FORMAX®

atlas

Air Feed Document Folder

1/2020

MAINTENANCE MANUAL

i .....Introduction

The purpose of this manual is to explain the procedure for dis-mantling and re-assembly of the major assemblies on the Formax Atlas Folding 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 h igh tensile steel.

Cap head, Button head, Socket countersunk, Shoulder bolts and Grub screws 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

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

Drive side (opposite operator side)

Feeder end (on your left)

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 232V 50Hz 15Amps or 240V 60Hz 15Amps.

Fit the fold plates to the machine and tighten securely. Turn the fold rollers by using the hand-wheel on the drive side of the machine to ensure it rotates freely.

Switch on the machine and check that all functions operate.

Set up the machine to fold paper and check that the machine feeds and folds correctly.

ROLLER BELT CHANGE.

1. Unscrew the two knobs that retain the fold roller cassette assembly and remove the complete assembly from the machine.

2. Remove top cover with 4 pozi-drive screws.

3. Remove circlips from roller guard, only on belt side.

4. With 10 mm spanner loosen belt tensioner & remove hexagon headed bolt from belt side adjuster.

5. Remove all cap headed bolts from belt side of assembly.

6. Gently tap off side plate, be careful not to loosen rubber 0'rings on ends of rollers.

7. Replace drive belt, as shown in picture fig. 1.

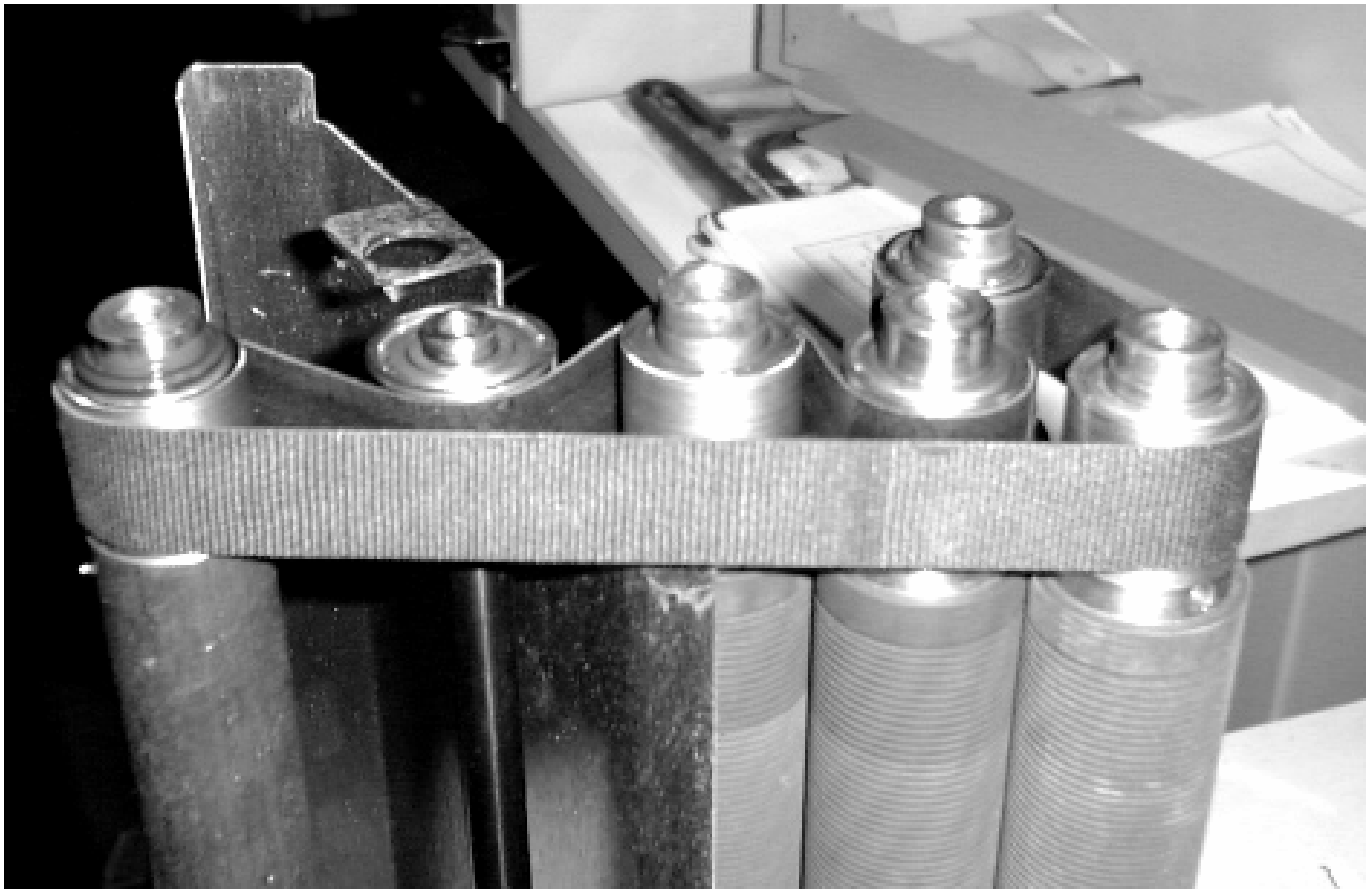


Fig. 1

ROLLERS REPLACEMENT

1. Dismantle assembly, as in previous instructions.

2. Remove rubber rings, remove all none gear rollers first, then roller with gear drive last. Again be careful not to loosen rubber 0-rings from ends of rollers.

