Spedo 9700 Slitter Merger

Instruction Manual

Issue 1

Spedo UK Limited
76 Woolmer Way
Bordon
Hampshire
GU35 9QF
ENGLAND

Telephone: +44 (0) 1420 487 447
Fax: +44 (0) 1420 477 827
Email: spedo@spedouk.com
Web: www.spedouk.com

Spedo 9700 Slitter Merger

History Sheet

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Spedo 9700 Slitter Merger

Safety Measures

This instruction manual contains certain WARNING and CAUTION notices which must be followed by the user to ensure safe operation and to retain the equipment in a SAFE condition.

All users of the equipment described in this manual MUST have received adequate training in its use and application in order to ensure SAFE AND PROPER USE.

Any adjustment, maintenance or repair of the opened apparatus under voltage shall be carried out only by a skilled person who is AWARE OF THE HAZARD INVOLVED.

Spedo 9700 Slitter Merger

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GENERAL DESCRIPTION SECTION 1

INTRODUCTION

The 9700 Slitter Merger Unit has been designed to convert 2-up continuous stationary into a single stream, which can then be passed to a continuous forms cutting device.

Fig 1.1 Slitter Merger

Spedo 9700 Slitter Merger is available in 2 different operating configurations.

The Standard version (known as the **9700S**) is for use with older Spedo cutters or third party equipment where CANBUS communication is not available.

The Enhanced Version (known as the **9700E**) is a fully integrated unit which is controlled either via the Spedo 2400 Forms Cutter or by a third party printer or unwinder using the optional printer interface unit.

Spedo 9700 Slitter Merger

TECHNICAL DATA

Safety Features:

Emergency stop button stops complete system if pressed in an emergency. Protective cover fitted over moving parts. Safety interlock switches off the unit if the transparent cover is opened while the unit is running.

Paper Web:

Continuous Web up to 520mm (20 ½ inches)

Paper Weight:

Single Web: 40 to 300 GSM

Speed:

120 Metres / Minute (400 Feet / Minute)

Power Requirements (9700S):

230V AC (+/- 10%)
460 Watts
50 – 60 Hz
Single Phase Supply

Power Requirements (9700E):

230V AC (+/- 10%)
161 Watts
50 – 60 Hz
Single Phase Supply

Noise Emissions:

76dB

Dimensions (approx.):

Height: 1070mm
Length: 610mm – 1020mm
Width: 850mm

Weight (approx.):

120kg

DESCRIPTION OF OPERATION

The web control unit is configured into a system as shown in Figs 1.2 and 1.3.

A single stream of web is fed in from a printer, unwinder or fan-folded pack, over the infeed plate from where it is fed forward by two tractor units to be cut by a centre cutter.

The web passes between the cutter blades and is fed out from the unit. Dependent upon the setting of the overlap paper guides, the resultant streams are overlapped, either left-over-right or right-over-left. The outfeeding web is then fed to the input of a guillotine.

The resultant loop which forms between the three machines is monitored by four paper loop sensors - one detecting the presence of the infeed loop to the web control unit, one controlling the output of the printer or additional device, and two sensing the paper loop between the web control unit and the guillotine.

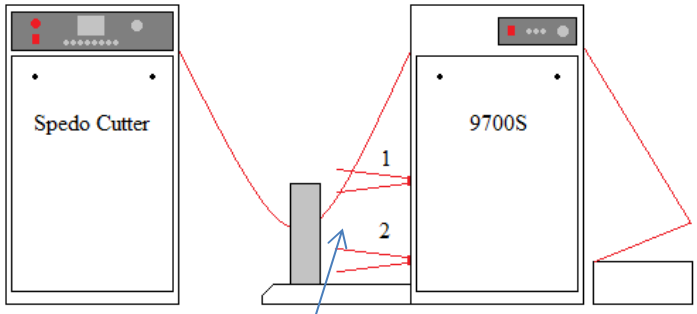
If infeed loop to the web control unit becomes too tight (the loop rises above the sensing area of the sensor) the web control unit and guillotine stop.

If the outfeed loop from the web control unit becomes too tight, the web control unit starts (provided paper is available at its infeed). If the outfeed from the printer is faster than the speed (infeed) of the web control unit, the loop slackens (drops) and after a short delay, the printer pauses. Once the loop begins to tighten (rises), the printer starts again.

The speed of throughput on the web control unit can be varied by the operator from 0 to 120 Metres per minute (0 to 400 feet per minute) approximately. A paper runout switch fitted in the path of the first web infeed detects when the last form has run through the unit and then stops the system.

The unit is operated from a control panel, running down the left side, the controls of which allow the unit to be switched on, set up and run.

There are two safety devices fitted. If the transparent cover is lifted while the unit is running, it stops immediately. An emergency stop button is fitted at the outfeed end, which if pressed, also stops the unit immediately.



CUTTER SHOULD RUN FASTER THAN THE MERGER UNIT

WEB SENSING AREA

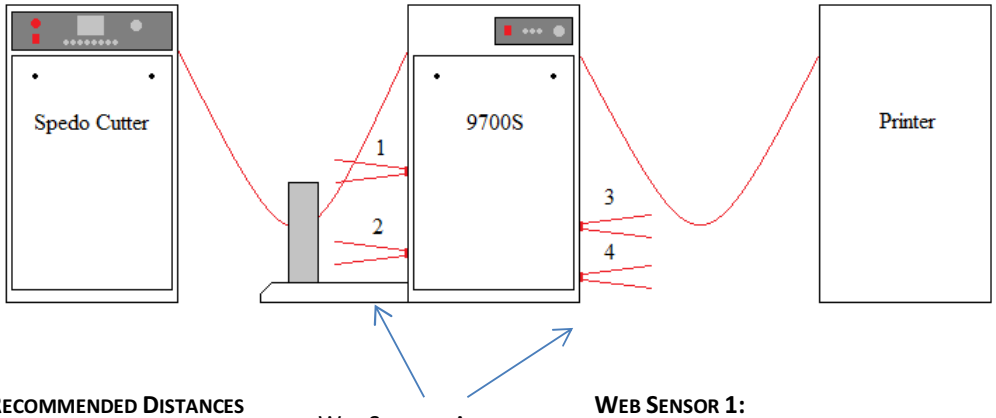
WEB SENSOR 1:
IF WEB RISES ABOVE SENSING AREA CUTTER PAUSES.
WEB SENSOR 2:
IF WEB FALLS BELOW SENSING AREA MERGER PAUSES.

RECOMMENDED DISTANCES
SLITTER MERGER TO CUTTER:
MINIMUM = 0.5 METRE
MAXIMUM = 1 METRE

9700S SLITTER MERGER – BASIC CONFIGURATION

CUTTER SHOULD RUN FASTER THAN THE MERGER UNIT

SLITTER MERGER SHOULD RUN FASTER THAN THE PRINTER



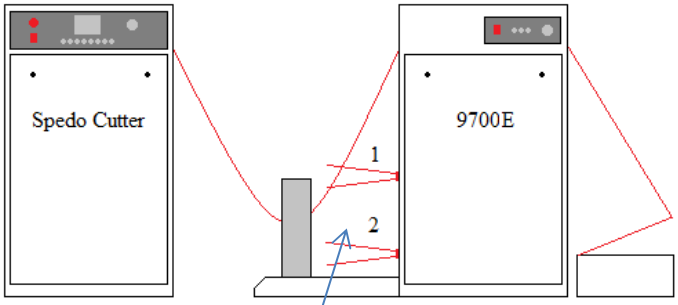
RECOMMENDED DISTANCES
SLITTER MERGER TO CUTTER:
MINIMUM = 0.5 METRE
MAXIMUM = 1 METRE
SLITTER MERGER TO PRINTER:
MINIMUM = 1 METRE
MAXIMUM = 2 METRES

WEB SENSING AREAS

WEB SENSOR 1:
IF WEB RISES ABOVE SENSING AREA CUTTER PAUSES.
WEB SENSOR 2:
IF WEB FALLS BELOW SENSING AREA MERGER PAUSES.
WEB SENSOR 3:
IF WEB RISES ABOVE SENSING AREA MERGER PAUSES.
WEB SENSOR 4:
IF WEB FALLS BELOW SENSING AREA PRINTER PAUSES.

9700S SLITTER MERGER – PRINTER INTERFACE CONFIGURATION

Fig 1.2 9700S System Configurations.



CUTTER WILL CONTROL THE SPEED OF THE MERGER UNIT AUTOMATICALLY

WEB SENSING AREA

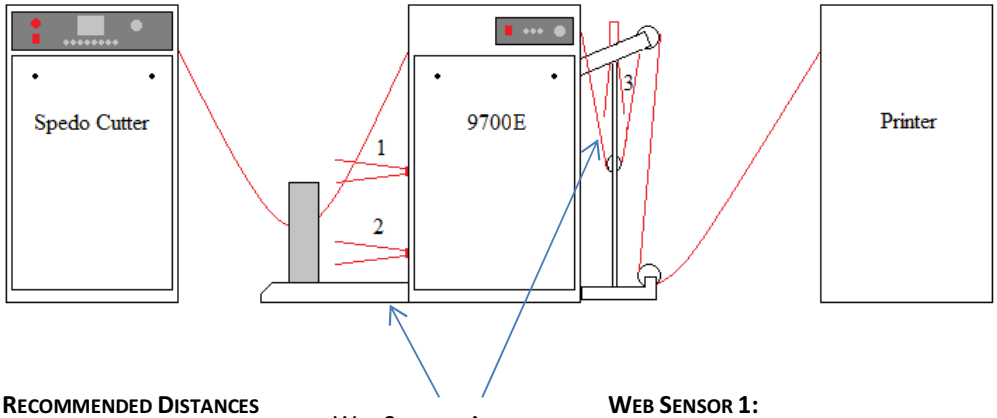
WEB SENSOR 1:
IF WEB RISES ABOVE SENSING AREA MERGER SPEEDS UP.
WEB SENSOR 2:
IF WEB FALLS BELOW SENSING AREA MERGER SLOWS DOWN.

