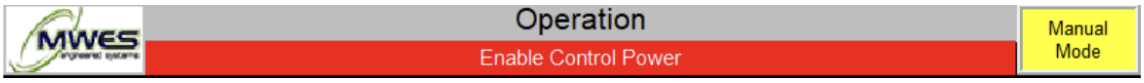
1.HMI Screens

1.1.Header



Every Screen has a header that consists of:

- MWES Logo
- Name of the Active Screen
- Security Level: Operator, Maintenance, Supervisor, or Administrator
- Auto/Manual Operation Selection Push Button. This toggles between Auto Mode and Manual Mode. The button's text indicates the active operational mode.
- Status / Informational Field: Provide the operator with status and operational instructions to operate the machine. The status / information field is color coded to help draw attention to specific issues as detailed below.

Green	In operation / good
Yellow	Requires Operator Attention
Red	Alarm
Gray	Status Only
Orange	Immediate Display Message

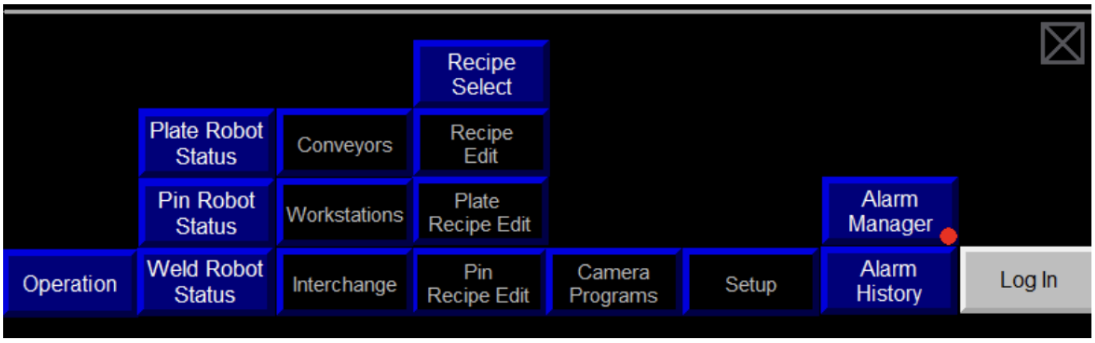
1.2.Footer

Every Screen has a footer that consists of:

- The Date and Time on the right
- The time stamp and Alarm Message on the left

1.3.Main Menu Pop Up Screen

The *Main Menu*, shown below, appears on the bottom of the display when the *Main Menu* button is pressed. The *Main Menu* button is available in the lower right of every screen. A grey *X* in a square at the upper right of the pop-up Screen will close the *Main Menu* display.



Blue	Navigation Buttons open their associated screen
Black	Navigation Buttons indicate their associated screen is unable to be opened due to insufficient operator security. Once the operator logs in with correct authorization, the button will turn Blue
Grey	Navigation Buttons display associated pop-up screen

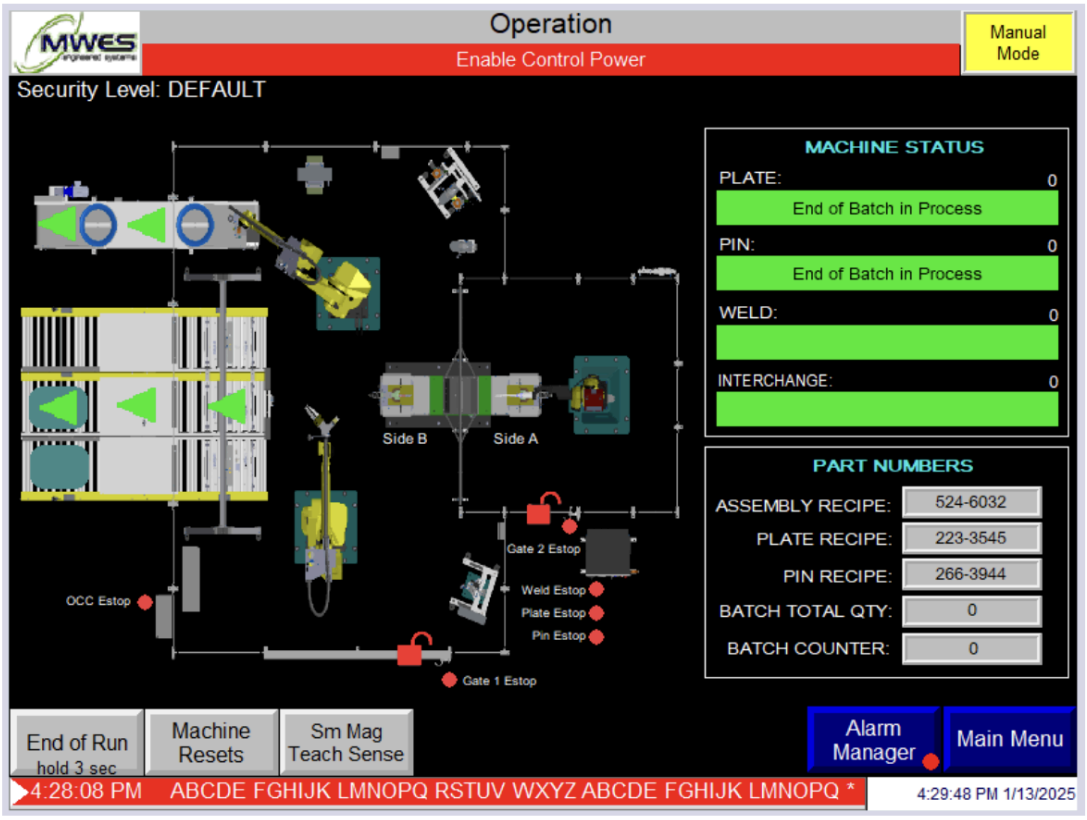
Screen Definitions:

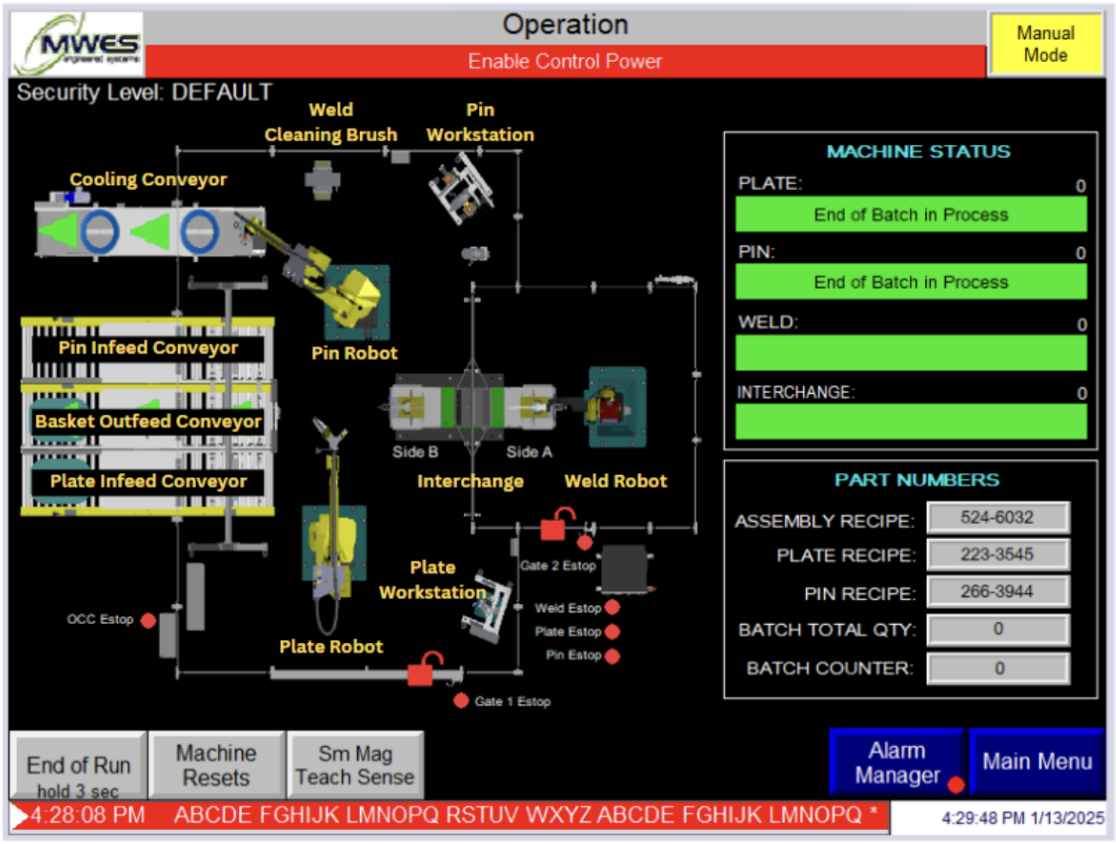
Operation	Push Button opens the *Operation Screen*.
Plate Robot Status	Push Button opens the *Plate Robot Status Screen.*
Pin Robot Status	Push Button opens the *Pin Robot Status Screen*.
Weld Robot Status	Push Button opens the *Weld Robot Status Screen*.
Conveyors	Push Button opens the *Conveyors Screen. Password protected for Maintenance or Administration personnel only.*
Workstations	Push Button opens the *Workstations Screen. Password protected for Maintenance or Administration personnel only.*
Interchange	Push Button opens *Interchange Screen. Password protected for Maintenance or Administration personnel only.*
Recipe Select	Push Button opens the *Recipe Selection Screen.*
Recipe Edit	Push Button opens the *Recipe Edit Screen. Password protected for Maintenance or Administration personnel only.*
Plate Recipe Edit	Push Button opens the *Plate Recipe Edit Screen. Password protected for Maintenance or Administration personnel only.*
Pin Recipe Edit	Push Button opens the *Pin Recipe Edit Screen. Password protected for Maintenance or Administration personnel only.*
Camera Programs	Push Button opens the *Camera Programs Screen. Password protected for Maintenance or Administration personnel only.*
Setup	Push Button opens the *Setup Screen. Password protected for Maintenance or Administration personnel only.*