3. Fit new gear roller first, with rings, then fit last 3 rollers and 0-rings, then belt.

4. Refit end plate, make sure both plates are fitted square before tightening the fixing bolts. Then adjust belt.

MAIN DRIVE BELT REPLACEMENT

1) Remove roller assembly, Remove side cover compressor access panel 95-009-02.

2) Remove service side panel 95-001. By removing 4 screws and lift cover.

3) Remove 2 cap head screws, plus washers, from fan. Remove fan then remove belt from pulley.

4) Remove 3 screws from bearing bracket, 1 on outside of machine, 2 on inside of compressor chamber.

5) Remove belt from pulley and main shaft, by lifting gear end of shaft.

6) Re-assemble in reverse order.

SETTING THE MOTOR SPEED CONTROL.

The motor speed control is set, using the four preset controls on the motor speed control PCB (613-184 or 95-138) see Fig. 2. The motor speed control PCB is mounted in the feed frame, under the paper loading table.

Initial Adjustments

Remove the paper loading table to expose the motor speed control PCB.

1. Set the 'IR' preset (IR compensation) to minimum (i.e. Fully anti-clockwise)

2. Set the 'OL' preset (current overload) to mid position.

3. Set the 'H' preset (high speed) to mid position.

4. Set the 'L' preset (low speed) to mid position.

Tools:-

Trimmer adjustment tool

Multi-meter with a DC range of 0 to 300 Volts

Adjustment

Connect the multi-meter to the motor speed control PCB.
(+ve lead to connector pin 'A', - ve lead to connector pin 'C')

Power up the machine and turn the operator speed control knob to maximum. (Fully clockwise)

Set the maximum speed by adjusting the DC voltage to 195 volts using the 'H' preset. Note.- For 240 volts 60 hz (USA) this voltage should be 190 volts

Decrease the speed to minimum using the operator speed control knob. (Fully anti-clockwise)

Set the minimum speed by adjusting the DC voltage to read approximately 70 volts using the 'L' preset.

The speed range equates to approximately Min. 1350 Max. 4200. If the motor starts to "HUNT" then increase the setting of the 'OL' preset.

Adjustment (continued)

The minimum and maximum speeds can be set more accurately using an optical tachometer and a shaft encoder, instead of a multi-meter.

Remove the handwheel from the motor shaft and fit the encoder to the shaft.

Set the minimum and maximum speeds as previously described.

