

**ADKINS**

# ALPHA CALENDER ROLL-MASTER 1.2



## Operators Handbook

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**Alpha Calender Roll-Master 1.2** is a trademark of A. Adkins & Sons Limited.

Please read this manual carefully and keep it with your machine at all times for reference.

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# Preface

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Dear User

Welcome to the growing group of Adkins **Alpha Calender Roll-Master 1.2** users! The product you have purchased has been carefully designed and manufactured to ensure that you, the user, will gain the maximum benefit.

All Adkins products are specifically designed to ensure ease of use, with particular attention to safety requirements.

Should you discover any fault or damage upon receipt of this product, you should immediately contact your supplier.

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# 1. Introduction

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The **Alpha Calender Roll-Master 1.2** has been developed after continuous feedback from end users and aims to provide market leading specifications with ease of operation and economical running costs.

It is capable of thermal transfer from roll-to-roll, roll-to-pieces and pieces-to-pieces and for any type of cotton, polyester or polyester mix. Moreover, the machine footprint and energy usage make it ideal for smaller workplaces where both are critical factors to successful production runs.

Being simple in operation it can be operated by as few as two personnel and training overhead is low.

## 1.1 Machine Benefits

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Below is a brief list of the many benefits of the **Alpha Calender Roll-Master 1.2**:

- i. Most of the machine rollers are precisely cut using computer operated CNC cutting machines to provide a completely parallel shaft. This allows for very long material transfers without any tracking.
- ii. The heating roller is constructed from stainless steel and is also CNC cut, providing a very smooth surface which allows for uniform heat distribution. Approximately 70% of the roller surface is covered by a felt blanket, enabling it to reduce the emission of radiated heat to the environment and thereby ensuring a good transfer result.
- iii. The CNC cut balance (tensioning) rollers have a diameter of 8.7 cm (*3.42 in*) which prevents any deformation in the substrate thereby completely eliminating curls and ripples which could possibly transfer onto the printed media.
- iv. The machine is designed in such a way that the materials are fed into the rollers from an elevated position, allowing for precise fabric feed and lowering the fault rate in production.
- v. A high-quality blanket with outstanding torsional stability at temperatures of up to 250°C (*482°F*) provides a stable transfer of substrates and with less than 1% thermal shrinkage will last the lifetime of the machine.

## 1.2 Specifications

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Below are the specifications for the **Alpha Calender Roll-Master 1.2**

Heating Media	Oil
Voltage	Single Phase 220 Volts
Power	(Heater - 4.5 kW) (Motor - 0.5 kW)
No. of Heating Elements	1
No. of Feed Rollers	3
No. of Collection Rollers	3
Machine Size	1525 mm (L) x 400 mm (W) x 1240 mm (H) <i>60 in (L) x 15.7 in (W) x 48.8 in (H)</i>
Worktable size	600 mm (L) x 1120 mm (W) x 900 mm (H) <i>23.6 in (L) x 44 in (W) x 35.4 in (H)</i>
Drum Diameter	160 mm (6.3 in)
Transfer Speed	up to 0.5 m/min (5.4 in/min)
Transfer Blanket Width	1150 mm (45 in)
Maximum Temperature	240°C (464°F)
Maximum Transfer width	1220 mm (48 in)
Net Weight	250 Kg (551 lbs.)
Substrate Path	Top Drum Fed
Roll-to-roll Functionality	Yes
Piece-to-piece Functionality	Yes
Roll-to-piece Functionality	Yes
Work Table Included	Yes
Air Cylinder Required	No

### **1.3 Safety Instructions**

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Before operating the **Alpha Calender Roll-Master 1.2**, please read the safety instruction carefully to fully understand the machine's primary structure, function, and operation method. Training in machine operation and maintenance procedures is also required, for all personnel involved in the day-to-day use of the **Alpha Calender Roll-Master 1.2**.

During operation and maintenance, personnel should pay particular attention to any warning signs, or stickers, to guarantee all operators personal safety.

### **1.4 Safety Tips**

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- i. The electrical power source used for the equipment must be in line with the type displayed on the nameplate. The earthing must be accurate and reliable (equipment with three-terminal polarized plus plug not allowed to change the function of the earth electrode freely).
- ii. When the equipment is operating normally, the surface temperature of the heating roller is very high and care should be taken never to touch it with your hand.
- iii. When opening the box to examine and fix any equipment, the power must be shut off, to avoid electric shock or mechanical wounding incidents. When transfer work has been finished the power should be cut off too.
- iv. Don't place the power lead onto the walkway, or leave the cord wrapped in a pile, to prevent tripping accidents. Care should also be taken to prevent the power lead from rolling depressions caused by vehicles or trollies, possibly causing a short circuit and or fire/electrical shock.
- v. Mounting card and transducer in the box should be kept clean and dry to avoid conductive material such as dust etc. Don't open the protective covering to avoid electric shock injuries.
- vi. The working area should be kept dry and well ventilated. Also care should be taken to prevent water spillage and protect from damp when using the equipment. Don't store or stack any flammable or explosive materials close to the machine.
- vii. Don't put tools or other items, such as screwdrivers, nails, screws and/or nuts etc. onto part(s) of the machine to



## **Safety Tips (cont.)**

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avoid them from falling into the rotating rollers, thereby causing damage to the machine.

- viii Do not wash the machine with water to avoid short circuits, electric shock and corrosion.

