AZIMUTH

Presses & Automatisation – Since 1975

Operator's Manual – Azimuth Controller

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Operator Manual – Azimuth Controller

1.Importance of the Manual

This manual is written to become familiar with all functions and possible applications of our machine.

It contains important instructions on how to use the machine safely, according to its intended purpose.

It is not only essential to follow these guidelines to avoid risks, but it also reduces repair costs and downtime, while increasing product reliability and service life.
Anyone working with the machine must follow the instructions in this manual, especially those related to safety.

In addition, local rules and regulations regarding environmental safety and accident prevention may apply.

2. User Responsibility

Only allow individuals who are familiar with the general safety instructions and accident prevention guidelines to work with the machine.
The operator must be properly trained, and the **Safety Instructions and instrument Preparation** contained in this manual must be read and understood.

3. Operator Responsibility
Before starting any work, all persons authorized to operate the machine must pay attention to general regulations on occupational safety and accident prevention.
The **safety chapter and warnings** in this manual must be read and understood.

4. Hazards
This machine is designed and manufactured according to advanced technical standards and recognized safety regulations.
However, improper use may endanger the life and health of the operator or other people, or damage the machine and other property.
Therefore, the machine must only be used for its intended purpose and kept in perfect technical condition.
Any defect that could negatively affect safety must be repaired immediately.

5. Intended Use

The electronic control program of Azimuth machines is specifically designed for pressing and riveting sheet metal of various materials.
AZIMUTH will not be held responsible for any damages resulting from improper use.
The intended use also includes following all instructions in the operating manual and complying with inspection and maintenance schedules.

6. Copyright

7. Manufacturer and Supplier Address

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TABLE 1 - GLOSSARY

Acronym	Full Term	Description
HMI	Human-Machine Interface	User interface or dashboard linking a person to a machine, system, or device.
PLC	Programmable Logic Controller	Industrial digital computer used to control manufacturing processes.
I/O	Input/Output	Refers to signals or data received (input) and sent (output) by a system.
VFD	Variable Frequency Drive	Device used to control the speed and torque of electric motors.
SPM	Strokes per Minute	The number of strokes performed by the press in one minute.
PNP	Positive-Negative-Positive	Transistor output type where the load is connected to ground, and the sensor sends +24V to the load when activated.
NPN	Negative-Positive-Negative	Transistor output type where the load is connected to positive voltage, and the sensor pulls the output to 0V when activated.
DSV	Double Safety Valve	Valve used in systems to ensure increased safety by regulating or shutting off fluid flow if one safety circuit fails.
STO	Safe Torque Off	Safety function in drive systems that ensures the motor does not produce torque during critical operations or when a safety condition is detected.
BDC	Bottom Dead Center	The lowest point of the press stroke where the ram completes its downward movement.

1. Basic Principles

1.1 Main Page

FIGURE 1-1 - MAIN PAGE

1.1.1 Navigation and System Overview

Accessing the Main Page: Press the *Azimuth* button at any time to return to the HMI main page.

Equipment Navigation: To access a specific piece of equipment, press its name. A green background on an equipment button indicates that its menu is currently being viewed.

- *Note: You can also access the machine menu by clicking directly on the equipment in the main page image.*

Access Restrictions: If a button is locked or grayed out, this means a higher access level is required. Log in with the appropriate credentials to unlock and use the restricted features.

TABLE 2 - PASSWORDS

Operator	6190
Maintenance	12345678
Azimuth	Contact technical support if required

Alarms: When an alarm is active, the Alarm button flashes. Pressing it opens the alarm page for more information and troubleshooting.

Statistics: The Statistics button opens the machine statistics page, providing key operational data.

Operations : The Operation button opens the machine operation page, showing information useful for production.

Logout Button: After logging in, you can log out anytime by pressing the Logout button.

1.1.2 Main Page Features

The main page displays the recipes currently loaded for both the Press and the Feeder.

You can also set the operating mode of the **Feeder**, the **Uncoiler** and the **Shear**. Each of these machines can be switched between manual and automatic modes using their respective controls.

You can Start, Stop and change the press motor's direction with the motor control section.

FIGURE 2 - CHANGE LANGUAGE

The HMI language can be switched between French and English by selecting the language checkbox.

The time can be changed by pressing the clock, which opens the HMI settings menu.

- In the HMI settings menu, select **Set Time/Date**.

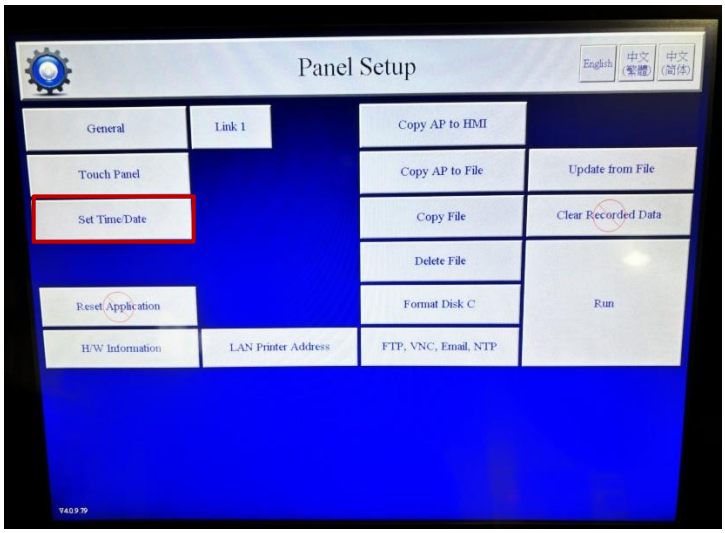


FIGURE -1-3 – HMI'S PARAMETER MENU.

- Enter the correct time and date using the ↑, ↓, +, and – symbols, then click **Set & Exit**.

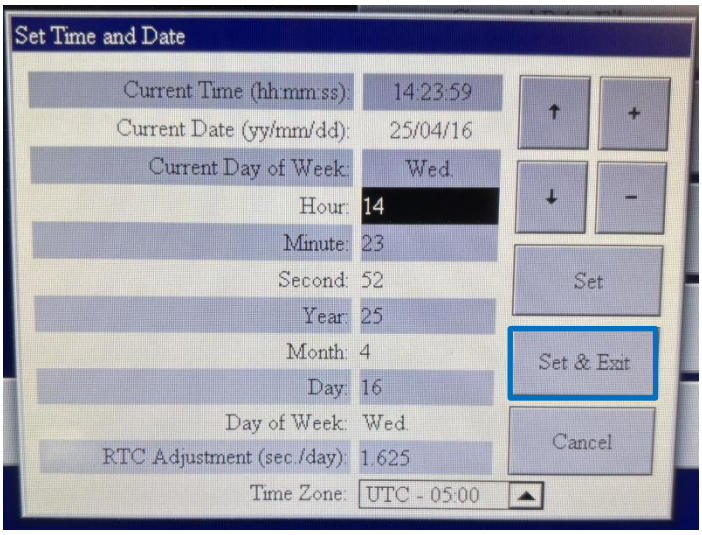


FIGURE 1-4 – TIME AND DATE PARAMETERS.

- Press the **RUN** button to confirm and apply the new settings.

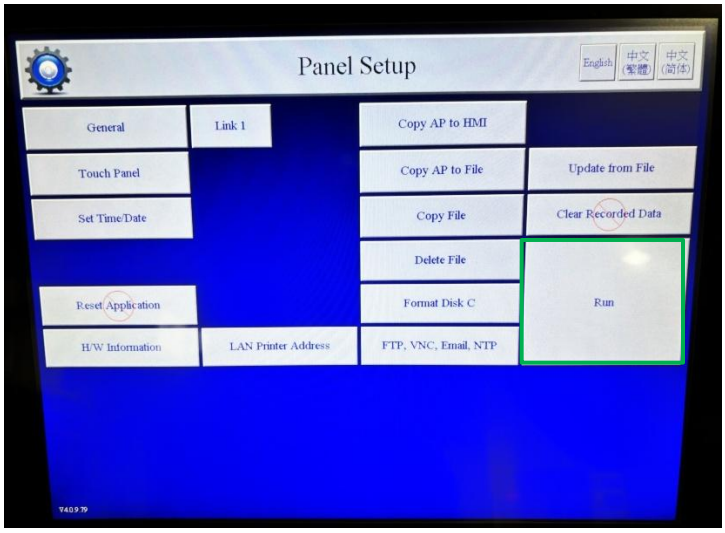


FIGURE 1-5 – BACK TO HMI'S MAIN PAGE.

1.2 Statistics Page

FIGURE 1-6 - STATISTICS

The **Cycle Counter** shows the total number of complete cycles performed by the press. It can be reset at the end of the day so the operator can track total press strokes for production.

The **Clutch Counter** increases each time the clutch is engaged.

The **Warranty Counter** monitors the total number of press strokes. Warranty status feedback is also shown:

- Red circle = warranty is no longer valid.

The **Clutch Time** displays the total time during which the clutch was active.

The **Hydraulic Overload Alarm Counter** monitors the total number of hydraulic overload alarms.

The **Lubrication Success/Failure Counters** provide feedback on the total number of lubrication cycles executed and their status.

The **Powered Time** shows the total time the machine has been powered on.

The **Adjustment Motor Active Time** shows the total time the adjustment motor has been active.

Feeder Statistics are also displayed: total number of feeds performed, total length fed, and the total time rollers were opened/closed.

1.3 Operations Page

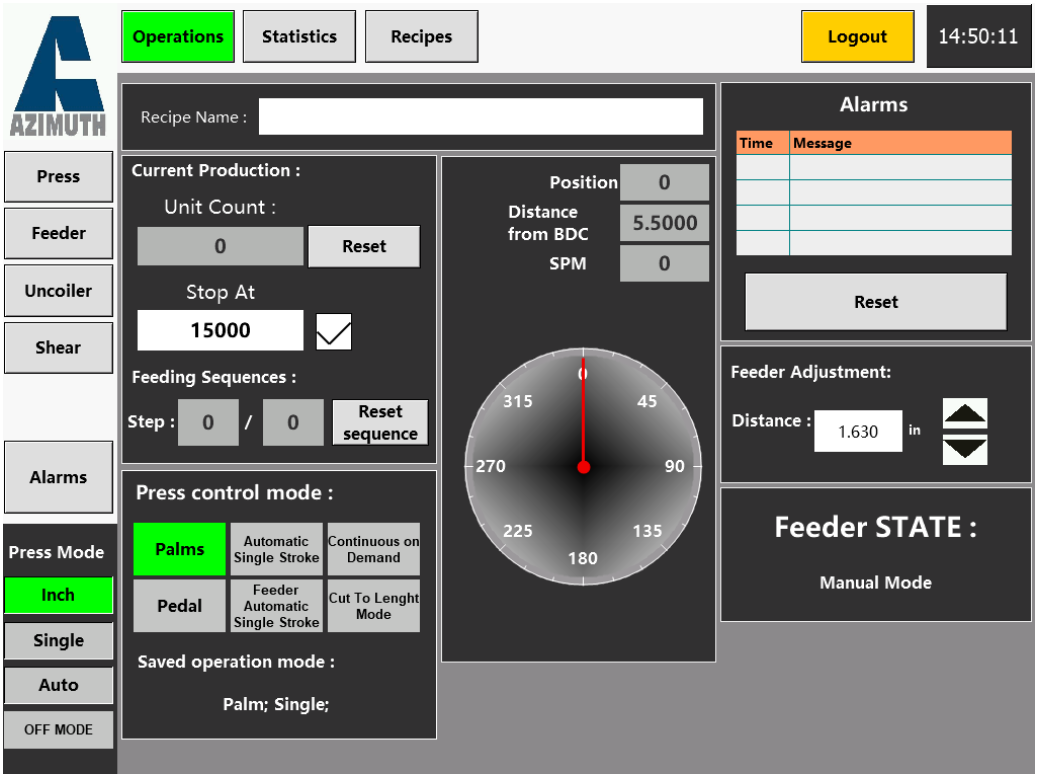


FIGURE 1-7 – OPERATIONS PAGE

The operation page provides an overview of the current production status while the machine is running.

Displayed information includes :

- Active recipe name
- Unit counter
- Press control modes and the last operation mode used for the active recipe
- Current press position
- The distance from BDC
- Press speed in SPM (Strokes per Minute)

- The active alarms
- Adjustment arrow for live Feed distance adjustment
- Status messages related to the Feeder

The center section displays the current position of the press, as well as the actual distance from BDC and the press speed in strokes per minute (SPM).

A batch counter is available to stop the press after a defined number of strokes.
The press will stop only if the checkbox to the right of the entered value is selected.

To set the batch counter, enter the desired number of parts, then check the “Stop at” box to activate the stop condition. In the example of Figure 1-7, the press will stop when 15 000 parts are done.

Reset the counter by clicking the “Reset” button next to the unit count display.

The Feeder adjustment tab lets you perform live adjustments of the feeding length. Press the up and down arrow to modify the actual feeding distance.

1.4 Recipes Page

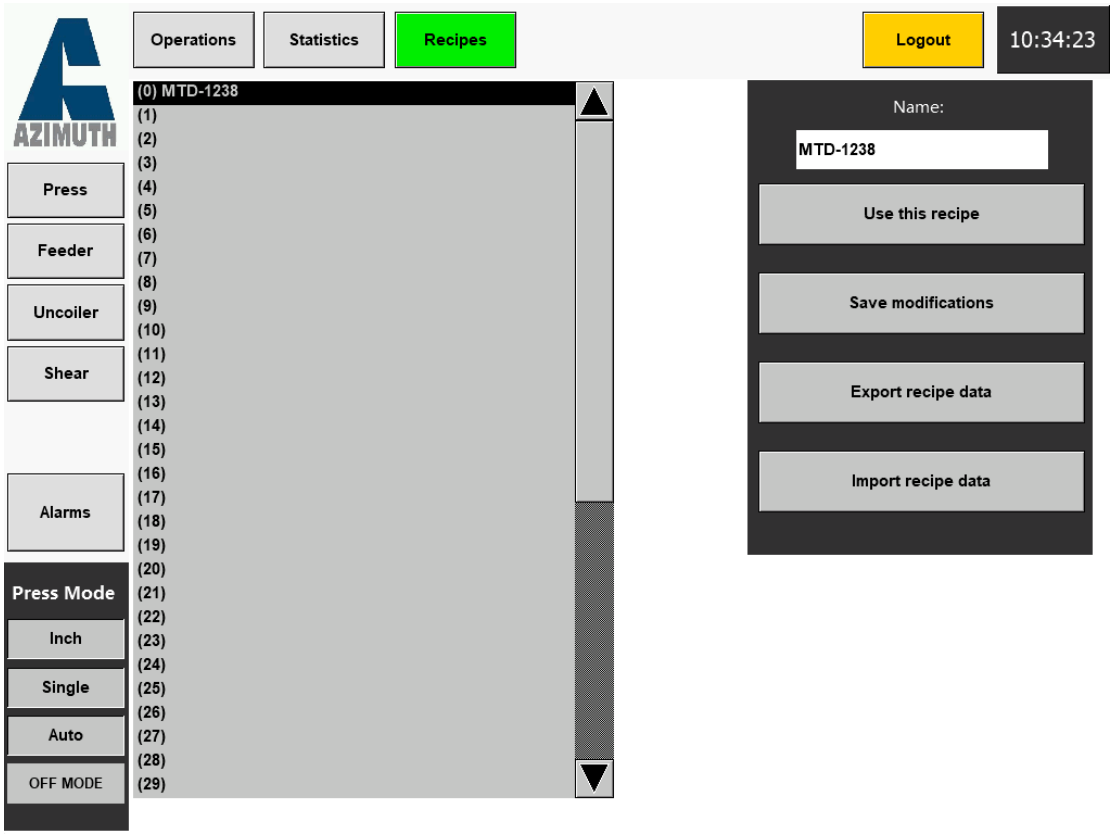


FIGURE 1-8 – RECIPES PAGE

A list of all the recipes is shown in the recipes page. In this page, you can load a recipe, save modifications to an in-use recipe and Export and Import recipes on a USB media device[1].

[1]: *The media device must be formatted with a **memory size of 2048 bytes**.*

The **Azimuth controller** uses **recipes** to store specific production parameters associated with a particular tooling setup.

The recipes contained controller store the following data:

- Recipe's name
- Press Speeds
- Feeding anlges range and Pilot release angles
- The desired unit quantity and the stop-at-quantity setting
- The Die Protections parameter
    - *Important : Only the **User I/O** values in the **"Die protections"** tab found in the Die section are saved in the recipe; **Global Cams & Die Protection** values remain unchanged.*
- The Shut Height value
- Operation mode
- Gags:
    - Active
    - Confirmation of position
    - Name
- Die:
    - Amount of Press punch per parts
    - Upper die weight
    - Material thickness
    - Punch sharpening Setpoint
    - Last Sharpening Date
- Feeder:
    - Speed
    - Acceleration
    - Deceleration
    - Sequences Distances and gags
    - Distance between gags
    - Parts lengths
    - Straightener Encoders setpoints
    - Straightener Encoders Tolerance
- Uncoiler:
    - Timer On delay
    - Timer Off delay
    - Speed
    - Speed toggle
- Recoiler:
    - Width
    - Length to Stop
    - Torque overrides active
    - Tension
    - Torque ramp
    - Torque at max speed

Recipe Creation

To create a recipe, follow these steps

Select a nameless recipe,

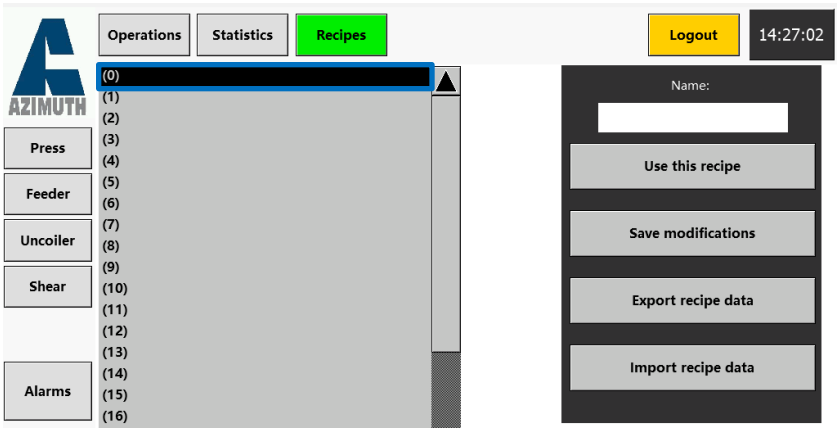


FIGURE 1-9 - SELECTING A RECIPE WITHOUT A NAME

Enter a new title,

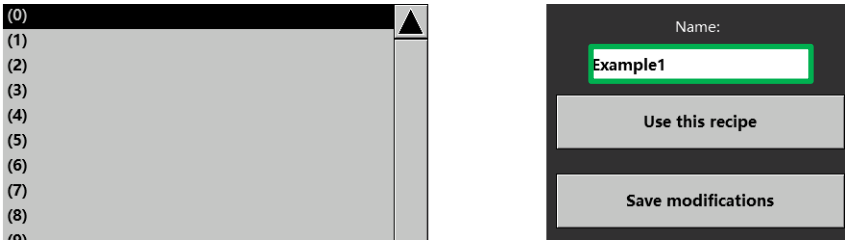


FIGURE 1-10 – ENTER A TITLE FOR THE NEW RECIPE'S NAME

Click on Save modifications.

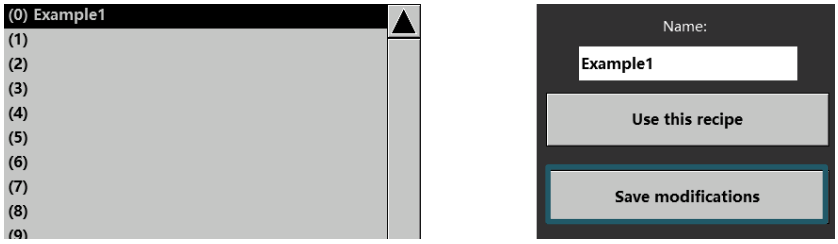


FIGURE 1-11 – SAVINGS MODIFICATIONS INTO THE NEW RECIPE

Once the new recipe is named, enter the desired parameter values and press **"Save modifications"** to store the modifications in the recipe.

Modifying an Existing Recipe:

Select the recipe to edit from the menu.

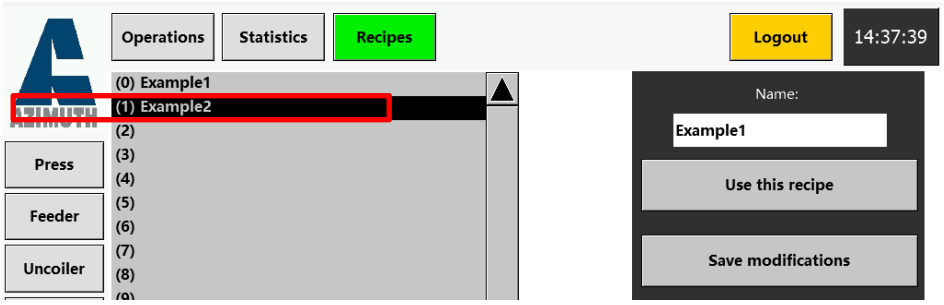


FIGURE 1-12 – SELECTION OF AN EXISTING RECIPE

Click on Use this recipe to load it.

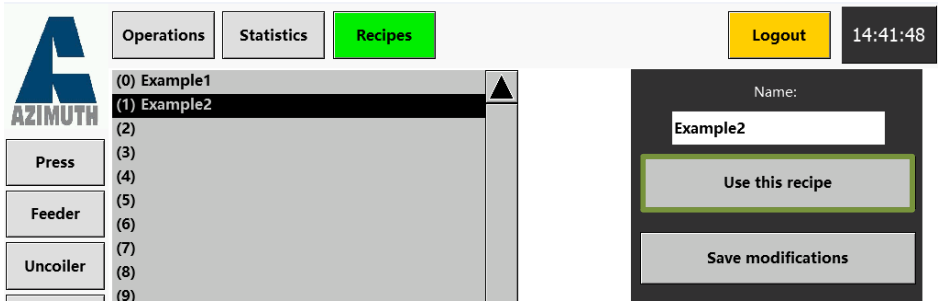


FIGURE 1-13 – LOADING THE EXISTING RECIPE

Change the desired values.

FIGURE 1-14 – RECIPE TO EDIT

FIGURE 1-15 – EDITED RECIPE.

Click on Save modifications.

Creating a New Recipe from an Existing Recipe

Procedure to generate a new recipe by copying an existing one:

Select a recipe that contains the desired parameter values.

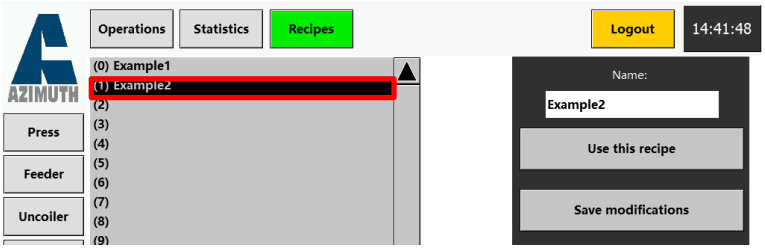


FIGURE 1-16 - RECIPE THAT CONTAIN THE DESIRED PARAMETERS.

Click on Use this recipe.

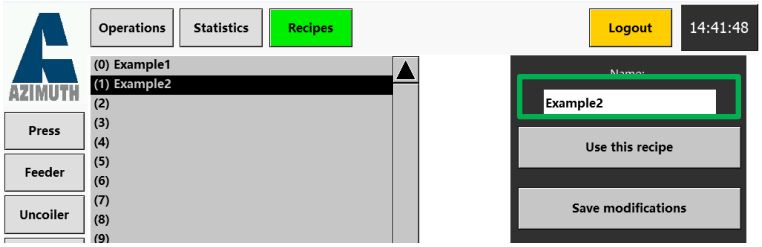


FIGURE 1-17 – USE THE RECIPE THAT CONTAINS THE DESIRED PARAMETERS.