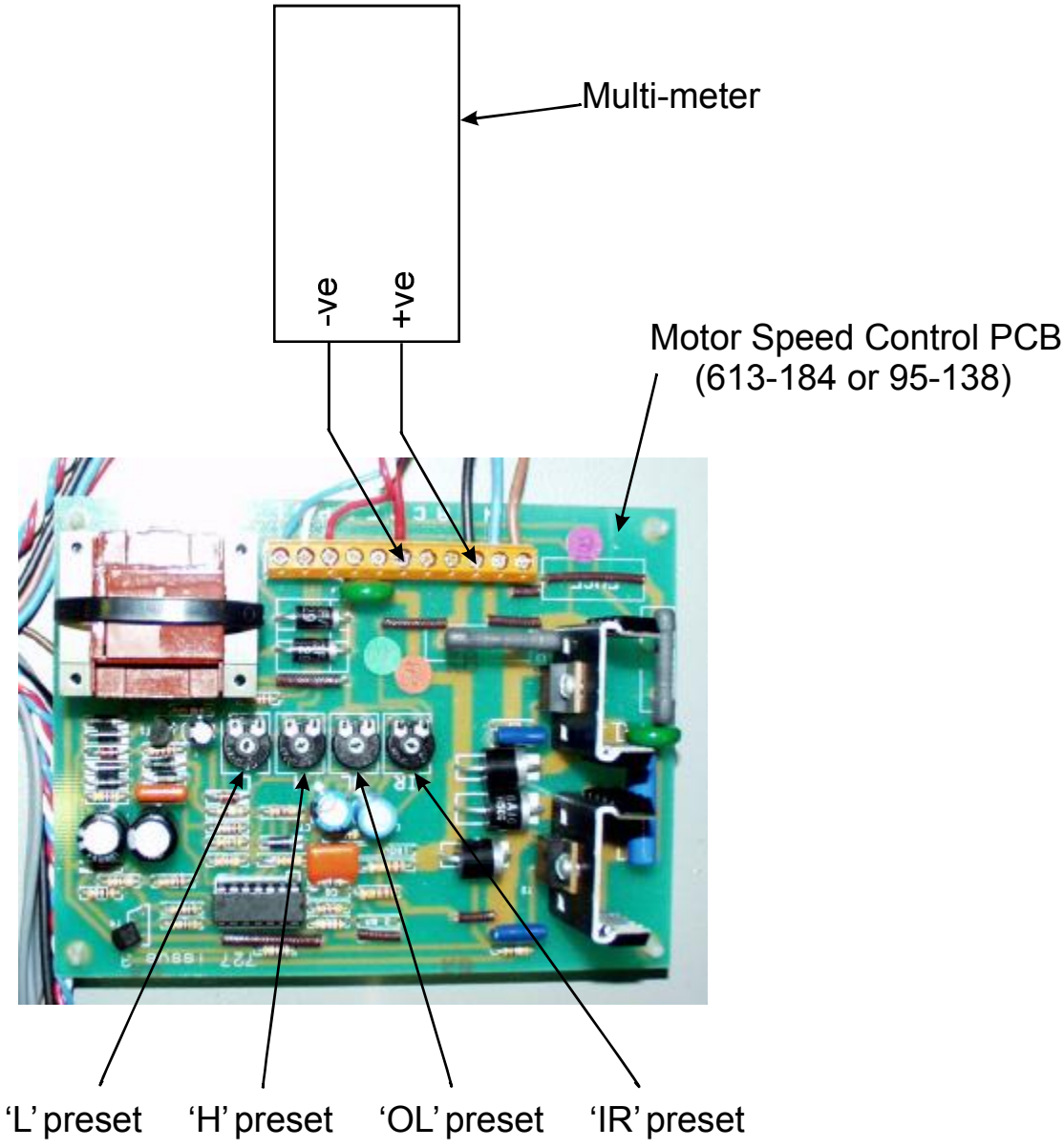


Fig. 2

DC DRIVE

For early models use fig. 3

To replace the DC Drive Shaft Timing Belt, disassemble as shown below in Fig. 3

For later models the assembly is shown as in fig, 4

Note with both types the drive belt should not be too tight when the roller set is fully home, or excess noise will be generated. When adjusting type fig 4 the two, rear mounting bracket, securing fasteners to the frame should be loosened to ensure the shaft is not under bending, retighten whilst taking the weight from the worm and wheel drive to ensure a clear running fit .

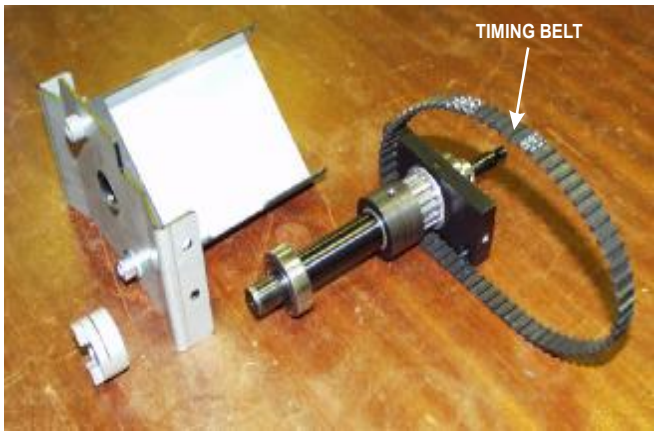


Fig. 3

Fig 4

VALVE PLUNGER REPLACEMENT.

1. Remove coil cable.

2. Remove 2 cap head screws, holding body of valve to machine, with 4 mm Allen key.

3. Remove valve, be careful not to loosen 0' ring seal.

4. Remove bottom of valve to release plunger and spring.

5. Refit in reverse order.

VALVE COIL

Resistance readings on the coil should be 10 ohms. To read the volts to the coil, have the coil connected to the system and read the volts across the coil connections with the feed on.

This should be 12 volts.

SUCTION DRUM AND BELT REMOVAL \ REPLACEMENT.

1. Remove feed bed and side guide.

2. Remove valve assembly as in last paragraph.

3. Remove 0-ring seal, remove long Allen screw 408-01-050-030.

4. Remove choke shaft from non operator side, remove baffle (feed system) 93-027-02.

5. Remove 4 screws securing the bearing center support plate - 2 pozi-head from front of feed frame & 2 cap head, from under the feed frame. DO NOT adjust or remove red bolt, as this is factory set.

6. Remove bearing center support plate 93-010. Be careful when removing this as two bearings and shims can fall out.

7. Remove suction drum and belt, leave in feed drum idler and feed drum roller, You can now remove belts.

8. Replace in reverse order, again be careful of bearings and shims. When fitting bearing support, make sure it is up against red bolt.

