MONO

MonoEquip.com

Gemini Roll Plant

EN Installation and Operation

Product Versions

- Two pockets
- Optional roll forming unit
- UK specifications

Product Serial Number

EU Declaration of Conformity Certificate

MONO

DECLARATION OF CONFORMITY

We hereby declare that this machine complies with the essential health and safety requirements of :-

- The Machinery Directive 2006 / 42 / EC
- The Low voltage Directive 2006 / 95 / EC
- The requirements of the Electromagnetic Compatibility Directive 2004 / 108EC, 91 / 263 / EEC, 92 / 31 / EEC
- The General Safety of Machinery and food processing Standards applicable
- Materials and Articles intended to come into contact with food - Regulation (EC) No. 1935 / 2004
- Good manufacturing practice for Materials intended to come into contact with food - Regulation (EC) No. 2023 / 2006

Signed	
D. Osmundsen – Quality and Conformance Manager	

Date	

Machine FG Code.		**Machine Serial No.**	

A technical construction file for this machine is retained at the following address:

MONO EQUIPMENT
Queensway,
Swansea West Industrial Park,
Swansea
SA5 4EB
UK

MONO EQUIPMENT is a business name of **AFE GROUP Ltd**
Registered in England No.3872673 VAT registration No.923428136

Registered office: Unit 35,
Bryggen Road,
North Lynn Industrial Estate,
Kings Lynn Norfolk,
PE30 2HZ

Safety Symbols

The following safety symbols are used throughout this product documentation and manual (available at Mono-Equip.com). Before using your new equipment, read the instruction manual carefully and pay special attention to information marked with the following symbols.

	DANGER	■ Indicates an immediate hazard with a high risk which, if not avoided, will result in death or serious physical injury.
	WARNING	■ Indicates a potential hazard with a medium risk which, if not avoided, could result in death or serious physical injury.
	CAUTION	■ Indicates a hazard with a low risk which, if not avoided, could result in minor or moderate physical injury.

Electrical Safety

Advice regarding supplementary electrical protection

Commercial bakeries, kitchens and food service areas are environments where electrical appliances may be located close to liquids, or operate in and around damp conditions, or where restricted movement for installation and service is evident.

The installation and periodic inspection of the appliance should only be undertaken by a qualified, skilled and competent electrician, and connected to the correct supply suitable for the load as stipulated by the appliance data label.

The electrical installation and connections should meet the necessary requirements of the local electrical wiring regulations and any electrical safety guidelines.

We recommend:

- Supplementary electrical protection with the use of a residual current device (RCD)
- Fixed wiring appliances incorporate a locally situated switch disconnecter to connect to, which is easily accessible for switching off and safe isolation purposes. The switch disconnecter must meet the specification requirements of IEC 60947.

Your attention is drawn to: BS 7671:2018 – Guidance Note 8 – 8.13 : Other locations of increased risk

It is recognised that there may be locations of increased risk of electrical shock other than those specifically addressed in Part 7 of BS 7671. Examples of such locations could include laundries where there are washing and drying machines in close proximity, and water is present, and commercial kitchens with stainless steel units, where once again, water is present. Where, because of the perception of additional risks being likely, the installation designer decides that an installation or location warrants further protective measures, the options available includes:

- Automatic Disconnection of Supply (ADS) by means of a residual current device having a residual operating current not exceeding 30 mA;
- Supplementary protective equipotential bonding; and
- Reduction of maximum fault clearance time.

The provision of RCDs and supplementary bonding must be specified by the host organisation's appointed installation designer or electrical contractor and installed by a suitably qualified and competent electrician so as to comply with Regulations 419.2 and 544.2.

WARNING

- The supply to this machine must be protected by a 30mA Type B Residual Current Device (RCD).
- Always fit a wall-mountable isolator switch to isolate the machinery from the electrical supply completely. The isolator must be visible, labeled as an emergency shutdown device, and easily accessible.

Important Notices

CAUTION Do not use ordinary vegetable oil, from shop shelves, in the Dough Divider. Vegetable oil forms a highly viscose residue (gum-like), causing sticking and possible damage to the machine.

MONO Equipment recommends the use of "BAKO DIVIDER OIL" (available to order direct from MONO using part number A900-25-272)

The importance of operator training

Operators should always be properly trained in the safe use and operation of all appliances, and read and understand the Operator Manual which sets out clear safety warnings to not place hands in the device when it is operating.

Do not attempt to pick dough pieces from the pockets. Operators should only pick up dough pieces from the belts.

Always ensure the dough lubrication system and flour duster are topped up to avoid blockages

Operators are reminded of the need to ensure the oil reservoir and flour duster are always topped up so as to provide lubricant to the dough moulding pockets. The lubrication assists the trouble-free ejection of dough pieces on to the conveyor belts.

Enhancing safety awareness – additional warning labels and guarding

As a responsible manufacturer, MONO Equipment is committed to ensuring the best safety and operating standards are incorporated in to all our appliances.

We have produced an enhanced Safety Warning Label Kit and extended, Fail-Safe Interlocked Guard that is available free-of-charge to all MONO Gemini Two-Pocket Roll Plant machine operators. MONO Equipment will contact all customers to arrange to supply these items. Customers can also contact MONO Equipment directly to register your appliance and to arrange an appointment for our engineer to attend.

Tel. +44/0 1792 561 234 or Email: spares@monoequip.com

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1. Introduction

1.1. The MONO Gemini Roll Plant

MONO's two-pocket roll plant is designed to effortlessly and reliably produce high volumes of bread rolls with accuracy and consistency and has an output of up to 3,200 rolls per hour. Requiring just one person to operate, the compact Two-Pocket Roll Plant fully automates the dividing and rounding process, producing a wide range of rolls with a weight range of between 30-100g. The highly intuitive colour Touch Screen Controller controls every element of the roll production process and stores up to 60 programs for future use.

With the addition of MONO's optional Roll Forming Unit, the Gemini Roll Plant's repertoire can be extended to include finger rolls, petit pain, and burger buns.

Key benefits

- Fully automated process
- Produces up to 3200 rolls per hour
- Weight ranges of 30 to 100g, 40 to 110 g, and 50 to 145 g
- Exceptional accuracy of weight, size and shape
- Small footprint fits most bakeries
- User-friendly, colour touch screen controller
- Stores up to 60 programs
- One-person operation
- Optional roll forming unit to extend the product range

Key features

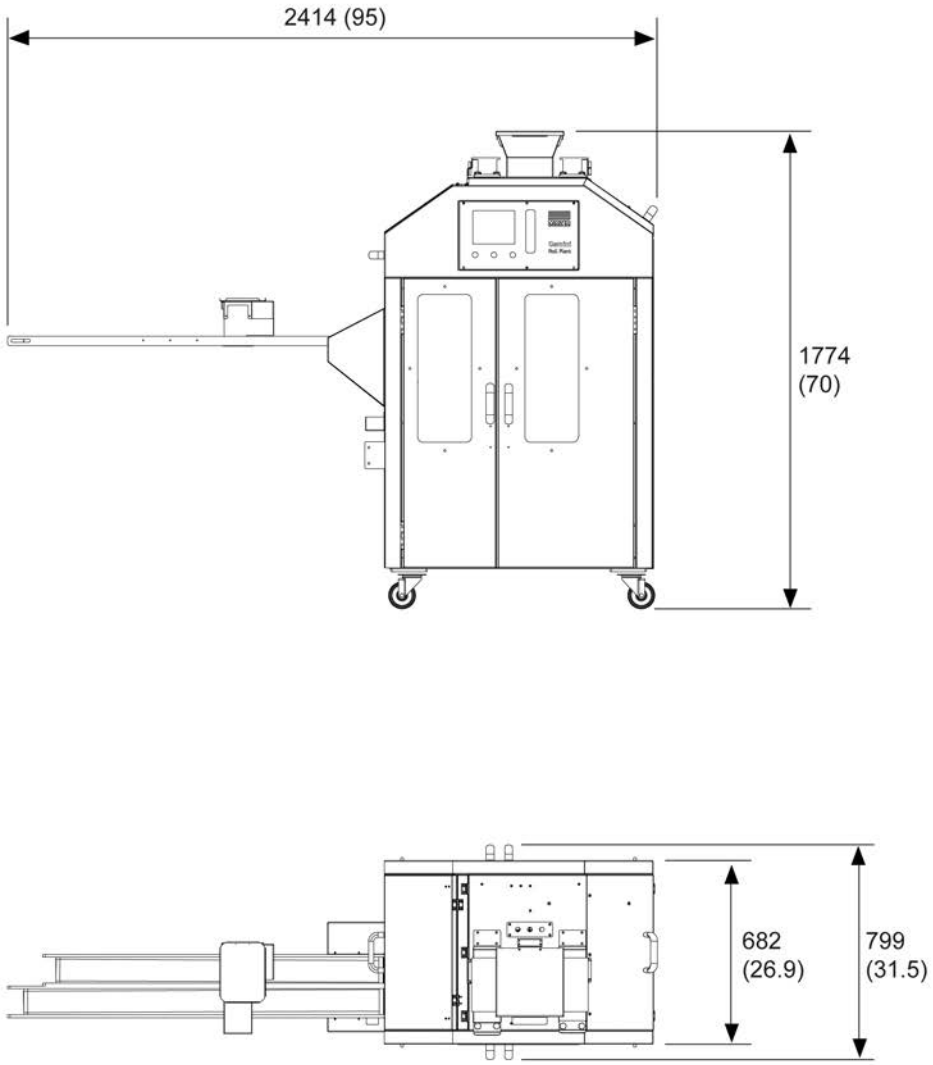
Figure 1.1: Key features

A. Hopper
B. Integrated flour dusters
C. Control panel (touch screen controller, viewing window, USB port, and emergency stop button)
D. Viewing windows
E. Access panels
F. Lockable castors for safety
G. Flour dust catcher
H. Power connection for optional roll forming unit
I. Locating plates for positioning the optional roll forming unit
J. Off-take belts

2. Dimensional Drawings

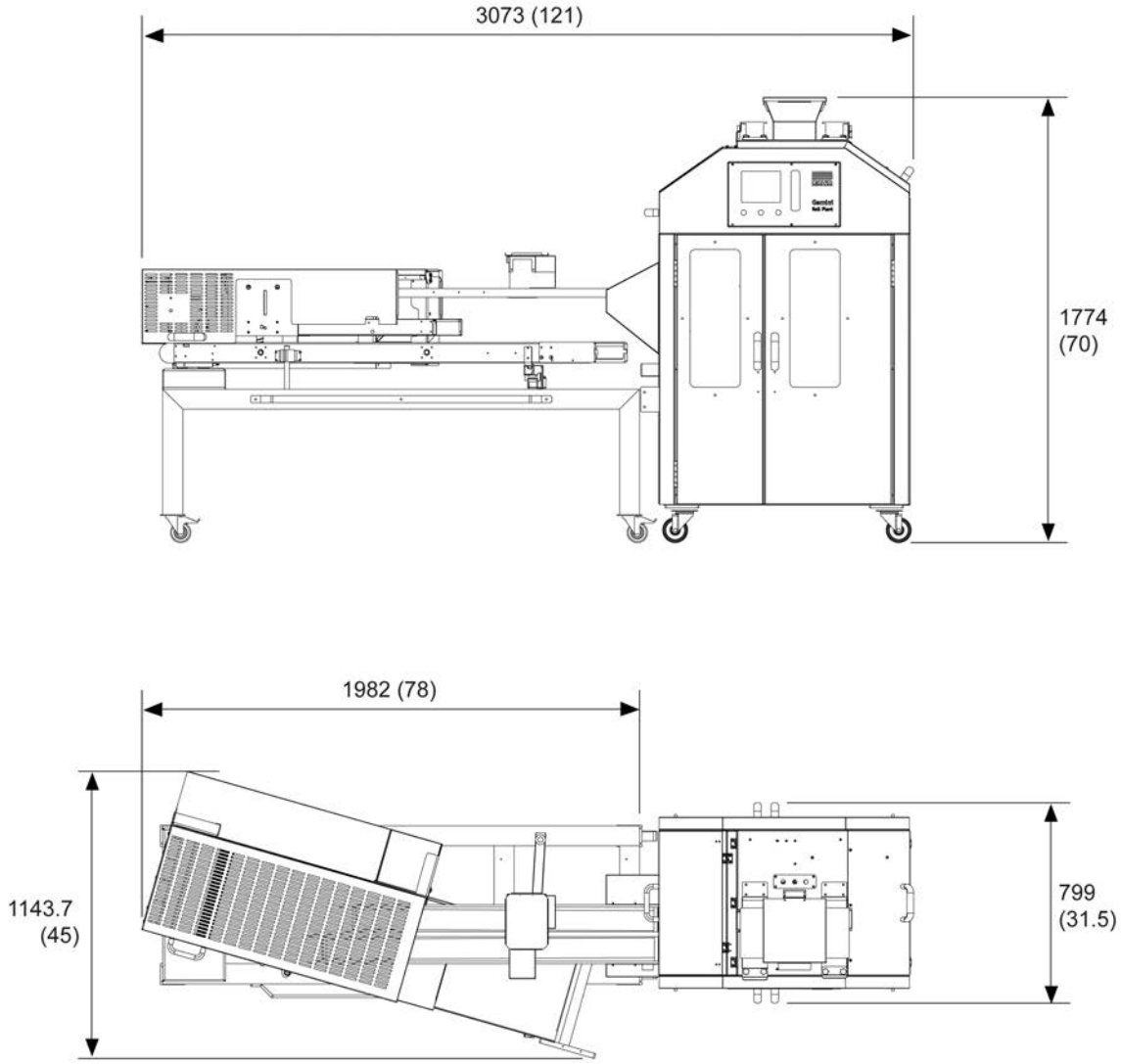
2.1. Dimensional drawings

Figure 2.1: **Dimensions without the roll forming unit**



Dimensions are in mm (inches).

Figure 2.2: Dimensions with the roll forming unit



Dimensions are in mm (inches).

3. Specifications

3.1. Electrical specifications

WARNING

- An electrical socket must be protected by a 30mA Type B Residual Current Device (RCD) before installation and commissioning of the bread roll plant.
- Always fit a wall isolator to electrically isolate the machine completely. The isolator must be visible, labeled, and easily accessible by an operator.
- Always check the electrical requirements on the machine's information plate before connecting the power. Contact Mono Equipment if the electrical information is not correct for your site.
- Never use the USB port to power or recharge electronic devices e.g., mobile phones. Incorrect usage causes damage to the machine and could cause a fire.
- All electrical connections to the machine must comply with the statuary requirement of the country.
- Always ensure hands are dry before touching any electrical components including cables, switches, and plugs.
- Ensure the machine is switched OFF at the mains isolator when not in use.

Electrical ratings See **Table 3.1**

Table 3.1: Electrical ratings

Supply	Ratings	
	With roll forming unit	Without roll forming unit
415 Vac (50/60 Hz), 3-phase + neutral + earth	1.8 kW, 16 A fuse	2.55 kW, 16 A fuse

3.2. Functional specifications

Roll weight range 30 to 100 g

40 to 110 g

50 to 145 g

Output capacity Up to 3200 rolls per hour

Roll forming unit Optional accessory

3.3. Mechanical specifications

Dimensions	See **Table 3.2** or **Table 3.3**
Weight	640 kg (1410 lb) without the roll forming unit
	920 kg (2028 lb) with the roll forming unit
	This equipment is too heavy for a single person to lift.

Table 3.2: Overall dimensions without the roll forming unit

Length(1)	Width(2)	Height	Piston diameter
2414 mm (95 in.)	799 mm (31½ in.)	1744 mm (69¾ in.)	64 mm (2½ in.)

(1) Including the switch.
(2) Including the handle.

Table 3.3: Overall dimensions with the roll forming unit

Length(1)	Width (unit open)	Width (unit closed)	Height
3073 mm (121 in.)	1142 mm (45 in.)	650 mm (25½ in.)	1774 mm (69¾ in.)

(1) Including the switch.

3.4. Environmental specifications

Noise	The noise level is less than 85 dB.

4. Safety

4.1. Safety messages

WARNING

- Before using the machine:
  - Check that all covers, panels, guards, and cables are securely fitted.
  - Visually examine the machine for obvious damage.
- If the machine is damaged, malfunctioning, or missing parts:
  - Stop using it.
  - Do not attempt any repairs to it.
  - Contact the Service Department of Mono Equipment for advice.
- Ensure this User Manual is read thoroughly before operating the machine.
- Only fully-trained and authorised persons are permitted to install the machine.
- All machine operators should be fully trained before operating the machine.
- No one under the age of 16 should be permitted to operate this machine.
- No loose clothing, ties, or jewellery should be worn when operating the machine.
- Never operate the machine with any panels removed.
- Safety guards should not be removed under any circumstances.
- A responsible manager should carry out daily Safety Checks on the machine.

WARNING

- An electrical socket must be protected by a 30mA Type B Residual Current Device (RCD) before installation and commissioning of the bread roll plant.
- Always fit a wall isolator to electrically isolate the machine completely. The isolator must be visible, labeled, and easily accessible by an operator.
- Always check the electrical requirements on the machine's information plate before connecting the power. Contact Mono Equipment if the electrical information is not correct for your site.
- Never use the USB port to power or recharge electronic devices e.g., mobile phones. Incorrect usage causes damage to the machine and could cause a fire.
- All electrical connections to the machine must comply with the statuary requirement of the country.
- Always ensure hands are dry before touching any electrical components including cables, switches, and plugs.
- Ensure the machine is switched OFF at the mains isolator when not in use.

WARNING

- Be aware that hand contact with moving surfaces may cause friction burns to skin.
- Do not strike the touchscreen controller with a hard or pointed object, or press the panel with excessive force
- Fully train operatives before using the machine. Anyone undergoing training must be under direct supervision.
- Do not store items on top of or surrounding the machine.
- Only use the machine for forming bread rolls from dough as explained in this user manual. Contact Mono Equipment for other product-making machines.
- No unauthorised modifications to the machine are permitted.
- Ensure the machine is isolated from the electrical supply before any cleaning or maintenance work takes place.
- Do not attempt to clean the moulding areas when the machine is running.
- Do NOT insert hands or any other item into the Flour Duster when the machine is running.
- As flour dust can be highly combustible, ensure only an ATEX-approved Safety Vacuum Cleaner is used for cleaning purposes.

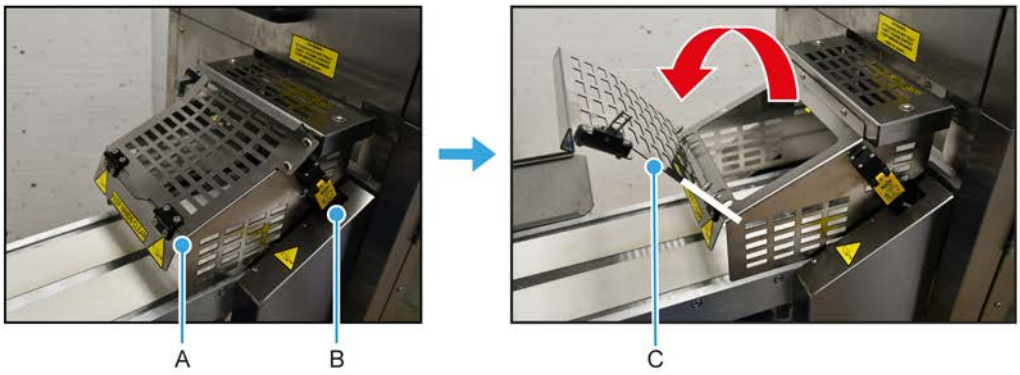
4.2. Offtake conveyor guarding

WARNING Do not attempt to clear blockages by placing hands under the guard whilst the machine is in operation.

The machine is fitted with a safety guarding device located where the dough pieces are ejected onto the offtake conveyor.

If a blockage needs to be cleared during roll production, lifting the hinged flap **(A)** will cut the machine off via the interlocking safety switch **(B)** ensuring full operator safety (**Figure 4.1**). After clearing the blockage, the operator shall close the flap and resume the machine by pressing the reset light on the control panel.

Figure 4.1: Opening the Offtake conveyor guard



5. Installation

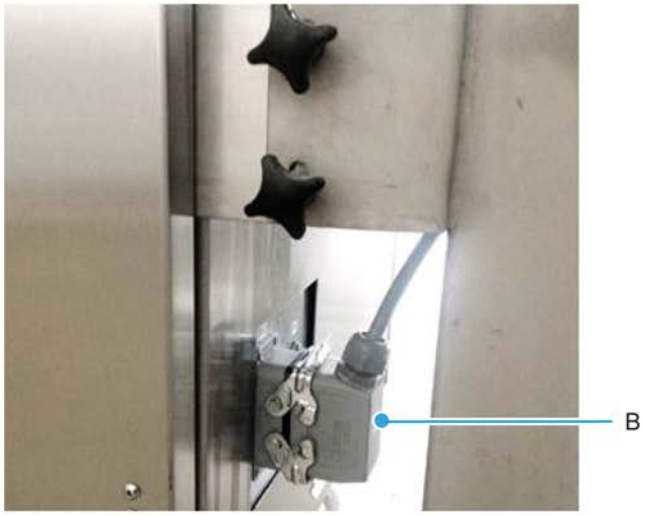
5.1. Installing the MONO Gemini Roll Plant

- The machine has two fixed and two lockable swivel castors for ease of positioning and safety.
- A forklift, or pallet truck, can pick the machine up from under the main frame between the wheels.
- Ensure the machine is standing level on a solid floor.
- The following areas should be kept accessible:
  - Control panel
  - Side panels
  - Back panel
- Cleaning and maintenance is then easier without having to move the machine.
- After checking the electrical supply is consistent with the machine's information plate, connect the 16 Amp plug to a RCD-protected socket (see **Section 3.1**).
  - The terminal value of the machine is 10 Amps at 415 Vac (3-phases).
  - An electrical wiring diagram is inside the fuse box.
  - See **Chapter 14** for all electrical drawings.
- Turn the main isolator switch on the machine to the "I" position to power-up.

5.2. Connecting the optional Roll Forming Unit (RFU)

1. Position the two pieces of machinery together.
   - The locating plates on both machines need to be aligned.
2. Using the black thumb screws, secure two of them in the fixing plates on both sides of the machines (A).
   - Tighten the thumb screws until finger-tight only.

3. Connect the power supply cable (B) from the RFU to the roll plant.
   – Secure the cable in place by using the integrated top and bottom clips.