### **1.4.1 Heat and Power Switches**

Both the Heat and Power switches are located on the Control Panel. To immediately stop the machine from heating, turn off the Power Button. This will stop the power for heating, but will still allow power to pass to the motor.

### **1.4.2 Blanket Maintenance**

When the heat transferring is completed, turn off the heater (as above) but allow the motor to rotate the blanket until the temperature falls below 80°C (176°F), this will prevent the blanket from scorching/burning on the hot roller.

### **1.4.3 Heat Roller**

Following heating, the surface temperature of the heating roller could be over 240°C (464°F). While the machine is heating, special care should be taken *not* to touch the roller surface with any part of the body, to avoid crushing or burning injuries. In addition, when the machine is heating and/or operating, the operators should be present to avoid the roller from overheating, thereby causing a fire.

## **1.5 Warning Signs**

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Please pay close attention to any and all warning signs displayed on the machine. The injuries displayed on the signs may death or permanent disablement to operators and/or general bystanders. Serious machine damage will likely also occur if the warnings are ignored.

- NB Under no circumstances should any attempt to remove, modify or bypass safety equipment be undertaken, as this could lead to serious personal injury, including death and seriously damage the machine, which will invalidate your warranty.**

## 2. Installation

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The **Alpha Calender Roll-Master 1.2** should be sited in a secure, flat and dry location with good ventilation and enough space for safe and efficient operation.

A safe and adequate electrical supply should be provided with sufficient protection for the rating of the machine and with easy access to a trip/safety switch.

It is also good practise to provide close and easy access to emergency medical equipment and firefighting equipment.

### 2.1 Unpacking

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- i. Remove the pin
- ii. Loosen all of the screws on the packaging
- iii. Remove the crate cover with a hammer and/or crowbar
- iv. Lower the crate side covers
- v. Remove the Work table and shafts
- vi. Using a forklift transport the **Alpha Calender Roll-Master 1.2** to the correct position

### 2.2 Installation of Work table

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**NB Two people are required for installation**

#### **Step 1 Installation of the main structure**

- a. Fix the two angled horizontal table support arms to the left and right cabinets (please refer to the exploded diagram on page 12).
- b. Using two people connect the angled table legs (11) to the two angled horizontal table supports.

#### **Step 2 Installation of the lower structural bar (12)**

Care should be taken not to fasten the bar too tightly at this stage.

#### **Step 3 Installation of the Material Loading Shaft (10, 13)**

- a. Screw the four metal plates onto the left and right angled table legs (11), making sure the screws are only hand tight at this stage.
- b. Connect the Transfer Paper Loading Shaft (10) and the Fabric Loading Shaft (13) onto the angled table legs. So

## **Installation of Work Table (cont.)**

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the installation of the Guide Bar for transfer paper (30) is the same.

### **Step 4 Installation of Work Table (20)**

Place the metal table onto the installed holder and fasten with four screws.

### **Step 5 Installation of the Tension Shaft (17), including the installation of the Gear Reducer (3).**

Install similarly to the Tension Shaft at the top of the machine but please note that you will need to install the metal plates on the left and right cabinets first.

### **Step 6 Install Guide Shaft (19).**

### **Step 7 Adjust the height of the Table with the adjustable feet (8).**

### **Step 8 Check all of the screws and nuts on the machine and fasten where needed.**

**NB** The Rewind Shafts (15, 16 and 21) can be removed by pulling on one end and removing from the other.

## **2.3 Installation Notice**

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- i. Check whether all screws in the machine are loose or not, tighten them if loose.
- ii. As the equipment is heating machinery, the machine should be used in an environment that is well ventilated, dry and noncorrosive. Make sure no flammable and/or explosive materials are located near to the machine.
- iii. The machine must be earthed separately.
- iv. The main power lead must be of sufficient quality with at least a 6 mm thickness.
- v. While installing the machine every effort should be taken to keep the machine level. Ideally the machine should be finally installed with the aid of a spirit level.

### 3. Operation Guide

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- i. Before switching on the machine, make sure that all of the electrical wires are connected correctly. The body of the machine must be connected to ground. Press the main power switch and transform start switch. Then, adjust the rotary speed on the Speed Adjustor (2) to optimum values. When the heated roller starts to revolve, press “heating” button (5) and adjust the temperature to optimum values. (Default temperature is 220°C (428°F).
- ii. When the machine reaches the pre-set temperature, allow the thermostat to stabilize the temperature for a while. Check the transfer results with a small piece of printed transfer paper and substrate. Adjust the temperature with reference to the testing result of the transfer.
- iii. Place the printed transfer paper and tissue paper in the correct position (to prevent contamination of the blanket), onto the working table and main machine. Feed the tissue paper in first and then the printed transfer paper, taking care to keep them flat. Then feed the textiles into the machine evenly.
- iv. When the tissue paper and the transfer paper exit the rear of the machine, attach them to their respective collecting rollers. Then attach the transfer paper to the collection roller at the front of the machine, under the table so that all materials can be collected automatically. The speed of collection of the transfer paper can be adjusted using the controller (7).
- v. During the working process, the transfer speed can be adjusted (by “2”) according to the vividness of the final sublimated print.
- vi. When the transfer cycle is completed, switch off the heating button to let the machine cool down. The operator should monitor the machine until the temperature drops to below 80°C (176°F), at which point the machine can be switched off. Under special circumstances (including an emergency), the operator may switch off the main power supply and heater simultaneously. The machine will cool down automatically and stop running after approximately 2 hours. Although this is not recommended during normal use, due to the potential for damage and/or fire risk.