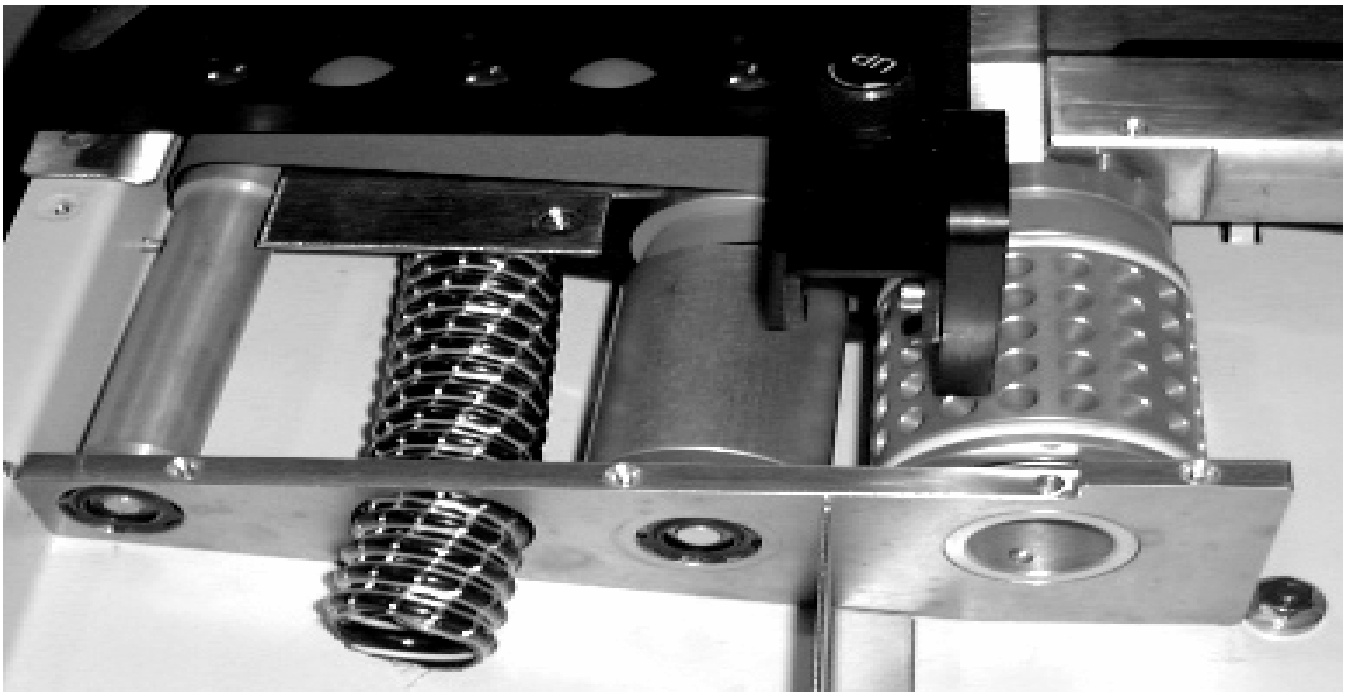


Fig. 4

SENSOR READINGS.

From PCB part no. 95-021 Issue D the sensor reading can be taken using the calibration diagnostic plug part no. 90-046 as shown in Fig 5.
The red and black wires connect to your digital voltmeter.
If the readings rise up to O.7 v, which is the switching volts, the machine will not count and will stream feed on pulse.
Then the sensor will need cleaning or replacing.