Alarm Manager	Push Button opens the *Alarm Manager Screen*. Red circle indicator will appear when alarm(s) is active.
Alarms History	Push Button opens the *Alarm History Screen*.
Log In	Push Button opens a pop up display for Operators, Maintenance, or Administrators to type in their Username and Password. After authentication, the display will read the associated Security Level on the upper left of the screen and the *Log In* button will be replaced by *Log Out* button on Main Menu.
Log Out	Push Button logs operator out. Log out is confirmed by Security Level updating to *DEFAULT*, and *Log Out* button will be replaced by the *Log In* button on Main Menu.

1.4.Operation Screen

The *Operation Status Screen* is shown below. The *Operation Screen* appears when the *Operation* button is pressed on the Main Menu. This Screen provides the active Recipe information and the status of the cell. Symbols will appear in real time on the cell image to indicate specific operatives, each of which is listed below.





Screen Definitions:

Mode Push Button toggles between Automatic Mode and Manual Mode. The button's text indicates the active operational mode. **Manual Mode can only be entered if auto cycle is not in operation**.

Machine Status Machine Status fields provide updates on operating status of Plate Robot, Pin Robot, Weld Robot and Interchange. The number in upper right indicates the sequence step the machine is at, and the status field is color-coded to help draw attention to specific issues as detailed below.

Green	In operation / good
Yellow	Requires Operator Attention
Red	Alarm
Gray	Status Only
Orange	Immediate Display Message

Assembly Recipe Data Display indicating current active Recipe name.

Plate Recipe Data Display indicating current active Plate Recipe name.

Pin Recipe Data Display indicating current active Pin Recipe name.

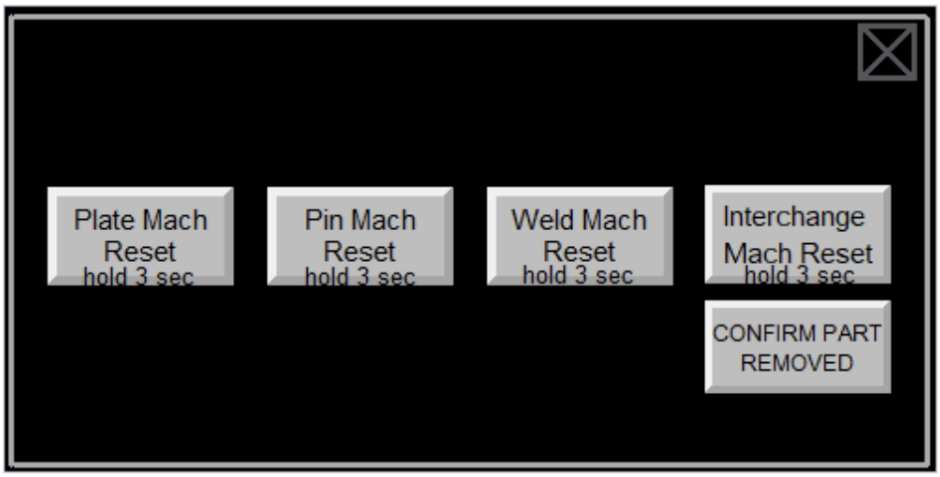
Batch Total Quantity	Data Display indicating the total quantity of parts to be completed.
Batch Counter	Data Display indicating the current amount of parts completed.

Symbols:

Red/Grey Circle	Indicators of the Estop Push Button status are located near their respective positions on the cell. The circle will be filled grey if Estop Push Button is not pressed and not active, and filled red if Estop Push Button is pressed and active.
Green "Closed" Lock	Green "Closed" Lock indicates Gate is closed and locked.
Red "Open" Lock	Red "Open" Lock indicates Gate is open and unlocked
Green Arrow	Indicate Conveyor zone is active.
Teal Rounded Rectangle	Indicate basket presence on conveyor zone.
Side A/Side B	Text alternates to indicate Side A or Side B on interchange is present at Welding Robot.