## **3.1 Operation Notice**

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### **3.11 Adjustment of Blanket tracking**

When working at high temperatures a small amount of shrinkage is to be expected from a new blanket. To avoid damaging your new blanket by improper operation, do not adjust the location of the Tracking Adjusting Roller (45) within the first two weeks, or the first 100 hours of operation, whichever is quickest; To adjust the new blanket, reverse the direction of revolution using the Blanket Reverse Switch (18) until the blanket moves back to the central of the oil drum.

During use the blanket may track to either side, this is a normal operation and should not be a cause for concern. As mentioned above there is a tracking adjusting roller (45) on the machine.

When the blanket is tracking to the right hand side, increase the tension of the blanket on the right hand side by a small amount, or if the opposite is the case, decrease the tension of the blanket on the left hand side by a small amount.

To control the tension – insert the supplied spanner onto the end of the Adjusting Rod. Increase the tension by revolving anti-clockwise, decrease the tension by revolving clockwise. Please be patient as this adjustment process can take some time.

### **3.12 Operation Noise**

While heating the rollers and bearing may expand and emit noise. This is normal and should not be a cause for concern.

## 4. Maintenance

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### 4.1 Cleaning

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Care should be taken to keep the machine clean and tidy and to keep the electric circuit box and transducer free from dirt and dust that may accumulate over time.

**NB Do not open the Transformers protective shield to avoid electric shock.**

When cleaning the rollers care should be taken not to scratch them or use harsh or acidic chemicals.

### 4.2 Lubrication

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All bearings should be lubricated with lithium based, heat proof grease, with a flash point of not less than 240°C (464°F).

### 4.3 Blanket Care

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As the blanket is not a warranty part care should be taken in operation to use best practise.

If there is a power failure or at the end of each working day, stop the heating and use the separate Hand Wheel to move the blanket well clear of the oil drum. Insert soft paper board or individual papers to approximately 2 to 4 mm in thickness between the blanket and the oil drum; this method should protect the blanket from burning.

When restarting the machine, care should be taken to remove the paper board or paper and re-tighten the blanket again using the separate Hand Wheel.

### 4.4 Heating Oil Replacement

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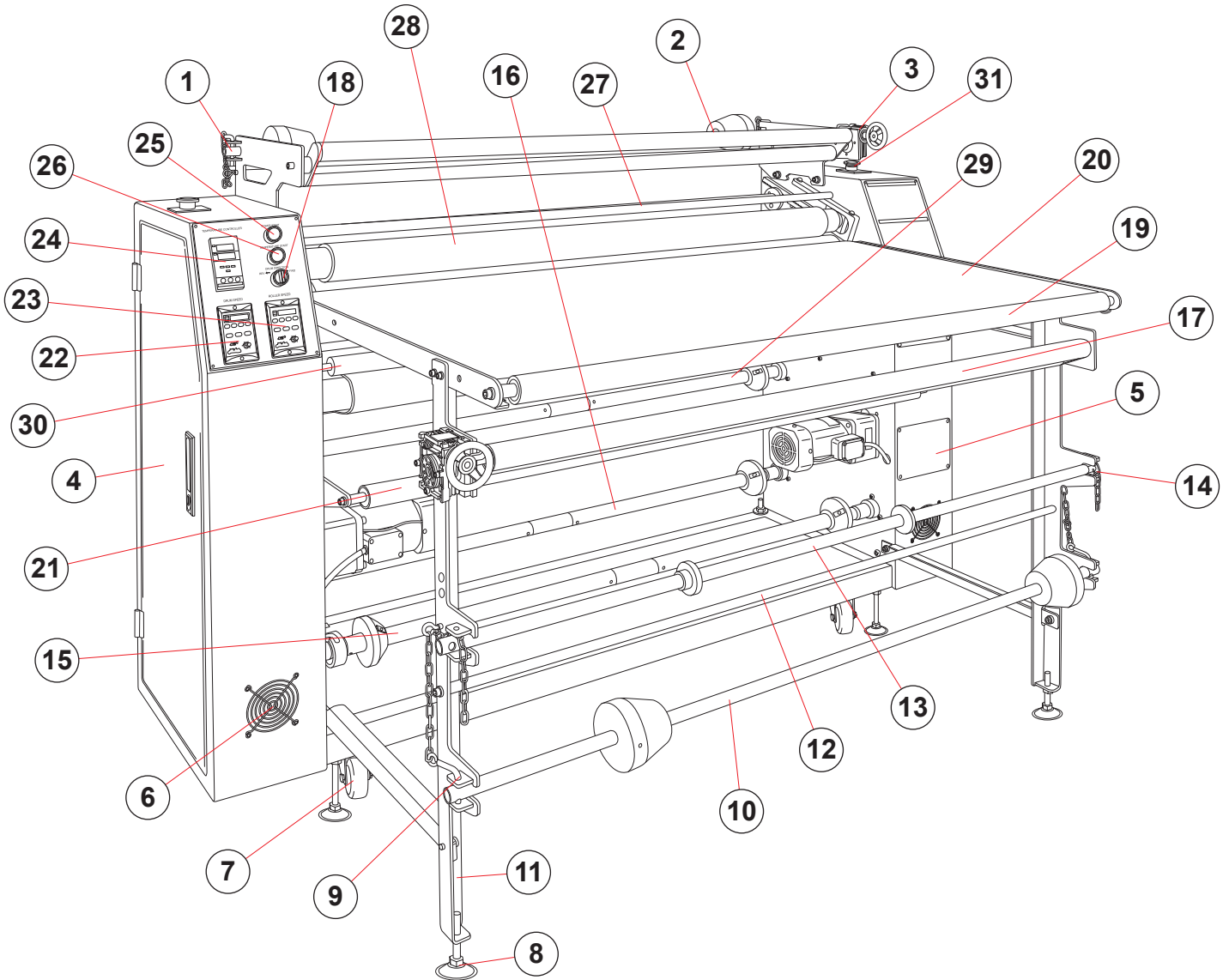
The Oil Drum is filled with temperature resistant oil which is rated up to 320°C (608°F). Replacement should be with equivalently rated good quality oil.