Choose an Empty Recipe in the recipe list.

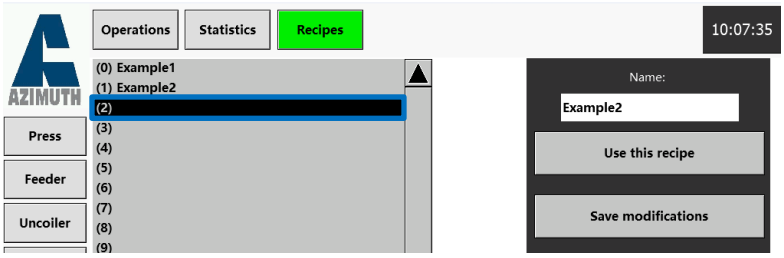


FIGURE 1-18 – SELECTION OF AN EMPTY RECIPE.

Enter a new name

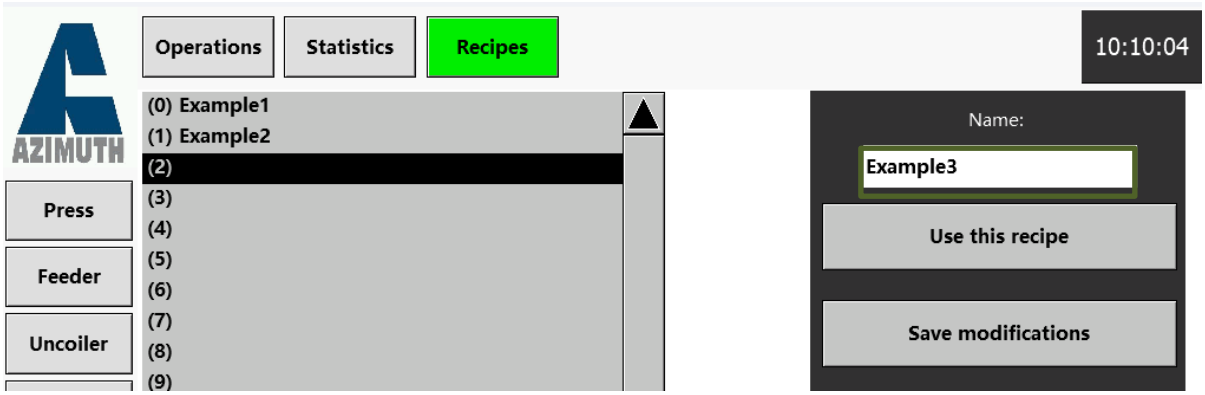


FIGURE 1-19 - ENTRER NAME FOR THE NEW RECIPE.

Click on Save modifications.

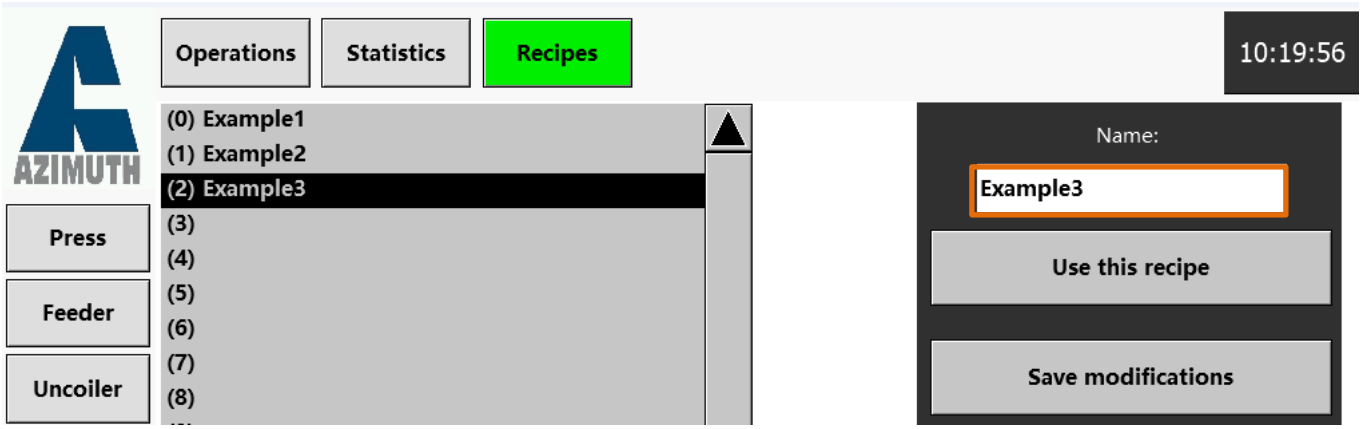


FIGURE 1-20 – SAVE THE NEW RECIPE.

2. Press Controls – Mechanical

This section covers the parameters for the press controls.

2.1 Main Page

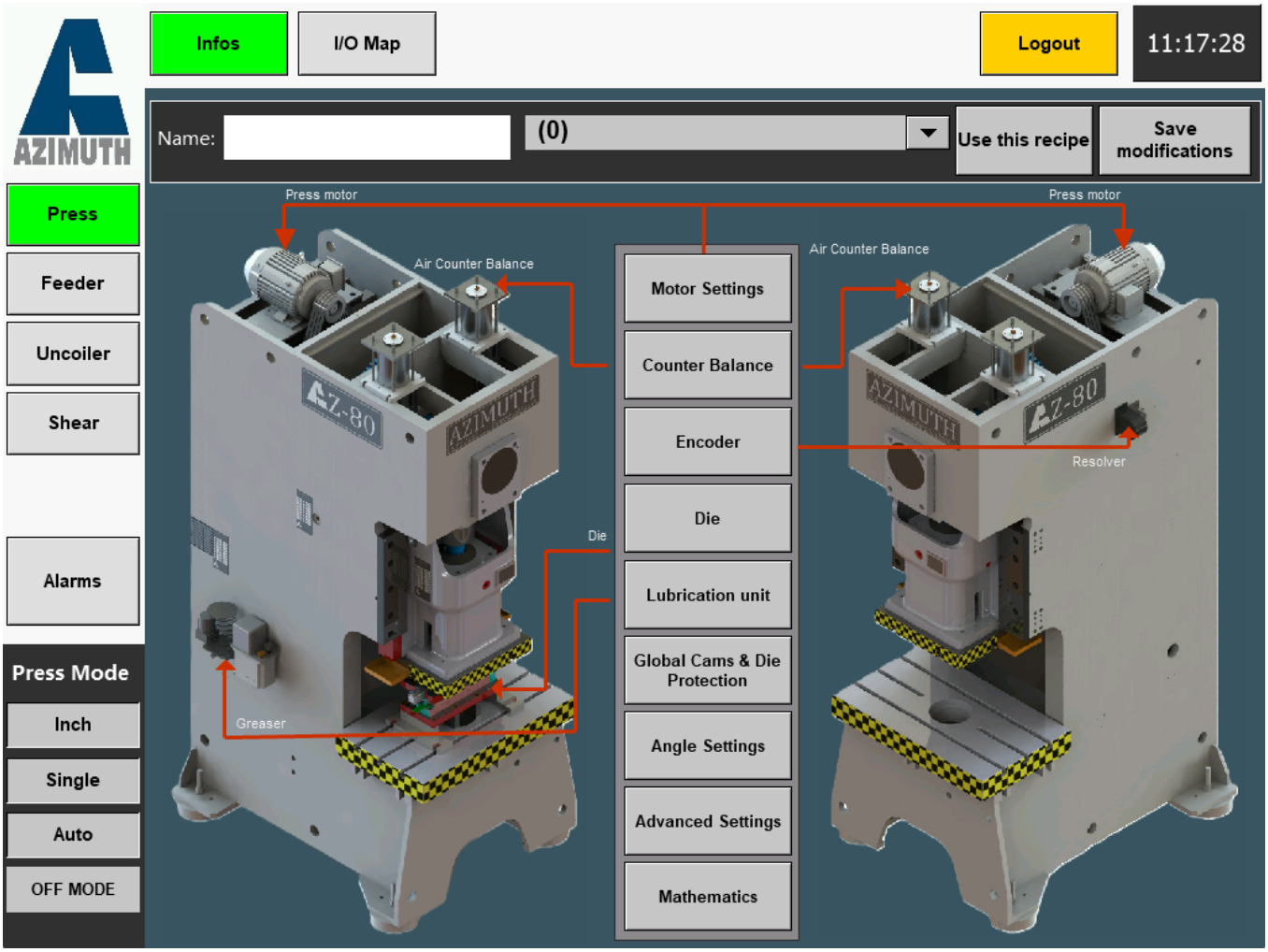


FIGURE 2-1 – PRESS MAIN PAGE.

2.1.1 Navigation and General Overview

The main page of the press section provides access to multiple sections of the controller that are dedicated to the press controls.

These sections consist of :

- Motor Settings
- Counter Balance
- Encoder
- Die
- Lubrication Unit
- Global Cams & Die Protection
- Angle Settings
- Advanced Setting
- Mathematics

On the left side of the press menu navigation bar, feedback is provided on the current press mode:

Inch, Single, Auto or OFF Mode.

The **top navigation bar** of the press allows the operator to navigate through all the press menus.

Info will display the main page of the press.

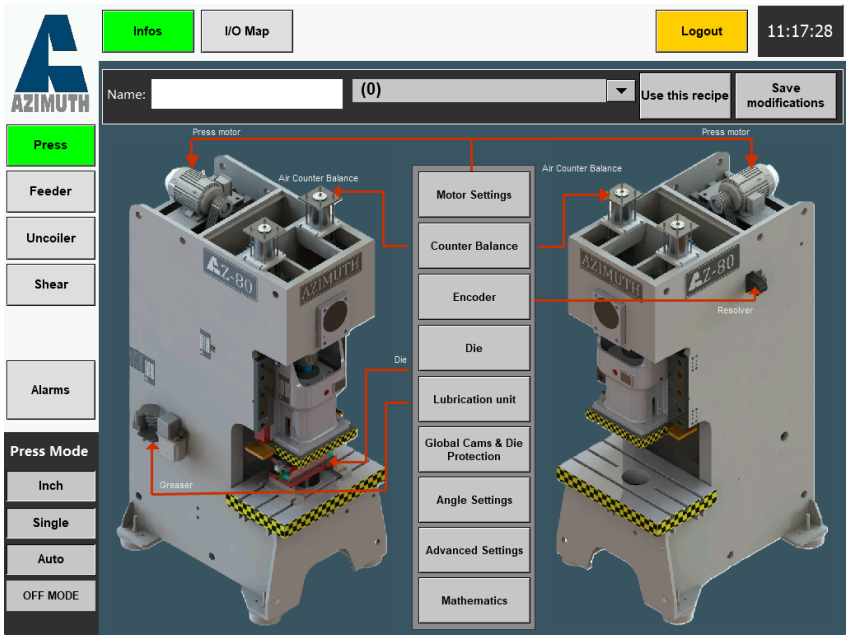


FIGURE 2-2 – PRESS INFOS PAGE.

I/O Map displays a page that allows the operator to navigate through the machine's inputs and outputs to assist in troubleshooting.

FIGURE 2-3 – I/O MAP PAGE.

2.1.2 Infos Page

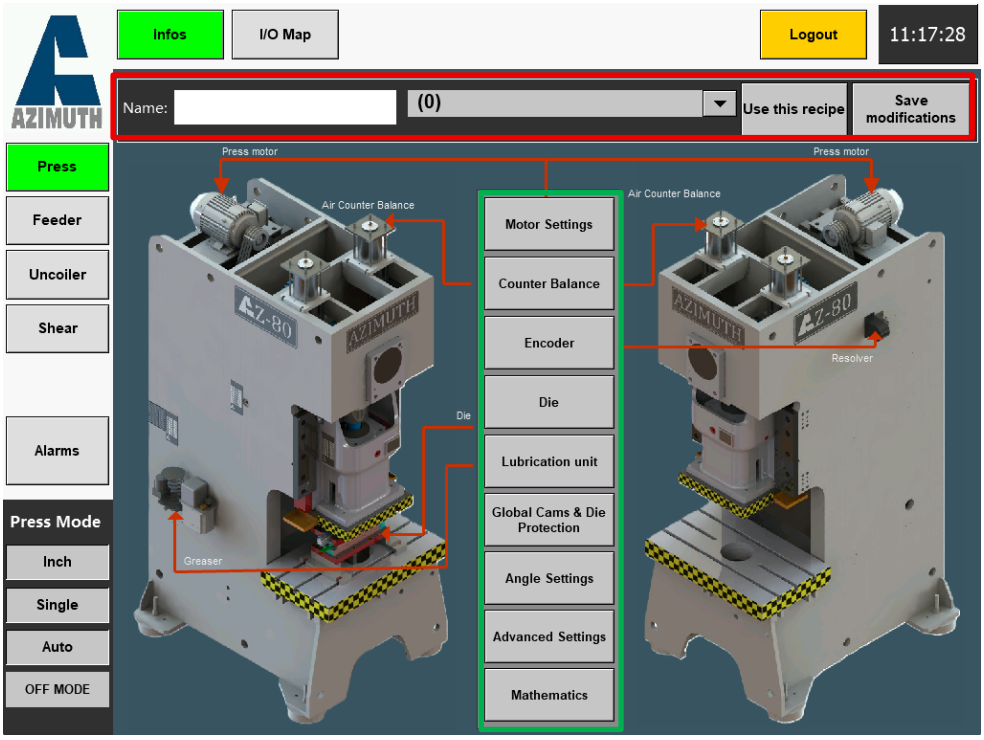


FIGURE 2-4 - DETAILS INFOS PAGE

The press **Infos** page allows you to navigate through every menu related to the press controls.

This page allows you visualize and load a recipe as per the recipe section, or access various press menus using the center Navigation Bar.

2.1.3 Motor settings Page

FIGURE 2-5 - PRESS MOTOR SETTINGS PAGE

On the **Motor Settings** page, if the press motor is controlled by a Variable Frequency Drive (VFD), you can adjust the press speed for both **normal operations** and **Inch mode**. These speed settings determine how quickly the press completes a cycle.

A higher SPM value increases the press speed, which in turn reduces the cycle time.

The **Speed** tab controls the press speed for all operating modes except Inch mode.
The press motor speed in Inch mode is determined by the value entered in the **Inch Speed** tab.

The **Inch Speed** can be set down to a lower SPM value, allowing for greater precision when starting or setting up the tooling.

You can **start** and **stop** the motor and select the **rotation direction**.

Please note that the reverse mode works only when the press is in Inch mode.
The reverse direction can be used if the press is stuck in the bottom position or needs to be returned to the top without performing a stroke.

When the motor is running, the **Active** indicator will be highlighted with a **green background**.
If the motor encounters an error, the **Fault** indicator will appear with a **red background**.

When the press motor is controlled by a VFD, you can monitor the motor current, torque, the output frequency and the DC bus voltage of the VFD. Also, you can set the **acceleration** and **deceleration times** of the motor. In addition, you can view drive faults and reset them if necessary.

The example shown in **Error! Reference source not found.** demonstrates an acceleration and deceleration time of **20 seconds**.
This time represents how long the motor takes to reach the commanded speed.
Therefore, in the example of **Error! Reference source not found.**, when the motor starts, it requires **20 seconds** to reach its preset speed.

2.1.4 Counter Balance Page

FIGURE 2-6 - COUNTER BALANCE PAGE

The counter balance page displays the air pressure that should be set for the counter balance cylinder in function of the upper die weight.

2.1.5 Encoder Page

FIGURE 2-7 - ENCODER PAGE

Feeder Cams Section

The activation of the Feeder by the press is controlled using two cams.

The Feed Cam triggers the material feed according to the distance defined in the active recipe.
In the example shown in Figure 2-7, the Feeder receives a signal to start feeding at 300°, and the feeding operation must be completed before reaching 60°.

The Pilot Release Cam opens the feeder rolls to reposition the material between each feed cycle.
This function is useful when the tooling includes mechanical stops that guide the material during cutting or forming operations.
If the tooling does not include pilot pins, this parameter can be set to 0.0.

In the example shown in Figure 2-7, an angle range between 170° and 190° has been defined to allow the Feeder rolls to open when the press is within this angular range.

Information on how to setup the Feed Cam and the Pilot Release Cam is available by clicking on the magnifying glass button

2.1.6 Press Control Mode Section

The press control mode section lets go select the control mode for the press. You can save the operation mode for the job by pressing the Save button. This feature is a reminder of the press operating mode for the job that was saved into the recipe.

Press Operating Modes

Inch Mode: The inch mode allows the press to be advanced in small increments. This operating mode is used during mechanical adjustments of the press or when preparing it for a new production run. Inch mode is the only mode in which the press can be moved in reverse.

Single Mode: The Single mode is an operating mode in which the press performs only one cycle when the two-hand control buttons are activated. To complete a full cycle in Single mode, the operator must keep both two-hand control buttons pressed for the entire duration of the cycle. The press will automatically stop in the top position. This mode can be used for manual production purposes or to test production parameters before starting the press in Automatic mode.

Auto Mode: The Automatic mode is used for continuous production. When Automatic mode is selected, the press will perform cycles continuously until an event stops it.

To activate Automatic mode, the operator must first press the Prior Act button on the operator station. Within 5 seconds, the operator must then start the press by pressing the two-hand control buttons. These buttons must be held for a few seconds before being released. The press will then continue cycling automatically.

The operator can stop the automatic cycle by pressing the Top stop button located on the operator station. If the unit counter reaches its preset value and the stop option is enabled, the press will stop its continuous cycle.

OFF Mode: This is not a production mode. If this mode is active, no other mode can be activated. Furthermore, it will not be possible to engage the press.

Automatic Single Stroke Mode: The Automatic Single Stroke mode is an operating mode in which the press performs single cycles automatically. In other words, the press restarts a single cycle upon receiving an external signal. This operating mode is useful when production must run continuously, but the total material feed length is too long to be fully advanced within the feed angle range of the standard Automatic mode.

To activate the Automatic Single Stroke mode, the operator must first ensure that the press is in Single mode, then activate the required buttons for its operation.

To start an Automatic Single Stroke sequence, the operator must press the Prior Act button, and within 5 seconds press and hold the two-hand control buttons for the duration of one complete cycle. This automatic operating mode can be stopped by pressing the top stop button on the operator station.

The Automatic Single Stroke mode of the Azimuth controller can be used in two different ways. The activation signal may be generated by an external component, in which case only the Automatic Single Stroke button must be activated. Alternatively, the signal may come from a feed-completion signal issued by the Azimuth Feeder, in which case both buttons labeled Automatic Single Stroke must be activated.

Important: If the sequence is interrupted (for example, by a top stop, an emergency stop, or an alarm), the Automatic Single Stroke mode will be deactivated. To reactivate it, press the Prior Act button and perform the first stroke using the two-hand control.

Continuous on demand: The Continuous On-Demand mode is an operating mode in which the press cycles automatically, like the *Auto* mode. The difference is that the press will perform a top stop to allow a shearing cycle to occur, then automatically restart once the shearing operation has been completed.

This operating mode is particularly useful when the press must perform multiple punching operations on a part before shearing it. This mode is available only when a shear system is integrated with the press control.

To activate the Continuous On-Demand mode, the operator must first ensure that the press is set to *Auto* mode, then activate the Continuous On-Demand button on the operations page.

To initiate a Continuous On-Demand sequence, the operator must press the Prior Act button and, within five (5) seconds, press and hold the two-hand control buttons for the duration of several press cycles.

This automatic operating mode can be stopped by pressing the top stop button located on the operator station.

Important:
If the sequence is interrupted (for example, by a top stop, an emergency stop, or an alarm), the Continuous On-Demand mode will be deactivated.
To reactivate it, press the Prior Act button and perform a few strokes using the two-hand control.

Cut to length mode: The Cut-to-Length mode is an operating mode in which no pressing operation occurs. In this mode, the feeder advances the material to a specified length, after which the shear performs a shearing cycle.

To activate the Cut-to-Length mode, the operator must first press the Cut-to-Length button on the operation page. The operator must then ensure that a recipe configured with a valid feed distance and shear function is loaded.

Next, the operator must verify that the Shear is set to *Auto* mode. Once confirmed, the operator must press and hold both two-hand control buttons for the duration of the first feed cycle.

This automatic operating mode can be stopped at any time by pressing the top stop button located on the operator station.

Brake Monitor section

The most recent press braking and starting times are displayed. These values are useful for monitoring the wear of the clutch and brake assembly.

Press Inch Timer section

A timer can be set in Inch mode to engage the press for a specific duration.
The value of this timer represents the amount of time the press remains engaged in Inch mode each time the operator holds the two-hand control.

2.1.7 Die Page Menu

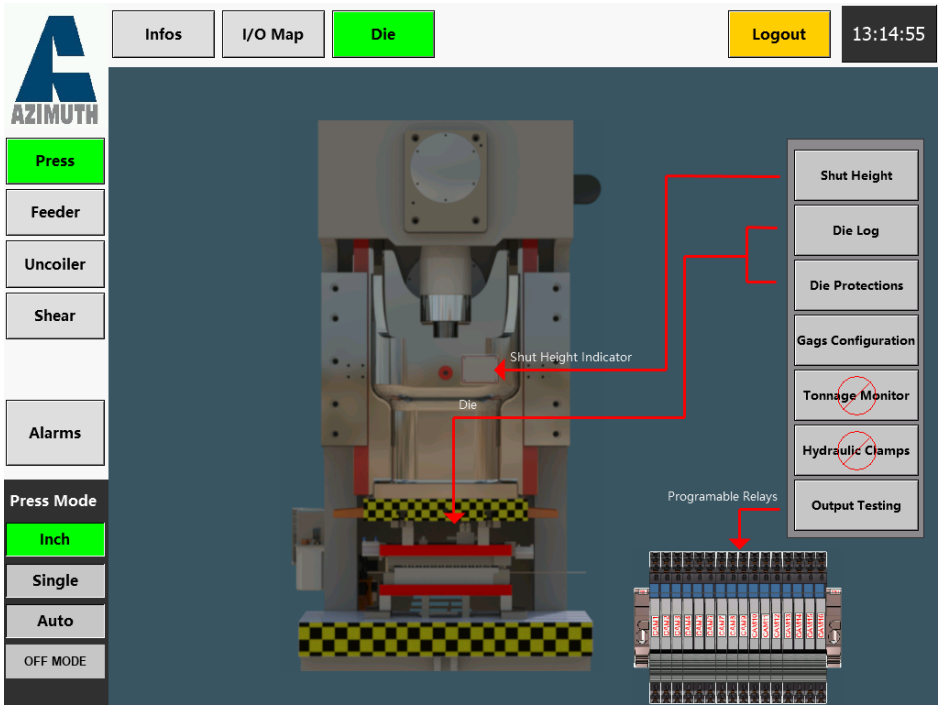


FIGURE 2-8 - DIE MAIN PAGE

The navigation bar of the die main page lets you navigate through the die related section of the press controller.

On this page you can access the following menus :

- Shut Height
- Die Log
- Die Protections
- Gags Configuration
- Tonnage Monitor (In development)
- Hydraulic Clamps (In development)
- Output Testing

Die – Shut Height (Standard)

The Standard shut height page features a place where you can enter the shut heigh displayed on the EM31.

If you do not have the shut height indicator display, then the value is only for reference.

Die – Servo Shut Height (Optionnal)

FIGURE 2-9 - SERVO SHUT HEIGHT OPTION

Shut Height Section

The shut height section displays the actual shut height of the machine and the required shut height for the job saved in the recipe.

Servo Shut Height Settings

The Servo Shut Height Settings section lets you set the maximum and minimum shut height value according to the press. It also lets you home the shut height position.

To set the actual position of the servo shut height, make sure that the press is at Bottom Dead Center (BDC). Once the press is at BDC, measure the distance between the bolster plate and the ram.