RECOMMENDED DISTANCES
SLITTER MERGER TO CUTTER:
MINIMUM = 0.5 METRE
MAXIMUM = 1 METRE

9700E SLITTER MERGER – BASIC CONFIGURATION

CUTTER SHOULD RUN FASTER THAN THE MERGER.

SLITTER MERGER WILL MATCH THE SPEED OF THE PRINTER



RECOMMENDED DISTANCES
SLITTER MERGER TO CUTTER:
MINIMUM = 0.5 METRE
MAXIMUM = 1 METRE
SLITTER MERGER TO PRINTER:
MINIMUM = 1 METRE
MAXIMUM = 2 METRES

WEB SENSING AREAS

WEB SENSOR 1:
IF WEB RISES ABOVE SENSING AREA CUTTER PAUSES.
WEB SENSOR 2:
IF WEB FALLS BELOW SENSING AREA MERGER PAUSES.
WEB SENSOR 3:
ULTRASONIC SENSOR MONITORS THE DANCER BAR, CONTROLLING BOTH THE MERGER AND THE PRINTER TO ENSURE SMOOTH RUNNING. (SEE PAGE 19)

9700S SLITTER MERGER – PRINTER INTERFACE CONFIGURATION

Fig 1.3 9700E System Configurations.

INSTALLATION & OPERATION SECTION 2

INTRODUCTION

- The installation procedures given in this section should only be carried out by a competent trained service technician.
- Once the web control unit has been declared ready to operate, the operating personnel should be made familiar with its safe operation.

UNPACK

- Unpack the equipment and examine it thoroughly to ascertain whether any damage has occurred in transit.
- Report immediately any such damage to the agent or manufacturer. Retain the packing should further transportation be necessary.

ACCESSORIES

- **The following items are supplied as standard:**

- Mains Cable to Guillotine.
- Loop Control Cable to Guillotine.
- Printer Interface (if ordered)
- Instruction Manual

SITE CONSIDERATIONS

- Configure the system as shown in Fig 1.2 or 1.3 depending on model.
- For optimum use of the unit, the distance between the web control unit and guillotine can be between 0.5 metre minimum to any desired maximum. The distance from the web control unit to the printer can be up to 2 metres maximum. If heavy weight paper is to be processed, the maximum possible distance should be allowed.
- Consideration must also be given to the layout and positioning of work tables and cupboards surrounding working area, at the same time leaving enough space around the system for the operator to have access to all operational requirements.
- All units in the system should be set square in relation to each other.
- Refer to the relevant instruction manual of any other unit in the system, before making up the combined system.

INSTALLATION

CONNECTING THE MAINS (POWER) CABLE

- Remove the control panel doors on both the Cutter and the Merger Units. Insert the mains (power) cable plug into the mains input socket(**X1**) located on the left hand side of the power control box and then the other end into the Cutters power output socket (**X6-X7**) on the right hand side of the power control box.
- If an alternative plug is required for the guillotine, remove the plug from the cable and re-connect it to a suitable plug. The colour codes are as follows:

L	(live)	= BROWN wire
N	(neutral)	= BLUE wire
E	(earth / ground)	= GREEN/YELLOW wire.

CONNECTING THE CUTTER INTERFACE CABLES

- 9700S and 9700E Versions – Connect the Loop Control Cable to the Merger Unit power control box **X2** and to the Cutter power control box **X4**.

- 9700E Version only – Connect the ENET Communication Cable to the Merger Unit power control box **X3** and to the Cutter control panel **ENET** plug.

CONNECTING THE PRINTER INTERFACE CABLES (IF REQUIRED)

- 9700S and 9700E Versions – Select the correct interface cable and connect to the Merger Unit power control box **X4**. Feed the cable through the Merger Unit and exit via the rear cable outlet.

SELECT OPERATING MODE (9700E ONLY)

- Using the control panel DIP switched select the operating mode required. (See Page 18)

INSTALLATION CHECK – 9700S

- **WARNING:** Never operate the unit when wearing items of loose clothing or loose decorative jewellery, as they could become entrapped in the machinery and cause injury.

- Refer to Figs 2.6 thru 2.9 to familiarize yourself with the sequence of operation, controls and paper deck adjustment requirements before attempting to load and operate the unit.

- Switch ON the Slitter Merger Unit. Check that the MAINS ON/OFF indicator illuminates.

- If the AUTO button is illuminated press once to extinguish.

- Press the START button and ensure the STOP lamp is extinguished. Press and release the START button several times and check that on each press the tractor unit drive runs.

- With the Paper Runout Switch covered, press the AUTO button. Check that it illuminates. Press the START button and check that the STOP lamp is extinguished. Check that the tractor unit drive runs.

- Check manually by covering each sensor with paper that it is detecting the presence of its loop. Press the STOP button to cancel.

- Follow the sequence given in Fig 2.6 and check that the web is being processed as required.

- With the unit running, hit the emergency STOP button and check that the unit stops. Twist the button to release it.

- With the printer interface option fitted, connect the printer interface cable to the printer and the loop control cable to the cutter. Manually check that the lower infeed sensor switches off the printer.

- Operate the system and check that it functions satisfactorily. Before handing over, ensure that the operating personnel are familiar with all operating procedures and are aware of any safety hazards involved.

INSTALLATION CHECK – 9700E

- **WARNING:** Never operate the unit when wearing items of loose clothing or loose decorative jewellery, as they could become entrapped in the machinery and cause injury.

- Refer to Figs 2.6 thru 2.9 to familiarize yourself with the sequence of operation, controls and paper deck adjustment requirements before attempting to load and operate the unit.

- Installation checks must be made using the STANDALONE operating mode. (See pages 18-19)

- Switch ON the Slitter Merger Unit. Check that the MAINS ON/OFF indicator illuminates.

- If the AUTO button is illuminated press once to extinguish.

- Press the START button and ensure the STOP lamp is extinguished. Press and release the START button several times and check that on each press the tractor unit drive runs.

- With the Paper Runout Switch covered, press the AUTO button. Check that it illuminates. Press the START button and check that the STOP lamp is extinguished. Check that the tractor unit drive runs.

- Check manually by covering each sensor with paper that it is detecting the presence of its loop. Press the STOP button to cancel.

- Follow the sequence given in Fig 2.6 and check that the web is being processed as required.

- With the unit running, hit the emergency STOP button and check that the unit stops. Twist the button to release it.

- With the printer interface option fitted, select PRINTER INTERFACE operating mode (See pages 18-19) connect the printer interface cable to the printer and the loop control cable to the cutter. Manually check that the lower infeed sensor switches off the printer.

- Operate the system and check that it functions satisfactorily. Before handing over, ensure that the operating personnel are familiar with all operating procedures and are aware of any safety hazards involved.

