

RF Auto

Operating & Maintenance Manual

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1. Introduction

1.1 Background

The machine as supplied consists of an integrated product feeding and transport system, complete with product collection device. A printer can be added according to customer requirements.

1.2 Important notes

- 1.2.1 The purpose of this manual is to provide information only. Every effort has been made to ensure the accuracy of the contents of this manual. However, Rotech Machines Limited can assume no responsibility for any errors, or their consequences contained within.

- 1.2.2 The information contained within this manual shall be considered to be commercially confidential and shall not be released to third parties without the prior written consent of Rotech Machines Limited.

2. Product information

2.1 Name of equipment

Rotech RF-Auto

2.2 Applicable model type

This manual applies to all RF-Auto models.

2.3 Location of machine

Manufactured in the UK by Rotech Machines Limited.

2.4 Machine functions

The function of this machine is to feed products from a feeding device onto a flat conveyor for presentation to a printer or labeller that has the ability to print or label onto the product surface. After this process, the product continues to the end of the conveyor where it is deposited into a catcher-tray.

2.5 Description of products the machine can accommodate

Products are presented to the feeder in their flat form.

The maximum and minimum sizes that can be accommodated are:

Maximum:	400 mm wide	x 300 mm long (subject to product)
Minimum:	80 mm wide	x 30 mm long

Where width is measured across the machine, perpendicular to the direction of travel.

3. Safety information

3.1 Guidelines

- 3.1.1 Read this manual and also familiarise yourself with any associated documents or additional training videos provided
- 3.1.2 To avoid risk of electric shock, always disconnect the machine from the main supply before removing any guards or covers.
- 3.1.3 To avoid risk associated with pneumatic circuits, always disconnect from mains and purge any pneumatic systems before removing any guards or covers.
- 3.1.4 Follow the procedures and specifications outlined in this manual.
- 3.1.5 Notice is hereby given to the customer to ensure that the machine is in conformance with applicable national and local health and safety legislation in the country of use.
- 3.1.6 If in doubt do not take any personal risks.
- 3.1.7 Only trained personnel should be allowed to work with the machine during operation, maintenance, installation, or decommissioning.

3.2 Alarm and warning systems

- 3.2.1 All electrical control boxes are labelled with warning signs.
- 3.2.2 Residual risks are identified in this manual.

3.3 Component safety features

- 3.3.1 Do not operate any machine with fixed guards removed or fastened incorrectly.
- 3.3.2 Do not use the machine with functional and safety sensors and devices maladjusted or removed

3.4 Features for operator safety

- 3.4.1 The machine is guarded and provided with safety features in conformance to current machinery directive requirements.

3. Safety information

3.5 Interlocking

- 3.5.1 Safety interlocks are not fitted. All guards are fixed.

3.6 Personal protective equipment (PPE)

- 3.6.1 PPE is not required to operate this machine.
- 3.6.2 No loose clothing should be worn. Long hair, ties, etc. should be adequately retained.

3.7 Conditions for safe use

- 3.7.1 This machine is designed to be used within a normal light industrial production line type environment. Do not use outside this environment
- 3.7.2 The machine has not been designed with any ingress protection (IP) rating consideration. In the event that the machine has become wet, e.g. a factory sprinkler system, do not attempt to turn on or operate the machine until a suitably competent person has thoroughly inspected the machine.
- 3.7.3 Additional safety measures, beyond those detailed in this manual, are not required for safe operation of the equipment.
- 3.7.4 The customer should ensure that there is no ingress or solid, liquid, or gaseous contaminant that may affect machine safety.
- 3.7.5 The machine is not provided with any integral lighting. It is the responsibility of the customer to ensure adequate local and area lighting is provided, in accordance with statutory instrument building standards (SIBS) codes.

3.8 Operation

The machine has been designed to be easy to operate. Initial training in the loading, operation, and unloading of the machine is required. Training Videos are loaded on a USB Memory Stick provided with the RF-Auto.

3.9 Maintenance

Suitably qualified and trained engineering technicians shall only effect maintenance of the machine.

3.10 Installation and dismantling

Should only be effected by suitably qualified and trained engineering technicians

3. Safety information

3.11 Residual risks

- 3.11.1 The functional design of the machine has not resulted in there being present a residual risk to users of the machine. The residual risks are considered to be low.

- 3.11.2 The loading and unloading of the machine during operation can be considered as a repetitive action. The customer should regularly review any repetitive strain injury (RSI) impact on operators.

4. Transportation

4.1 Equipment handling and transportation

- 4.1.1 No gantry, crane or lifting points are provided.
- 4.1.2 The machine is to be placed securely on a level bench or floor of sufficient strength to support the weight of the machine with no risk of toppling.
If supplied with the optional wheeled stand the machine should be sited on a level floor of sufficient strength to support it.
- 4.1.3 It is important to ensure that the machine is level about both axes.
- 4.1.4 The contact points between any lifting device and the machine should be covered to avoid damage to the surface of the machine.

4.2 The weights of equipment and modules

The weight of the machine complete with printer but without the packaging is estimated to be 50Kg.

The weight of the machine inclusive of any packaging is estimated to be 55Kg

NOTE:

**The RF Auto is considered a moderately heavy load.
Lifting and transporting it requires two people.**

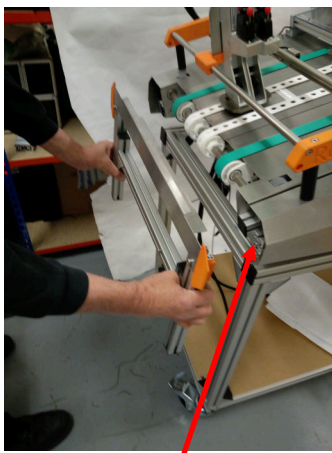
5. Assembly

5.1 Product catcher tray

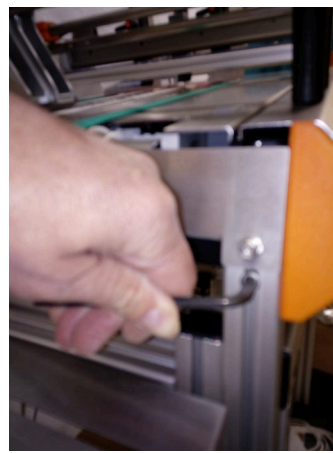
The catcher-tray and mounting brackets may have been removed from the machine for transportation.

Mount the Outfeed Catcher Bracket onto the end of the Chassis profile. 2 x M6 x 30 Cap Head Screw and 5mm Hexagon Wrench.

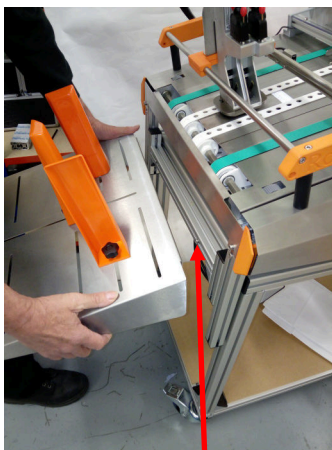
Locate the Outfeed Catcher 'keyhole' slots onto the 2 M6 Button Head Screws on the Mounting Bracket



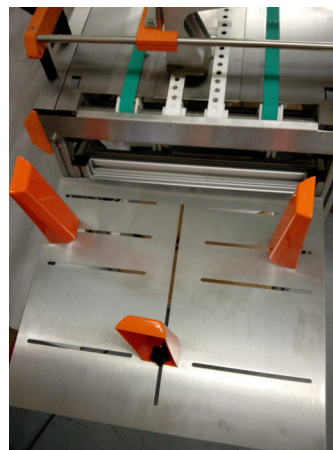
Offer Mounting Bracket
Up to Chassis Profile



Secure in place with 2 x
M6 x 30 Socket Cap Screws



Locate the 'keyhole' slots
in the Outfeed Catcher
onto the 2 M6 Button
Head Screws



Re-assembled Outfeed Catcher

6. Installation

6.1 Installation requirements

- 6.1.1 The installation site should be clean, dry and level, at a suitable position determined by the customer.
- 6.1.2 The installation site should have a single 220v/240v AC supply via a 3-pin socket (unless rated for 110v operation).
- 6.1.3 Before installing and using the machine it is recommended that staff or operators read this manual and view the training videos installed on the USB Memory Stick provided.
- 6.1.4 Installation should be effected within the following hierarchy:
 - National legislation requirements.
 - Corporate regulations: installation safety standards and procedures.
 - The installation description given this manual.
- 6.1.5 No specific materials are required for installation.
- 6.1.6 Tools may be required to change service connections to ensure that they are compatible and correctly fitted.