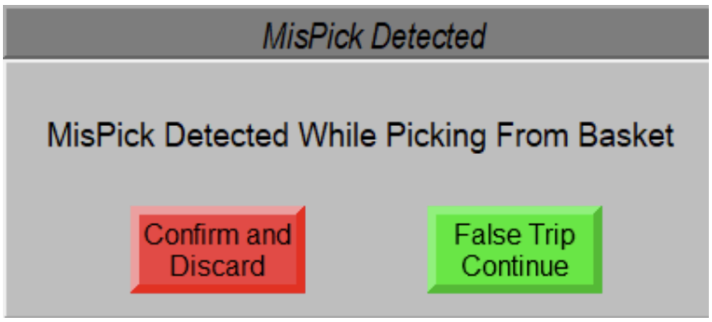
End of Run	Push Button to shut down cycle after finishing current processes.
Machine Reset	Push Button displays the pop up below, featuring machine reset buttons for the Pin Robot, Plate Robot, Weld Robot and Interchange. Activating a machine reset returns the robot to its default state: it stops current operations, clears errors, reinitializes systems and moves to home position. Hold for three seconds to activate.

- When the *Interchange Machine Reset* button is pressed, a *Confirm Part Removed* Button will appear below. Operator must confirm that parts have been removed from Side A and/or Side B to properly reset the Interchange.



Small Magnet Teach Sense Push Button to recalibrate or fine-tune the sensitivity of the magnet sensors on the Pin Robot. These sensors are used for detecting, aligning and ensuring proper positioning of pin picking and placement.

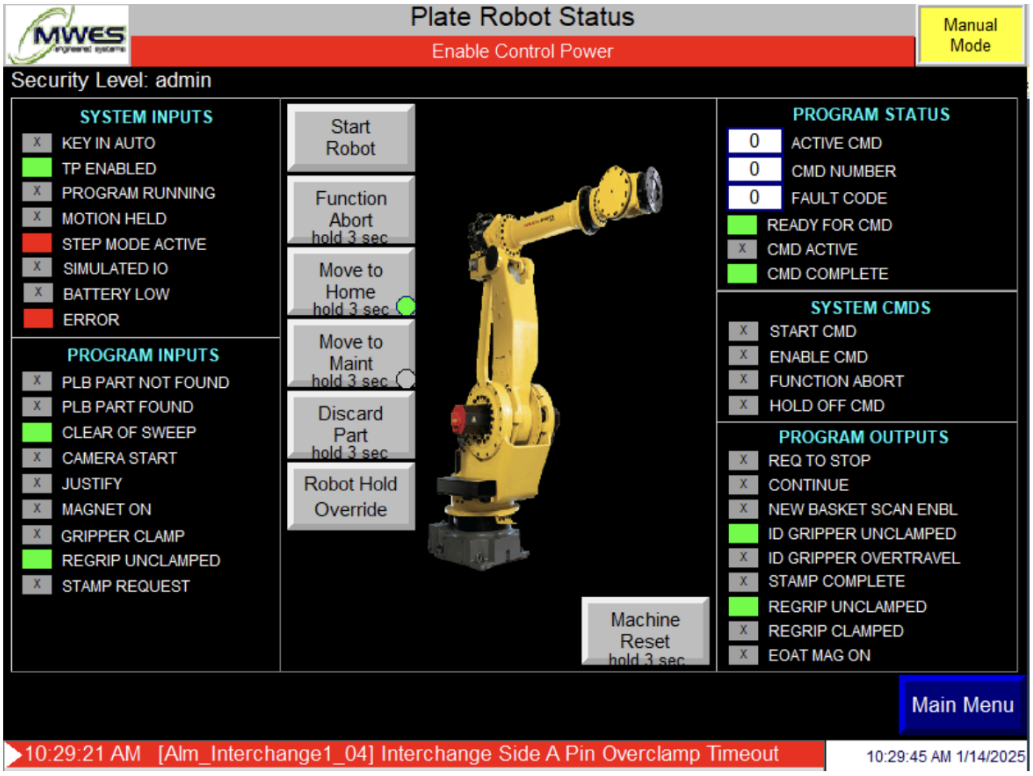
During the Automatic Cycle, if the magnet sensitivity on the Pin Robot affects the ability to pick a pin from the pin infeed basket, a trigger will display the pop-up below:



Confirm and Discard	Push Button indicates MisPick is true and to discard pin
False Trip – Continue	Push Button indicates MisPick is false and to continue with pin

1.5.Plate Robot Status Screen

The *Plate Robot Status Screen* is shown below, and appears when the *Plate Robot Status* button is pressed. This screen provides a comprehensive overview of the Plate Robot system in key sections, such as System Inputs, Program Inputs, Program Outputs, Program Status and System Commands. Rectangular corresponding indicators for Inputs/Outputs will be grey if inactive, green if active, and red if active and urgent.