## **5. Maintenance**

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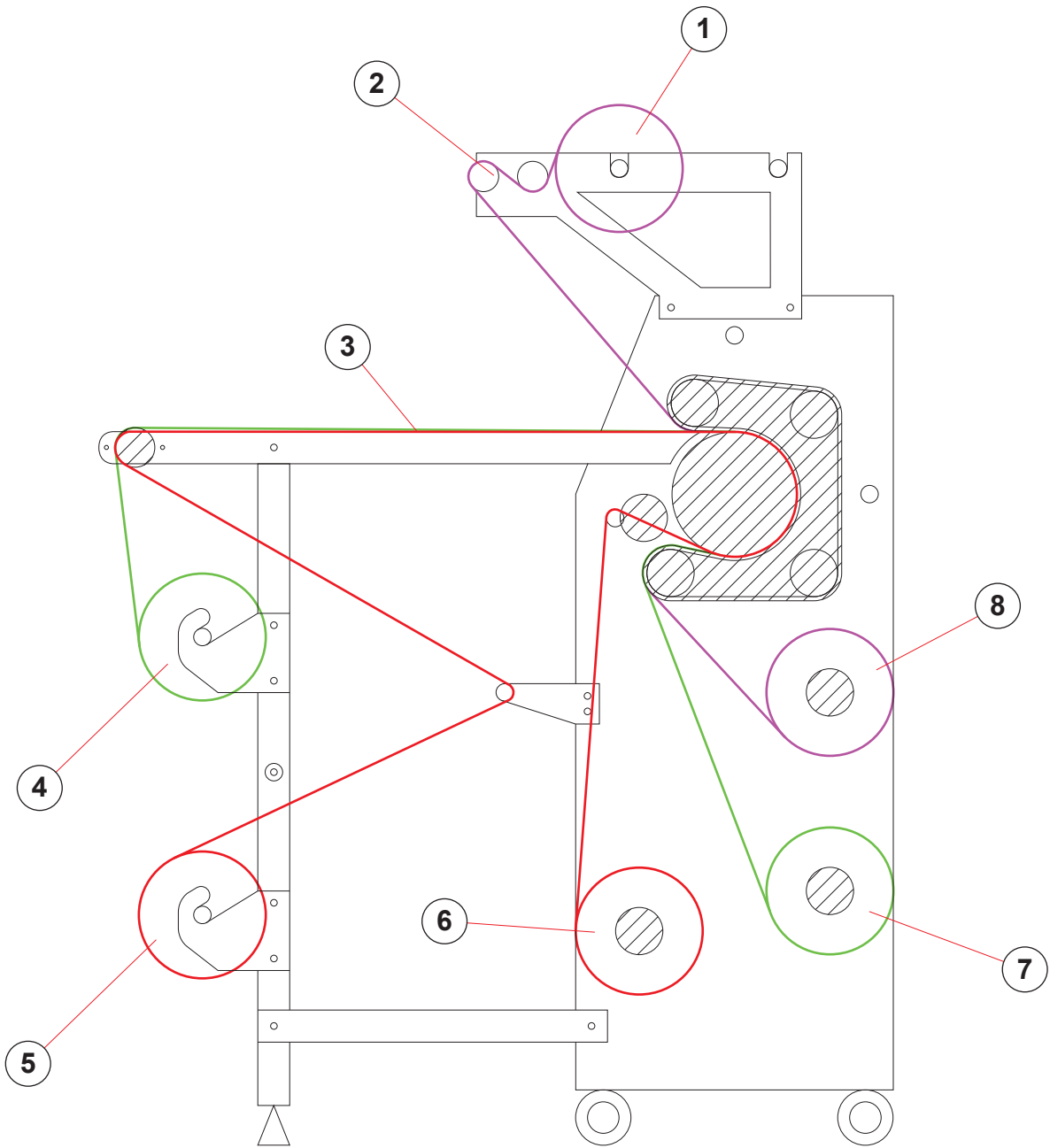
## 5.1 General Layout



No.	Part Name	16	Fabric Rewind Shaft
1	Shaft Pin and Chain	17	Fabric Tension Shaft
2	Barrier Paper Shaft	18	Drum Direction Switch
3	Gear Reducer	19	Guide Shaft
4	Cabinet Door	20	Work Table
5	Name Plate	21	Barrier Paper Rewind Shaft
6	Cooling Fan	22	Drum Speed Controller
7	Castor Wheel	23	Roller Speed Controller
8	Adjustable Foot	24	Temperature Controller
9	Shaft Pin and Chain	25	Main Power Button
10	Transfer Paper Loading Shaft	26	Temperature Start Button
11	Table Leg	27	Structural Bar
12	Structural Bar	28	Blanket
13	Fabric Loading Shaft	29	Transfer Paper Guide Bar
14	Tensioner	30	Separation Shaft
15	Transfer Paper Rewind Shaft	31	Emergency Stop Button