2.1.8 Die Log Page

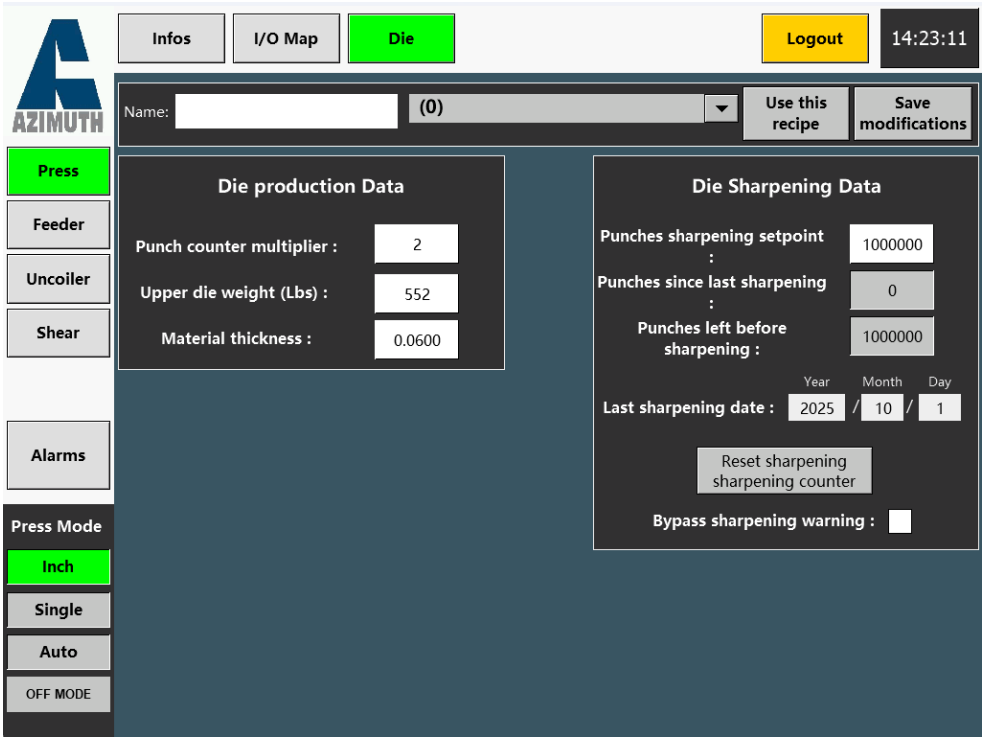


FIGURE 2-10 - DIE LOG PAGE

Die Production Data

In the die production data, you need to enter the amount of part made for a press punch. This will keep track of how many parts have been done in the Unit counter of the *Operations Page*. The upper die weight will help you set the right air pressure into the counter balance cylinder. You can also enter a material thickness as a reminder of which material with this die is supposed to punch.

Die Sharpening Data

In the Die Sharpening data section, you can set an amount of punch to trigger a sharpening warning once the tooling has made this number of punches. You can keep track of the number of punches made since de last sharpening, as well as the number of punches left before the sharpening warning. The last sharpening date will automatically update when the Reset sharpening counter button will be pressed.

Gags Configurations

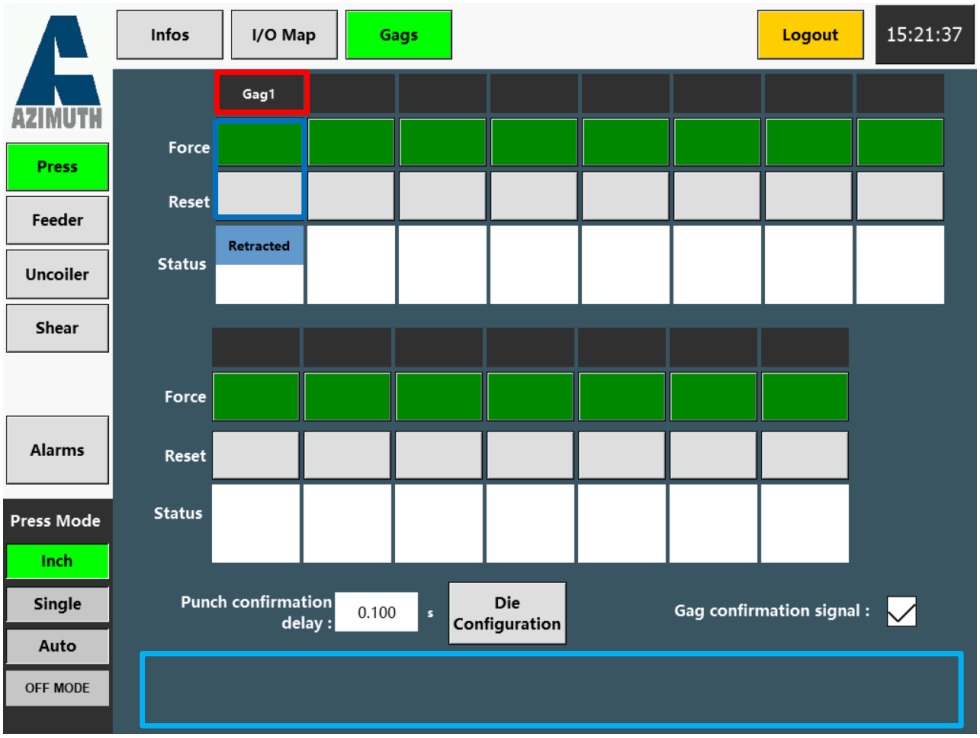


FIGURE 2-11 – GAGS CONFIGURATIONS PAGE.

The Gag Configuration page allows you to monitor the status of the active gags for the currently loaded recipe. The main features of the Gag page are as follows:

Gag Names: Each gag is listed with its corresponding name.
In the example shown in *Figure 2-11*, the name assigned to the first gag is "Gag1". This function is useful for identifying which gag is used for a specific purpose.

Force and Reset Gags: You can manually force or reset a gag by clicking the corresponding buttons located below the gag name. The Force action activates the gag, while the Reset action deactivates it.

Gag Status Monitoring: If your gags are equipped with position sensors or other types of sensors, you can monitor their status. The states are displayed as Retracted or Extended.

Stroke Confirmation Delay: The stroke confirmation delay defines the allowed time for the gags to activate or deactivate before an alarm is triggered. If a gag fails to reach its expected state within this time, an alarm will indicate an incorrect activation or deactivation.

Gag Confirmation Signal Checkbox: The gag confirmation signal checkbox allows the controller to recognize whether your gags are equipped with position sensors or similar devices to confirm their states (retracted or extended).

If the positions of your gags are being monitored, make sure to check this box.

Gag Fault Messages: Under the die configuration button, all fault messages related to the gags are displayed. The message indicates whether the error is a gag activation or deactivation fault, as well as the number of the gag in error.

Die Configuration Button

The die configuration button takes you to the page where you can create recipes for different dies and define specific gag configurations for each die.

Die Configuration Page

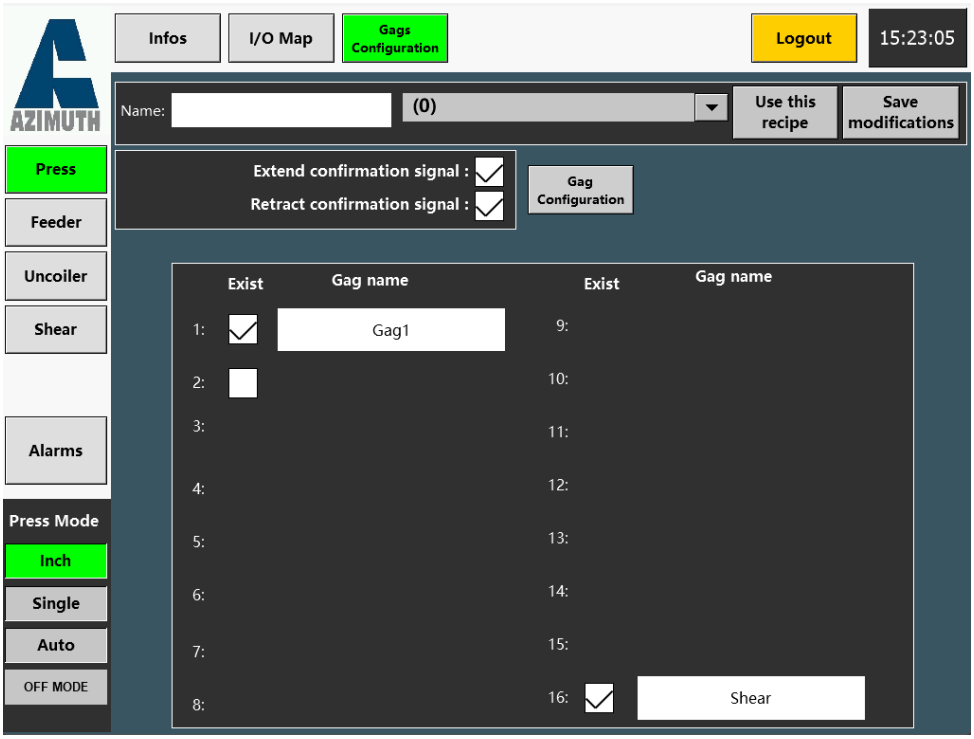


FIGURE 2-12 – DIE CONFIGURATION PAGE

The Die Configurations page allows you to manage gag parameters based on the die installed on the machine.

Configuring Gags for a Die

You can activate up to 16 different gags by checking the corresponding boxes. Once a gag is activated, you must assign it a name in the designated section. In the example shown in *Figure 2-12*, gag #1 is activated and named "Gag1."

If your die monitors only a single position signal for the gags, you must activate the desired confirmation signal checkbox.

If your die monitors both the extended and retracted positions of the gags, please activate both activation signal checkboxes.

Tonnage Monitor Page (In development)

Important: This section is not accessible and is currently under development.

Hydraulic Clamps (In development)

Important: This section is not accessible and is currently under development.

Output Testing Page

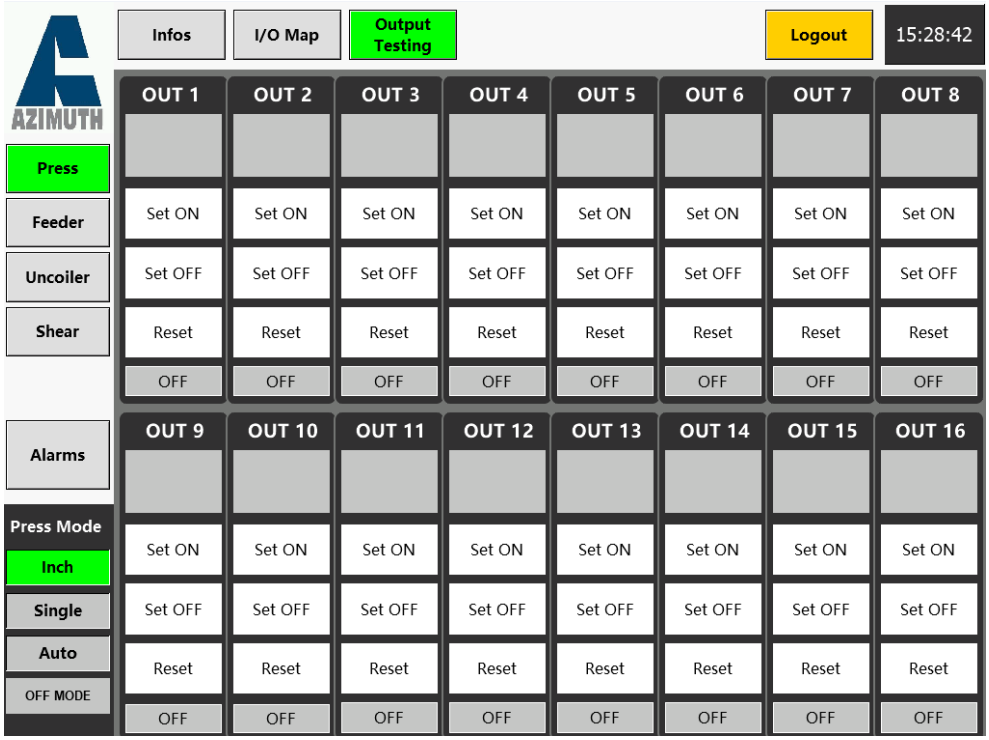


FIGURE 2-13 – OUTPUT TESTING PAGE

It is possible to force the activation of the Azimuth controller's user outputs.
This page is useful for testing the functionality of user outputs during the programming of the Die protections.

To force a desired output to activate, press **Set ON**.
To force an output to deactivate, for example to keep it always off, press **Set OFF**.
To reset the forced states of the outputs and allow normal operation, press **Reset**.

2.1.9 Lubrication Unit Page

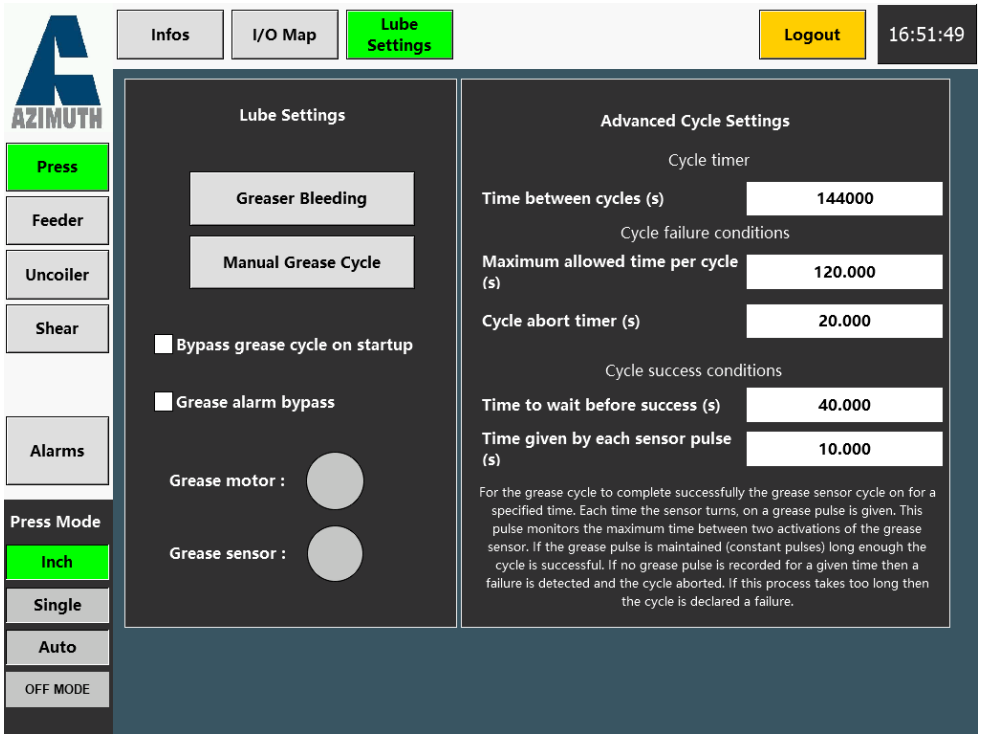


FIGURE 2-14 – LUBE SETTINGS PAGE

Azimuth presses are equipped with an automatic greasing system.
This greaser performs lubrication cycles at regular intervals to ensure proper lubrication of critical press components.

Lubrication Cycle Explanation
For a greasing cycle to complete successfully, the grease sensor must remain activated for a specified duration. Each time grease passes through the distributor at the top of the press, the sensor turns on and off. The grease cycle monitors the maximum time between two sensor state changes.

- If these pulses remain consistent long enough, the cycle is considered successful.
- If no grease pulse is detected for a certain period, the cycle fails and is interrupted.
- If the process exceeds the maximum allowed time, the cycle is declared a failure.

Warning: It is not recommended to modify timer values without consulting a certified Azimuth technician.

Manual Lubrication Cycle
This attempts to properly lubricate the machine and indicates success or failure.

Activate Grease Bleed
Runs the greaser continuously for two minutes to help resolve lubrication issues.
It is also useful when bleeding the lubrication system.

Bypassing the Lubrication Cycle at Startup
If the machine is frequently powered on and off, causing excessive grease accumulation due to the startup lubrication cycle, it is possible to bypass the automatic lubrication cycle at startup.
Note: The press will still perform a greasing cycle according to the timer settings between cycles.

If you need to fill the greaser but there is already sufficient grease to continue production, you can bypass the alarm to prevent interruptions from lubrication cycle alerts.

A visual representation of the greaser's motor status and grease sensor is also available to assist with troubleshooting.

2.2 Die Protections

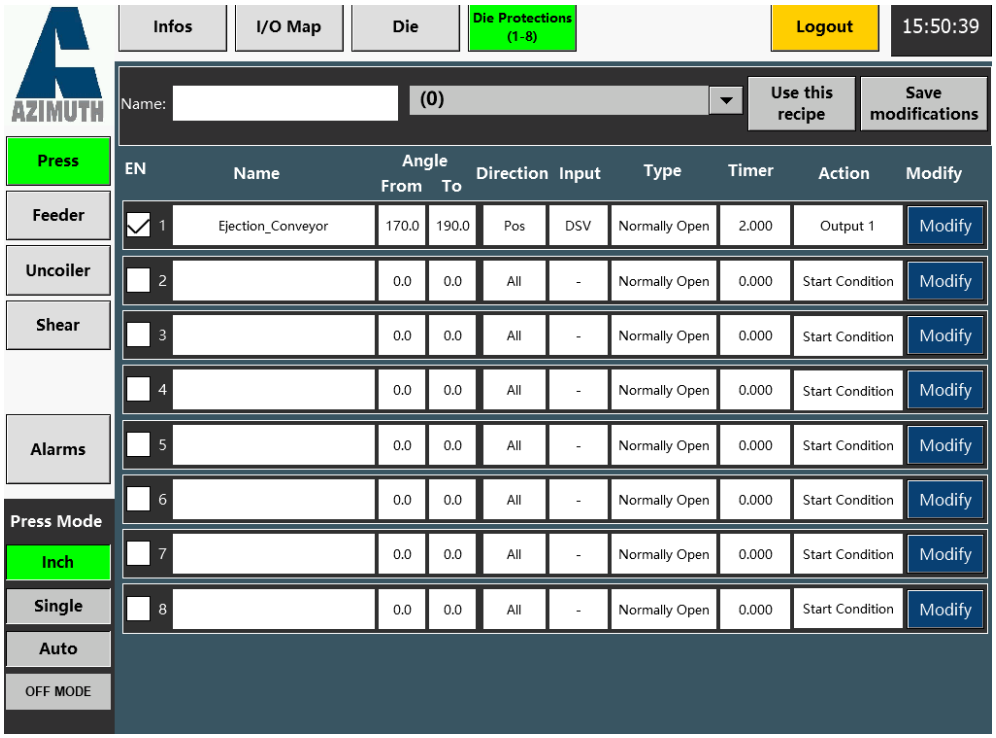


FIGURE 2-15 – LOCAL DIE PROTECTIONS

The Die Protection page provides an overview of the local die protections defined for the active recipe.
A local die protection functions almost the same way as a global die protection, except that local die protections are saved within and active for a specific recipe, while global die protections are always active regardless of the selected recipe.

To use local die protections, select the desired recipe.
Set the required local conditions for that recipe, then click Save Changes.

To navigate between local die protections 1 to 16, press the green page button on the top navigation bar.
Page 1 displays local die protection 1 to 8, and Page 2 displays 9 to 16.

For instructions on how to define a local die protection condition, refer to the *Global Die Protections* section.

2.3 Global Die Protections

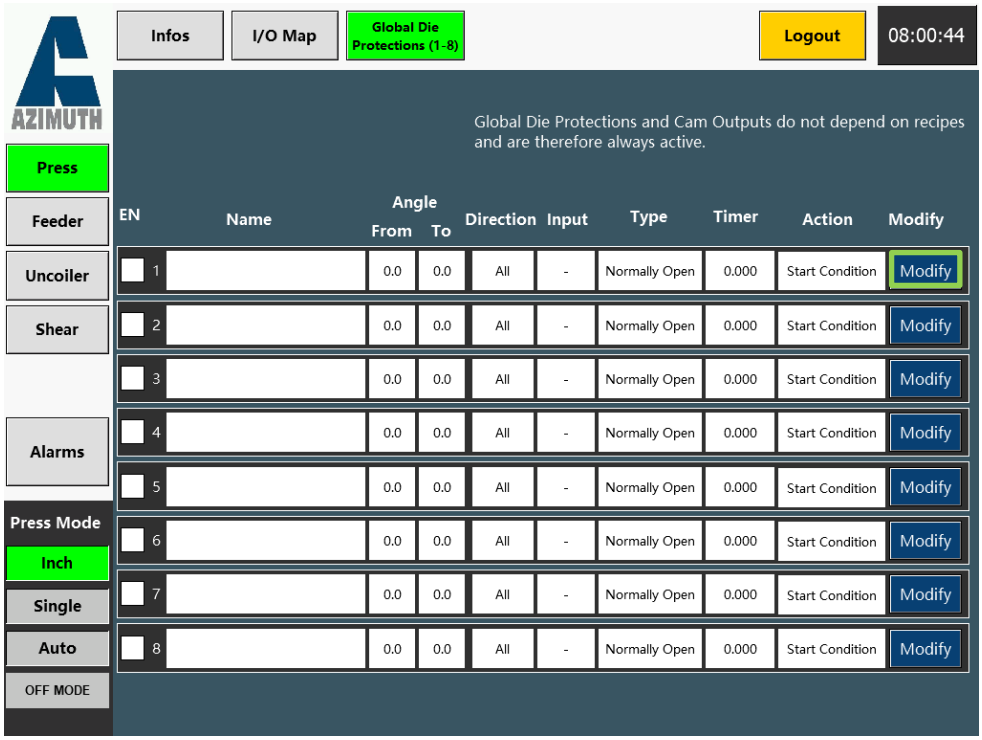


FIGURE 2-16 – GLOBAL DIE PROTECTIONS

This page allows you to connect the press to auxiliary equipment and provides a platform to automate certain functions based on inputs, cam angles, or both.
The Action column determines what the machine will do once the condition is met. Each column represents specific conditions that must be true for the action to occur.

A condition must be enabled (checked) for it to be active.

These actions can either be stored in a recipe, so they load automatically when a job is selected for the press, or they can be global, meaning they are always active regardless of the selected job.

The Angle settings determine the press position in which the condition is true.
Leaving both values set to 0 and 0 makes the condition always true.
Setting the lower angle to 90° and the upper angle to 270° applies the modifier from 90° to 270°, passing through 180°, as illustrated in black in Figure 2-17.

FIGURE 2-17 - ANGLE BETWEEN 90° AND 270°.

While setting the lower angle to 270° and the upper angle to 90° applies the modifier from 270° to 90°, passing through 0°, as illustrated in black in *Figure 2-18*.

FIGURE 2-18 - ANGLE BETWEEN 270° AND 90°.

A specific direction can be defined. This direction should always be set to **Positive** in the case of a conventional press.

When both the angle and direction conditions are met, the input conditions are then evaluated. If the default value **None** is selected, the input will not be considered. If one of the input lines is selected, that input must be active depending on the selected type. If DSV is selected, the DSV must be active.

TABLE 3 – INPUT TYPES

Normally Open	The condition will remain true as long as the corresponding input of the Programmable Logic Controller (PLC) is active.
Normally Close	The condition will remain true as long as the corresponding input of the PLC is not active.
Rising wave	When the signal to the PLC is first activated — that is, when it transitions from false to true — the condition is met as long as the angle and direction conditions are true.
Falling wave	When the signal to the PLC is deactivated — that is, when it transitions from true to false — the condition is met as long as the angle and direction conditions are true.
Rising-Falling	The signal must transition from true to false for the condition to be met and will remain valid as long as the angle and direction conditions are true.
Falling-Rising	The signal must transition from false to true for the condition to be met and will remain valid as long as the angle and direction conditions are true.
Rising-Falling-Rising (RFR)	The signal must transition from true to false and then back to true for the condition to be met, and it will remain valid as long as the angle and direction conditions are true.
Falling-Rising-Falling (FRF)	The signal must transition from false to true and then back to false for the condition to be met, and it will remain valid as long as the angle and direction conditions are true.