6.2 Installation procedures

- 6.2.1 Site the machine in a suitable position in relation to the production line.
- 6.2.2 Ensure that the machine is sited on a horizontal surface and cannot slide or roll.
- 6.2.3 Connect the machine to the mains AC supply with the power cord supplied

6.3 Inspection and testing procedures upon installation

- 6.3.1 Check machine supplies have been connected and their function and safety are validated.
- 6.3.2 Ensure that moving parts are free from obstruction, and any packaging has been removed, especially around the printer..
- 6.3.3 Switch on the mains power switch to both the feeder and the printer (when fitted)
- 6.3.5 Pressing the green start button on the control panel at this point will start the machine outfeed conveyor running. Pressing the illuminated blue or yellow buttons will start the in-feed belts running. Pressing the red stop button will stop the machine.

6. Installation

6.4 Commissioning plans and procedures

6.4.1 Once installation has been successfully completed the machine is ready to run.

7. Decommissioning and disposal

7.1 Decommissioning

- 7.1.1 Turn off the machine normally.
Isolate the electrical supply at the mains supply switch located at the rear left of the machine.
- 7.1.2 Maintenance staff should then disconnect the machine from the main services following the customer's code of practice, ensuring that the supply ends of services are rendered safe.
- 7.1.3 Place a secure label on the machine to identify that the machine has been decommissioned.

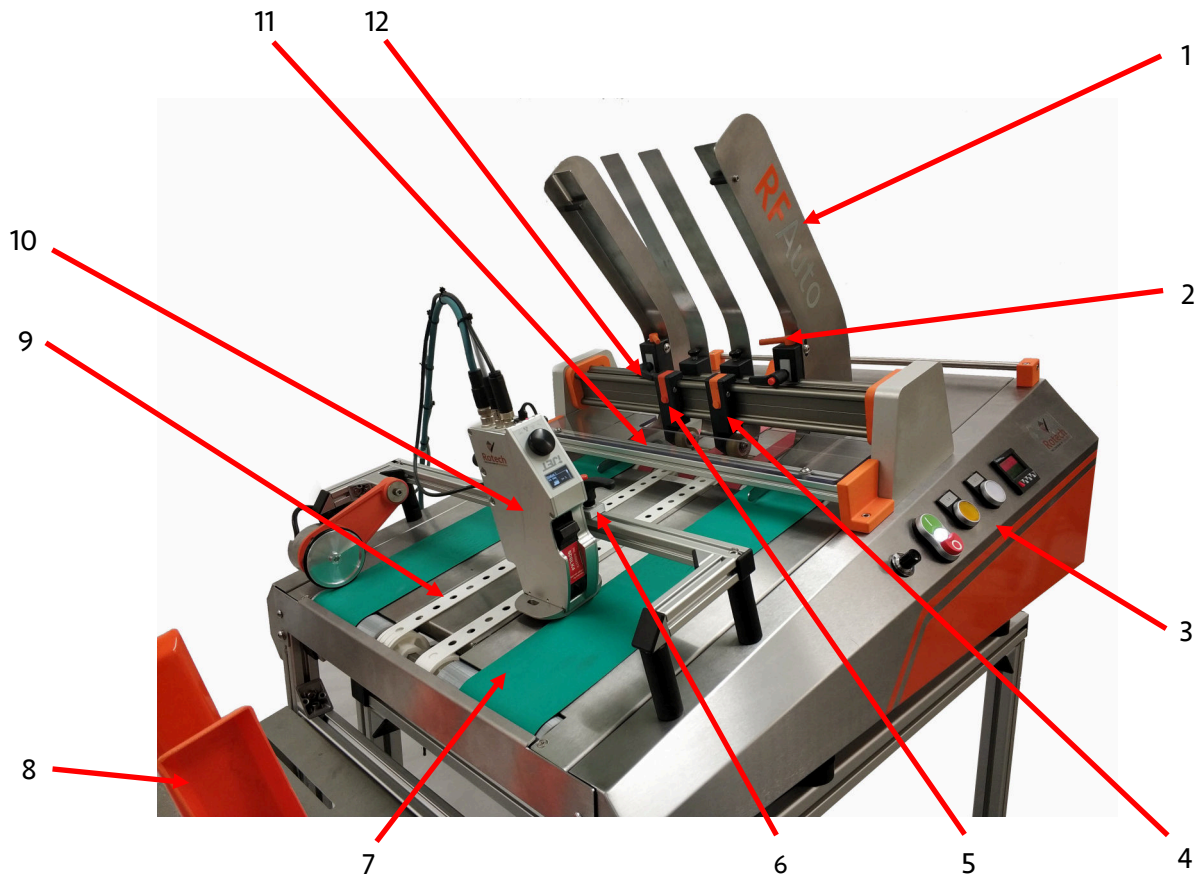
7.2 Disposal

When the machine is no longer required it may be returned to Rotech Machines Limited for disposal. The following conditions apply:

- Laws & codes of practice applicable govern conditions for return and disposal at the time of the first delivery of the machine to the customer.
- Rotech Machines Limited will not be liable for decommissioning, transportation or storage.
- Rotech Machines Limited will only accept for disposal those part of the machine that were supplied.
- Any additions to the machine will not be accepted, including, dust, dirt, residue, spilled or misplaced product, compound, chemical element or production waste.
- Rotech Machines Limited do not accept for disposal any product that has been subjected to radiation or been in contact with known toxic substances or biological material unless decontamination can be verified.

8. Operation

8.1 The Feeder



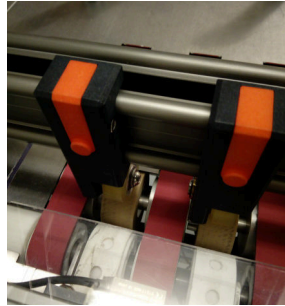
1. Infeed Product Hopper
2. Infeed Hopper Height Adjustment Lever (to clear Infeed Belt)
3. Control Panel (Page 18)
4. Auto Gating Assembly
5. Auto Gating Assembly Locking Lever
6. Print Sensor
7. Outfeed Outer Conveyor Belt
8. Outfeed Catcher Product Guide
9. Outfeed Vacuum Belt
10. Printer
11. Product/ Batch Counter Sensor
12. Hopper Adjustment Locking Lever

8. Operation

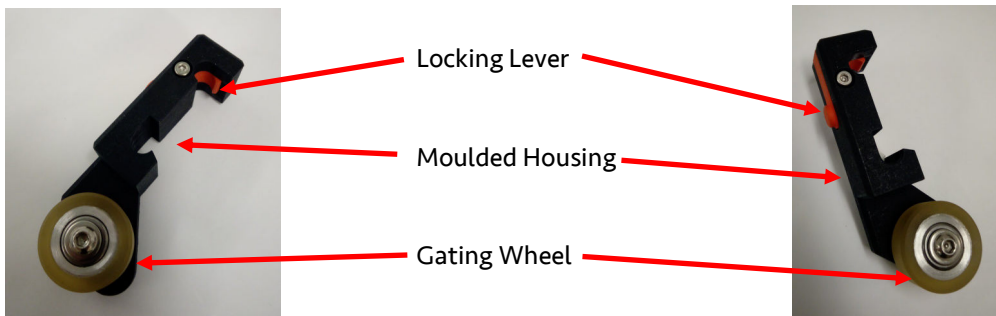
8.2 The Feeder

8.2.1 Auto Gating Assembly

The Auto Gating Assembly is designed to accommodate different thicknesses of product automatically without the operator having to make adjustment between products. The RF Auto is supplied as standard with 2 Auto Gating Assemblies



The Gating Assembly (Patent Application GB1709492.1) consists of a moulded housing which 'clips' on to the Gantry Rail and is secured by a locking clip. The rubber gating wheel automatically adjusts in height to allow a single product to be gated.



8.2.2 Moving the Auto Gating Assembly

Depending on the width of the product being fed, the Gating Assemblies can be moved along the Gantry Rail to be positioned over the Infeed Friction Belts or Infeed Friction Rollers.

To move the Gating Wheel Assembly:-

Press the bottom of the Locking Lever in and rotate the Gating Assembly down.