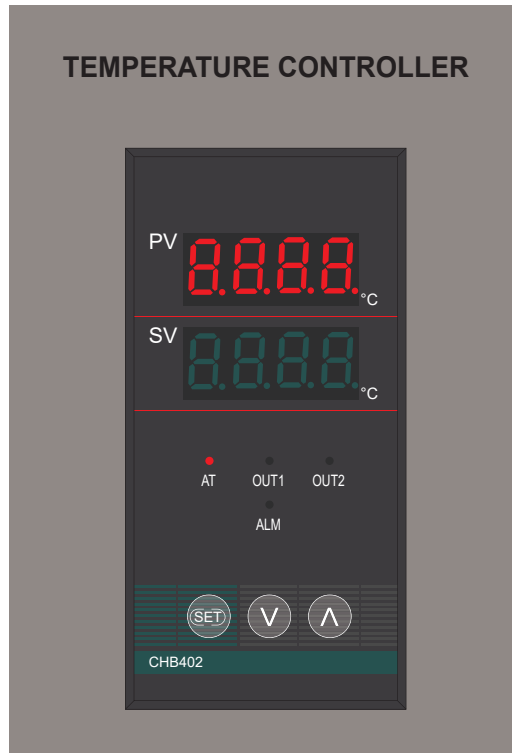
## 5.2 Roller Configurations



No.	Part Name
1	Barrier Paper Charge Roller
2	Tensioning Bar
3	Work Table
4	Fabric Charge Roller
5	Transfer Paper Charge Roller
6	Transfer Paper Exhaust Roller
7	Fabric Exhaust Roller
8	Barrier Paper Exhaust Roller

## 5.3 Control Panel Operations

This is located at the front of the left hand cabinet and controls the temperature of the drum.



### Operation Procedure

1. Power up the machine at the mains supply switch.
2. The controller displays the set temperature SV (set value) in green digits 0 in red digits PV.
3. To change the SV (set value) press the SET button displays Su in red. Use the up and down buttons to change the set temperature, once correct value is shown press SET to update controller.
4. Press HEAT button to switch heating elements on.
5. Press POWER button.
6. Press transform button.

### **NB.**

**IT IS VERY IMPORTANT THAT THE DRUM IS REVOLVING ONCE THE HEATERS ARE SWITCHED ON.**

**WITH THE TEMPERATURE ABOVE 100°C AND THE DRUM NOT TURNING THE FELT BELT WILL BE DAMAGED BEYOND REPAIR.**

## Control Panel Operations (Cont.)

The Fabric charge speed controller is located at the front of the left hand cabinet and controls the speed of the fabric charge roller.

### Fabric Charge Speed Controller



### Operation Procedure

1. On powering up the machine at the mains supply switch the controller displays the last speed setting used.
2. To change the speed setting turn the knob shown clockwise to increase speed and anti-clockwise to reduce speed.
3. To start the roller press the FWD button.
4. To stop the roller press the red STOP button.
5. To reverse the roller press the REV button.

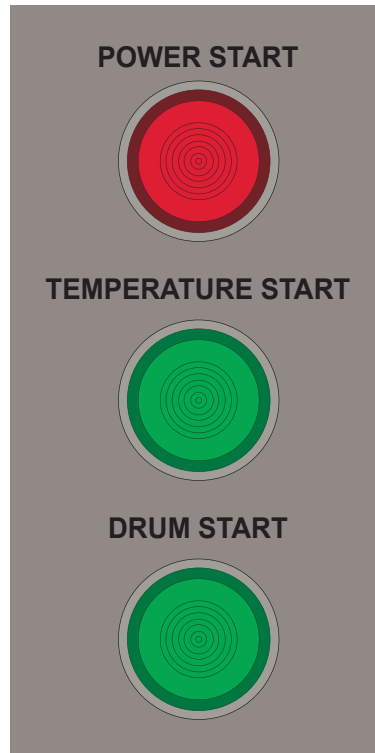
\* The MODE and ENTER buttons should not be used as these are factory set.

### Conveyor belt speed controllers

This is located at the rear of the left hand cabinet and controls the speed of the conveyor belt.

It is operated in the same way as the fabric charge roll controller.