OPERATING PROCEDURES

SUMMARY OF CONTROLS

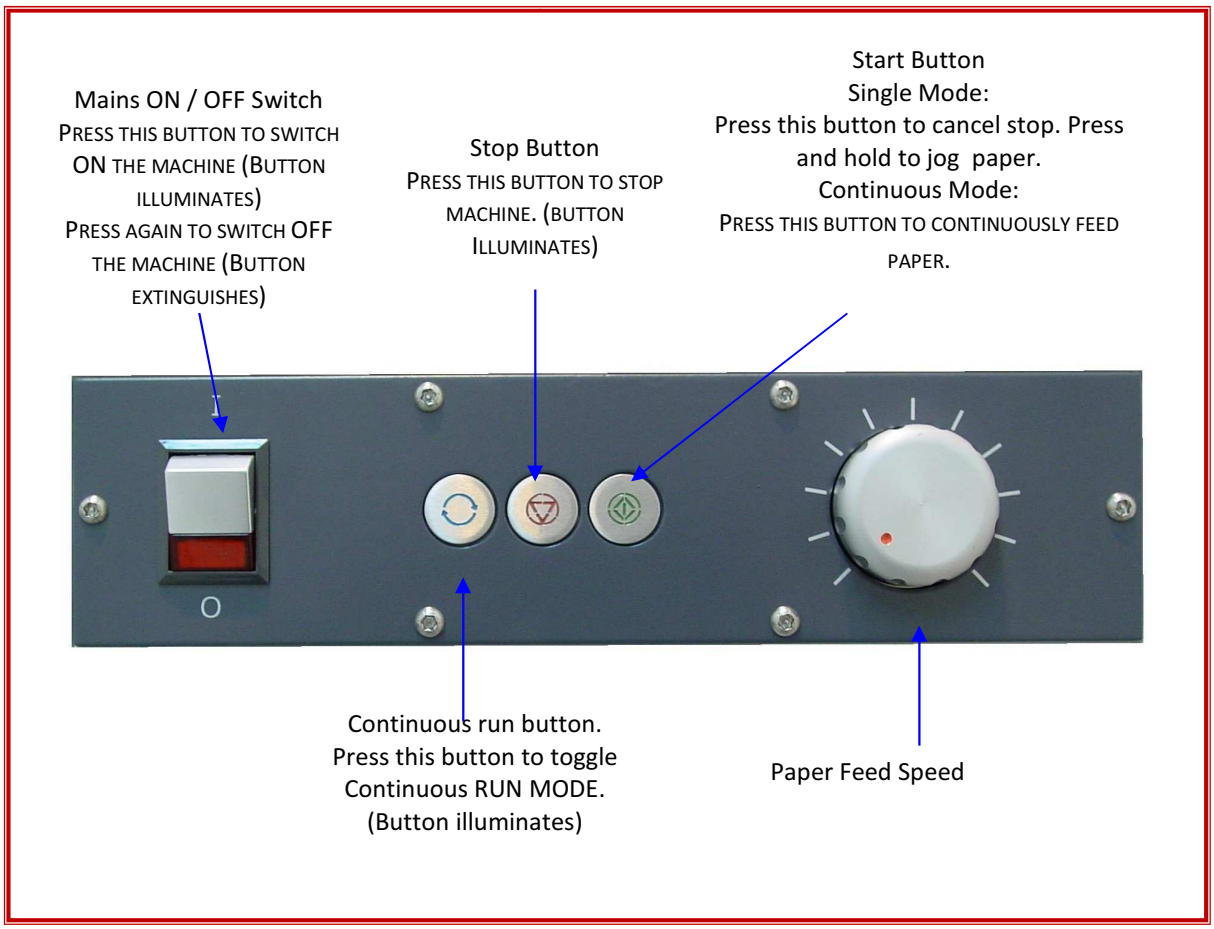


Fig 2.0 Summary of Controls

OPERATOR BUTTON CONDITIONS:

STOP and START lamps illuminated – Machine stopped in Set-up Mode.

STOP, START and AUTO lamps illuminated – Machine stopped in Auto Mode.

START lamp illuminated – Machine ready in Set-up Mode.

START and AUTO lamps illuminated – Machine Running in Auto Mode.

AUTO lamp illuminated – Machine paused in Auto Mode.

START lamp flashing – Machine initialising.

STOP and START lamps flashing – Safety Cover Open.

STOP, START and AUTO lamps flashing – Machine Error

OPERATOR BUTTON INDICATORS

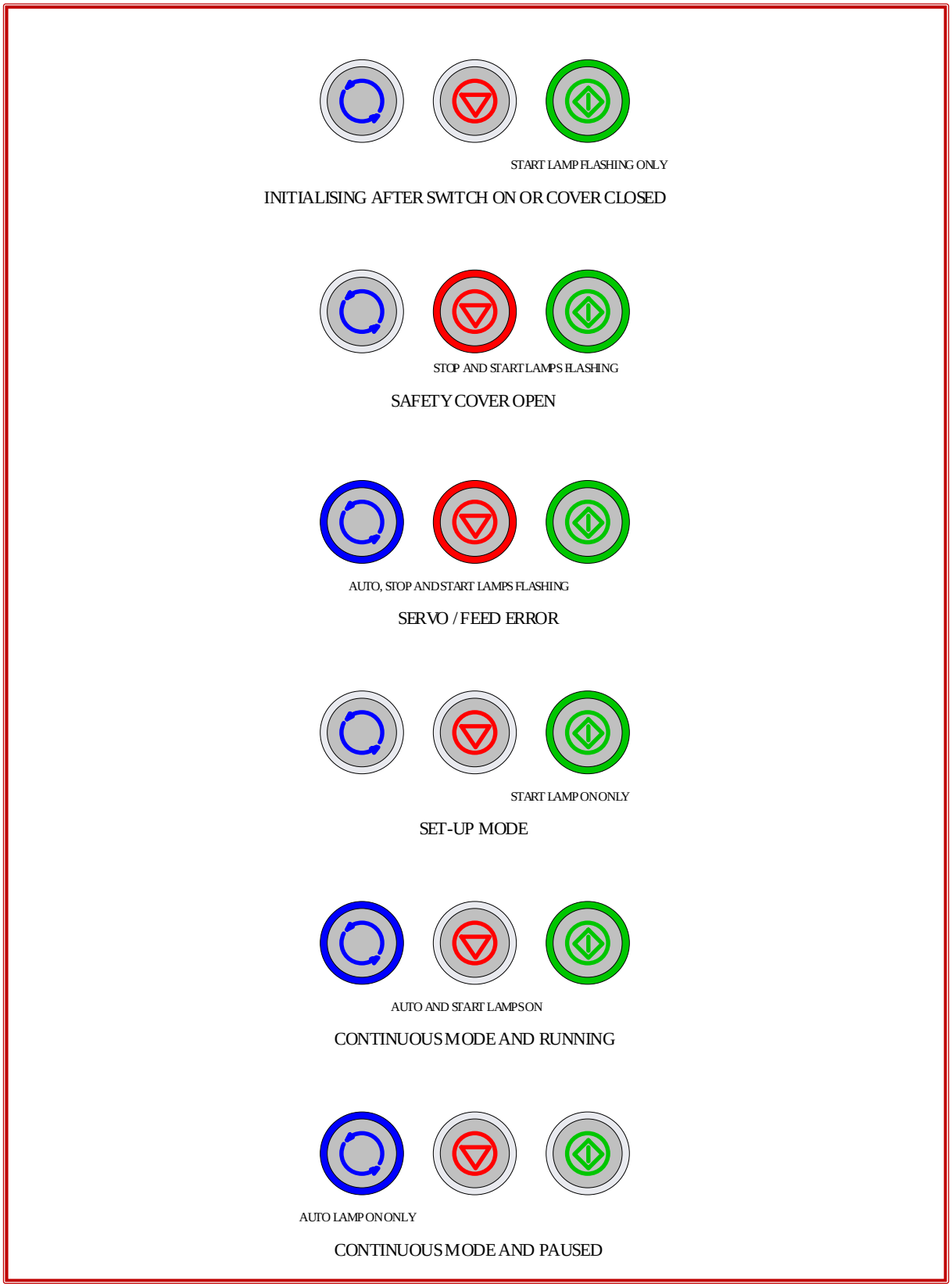


Fig 2.1 Operator Button Indicators Explained.

CONTROL MODE CONFIGURATION – 9700E ONLY

DIP SWITCH CONFIGURATION:

It is possible to adjust the operation of the Slitter Merger using the DIP switches provided on the logic control panel. Control Modes, Tractor Speeds, Printer Stop and Printer Run signals can all be changed to suit the specifications of the input device.

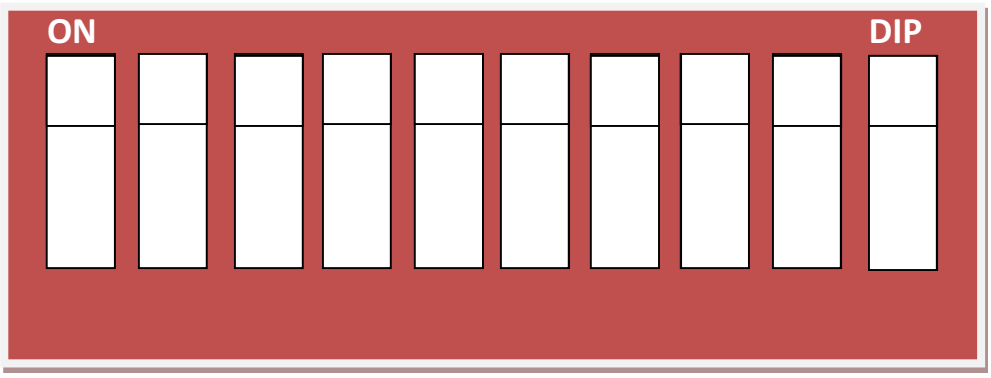


Fig 2.2 DIP Switches in ON position. (ON=1 and OFF=0)

PRINTER START POSITION

The point at which printer is allowed to start running is dependent on the input start position as read by the dancer bar ultrasonic sensor. You can adjust this start position by setting switches 1 and 2 using the table below.

1	2	Input Start Position
0	0	1
1	0	2
0	1	3
1	1	4

PRINTER STOP POSITION

The point at which the printer is signalled to stop is dependent on the input stop position as read by the dancer bar ultrasonic sensor. You can adjust this stop position by setting switches 3 and 4 using the table below.