There are inputs dedicated to the user input functionality. It must be wired as a 24V PNP input. **Improper connection may cause damage to the equipment.**

***Refer to the provided electrical diagram.*

TABLE 4 – ACTION TYPES

Start Condition	Prevents the press from starting if the condition is not met.
Top Stop	Stops the press at the Top position at the end of its cycle.
Immediate Stop	Stops the press immediately.
Output 1 to Output 16	Activates the specified relay. Example: Output 1 activates the CAM1 relay on the electrical panel. *** Refer to the provided electrical diagram.*
Start Feed	Triggers a signal to start the Feeder.
Cancel Feed	Trigger a signal to immediately stop the Feeder.

A timer can be implemented. It ensures that the conditions remain true for the entire duration of the timer before triggering the requested action.

TABLE 5 - TIMER TYPES

Timer off-delay	Output stays TRUE, for the set amount of time after the conditions stop being TRUE
Timer on-delay	Output stays FALSE initially. When the input becomes TRUE, the timer starts counting. Once the preset time elapses, the output turns TRUE.
Timer off-delay safe	Output stays TRUE, for the set amount of time after the conditions stops being TRUE, but will not remain active if a safety device is triggered

The Modify button, give access to the die protection programming page. You will be programming the die protection of the line you clicked on Modify.

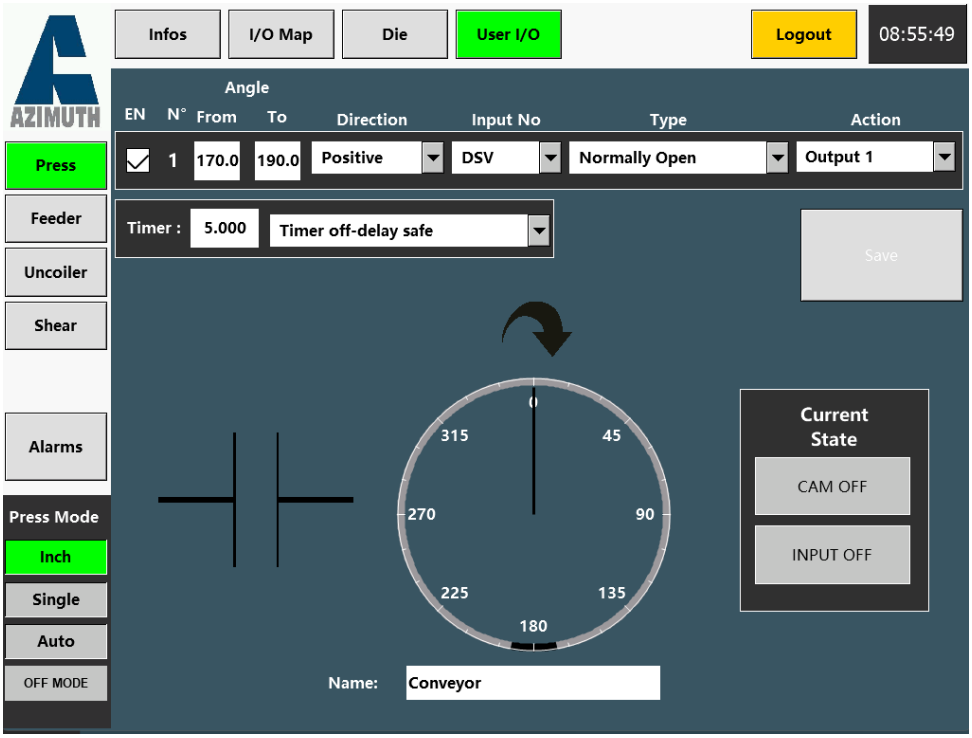


FIGURE 2-19 – DIE PROTECTION PROGRAMING PAGE.

Die Protection programing procedure

To program a die protection, you must:

1- Click on Modify of the line to program.

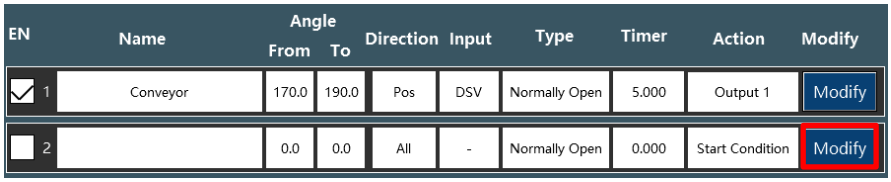


FIGURE 2-20 – PROGRAMMING A NEW DIE PROTECTION

You will then be redirected to the User I/O programming page, as shown in *Figure 2-19*.

2- (Optional) Assign a **Name** to your User I/O.
3- Activate the Die Protection by checking the **EN** box.
4- If the condition must be verified within a specific angle range, enter the **From** and **To** values.
5- Enter the **direction** in which the angle range should be monitored. (For a conventional press, the direction should **always be Positive**.)
6- If you need to monitor a sensor signal, enter the **line number** where the sensor is connected.
7- If you need to monitor a sensor signal, enter the **Type** of signal to check for the condition to be true.
8- Assign an **Action** to perform when all conditions are met.
9- If the conditions must remain true for a certain duration before the action is executed, enter the delay in the **Timer** field.
10- If a Delay is entered, select the **Timer Type**.
11- Click **Save**, and the Die Protection will be programmed.

Angles Parameter

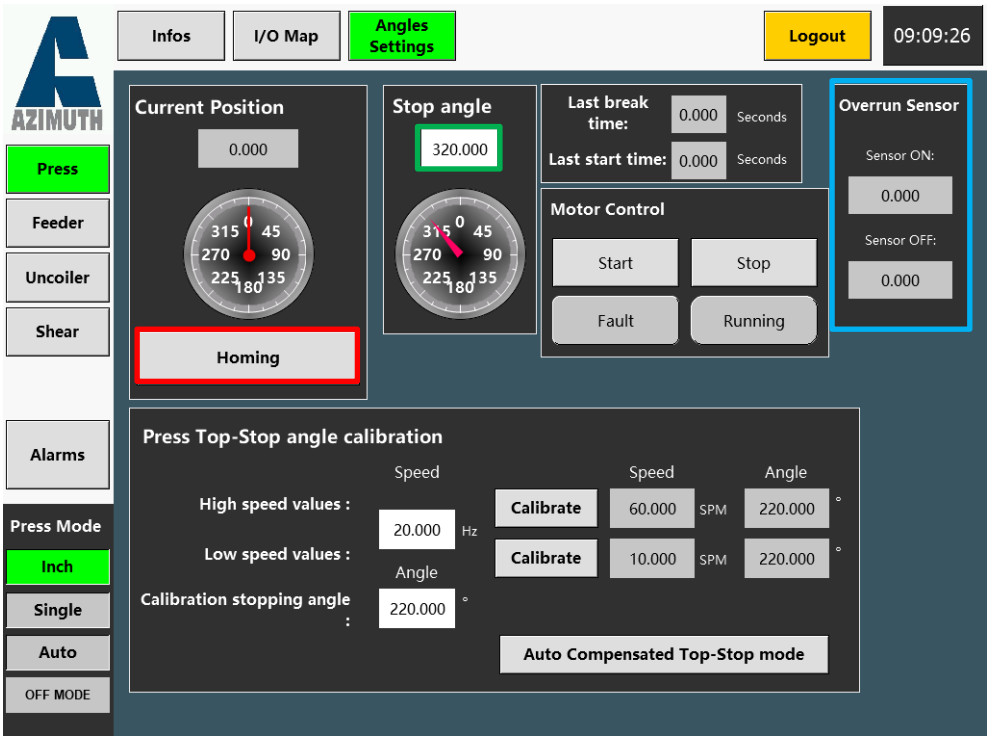


FIGURE 2-21 – ANGLES PARAMETER PAGE.

The encoder mounted on the press indicates the current position of the crankshaft.
It can be reset using the Homing button.
This operation should only be performed in the event of a mechanical issue with the encoder or a communication problem with the rest of the machine.

Press Homing Procedure

Install a magnetic dial indicator on the lower plate. Position it so that the tip touches the top of the upper plate. Refer to *Figure 2-22* as an example.

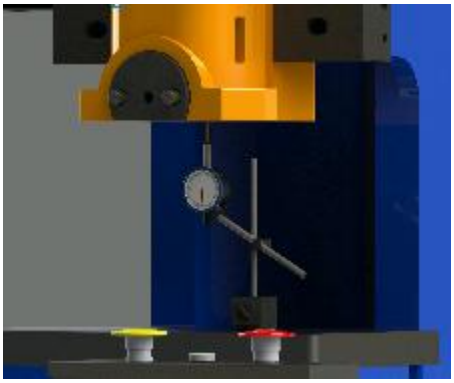


FIGURE 2-22 - INSTALLATION OF A DIAL INDICATOR FOR RESETTING THE PRESS POSITION

Once the dial indicator is properly positioned, move the press upward until you reach a point where the dial starts to move in the opposite direction. Identify the “dead center” point where the dial no longer moves, and then press the Homing button.

Warning: Incorrectly resetting the origin position may result in injury and unpredictable machine behavior.

The stop angle controls when the press begins braking to stop in the upper position.
If the press never stops at zero, it may be necessary to adjust the upper stop angle.

The Overrun Sensor section displays the last angle at which the overrun sensor was activated and deactivated. The overrun sensor monitors the operation of the encoder, confirming that the encoder position matches the physical position of the press camshaft.

Adjusting Stop Angle (Without Auto compensated Top Stop)

Perform one press cycle in Single Mode, then record the press stop angle.
If the stop angle is between 225° and 359°, as shown in black in *Figure 2-23*, use *Equation 1*.

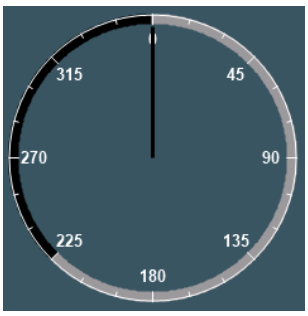


FIGURE 2-23 – ANGLE RANGE BETWEEN 225° AND 359°

If the stop angle is between 1° and 90°, as shown in black in *Figure 2-24*, use Equation 2.

FIGURE 2-24 – ANGLE RANGE BETWEEN 1° AND 90°

$N_{angle} = New\ angle\ to\ save$

$X = Actual\ Top\ Stop\ angle$

$Y = Press\ stop\ angle\ following\ a\ Single\ cycle$

$$\boldsymbol{N_{angle} = X + (360° - Y)}$$

EQUATION 1 - TOP STOP ANGLE 1

$$\boldsymbol{N_{angle} = X - Y}$$

EQUATION 2 - TOP STOP ANGLE 2

Example 1 :

The press stops at a position of 346°, therefore Equation 1 must be used. Referring to *Figure 2-21*,

$$X = 320°$$

$$Y = 346°$$

$$N_{angle} = 320° + (360° - 346°)$$

$$N_{angle} = 334°$$

The angle to be entered in the "Stop Angle" field would therefore be **334°**.

Example 2 :

The press stops at a position of 6°, therefore Equation 2 must be used. Referring to *Figure 2-21*,

$$X = 320°$$

$$Y = 6°$$

$$N_{angle} = 320° - 6°$$

$$N_{angle} = 314°$$

The angle to be entered in the "Stop Angle" field would therefore be **314°**.

Advanced Settings

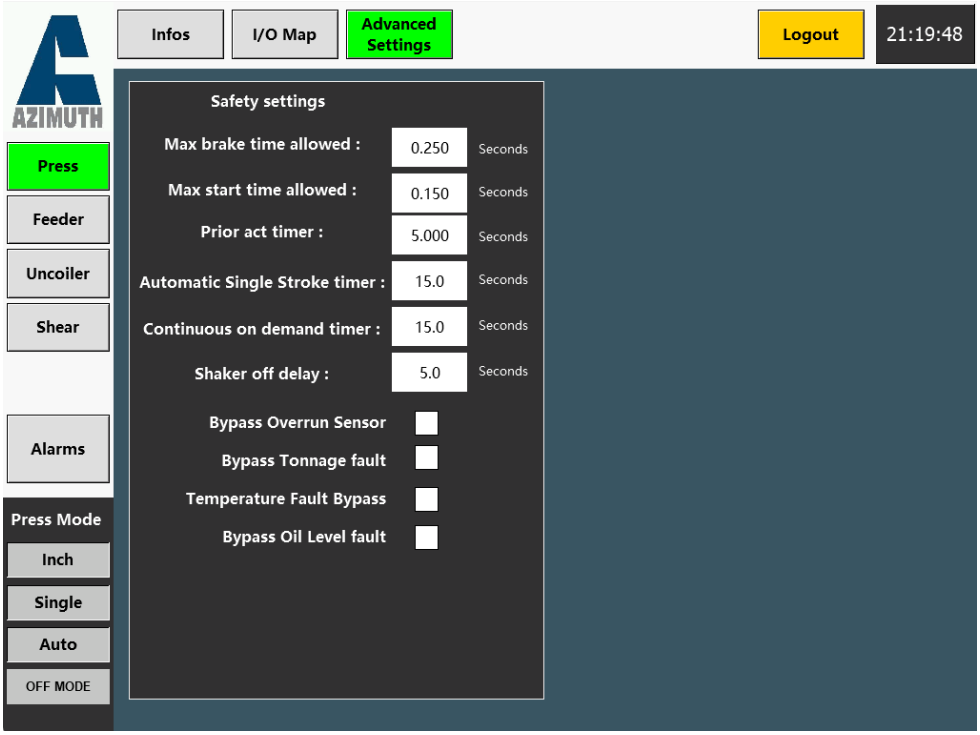


FIGURE 2-25 – PRESS ADVANCED SETTINGS

Braking and Start Timing Parameters

Maximum Braking Time

You can set a maximum braking time to monitor how long the press takes to come to a complete stop.

Maximum Start Time

You can also set a maximum start time to measure how long the press takes to begin moving. These parameters are essential for ensuring proper maintenance and safe operation.

Priority Act Timer

This setting adjusts the amount of time allowed between pressing the green two-hand buttons after the priority action button has been activated.

Automatic Single Stroke Timer

Set the automatic single stroke time to a value slightly higher than the maximum time between two press cycles.

Example: If the press normally cycles every 10 seconds, set the timer to 12 seconds.

This timer ensures that Automatic single stroke mode deactivates in the event of irregular operation, preventing accidental or unintended cycling.

Continous on Demand Timer

Set the continuous on demand time to a value slightly higher than the maximum time between a two press cycle has the automatic single stroke timer.

This timer ensures that Continous on Demand mode deactivates in the event of irregular operation, preventing accidental or unintended cycling.

Shaker Activation Time

This timer determines how long the shaker remains active after the press stops in the top position.

As shown in *Figure 2-25*, the shaker is set to operate for 5 seconds after a press stroke. Increase this value if additional time is needed to remove scrap material.

Override Options

Overrun Sensor Override

If the overrun sensor malfunctions, you can bypass its alarm by checking the override box. This allows the press to continue running temporarily until the sensor is replaced.

Tonnage Failure Override

If the press is equipped with a tonnage monitoring system and a failure occurs, you may bypass the tonnage alarm using the override checkbox. This allows temporary operation until the defective component can be replaced.

Temperature Failure Override

If the temperature sensor malfunctions, you can bypass the temperature alarm by enabling the override. This allows the press to continue operating until the sensor is replaced.

Oil Level Failure Override

If the oil level sensor malfunctions, you may bypass the oil level alarm using the override checkbox. This allows temporary operation while awaiting a replacement sensor.

Mathematics

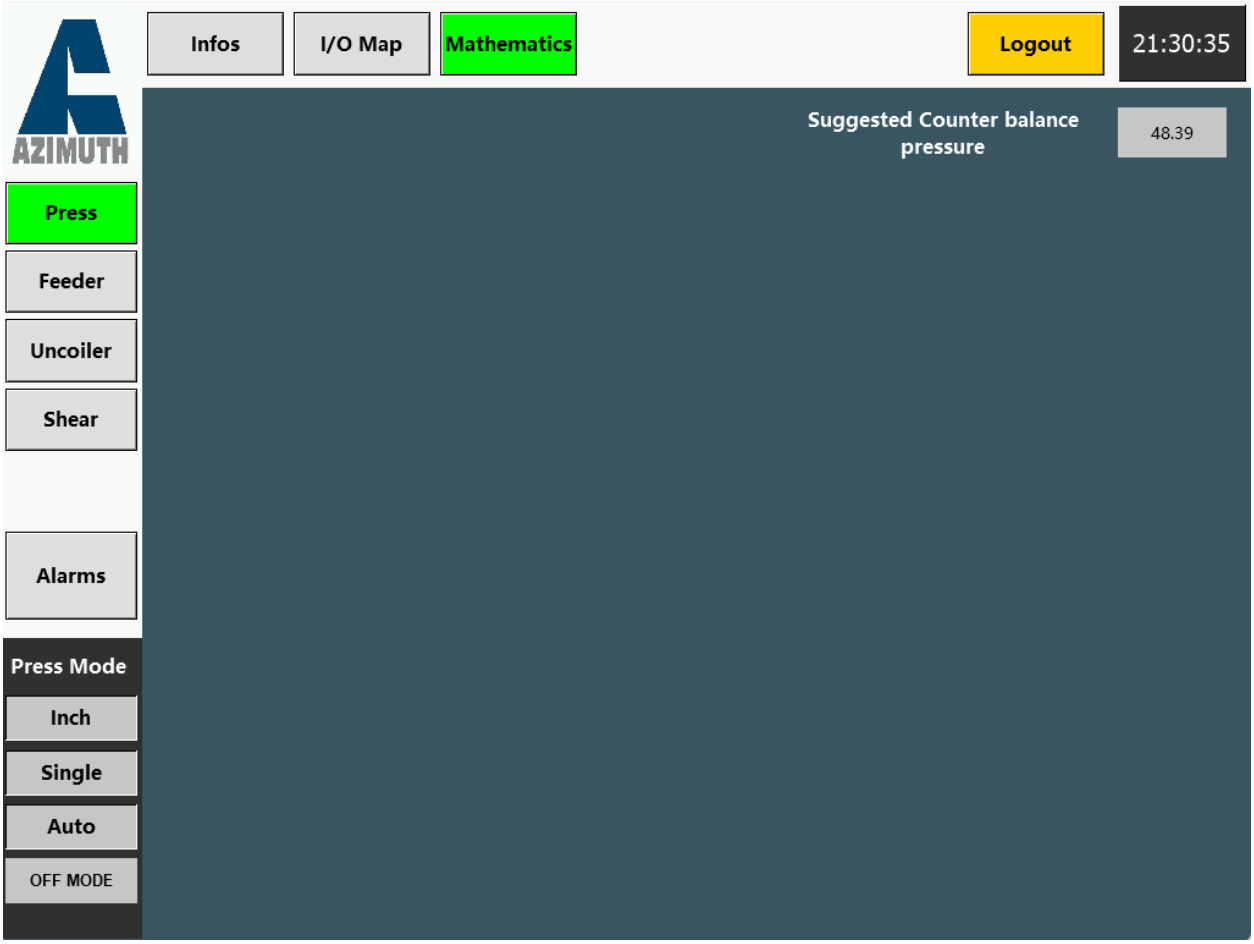


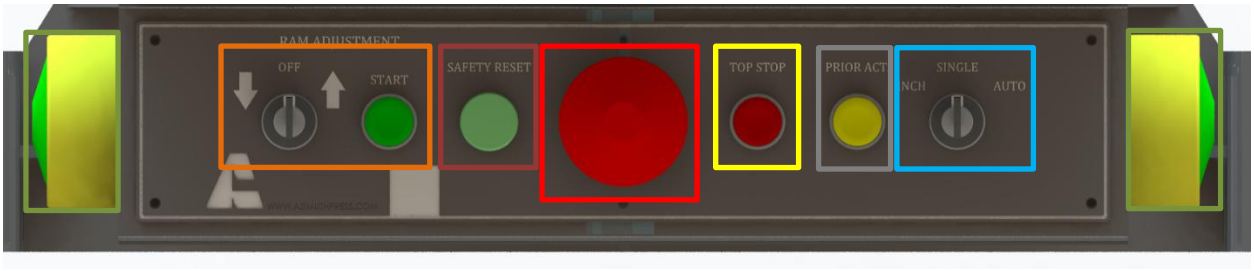
FIGURE 2-26 - PRESS MATHEMATICS

This section shows results of the Air counterbalance suggested pressure. Further informations will be added to this page in the near future.

2.3.1 Operator Station

FIGURE 2-27 – OPERATOR STATION

The operator station contains all the devices required to control the press.



To start the press, **both green push button** located on each side of the operator station must be pressed simultaneously. In **Inch mode**, these buttons must remain pressed for the desired duration of the press stroke. In **Single mode**, they must remain pressed for the entire press cycle.

A rotary selector allows you to choose between three operating modes:

- **Inch mode:** Activates the press for a short, predefined duration.
- **Single mode:** Performs one complete press cycle.

- **Auto mode:** The prior act button must be pressed before holding both push buttons. Once this sequence is completed, the press will continue to operate automatically after a brief hold of the buttons.

To stop the press while in automatic operation, use the **Top Stop** button. Do **not** use the **emergency stop button** unless an actual emergency occurs.

The **safety reset button** is used to reset safety devices, for example after an emergency stop.

To adjust the **shut height** of the press:

1. Select the direction (**up** or **down**) using the **direction selector**.
2. Then press the **Start** button to begin the adjustment.

2.3.2 Alarms Section

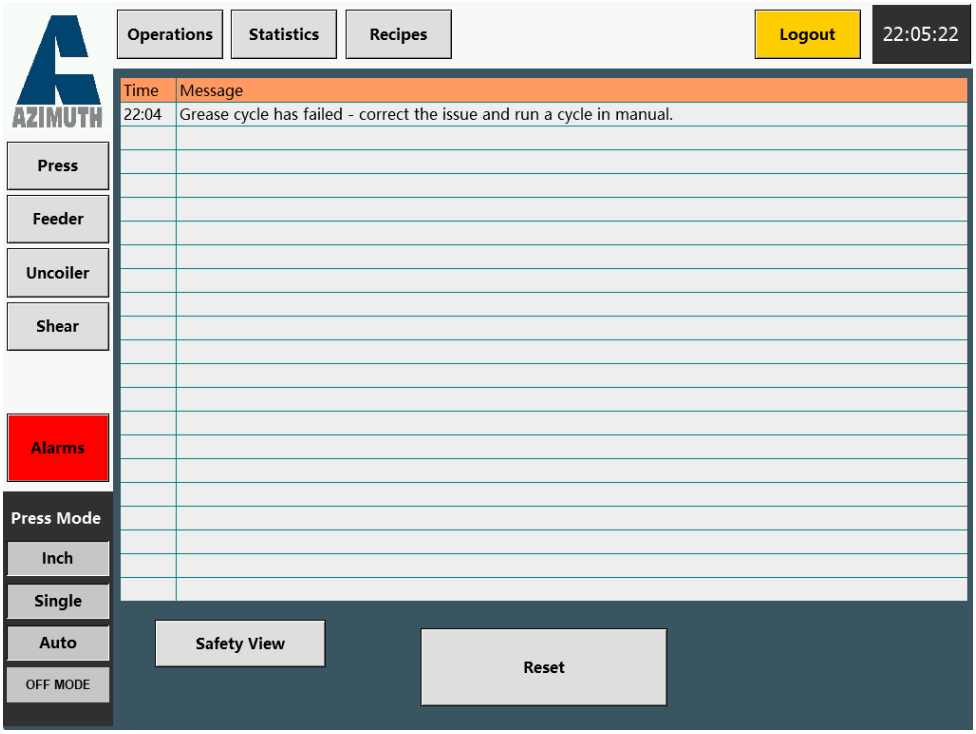


FIGURE 2-28 – ALARMS PAGE

The **Alarms** page displays all alarms that are currently active. This page allows you not only to reset the alarms but also to access the **Safety View** page, where you can identify exactly which safety device is currently active.