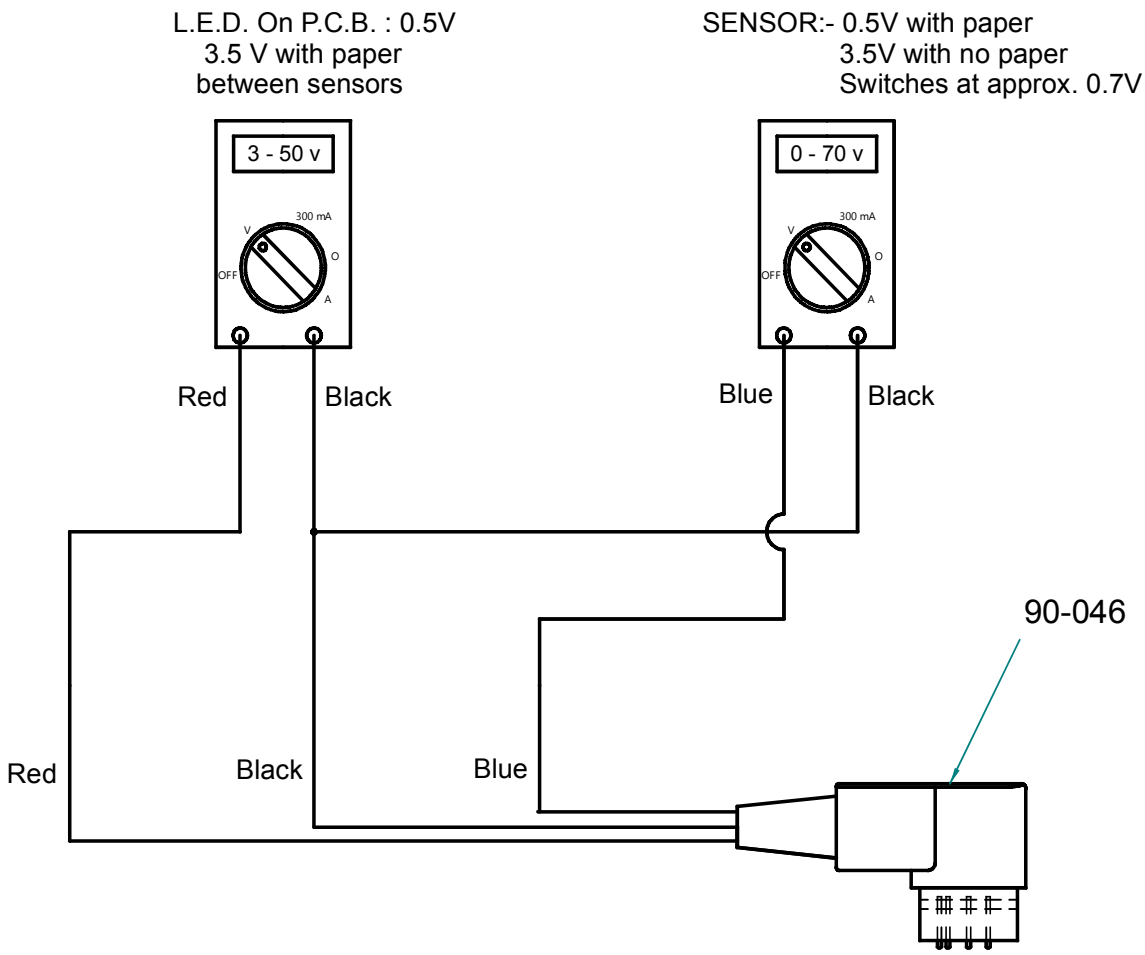


Fig. 5

Sensor Calibration and Alignment.

An electronic kit, (see picture below), has been developed to assist the operation of 'calibrating and aligning the sensors'. This kit can be purchased from Formax by ordering part number **70-043** (1 off).

Sensor Calibration and Alignment Kit (70-043)

SENSOR REPLACEMENT.

1. To remove top sensor, remove rear cover part no. 95-OO1 by removing four screws and lifting panel.

2. Remove feed bed and side lay.

3. Remove EK~ sensor cables from PCB, making note of their

4. Remove two hexagons headed bolts holding the sensor and ball carrier. The sensor is built into this assembly and has to be replaced as an assembly.

5. Re-assemble in reverse order.

THE BOTTOM SENSOR

With the top sensor holder removed the bottom sensor is held in place by two posi-drive screws. Remove the sensor block and cable, feeding cables through the cable retainers.

DELIVERY BELT CHANGE.

1. Remove Roller Assembly.

2. Remove rear Access Panel 95-001, Compressor Access Panel 95-009.

3. Remove cable ties from Cover 92-002-02 on underside of Delivery, then remove cover.

4. Remove wires from mains input socket & cable tie from safety circuit switch.

5. Remove Emergency stop button by pulling off yellow safety, then move lock to one side & remove rear contact block.

6. Remove Delivery Assembly by releasing Vertical Post screw in Feed Bed.

7. Remove Drive Belt 92-026, then remove Driven Cord Roller Assembly 92-029-02 by removing Drive Idler Assembly 92-030
   - take care not to lose M8 spacing washer 481-080.

8. Re-assemble in reverse order.

DELIVERY DRIVE BELT CHANGE.

Without removing the Delivery Assembly

1. Remove Roller Assembly.

2. Remove rear Access Panel and Compressor Access Panel.

3. Remove Drive belt from bottom pulley

4. Remove the Delivery Roller Catcher Assembly by unscrewing the two bracket fixing screws from within the roller frame area.

5. Remove the Driven Cord Roller Assembly by unscrewing the shoulder bolt and removing the Drive Idler Pulley assembly from the rear of the machine, taking care not to loose the M8 spacing washer, also remove the button head screw from the front shaft fixing.

6. The Driven cord roller assembly can now be removed from below.

Re-assemble in the reverse order.

FOLD PLATE CALIBRATION - Metric/Imperial

1. Remove the upper fold plate cover.

2. The following process is only necessary if the potentiometer has been replaced - move onto step 3 if this is not the case.
   To set up the Potentiometer for the Upper or the Lower Fold plate, see Fig. 6 & do the following : -

   (i) Move the Fold Plate Deflector or Stop so that the hole in the deflector is in-line with the hole in the fold plate Box.

   (ii) Loosen the gear on the Potentiometer and turn the spindle fully anti-clockwise & then 5 turns clockwise.
   Re-tighten the gear on the Potentiometer.