3	4	Input Stop Position
0	0	1
1	0	2
0	1	3
1	1	4

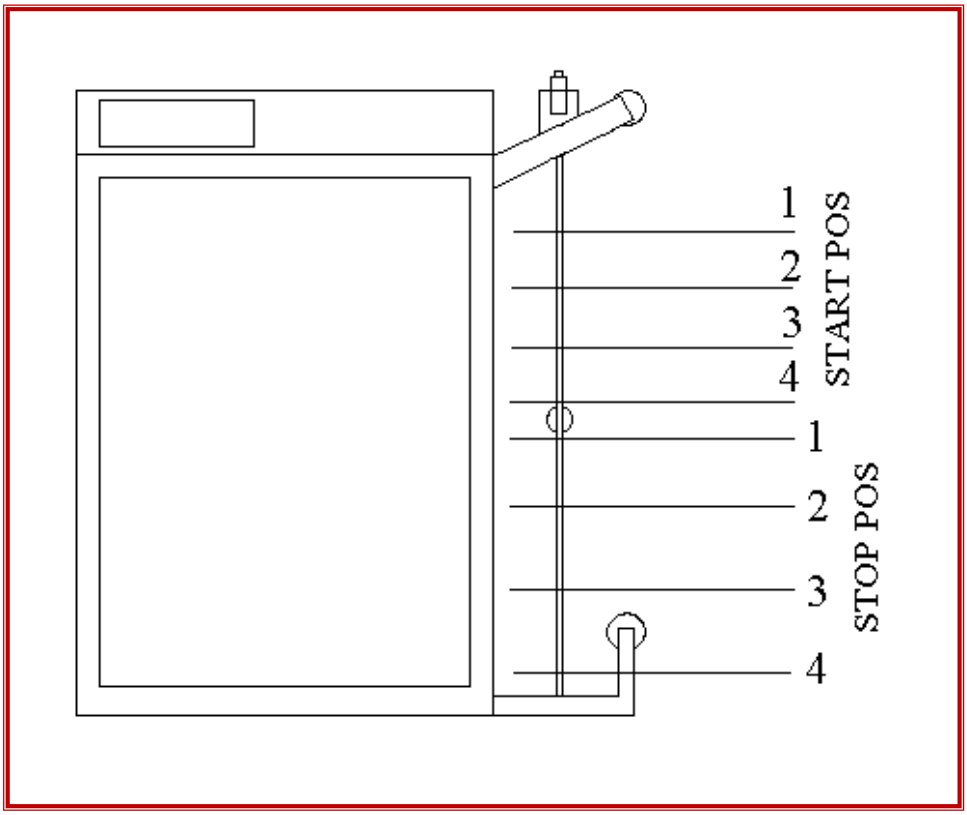


Fig 2.3 Showing approximate positions.

AVERAGE SPEED ADJUSTMENT

The average speed of the Slitter Merger can be adjusted to match the speed of the input device by setting switches 5, 6 and 7 using the table below. Note: This is the speed achieved by the Slitter Merger when the dancer bar is in its middle position.

5	6	7	Input Speed
0	0	0	30 M/Min
1	0	0	40 M/Min
0	1	0	50 M/Min
1	1	0	60 M/Min
0	0	1	70 M/Min
1	0	1	80 M/Min
0	1	1	90 M/Min
1	1	1	100 M/Min

CONTROL MODE SETUP

The control mode can be changed depending on the type of input device and cutter version.
You can adjust the control mode by setting switches 8 and 9 using the table below.

8	9	Control Mode
1	1	Cutter Following Mode
0	1	Standalone Mode
1	0	Printer Interface Mode

Cutter Following Mode:
Used when connected to a Spedo 2400 Forms Cutter (software version 18 and above), this mode allows the cutter to control the speed on the Slitter Merger directly.
NOTE: The Spedo 2400 Forms Cutter must be enabled for use with a 9300/9700 in the USER MENU.

Standalone Mode:
Used when connected to a Spedo Forms Cutter which has not been enabled for use with ENET communications. The Speed on the Spedo 9700 Slitter Merger must be set by the operator.
NOTE: The ENET cable must be disconnected.

Printer Interface Mode:
Used when the printer interface module is fitted to the Infeed of the Spedo 9700 Slitter Merger. The speed of the Spedo 9700 Slitter Merger is controlled by the height of the dancer bar assembly.
NOTE: The ENET cable must be disconnected and the Spedo 2400 Forms Cutter must not be enabled for use with a 9300/9700 in the USER MENU.

PAPER RUN OUT SWITCH OVERRIDE

The Paper Run Out Switch can also be toggled on and off if needed by selecting switch 10.