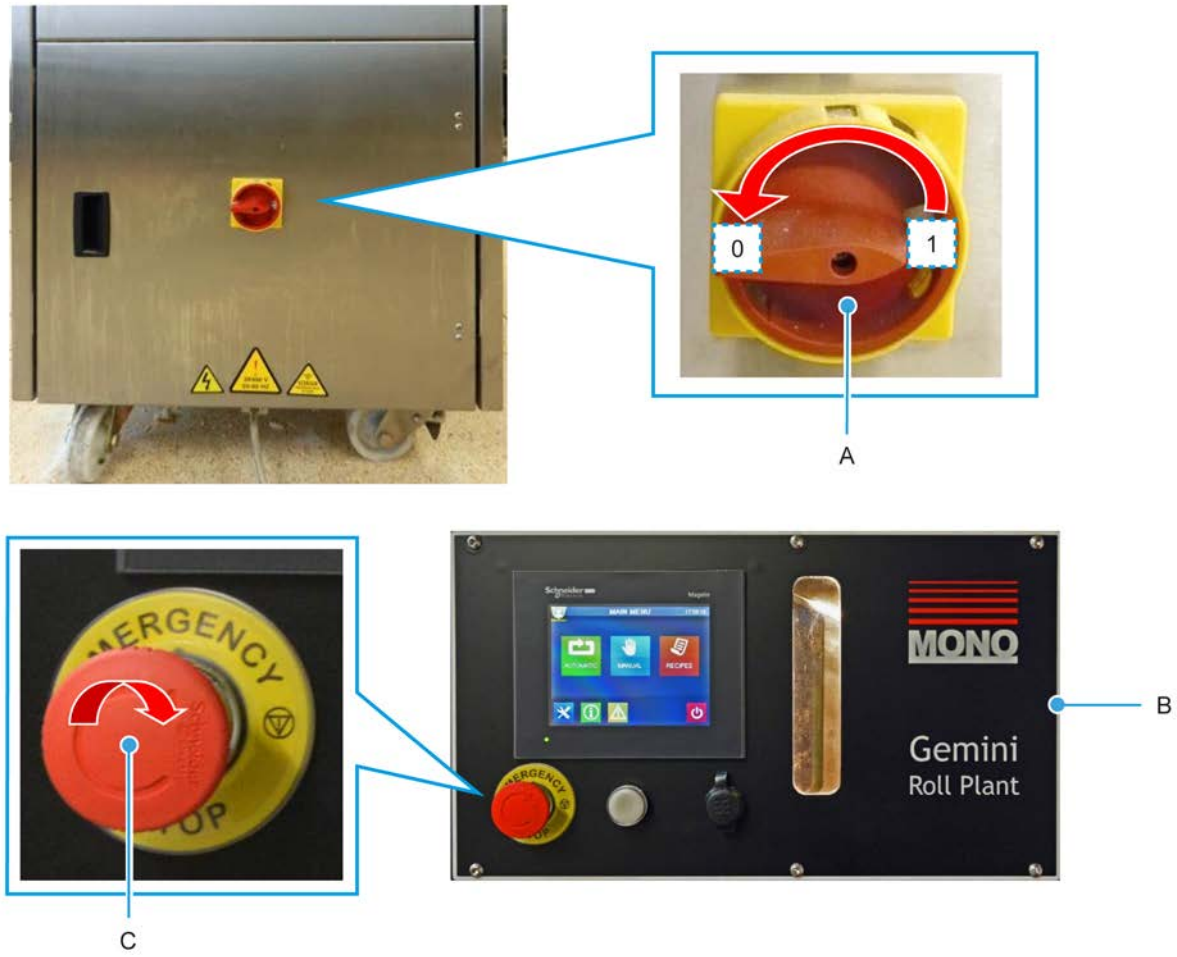
6. Isolation

6.1. Isolating the machine from the electrical supply

In an emergency:

- Turn the isolator switch (A) clockwise to the "0" (OFF) position.
- Use the **Emergency Stop Button** on the control panel (B and C).
  - **Note:** Twist the button clockwise to release it first, and then press it.
- Turn off or unplug the power supply to the machine.

Figure 6.1: Emergency stop buttons



7. Operation: two-pocket roll plant

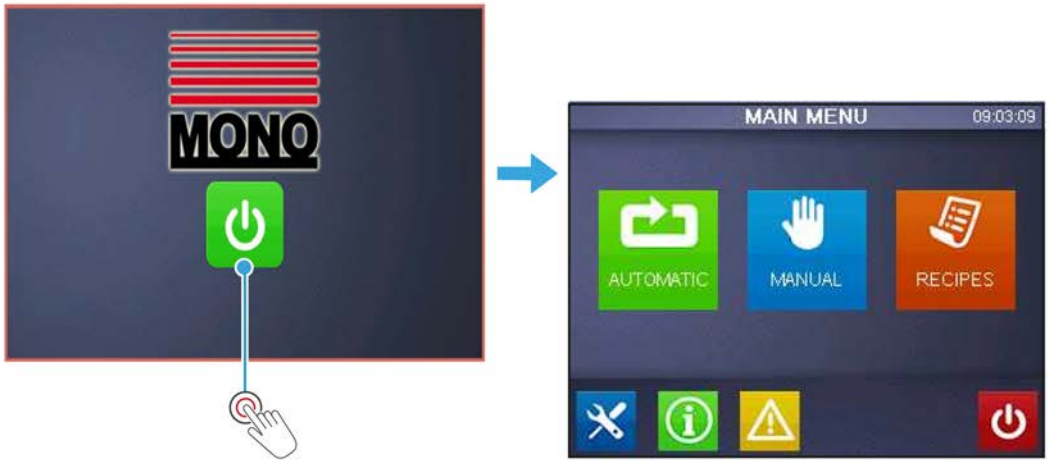
7.1. Start-up

The **Home** screen appears after switching the machine on.

To continue from the **Home** screen (**Figure 7.1**):

1. Touch the green **Start** button.
2. The machine now runs checks on the settings and calibrates it ready for use.
3. After a short wait, the main **Main Menu** screen appears.

Figure 7.1: Home and Main Menu screens



There are three larger icons on the Main Menu screen:

Automatic: Touch to load previously stored recipe program. See **Section 7.6** for a guide to the **Automatic** operation mode.

Manual: Touch to run temporary programs, or create and save new recipe programs. See **Section 7.7** for a guide to the **Manual** operation mode.

Recipes: Touch to manage recipe programs. Edit, delete, upload, and download using a USB pen-drive. See **Section 7.8** for a guide to the **Recipes** menu.

At the bottom of the screen are four smaller icons (from left to right):

	Settings:	Touch to see the general settings screen. See **Section 7.2** for a guide to the **Settings** screen.
	Information:	Touch to see the power used, life timer, unit price, consumption, pieces produced, etc. See **Section 7.4** for a guide to the **Information** screen.
	Alarms:	Touch to see active and historic alarms, and the alarm log. See **Section 7.5** for a guide to the alarm functions.
	Standby:	Touch to return to the **Home screen**.

7.2. Engineering settings

The **Settings** button provides access to the main default settings for the machine (**Figure 7.2**).

To access, touch the blue **Service** and enter the password. (The default password is 1972).

The **Settings** menu has two main options:

- HMI configuration – offline settings, system settings, and diagnostics.
- Service menu – belt, pinner and duster settings, IO test, and IO diagnostics.

Figure 7.2: Accessing the Settings menu

7.3. HMI configuration

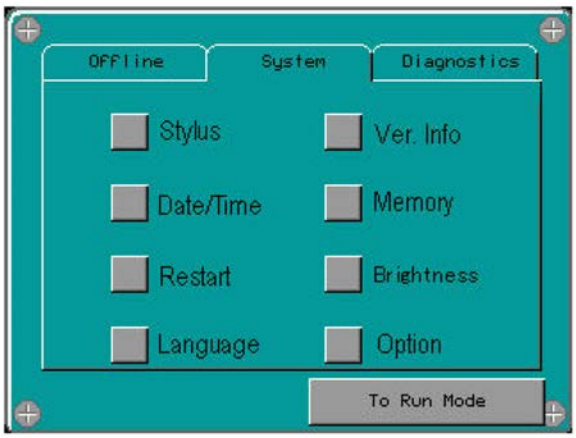
The HMI configuration page has three main option tabs: Offline, System, and Diagnostics.

Offline

The **Offline** tab enables access to settings regarding the HMI only.

System

Figure 7.3: System tab



The system tab enables access to:

Stylus	For screen calibration
Date / Time	For setting the date and time
Restart	To restart the operating system
Language	Not currently supported
Ver. info	Displays the system run-time versions
Memory	Memory statistics
Brightness	Screen brightness adjustment
Option	Not currently supported

Diagnostics

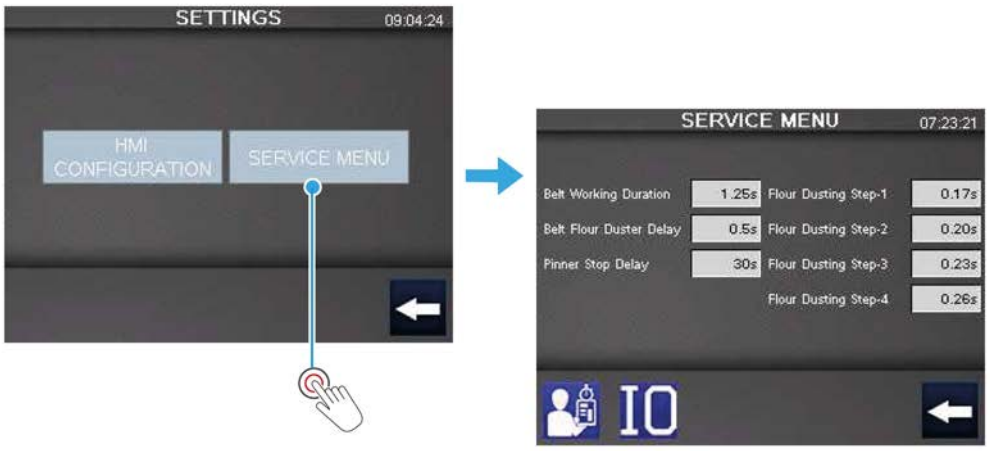
The Diagnostics tab enables access to:

Variables	Not currently supported
Statistics	Displays communication statistics

Service menu

Select the **Service** button to be taken to the **Service Menu** page (**Figure 7.4**). The **Service Menu** page displays the working durations in seconds of the main belt and flour dusters, the delay duration in seconds of the belt flour duster, and pinner stop delay.

Figure 7.4: Accessing the Service menu



At the bottom of the screen, an **I/O Test** button provides access to the **I/O Test** screen (**Figure 7.5**). The **Arrow** button takes you back to the previous screen.

The **I/O Diagnostics** button provides access to four information screens (**Figure 7.6 on page 17**).

Figure 7.5: Accessing the I/O Test screen

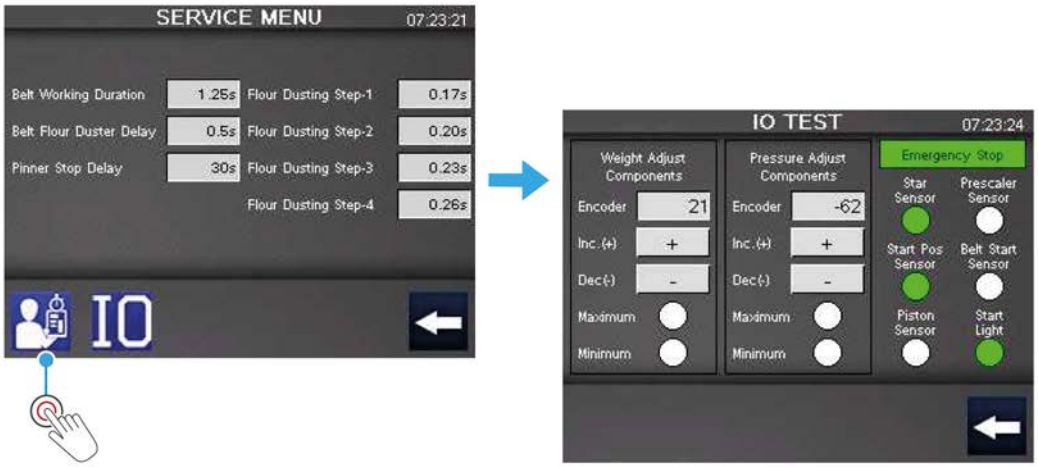


Figure 7.6: Accessing the I/O Diagnostics menus

7.4. Information screen

The **Information** screen (**Figure 7.7**) provides basic information about power consumption and products produced.

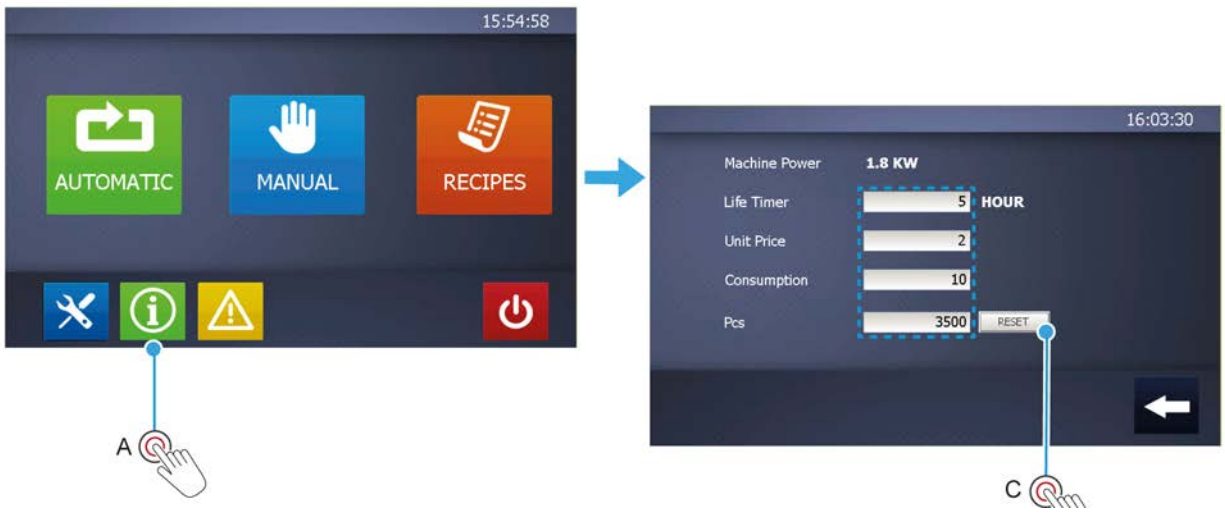
Life timer:	The total number of hours the Two-Pocket Roll Plant has been running
Unit price:	The unit price of electricity being used.
Consumption:	The total value of electricity used.
Pcs:	The total number of rolls produced since the last 'Reset' took place.

Select the green **Information (i)** button (A) and input the relevant values for each field stated above.

To reset the production quantity at any time, select the **Reset** button (B) to the left of the **Pcs** field.

Select the **Arrow** back button to return to the previous menu.

Figure 7.7: Information screen



7.5. Alarms log

Select the yellow **Alarm** button **(A)** to enter the **Active Alarms** screen (**Figure 7.8**).

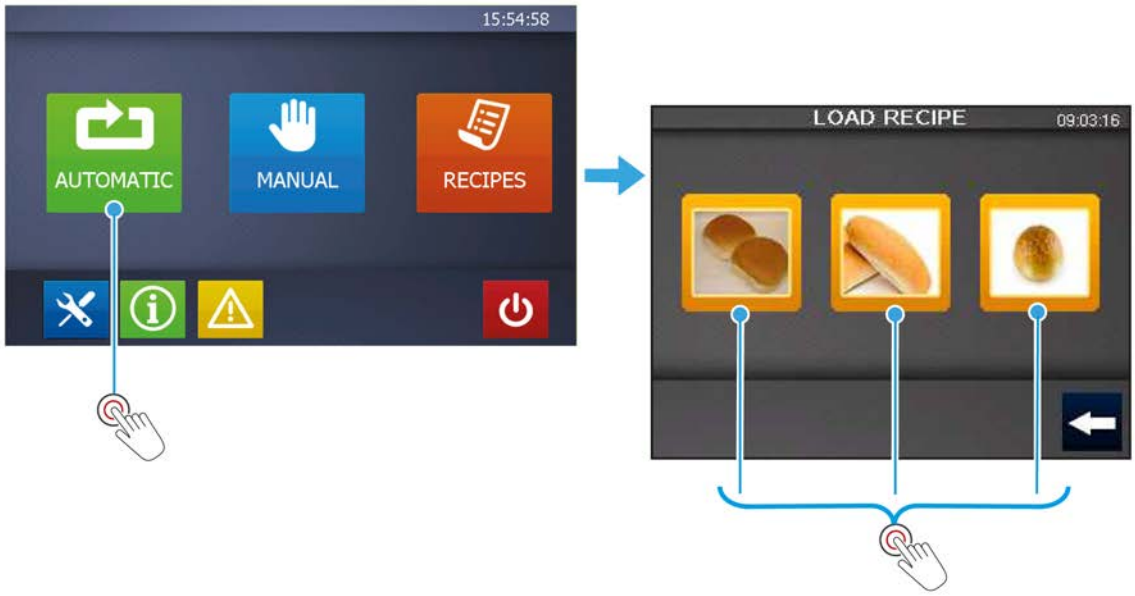
The pop-up window gives access to active alarms, historical alarms, and alarms log. To switch between alarm pages, press the buttons **(B - D)** across the bottom of the screen. See **Appendix A** for troubleshooting alarm messages.

Figure 7.8: **Active Alarms screens**

7.6. Automatic mode

When the **Automatic Mode** is selected, the **Product Category** screen appears (**Figure 7.9**).

Figure 7.9: Automatic Mode and Load Recipe screens



The Product Category Screen has three main Roll Type options (from left to right):

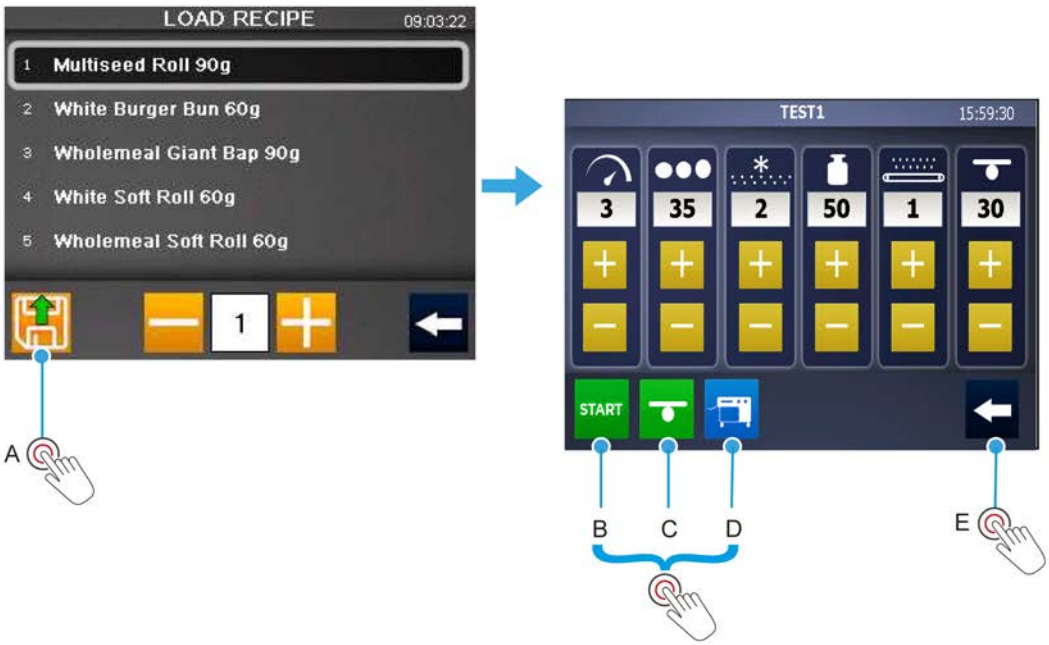
Burger buns:	Flattened buns, suitable for burgers
Finger rolls:	Elongated bread rolls.
Round rolls:	Standard round rolls.

To use Automatic mode:

1. Touch the type of roll you wish to produce to then show a list of stored recipes (**Figure 7.10 on page 21**).
2. Touch a recipe, e.g. Multiseed Roll 90g.
3. Touch the **Load** button to then see the recipe program.

Note: If there are no recipe programs, create them in **Manual** mode and store them for future use.

Figure 7.10: Load Recipe Program screen



The six columns shown on the screen relate to different elements of the product recipe program (from left to right):

	Speed:	The speed that the machine is running at. Input a value in the range 1 (slowest) to 10 (fastest).
	Dough cavity depth:	The depth of the dough rounding cup. Input a value in the range 20 to 46.
	Pre-scaler flour duster:	The amount of flour deposited at the pre-scaler stage. Input a value in the range 0 (off) to 3.
	Weight:	The weight of the dough piece in grammes. Input a value in the range 30 to 105 .
	Conveyor belt flour duster:	The amount of flour deposited on the off-take belts. Input a value in the range 0 to 4.
	Rounder tray speed:	The speed of the Rounder Tray during the rounding process. Input a value in the range 10 to 75.

Note: All of these settings are adjustable at any time without overwriting the saved recipe program.

At the bottom of the screen are five more buttons (from left to right):

	Start:	Starts the recipe program. When touched, this icon changes to a red STOP button which can be used to stop the program.
	Rounder:	Touch to switch the Rounding device on and off.
	RFU:	Touch to enter the Roll Forming Unit setup screen (optional extra).
	Recipe:	Touch to save product recipe programs.
	Back:	Touch to return to the previous screen.

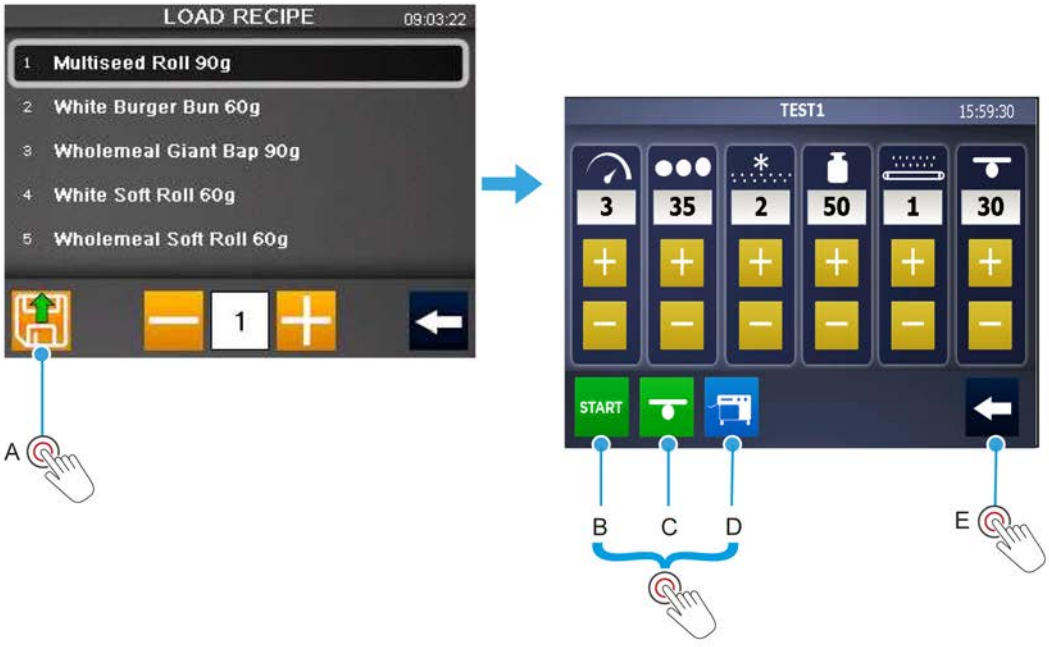
7.7. Manual mode

When the **Manual** mode is selected, the recipe program screen appears (see **Section 7.6**).