Safety View Page

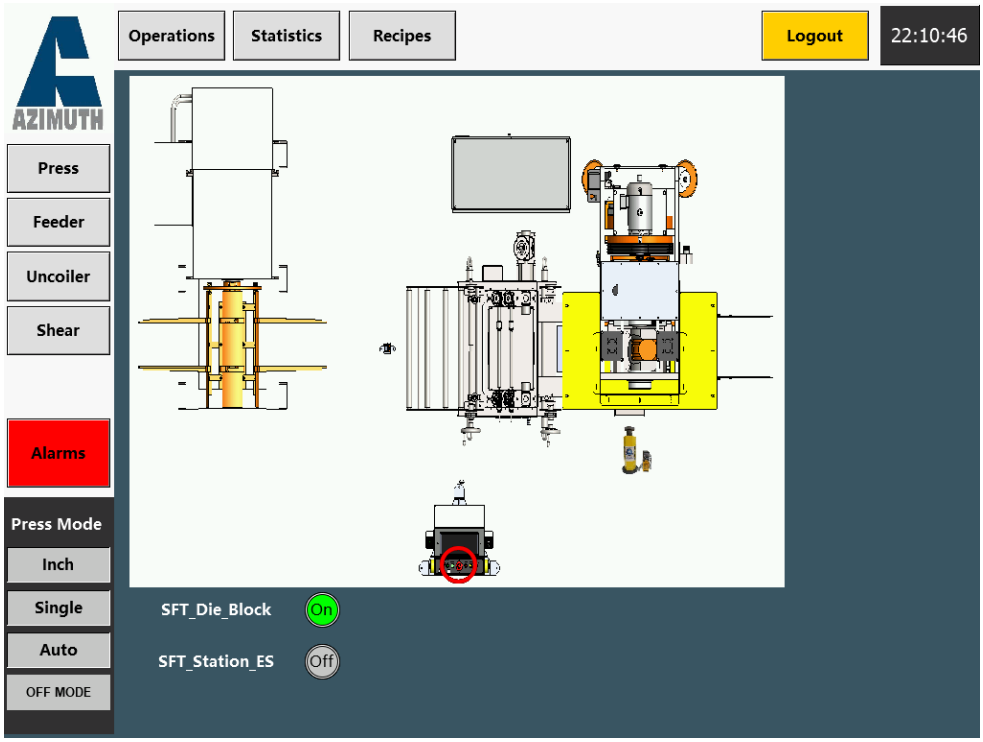


FIGURE 2-29 – SAFETY VIEW PAGE

If a safety device has been triggered, a circle will light up around the corresponding component. This circle will alternate between red and black. In the example shown in *Figure 2-29*, the operator station's emergency stop is active.

Press alarms description

TABLE 6 – PRESS ALARMS LIST

Alarm	Description	Possible cause	Solution
High shut-height adjustment position	The adjustment motor has reached its highest position.	The shut-height exceeds the upper limit.	Decrease the shut-height.
Low shut-height adjustment position	The adjustment motor has reached its lowest position.	The shut-height exceeds the lower limit.	Increase the shut-height.
Press motor drive fault	The press motor's VFD has encountered a fault condition.	Problems with the press motor.	Must be reset through the interface in the press advanced parameters.
Lubrication cycle	The lubrication cycle has failed.	The grease reservoir is empty.	Fill the grease reservoir and start a grease cycle.
		Air is present in the grease conduits.	Bleed the grease reservoir.
			Bleed the grease feed lines.
Pitman temperature	The Pitman temperature has reached a critical maximum.	Lack of grease or friction at the collar.	Make sure all critical components have been properly greased. Allow time for the temperature to decrease before resuming normal operation.
Low oil level	The oil reservoir is empty.	There is no more oil in the oil reservoir.	Fill the oil reservoir.
Low air pressure	There is no air pressure in the machine – or DSV fault.	The air supply is not connected to the machine.	Ensure the air supply is properly connected to the machine.
		A major air leak results in insufficient machine air pressure.	Locate and repair the air leak.
Two-hand station discrepancy	One set of contacts does not match the other.	Only one button of the two-hand control was pressed for too long.	Reset the alarm and continue normal operation.

		Mechanical failure of one of the button contacts.	Replace the defective contact.
Overrun sensor	The encoder position does not match the press position.	Incorrect initial press position.	If the position of the press Pitman and the programmed position do not match, perform a homing of the press position
		The overrun sensor is defective.	Replace the overrun sensor.
		The press encoder is defective.	Replace the encoder.
FR1 relay discrepancy	Relay FR1, which controls the first DSV, is not responding correctly.	The relay is defective.	Replace the relay.
FR2 relay discrepancy	Relay FR2, which controls the second DSV, is not responding correctly.	The relay is defective.	Replace the relay.
Safety	One of the machine's safety devices has been activated.	A machine safety is active.	Using the "Safety View" page available in the alarms page, identify the active safety. If safe, re-arm it and press the two-hand control safety reset.
Hydraulic overload	The hydraulic overload has triggered a fault.	The machine has struck beyond the allowed capacity.	Check possible over-tonnage causes, then press the alarm reset button.
Press start time	The press did not start within the allotted time.	A jam in the press prevented it from starting within the allotted delay.	Check the mechanical problem or increase the startup delay.
Press brake time	The press did not brake within the allotted time.	Clutch/brake wear.	Perform maintenance on the braking system.
Feed verification	Material feeding did not occur correctly.	A blockage prevented the feeding from completing properly.	Find the source of the blockage and correct it.

Counter Stop	Stops the press when the counter has been reached.	The press has reached the piece counter value.	Reset the current counter value, then reset the alarm.
Shut-height adjustment motor overload	The adjustment motor has been overloaded.	Motor overload.	Check possible causes of overload. Reset the motor overload in the “Motor Overloads” page in the alarms menu.
Prior Act Warning	The operator did not press the prior act button when attempting an automatic start.	The operator attempted to start a cycle requiring priority action without pressing the prior act button.	Ensure the prior act button is pressed before starting a cycle requiring it.
The press motor is not running	The press motor is not running.	An action requiring the press motor to run was attempted while the motor was off.	Start the press motor.
Press movement against DSV activation	The press no longer moves despite DSV activation.	The press is not actually moving anymore despite the DSV being activated.	Check if the press motor is running. Check for encoder malfunction.
Press reverse-direction startup	The press can only run in Inch mode when the motor is running in reverse.	Attempt to run the press in reverse in a mode other than Inch.	Ensure the press is in Inch mode to run in reverse.
User I/O immediate stop conditions	An immediate stop condition has stopped the press.	A user programmed I/O triggered an immediate stop.	Check which immediate stop conditions are programmed.
User I/O top-stop conditions	A top-stop condition has stopped the press.	A user programmed I/O triggered a top stop.	Check which top-stop conditions are programmed.
Automatic single Stroke mode cycle start	The press must be in Single mode to start an automatic single cycle.	An attempt to activate an automatic single cycle was made when the press was not in Single mode.	Ensure the press is in Single mode to start an automatic single cycle.
Foot pedal contact discrepancy	One set of contacts does not match the other.	Mechanical failure of the press activation pedal contacts.	Replace the defective contact or replace the pedal.
Automatic Single cycle relay contact discrepancy	One set of contacts does not match the other.	The relay contacts connected to the press start sensor for the	Replace the relay.

		automatic single cycle do not match.	
DSV discrepancy	Both DSV pressure sensors indicate a valve malfunction.	Valve malfunction.	Check the wiring. Possibly replace the valve.
FR3 relay discrepancy	Relay FR3, which controls the first STO, is not responding correctly.	Relay malfunction.	Check the wiring. Possibly replace the relay.
FR4 relay discrepancy	Relay FR4, which controls the second STO, is not responding correctly.	Relay malfunction.	Check the wiring. Possibly replace the relay.

TABLE 7 – (CONTINUED) PRESS ALARMS LIST

Alarm	Description	Possible cause	Solution
Exceeded tonnage limit.	The press tonnage has been exceeded.	The load required by the press to perform the work is too large for the press capacity.	Reduce the load on the press.
Excessive speed change.	The frequency of the variable frequency drive changed significantly during the press cycle.	A source of jamming caused the press to slow down significantly.	Identify the source of the significant change in press speed.
Automatic single sequence stop.	The automatic single sequence is complete. To restart a sequence, press the Prior Act button and use the two-hand control buttons to initiate the first stroke of the sequence.	An event has stopped the automatic single cycle.	Restart an automatic single cycle using the two-hand control.
Shaker motor overload.	Shaker overload fault.	Motor overload.	Check the possible sources of overload on the shaker motor. Reset the motor overload in the “Motor Overloads” page located in the alarms page.
Feed lubrication motor overload.	Feed lubrication overload fault.	Motor overload.	Check the possible sources of overload on the feed lubrication motor. Reset the motor overload in the “Motor Overloads” page located in the alarms page.
Feeder shut-height adjustment motor overload.	Feeder passline overload fault.	Motor overload.	Check the possible sources of overload on the feeder shut-height adjustment motor. Reset the motor overload in the “Motor Overloads” page located in the alarms page.

Hydraulic unit motor overload.	Hydraulic unit overload fault.	Motor overload.	Check the possible sources of overload on the hydraulic unit motor. Reset the motor overload in the “Motor Overloads” page located in the alarms page.
Servo Shut height adjustment motor fault	Servo motor fault	The Shut Height servo drive is in fault state	Refer to the servo motor documentation for troubleshooting based on the specific alarm.
Different shut height	The actual shut height of the machine does not match the desired shut height for the job	The loaded job shut height is different from the last job’s required shut height.	Adjust the shut height of the press.
Servo adjustment motor drive safety fault	A safety device triggers a safety alarm to the servo drive.	A safety device is active	Using the “Safety View” page available in the alarms page, identify the active safety. If safe, re-arm it and press the two-hand control safety reset.
Servo Adjustment low limit	The adjustment motor has reached its lowest position.	The shut-height exceeds the lower limit.	Increase the shut-height.
Servo adjustment high limit	The adjustment motor has reached its highest position.	The shut-height exceeds the upper limit.	Decrease the shut-height.
Servo adjustment maximum torque	The maximum amount of torque has been reached.	The speed value of the adjustment servo may be to heigh The counterbalance air pressure is not set correctly	Lower the servo adjustment speed. Set the counterbalance air pressure according to the charts
Servo adjustment value out of range	The demanded value of the shut height adjustment is out of range.	A default value of the shut height adjustment is not in the correct range	Put a value of desired shut height that is contained between the shut height limits
Continous on demand sequence stop.	The continuous on demand sequence is complete. To restart a sequence, press the Prior	An event has stopped the continuous on demand cycle.	Restart a continuous on demand cycle using the two-hand control.

	Act button and use the two-hand control buttons to initiate the sequence.		
Die sharpening warning	The die sharpening counter has been reached	The amount of strokes made by the die since its last sharpening has reached the sharpening set point	Reset the die sharpening counter
Operation mode warning	The current operation mode does not match the one saved in the recipe	The current operation mode is not the same has the one used for production for this recipe.	Once you are ready for your production, change the production mode for the one saved in the recipe

3. Feeder Control

3.1 Feeder's main page

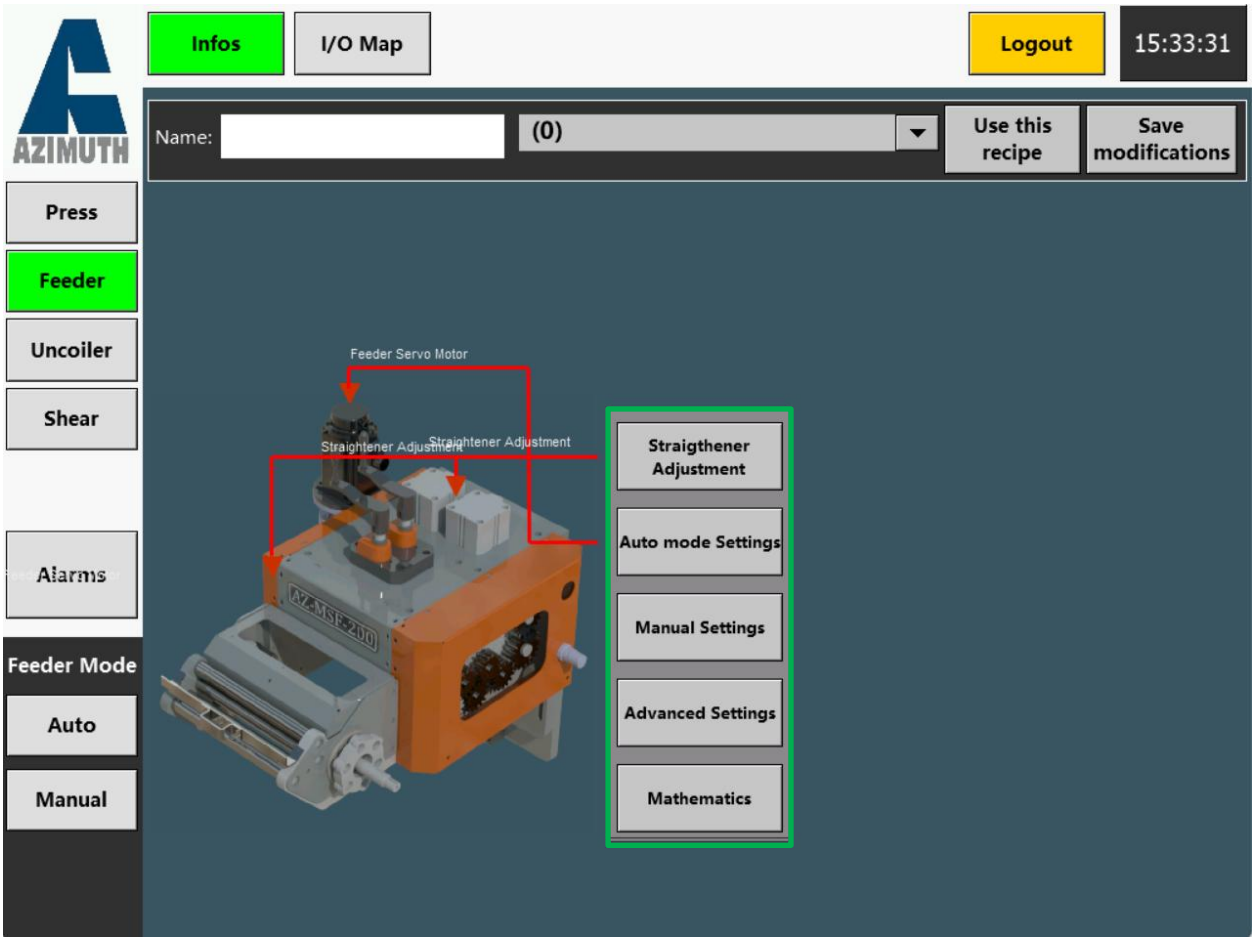


FIGURE 3-1 - FEEDER INFO PAGE

The Feeder **Infos** page allows you to navigate through every menu related to the feeder controls.

This page allows you visualize and load a recipe as per the recipe section, or access various Feeder menus using the center Navigation Bar.

3.1.1 Straightener Encoders

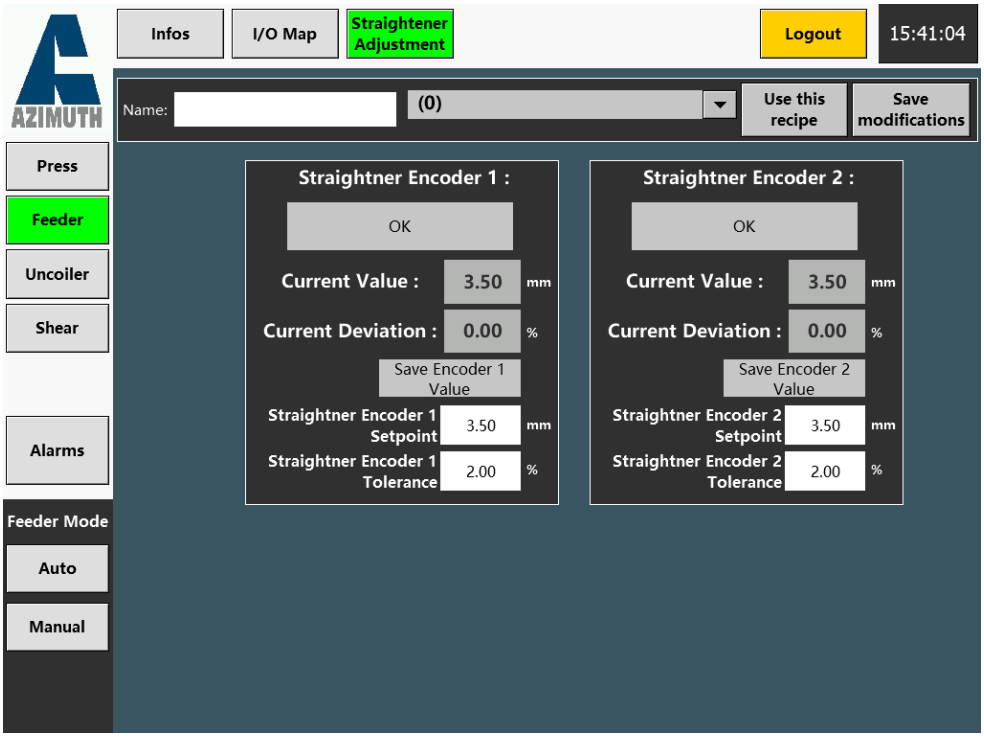


FIGURE 3-2 – STRAIGHTENER ENCODERS CALIBRATION

The encoder calibration page includes several functions identical to those found on the Feeder recipe page, such as the buttons to save encoder values, the encoder setpoints, and the tolerances.

However, a visual indicator is provided to display the Current Position Value of the encoder in millimeters, as well as the current deviation value (%) of the encoder. The encoder position status is shown in the top window. “OK” means the current position value is within an acceptable range, while if the frame turns red, an “Out of Range” message will appear, indicating that the rollers are not within the prescribed position range.

The encoder position save buttons allow storing the current roll height values into the recipe.

3.1.2 Auto mode

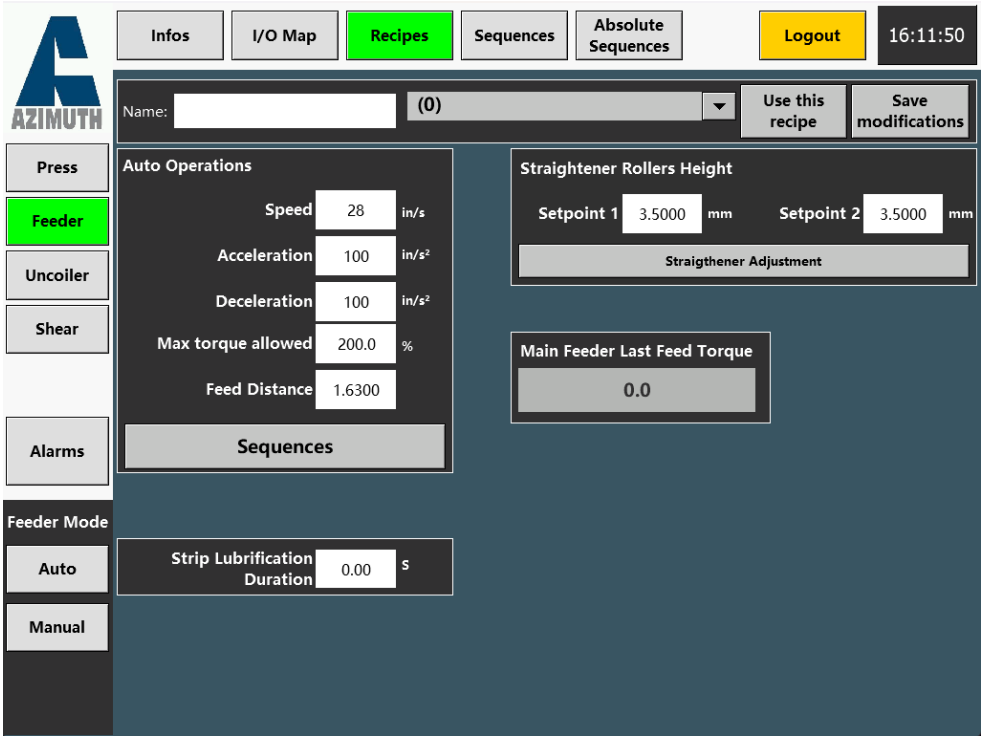


FIGURE 3-3 – FEEDER AUTOMATIC MODE PARAMETER

The automatic mode parameters page displays the general parameters contained within a Feeder recipe.

The **Feed distance** is defined in the *Sequences* section.

Make sure the **Feeder** operates at a sufficient speed to deliver the selected feed length **within the feed window allowed by the press feed cam**.

If the **Feeder** cannot deliver the desired distance within the feed cam window, an alarm will be triggered.

Set the **speed, acceleration, and deceleration** values to optimize cycle time while reducing the risk of slipping or feed faults.

A **maximum torque limit** can also be configured. If the Feeder exceeds this limit, an alarm will activate to protect the system.

Once all parameters have been entered, save the recipe by pressing **Save Modifications**.

For more details on creating and using recipes, refer to section *Recipes Page*

After each feed, the screen displays the **torque required** for the operation, providing valuable diagnostic information.

Tolerances for the straightener roll positions can be stored in the recipe to allow the operator to restore the roll height settings from a previous use of the recipe.
The encoder setpoint for the straightener rolls represents the roll height position that was saved when the machine was set up for that recipe. This is useful for determining the proper roll height required to perform the job associated with the selected recipe.

The **Straightener Adjustment** button opens a page where the current roll height position can be viewed. This page is useful for adjusting the straightener roll height for the task at hand.

If the **strip lubrication option** is enabled, you may adjust the **lubrication duration** in the corresponding field.

3.1.3 Sequences

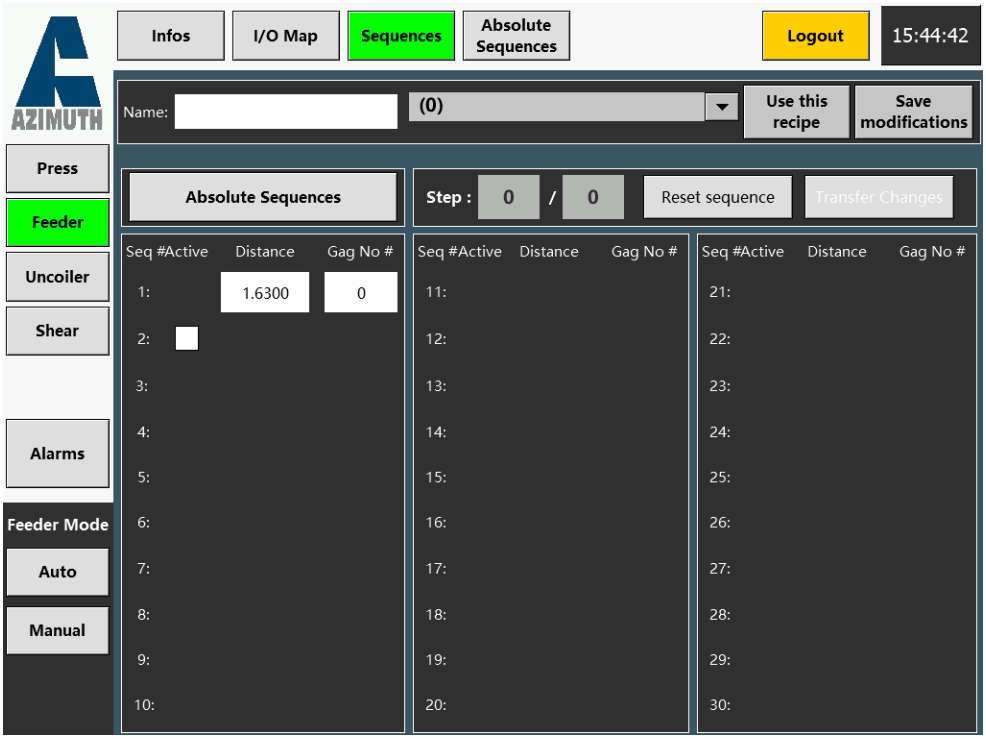


FIGURE 3-4 – FEEDING SEQUENCES

To configure sequences for a specific recipe:
• Select the **recipe** to which you want to apply the sequences.
• Enable the required **number of sequences** by **checking** the corresponding boxes.
• Enter the desired **feed distance for each sequence**. (If the sequence contains only one feed, enable only the first sequence.)
• If your tool includes multiple gags, you can assign specific gags to the activated sequences.