10	Paper Run Out Switch Override

IDENTIFICATION OF OPERATIONAL ASSEMBLIES

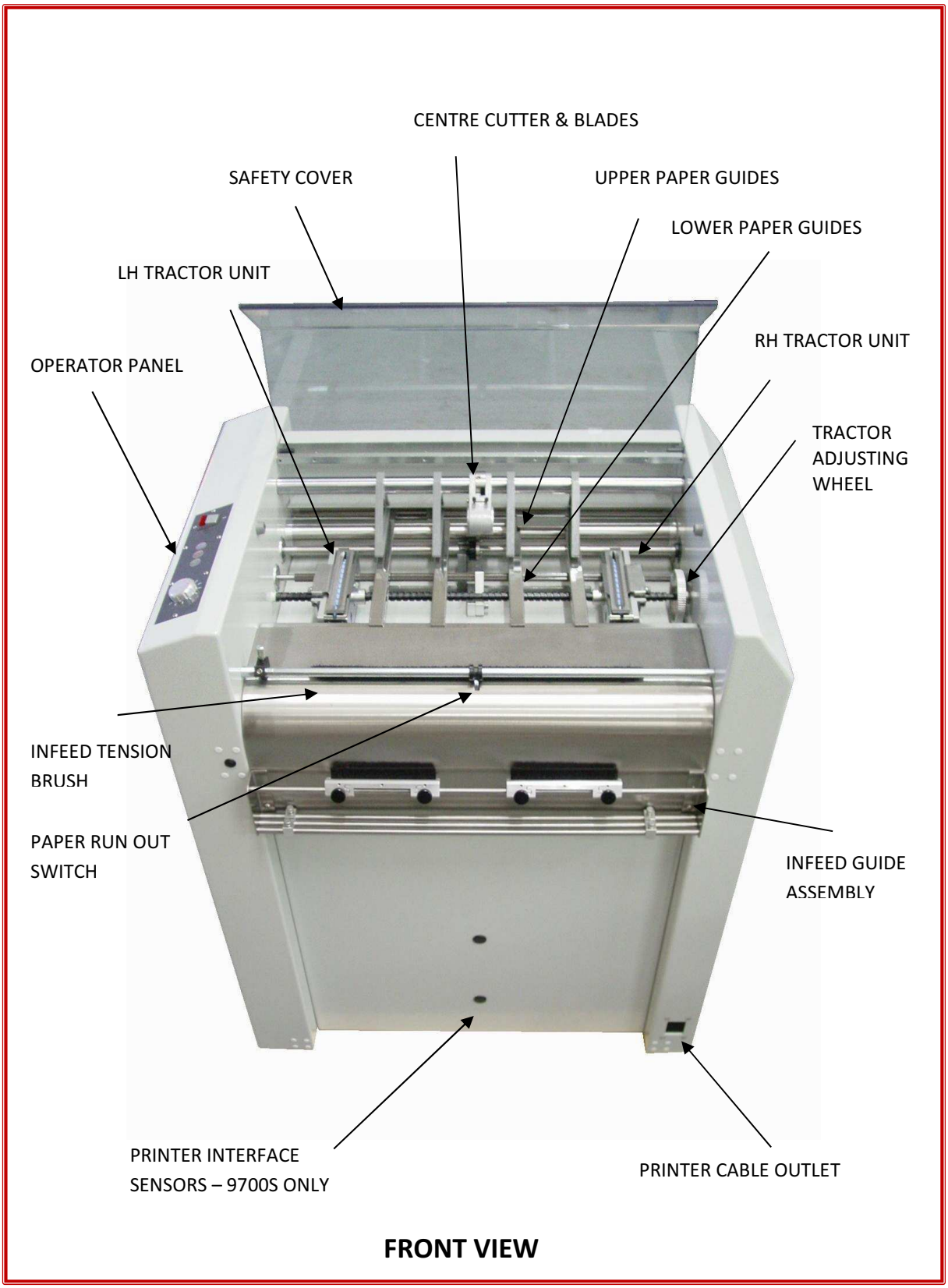


Fig 2.4 Identification of Operational Assemblies

IDENTIFICATION OF OUTFEED ASSEMBLIES

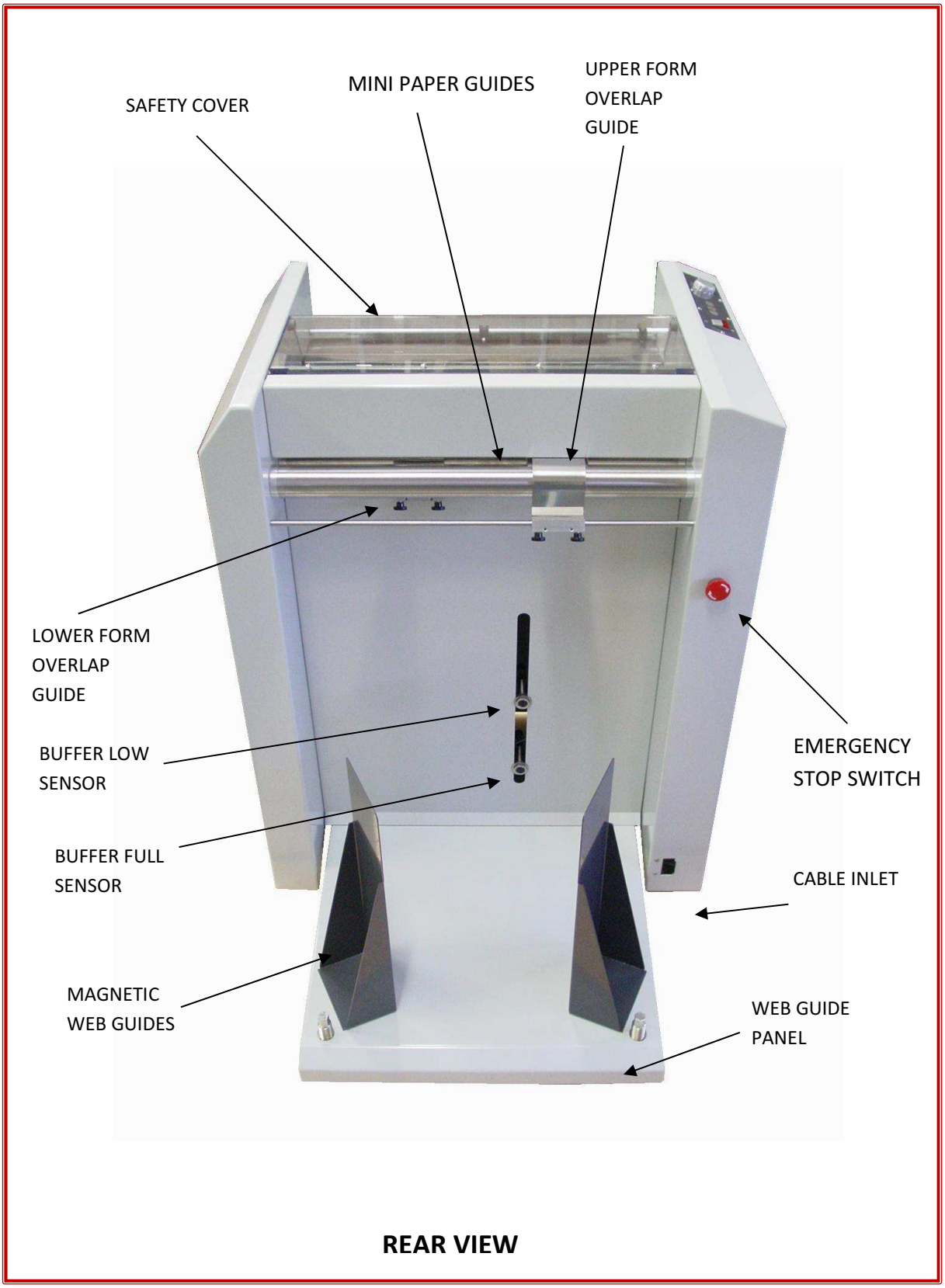


Fig 2.5 Identification of Outfeed Assemblies

LOADING THE WEB (NO PRINTER INTERFACE)

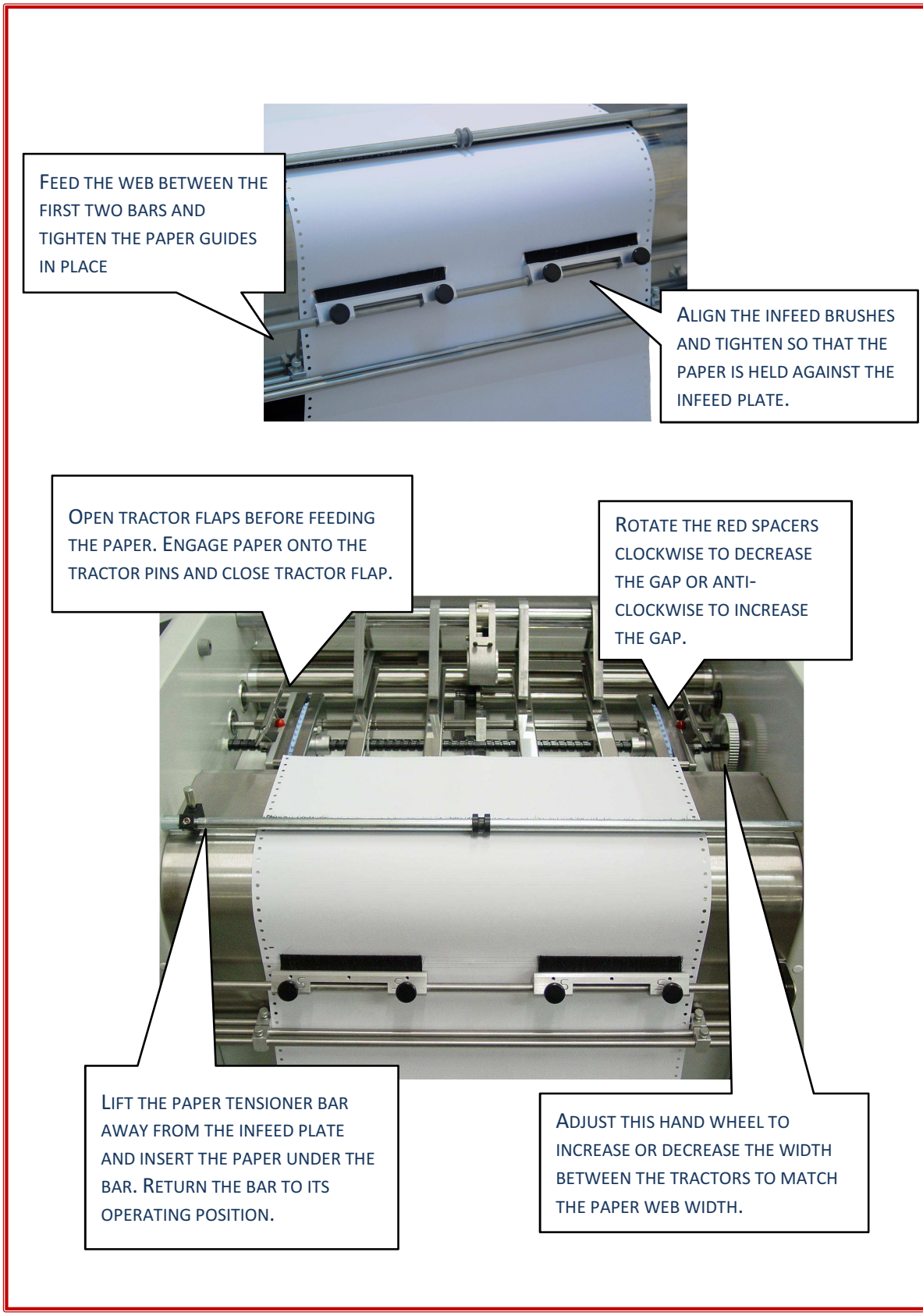
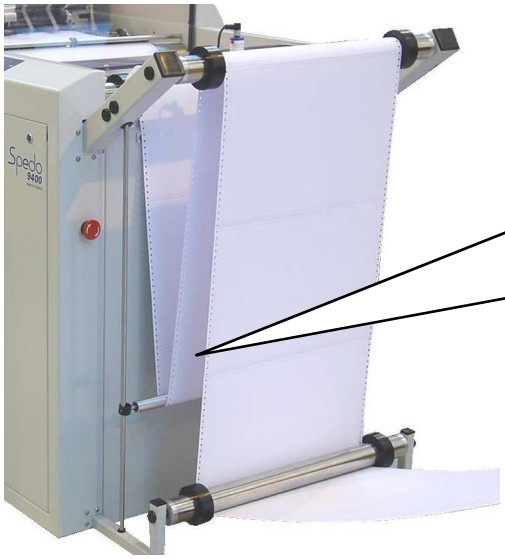


Fig 2.6 Loading the Web - No Printer Interface

LOADING THE WEB – 9700E PRINTER INTERFACE

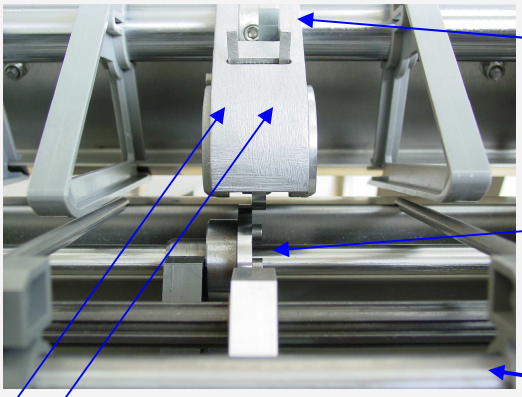


LOAD THE WEB THROUGH THE PRINTER INTERFACE MODULE AS SHOWN.

ONCE PAPER IS LOADED IN THE PRINTER INTERFACE MODULE CONTINUE TO LOAD THE WEB INTO THE SLITTER MERGER AS PER FIG 2.6.