Use **Manual** mode to:

- Run temporary programs (lost when power is switched off).
- Design recipe programs to be saved for future use.

Figure 7.11: Product recipe program screen (Manual mode)



The six columns shown on the screen relate to different elements of the product recipe program (from left to right):

Speed:

The speed that the machine is running at.
Input a value in the range 1 (slowest) to 10 (fastest).

Dough cavity depth:

The depth of the dough rounding cup.
Input a value in the range 20 to 46.

Pre-scaler flour duster:

The amount of flour deposited at the pre-scaler stage.
Input a value in the range 0 (off) to 3.

Weight:

The weight of the dough piece in grammes.
Input a value in the range 30 to 105
.

Conveyor belt flour duster:

The amount of flour deposited on the off-take belts.
Input a value in the range 0 to 4.

Rounder tray speed:

The speed of the Rounder Tray during the rounding process.
Input a value in the range 10 to 75.

At the bottom of the screen are five more buttons (from left to right):

Start:

Starts the recipe program. When touched, this icon changes to a red STOP button which can be used to stop the program.

Rounder:

Touch to switch the Rounding device on and off.

RFU:

Touch to enter the Roll Forming Unit setup screen (optional extra).

Recipe:

Touch to save product recipe programs.

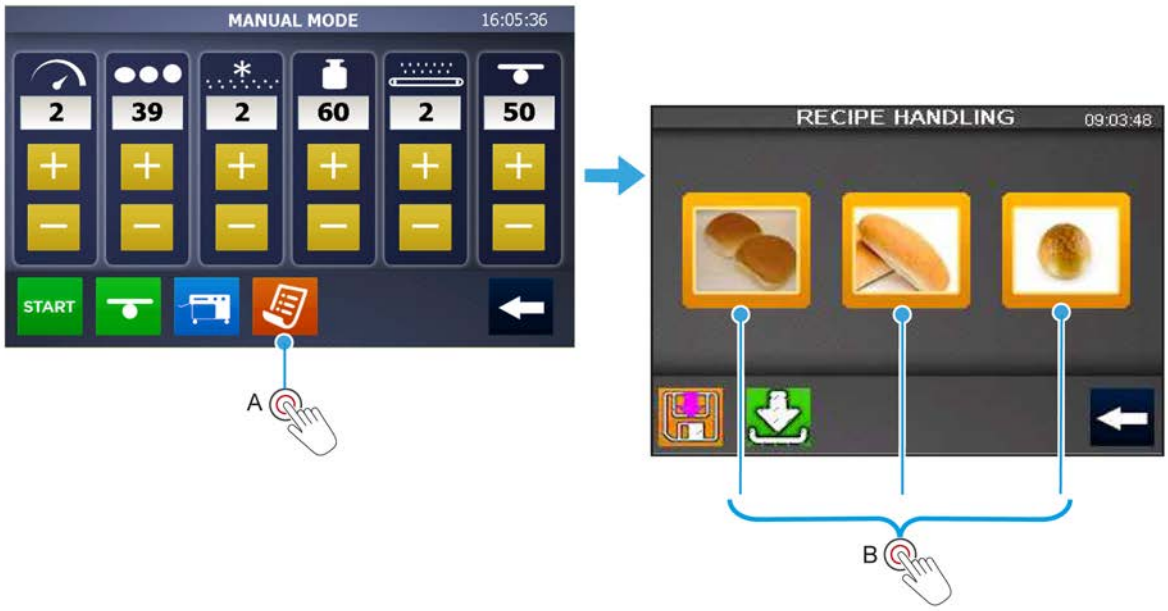
Back:

Touch to return to the previous screen.

How to save a product recipe

Context: Once you are happy with the product recipe, save it for future use by touching the orange **Recipe** button.

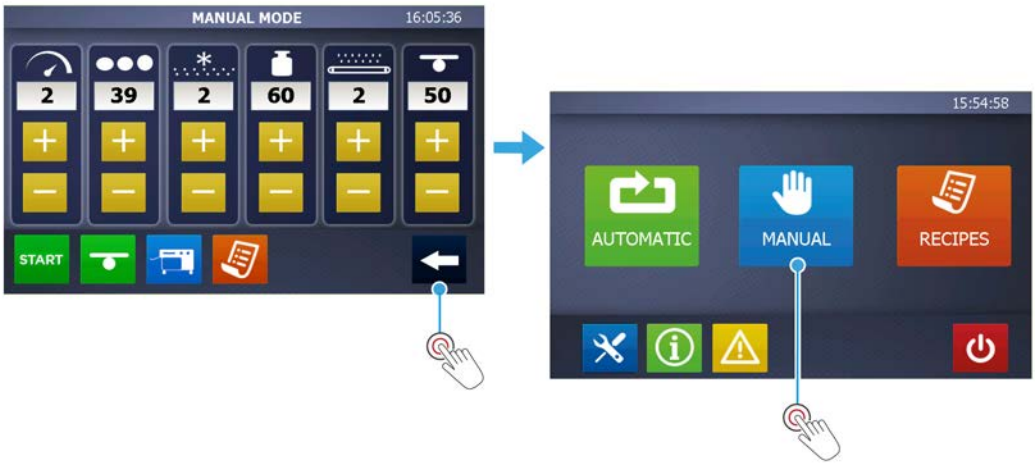
1. Touch the orange **Recipe** button.
2. Select the product category where the product recipe is to be stored.
   – Burger buns, Finger rolls, or Round rolls.



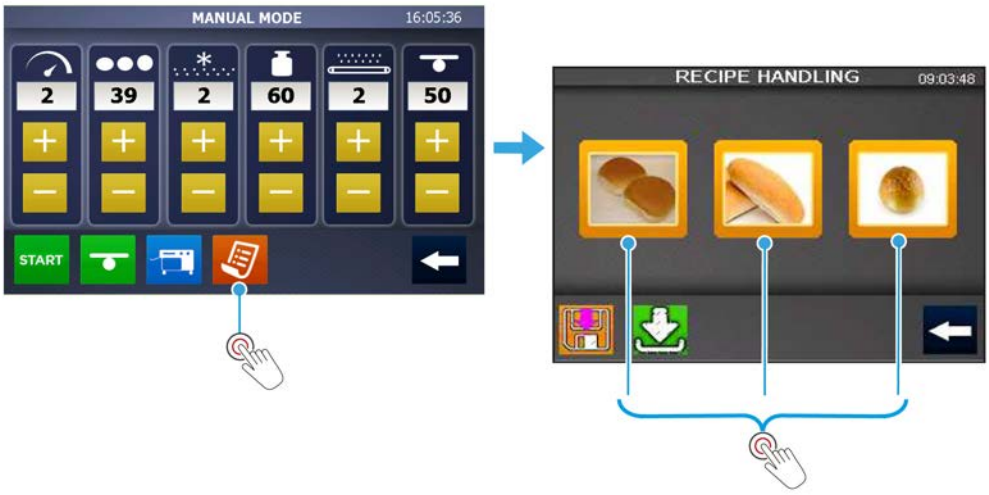
3. Scroll to the next available space and touch the **Save** button.
4. Enter a name for the new product recipe.
5. Press the **Arrow** button to return to the **Main Menu** screen.

How to edit or copy a product recipe

1. Load up the product recipe you wish to edit by following the instructions in **Section 7.6**.
2. After the product recipe has loaded, and you have the detailed information screen shown below, click the back Arrow button.
3. Select the **Manual** button and make the necessary changes to the product recipe by altering the settings as appropriate.



4. Once satisfied with the new settings, select the Recipe button.



5. Select the relevant product category group under which the programme is to be saved.
6. There are now two options available:
   a. To update an existing product recipe with new values, select the name of the product in the list so that it is highlighted in blue and then click on the Save button.
   b. To create a new product recipe, type the name of the new product in the Recipe Name box and then select the Save button.

7.8. Recipe mode

How to backup all product recipes

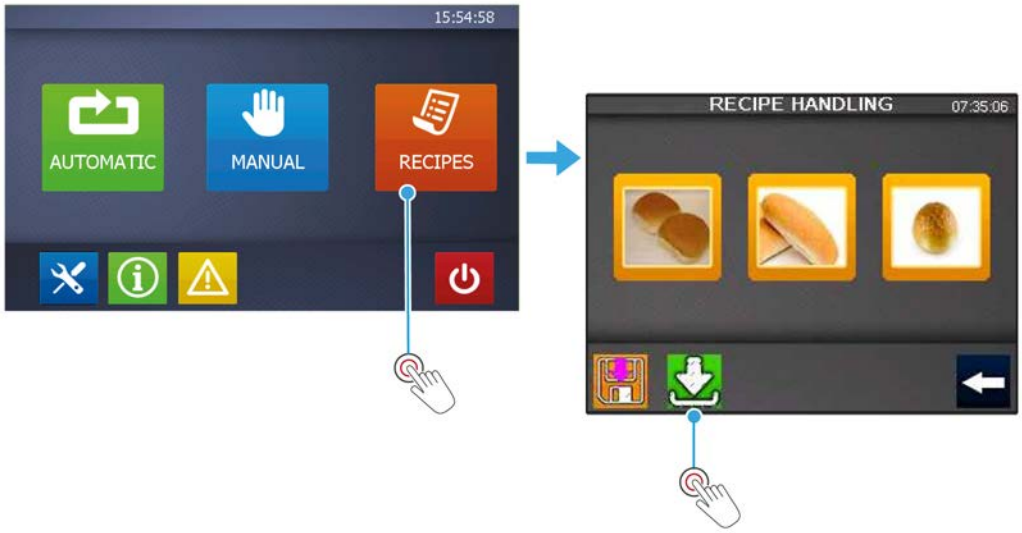
1. Flip the black plastic cap of the USB port (positioned below the bottom right-hand corner of the display).
2. Insert a standard USB pen-drive.
3. Touch the **Recipes** button.
4. Touch the **Backup All** button.
5. In the top right-hand corner, a message indicates that the recipe database is exporting to a .csv file.
6. Remove the USB pen-drive when the exporting message disappears.
7. Replace the black plastic cap on the USB port.

Figure 7.12: Backing up product recipes

How to restore all product recipes

1. Flip the black plastic cap of the USB port (positioned below the bottom right-hand corner of the display).
2. Insert a standard USB pen-drive.
3. Touch the **Recipes** button.
4. Touch the **Restore All** button.
5. In the top right-hand corner, a message indicates that the recipes are being imported from a .csv file.
6. Remove the USB pen-drive when the importing message disappears.
7. Replace the black plastic cap on the USB port.

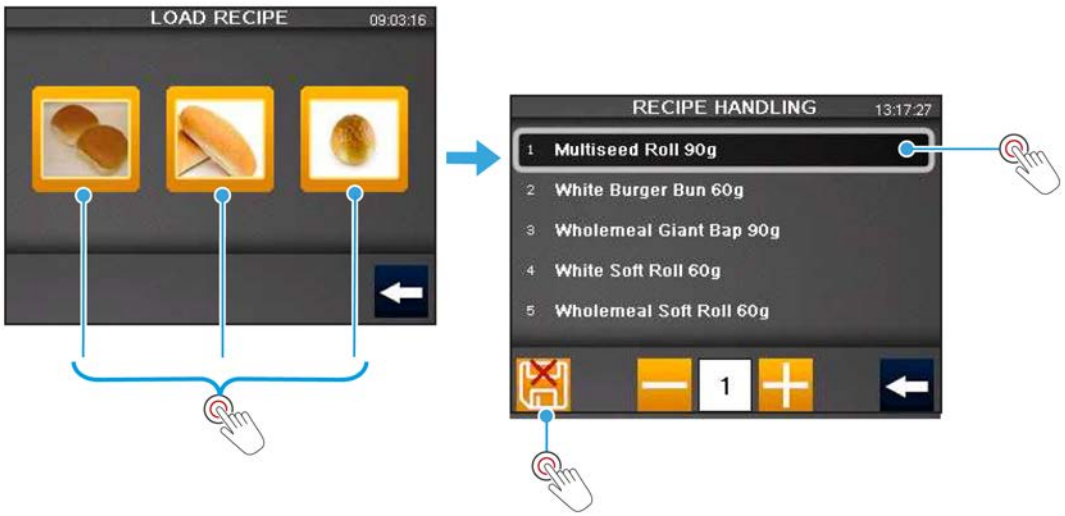
Figure 7.13: Restoring product recipes



How to delete product recipes

1. Touch the **Recipe** button on the **Main Menu** screen.
2. Touch the product category on the **Recipe Handling** screen.
3. Enter the password. (Default is 3142).
4. Touch the product recipe that needs to be deleted.
5. Touch the **Delete** button.
6. Confirm to delete the product recipe (**Yes / No**) permanently.

Figure 7.14: Deleting product recipes



8. Operations: Roll Forming Unit (If fitted)

8.1. Features of the roll forming unit (if fitted)

The Roll Forming Unit (RFU) is an optional accessory for producing a broader range of bread rolls, such as burger buns and finger rolls.

Different bread roll shapes can be created by adjusting a series of rollers and pressure belts, which then mould the round roll output from the MONO Gemini Roll Plant into a flattened burger roll or an elongated finger roll.

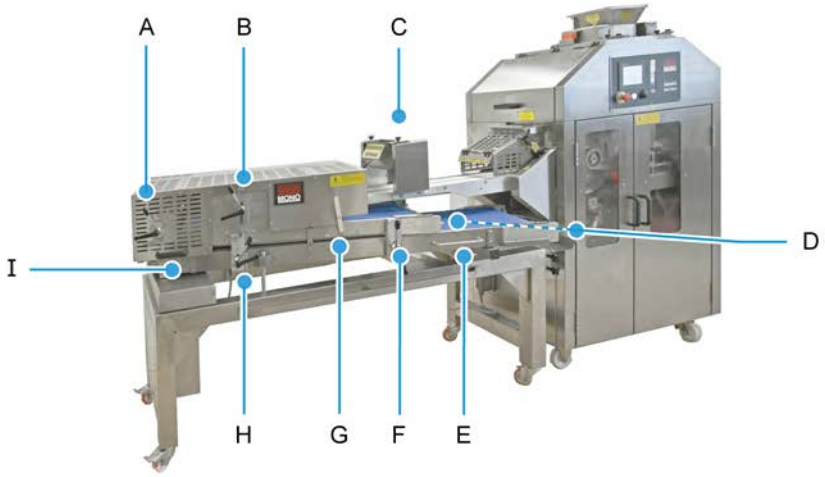
There are five key devices on the Roll Forming Unit to achieve the desired results:

1. Initial roller (if fitted) - provides first flattening (burger buns).
2. Secondary roller - provides further reduction (burger buns).
3. Finger roller positioning guide - positions a dough piece on the bottom belt.
4. Upper pressure belt, left side - height adjustment for the final product.
5. Upper pressure belt, right side - height adjustment for the final product.

Also located at the front of each belt are two belt-tensioners that adjust the tension of the top and bottom belts should the need arise.

After achieving the desired roll size, shape, and dimensions, the values from each roller and belt can be saved to a product recipe program for future use.

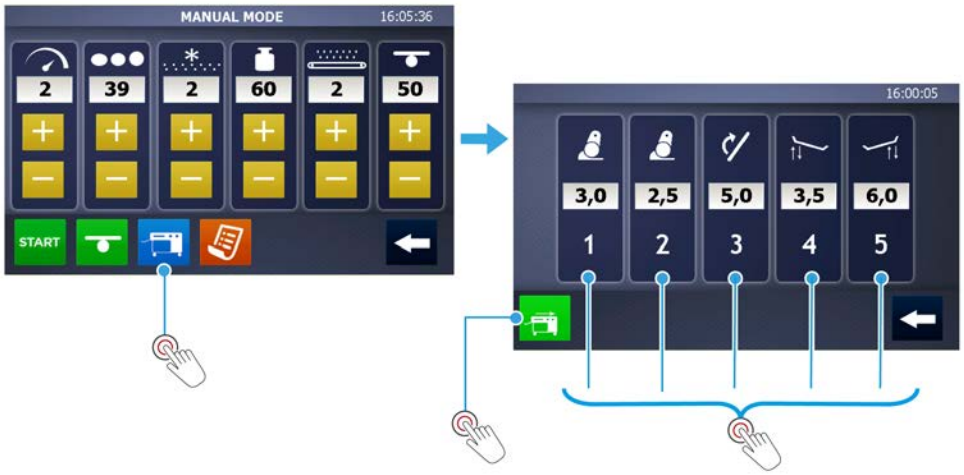
Figure 8.1: Features of the roll forming unit (if fitted



A. Finger roll positioning guide
B. Secondary roller
C. Initial roller (if fitted)
D. Belt tensioners
E. Lower best access handle
F. Upper pressure belt height adjustment, right side
G. Off-take belt height adjustment
H. Upper pressure belt height adjustment, left side
I. Roll forming unit cover handle

8.2. Storing values from the RFU to a recipe program

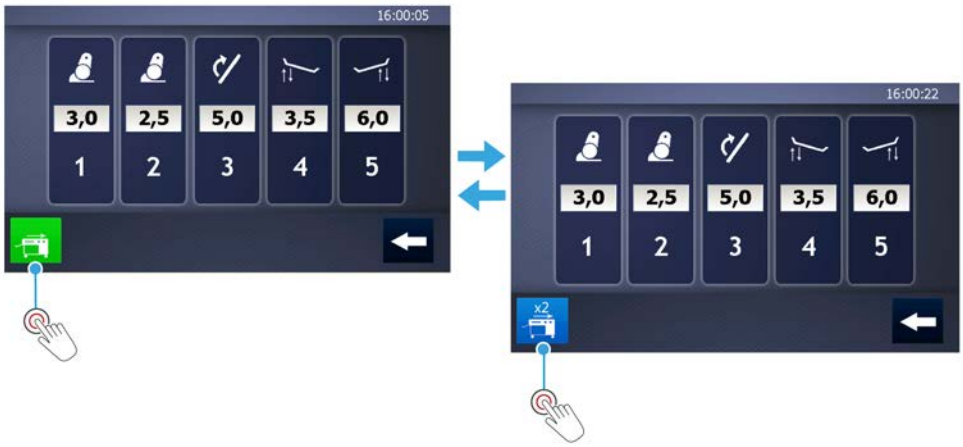
1. Touch the blue RFU button.



2. Following the numbers featured on the rollers, guide and pressure belts, enter the value of each lever to the corresponding number on the Roll Forming Values screen.

- : Initial roller value
- : Secondary roller value
- : Finger roller positioning guide value
- : Top pressure best, left side value
- : Top pressure best, right side value

3. If required, use the green **Upper Belt Speed Control** button (at the bottom left-hand corner) to toggle between standard single speed or double speed (x2).



9. Cleaning and maintenance on the two-pocket roll plant

9.1. Safety messages

WARNING This appliance must be maintained at regular intervals. The frequency of maintenance will depend upon your specific use and location. The maximum service interval should be 12 months.

Service and maintenance should only be undertaken by suitably qualified, trained, and competent engineers.

You must immediately report any damage or defect arising with the appliance.

Unsafe equipment is dangerous. Do not use the appliance. Isolate the power supply and contact or your appointed service agent.

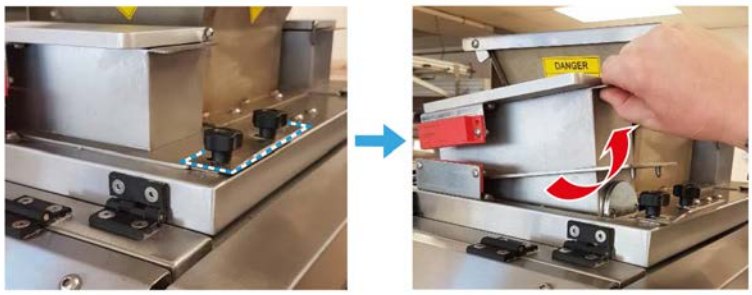
9.2. General advice for cleaning

- Always disconnect the machine from the mains power supply before cleaning.
- Following the recommended cleaning schedule in **Chapter 11** is essential to obtain optimum performance and results.
- For speed and efficiency, always start cleaning the machine from the top and then move downwards.
- Daily clean all surfaces that come into contact with the dough.
- Remove all scraps of dough from the filling chamber and clean with food-based oil from a spray can.
- Do not use jets of water to clean the machine or control panel..
- Do not use solvents that could damage the paint and synthetic materials.
- Only use plastic scrapers and brushes. Never use metal scrapers.
- Do not use compressed air to clean the machine. However, using a suitable ATEX-certified safety vacuum cleaner is recommended. Read the manufacturer's safety instructions before using the safety vacuum cleaner.
- Wipe all external surfaces with a damp cloth and mild cleanser.

9.3. Cleaning the flour dusters

- The two flour dusters situated on either side of the hopper are cleanable using a stiff brush. It is also advisable to vacuum clean the flour dusters using an ATEX-certified safety vacuum cleaner to prevent an infestation.
- Both flour dusters can be removed from the machine for a more thorough cleaning by sliding the retaining plates to the unlocked position and easing the flour duster out front side first (**Figure 9.1**).
- When refitting the flour dusters: insert the cog-end first, lower the remainder of the flour duster into position, and then slide the retaining plates back into the locked position.

Figure 9.1: How to removing the flour dusters for a through cleaning



9.4. Cleaning the dough hopper

Clean the hopper after every production run or at the end of each day. Never leave any dough in the hopper; it will be difficult to clean later and may cause a malfunction.

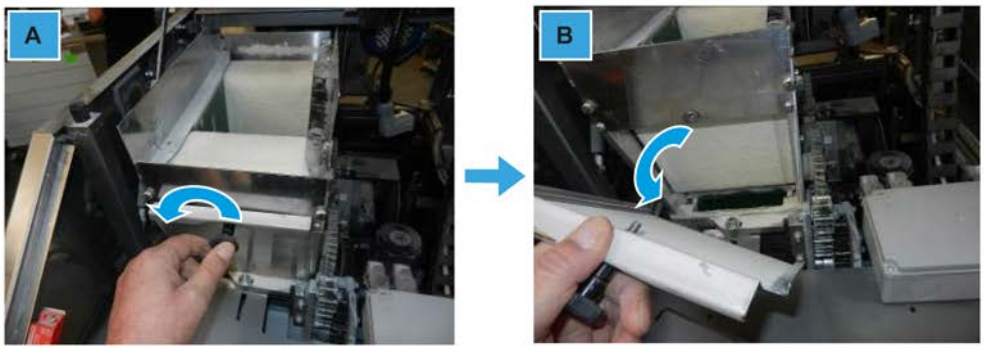
1. Lift the top access panel (**Figure 9.2**).
   – The integrated gas struts support the panel in position and prevent it from falling closed.
2. Clean the hopper and surrounding area thoroughly.
3. To close the panel:
   a. Pull the handle down and gently lower the assembly back into place.
   b. Close the outer access door.