Move the Gating Assembly to the required position and rotate it up to clip back over the Gantry Rail.

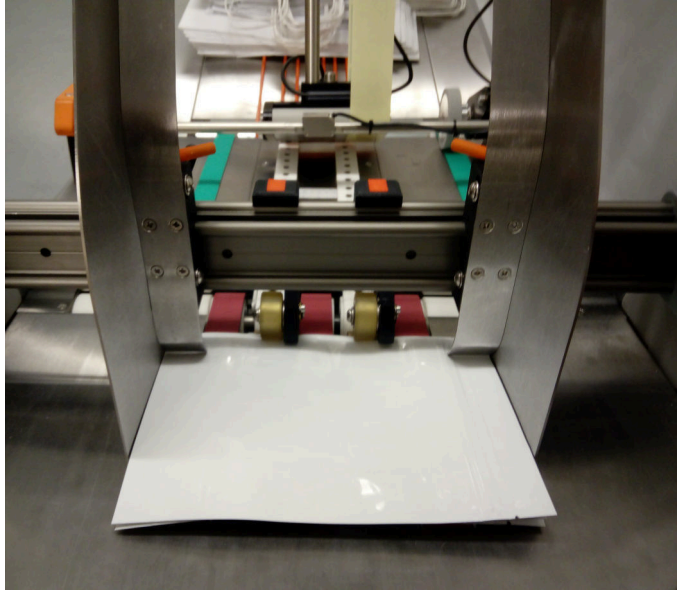
Press the top of the Locking lever in to lock the Gating Assembly in place



8. Operation

8.2.3 Infeed Hopper Adjustment

Move the Hopper side plates in on both sides to allow 1mm of clearance about the prod-



Rotate the Hopper Lock Lever clockwise to clamp the hopper in position

Hopper Lock Lever

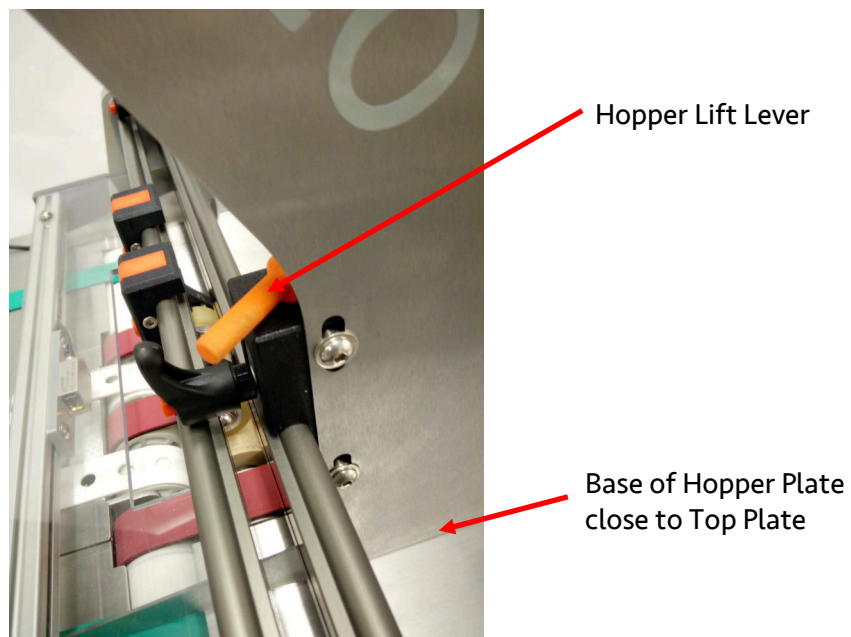


1. Load a few more products into the hopper but overlap them slightly so that they fall naturally into place within the hopper.
2. Place the rest of the product in the hopper.

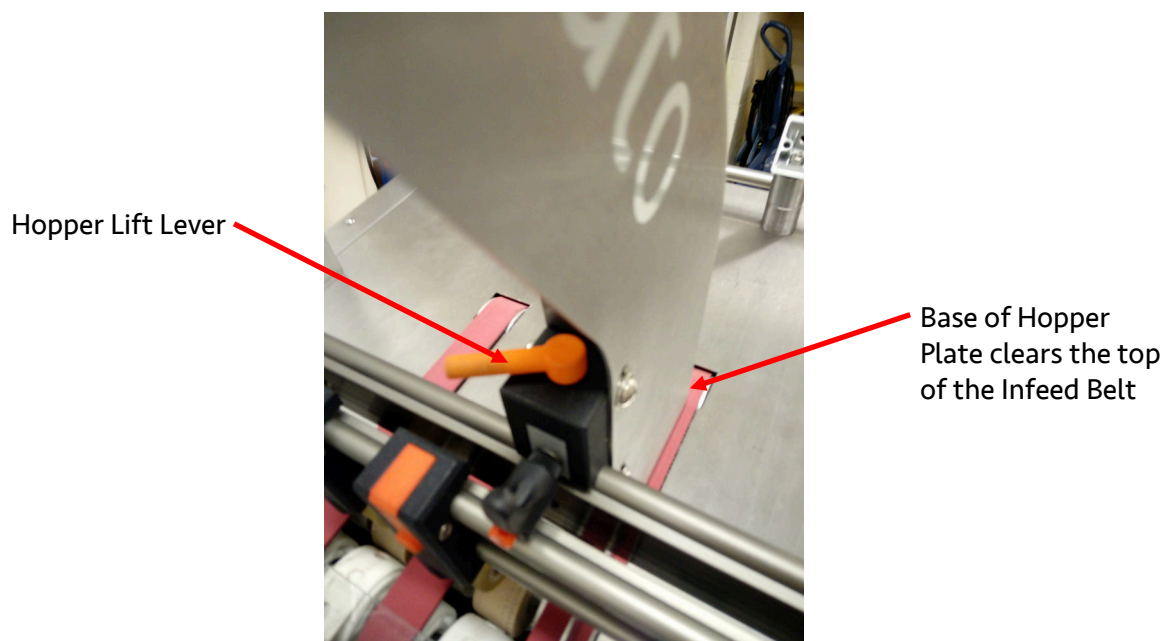
8. Operation

8.2.4 Infeed Hopper Height Adjustment

1. The Hopper Side Plates are equipped with a height adjustment mechanism so that they can be easily moved over the Infeed Belts when setting the position for the product width.
2. If the Hopper Side Plate is clear of the Infeed Belt then rotate the orange Hopper Lift Lever anti-clockwise to lower the Hopper Plate down



3. To Slide the Hopper Plate over the Infeed Belt, rotate the Hopper Lift Lever clockwise to



8. Operation

8.2.5 Outfeed Vacuum Conveyor Belts

The 2 central Outfeed Vacuum Conveyor Belts perform a key role in transporting the product from the feeder to a position where it is printed or labelled and then depositing it neatly into the catcher-tray.

It is made from a food grade silicone based material that, together with the vacuum, holds the product firmly and prevents it from slipping while being transported and printed.

Optional Outfeed Guide Plates may be fitted on top of the conveyor to control the product before printing and before dropping into the catcher.

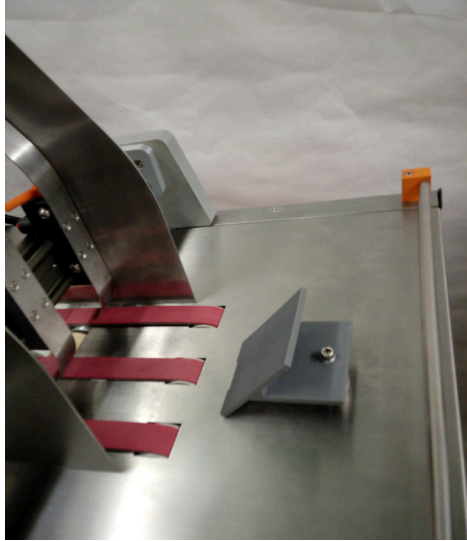
The speed of the machine can be adjusted by rotating the Speed Control Knob on the Control Panel. (Clockwise to increase the speed , Anti- clockwise to decrease the speed)

NOTE: The Outfeed Conveyor speed range is 3M/min to 60M/min

If a print is accidentally made onto the conveyor belt, it is recommended that it is cleaned with the cleaner provided before the day end.