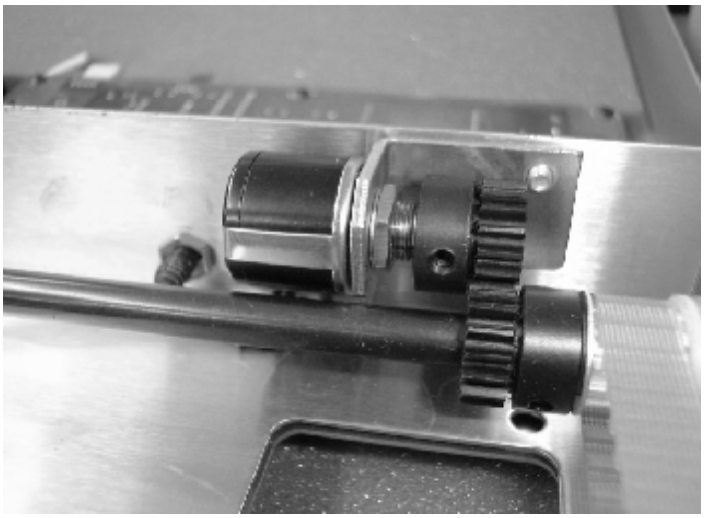


Fig. 6

3. Fit the jumper at LK1, on the two pins furthest from the Potentiometer connector - See Fig. 7

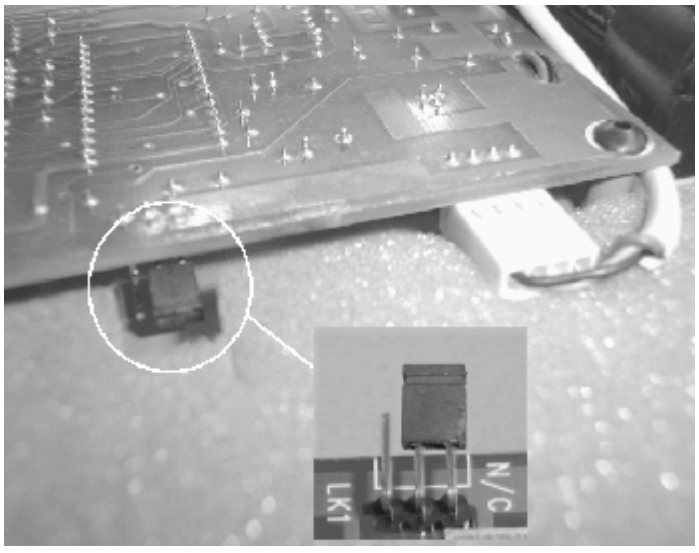


Fig. 7

FOLD PLATE CALIBRATION - Metric/Imperial (cont')

4. Switch on the display by pressing the 'On' button. The display will show 'Cal' for four seconds and then toggle between 'TST', '225' and '8.8'.

5. Replace the jumper at LK1 onto the two pins nearest to the potentiometer connector.

6. Insert the Calibration plate (90-034-01) with its inserts set at '225' (for metric calibration) or '8.8' (for imperial calibration), move the deflector up to the plate.

7. Press the 'micro' button when the display shows '225' (for metric calibration) or '8.8' (for imperial calibration) - the display will now change to read '160' (for metric calibration) or '6.3' (for imperial calibration).

8. Insert the Calibration plate with its inserts set at '160' (for metric calibration) or '6.3' (for imperial calibration), move the deflector up to the plate. Press the 'micro' button, - the display will now change to read '105' (for metric calibration) or '4.1' (for imperial calibration).

9. Insert the Calibration plate with its inserts set at '105' (for metric calibration) or '4.1' (for imperial calibration), move the deflector up to the plate. Press the 'micro' button, - the display will now change to read '50' (for metric calibration) or '2.0' (for imperial calibration).

10. Insert the Calibration plate with its inserts set at '50' (for metric calibration) or '2.0' (for imperial calibration), move the deflector up to the plate. Press the 'micro' button, - the calibration is now complete.

11. Replace the upper fold plate cover.

Note :- (i) The above procedure is only necessary if either the PCB or the potentiometer is replaced.

(ii) By placing calibration plug 90-046 in the socket at the rear of the machine the total count for the machine can be obtained and also voltage values of the paper sensor can be checked see diagram 90-050 for details.

FOLD PLATE ACCURACY.

If the display is inaccurate & needs adjusting (i.e. A4 paper does not fold accurately in half when the display reads 148.5 or 8.5" x 11" paper does not fold accurately in half when the display reads 5.5) - the following procedure should be followed: -

1. Remove the upper fold plate cover and disconnect the lead from the potentiometer to the PCB.

2. Slacken off the potentiometer gear on the shaft (Next to the timing belt pulley)

3. Slightly tighten the gear so that it can be turned but is not loose on the shaft.

4. Place the fold plate into the machine (without its upper cover).

5. Run the machine and adjust the deflector position on the fold plate until the A4 or 8.5" x 11" sheet folds exactly in half.

6. Re-connect the potentiometer lead to the PCB, press the 'On' button & rotate the loosened gear until the display reads 148.5 (for the A4 paper) or 5.5 (for the 8.5" x 11" paper). Tighten the gear.