- If you need only one gag for a step input only the gag number. For example, the first step requires Gag1, in the **Gag No #** section wright “1”
- If you need more then one gag, lets say Gag1 and Gag2 for the second step. In the **Gag No #** Section wright “0102”.
  For more details on configuring the gags, please refer to the *2.1.7Gags Configurations* section.
  Once all sequences are configured for the recipe, press the Save Changes button to save the settings.

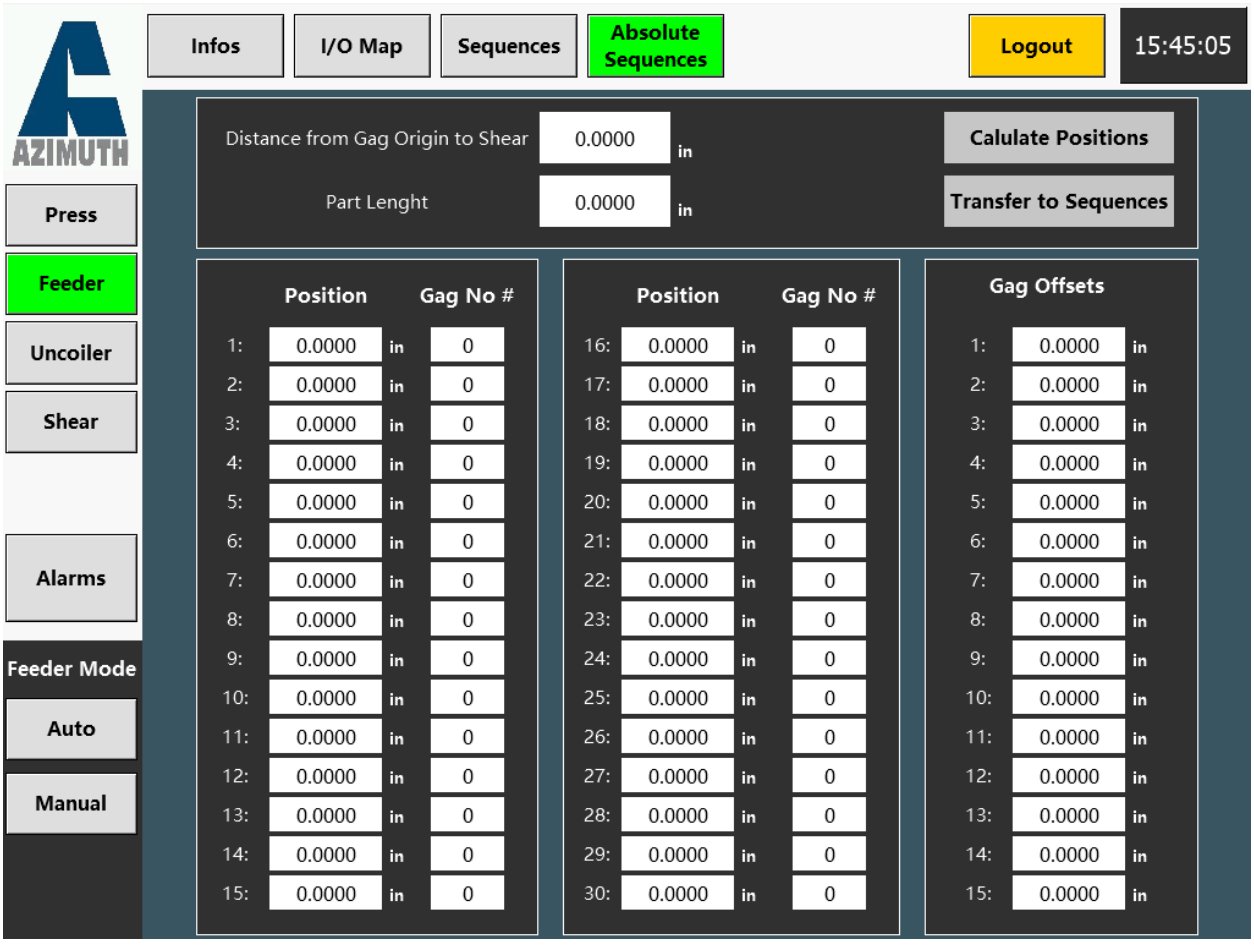
When changes are made to the recipe or sequence parameters,
the **Transfer Changes** button will start flashing. It is essential to press this button for the changes to be applied.

The current sequence step is displayed.
To reset the sequence, press **Reset Sequence**.

Whenever changes are made in the recipe or sequence parameters, the **Transfer Changes** button will begin flashing. It is essential to press this button for the changes to take effect.

When you have a drawing of the part with all of the dimensions need for each feature on that part, you can use the Sequence absolute button to access the sequence absolute page.

3.1.4 Sequence Absolute



To be able to calculate the feed distance needed for each feature to be punched at the wanted location on the part, you can use the sequence absolute page.

To do so you will need certain data to help the controller calculate the feed distance for each punch of each feature.

Gag origin: This is the feature from where all the measures are linked to. All the distance to be entered must be related to a distance from this feature.

Distance from Gag Origin to Shear: This is the distance between the Gags Origin dans the shear.

Part length: The total length of the finished part.

Gag Offsets: This is the distance between a certain gag and the gag origin. For example, if Gag1 is at 1.125” of Gag2 and Gag2 is the Gag Origin, then the Gag offset for Gag1 would be 1.125”, and the Gag offset for Gag2 would be 0.

Position: The position in the parts of each feature according to the drawing

Gag No #: The gag number of the feature related to the position entered.

Note: Gag No # : 16 is ALWAYS the Shear

Absolute sequences programing example:

1. Locate the “Gag Origin”, by finding the features that is relevant for all of the measures to be entered.
2. Number the features (Find which one in Gag1, Gag2, … , GagX)
3. Enter the **Distance from Gag Origin to shear**
4. Enter the **Part length**
5. Enter the **Gags Offsets**
6. Enter the **Positions** of each feature and their **Gag No #**
7. Press **Calculate Positions**
8. Press **Transfer to Sequences**
9. Go to the **Sequences** page to confirm that the distance have been transferred. (If they have not transferred, re-do **Step 7** and **Step 8**)
10. In the **Sequences** page, press **Transfer Changes**.

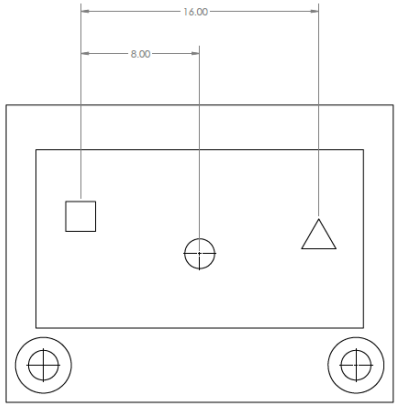


FIGURE 3-5 - DIE EXAMPLE

As shown in *Figure 3-5*, the square would be our reference for the gag origin.

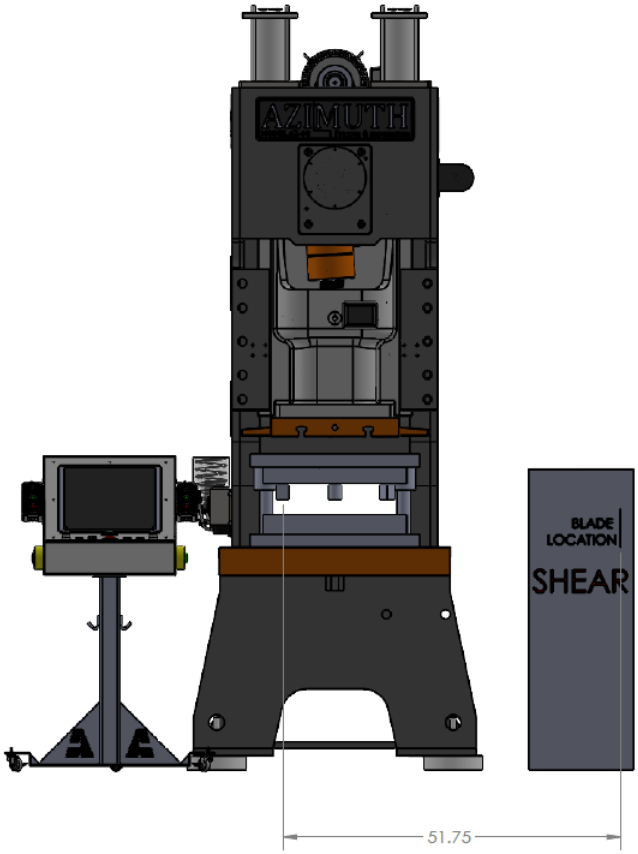


FIGURE 3-6 - DISTANCE FROM GAG ORIGIN TO SHEAR

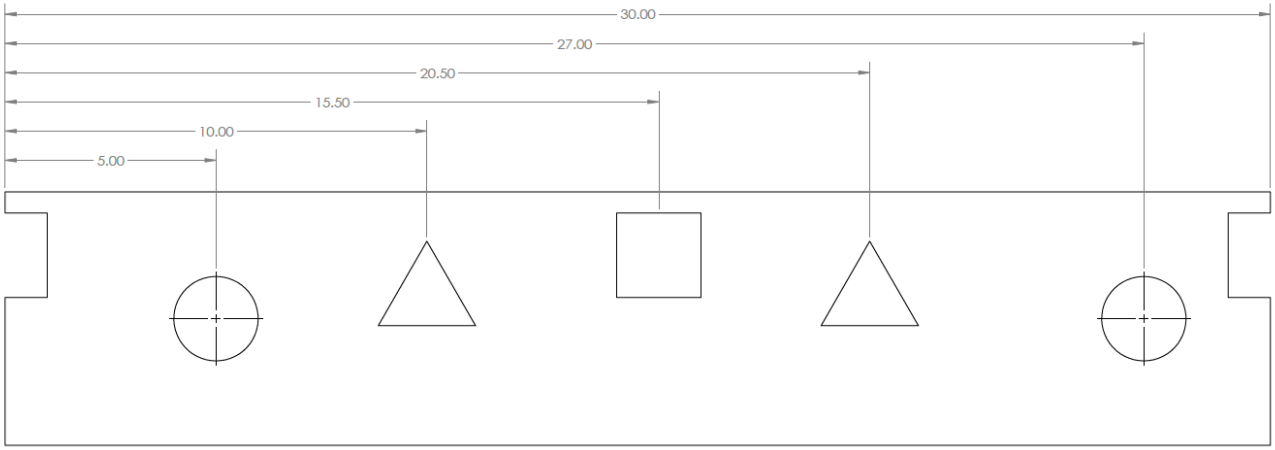


FIGURE 3-7 - PART DIMENSIONS DRAWING

FIGURE 3-8 - SEQUENCES ABSOLUTE PROGRAMMING EXAMPLE

Example Using *Figure 3-5*, *Figure 3-6* and *Figure 3-7*.

1. Locate the “Gag Origin”, by finding the features that is relevant for all the measures to be entered.
    a. Gag Origin will be the “Square feature” as all the measures are based on that feature
2. Number the features (Find which one is Gag1, Gag2, … , GagX)
    a. Gag1 : Square
    b. Gag2 : Circle
    c. Gag3 : Triangle
    d. Gag16 : Shear
3. Enter the **Distance from Gag Origin to shear**
    a. Distance From Gag Origin to Shear: **51.75**
4. Enter the **Part length**
    a. Part length: **30**
5. Enter the **Gags Offsets**
    a. Gag1: **0**
    b. Gag2: **8**
    c. Gag3: **16**
6. Enter the **Positions** of each feature and their **Gag No #**
    a. Position: **15.5**, Gag No #:**1**
    b. Position: **30**, Gag No #:**1**
    c. Position: **10**, Gag No #:**2**
    d. Position: **20.5**, Gag No #:**2**
    e. Position: **5**, Gag No #:**3**

f. Position: **27**, Gag No #:**3**

g. Position: **30**, Gag No #:**16**

7. Press **Calculate Positions**
8. Press **Transfer to Sequences**
9. Go to the **Sequences** page to confirm that the distances have been transferred. (If they have not transferred, re-do **Step 7** and **Step 8**)

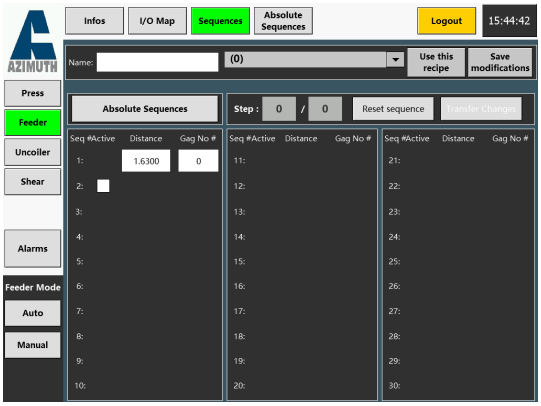


FIGURE 3-9 - SEQUENCES BEFORE PROGRAMING

FIGURE 3-10 - SEQUENCES AFTER PROGRAMMING

10. In the **Sequences** page, press **Transfer Changes**.

3.1.5 Manual Settings

Using the remote controls

On both sides of the operator station, there are two remote controls. The first contains the buttons required for the manual movements of the Feeder, and the second contains the buttons for the Uncoiler.

FIGURE 3-11 – FEEDER MANUAL MOVEMENTS REMOTE

The **2-positions selector** located on the top of the manual-movement remote is used to manually open and close the Feeder rolls. This control is useful for feeding material into the Feeder during machine startup. In the **"Open"** position, the material passes through the Feeder without restriction. It is therefore necessary to close the rolls on the material once it has passed through the Feeder. With the rolls closed on the material, it will be held in place inside the Feeder, allowing the use of the Feeder's manual controls to move the material.

Note: A manual Feeder movement cannot be performed if the rolls are in the **"Open"** position.

The **Forward** button commands a positive manual movement of the Feeder, meaning the material will advance toward the die.

The **Reverse** button commands a negative manual movement of the Feeder, meaning the material will move backwards, out of the Feeder.

Passline Adjustment (Motorized passline option)

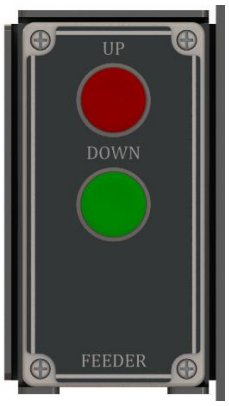


FIGURE 3-12 – PASSLINE REMOTE

The Feeder passline adjustment buttons can be located on a remote or on the operator station depending on the component sold with the press line. These buttons are used to set the height at which the material enters the die. The **Up** button increases the Feeder height, while the **Down** button lowers the Feeder height.

Note: It is important to ensure that the locking mechanism is disengaged before making any adjustment to the Feeder height.

Manual Parameters

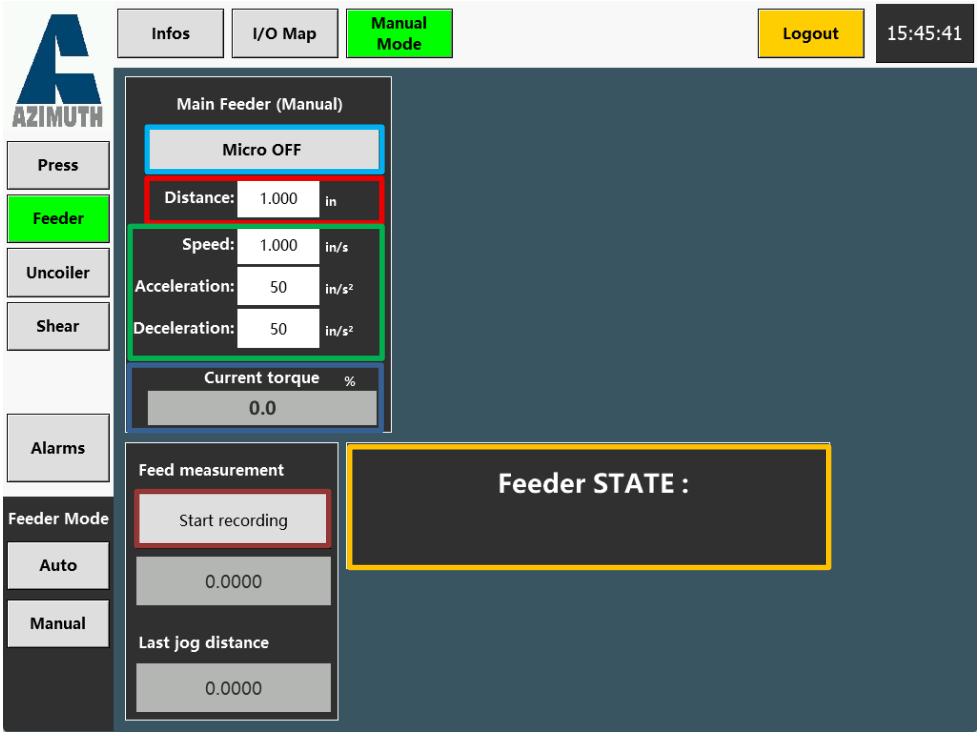


FIGURE 3-13 – DETAILS MANUAL MODE PAGE

By default, pressing the **Forward** or **Reverse** buttons on the Feeder remote will cause the Feeder to move. This movement will continue as long as the button is held down, until the manual distance limit—described in the *Advanced Settings***Error! Reference source not found.** section—is reached.
A **micro-feed** option is also available, allowing the Feeder to feed a predefined length entered on the screen in the **Distance** tab. To perform a Micro Feed, enable the **Micro mode** by clicking on the **Mirco OFF** button, then press **ONCE** on the **Jog Forward** button of the feeder remote.

The **speed**, **acceleration**, and **deceleration** for manual Feeder operations are adjusted in the upper section of the screen.

When the feed is completed, the **actual torque** required to perform this feed will be displayed on the screen for diagnostic purposes.

You can measure a feed distance by pressing **Start Recording**. Then manually move the Feeder and press **Stop Recording**. The fed distance will be displayed just below the recording button. This function can be useful during machine setup to determine which Distance should be entered in the recipe for automatic operation.

A visualization of the **last moved distance** is displayed below the position recording window.

The **Feeder status** is displayed in this section.

3.1.6 Advanced Settings

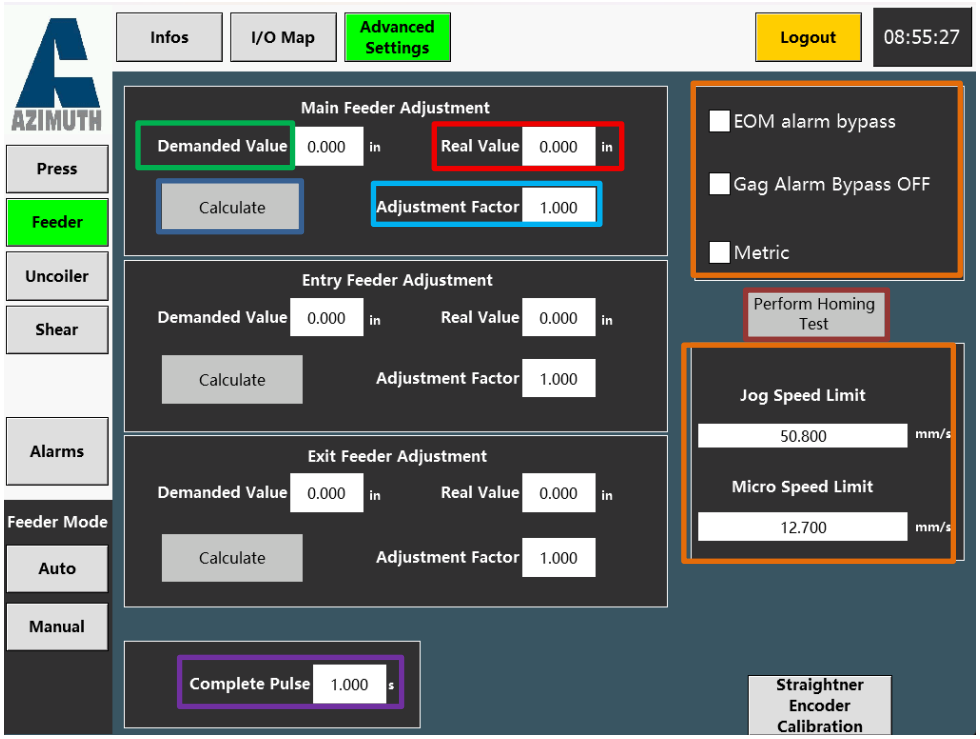


FIGURE 3-14 – ADVANCED SETTINGS

It is possible to define a **Adjustment factor** for the feeder, but this should only be necessary if a physical modification to the feeder results in recurring incorrect feed lengths.

To adjust this factor:
- Enter the **Demanded value**.
- Then enter the measured feed value into the **Real Value** field.
- Press **Calculate** so the system applies the correction factor.

Systems With One or Two Feeders
- If you have only **one feeder**, you only need to adjust the **main factor**.
- If your machine is equipped with a **dual-feeder system**, you can define a separate factor for the **entry feeder** and the **exit feeder**.

Additional Functions
- The End-of-Material alarm (EOM) can be bypassed by checking the **EOM alarm bypass** box.
- The feeder units can be switched to metric if needed.
- The gag fault alarm can be bypassed by checking the **Gag Alarm bybass OFF** box.
- Speed limits can be defined for manual operations to prevent excessive feed speed in manual mode.

You can Home the position of the entry and exit feeder by pressing the **Perform Homing Test button**.

A **Pulse Time** can be set so that a signal is sent when the Feeder has completed its requested feed. This command is useful for Feeders that need to send a signal to the press to automatically restart a cycle following the completion of a feed.

The **Straightener Encoder Calibration** button is intended for use by Azimuth Machinery technical support.

3.1.7 Mathematics

FIGURE 3-15 – MATHEMATICS

The Feeder Mathematics page is useful to help setup the appropriate Feed cam angles according to the Feeding parameters and the press speed of the recipe.

To be able to estimate the Feed cycle time correctly perform the following steps.

1. Make sure that a recipe is loaded and the values entered in the **Top left section** are representative of the parameters that will be used for the job.
2. With you Feeder in **Manual mode**, enable the **Micro mode** in the mathematics page by pressing on the **Micro mode** activation button.
3. Activate the calibration by pressing the **Calibrate** button.
4. Perform a **micro feed** by pressing **ONCE** on the **Feeder Jog Forward** button.
5. Deactivate the calibration by pressing the **Calibrate** button.

Then you will be able to know the estimated **Feed cycle time** and the **angle range needed** for the job.

You can also Enter a “From” and “To” angles to simulate the Feed Cam angles needed for the job. This will give you the **Feed Cam Available Time** for the Job. You can then compare the **Feed Cam Available Time** to the **Estimated Feed Cycle Time** to see if the Feed Cam angles parameters are properly set.

3.1.8 Feeder alarms descriptions

TABLE 8 – FEEDER ALARMS LIST

Alarm	Description	Possible Cause	Solution
Servo Motor	Servo motor fault	Internal trouble	Refer to the servo motor documentation for troubleshooting based on the described alarm.
Feed Signal Loss	Active when the press exits the feed angles, but the Feeder continues feeding	A feed signal was sent but the release signal has not yet been received	Increase the feed speed. Increase the feed angle range.
Release	If a feed signal is received while waiting for a release signal or while uncoiling, an alarm is triggered	Un signal d'alimentation a été émis alors, mais le signal de Relâche n'a pas encore été reçu.	If a release is required, ensure the release signal is triggered before the feed signal. If no release is needed, bypass the release.
Uncoiler Automatic Mode	The uncoiler must be in automatic mode to start feeding	The Feeder attempted to start in automatic mode, but the uncoiler is in manual mode	Ensure the uncoiler is in automatic mode before starting an automatic feed sequence.
Gag Alarm	A gag was not activated or deactivated within the allowed time	Insufficient air pressure	Ensure air pressure is sufficient to activate gag movement.
		Confirmation delay too short	Increase the confirmation delay.
		Physical blockage of the gag	Identify and correct any gag blockage or obstruction.
		Electrical fault	Check if the valve supply is functioning electrically.
End of Material	End-of-material alarm	No material is present at the Feeder inlet	Insert material into the Feeder inlet.
Feed Verification	Error occured during feeding.	Error occured during feeding.	Refer to the Servo Drive documentation to identify and correct the error.