8. Operation

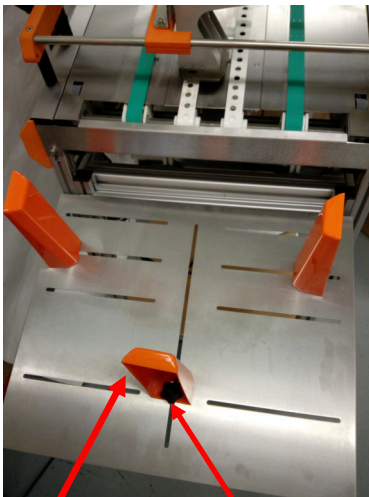
8.2.6 Using the Infeed Guide



Some products may need to be tipped forward to feed properly. In order to do this you can use the Infeed Guide.

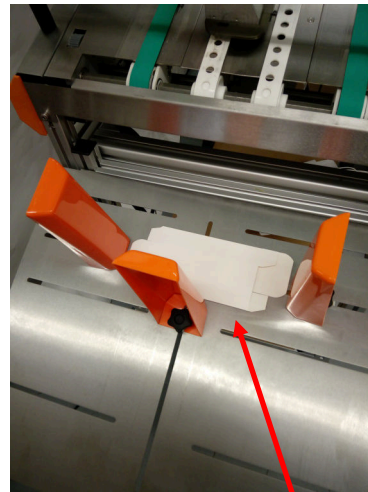
1. The Infeed Guide is mounted on a magnet and can be positioned in any position on the Top Plate

8.2.7 Setting the Outfeed Catcher



Catcher Guide

Locking Thumbscrew



Position Catcher Guides to collate the Product as it leaves the Feeder

1. Loosen the locking thumbscrew to move the catcher guides into position.
2. Tighten the locking thumbscrew to secure the catcher guides in position.

8. Operation

8.3 The Printer

The Printer will have a comprehensive manual covering all aspects of its operation.

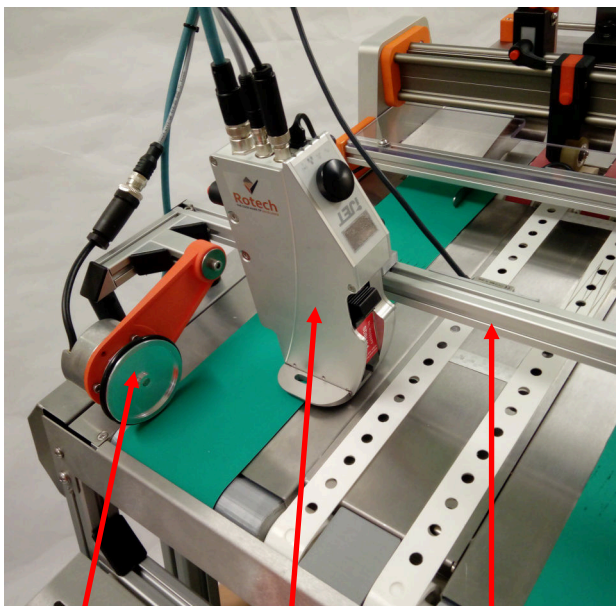
The type of Printer Gantry will vary with the printer specified.

The printer is provided with a signal each time a product is seen at the Print Signal Sensor.

NB: When setting the print position on the product the distance from the Print Signal Sensor to the Printer Nozzles must be added to any offset.

8.3.1 Adjusting the Print Position

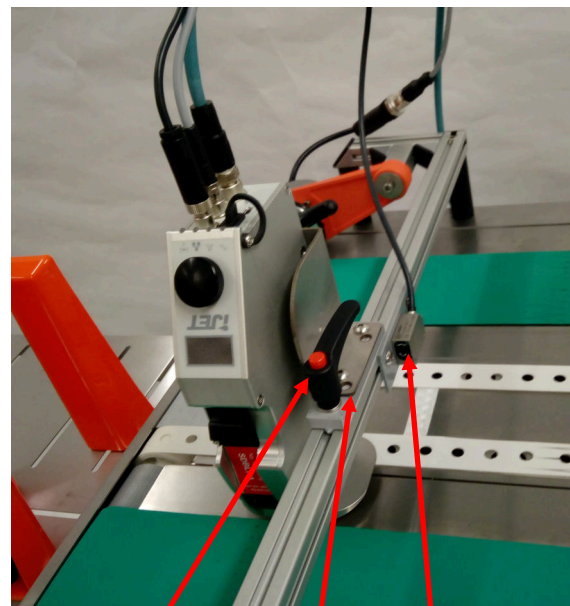
1. Unclamp the Printer Slide Bracket and move the Printer to the so that it is in line with the print area.
2. Clamp the Printer in position.



Encoder

Printer

Printer Gantry



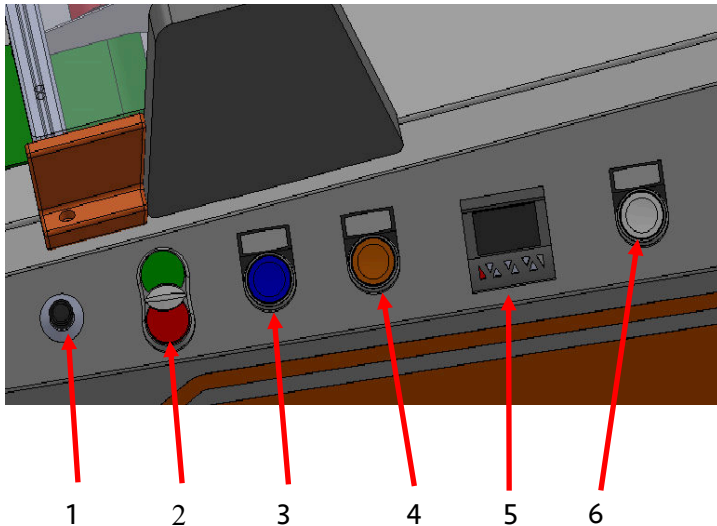
Printer Slide
Locking Handle

Printer Slide
Bracket

Print Signal Sensor

8. Operation

8.4 The Control Panel



- 1 - Speed Control Knob
- 2 - Start/ Stop Button
- 3 - Feed Test Button (Single Product)
- 4 - Feed Start/ Stop Button
- 5 - Batch Counter
- 6 - Reset Button

In order to run the machine follow the instructions below:

1. Press the green 'I' start button on the machine to start the outfeed conveyor.
2. Press the blue 'TEST' button to start the Infeed Motor and feed 1 product
3. Press the yellow 'RUN' button to start the Infeed Motor and feed product continuously.
Pressing the yellow 'RUN' button again will stop the infeed.
NB: The 'TEST' and 'RUN' buttons are illuminated when the Infeed is stopped.
4. Press the red 'O' button to stop the machine

Setting the speed:

Adjust the speed of the machine by rotating the Speed Control Knob: Clockwise to increase the speed, Anti-clockwise to decrease the speed

Please note:

- When the Speed Control Knob Scale is set to '1' the Outfeed Conveyor runs at approx. 3M/min
- When the Speed Control Knob Scale is set to '8.5' the Outfeed Conveyor runs at approx. 60M/min

Reset Button:

Both the Infeed and Outfeed Belt motors are protected by current overload devices.

If, for any reason, either of the Infeed or Outfeed Belts should be prevented from running then the current overload device will operate and shut the power of to both motors, stopping the machine. If this happens then the Reset Button will illuminate indicating that there is a fault.

Clear the fault and then press and hold the Reset Button down while simultaneously pressing the green Start button. Release both buttons to reset the system.

Note: i) A momentary movement of the Outfeed Conveyor may be observed as the system resets.

ii) If the Reset LED remains on when released, the system has not reset.

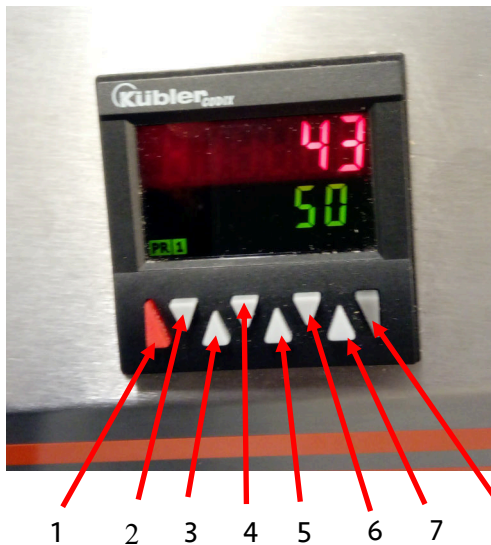
Press the green Start button to start the machine.