7. Replace the upper fold plate cover.

TROUBLE SHOOTING

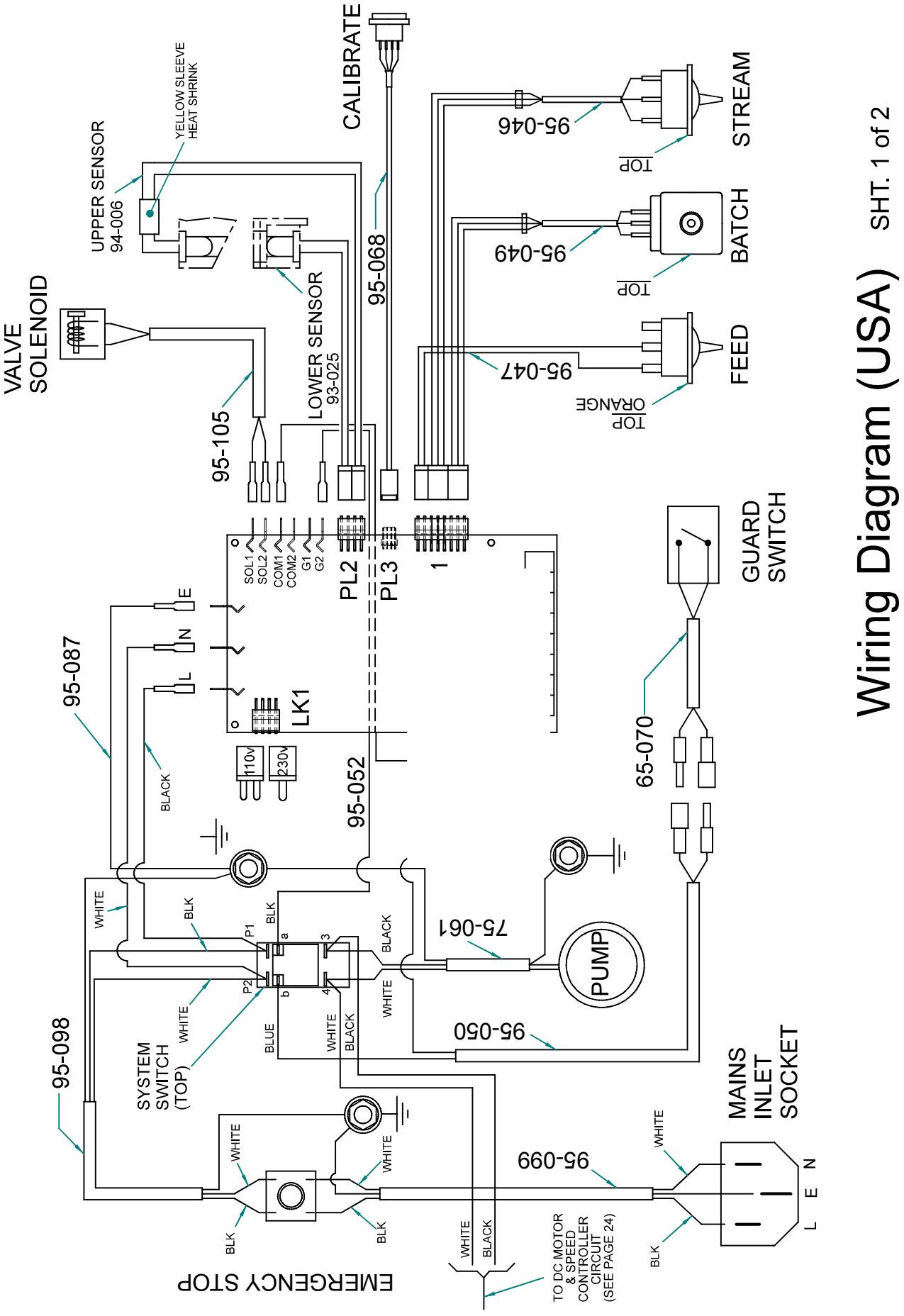
BAD FOLDING	Ink build up on rollers.	Clean rollers with cleaning kit. Part no. 90-018.
	Paper jammed in fold plate	Remove fold plate from machine. Remove shoulder screws from front rail & open up plate, then remove paper
	Roller gap incorrectly set for paper thickness.	Reset roller adjustments as in operators manual.
	Roller assembly not square	Adjust Roller assembly angle as in operators manual.
	Belt loose/slipping	Adjust belt tensioner
BAD FEEDING	Incorrect set up of feeder.	Reset as in operator instructions.
NO FEEDING	Valve not working.	Check solenoid plunger Check valve Coil Check coil volts Check PCB