Alarm	Description	Possible Cause	Solution
Entry Feeder Deviation	The entry Feeder has deviated too far from its respective feed distance	The actual fed length differs from the requested value	Adjust the correction factor to achieve an accurate actual feed value.
Exit Feeder Deviation	The exit feeder has deviated too far from its respective feed distance		
Main Feeder Deviation	The main Feeder has deviated too far from its respective feed distance		
Forced Gag	A gag is forced; disable it to start in automatic mode	A gag is in a forced state while attempting to start production in automatic mode	Ensure no gags are forced when starting automatic mode.
Press Motor Not Started	Start the press motor before feeding in automatic mode	The Feeder was set to automatic mode without the press motor running	Start the press motor before setting the Feeder to automatic mode.
Release while Feed	Release during feeding. Preventive alarm found in the press controller when integrated with the feeder	The feed cam and release cam overlap	Ensure the feed and release angle ranges do not share any common angles.
Entry Feeder Max Torque	The entry feeder has excessive torque	Too high requested speed. Too high acceleration/deceleration values. Material jam in the die.	Check speed commands, acceleration/deceleration values, and inspect the die for jams. Correct any issues.
Exit Feeder Max Torque	The exit feeder has excessive torque		
Main Feeder Max Torque	The main feeder has excessive torque		
Zero Speed	Feeder speed must be above 0	The requested feeder speed in the selected recipe is 0	et a feeder speed above 0.
Entry & Exit Feeder Rolls Closed	Both Feeders are clamped - impossible to feed	Entry and exit feeder rolls are closed	Ensure rolls are closed on only one feeder to feed material manually.
Entry Feeder Rolls Open	Cannot feed – entry feeder rolls are open	Feeder rolls are open during a feeding attempt	Close the designated Feeder rolls to feed material.
Exit Feeder Rolls Open	Cannot feed – exit feeder rolls are open		

Main Feeder Rolls Open	Cannot feed – main feeder rolls are open		
Entry Feeder Reference Position	Entry feeder is not at its reference position	Entry Feeder has not been homed	Ensure the Entry Feeder is homed.
Press Fault	The press is in fault, feeder cannot start	An alarm occurred at the press while attempting to start the Feeder	Resolve the press alarm before activating the Feeder.
Straightener Roll Positions	Straightener settings out of position	Requested and actual positions do not match	Ensure straightener roll positions match before starting a job.
Encoder Deviation 1	Encoder 1 deviation alarm	Excessive encoder deviation	Ensure straightener roll positions are within the acceptable range for the job.
Encoder Deviation 2	Encoder 2 deviation alarm		
Feed Correction Failure	Feed correction failed	An error occurred in the feed correction axis	Refer to the servo motor documentation for troubleshooting based on the described alarm.
Feed Length Correction Delay	Feed correction took too long	Material caught in tooling	Reset the error and restart feeding.
Feeder Passline Adjustment Motor Overload	Feeder passline height adjustment motor overload triggered	Blockage, abnormal friction	Check if the locking mechanism was disengaged before adjusting Feeder height.
First Forced Relay Discrepancy Controlling Feeder Height Motor	FR1, which activates the feeder passline motor, is not responding correctly. Diagnose or replace the relay	Relay malfunction	Replace the relay.
Second Forced Relay Discrepancy Controlling Feeder Height Motor	FR2, which activates the feeder passline motor, is not responding correctly. Diagnose or replace the relay		
Safety Alarm	One of the safeties has been triggered	A safety is active	Using the "Safety View" page from the Alarms section, identify the active safety. If the reason for activation is now safe, reset the safety to "armed" and press the

			reset button on the dual-hand control.
Cut to length activation	The only sequence entered is using Gag16 and the press is not in cut to length mode.	You are trying to start a cut to lenght sequence without activating the cut to lenght mode.	Make sur to have a Feeding step before the shearing step if you need the press to activate. Enable the cut to length mode when you need to perform cut to length operations
Shearing cycle at first step of sequence	The first step of the sequence is the shearing step.	The first operation of the sequence is the shear.	Change it for the last operation.
Multiple Shearing Cycle	There is more then one shearing cycle called in the set sequences	More then one shear cycle has been detected in the sequence.	Make sure that there is only 1 shear cycle by sequence.
Palms at Shearing Step	The dual palms has been used to initiate a stroke, but the next step in the sequence is a shearing cycle.	The dual palms has been used to initiate a stroke, but the next step in the sequence is a shearing cycle.	Please Reset de sequence.
Top Stop before Shearing Step	A Top-Stop command was given just before the shearing cycle.	A Top-Stop command was given just before the shearing cycle.	Reset de sequence
Press mode while attempting to shear	The press is in continuous mode without the continuous on demand cycle activated.	You are trying to start the press with a sequence that includes a shear, using a mode that cannot be used for shearing.	Make sure that your machine is in a mode that can be used for shearing
Feed aborted	A user I/O conditions was triggered to abord the Feed	Feed has been cancelled.	Verify what cause the condition to be triggered in the user I/O programming.

4. Uncoiler Parameters

4.1 Main Page

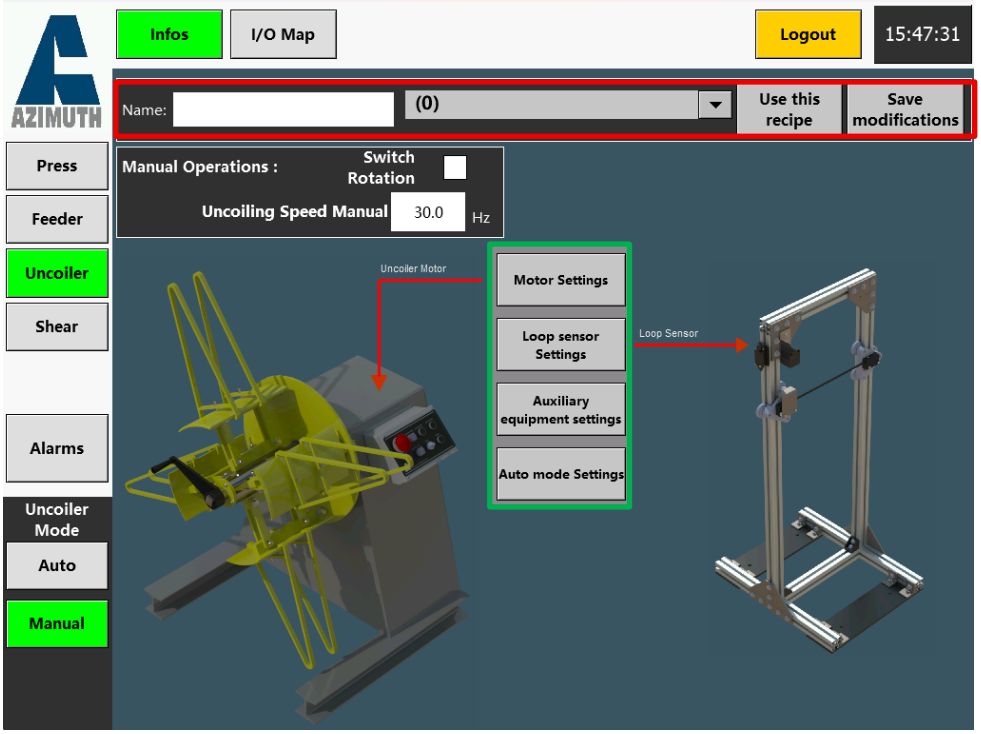


FIGURE 4-1 - PARAMÈTRES DÉROULEUR

The Uncoier **Infos** page allows you to navigate through every menu related to the uncoiler controls.

This page allows you visualize and load a recipe as per the recipe section, set the manual speed, unwinding direction and access various Uncoiler menus using the center Navigation Bar.

In the Manual section, the **manual uncoiler speed** can be set, which is the speed setpoint that the uncoiler will follow during manual movement.
A checkbox to **reverse the direction of rotation** of the uncoiler is located at the top of the manual section. This option is useful if some materials need to unwind from the top, while others need to unwind from the bottom.

4.1.1 Motor Settings

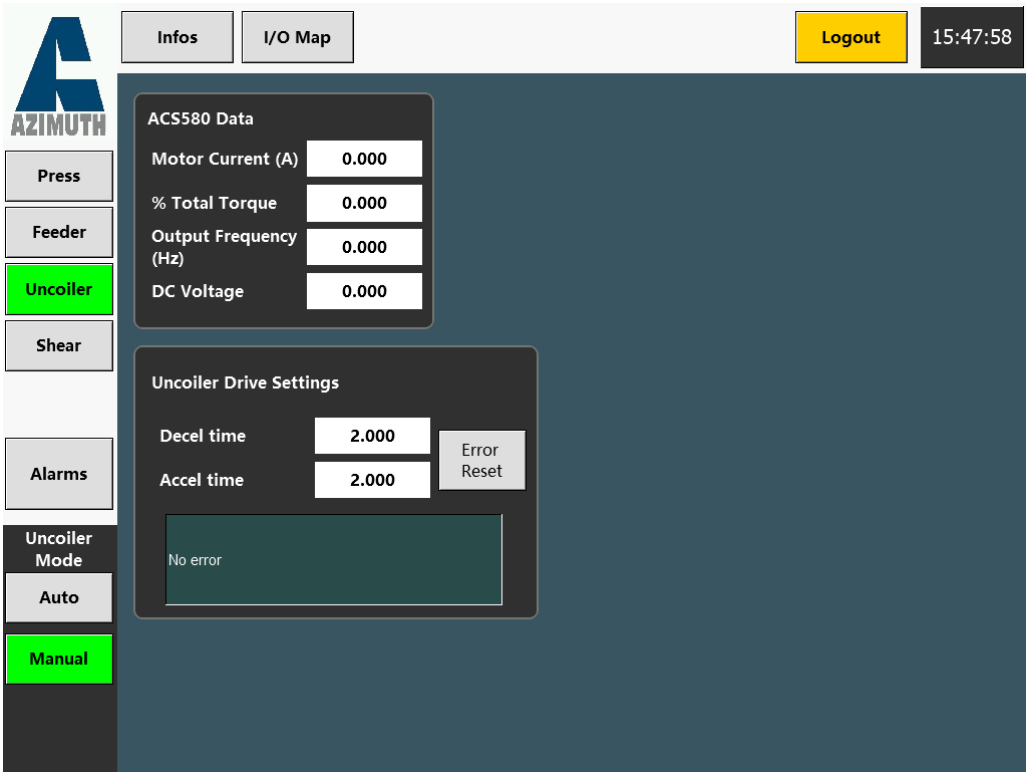


FIGURE 4-2 - UNCOILER MOTOR SETTINGS PAGE

When the Uncoiler motor is controlled by a VFD, you can monitor the motor current, torque, the output frequency and the DC bus voltage of the VFD. Also, you can set the **acceleration** and **deceleration times** of the motor. In addition, you can view drive faults and reset them if necessary.

The example shown in *Figure 4-2* demonstrates an acceleration and deceleration time of **2 seconds**.
This time represents how long the motor takes to reach the commanded speed.
Therefore, in the example of *Figure 4-2*, when the motor starts, it requires **2 seconds** to reach its preset speed.

4.1.2 Loop Sensor Settings Page

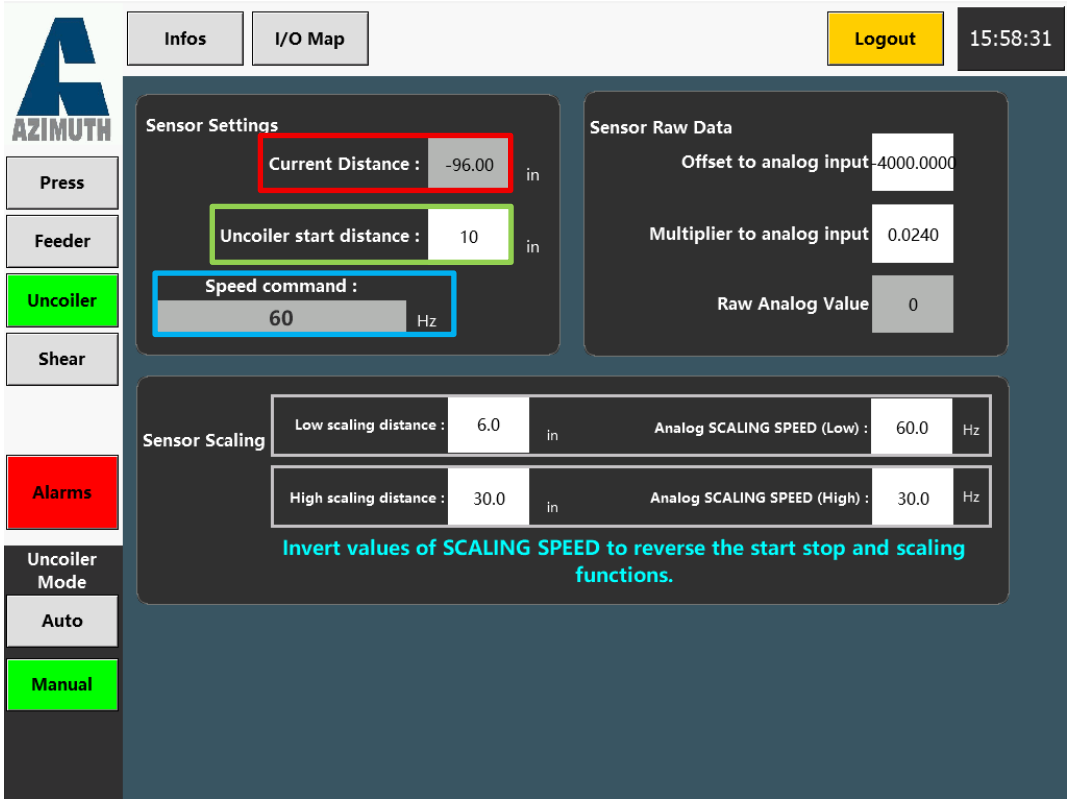


FIGURE 4-3 - LOOP SENSOR SETTINGS PAGE

The **Sensor Settings** section displays the **current distance** between the sensor and the material.
The distance at which the sensor must issue the **uncoiler run command** must be entered in the **Uncoiler Start Distance** field.
The **uncoiler speed command in automatic mode** is also displayed in this section.

The **Sensor Raw Data** section contains values to calculate the scaling of the speed according to the distance detected distance of the material. Please ask an Azimuth technician before modifying these values.

The **Sensor scaling** section lets you adjust the speed of the uncoiler according to the between the strip and the sensor.

Low Scaling distance is the distance when the strips is close to the loop sensor.

Analog SCALING SPEED (Low) is the command is Hertz that will be given to the uncoiler when it reaches the **Low scaling distance**.

High Scaling distance is the distance when the strip is far from the sensor.

Analog SCALING SPEED (High) is the command is Hertz that will be given to the uncoiler when it reaches the **High scaling distance**.

Notes: The closer the material strip is from the sensor, the faster the uncoiler needs to unwind.

4.1.3 Uncoiler Auxiliary Equipment page.

Further informations will be added to this page in the near future.

4.1.4 Auto mode Settings Page

The **automatic mode speed of the Uncoiler** can be controlled in two ways:

1. Leveling speed based on loop distance: The uncoiling speed in automatic mode is variable and adjusts according to the loop height. The higher the loop, the higher the uncoiling speed.

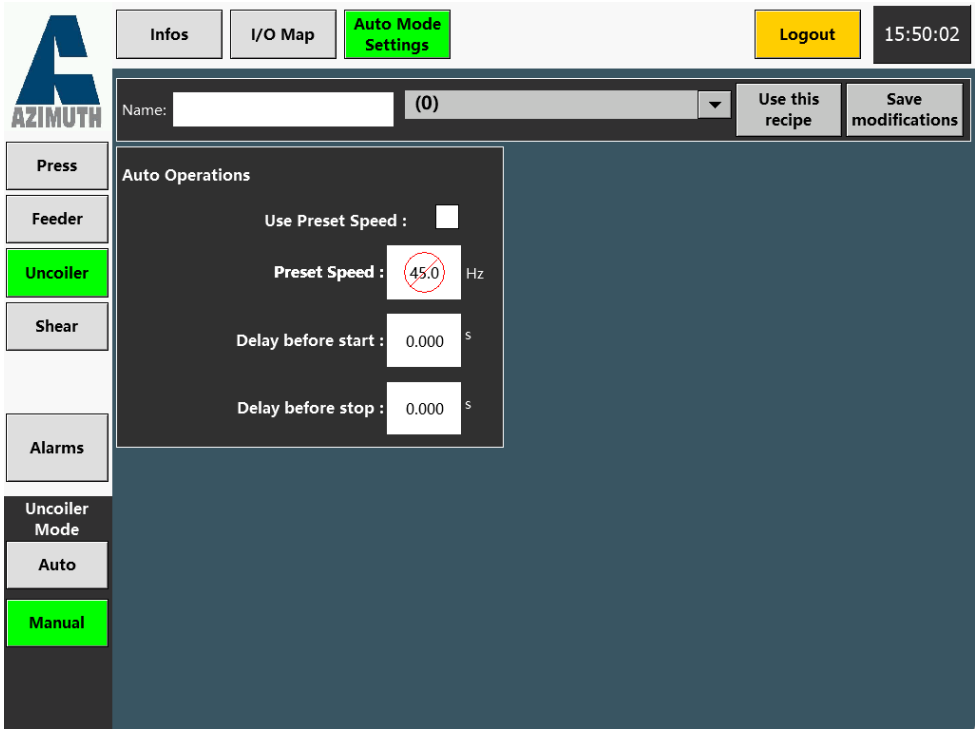


FIGURE 4-4 - ANALOG SENSOR SPEED COMMAND

Preset Speed:

The preset speed is a constant uncoiling speed. To use the preset speed, **check the Preset Speed Toggle box.**

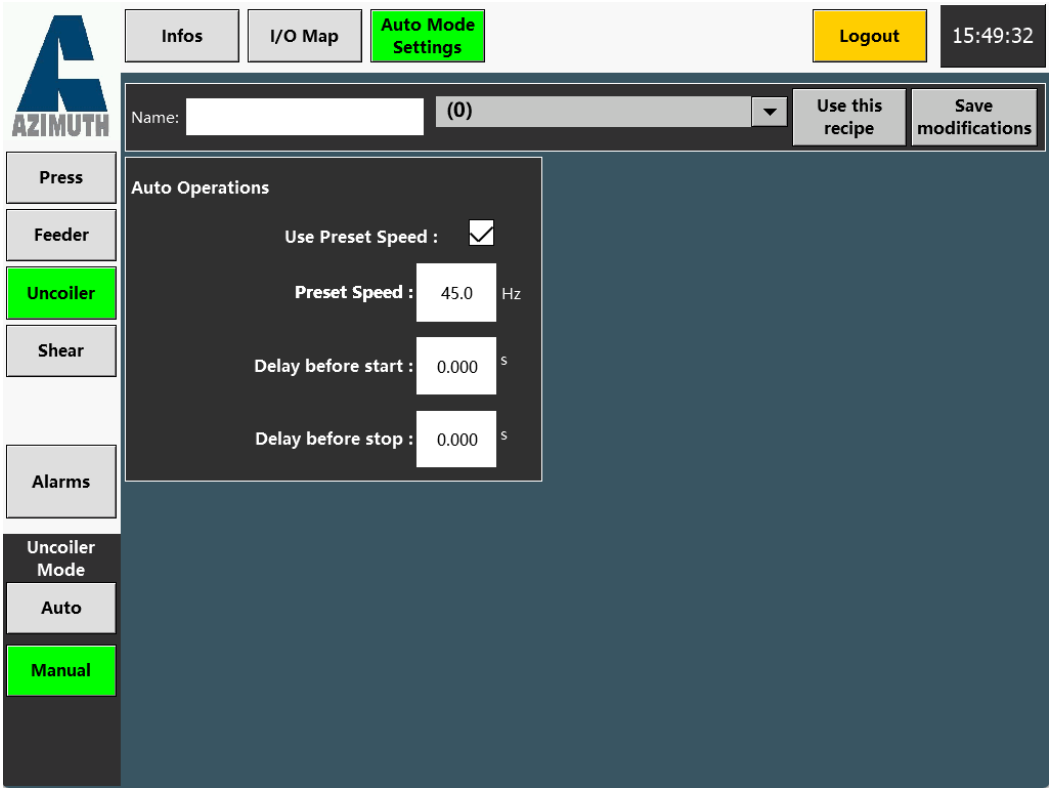


FIGURE 4-5 - PRESET SPEED COMMAND

A **Start Delay** and a **Stop Delay** for the uncoiler can be saved in a recipe.

The start delay is the time the uncoiler waits after receiving an uncoiling command before it begins to uncoil, while the stop delay is the time the uncoiler continues to uncoil after the uncoiling stop signal is received.

4.1.5 Uncoiler Operator Station

FIGURE 4-6 – UNCOILER OPERATOR STATION

The uncoiler operator station contains all the functions required for the manual operation of the uncoiler. Among other things, it allows changing the material on the uncoiler.

FIGURE 4-7 – OPERATOR STATION DETAILED VIEW

Uncoiler Overview

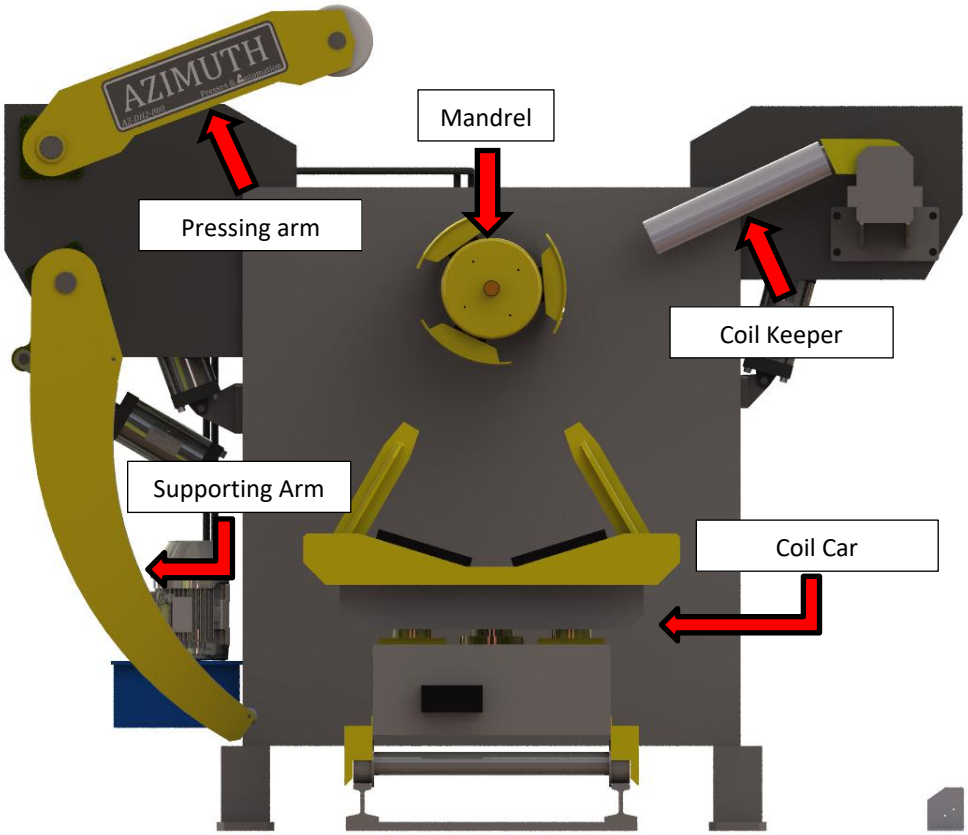


FIGURE 4-8 – UNCOILER OVERVIEW

Mandrel Expansion

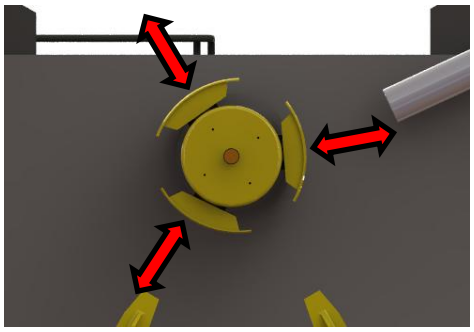


FIGURE 4-9 – MANDREL EXPANSION AND RETRACTION

The "**Expand**" and "**Shrink**" buttons are used to adjust the mandrel. To enlarge the mandrel to hold the material, the operator must press and hold the "**Expand**" button. If the operator wants to remove existing material and tighten onto the mandrel, they must press and hold the "**Shrink**" button.