8. Operation

8.5 BATCH COUNTER

The 6 digit Batch counter allows for a preset number of products to be printed, upto 999999, before halting the feeder automatically. It is operated as follows:

The Red display shows the actual count while the smaller, green, display shows the pre-set value. When the actual count reaches the pre-set value, the infeed will stop, the 'RUN' button will flash for 20 seconds and the machine cannot be restarted until the counter is reset.



Button Functions

- | | |
|---|---------------|
| 1 | Reset |
| 2 | Set '100000's |
| 3 | Set '10000's |
| 4 | Set '1000's |
| 5 | Set '100's |
| 6 | Set '10's |
| 7 | Set '1's |
| 8 | No Function |

To set the pre-set value,

Press each button, 2 through 7, to set the batch count required.

NOTE: Each press of the button will increment the count by 1 digit.

If a lower value digit is required than is displayed, continue pressing the button so that it 'rolls over' from 9 to 0.

Press the Reset button to clear the stored count.

When the pre-set value is reached both the red and green display will show the same value and a symbol will be displayed at the bottom of the display in the middle.



To reset the Batch Counter once the preset has been reached , press the red Reset Button.

9. Maintenance

9.1 Description of mechanical and electrical protection systems

- 9.1.1 There are no particular protection systems provided for maintenance staff. Observe all the safety information detailed in section 3
- 9.1.2 Only trained maintenance staff should attend to the maintenance of the machine.

9.2 Points and frequencies of inspection

9.2.1 Operator daily checks

Before commencing work each day the work area should be clean and tidy.

9.2.2 Operator weekly checks

In addition to the Operator Daily tasks above, it is recommended that the following be carried out at the end of each working week.

Before commencing these operations, ensure the isolator is turned to the OFF position.

a) Feeder roller cleaning.

1. Spray a small amount of Platen Cleaner onto a non-paper, lint-free piece of cloth
2. Remove all product from the Infeed Hopper.
3. Set the feeder to slow speed, switch the feeder on and gently wipe the 2 friction rollers.

b) General cleaning

With either a piece of cloth or a vacuum cleaner remove as much dust as possible from the machine.

c) Ensure that all cables, plugs etc. are undamaged.

9.2.3 Engineering preventative maintenance

It is recommended that at six monthly intervals the following be carried out.

1. Check that the conveyor belts and friction rollers are in good condition

10. Provision of spares, in-service support and guarantees

10.1 Spares

Spares are available by contacting Rotech Machines Limited or their authorised distributor/agent.

10.2 In-service support

In-service support can be provided by contacting Rotech Machines Limited or their authorised distributor/agent.

10.3 Guarantees

This machine is guaranteed to be free from defects for a twelve-month period. The guarantee excludes consumable items such as ribbons and those items subject to fair wear and tear, in particular, the rollers within the feeder and the conveyor.

11. RF-Auto Recommended Spares Kit

11.1 Recommended Spares Kit Part No. 4226

Electrical / Control System			
Stk. Ref.	Description	Function	Rec. Qty
1452	Switch Block. Normally Open	Start, Test and Run Switches	4
1453	Switch Block. Normally Closed	Stop Switch	1
3996	Fuse Mains T 3A L 250v	Mains Fuse	2
0318	Fuse Fans T 2.5 L 250v	Fan Fuse	1
2705	Relay Control DPDT	Conveyor Control	1
4246	Solid State Changeover Relay	Provides Signal to Batch Counter	1
7355	Potentiometer 47K Assembly	Speed Control	1

Mechanical			
Stk. Ref.	Description	Function	Rec. Qty
7352	Timing Belt T5 390L	Motor to Infeed Belt Shaft/ 2 nd Infeed Shaft	2
7353	Timing Belt T5 700L	Outfeed Motor to Conveyor Shaft	1
5539	Roller Fab'n	Infeed Roller	2
7522	Gating Wheel Assembly	Gates Product from Infeed Hopper	2
7307	Infeed Belt	Feeds Product to Gating Wheel	3
7217	Vacuum Belt	Transports Product after being Gated	2
*7218	Conveyor Belt Green (25mm)	Outfeed Outer Conveyor Product Transport	2
*7362	Conveyor Belt Green (100mm)	Outfeed Outer Conveyor Product Transport	2
5960	Reflective Strip 16x50 Sensor	Reflects Product Sensor Beam	2
5283	Carton Stack Stand	Product Outfeed Guide	1

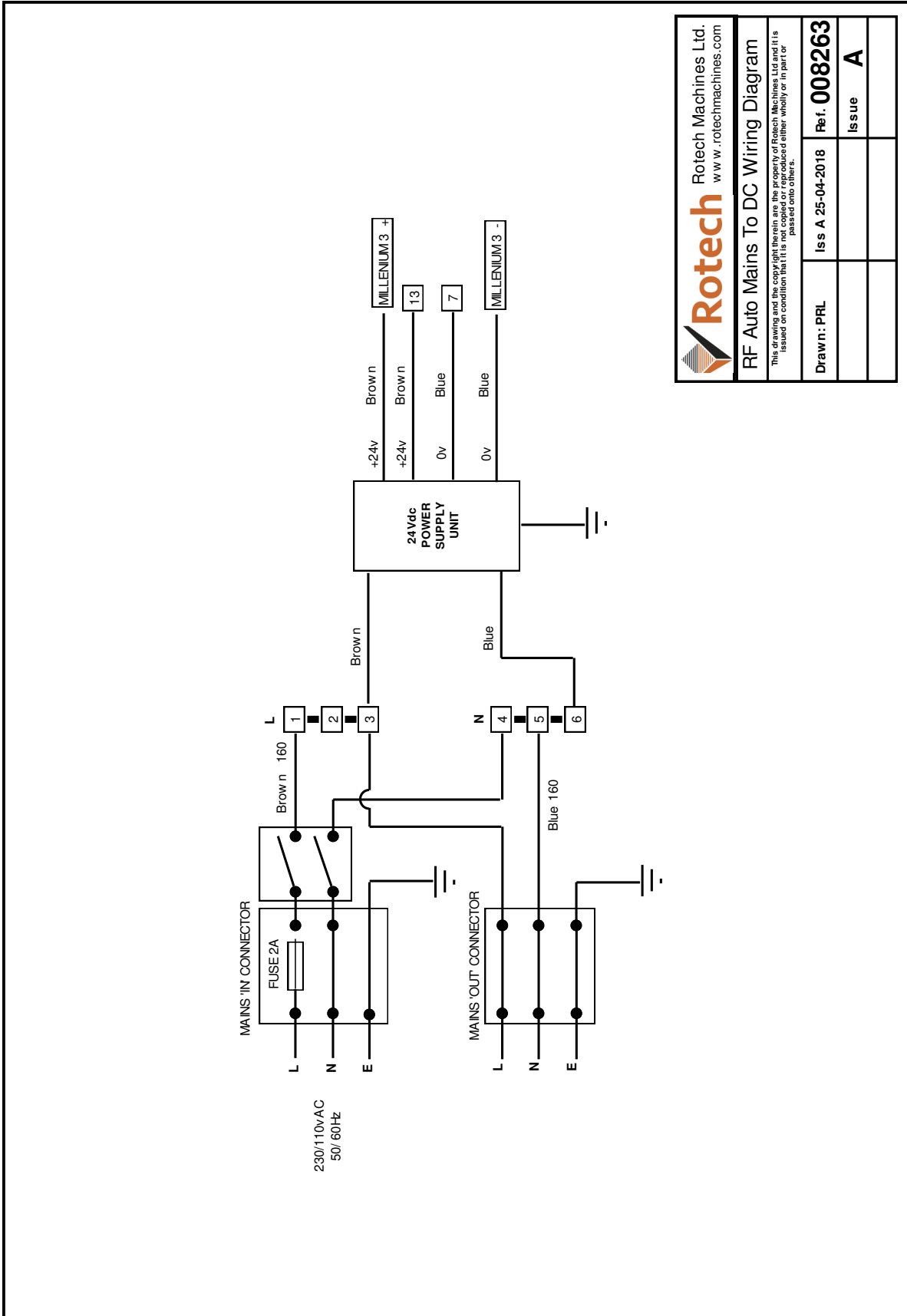
* Confirm Outfeed Conveyor Belt Width when ordering.