Figure 9.2: Lifting the outer access door upwards

9.5. Cleaning the pre-scaler

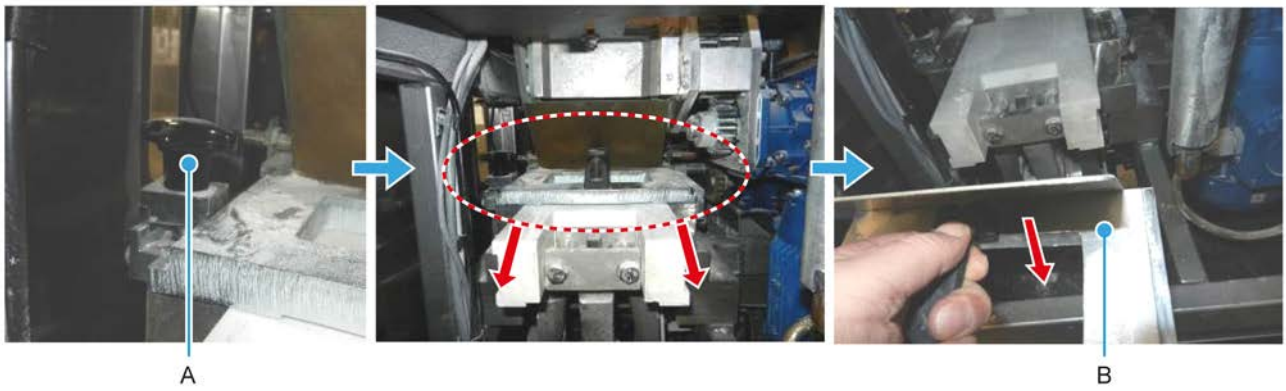
1. Open the **cleaning plate** by unscrewing the cross-headed screw (**Figure 9.3** | **A**).
2. After unscrewing:
   a. Remove the plate (**Figure 9.3** | **B**).
   b. Clean residual dough or flour from the pre-scaler area.
3. After cleaning, securely screw the cleaning plate back into position.

Figure 9.3: Accessing the pre-scaler

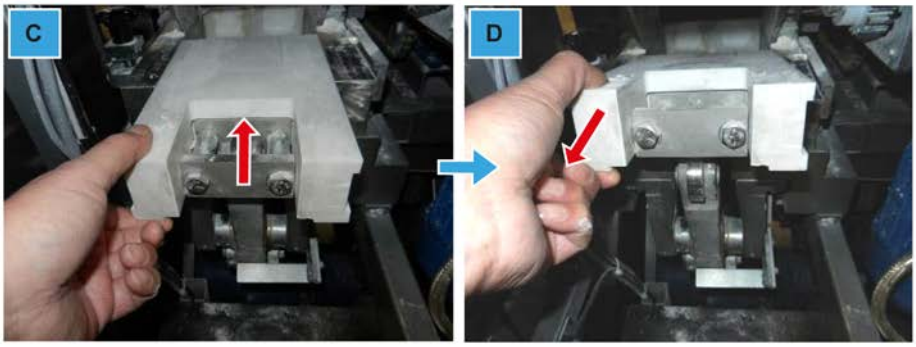


9.6. Cleaning the filling chamber and piston

1. Loosen the **clamping knob (A)**, positioned on the top-left side of the **piston plate**, sufficiently to allow the plate to be removed.
2. Hold the handle on the piston plate and pull it towards you to remove the plate **(B)**.



3. Lift the piston upwards over the roller (**C**) and remove completely (**D**).

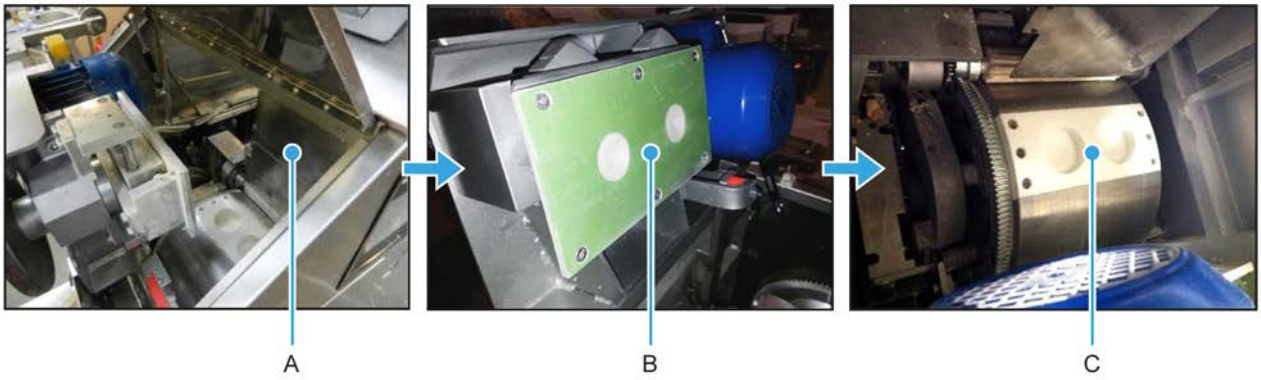


4. Clean the piston thoroughly and return to its original position.
5. Clean the filling chamber.
6. Ensure that the two Perspex side panels are clear of flour dust.
7. Refit the piston plate and hand-tighten the clamping knob.

9.7. Cleaning the drum and rounder

1. Open the access door upwards.
2. Press the **release button** to release the **handle** (**A**).
3. Release the retaining pin by rotating the handle anti-clockwise until it stops (**B**).
4. Hold both handles and firmly pull the **rounding unit** towards you (**C**).
   – The unit is quite heavy but is supported by gas struts which prevents it from falling back into place.

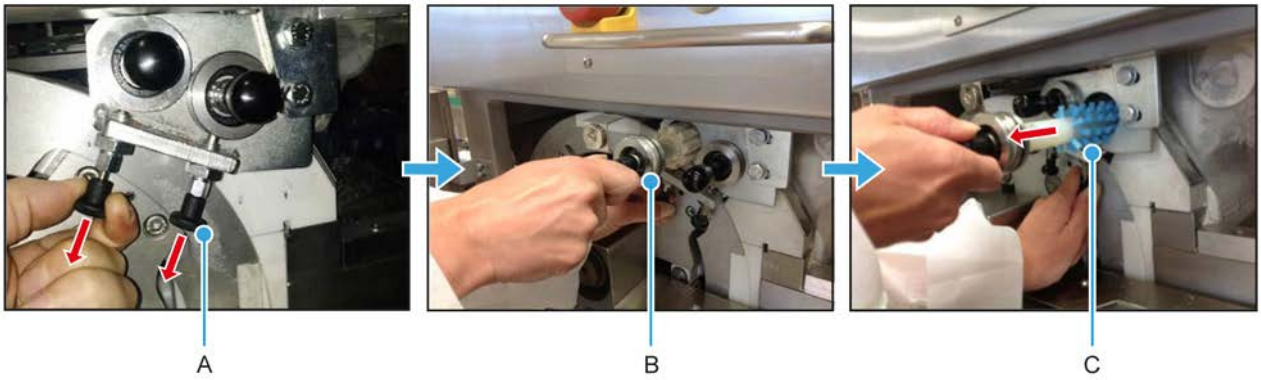
5. Clean all accessible areas, including the base plate, side guides, rounding plate and chambers with a plastic scraper or a stiff brush.



6. Remove the piston plate to clean the pre-scaling area from this side of the machine (see **Cleaning the pre-scaler on page 32**).

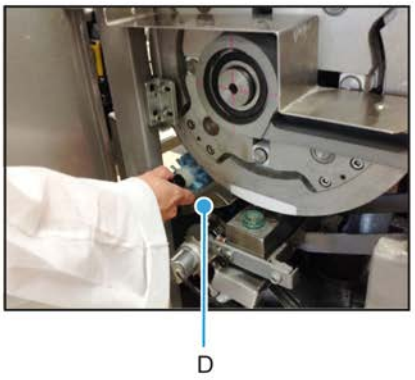
9.8. Cleaning the pressure roller and cleaning brushes

1. Access the **pressure roller** and **cleaning brushes** via the left-hand door.
2. To remove each component:
   a. Pull the locking pin (**A**) downwards.
   b. Slide the roller (**B**) or brush **(C)** from its position.
3. Clean both items thoroughly to remove any residual dough or flour with a plastic scraper.
4. Flour the pressure roller before placing it back in its original position.



– When refitting the components, ensure the locking pins are securing the roller and brush in their correct position.

5. Remove the lower brush **(D)**:
   a. Turn the clamping knob to the right.
   b. Pull the roller brush out smoothly.

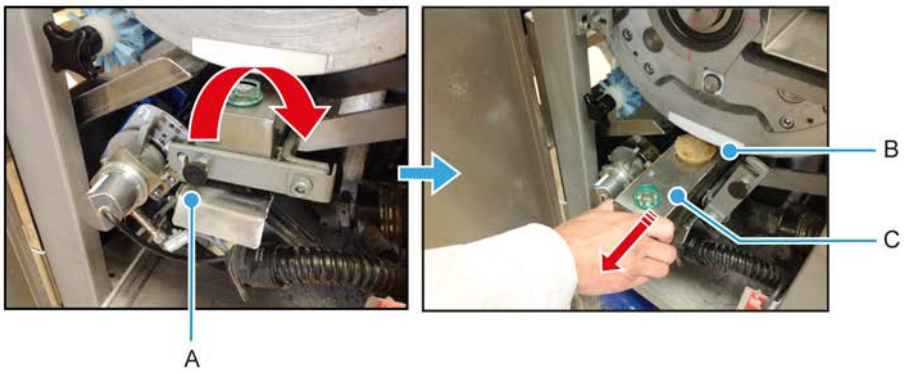


– Removal of the lower brush gives access to the metal platform immediately below it.

6. Clean the platform and brush thoroughly.
7. Refit the roller brush.
   a. Insert the brush onto the receiving rod.
   b. Rotate the brush until it engages with the retaining pin at the back.
   c. Turn the brush anti-clockwise to lock it in place.

9.9. Cleaning and refilling the oil reservoir

1. Turn the clamping knob (**A**) on the **retaining bar** (in front of the oil reservoir) in a clockwise direction to release the reservoir.
2. Hold both sides of the reservoir and pull it towards you to remove it.
3. Clean any residual oil from the surface and the oil cap (**C**).

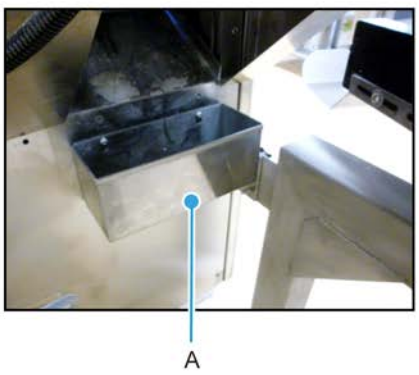


4. Dough residue on the oiling pads (**B**) should be checked daily and removed as required.
   - The oiling pads should be changed when worn; otherwise, changing them every 2 to 3 years should be sufficient.
   - When replacing the oil pads, remove the top lid of the reservoir for easy access.
   - Always refit the pressure springs after changing the pads.
5. Replenish the reservoir to ½ or ¾-full with food-safe divider oil.
6. After replenishing with oil:
   a. Return the reservoir to its original position,
   b. Secure the reservoir with the retaining bar by clicking it back in the locked position.

9.10. Cleaning the flour dust catcher

The **flour dust catcher** unit is below the primary **off-take arms** of the machine.

1. Lift the unit **(A)** upwards off the locating pins using the keyhole locators.
2. Clean the unit thoroughly and the refit it.



Note:

After completing the cleaning procedures, open all access doors and remove residual dough pieces and flour dust around the inside of the machine. If vacuuming, ensure you use an ATEX-certified Safety Vacuum Cleaner to avoid the potential for combustion.

Failure to adhere to the cleaning and maintenance instructions detailed in this user manual may affect the machine's performance and warranty.

10. Cleaning and maintenance on the Roll Forming Unit (if fitted)

10.1. Safety messages

WARNING This appliance must be maintained at regular intervals. The frequency of maintenance will depend upon your specific use and location. The maximum service interval should be 12 months.

Service and maintenance should only be undertaken by suitably qualified, trained, and competent engineers.

You must immediately report any damage or defect arising with the appliance.

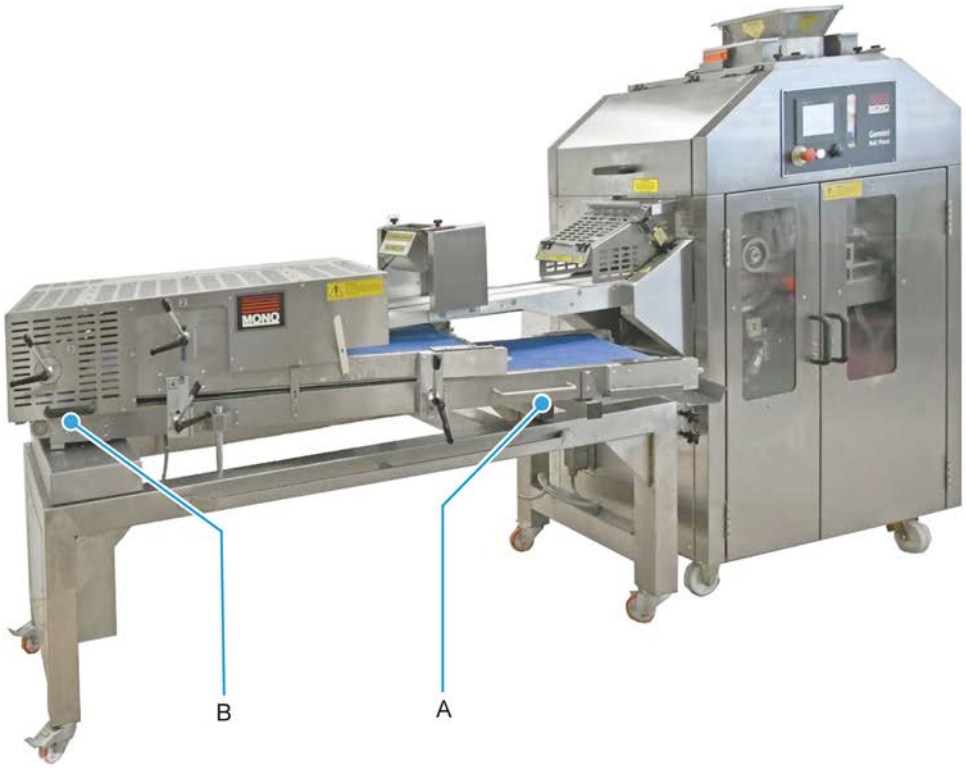
Unsafe equipment is dangerous. Do not use the appliance. Isolate the power supply and contact or your appointed service agent.

10.2. General cleaning advice

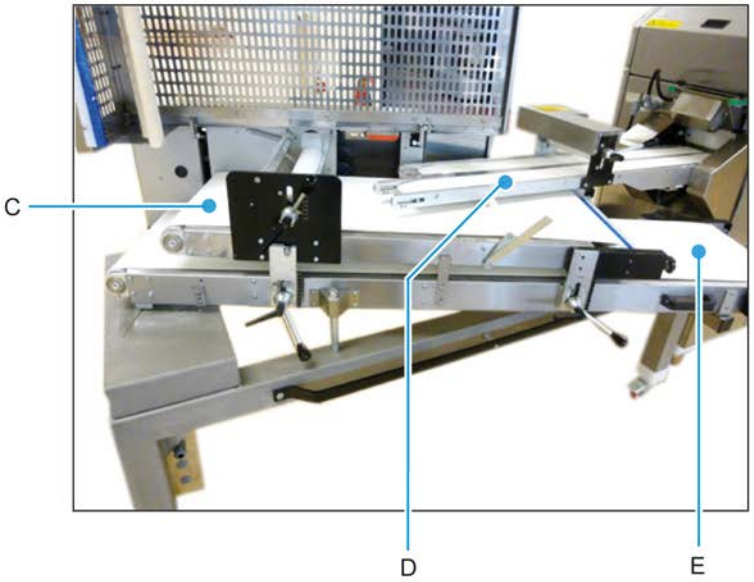
- Always disconnect the machine from the mains power supply before cleaning.
- Following the recommended cleaning schedule in **Chapter 11** is essential to obtain optimum performance and results.
- For speed and efficiency, always start cleaning the machine from the top and then move downwards.
- Daily clean all surfaces that come into contact with the dough.
- Remove all scraps of dough from the rollers, brushes, and belt systems.
- Do not use jets of water to clean the machine or control panel..
- Do not use solvents that could damage the paint and synthetic materials.
- Only use plastic scrapers and brushes. Never use metal scrapers.
- Do not use compressed air to clean the machine. However, using a suitable ATEX-certified safety vacuum cleaner is recommended. Read the manufacturer's safety instructions before using the safety vacuum cleaner.
- Wipe all external surfaces with a damp cloth and mild cleanser.

10.3. Cleaning the belts, brushes, rollers and guides

1. Hold the **lower belt access handle (A)** of the roll forming unit.
2. Pull out the lower belt of the roll forming unit to get access to the belts.

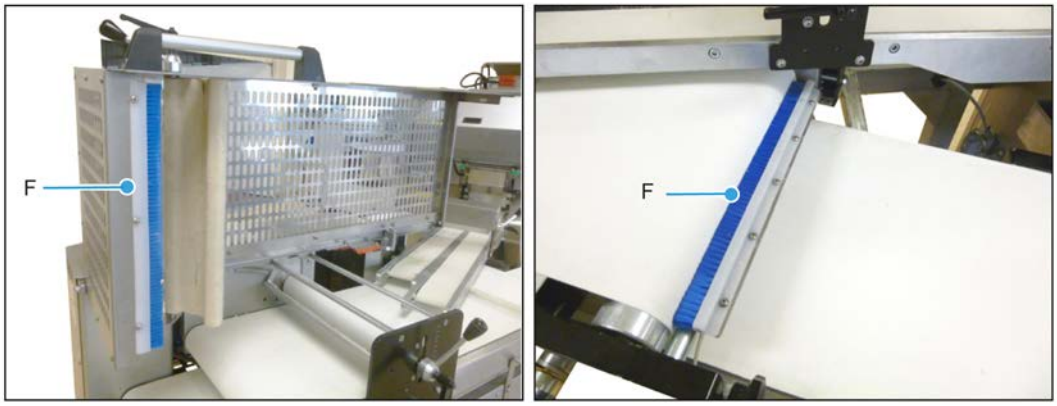


3. Hold the **cover handle (B)** of the roll forming unit.
4. Lift the cover upwards to gain access to the **upper belt (C)**, brushes, rollers, and guides.

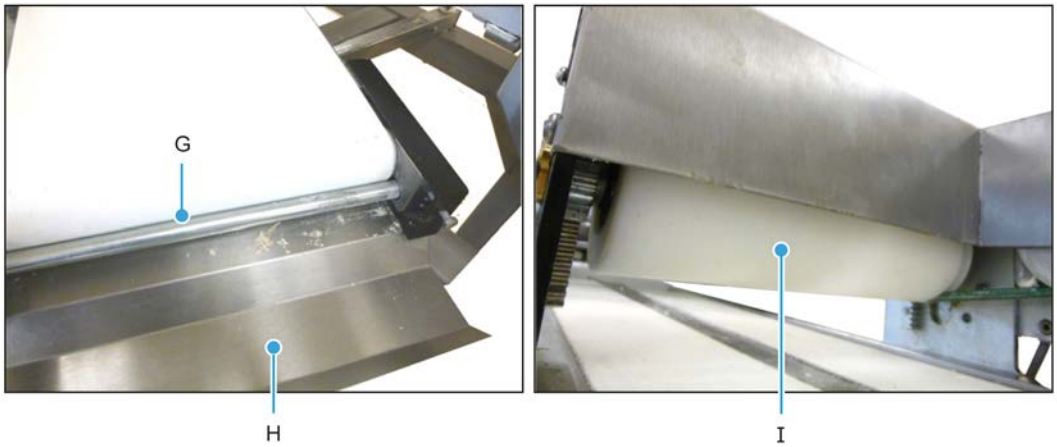


5. Clean any flour or dough residue from the **off-take arms (D)**, **upper belt**, and **lower belt (E)**.

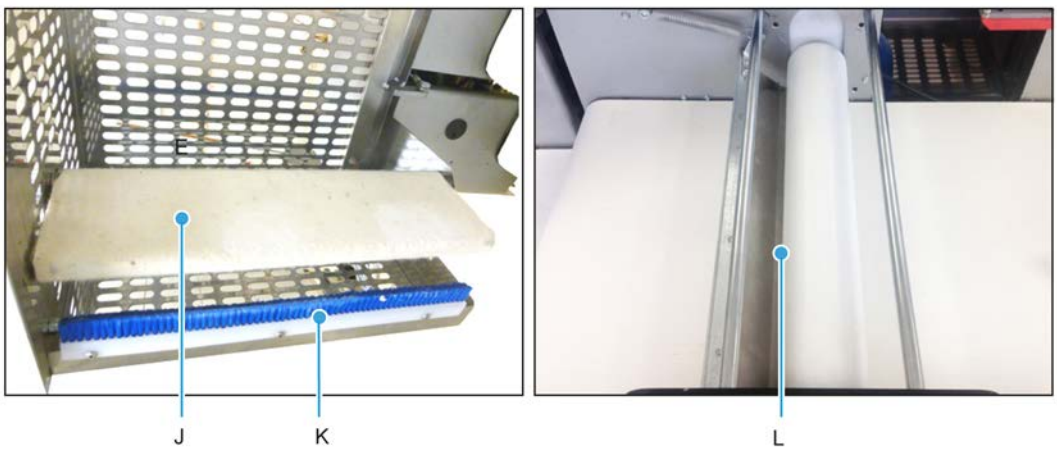
6. Clean the **blue brushes (F)** at the end of the cover and the front of the top belt assembly. Ensure any flour or dough residue is removed.



7. Remove any dough or flour remnants from the edges of all the belts **(G)**.
8. Remove any dough or flour remnants from the **collecting tray (H)** at the front of the lower belt.
9. Clean the **initial roller (I)** and ensure it turns freely.



10. Clean the **roll positioning flap (J)** and **blue brush (K)** to ensure no dough has stuck to the material.
11. Clean the **finger roll positioning guide (L)** so that the upper belt can run freely without obstruction.