Uncoiler Manual Movements

To perform a manual operation of the Uncoiler, press the **Mandrel FWD** button to unroll and the **Mandrel REV** button to roll. Ensure that the **Security Enable/Disable** selector is set to **Disable** for normal manual operation.

If a manual operation requires entering the safety zone, the **Security Enable/Disable** selector must be set to **Enable**, and the operator must use the **dead-man switch** to allow the Uncoiler to function manually.

Important: When using the dead-man switch to operate the Uncoiler manually within a hazardous area, the operator must continuously monitor the Uncoiler to ensure it does not unroll at an abnormally high speed.

Coil Car Movements

The Coil Car can perform four different movements.
Vertical translation:

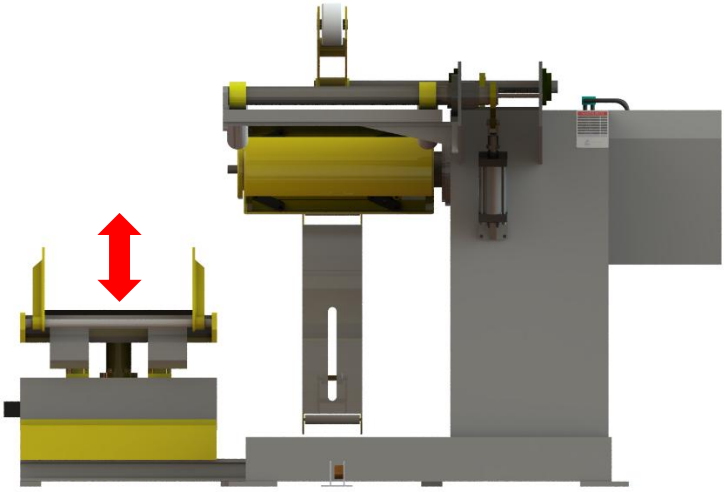


FIGURE 4-10 – VERTICAL TRANSLATION OF THE COIL CAR

To raise the coil, the operator must press the **Coil Cart Up** button. This action will perform a vertical translation of the coil carriage. This operation is useful for bringing the coil to the insertion height.

To lower the coil, the operator must press the **Coil Cart Down** button. This action will perform a vertical translation of the coil carriage. This operation is useful for lowering the coil after it has been removed from the mandrel.

Horizontal translation:

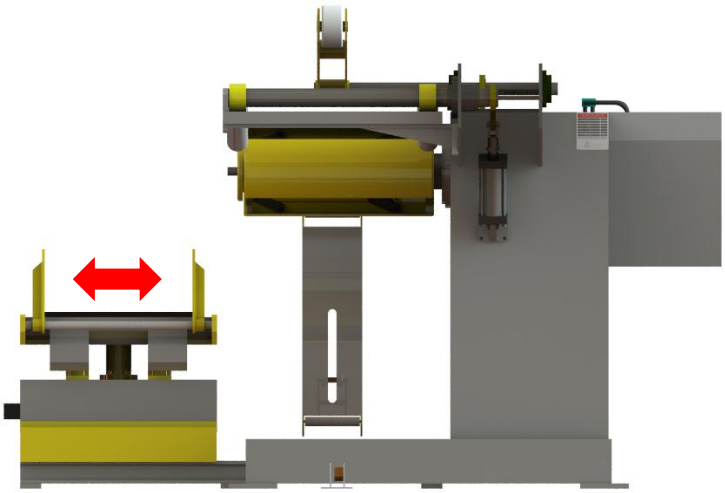


FIGURE 4-11 – HORIZONTAL TRANSLATION OF THE COIL CAR

To insert the coil onto the mandrel, the operator must press the **Coil Cart FWD** button. This will cause a horizontal translation of the coil cart toward the Uncoiler.
To remove the coil from the mandrel or return the coil cart to its original position, the operator must press the **Coil Cart REV** button. This will cause a horizontal translation of the coil cart away from the mandrel.

Uncoiler's arms movements

Supporting Arm

The **supporting arm** is designed to assist in feeding material from the Uncoiler into the Feeder. By raising the supporting arm and then uncoiling the material, it is possible to feed the material into the Feeder without touching it.

The **Supporting Arm Up** button raises the supporting arm, as shown in *Figure 4-12*

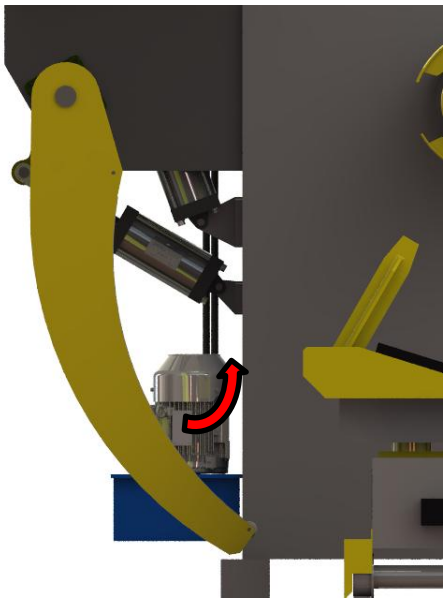


FIGURE 4-12 – SUPPORTING ARM GOING UP

while the **Supporting Arm Down** button lowers the supporting arm, as shown in *Figure 4-13*

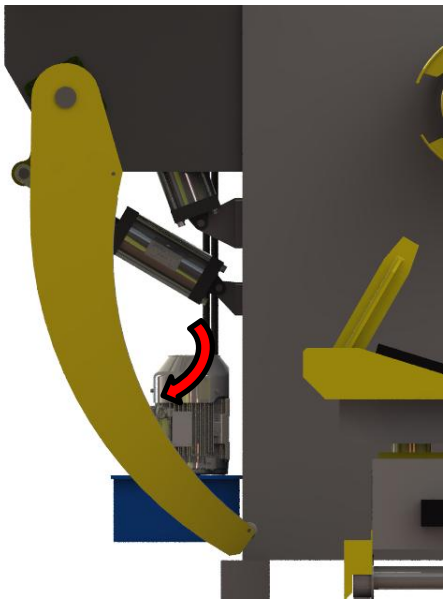


FIGURE 4-13 – SUPPORTING ARM GOING DOWN

Coil Keeper

The **coil keeper** is used to keep the coil in position. It is important that this arm is lowered.

Two movements are possible for the coil keeper. The **upward movement**, as shown in *Figure 4-14*, is performed by setting the selector named **Coil Keeper** to the **Unclamp** position.

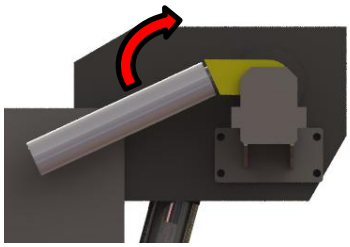


FIGURE 4-14 – COIL KEEPER GOING UP

To lower the **coil keeper** arm, the operator must set the selector named **Coil Keeper** to the **Clamp** position, which will cause the coil keeper to lower, as shown in *Figure 4-15*.

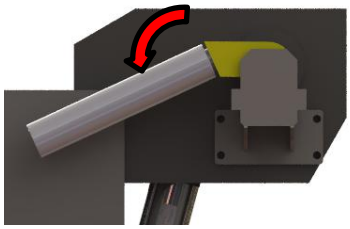


FIGURE 4-15 – COIL KEEPER GOING DOWN

Pressing arm

The **pressing arm** of the uncoiler has two functions. The first is to hold the coil in place while cutting the strap that secures the coil. The pressing arm prevents the coil from unwinding on itself due to the spring tension built up in the material. The second function of this arm is to keep the coil tightly held during the uncoiling operation.

The upward movement of the pressing arm is controlled by setting the selector named **Pressing Arm** to the **Unclamp** position. The resulting movement is shown in *Figure 4-16*.

FIGURE 4-16 – PRESSING ARM GOING UP

The downward movement of the **pressing arm** is performed by setting the **Pressing Arm** selector to the **Clamp** position.

FIGURE 4-17 – PRESSING ARM GOING DOWN

Feeder Pressing arm

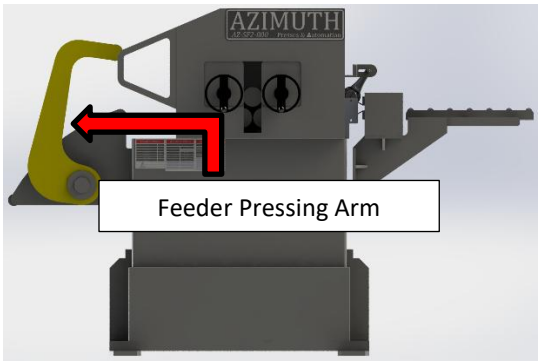


FIGURE 4-18 – FEEDER PRESSING ARM OVERVIEW

The **Feeder pressure arm** is used to guide the material into the Feeder when starting a job. To do this, the pressure arm must be in the **up** position, and the material is fed until it reaches the Feeder pressure arm. Once the material has passed the Feeder pressure arm, the operator must **close** the arm.

The operator can open the pressure arm by setting the selector named **Feeder Pressure Arm** to the **Unclamp** position. The movement of the arm will be as shown in *Figure 4-19*.

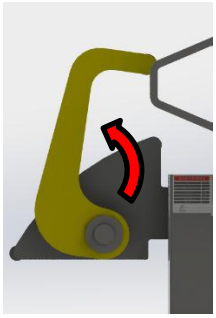


FIGURE 4-19 – FEEDER PRESSING ARM OPENING

The **closing movement** of the Feeder pressure arm is performed by setting the **Feeder Pressure Arm** selector to the **Clamp** position.

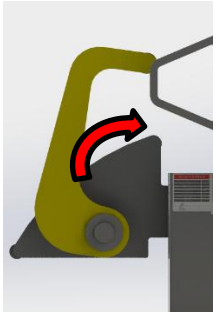


FIGURE 4-20 – FEEDER PRESSING ARM CLOSING

Emergency Stop

La station opérateur du Dérouleur contient un arrêt d’urgence ayant la fonction d’arrêter la machine en urgence si appuyé.

4.1.6 Uncoiler alarms description.

TABLE 9 – DECOILER/RECOILER ALARM LIST

Alarm	Description	Possible Cause	Solution
Uncoiler VFD Overload	The uncoiler controller is overloaded	A condition caused the uncoiler motor to overload	Must be reset via the uncoiler advanced settings.
High Material Limit	Material has reached a position too high in the tension sensor	The Feeder is feeding material faster than the uncoiler can unwind	Increase the uncoiler speed. Decrease the Feeder speed.
Straightener Pilot Fault	Straightener Rolls are open while trying to unwind material.	Straightener rolls are open and the uncoiler is in automatic mode	Ensure the straightener rolls are closed before setting the uncoiler to automatic mode.
Coil Car in Lowered Position	The coil support must be raised to move the coil car	The coil support was in the lowered position during a movement attempt	Ensure the coil support is in the raised position before moving the coil car.
Upper Position of Support Arm	The support arm must be lowered to move the coil car	The support arm was not in the lowered position during a movement attempt	Ensure the support arm is in the lowered position when moving the coil car.
Lower Position of Pressing Arm	The pressing arm must be raised to move the coil car	The pressing arm was in the lowered position during a movement attempt	Ensure the pressing arm is in the raised position before moving the coil car.

5. Shear

5.1 Shear Controls

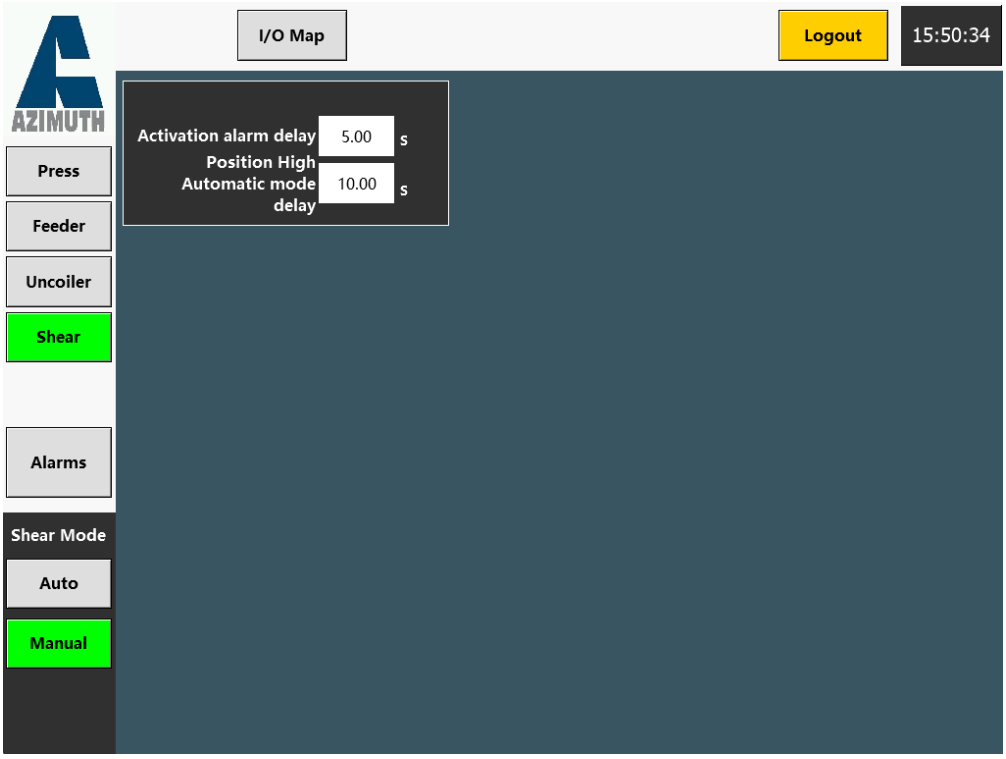


FIGURE 5-1 - SHEAR CONTROL PAGE

The Shear page display the Shear mode, either Manual or Auto.

In automatic mode the shear will automatically cycle when it is used is an sequence has Gag No#16.

In manual mode, the shear will go down when pressing the **Shear Stroke** push button and go Up when the button is released. Please note that is the shear was not in Top position, you will need to put the shear in manual mode and press the **Shear Stroke** push button of the Operator station to make the shear go to its top position.

Alarm Position Delay is the amount of time for the shear to go up in case of a blocage or a sensor malfunction.

Position High Automatic mode delay is the amount of time for the shear to go down in case of a blocage or a sensor malfunction.

5.2 Shear Alarms Description

TABLE 10 - SHEAR ALARMS LIST

Alarm	Description	Possible Cause	Solution
Fan motor overload	Fan motor overload has tripped	Motor overload.	Check the possible sources of overload on the shaker motor.
Hydraulic unit Oil temperature fault	The hydraulic unit oil temperature is too high.	Low hydraulic oil level Faulty pump	Check hydraulic oil level. Inspect hydraulic unit for malfunctions
Hydraulic unit motor overload	Hydraulic unit motor's overload has tripped.	Motor overload.	Check the possible sources of overload on the shaker motor.
FR5 relay discrepancy	FR5 relay, which activates the going up movement of the shear, does not respond properly.	Relay malfunction.	Check the wiring. Possibly replace the relay.
FR6 relay discrepancy	FR6 relay, which activates the going down movement of the shear, does not respond properly. Troubleshoot, change relay.	Relay malfunction.	Check the wiring. Possibly replace the relay.
Activation Up Alarm	The Shear cannot reach Up position	Blockage on the going up movement of the shear Up position sensor malfunction.	Look for blockage on the going up movement of the shear or look for Up position sensor malfunction.
Activation Down Alarm	The Shear cannot reach the Down position	Blockage on the going down movement of the shear Down position sensor malfunction.	Look for blockage on the going down movement of the shear or look for Down position sensor malfunction.
Shear not Auto	You are trying to execute an automatic movement of the shear, but the shear is set to manual mode	A cycle tried to activate an automatic movement of the shear, but the shear is not set to Auto mode.	Put the shear in Auto mode for automatic operations

Need to go Up	The shear has faulted during a cycle	A condition made the shear stop its movement during a cycle.	Press on the activation button to make it go at initial position.
Stroke while Shear	An attemp to stroke the press has been made while the shearing cycle was excecuting.	A signal to clutch the press has been given while the shear was in cycle	Make sure to not activate the press while the shear is in cycle
Top position Auto mode	The Shear is set to Auto mode and did not reach the High position for a certain amount of time.	Blocage or sensor malfunction.	Look for blocage or sensor malfunction. Make it manually go up.

6. Safety Instructions and instrument Preparation

Azimuth complies with safety regulations according to the table below:

TABLE 11 - COMPLIANCE

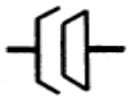
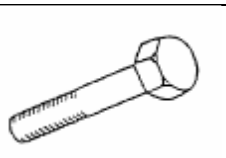
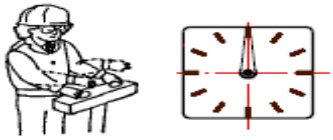
Réglementation	**Description**
UL 508A 3rd Edition Publication Date: April 24, 2018	Industrial Control Panel Compliance
CSA C22.2 No14-18	Canadian Standard for Industrial Control Equipment
CSA Z142	Press Safety

Please read this user manual carefully before installing, operating, maintaining, or inspecting the press to ensure operator safety and press protection.
Do not operate the press until you fully understand its principles, safety conditions, and all associated precautions. Additionally, make sure you thoroughly understand the control mechanisms installed on this press before beginning its use.

7. Startup Inspection

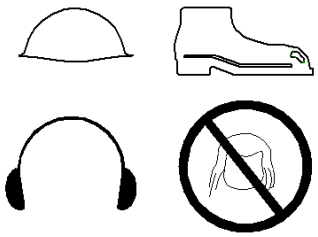
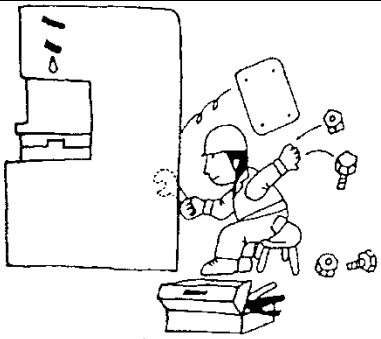
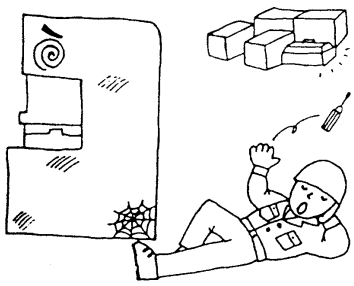
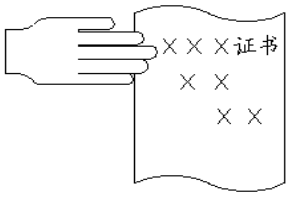
- Before using the machine, make sure the **shut height** is properly adjusted to your tooling.
- Verify the **motor voltage** and the **motor secondary voltage** before performing any work on the machine.
- Before operating the machine with material, perform a **visual inspection** and run the machine **five times** to ensure that no parts were damaged during transport (such as the safety system, crank housing, etc.).
- **Do not operate this machine** until you have read and understood that it presents a danger. Placing your hands or any part of your body inside the machine may result in **serious injury or death**.
- **Never operate this machine** without the use of **guards or safety devices** that protect you from injury.
- **Never perform maintenance or service** on this machine unless the **power supply is turned off and locked out**.
  • Never place your hands inside the machine unless the Emergency Stop (E-Stop) is activated.

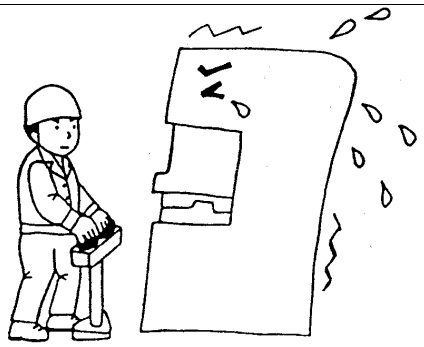
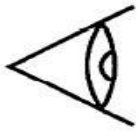
TABLE 12 - VÉRIFICATIONS PRÉDÉMARRAGE

No.	Inspection	Éléments d'inspection
1		Check the operation of the clutch and brake in inch mode.
2		Check that the bolts and screws of the crankshaft, flywheel, slide, connecting rod, and light curtain are properly tightened and secured.
3		In single-cycle mode, press the START button to stop the slide at TDC (top dead center).
4		When the emergency stop (E-STOP) button is pressed, the slide must stop immediately. Check the stopping time according to the press control system installed.
5		Check the proper operation of the light curtain: the slide must stop immediately when the beam is interrupted.

8. Autres précautions

TABLE 13 - AUTRES PRÉCAUTIONS

	**Operators must:** **(a) wear a safety helmet;** **(b) wear safety shoes;** **(c) wear ear protection;** **(d) keep hair short.**
	Never modify or remove the control circuit or safety devices in order to ensure operator safety; otherwise, AZIMUTH assumes no responsibility.
V cc 	Carry out all periodic inspections in full accordance with the mechanical instruction manual.
	The inspection, adjustment, and maintenance of electrical circuits must be performed by qualified electricians holding the appropriate certification.

	Ensure that the press is operated within its rated capacity limits.
 	Read this operating procedure and verify the switches and buttons (see sections: Operator Station***Error! Reference source not found.***, Using the remote controls *and* Uncoiler Operator Station).

9. Warranty Plan

9.1 Warranty plan on part-revolution presses model 6-AC TO 44-AC, AZ1 MODELS, AZ2 MODELS, AZ-S1 MODELS, AZ-S2 MODELS.

Years on air-clutch & electrical components

3

Azimuth machinery warrants to the original purchaser, to repair or, at AZIMUTH MACHINERY'S sole option, replace any major frame, crown, bed, upright or slide (machine casting or weldment), Air-clutch, seals & ALL Electrical components (greaser, oiler, motor, main controller, press encoder) after examination by AZIMUTH MACHINERY's properly authorized representative, to be defective in material or workmanship under normal use within three years or, if sooner, **6,000 hours** of running time after the original date of shipment from the AZIMUTH MACHINERY plant.

Does not include labor[1] or diagnostic work. The original purchaser will be responsible for travel costs and expenses.

Years mechanical parts warranty

2

Azimuth machinery warrants to the original purchaser, to repair or, at AZIMUTH MACHINERY'S sole option, replace any parts that are found defective(Ballscrew, pitman(s),crankshaft(s), slide, GIBS, RAM) after examination by AZIMUTH MACHINERY's properly authorized representative, to be defective in material or workmanship under normal use within three years or, if sooner, **4,000 hours** of running time after the original date of shipment from the AZIMUTH MACHINERY plant.

Does not include labor or diagnostic work. The original purchaser will be responsible for travel costs and expenses.

Year warranty on Hydraulic & others air-components

1

Azimuth machinery warrants to the original purchaser, to repair or, at AZIMUTH MACHINERY'S sole option, replace any parts that are found defective(hydraulic clampers (if furnished), hydraulic components, motors, air-counter balance & all others air components & hydraulic components) after examination by AZIMUTH MACHINERY's properly authorized representative, to be defective in material or workmanship under normal use within three years or, if sooner, **3,000 hours** of running time after the original date of shipment from the AZIMUTH MACHINERY plant.

Does not include labor or diagnostic work. The original purchaser will be responsible for travel costs and expenses.

[1] 150$/hour + traveling expense.