Fig 2.7 Loading the Web - 9700E w/Printer Interface

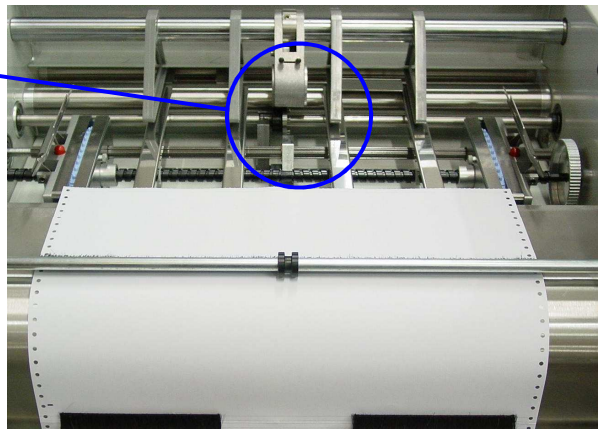
SETTING THE CENTRE CUTTER



RAISE THE CENTRE CUTTER BLOCK

TO RELEASE THE CENTRE CUTTER AND SWING IT UPWARDS, DEPRESS THIS LEVER DOWNWARDS.

THE CUTTER BLADES CAN BE ENGAGED ON EITHER SIDE.



ENGAGE/DISENGAGE THE CENTRE CUTTER BLADES.

LEFT-SIDE CUT

DEPRESS THIS LEVER TO THE LEFT TO ENGAGE THE CUTTER BLADES.

RIGHT-SIDE CUT

DEPRESS THIS LEVER TO THE LEFT TO ENGAGE THE CUTTER BLADES.

Fig 2.8 Setting the Centre Cutter

CHANGING THE MERGE CONFIGURATION

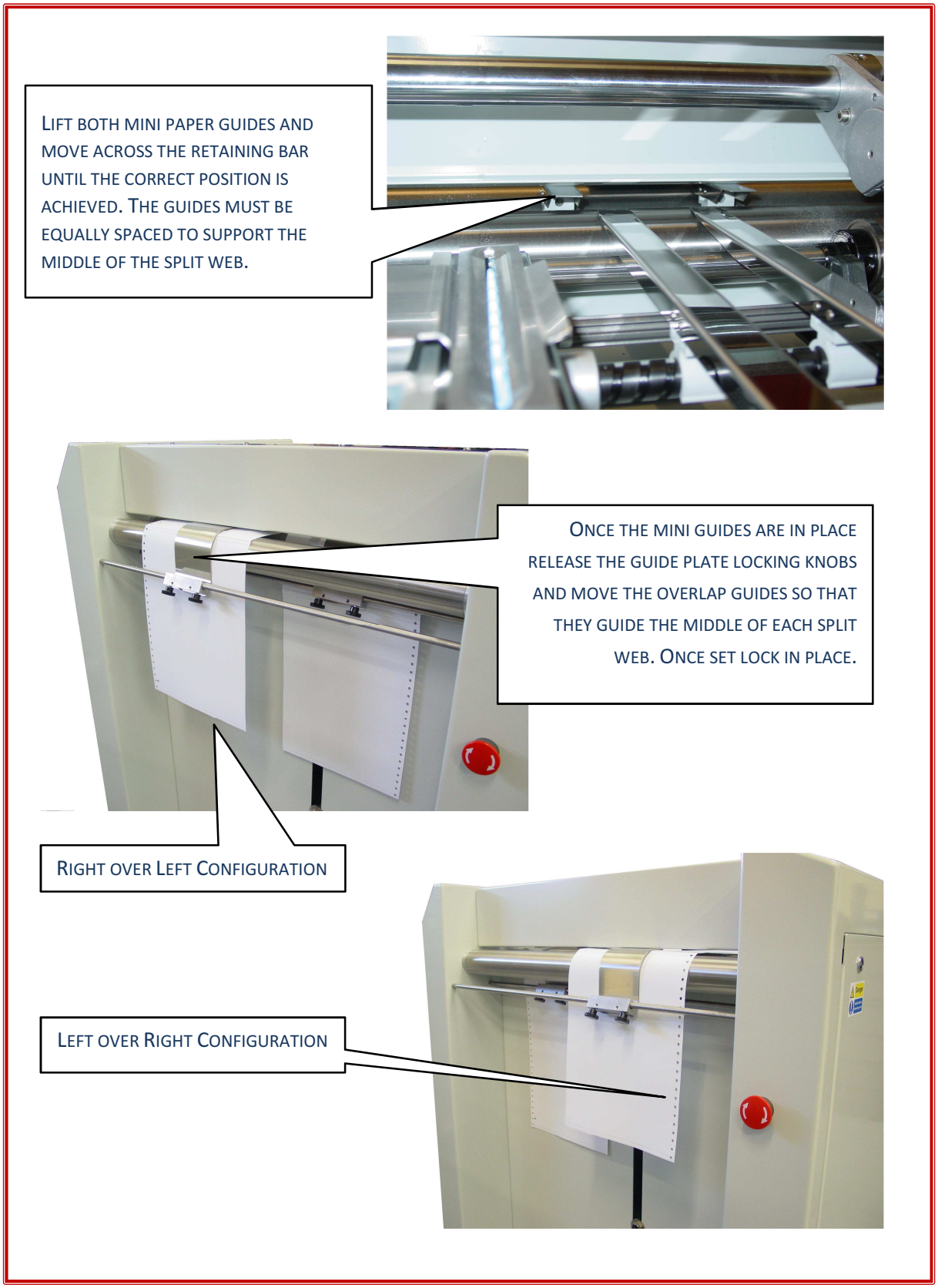


Fig 2.9 Changing the Merge Configuration

OPERATIONAL MAINTENANCE SECTION 3

WARNINGS

ELECTRICAL

Before starting any preventive maintenance, ensure that the web control unit has been disconnected from the mains electrical supply.

CLOTHING & JEWELLERY

Never operate the guillotine when wearing items of loose clothing or other decorative jewellery, such as necklaces or bracelets as they could become entrapped in the machinery and cause injury.

CUTTING BLADES

The angular blades on the centre cutter are extremely sharp and care should be taken to protect fingers when the protective cover has been opened.

The manufacturer is not liable for damage caused by non-observance of the procedures given in this manual.

If any malfunction occurs, contact the Customer Services Department of Spedo or its agent for assistance.

DO NOT ATTEMPT to correct any mechanical malfunction that occurs unless qualified to do so.

TASK INTERVALS

Recommended Service Schedule

WEEKLY OPERATORS TASKS

- Clean away paper dust adhering to any surface.
- Lubricate the centre cutter bridge.

3 TO 6 MONTH TASKS

- Check the sharpness of the centre cutter blades. Renew if necessary (Fig 3.2).

ANNUAL TASKS

- Renew the tractor belts, (see Fig 3.1).
- Renew the main drive belt.

CLEANING

- Remove any paper dust or other debris from the inside of the paper transport deck, using an air line or vacuum cleaner. This should be checked on a regular basis and performed as required.

- Open the tractor units and remove any paper dust.
- Clean away any ink residue or other tenaciously adhering debris from bare lubricated parts with a clean cloth.

- Clean the centre cutter blades using a soft-hair hand brush.

- Never use a metal instrument to remove paper debris adhering to the blade surfaces.

- Clean the protective cover using a foam cleaner.

LUBRICATION

- Lightly oil the tractor unit drive bushes. Loosen their clamps and slide the units long the shaft to spread the oil.

- Lightly oil the centre cutter bush which runs in the centre bridge.

REMOVAL PROCEDURES

SIDE COMPARTMENT DOORS

- The side compartment doors are secured in position by two locks. This prevents the operator from accessing the internal moving parts and electrical assemblies.

- Unlock both locks on the left side door and lift out and upwards from its retainers.

- Release the catches on the right side door and lift out and upwards from its retainers.

RENEWAL PROCEDURES

Tractor Belts (Fig 3.1)

- The tractor belts are located beneath the tractor cover on each tractor assembly. Proceed as follows:
- Remove each tractor cover by removing the associated securing thumbscrew.
- De-tension each belt by loosening the 3mm grub screw, using a 2mm Allen key. Push the two drive pulleys together.
- If the belts are worn, they should be cut out from the tractor assemblies.
- With the belts removed, clean and lubricate each assembly.
- When fitting the new belts, lightly lubricate the belt guides.
- Before fitting the new belt, ensure that its direction of travel matches that of the belt in the other tractor unit.
- Fit each new belt by wrapping it around its drive pulleys, locate the ends and press in the pin.
- Apply tension to each belt and clamp by tightening the grub screw.