Screen Definitions:

Start Robot Push Button to start robot and initialize pre-programmed sequence. *Password protected for Maintenance or Administration personnel only.*

Function Abort Push Button to immediately stop or interrupt the current operation or program the robot is executing. Hold for three seconds to activate. *Password protected for Maintenance or Administration personnel only.*

Move to Home Push Button to move the robot to its home position. The circle indicator in lower right will turn green if the robot is in its Home position. Hold for three seconds to activate. *Password protected for Maintenance or Administration personnel only.*

Move to Maintenance Push Button to move robot to its maintenance position. The circle indicator in lower right will turn green if the robot is in its Maintenance position. Hold for three seconds to activate. *Password protected for Maintenance or Administration personnel only.*

Discard Part Push Button instructs robot to place current plate in discard basket if it is no longer needed or has been identified as defective. Hold for three seconds to activate. *Password protected for Maintenance or Administration personnel only.*

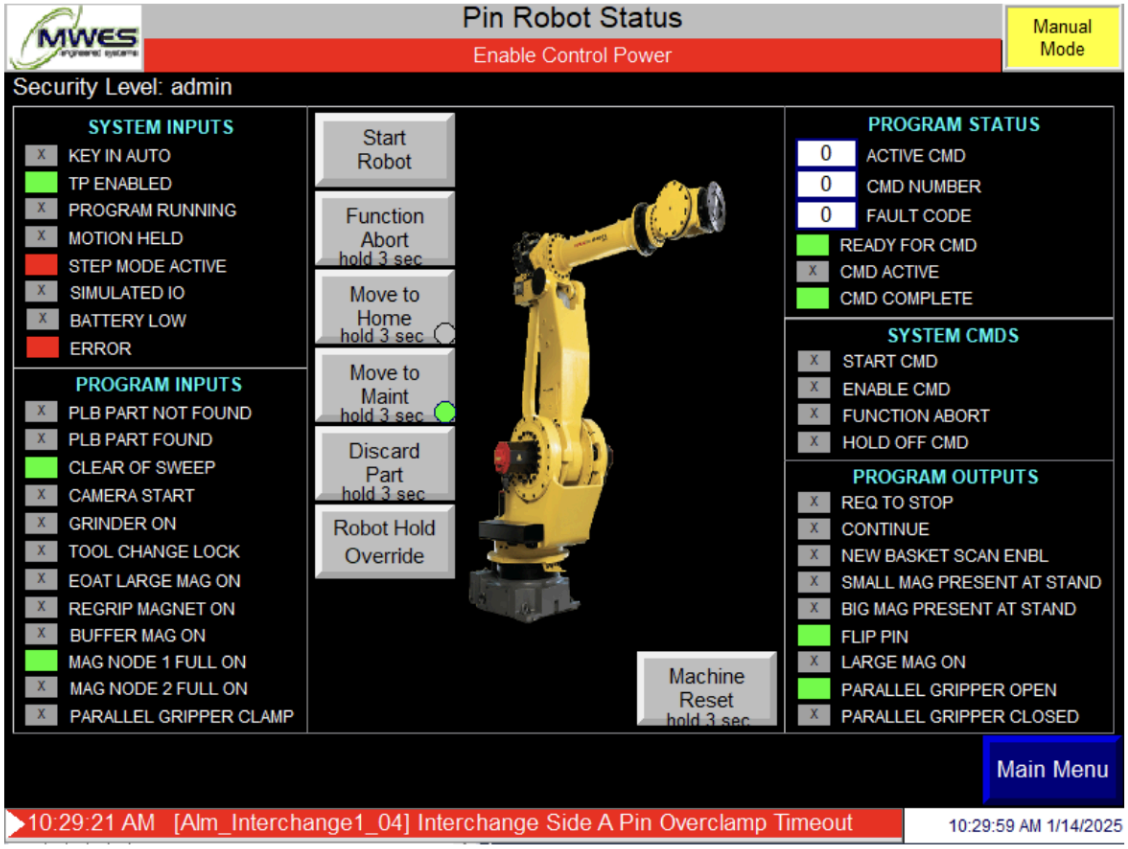
Robot Hold Override Push Button to manually pause or hold the robot's current operation. When pressed, the robot will stop its current task and remain in that state until the

button is released or another command is given. Hold for three seconds to activate. *Password protected for Maintenance or Administration personnel only.*

Machine Reset Push Button to return robot to its default state. Stops current operations, clears errors, reinitializes systems and returns to home position. Hold for three seconds to activate.