11.2 Additional Spares (as required)

Additional Spares			
Stk. Ref.	Description	Function	Rec. Qty
4248	Batch Counter	Counts Products Fed	1
4249	Fan	Creates vacuum under Outfeed Belt	1

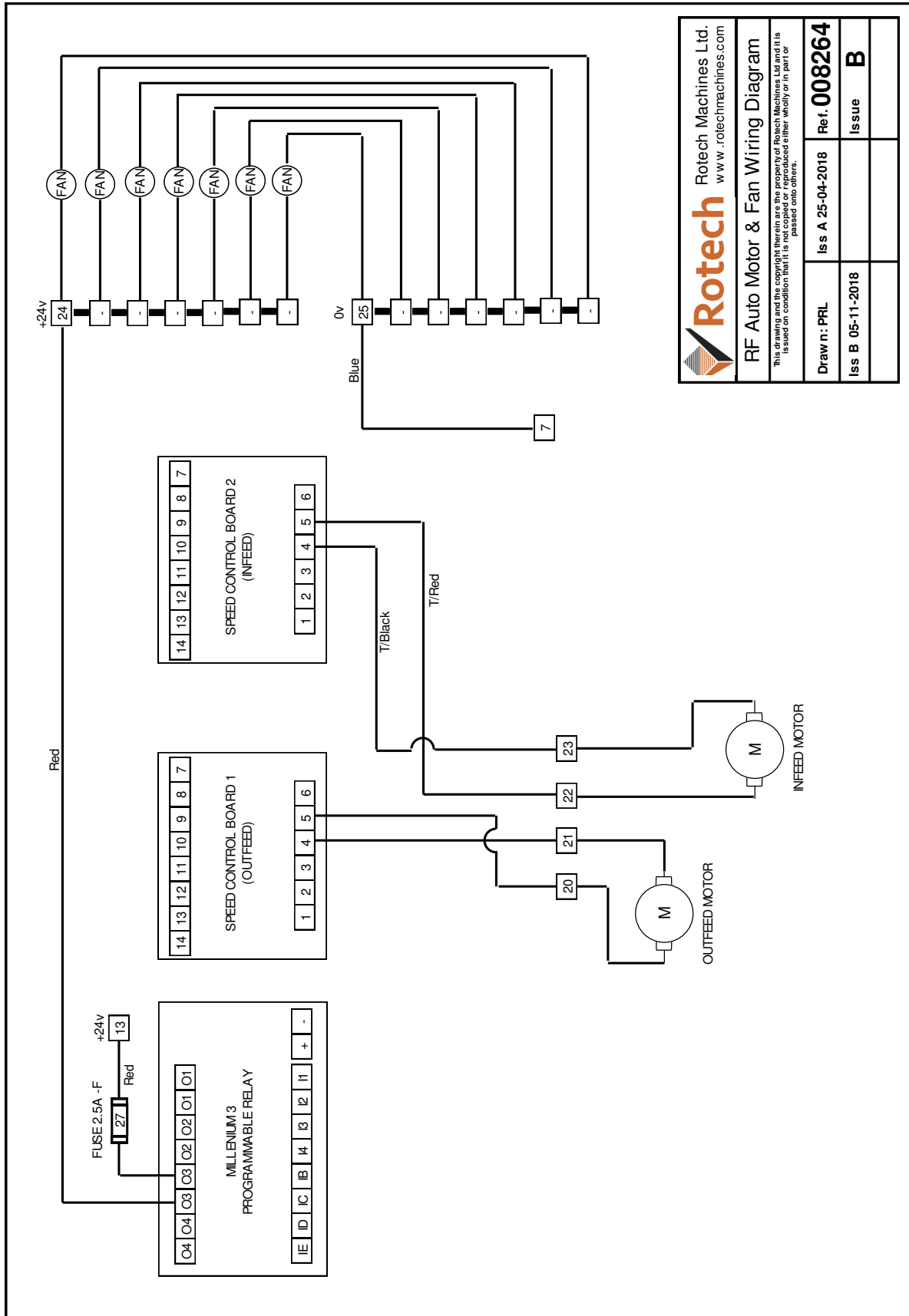
12. Wiring diagrams

12.1 RF Auto Mains to DC Wiring Diagram



12. Wiring diagrams

12.2 RF Auto Motor & Fan Wiring Diagram



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www.rotechmachines.com