## Control Panel Operations (Cont.)



### Power Start, Temperature Start and Drum Start Buttons

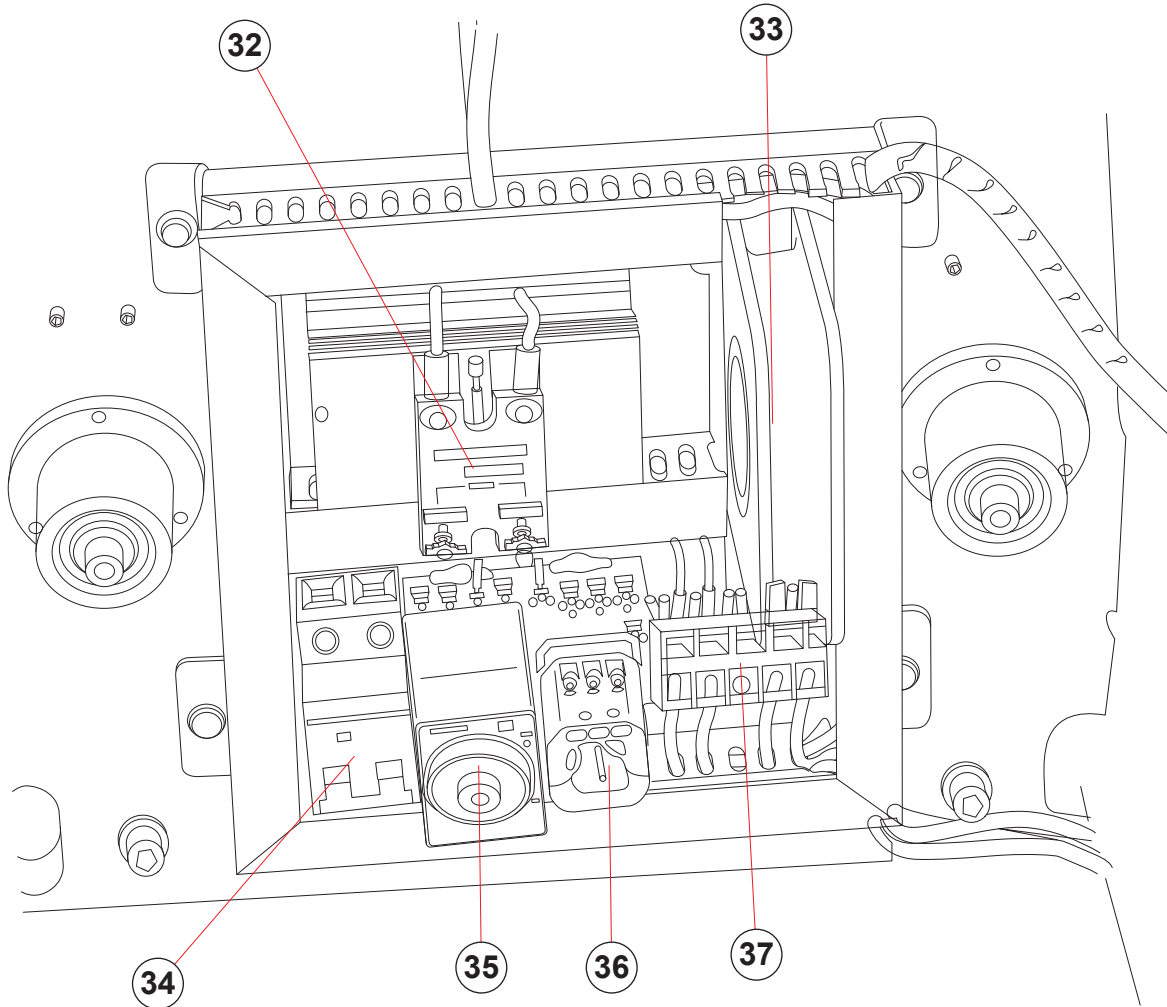
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XXXXXXXX XX XXXXX XXXXX XXXX XXX XXXXXXXX XXXX.

### Operation Procedure

1. On powering up the machine at the mains supply switch the controller displays the last speed setting used.
2. To change the speed setting turn the knob shown clockwise to increase speed and anti-clockwise to reduce speed.
3. To start the roller press the FWD button.
4. To stop the roller press the red STOP button.
5. To reverse the roller press the REV button.

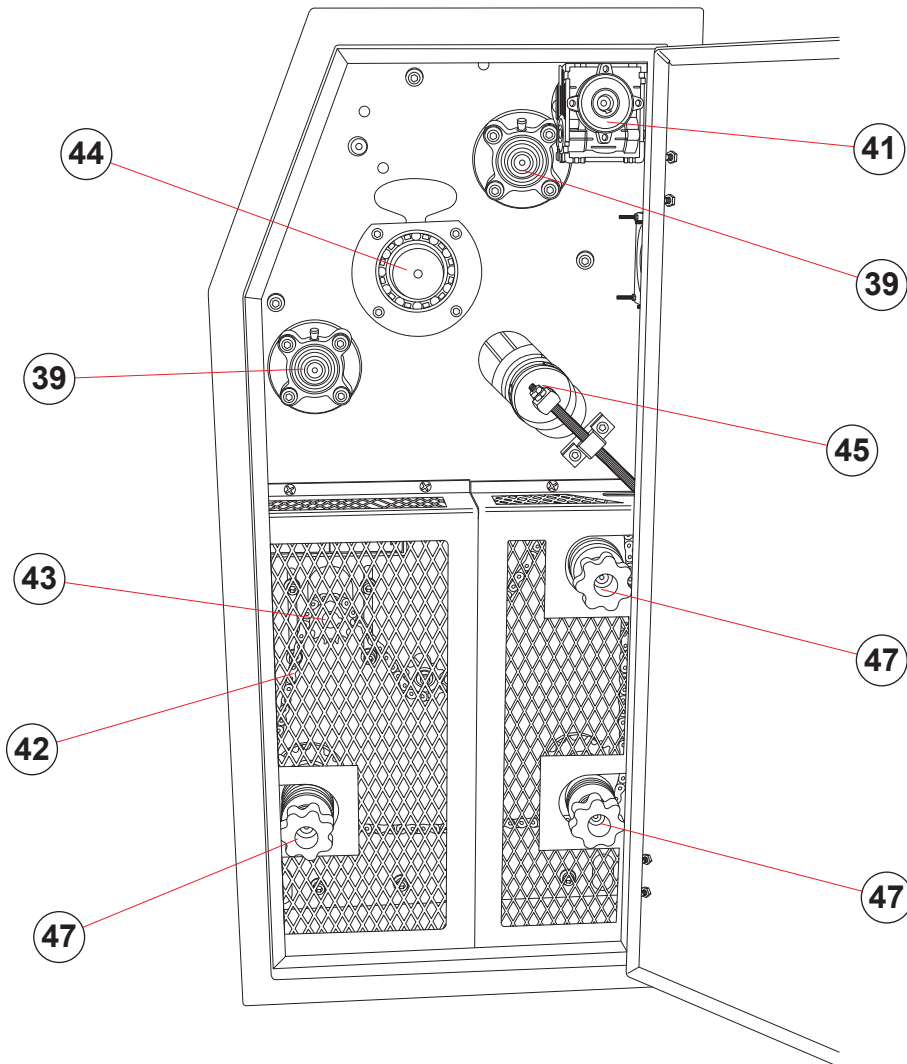
\* The MODE and ENTER buttons should not be used as these are factory set.