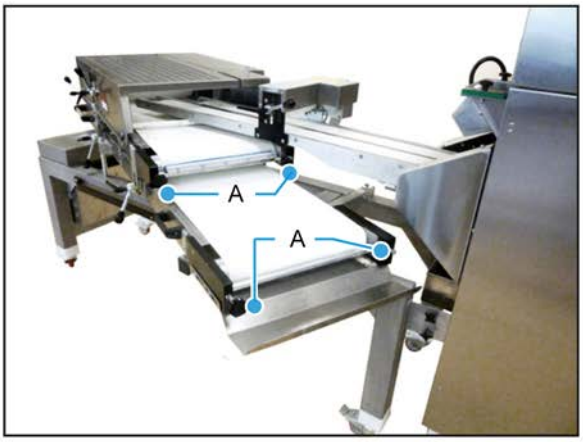


10.4. Belt tensioning adjustment

Occasionally the upper and lower belts of the roll forming unit may need re-tensioning using the best adjustment knobs (**Figure 10.1**, A). However, only a trained person should ever undertake re-tensioning of the belts.

Take care to retain the correct alignment on both sides. Failure to have equal tension on the right and left may result in the conveyor belts running unevenly and a loose tracking.

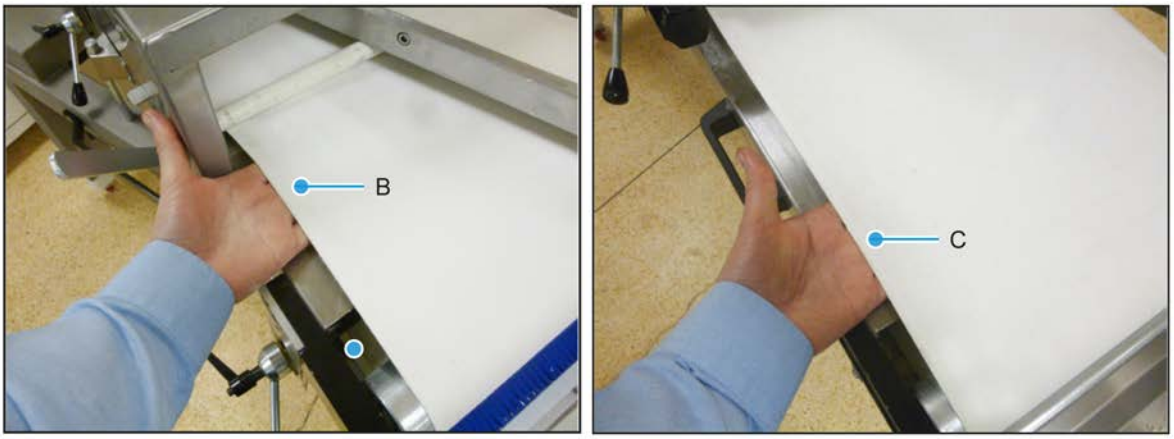
Figure 10.1: Positions of the belt adjustment knobs



The correct level of tension is when a person's hand is insertable under the belts (**B and C**) and the metalwork frame. Never do this whilst the machine is connected to the mains supply. Always isolate the machine first (see **Chapter 6**).

Check the general condition of the belts to ensure there are no rips or tears. Report any damages so that the belt can be replaced.

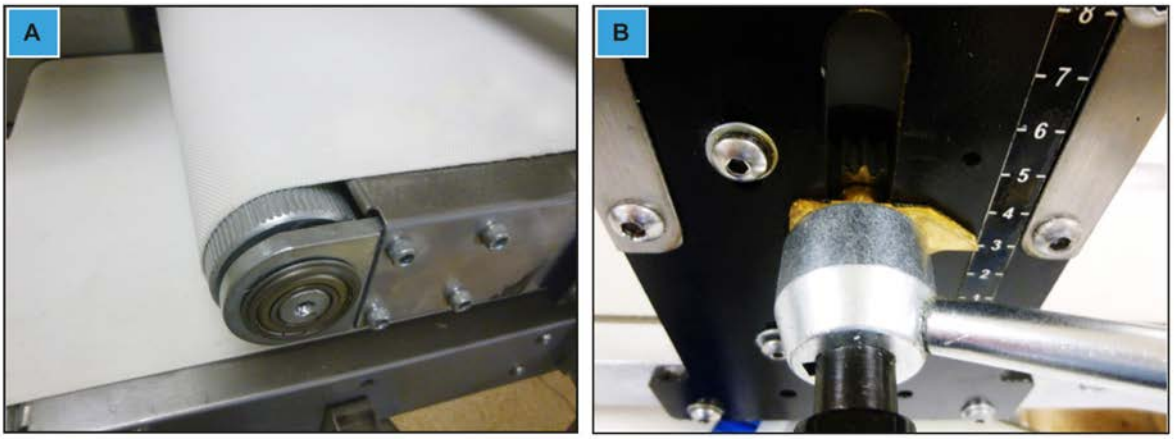
Figure 10.2: Upper and lower belt tensioning



10.5. Lubricating the bearings, levers, and cross bar

Any operational noise generated during normal running of the machine may be due to the bearings needing lubrication or replacement (**Figure 10.3** | **A**). Oil the bearings to see if the noise stops. If the noise persists after lubrication, then the bearings may need replacing.

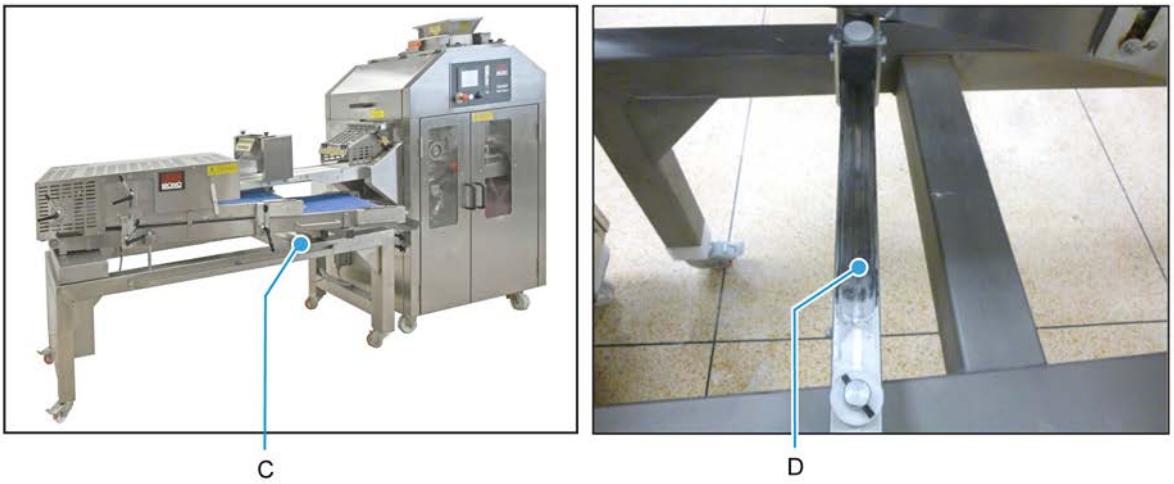
Figure 10.3: Typical bearings (A) | adjustment levers (B)



The adjustment levers should be free and easy to move and position (**Figure 10.3** | **B**). If any of the levers become tight in operation, it may be necessary to lubricate the mechanism.

Pull the Roll Forming Unit's upper belt mechanism to the open position to gain access to the support cross bar which may need cleaning and lubricating from time to time (**Figure 10.4**).

Figure 10.4: Belt open (C) | support cross bar (D)



11. Recommended Cleaning Schedule

In order to maintain the high quality of roll production, it is essential that regular cleaning of the Two-Pocket Roll Plant and Roll Forming Unit (if fitted) is carried out. Failure to do so may dramatically affect the quality of the output.

Figure 11.1: Recommended cleaning schedule

MONO

CLEANING SCHEDULE

Rev 2 08/05/2019

Two Pocket Roll Plant & Roll Forming Unit (if Fitted)

- Always ensure that the machine is switched OFF at the mains power supply before any cleaning or maintenance work takes place

- Before beginning work, start the machine for 2-3 minutes without dough to ensure any loose residue is dislodged from the system

Ref.	Part or Machine section	Daily				Weekly	
		Brush	Scraper	Vacuum	Damp cloth	Brush	Vacuum
1	Flour Dusters						●
2	Hopper System					●	●
3	Pre-Scaler	●	●				
4	Filling Chamber & Piston System		●	●			
5	Drum & Rounder	●		●			
6	Roller & Brushes	●	●				
7	Moulding Head and Hopper front flap	●	●	●			
8	Roll Forming Unit	●	●	●			
9	All Internal and External Surfaces			●	●		

WARNING

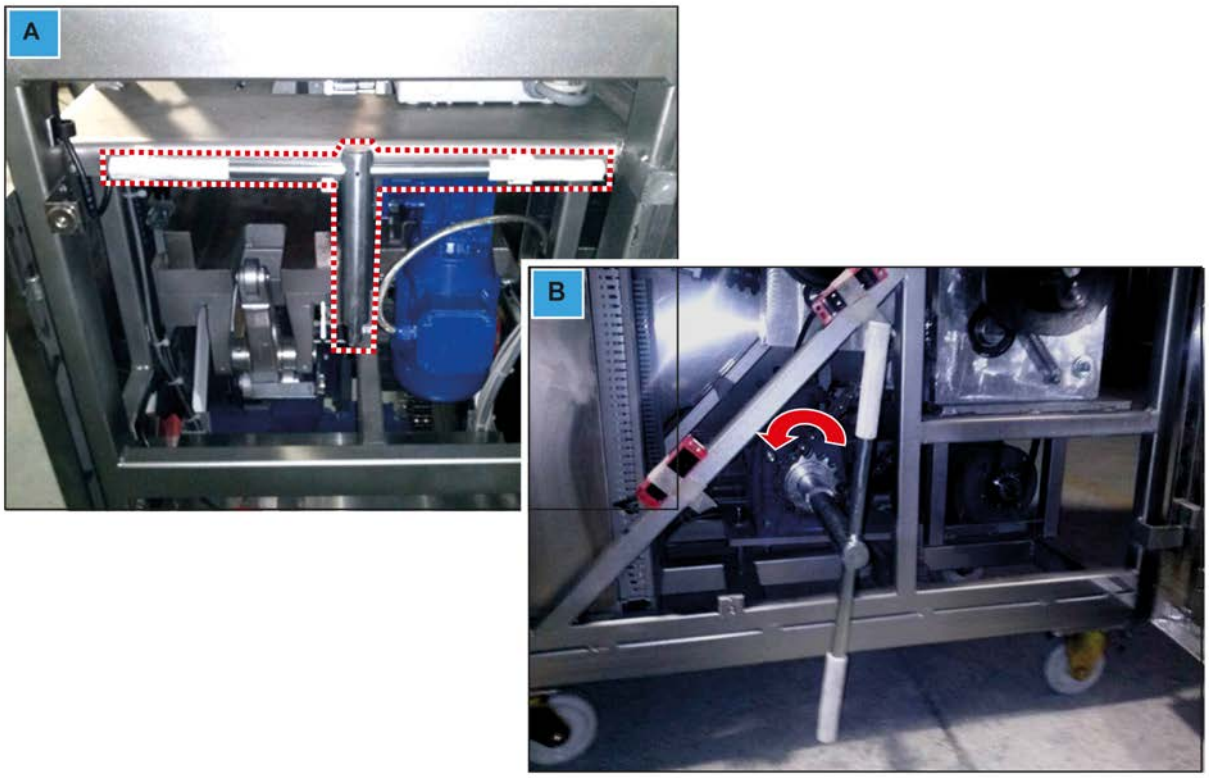
- Always disconnect the machine from the mains power supply before doing any type of maintenance
- If vacuuming, avoid the potential flour combustion by using only an appropriate ATEX-certified Safety Vacuum Cleaner.
- A copy of the cleaning schedule can also be found on the inside the machine's right-hand door

12. Manual operation with the power off

With the help of a **crank handle**, the drive can be rotated manually with the power off.

The manual crank handle is clipped to the machine behind the end safety door (**Figure 12.1** | **A**). It should be unclipped and inserted into the drive at the side of the machine. The correct machine rotation direction is anti-clock-wise (**Figure 12.1** | **B**). When finished, return the crank handle to the original stowed position.

Figure 12.1: Manual operation with the crank handle



13. Hints and tips

- For best results, ensure the dough piece is gently stretched into an elongated shape before loading into the **hopper**.
- For best results, it is advised not to cut the dough into too many pieces.
- Always check the weight of the dough pieces at the start of production and tweak the settings if required. Continue to check the weights at regular intervals to ensure consistency.
- Transfer the **roll forming unit** values from the screen to the actual belt settings; this ensures the correct shape is achieved before operating the machine.
- For finger roll production, ensure that the upper belt runs at a faster speed than the Lower Belt.
- The MONO Gemini Roll Plant and roll forming unit works well with a wide range of doughs. It should not be necessary to remove water from the recipes in order for it to work effectively.
- The MONO Gemini Roll Plant and roll forming unit design provides full access to the internal workings for thorough cleaning.
- As flour dust can be highly combustible, only use an ATEX-approved Safety Vacuum Cleaner for vacuuming purposes.
- For a quick guide to the cleaning process, refer to the cleaning schedule inside the left-hand door of the machine or in **Chapter 11** of this user manual.

14. Electrical Drawings

Figure 14.1: Drawing No. 398E2510001 (1 of 17)

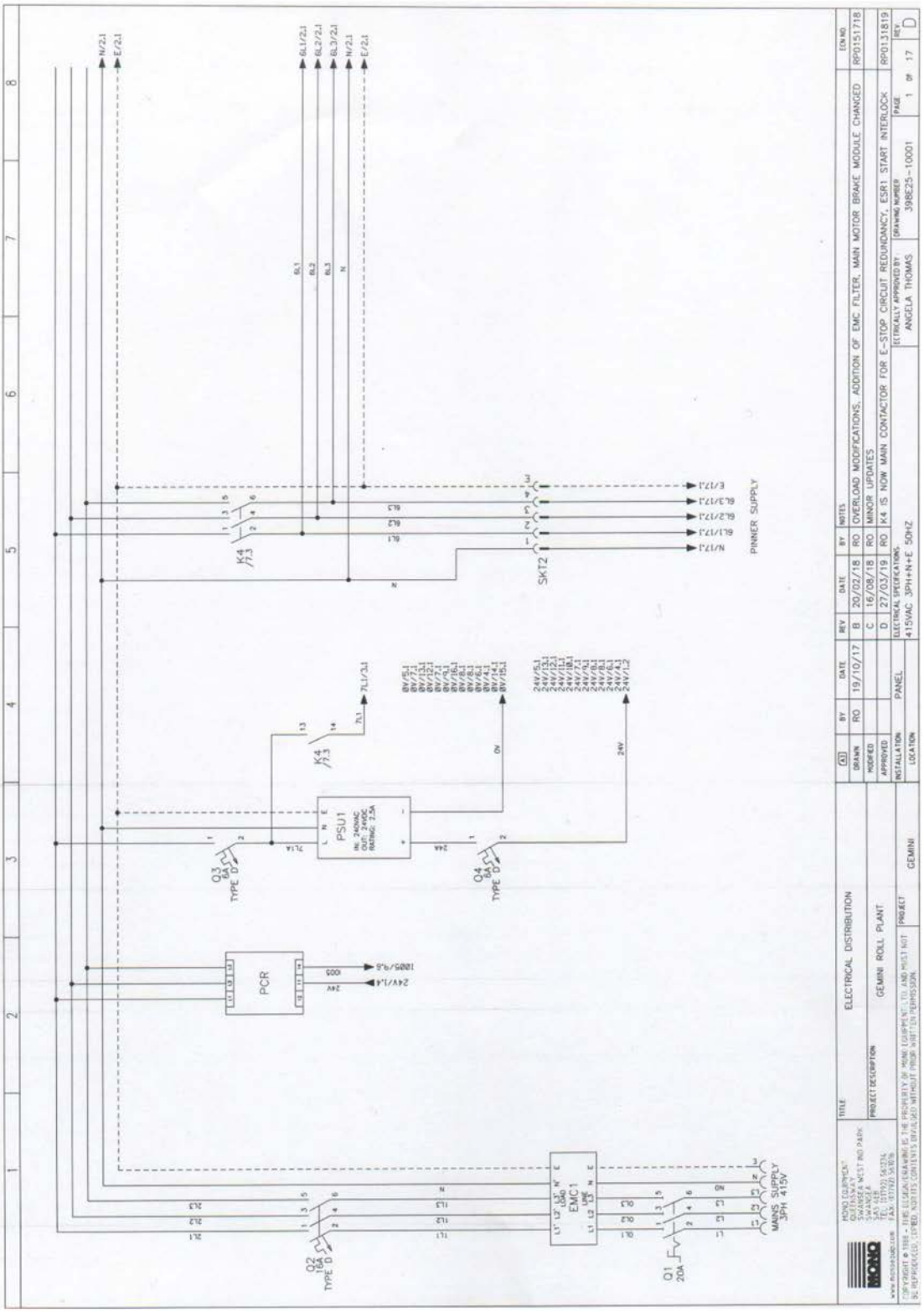


Figure 14.2: Drawing No. 398E2510002 (2 of 17)

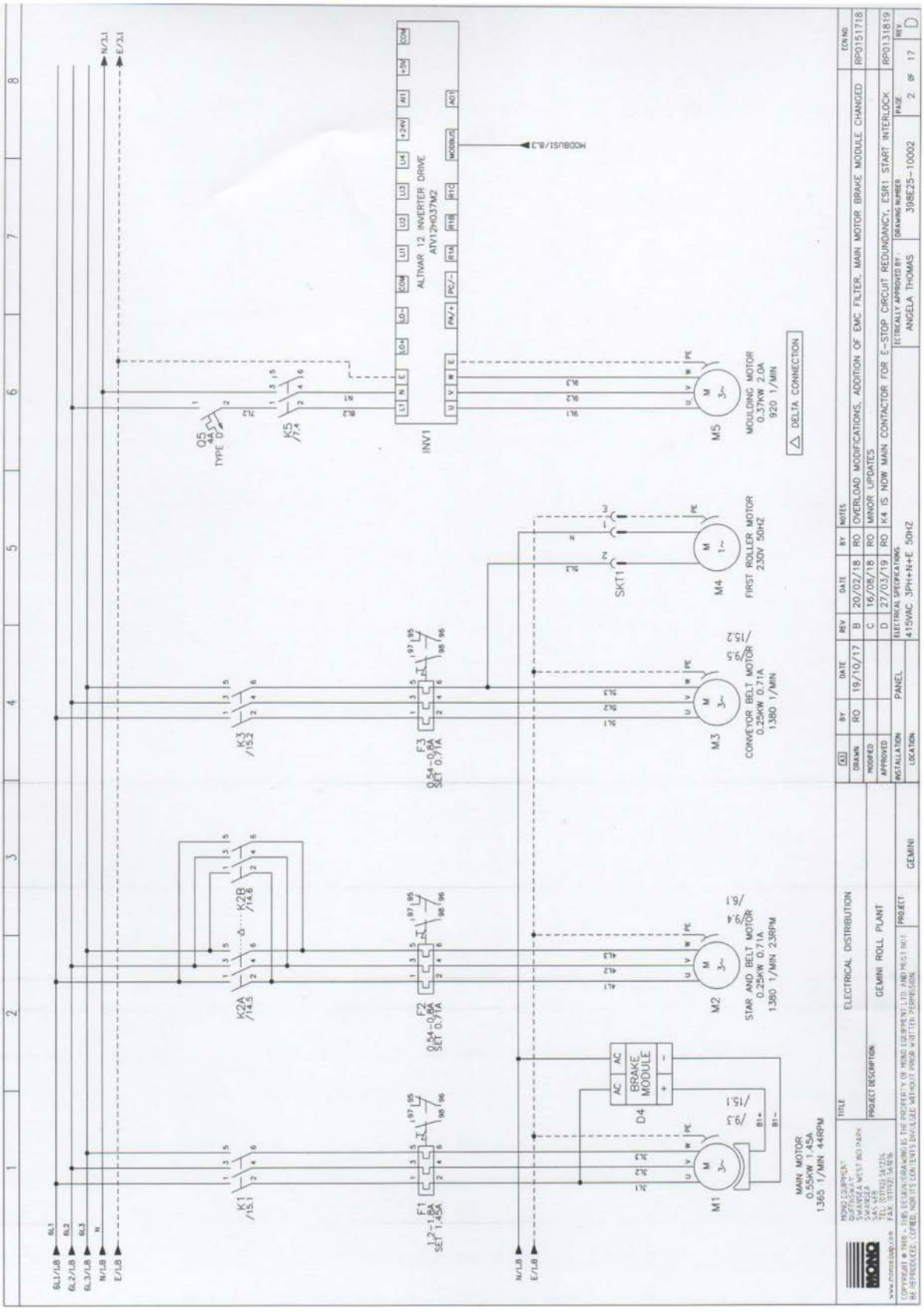


Figure 14.3: Drawing No. 398E2510002 (2 of 17)

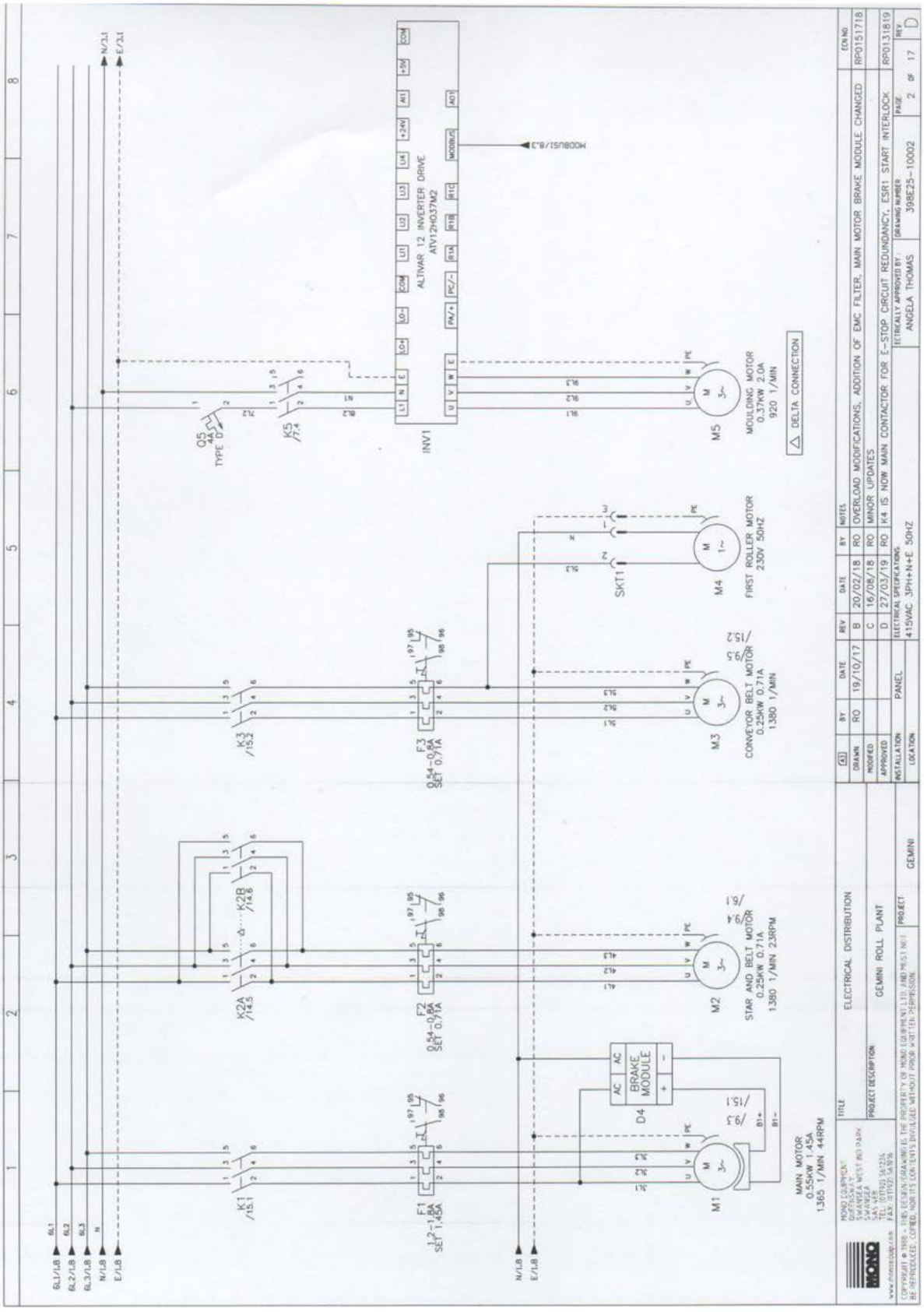


Figure 14.4: Drawing No. 398E2510003 (3 of 17)