1.6.Pin Robot Status Screen

The *Pin Robot Status Screen* is shown below, and appears when the *Pin Robot Status* button is pressed. This screen provides a comprehensive overview of the Pin Robot system in key sections, such as System Inputs, Program Inputs, Program Outputs, Program Status and System Commands. Rectangular corresponding indicators for Inputs/Outputs will be grey if inactive, green if active, and red if active and urgent.



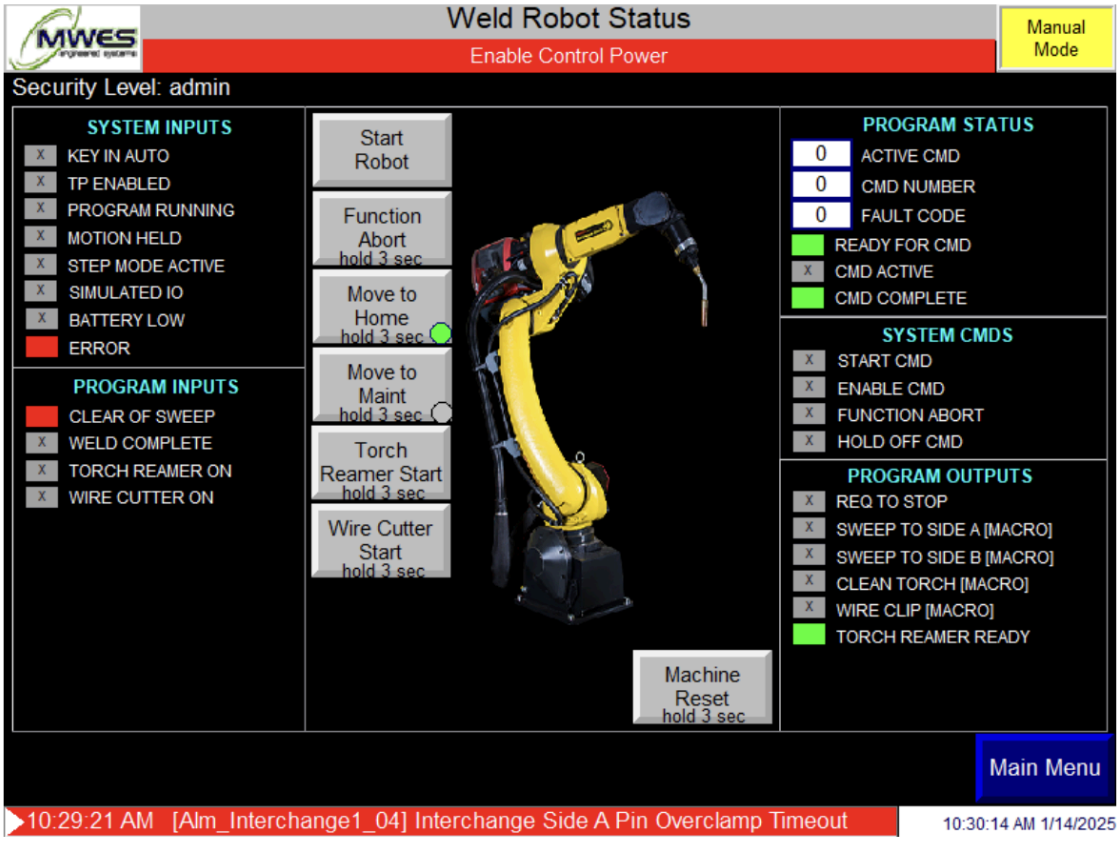
Screen Definitions:

Start Robot Push Button to start robot and initialize pre-programmed sequence. *Password protected for Maintenance or Administration personnel only.*

Function Abort	Push Button to immediately stop or interrupt the current operation or program the robot is executing. Hold for three seconds to activate. *Password protected for Maintenance or Administration personnel only.*
Move to Home	Push Button to move robot to its home position. The circle indicator in lower right will turn green if the robot is in its Home position. Hold for three seconds to activate. *Password protected for Maintenance or Administration personnel only.*
Move to Maintenance	Push Button to move robot to its maintenance position. The circle indicator in lower right will turn green if the robot is in its Maintenance position. Hold for three seconds to activate. *Password protected for Maintenance or Administration personnel only.*
Discard Part	Push Button instructs robot to place current pin in discard basket. Hold for three seconds to activate. *Password protected for Maintenance or Administration personnel only.*
Robot Hold Override	Push Button to manually pause or hold the robot's current operation. When pressed, the robot will stop its current task and remain in that state until the button is released or another command is given. Hold for three seconds to activate. *Password protected for Maintenance or Administration personnel only.*
Machine Reset	Push Button to return robot to its default state. Stops current operations, clears errors, reinitializes systems and returns to home position. Hold for three seconds to activate.