## 5.4 LH Cabinet Layout



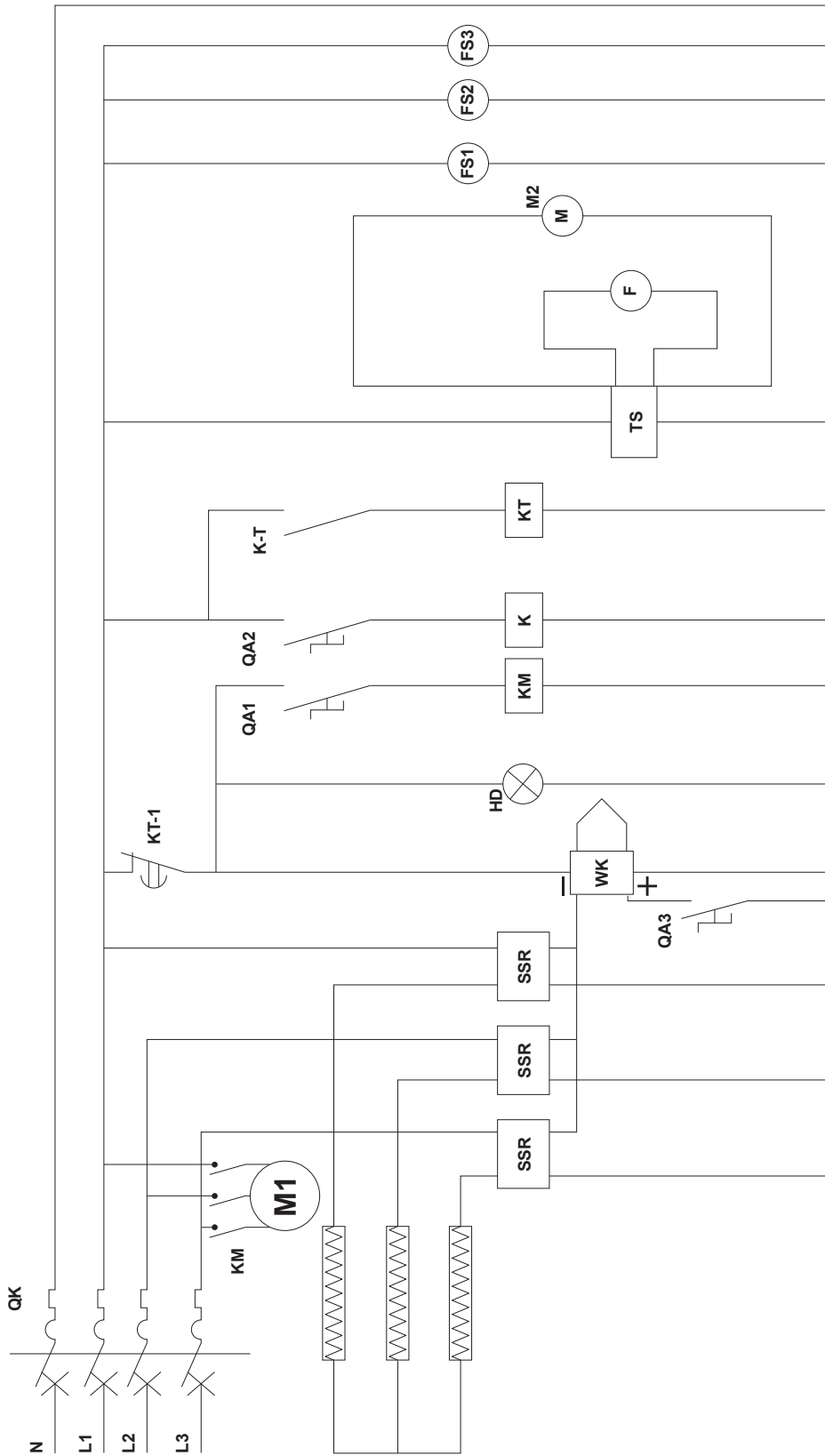
No.	Part Name
32	Solid State Relay
33	Cooling Fan
34	Circuit Breaker
35	Timer Relay
36	Heater Relay
37	Terminal Board

## 5.5 RH Cabinet Layout



No.	Part Name
38	Slip Ring
39	Bearing Block
40	Main Motor?
41	Gear Reducer
42	Chain
43	Toothed Wheel for Drive Belt Shaft
44	Bearing Block for Oil Drum
45	Tracking Adjusting Roller
46	Chain
47	Tensioner