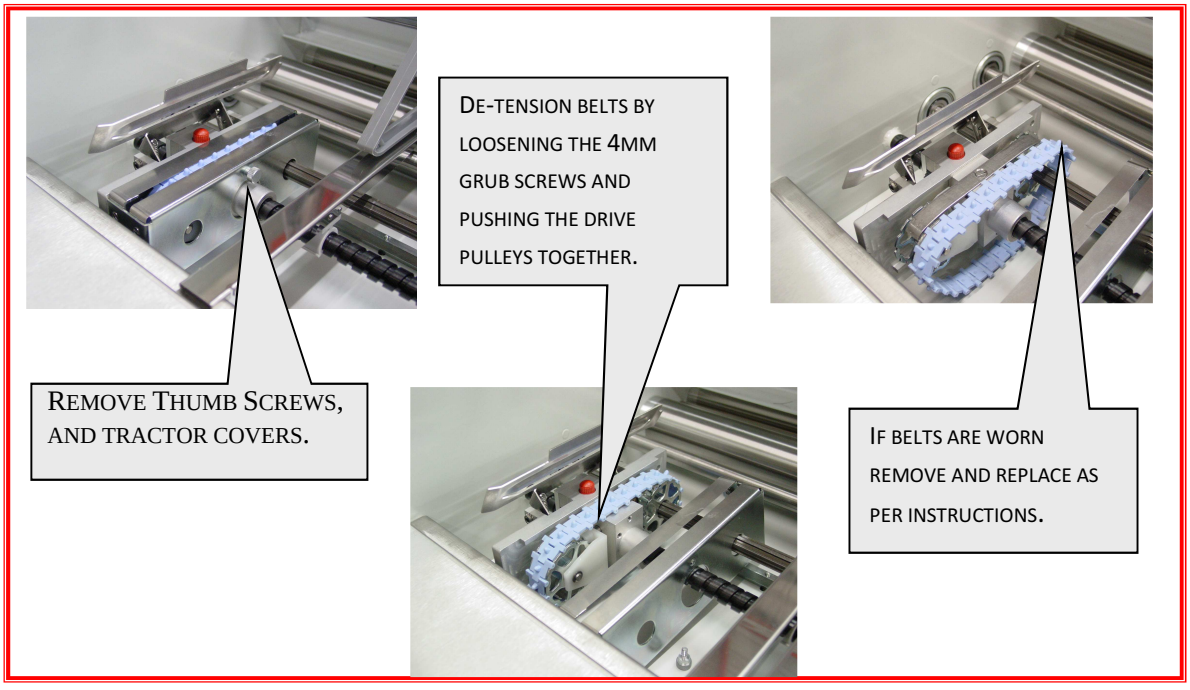


Fig 3.1 Renewal of Tractor Belts

UPPER CENTRE CUTTER BLADE (FIG 3.2)

- Remove x3off M4 countersunk screws. Remove the plate.
- Remove the blade hub. Remove x3off M4 screws and fit the new blade. Check that the hub spindle is free to move from side to side.
- Clean and lubricate. Re-assemble the parts in the reverse to the procedure given above.

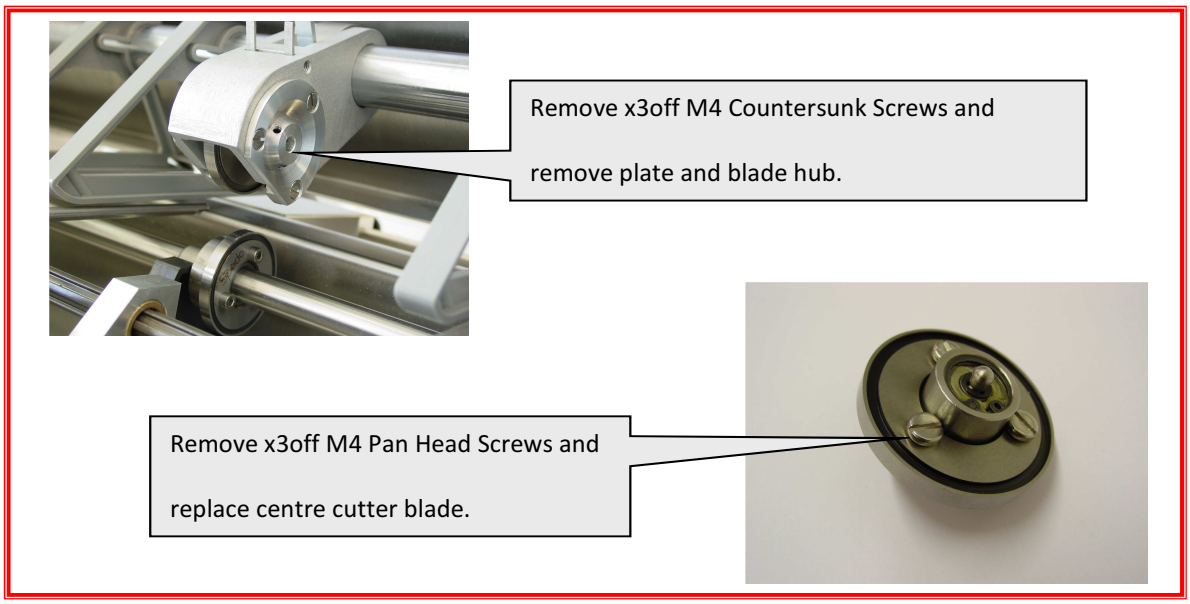


Fig 3.2 Renewal of Upper Centre Cutter Blade

LOWER CENTRE CUTTER BLADE (FIG 3.3)

- Raise upper centre cutter assembly.
- Loosen the lower blade hub grub screw using a 4mm Allen key.
- Remove Main Drive Belt as described in Fig 3.4.
- Loosen the centre cutter shaft raty bearing grub screw using a 2.5mm Allen key.
- Carefully draw the centre cutter shaft from the lower centre cutter hub.
- Remove the x3off M4 Screws and fit the new blade.
- Re-assemble the parts in the reverse to the procedure given above.

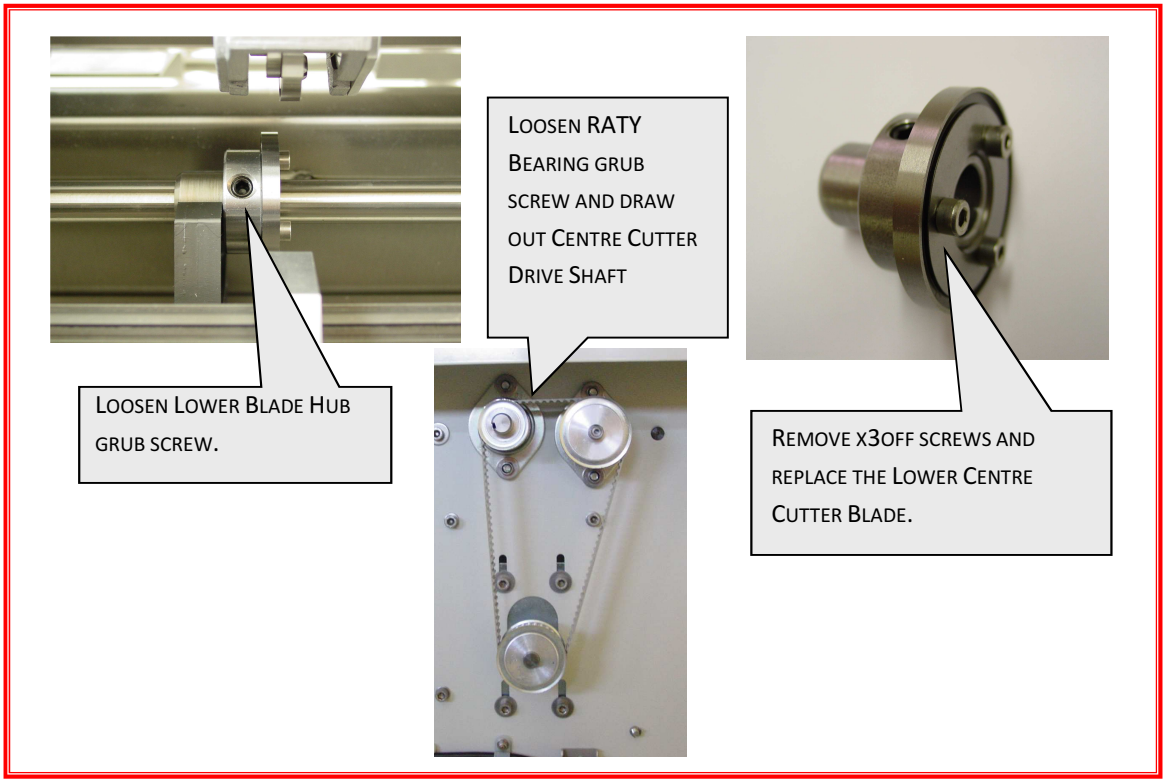


Fig 3.3 Renewal of Lower Centre Cutter Blade

MAIN DRIVE BELT (FIG 3.4)

- Loosen x4off main drive motor mounting screws.
- Push main drive motor upwards to slacken the drive belt.
- Fit new drive belt and tension by moving the main drive motor downwards.
- When correct tension is achieved, tighten all main drive motor screws.