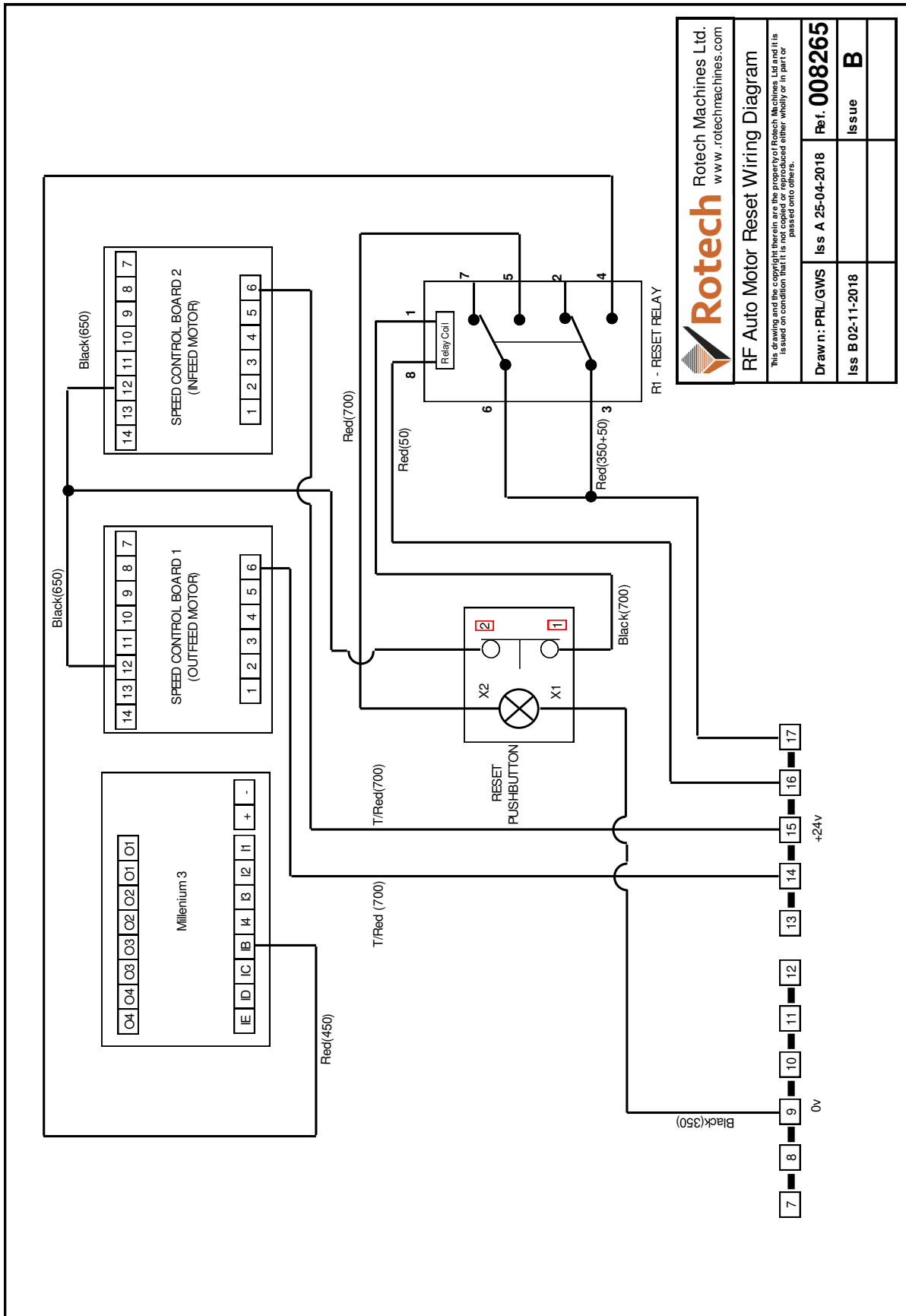
RF Auto Motor & Fan Wiring Diagram


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Iss B 05-11-2018		Issue B

12. Wiring diagrams

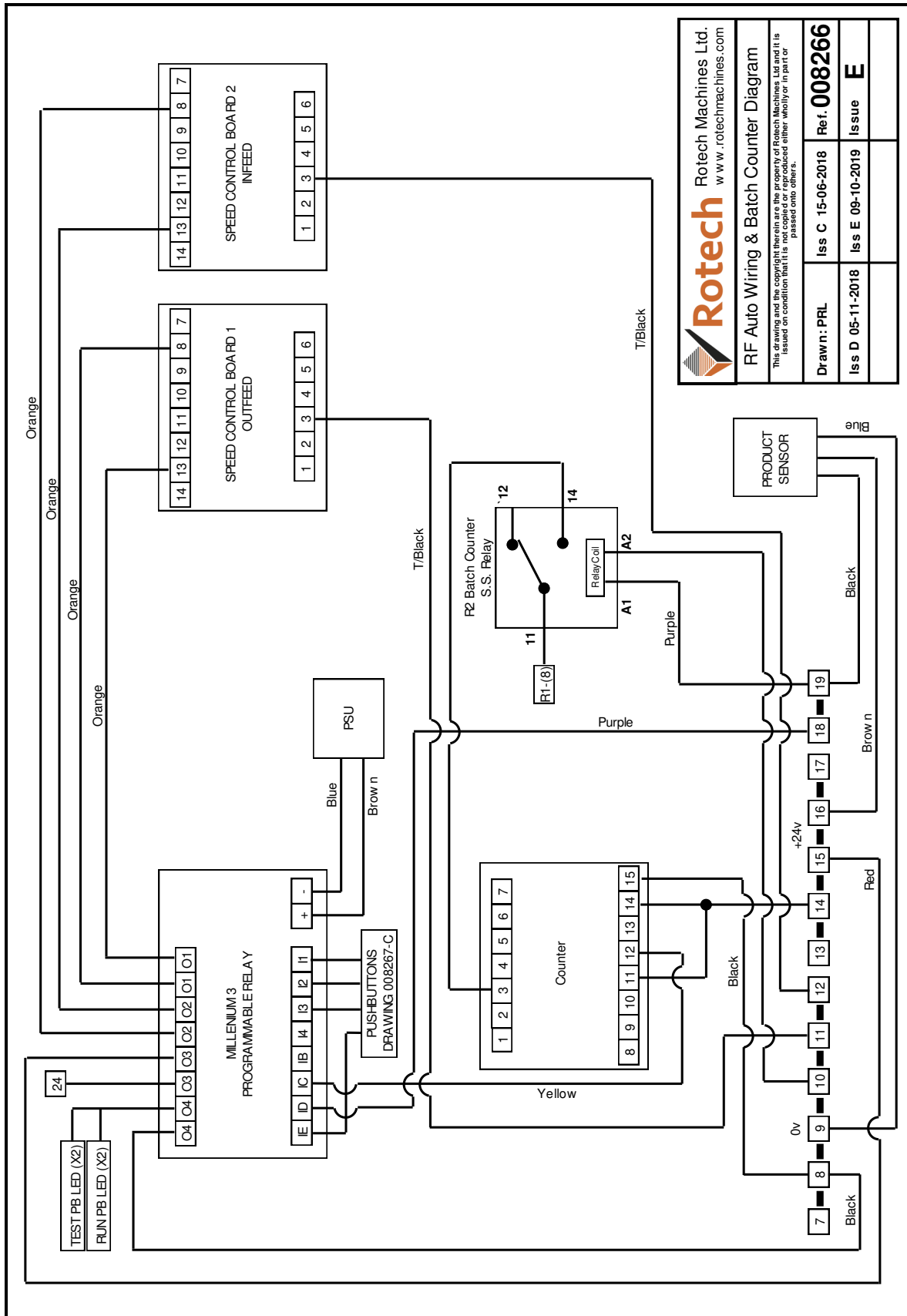
12.3 RF Auto Motor Reset Wiring Diagram



 Rotech Rotech Machines Ltd. www.rotechmachines.com	
RF Auto Motor Reset Wiring Diagram	
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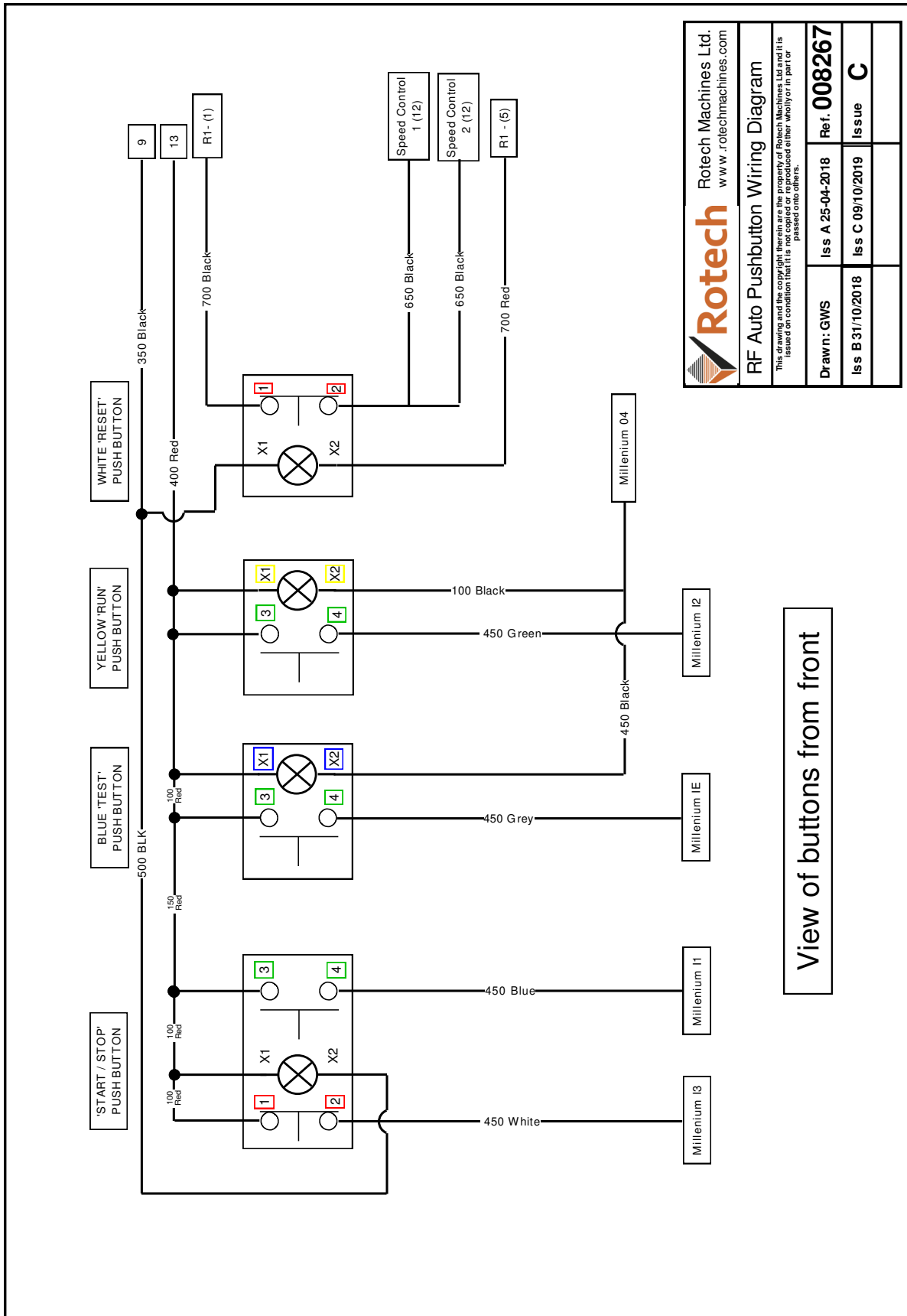
12. Wiring diagrams