## 5.6 Electrical Diagram



**Key:**

- WK** - Temperature Controller
- QA1** - Speed Switch
- QA2** - Power Switch
- QA3** - Heater Switch
- HD** - Heater
- Power Direction**

## 6. Troubleshooting

Symptom	Cause	Solution
The temperature is too high or rises slowly	Solid State Relay is damaged	Replace Solid State Relay
	There is damage in one or more sets of Electric Tubes in the Heater Unit	Replace the faulty Electric Tube(s) set(s)
	Aging of one or more sets of Electric Tubes in Heater Unit	Replace the faulty Electric Tube(s) set(s)
The temperature is out of control	Breakdown of Solid State Relay	Replace Solid State Relay
	Temperature Controller is faulty	Replace Temperature Controller
Blanket and Heating Roller don't revolve	Blanket is too loose	Adjust tension of Blanket
	Gear is skipping	Fasten Gear screws
	Bearing is jammed	Check or replace Bearing
	Failure of Frequency Converter	Check or replace Frequency Converter
	Failure of Redactor motor	Check or replace Redactor Motor
Temperature is not stable	Temperature Sensor is broken	Replace Temperature Sensor
	Aging or damaged Heating Tube	Replace Heating Tube
Main Switch trips	Breakdown of Collector Ring	1. Replace Collector Ring 2. Replace Solid State Relay



## **7. Design Change**

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With the policy of constant improvement and/or modification to meet changing conditions, the right is reserved to change the design and/or specifications at any time without prior notification, and therefore specifications may vary and not be in accordance with this manual.

## 8. Guarantee (Limited Warranty)

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A. Adkins & Sons Limited warrants that the press is free from defects in material and workmanship (excluding Pressing Pad Assembly) for a period of 12 months from the date of supply. The machine comes with a lifetime warranty on the heating element, one year warranty on parts and 90 days labour.

This warranty covers all parts to repair the defects, except when damage results from misuse or abuse, accident, alteration or negligence or when a machine has been improperly installed.

If a press covered by warranty should need to be returned to the factory for examination and repair, if on-site component replacement is not possible, A. Adkins & Sons Limited will make every effort to repair the customers press. The warranty will only be effective when A. Adkins & Sons Limited authorises the original purchaser to return the machine to the factory and only when the product upon examination has proven to be defective.

Should in our opinion any part of this press be defective in materials or workmanship, it will be replaced or repaired free of charge, provided that the press has been installed and operated in the correct manner and not subjected to misuse. If A. Adkins & Sons Limited authorise a replacement press, the warranty of the replacement press shall expire on the anniversary date of the original machines invoice to the customer.

In order for this warranty to be effective, no return of machine or parts may be made without prior factory authorisation. (This will exclude any travelling and/or carriage costs which will be charged at our discretion).

This is the sole warranty given by the company; there are no warranties, which extend beyond the description on the face hereof. The seller disclaims any implied warranty of merchantability and/or any implied warranty of fitness for a particular purpose; the buyer agrees that the goods are sold "as is". A. Adkins & Sons Limited does not warrant that the functions of the press will meet the customer's requirements or expectations. The entire risk as to use, quality and performance of the press lies with the customer. (No claim of any kind shall be greater than the sale price of the product or part to which the claim is made).

In no event will A. Adkins & Sons Limited be liable for any injury, loss or damage, including loss of profits, destruction of goods or any special, incidental, consequential or indirect damages arising from the use of the press or accompanying materials. This limitation will apply even if A. Adkins & Sons Limited or its authorised agent had been advised of the possibility of such damage.

**A. ADKINS & SONS LIMITED**  
**DECLARATION OF CONFORMITY**



<p>Application of Council Directives:</p> <p>Standards to which Conformity is Declared:</p>	<p>Machinery, Low Voltage. E.M.C.</p> <p><b><u>BS EN ISO 12100:2010</u></b> - Safety of machinery: Basic Technology, Principles of Design.  <b><u>BS EN 6024-1:2006+A1:2009</u></b> - Safety of machinery: Electrical Equipment of Machines.  <b><u>BS EN 60529:1992-A2:2013</u></b> - Degree of protection provided by enclosures.  <b><u>BS EN ISO 13850:2015</u></b> - Safety of Machinery: Emergency Stops.  <b><u>BS EN ISO 141211:2007</u></b> - Safety of Machinery: Principles for Risk Assessment.  <b><u>BS EN 55011:2016+A1:2017</u></b> - Class A Group 2 Equipment - EMC Emissions.  <b><u>BS EN ISO 61000-6-4:2007+A1:2011</u></b> - EMC Conducted Emissions.  <b><u>BS EN ISO 61000-6-2:2005</u></b> - EMC Immunity.</p>
<p>Manufacturer's Name:</p>	<p><b><u>A. Adkins &amp; Sons Limited</u></b></p>
<p>Manufacturer's Address:</p>	<p>High Cross, 18 Lancaster Road,          Hinckley, Leicester, LE10 0AW, United Kingdom.</p>
<p>Type of Equipment:</p>	<p>Alpha Calender Roll-Master 1.2</p>
<p>Model Number:</p>	<p>.....</p>
<p>Serial Number:</p>	<p>.....</p>
<p>Year of Manufacture:</p>	<p>.....</p>

I, the undersigned, hereby declare that the equipment specified above conforms to the above directives and standards.

Place: Hinckley, United Kingdom

Signature: 

Date: .....

Full Name: Marie McMahon  
 Position: General Manager