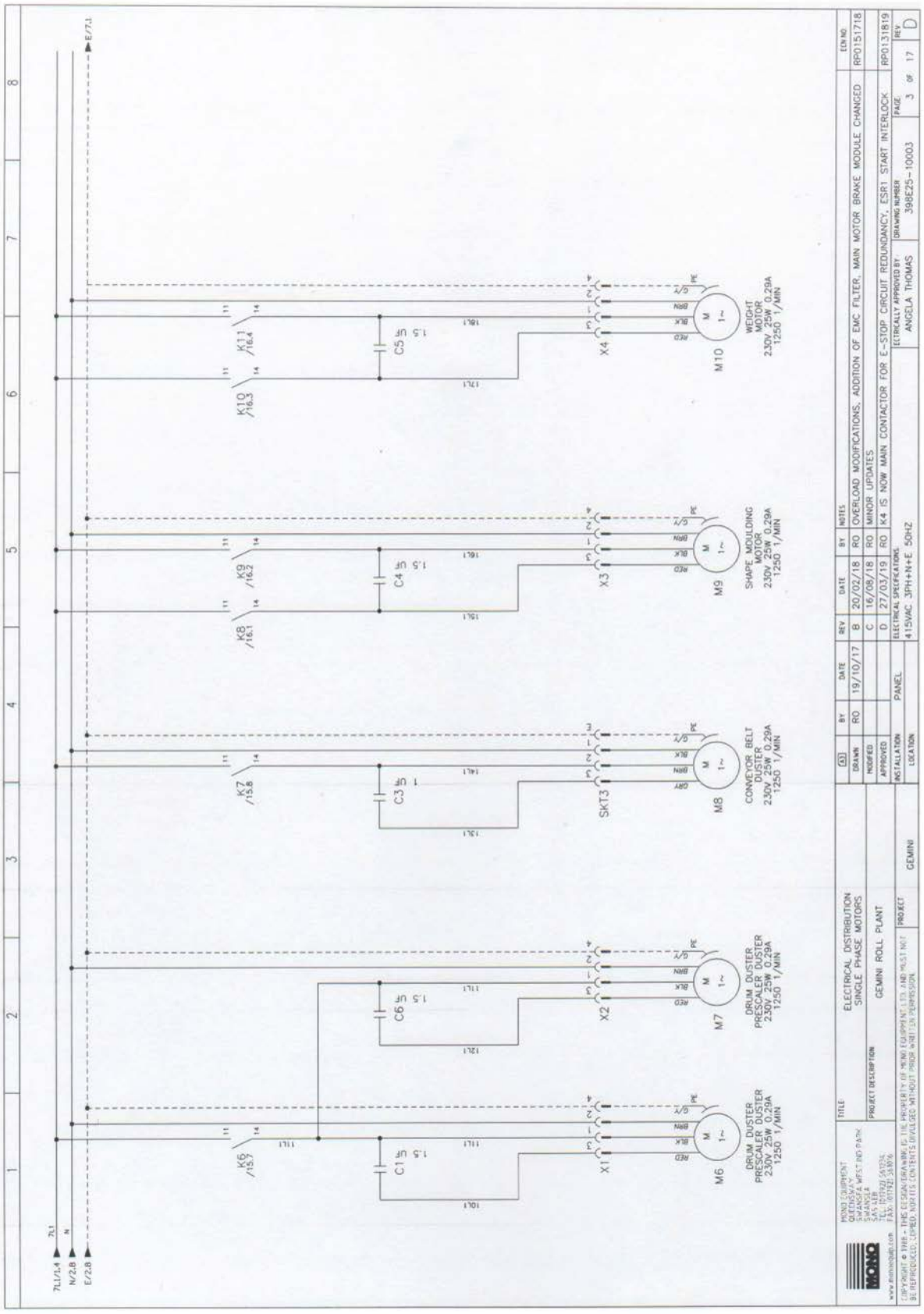


Figure 14.5: Drawing No. 398E2510004 (4 of 17)

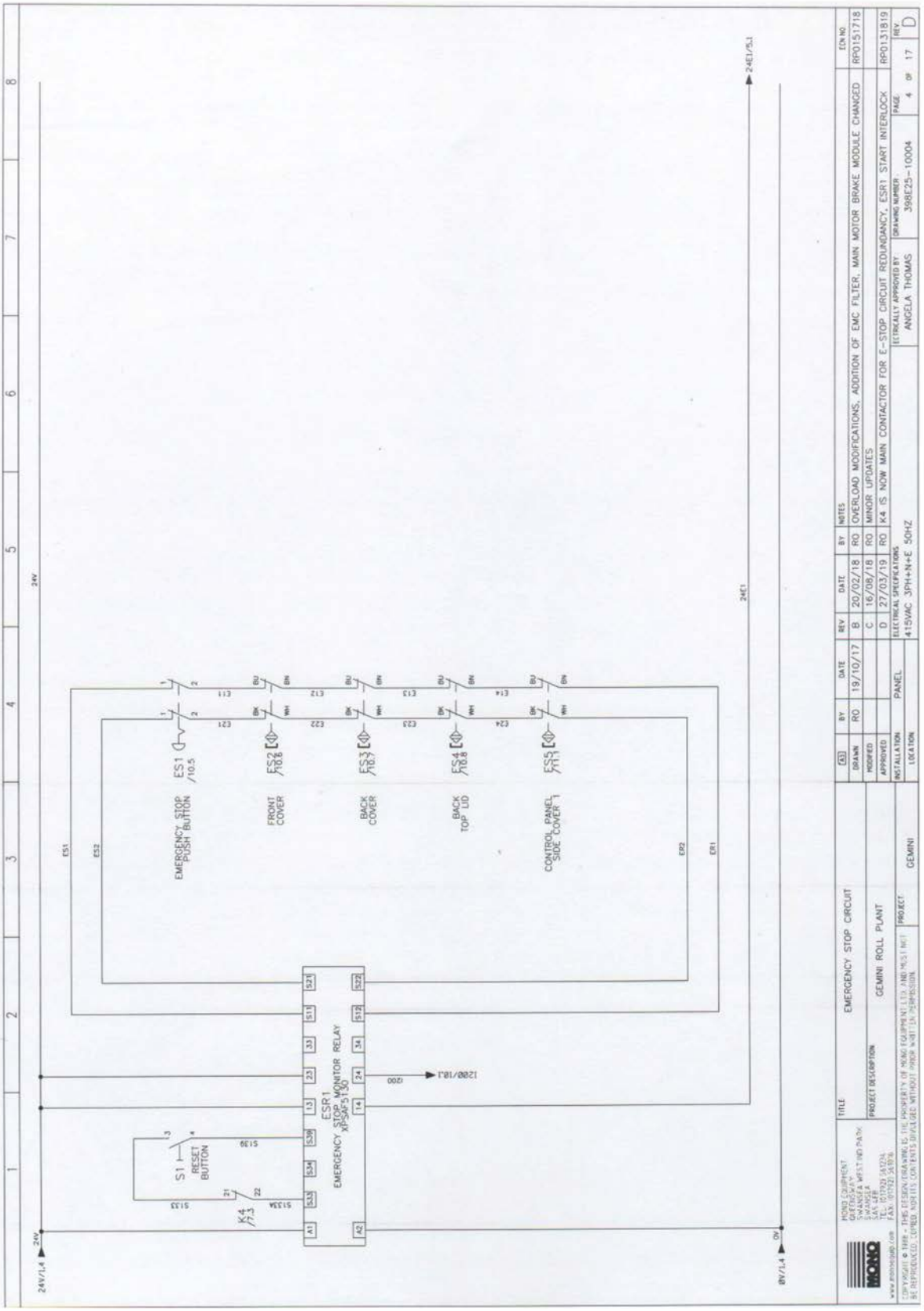


Figure 14.6: Drawing No. 398E2510005 (5 of 17)

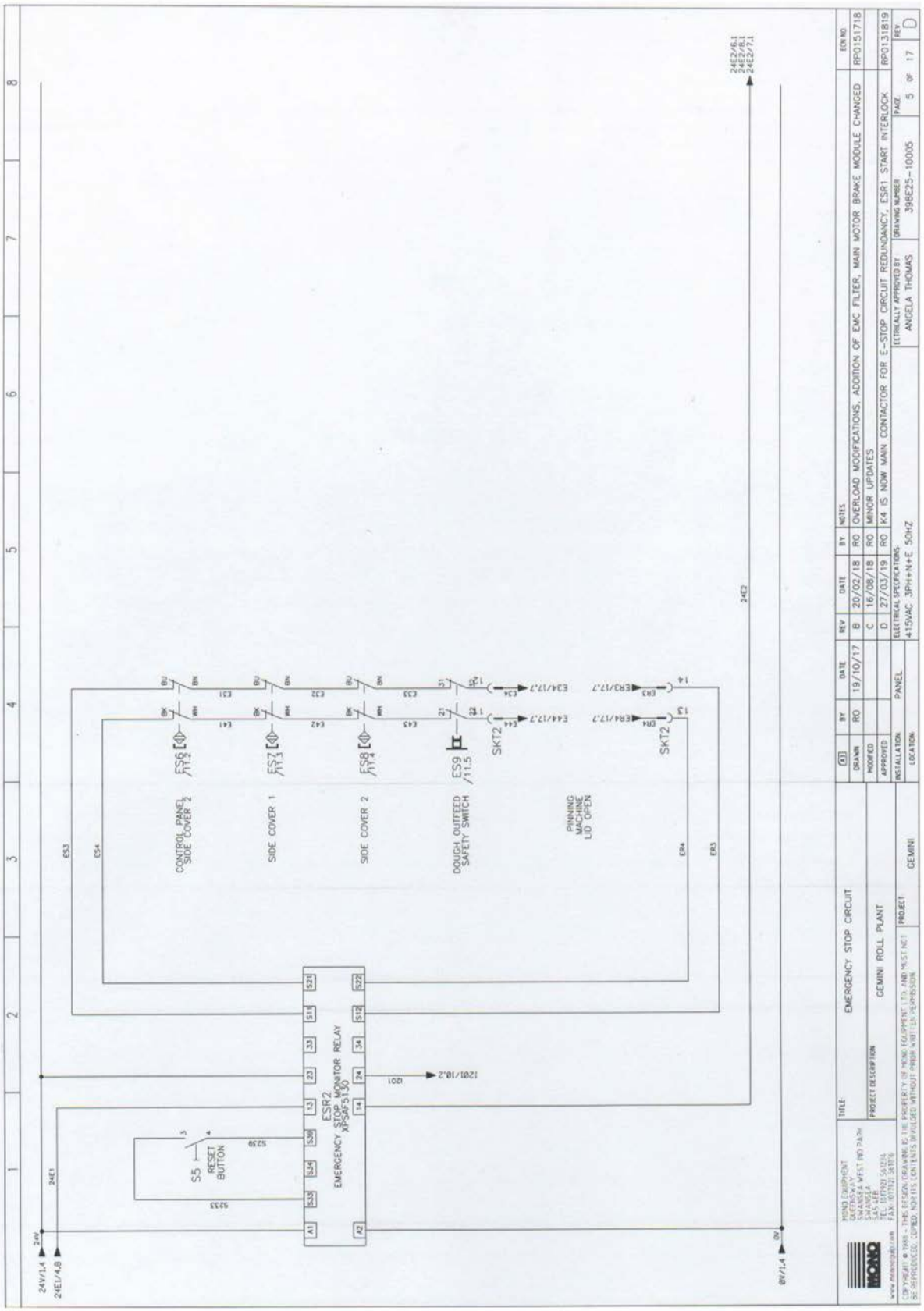


Figure 14.7: Drawing No. 398E2510006 (6 of 17)

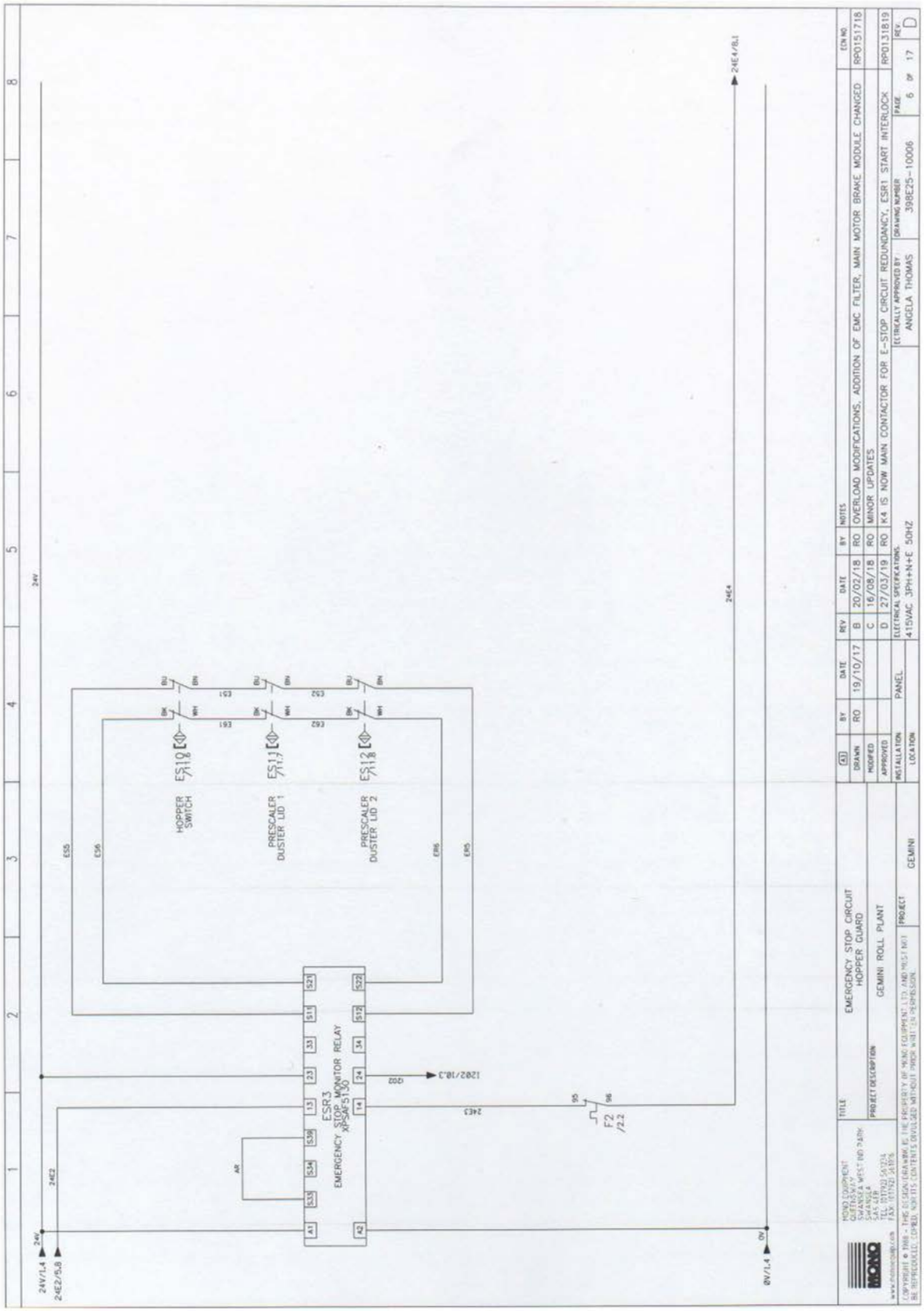


Figure 14.8: Drawing No. 398E2510007 (7 of 17)

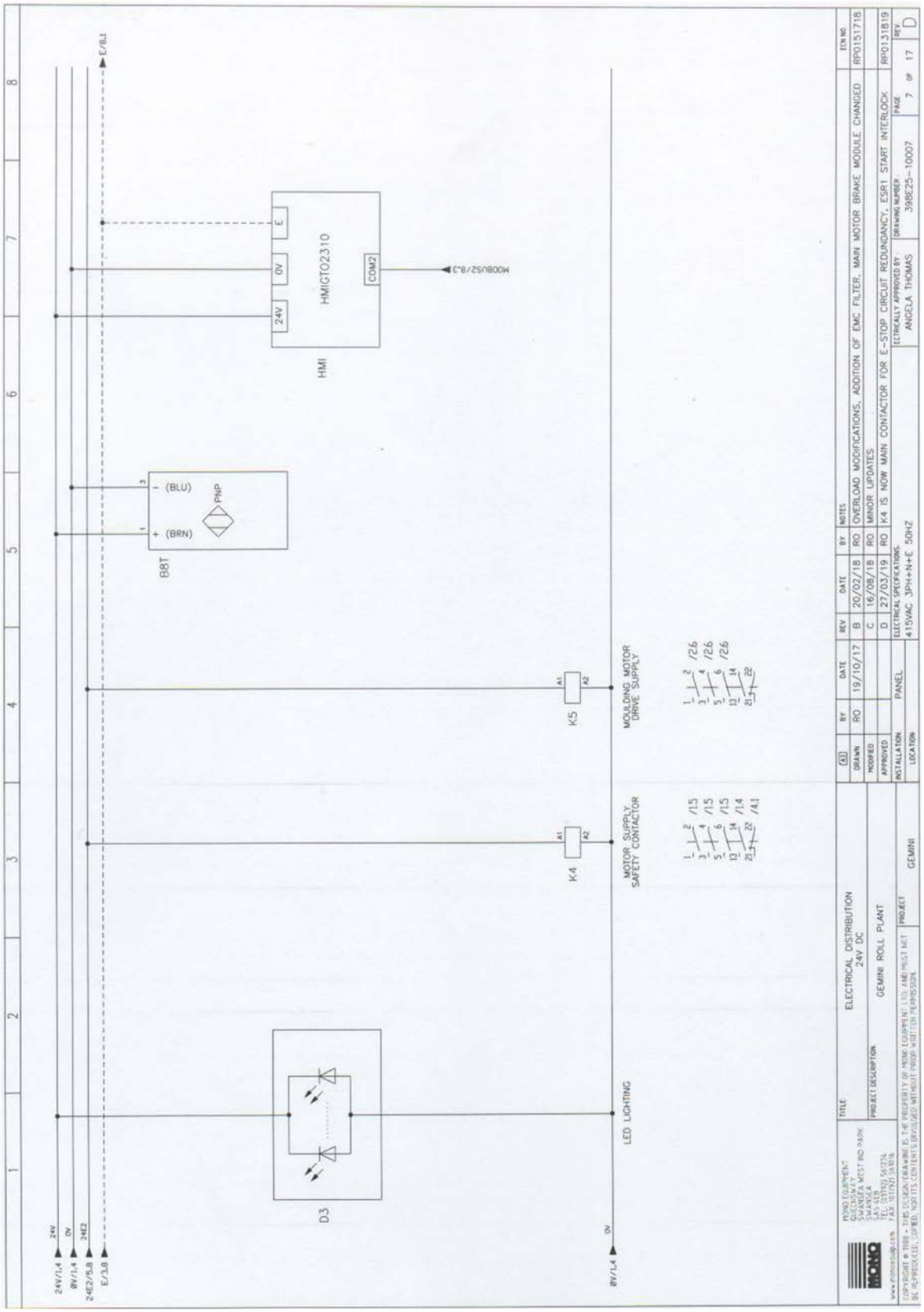


Figure 14.9: Drawing No. 398E2510008 (8 of 17)

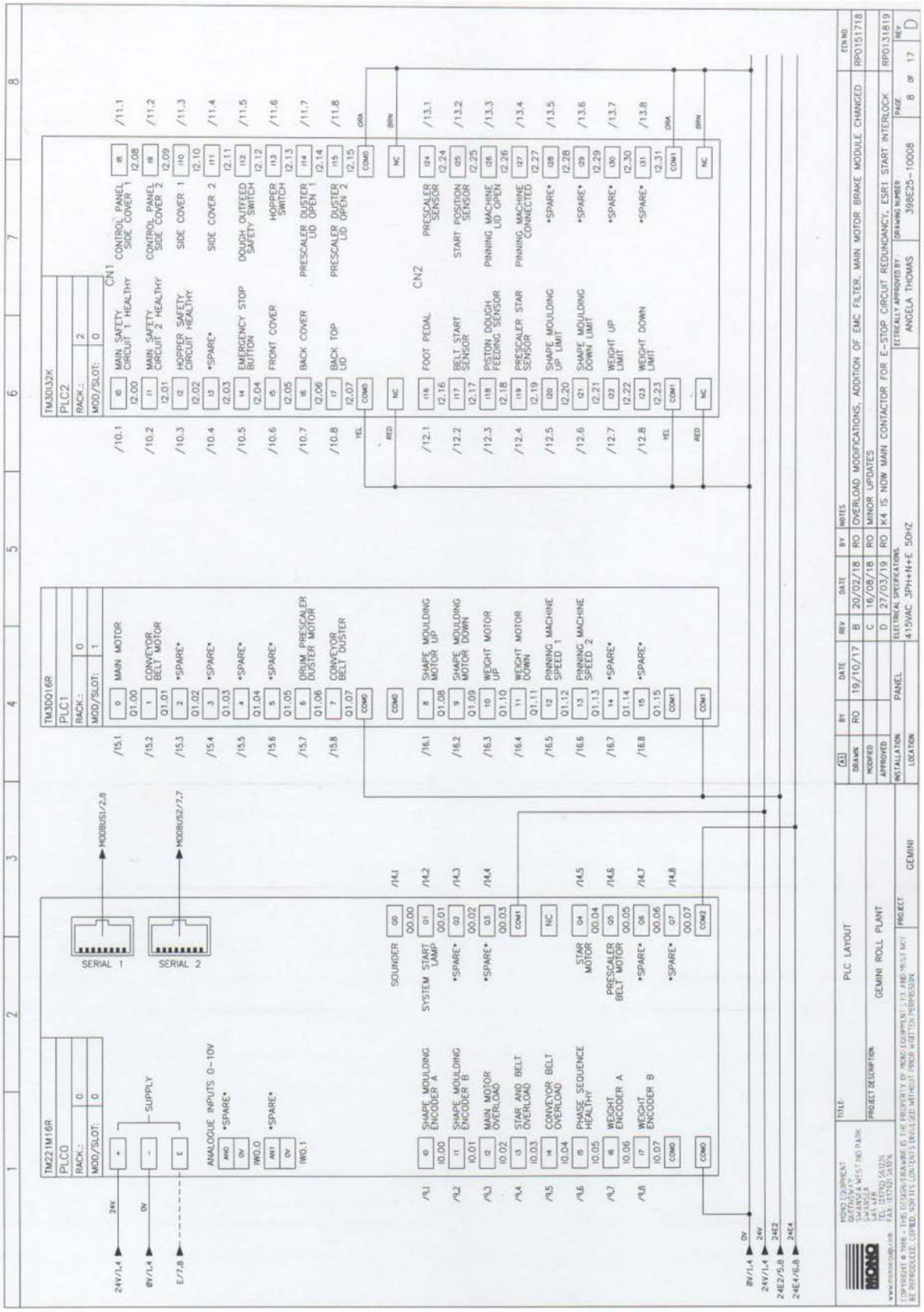


Figure 14.10: Drawing No. 398E2510009 (9 of 17)

