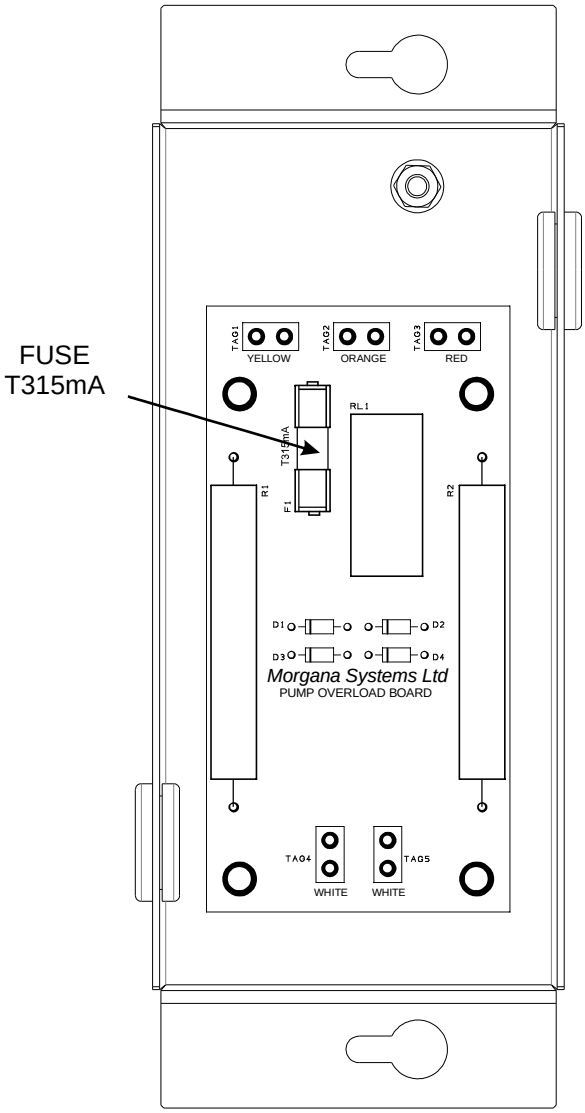
Yes **No**

Repair the wiring connection.

Replace the Touchscreen Assembly.

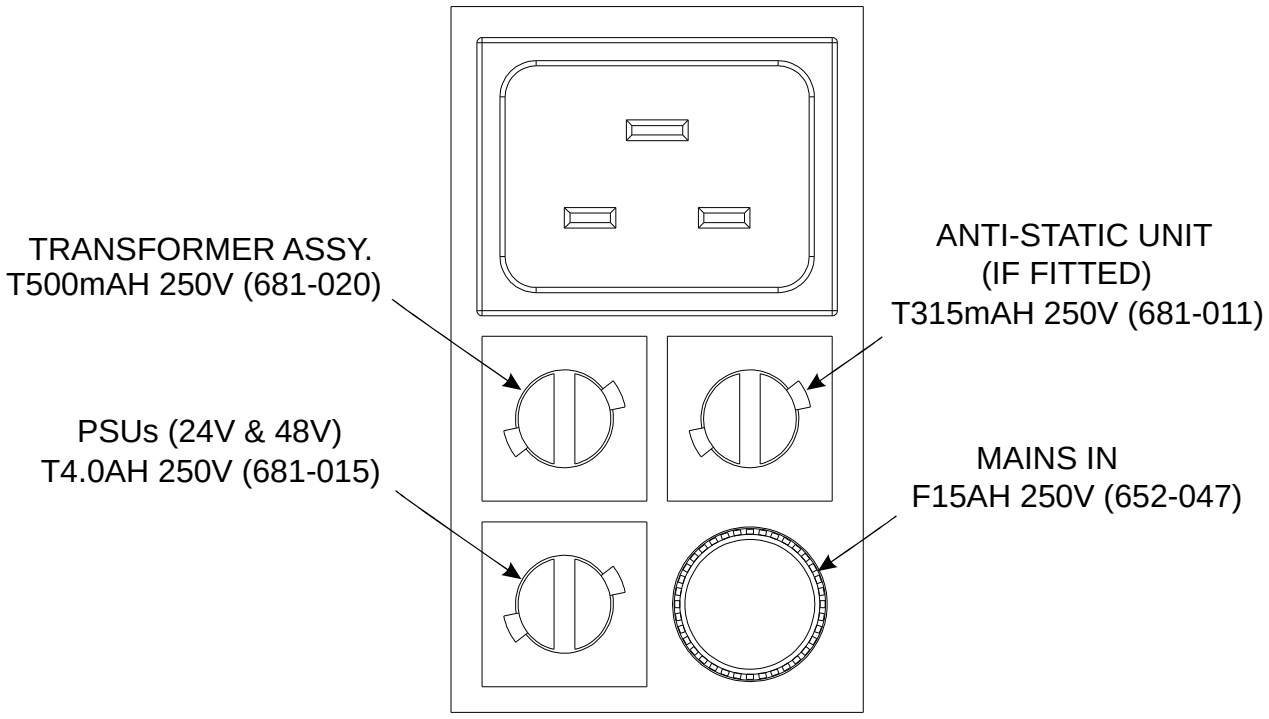
FAULT:- Pump will not operate when the Compressor switch is switched on.

Check the fuse on the PCB, in the Pump Overload assembly. The Pump Overload assembly is located on the inside of the yellow leg, below the baffle plate.



If this fuse has blown it must be replaced with a T315mA fuse, Morgana part number 681-011.

FUSE POSITIONS & RATINGS



Rev.	Mod No.	Mod Description	Date	Mod By