12.4 RF Auto Wiring & Batch Counter Diagram



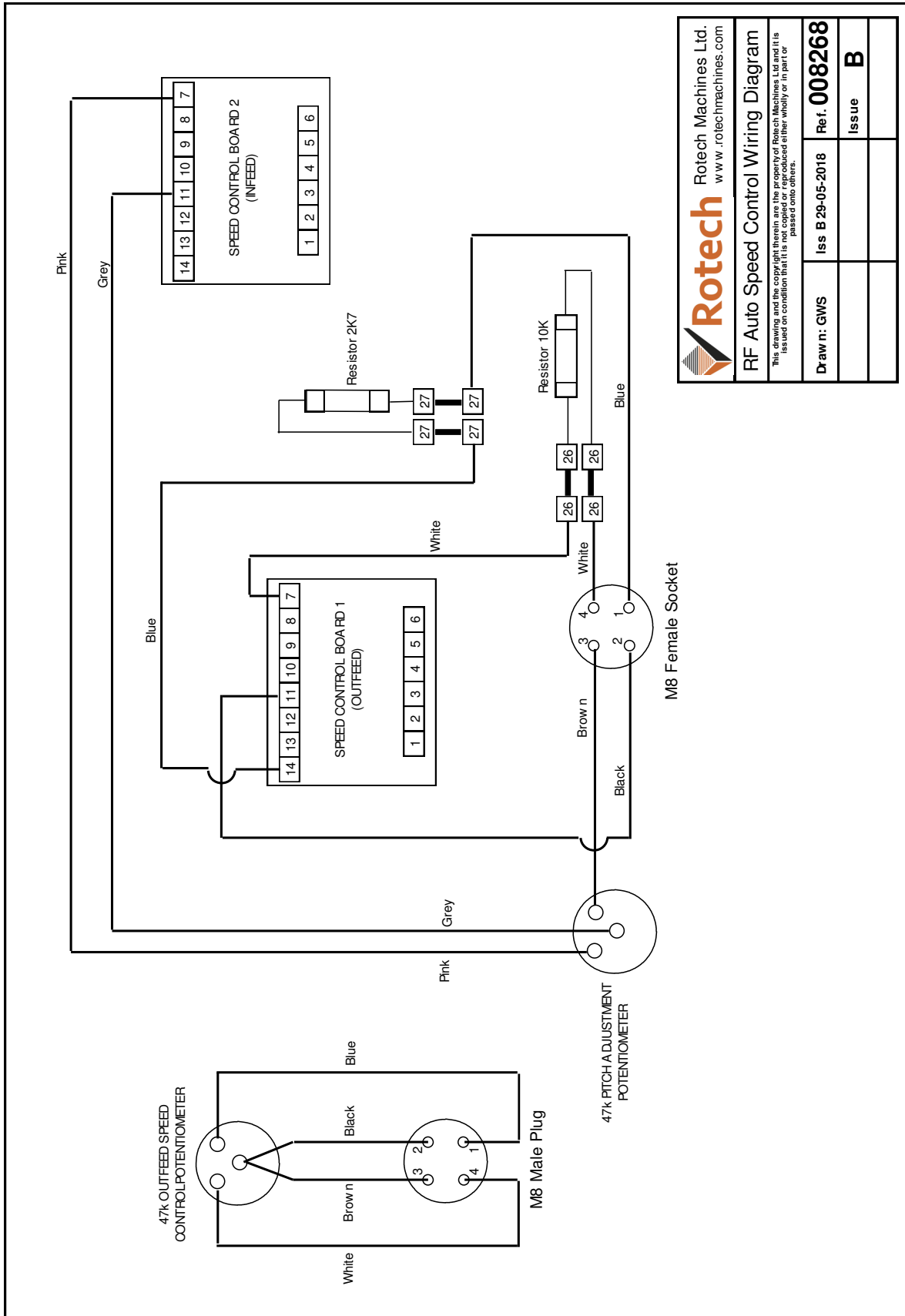
12. Wiring diagrams

12.5 RF Auto Pushbutton Wiring Diagram



12. Wiring diagrams

12.6 RF Auto Speed Control Wiring Diagram



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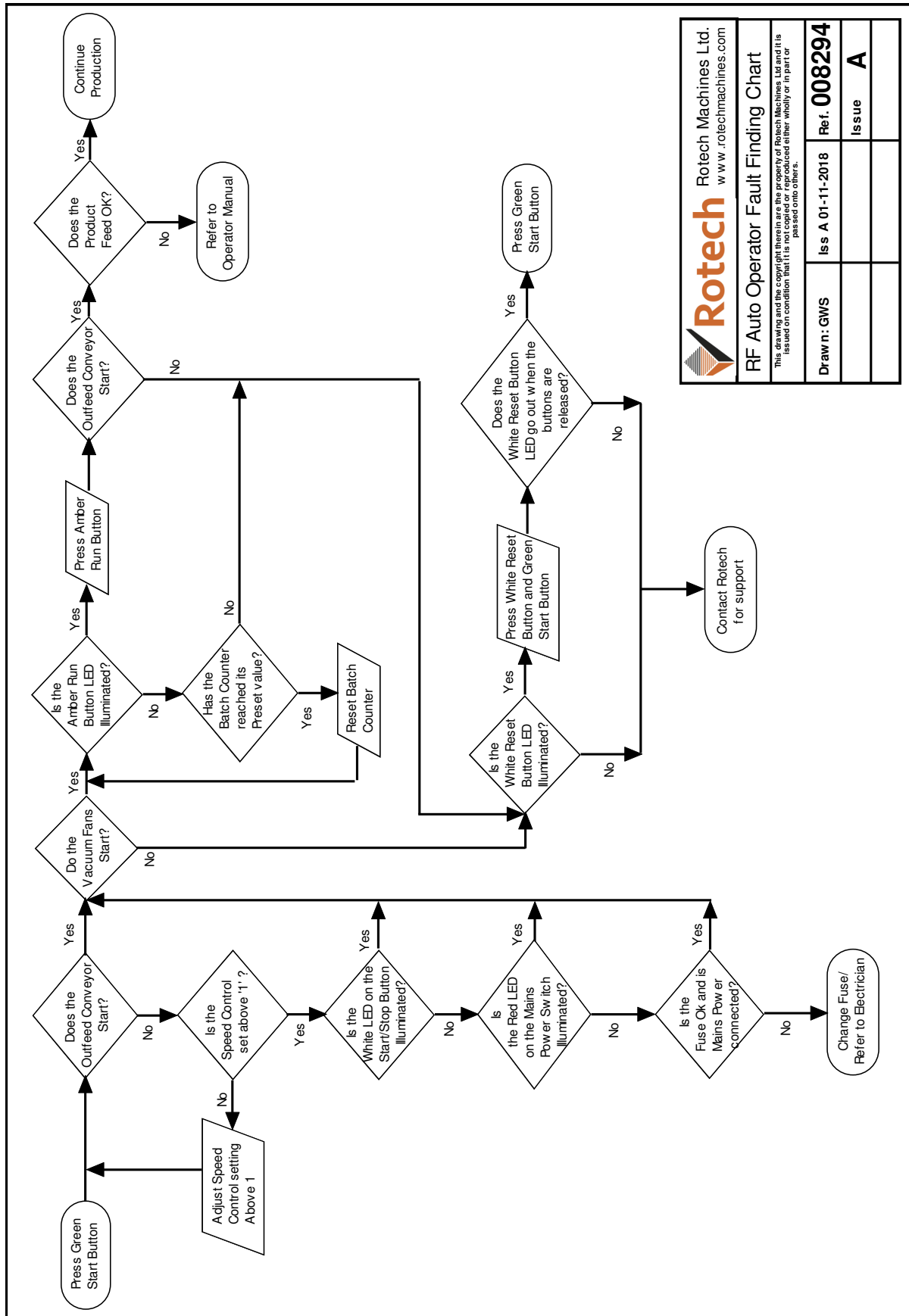
RF Auto Speed Control Wiring Diagram


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13. Fault Finding Chart

13.1 RF Auto Operator Fault Finding Chart



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RF Auto Operator Fault Finding Chart	
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EU DECLARATION OF CONFORMITY

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Rotech Machines Ltd
of

1 Brownfields Court
Welwyn Garden City
Herts AL7 1AJ
UNITED KINGDOM

declare under our sole responsibility that the products:

Rotech RF1 Feeder Range

designed and manufactured by the above mentioned company conform to:

Machinery Directive 2006/42/EC

This equipment has been produced in accordance with:

**ISO 12100:2010
ISO 13849-1**

**Signed as an authorised representative
of Rotech Machines Ltd.**



Richard Pether
Director

Rotech Machines Limited

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