1.7.Weld Robot Status Screen

The *Weld Robot Status Screen* is shown below, and appears when the *Weld Robot Status* button is pressed. This screen provides a comprehensive overview of the Weld Robot system in key sections, such as System Inputs, Program Inputs, Program Outputs, Program Status and System Commands. Rectangular corresponding indicators for Inputs/Outputs will be grey if inactive, green if active, and red if active and urgent.



Screen Definitions:

Start Robot	Push Button to start robot and initialize pre-programmed sequence. *Password protected for Maintenance or Administration personnel only.*
Function Abort	Push Button to immediately stop or interrupt the current operation or program the robot is executing. Hold for three seconds to activate. *Password protected for Maintenance or Administration personnel only.*
Move to Home	Push Button to move robot to its home position. The circle indicator in lower right will turn green if the robot is in its Home position. Hold for three seconds to activate. *Password protected for Maintenance or Administration personnel only.*
Move to Maintenance	Push Button to move robot to its maintenance position. The circle indicator in lower right will turn green if the robot is in its Maintenance position. Hold for three seconds to activate. *Password protected for Maintenance or Administration personnel only*
Torch Reamer Start	Push Button to activate torch reamer. Press to clean welding torch tips to ensure optimal performance and prevent blockages. Hold for three seconds to activate. *Password protected for Maintenance or Administration personnel only.*

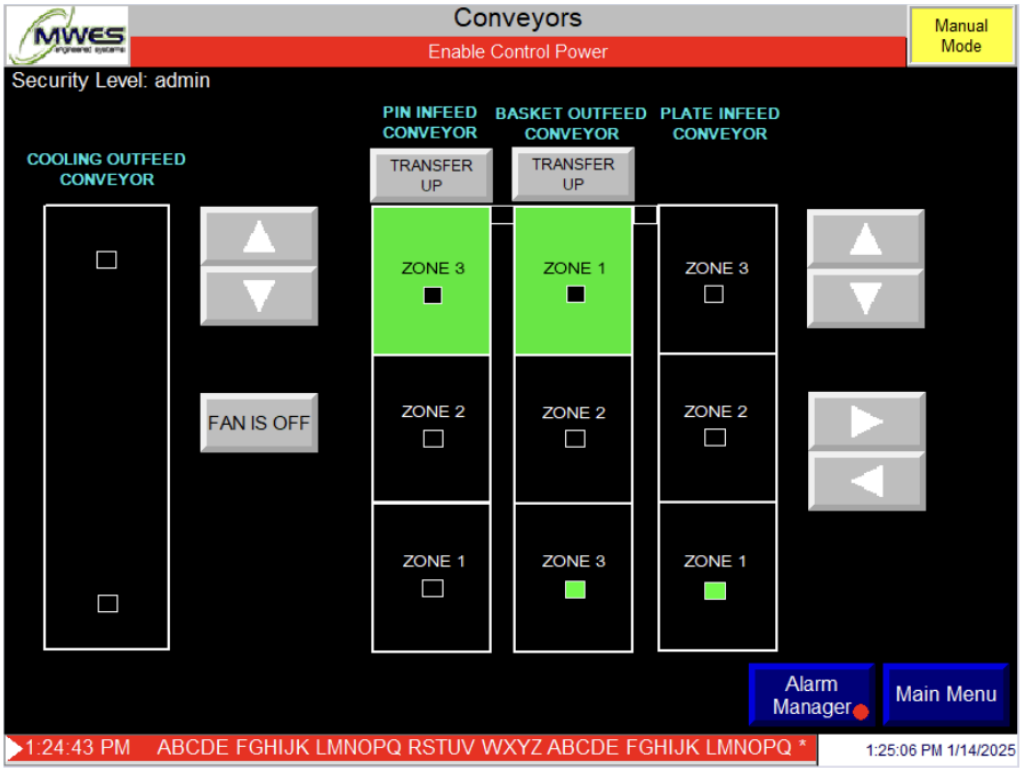
Wire Cutter Start	Push button to activate the wire cutter, which then performs the cutting process. Hold for three seconds to activate. *Password protected for Maintenance or Administration personnel only.*
Machine Reset	Push Button to return robot to its default state. Stops current operations, clears errors, reinitializes systems and returns to home position. Hold for three seconds to activate.

1.8.Conveyors Screen

The *Conveyors Screen* is shown below, and appears when the *Conveyors* button is pressed. This screen represents the conveyors and push buttons to manually start/stop conveyor belts, transfer belts or cooling fan.

The conveyor zones near the top of the screen, represent the conveyors towards the machine handling side, and the conveyors zones near the bottom of the page, represent the conveyors towards the operator handling side.