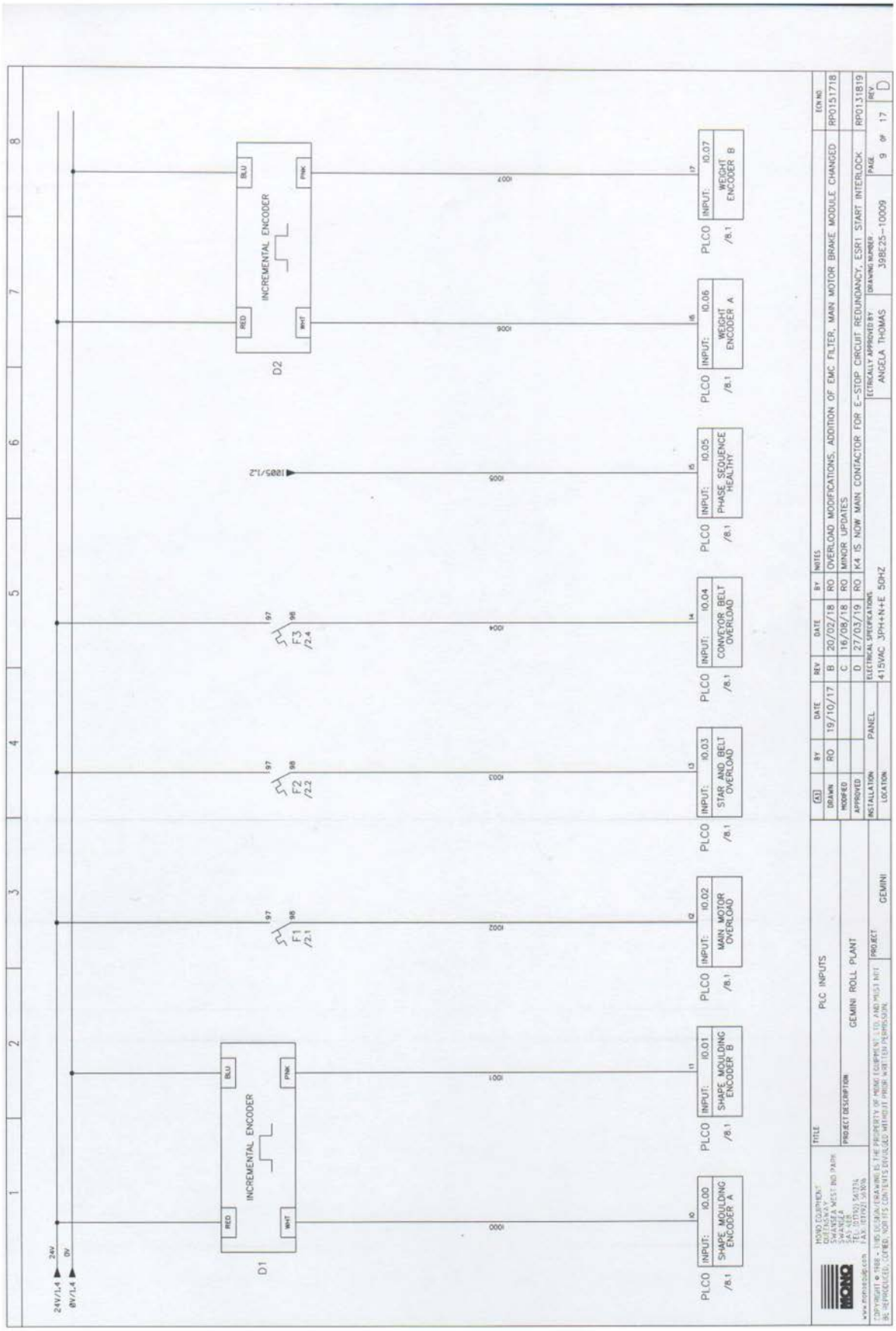


Figure 14.11: Drawing No. 398E2510010 (10 of 17)

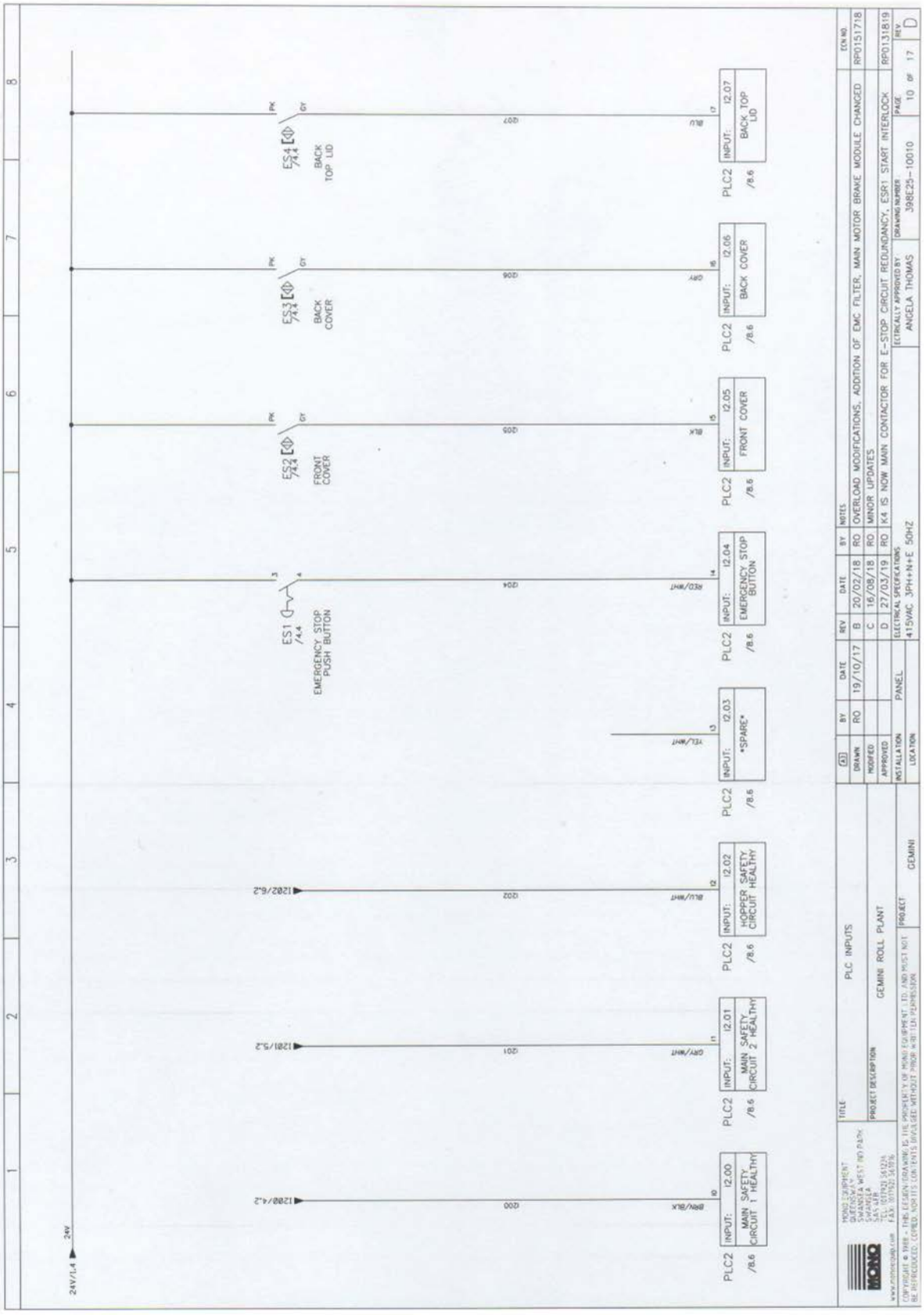


Figure 14.12: Drawing No. 398E2510011 (11 of 17)

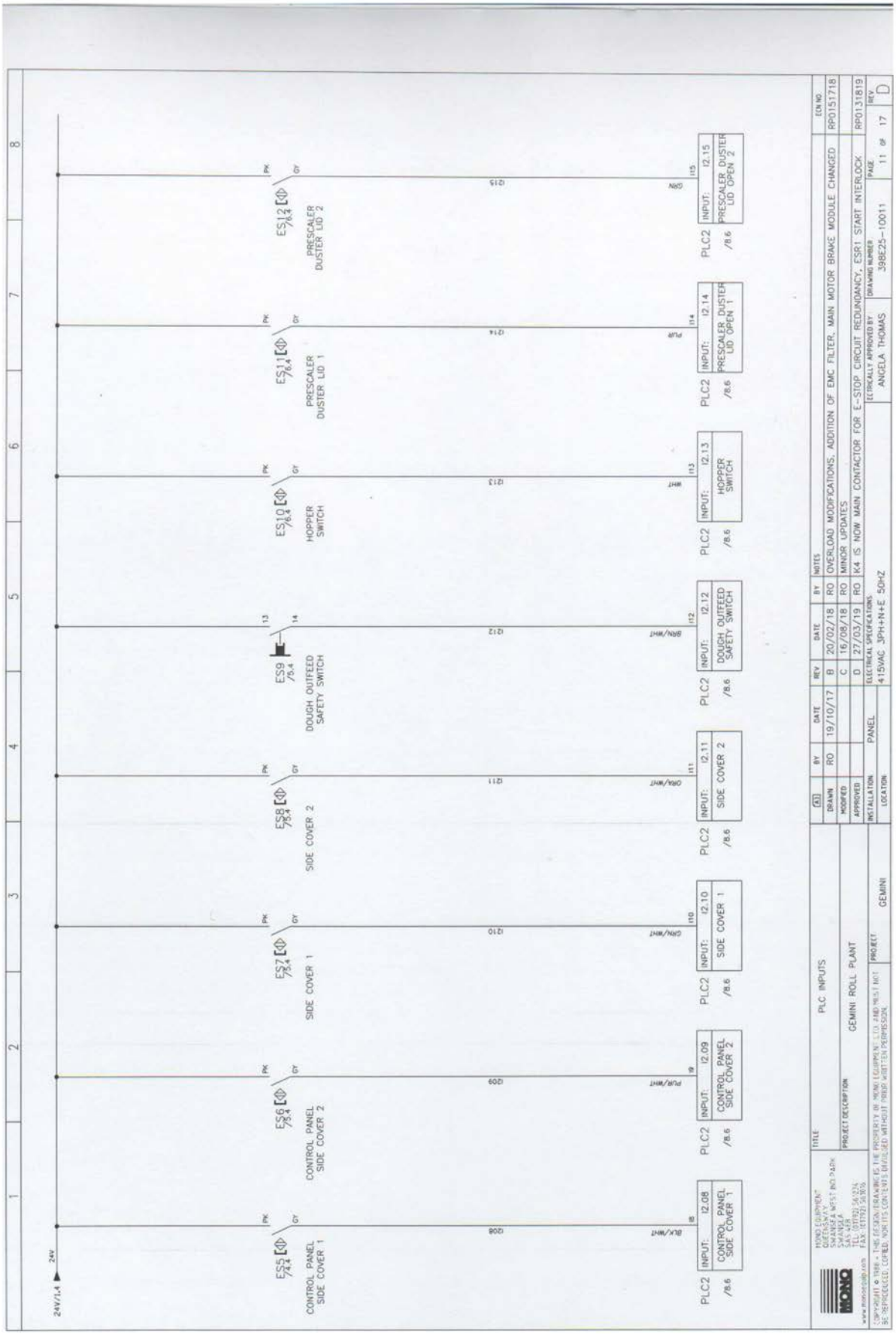


Figure 14.13: Drawing No. 398E2510012 (12 of 17)

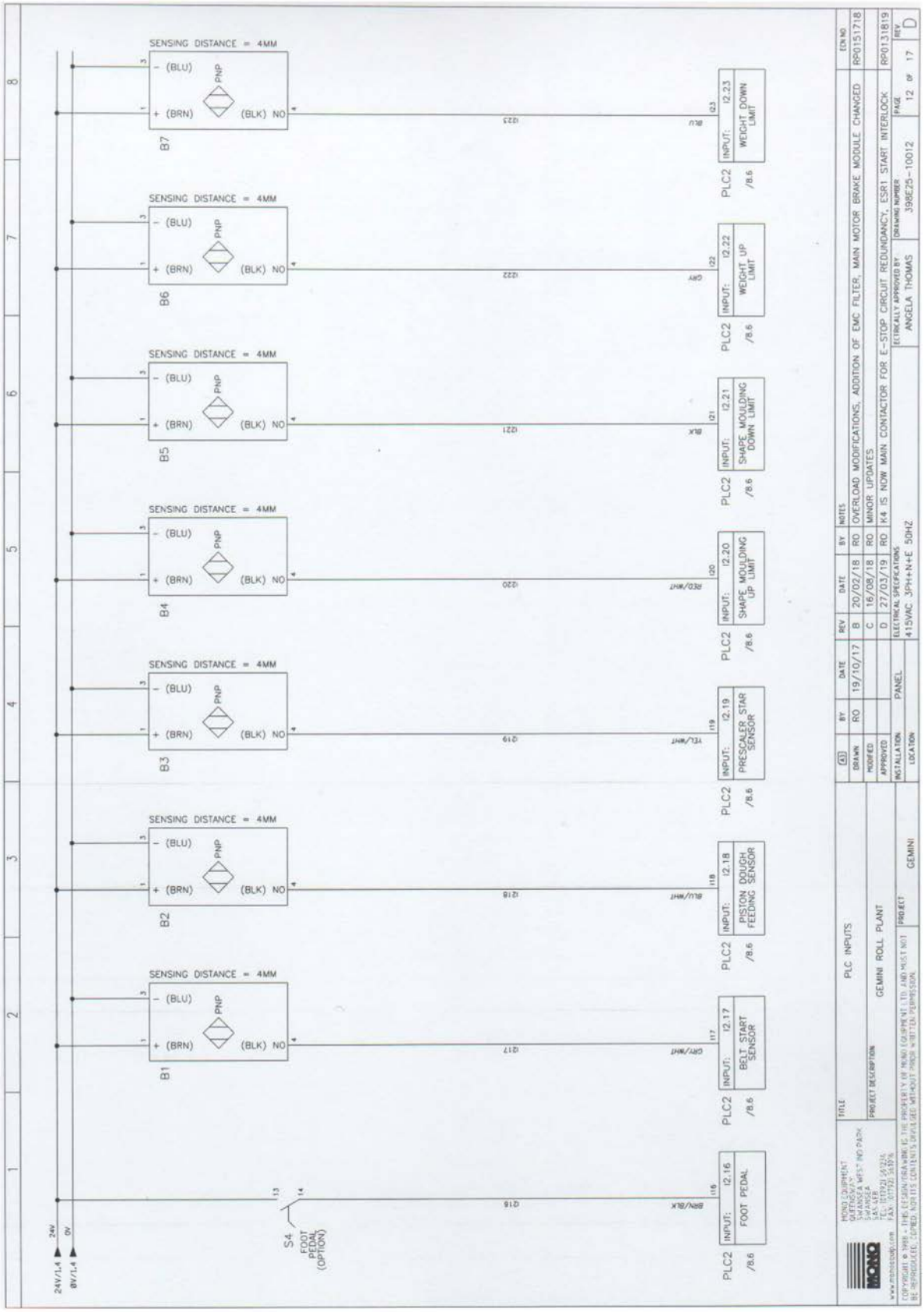


Figure 14.14: Drawing No. 398E2510013 (13 of 17)

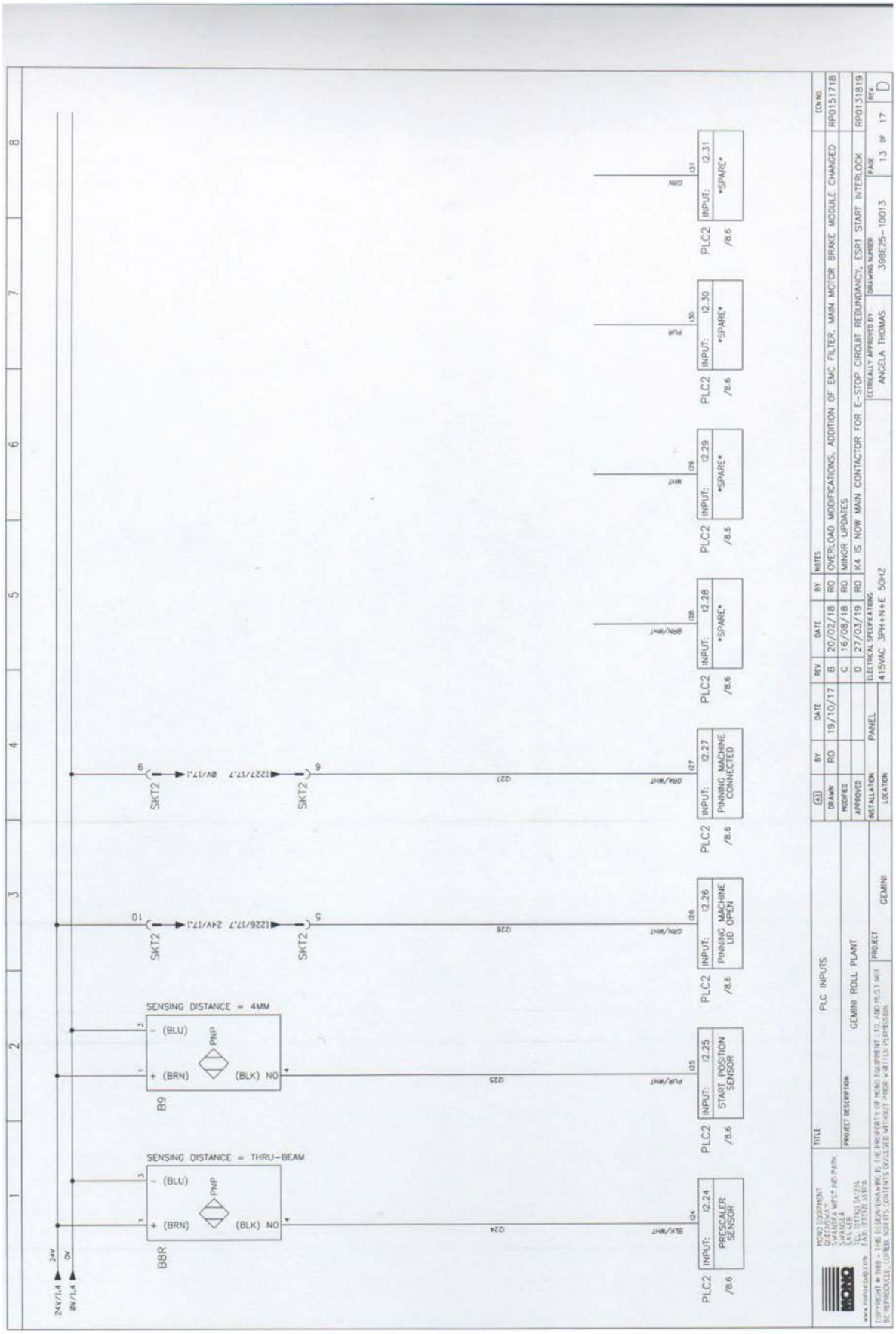


Figure 14.15: Drawing No. 398E2510014 (14 of 17)

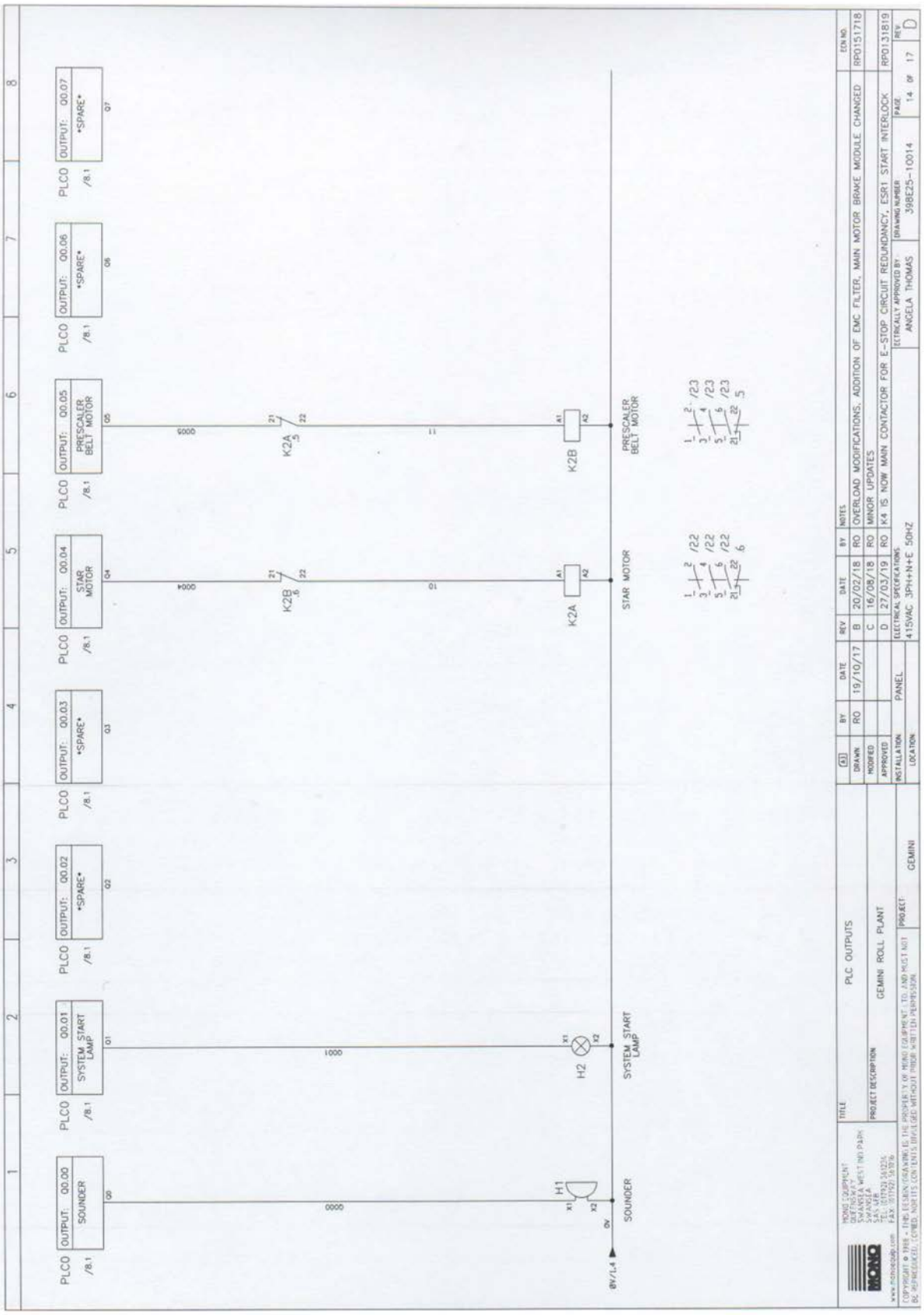


Figure 14.16: Drawing No. 398E2510015 (15 of 17)