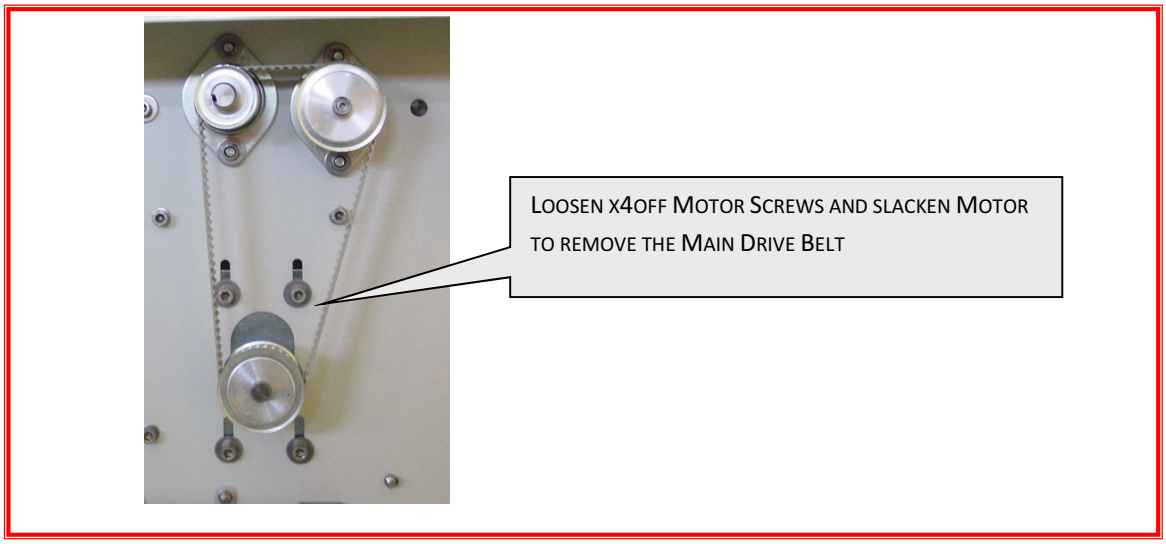


Fig 3.4 Removal of Main Drive Belt

ELECTRICAL SCHEMATICS

9700S ELECTRICAL SCHEMATIC

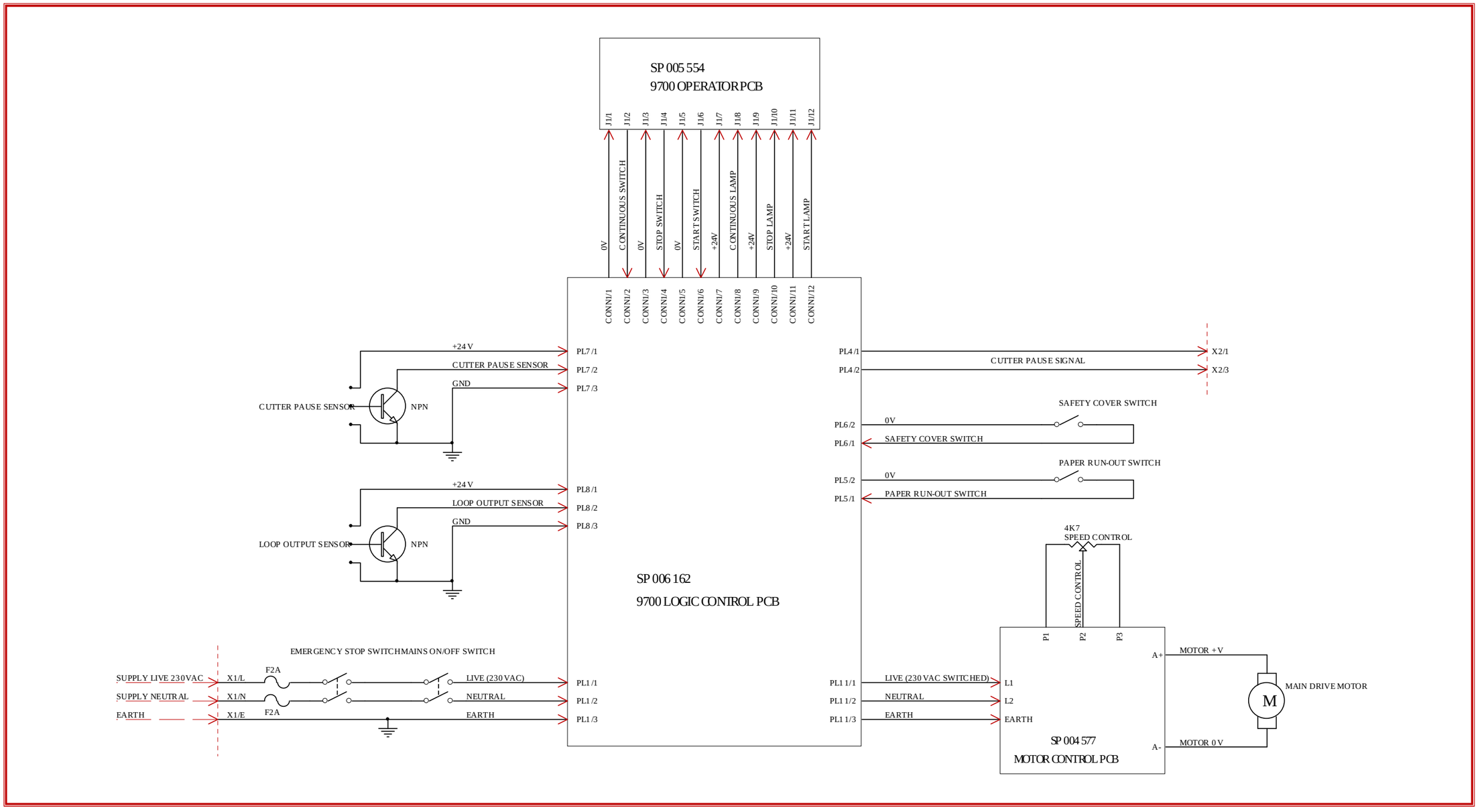


Fig 3.5 9700S Electrical Schematic

9700E ELECTRICAL SCHEMATIC

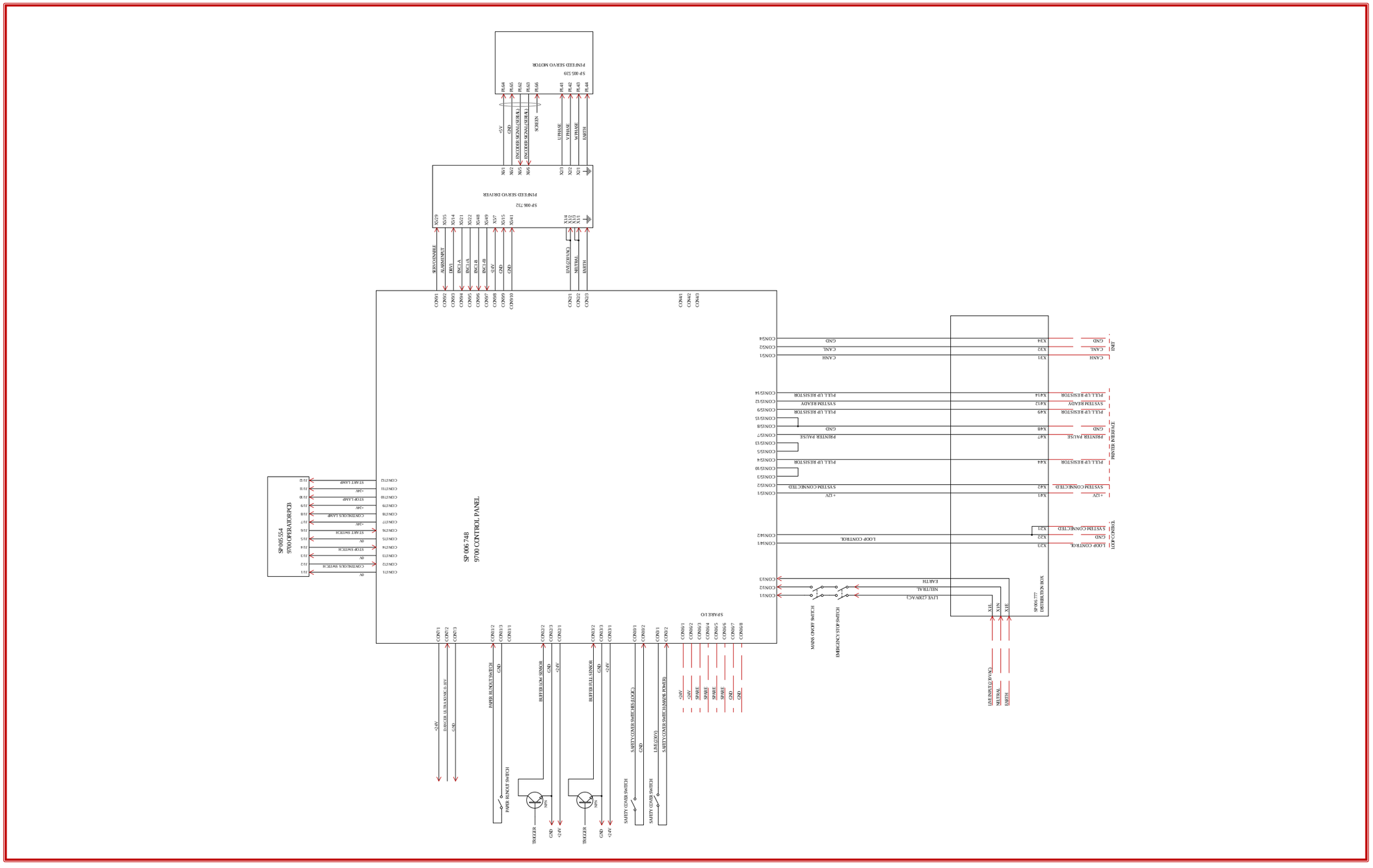


Fig 3.6 9700E Electrical Schematic