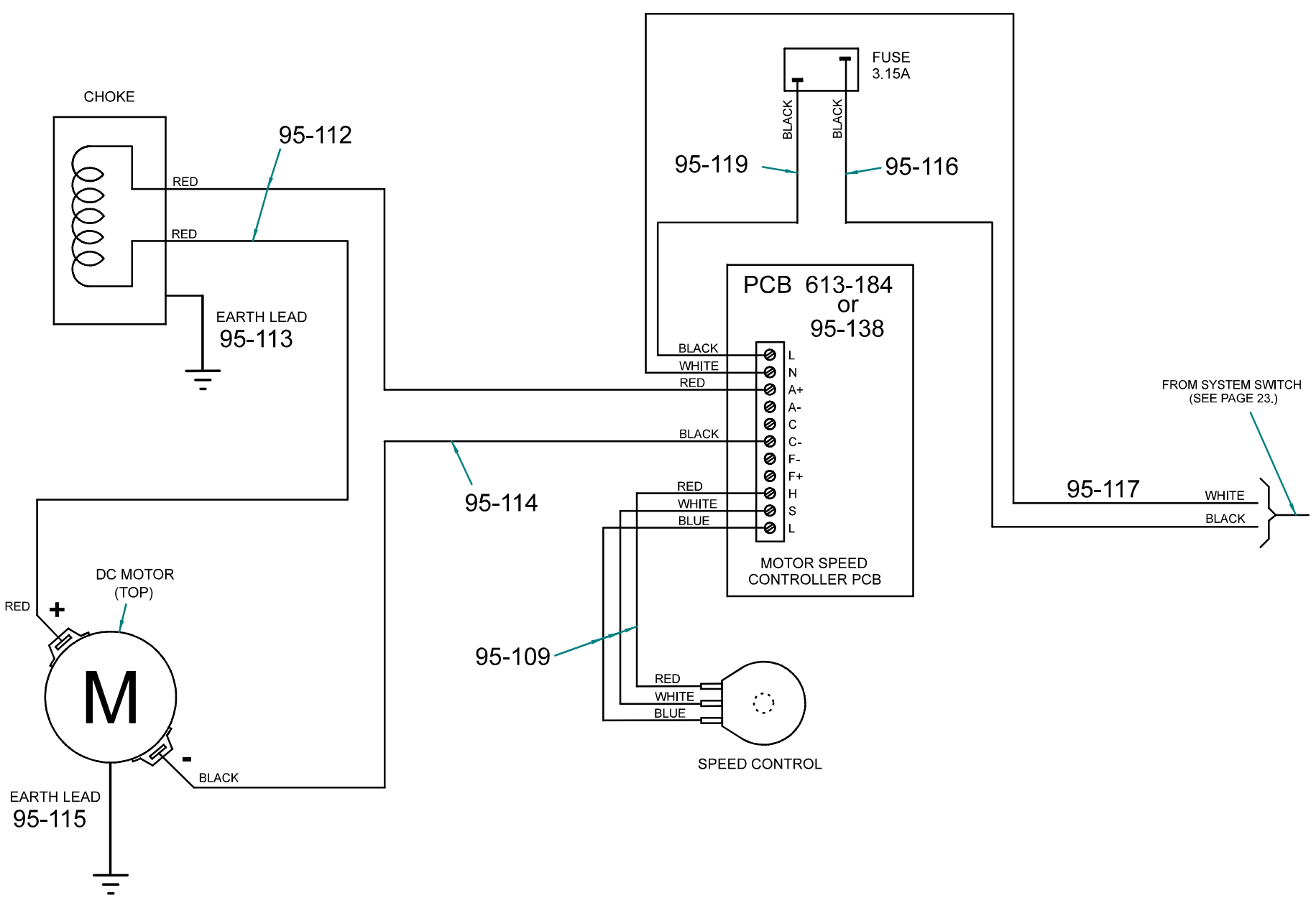
TROUBLE SHOOTING

NOT COUNTING	Sensor requires cleaning	Clean sensors top & Bottom.
	Sensor worn.	Check voltage, replace if required.
	PCB failure	Replace Main PCB
WILL NOT PULSE FEED.	As above	Replace Main PCB Check valve
ONLY STREAM FEED	As above	Replace Main PCB Check valve
NO READING ON FOLD PLATE DISPLAY	Battery flat	Replace battery.
	Faulty Fold Plate PCB	Replace Fold Plate PCB board
NO SUPPLY TO MACHINE		Check mains fuse
MACHINE WILL NOT START		Check stop button check guard circuit

Fold plate error codes are as follows:

1 not used	
2 not used	
3 EPROM returns a bad set of Calibrations	Re-Calibrate Fold Plate
4 Calibrations are not far enough apart	Re-Calibrate Fold Plate
5 Calibrations are not in the right order	Re-Calibrate Fold Plate
6 EPROM checksum Error	Re-Calibrate Fold Plate, if error still occurs replacement P.C.B. is required.


Wiring Diagram (USA)
SHT. 1 of 2
CALIBRATE
95-068
UPPER SENSOR
94-006
YELLOW SLEEVE
HEAT SHRINK
LOWER SENSOR
93-025
VALVE
SOLENOID
95-105
95-046
STREAM
95-049
BATCH
95-047
FEED
TOP
ORANGE
SOL1
SOL2
COM1
COM2
G1
G2
PL2
PL3
1
LK1
110V
230V
95-087
L
N
E
BLACK
95-052
GUARD
SWITCH
65-070
WHITE
BLK
P1
P2
a
b
3
4
BLUE
BLACK
75-061
PUMP
95-050
SYSTEM
SWITCH
(TOP)
95-098
MAINS
INLET
SOCKET
95-099
EMERGENCY STOP
TO DC MOTOR
& SPEED
CONTROLLER
CIRCUIT
(SEE PAGE 24)



Wiring Diagram (USA) SHT. 2 of 2