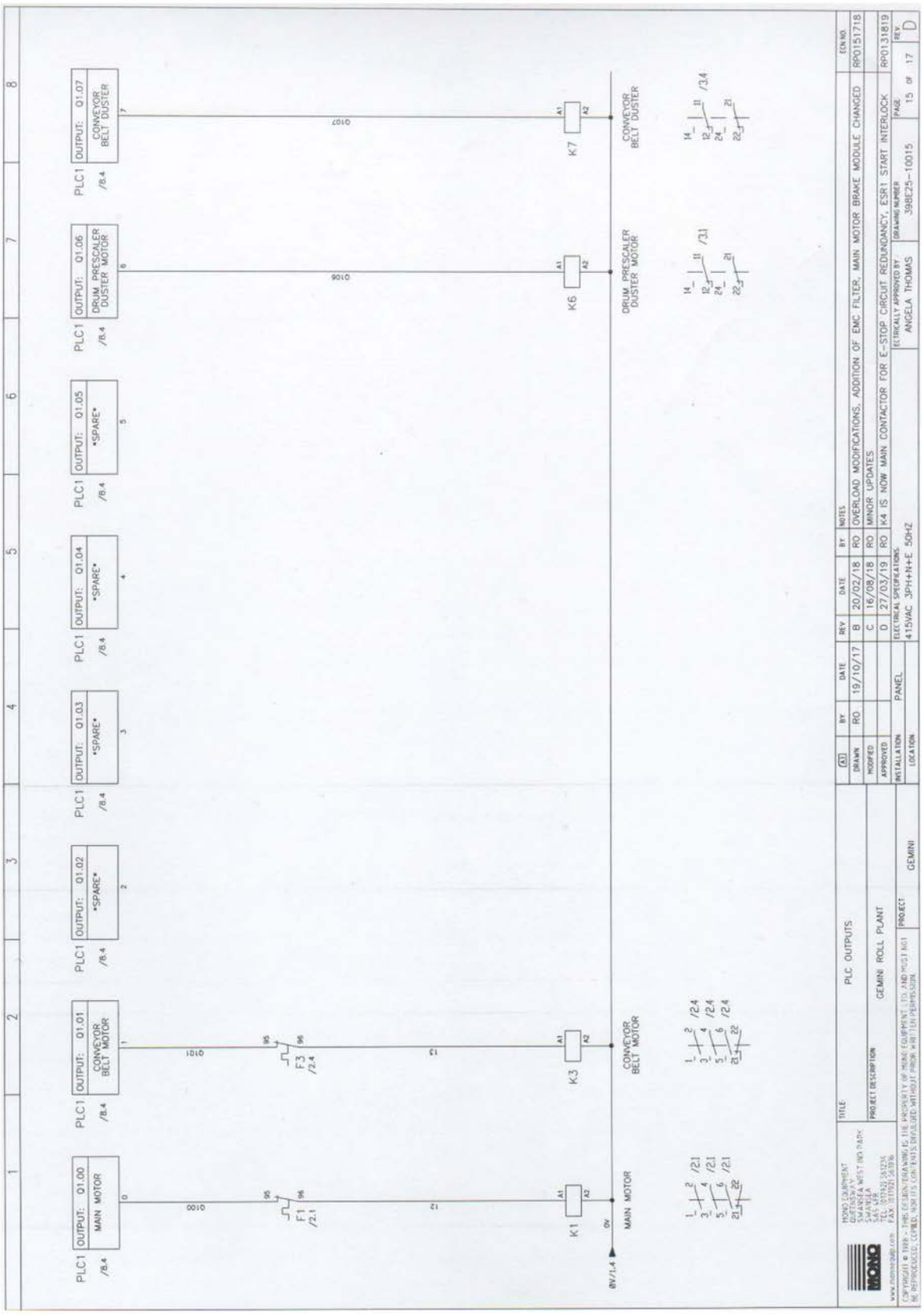


Figure 14.17: Drawing No. 398E2510016 (16 of 17)

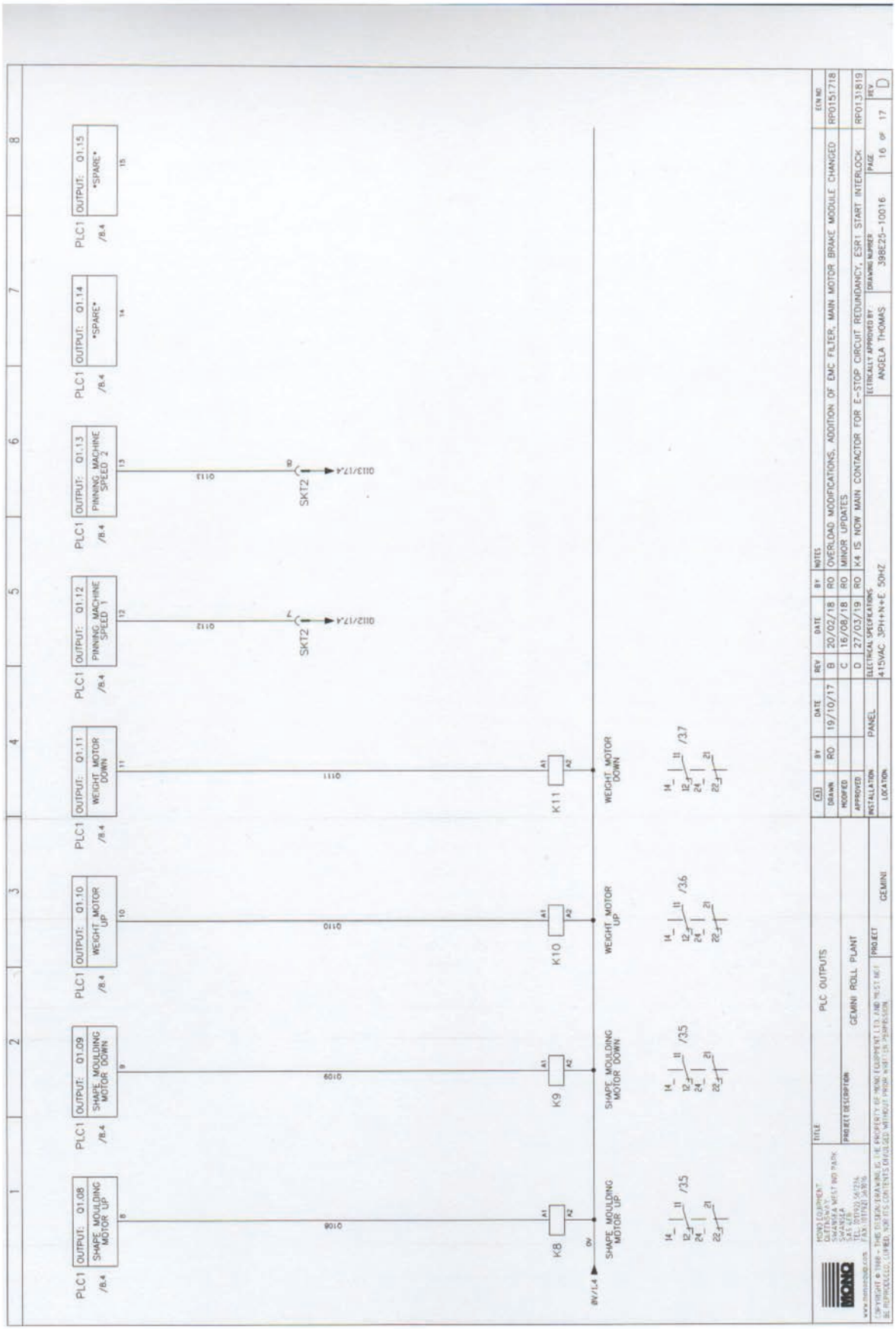
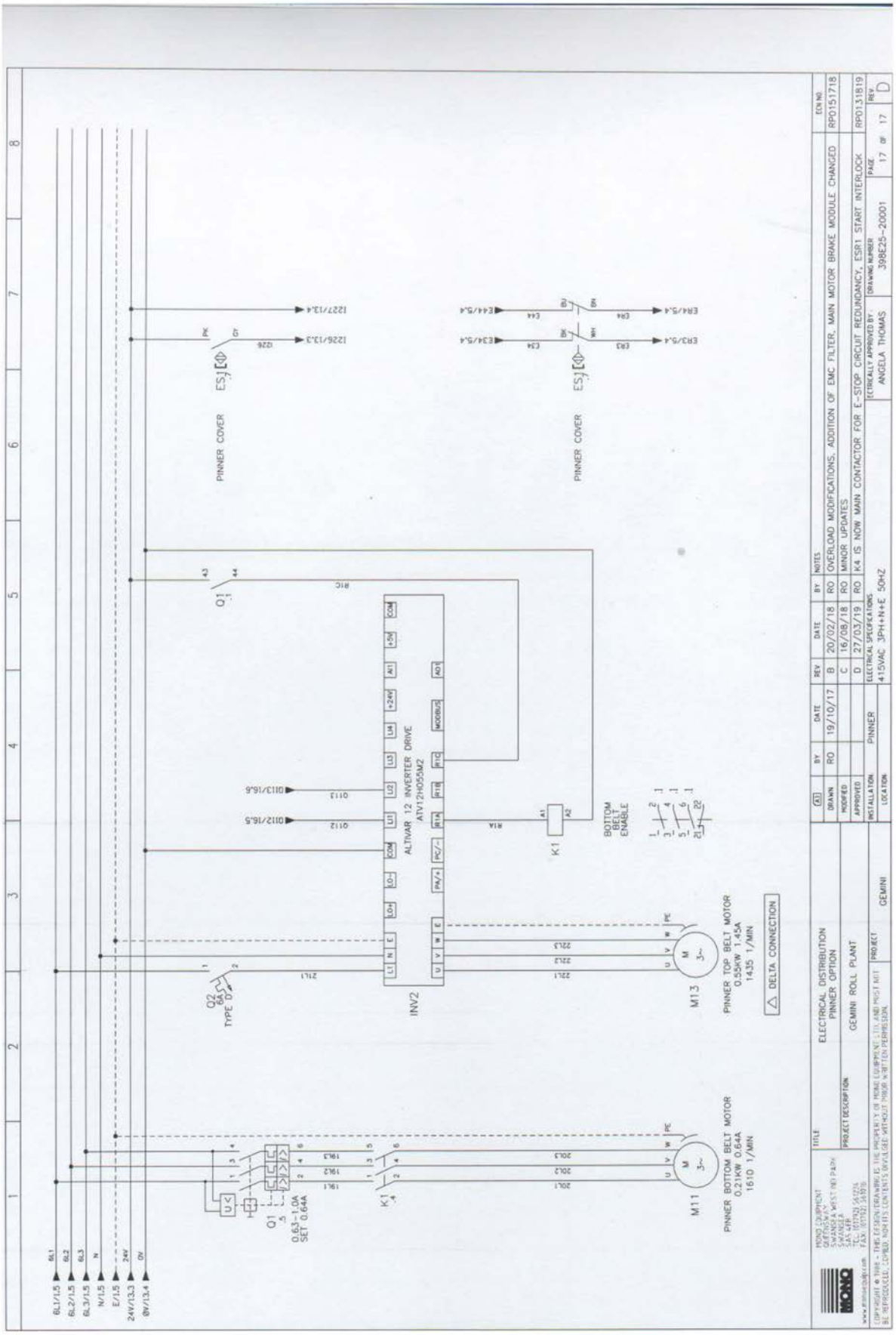


Figure 14.18: Drawing No. 398E2510017 (17 of 17)



15. Service

If a fault arises, please do not hesitate to contact the Customer Service Department. Please provide the serial number from the machine's nameplate or front page of this manual in all communications.

15.1. Contact information for customer services

MONO Equipment Limited
Queensway
Swansea West Industrial Park
Swansea
SA5 4EB
United Kingdom
www.monoequip.com

Contacts

spares@monoequip.com
+44 (0)1792 564039

techsupport@monoequip.com
+44 (0)1792 564041

service@monoequip.com
+44 (0)1792 564048

Switchboard
+44/0 1792 564039

15.2. Further information

Visit MonoEquip.com the for the latest versions of this user manual. The Documentation area of the web site has other language versions of product documentation. Also, up-to-date information about all MONO's products.

15.3. Environmental disposal

Dispose of the machinery with care when it comes to the end of its working life. Use the most environmentally-friendly manner possible by recycling or other means of disposal which complies with local regulations. Only dispose of the machine safely and legally. The Environmental Protection Act 1990 applies in the United Kingdom.

A. Alarm Messages

HMI alarm message	Description	Corrective action
BACK COVER OPEN	Back cover magnetic safety switch open.	Close back cover
BACK TOP LID OPEN	Back-top lid magnetic safety switch open.	Close back-top lid
BELT START SENSOR TIME-OUT	Belt start sensor not activated within time period.	Check belt start sensor is adjusted correctly to pick up striker.
		Check belt start sensor is operating correctly.
BOTH SHAPE MOULDING LIMITS ACTIVE	Shape moulding up and down sensors are activated.	Check sensors are operating correctly.
		Check the foreign object activating sensor.
BOTH WEIGHT LIMITS ACTIVE	Weight up and down sensors are activated	Check sensors are operating correctly.
		Check the foreign object activating sensor.
COMMUNICATIONS TIMEOUT	HMI cannot communicate with the PLC	Check the communications cable is plugged in correctly at both ends.
		Check the communications cable is not damaged.
		Check the PLC is operating in run mode.
CONTROL PANEL SIDE COVER 1 OPEN	Control panel side 1 cover magnetic safety switch open.	Close Control panel side 1 cover.
CONTROL PANEL SIDE COVER 2 OPEN	Control panel side 2 cover magnetic safety switch open.	Close Control panel side 2 cover.
CONVEYOR BELT MOTOR OVERLOAD	Conveyor belt motor overload tripped.	Check for mechanical obstructions.
		Check cable connections / cable damage Reset overload.
DOUGH OUTFEED SECURITY SWITCH ACTIVATED	Dough outfeed safety fork switch open.	Close dough outfeed safety fork switch.
EMERGENCY STOP BUTTON ACTIVATED	Emergency stop push button pressed.	Release emergency stop push button.
FRONT COVER OPEN	Front cover magnetic safety switch open.	Close front cover.
HOPPER LID OPEN	Hopper lid magnetic safety switch open.	Close hopper lid.
HOPPER SAFETY RELAY ACTIVATED	Hopper safety circuit not enabled.	Check the hopper lid switch magnetic safety switch.
		Check the prescaler duster lid 1 magnetic safety switch.
		Check the prescaler duster lid 2 magnetic safety switch.
INVERTER DRIVE AXIS ERROR [ID=?]	Shape moulding motor inverter drive fault detected.	Power cycle machine to clear fault. If fault persists, call for servicing and state the fault ID.

HMI alarm message	Description	Corrective action
INVERTER DRIVE COMMS ERROR	Shape Moulding motor inverter drive cannot communicate with the PLC.	Check the communications cable is plugged in correctly at both ends.
		Check the communications cable is not damaged.
		Check the PLC is operating in run mode.
INVERTER DRIVE CONTROL ERROR	Shape moulding motor inverter drive control fault detected.	Power cycle machine to clear fault.
INVERTER DRIVE ERROR [ID=?]	Shape moulding motor inverter drive error detected.	Power cycle machine to clear fault. If error persists, call for servicing and state the error ID.
MAIN MOTOR OVERLOAD	Main motor overload tripped.	Check for mechanical obstructions.
		Check cable connections / cable damage.
		Reset overload.
MAIN SAFETY RELAY 1 ACTIVATED	Main safety circuit 1 not enabled.	Check the emergency stop push button.
		Check the front cover magnetic safety switch.
		Check the back cover magnetic safety switch.
		Check the back-top lid magnetic safety switch.
		Control panel side cover 1 magnetic safety switch.
MAIN SAFETY RELAY 2 ACTIVATED	Main safety circuit 2 not enabled.	Check the side cover 1 magnetic safety switch.
		Check the side cover 2 magnetic safety switch.
		Check the dough outfeed safety fork switch.
		Check the pinning machine lid open.
PHASE SEQUENCE FAULT	Mains supply phase out of sequence.	Swap phase in mains plug.
PINNING MACHINE NOT CONNECTED	Pinning machine plug not connected.	Connect pinning machine or fit pinner link plug.
PINNING MACHINE TOP LID OPEN	Pinning machine lid magnetic safety switch open.	Close pinning machine lid.
PISTON DOUGH FEEDING SENSOR TIME-OUT	Piston dough feeding sensor not activated within time period.	Check the piston dough-feeding sensor is adjusted correctly to pick up striker.
		Check the piston dough-feeding sensor is operating correctly.
PRESCALER DUSTER LID 1 OPEN	Prescaler duster lid 1 magnetic safety switch open.	Close prescaler duster lid 1.
PRESCALER DUSTER LID 2 OPEN	Prescaler duster lid 2 magnetic safety switch open.	Close prescaler duster lid 2.
PRESCALER STAR SENSOR TIME-OUT	Prescaler star sensor not activated within time period.	Check the pre-scaler star sensor is adjusted correctly to pick up striker.
		Check the pre-scaler star sensor is operating correctly.

HMI alarm message	Description	Corrective action
RECIPE ERROR (G?/R?/O?/S?/E?)	Recipe load/save operation error detected.	Call for servicing and state the error details.
SAVE ALARM LOG - USB MISSING ERROR	USB pen-drive (memory stick) not present/not operational when trying to save alarm log to USB.	Confirm USB pen-drive (memory stick) is inserted into USB port.
		Use another USB memory stick.
SAVE ALARM LOG ERROR (C?/S?/E?/F?)	Error detected when trying to save alarm log to USB.	Call for servicing and state the error details.
SHAPE ENCODER TIME-OUT	Shape moulding encoder count not changed within time period.	Check the shape moulding motor is operational.
		Check the shape moulding encoder is coupled to drive shaft.
		Check the shape moulding encoder connections are correct.
		Check the shape moulding encoder is operating correctly.
SHAPE MOULDING DOWN TIME-OUT	Shape-moulding DOWN sensor not activated within time period.	Check the shape-moulding DOWN sensor is adjusted correctly to pick up striker.
		Check the shape-moulding motor is operational.
		Check the shape-moulding DOWN sensor is operating correctly.
SHAPE MOULDING DOWN WRONG SENSOR	Shape-moulding UP sensor activated when motor commanded in down direction.	Check the shape-moulding motor is operational.
		Check the shape-moulding motor direction is correct.
		Check the foreign-object activating sensor.
SHAPE MOULDING UP TIME-OUT	Shape-moulding UP sensor not activated within time period.	Check the shape-moulding UP sensor is adjusted correctly to pick up striker.
		Check the shape-moulding motor is operational.
		Check the shape-moulding UP sensor is operating correctly.
SHAPE MOULDING UP WRONG SENSOR	Shape-moulding DOWN sensor activated when motor commanded in up direction.	Check the shape-moulding motor is operational.
		Check the shape-moulding motor direction is correct.
		Check the foreign-object activating sensor.
SIDE COVER 1 OPEN	Side 1 cover magnetic safety switch open.	Close side 1 cover.
SIDE COVER 2 OPEN	Side 2 cover magnetic safety switch open.	Close side 2 cover.
STAR AND BELT MOTOR OVERLOAD	Check for cable connections / cable damage.	Check for mechanical obstructions.
		Check cable connections / cable damage
		Reset overload

HMI alarm message	Description	Corrective action
START POSITION SENSOR TIME-OUT	Start position sensor not activated within time period.	Check the start-position sensor is adjusted correctly to pick up striker.
		Check the main motor is operational.
SYSTEM START-UP	Information message for alarm log.	Not applicable.
WEIGHT DOWN TIME-OUT	Weight DOWN sensor not activated within time period.	Check the weight DOWN sensor is adjusted correctly to pick up striker.
		Check the weight motor is operational.
		Check the weight DOWN sensor is operating correctly.
WEIGHT DOWN WRONG SENSOR	Weight UP sensor activated when motor commanded in down direction.	Check the weight motor is operational.
		Check the weight motor direction is correct.
		Check for foreign object activating sensor.
WEIGHT ENCODER TIME-OUT	Weight encoder count not changed within time period.	Check the weight motor is operational.
		Check the weight encoder is coupled to drive shaft.
		Check for weight encoder connections are correct.
		Check for weight encoder is operating correctly.
WEIGHT UP TIME-OUT	Weight UP sensor not activated within time period.	Check the weight UP sensor is adjusted correctly to pick up striker.
		Check the weight motor is operational.
		Check the weight UP sensor is operating correctly.
WEIGHT UP WRONG SENSOR	Weight DOWN sensor activated when motor commanded in up direction.	Check the weight motor is operational.
		Check the weight motor direction is correct.
		Check for foreign object activating sensor.

MONO Equipment is one of the leading designers and manufacturers of bakery and foodservice equipment in the United Kingdom. This proud heritage of British craftmanship, combined with a reputation for creating high-quality, innovative products, can be traced back to its origins in 1947.

MONO Equipment's comprehensive range of doughnut equipment is available in a variety of sizes to suit most businesses - from the compact Table Top Fryer through to the ever popular Aztec Doughnut Fryer.

Manufactured in hygienic and easy-to-clean stainless steel, these highly versatile fryers are suitable for producing a wide range of yeast raised doughnuts.

MONO Equipment also supplies a wide range of specialist equipment to satisfy the constantly developing needs of the bakery, foodservice and confectionary markets.

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