Operators with Maintenance or Administrative security level have access to this screen.



Screen Definitions:

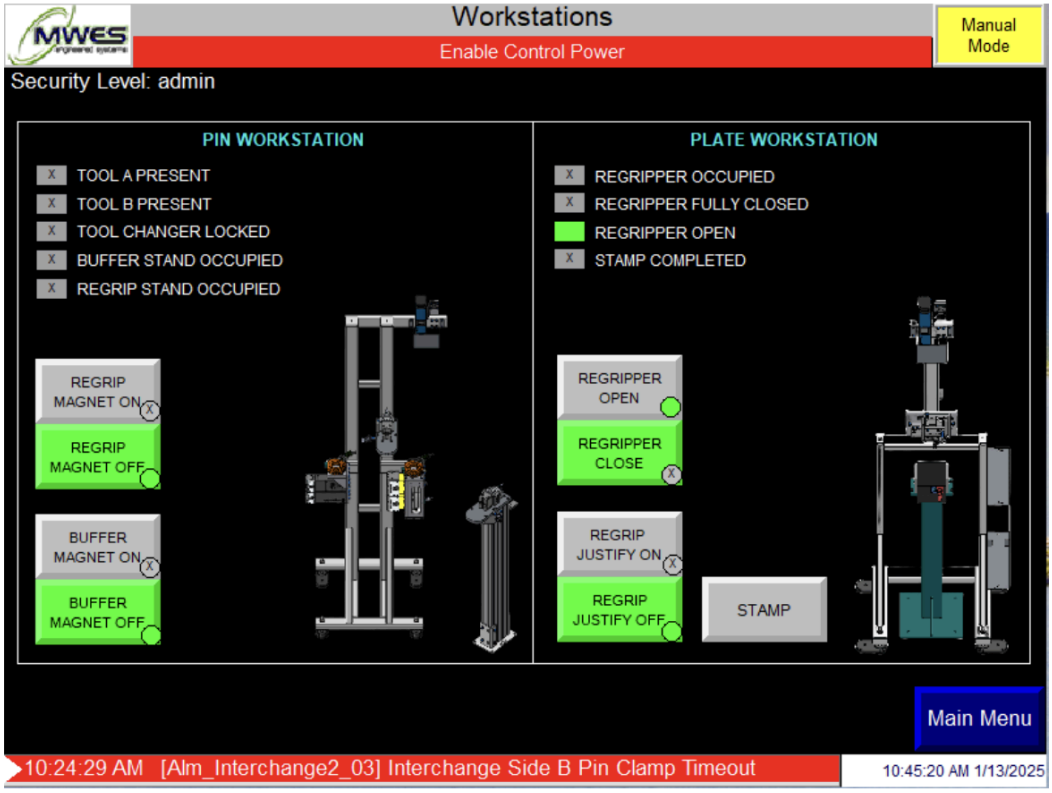
Cooling Outfeed Conveyor	Rectangular object represents the Cooling Outfeed Conveyor. The two squares inside represent part presence: they are filled black when no part is detected, and filled green when a part is detected in that zone.
Cooling Conveyor Arrow Buttons	Push Buttons to activate Cooling Outfeed Conveyor belt forwards or backwards. *Located to the right of the Cooling Conveyor.*
Pin/Basket/Plate Conveyors	Rectangular objects represent Pin Infeed Conveyor, Basket Outfeed Conveyor, and Plate Infeed Conveyor. Each Conveyor contains three zones, with squares in the center to indicate basket presence. Squares are black if conveyor zone is empty, and green if occupied. To enable conveyor zone to move, Operator must press on specified zone. Zones that are pressed will turn green and move in the direction dependent on the *Up* or *Down Arrow* Button pressed. Black zones will not move.
Pin/Basket/Plate Up and Down Arrow	Push Buttons to move green, enabled conveyor zone belts forward or backward.

Transfer Up	Push Button to raise Transfer Belt on corresponding conveyor zone. To enable button, you must press ***Pin Infeed Conveyor* Zone 3, *Basket Outfeed Conveyor* Zone 1 or *Plate Infeed Conveyor* Zone 3.** Pressing any of those zones will turn it green and enable their *Transfer Up Push Button*, and the *Right* and *Left Arrow* Push Buttons.
Transfer Right and Left Arrow	Push Buttons to move green, enabled Transfer Conveyor Belt right or left.

1.9.Workstations Screen

The *Workstation Screen* is shown below, and appears when the *Workstations* button is pressed. This screen represents the Pin Workstation and Plate Workstation and provides the operator the status of Workstations sensors and individual control of machine.

Operators with Maintenance or Administrative security level have access to this screen.



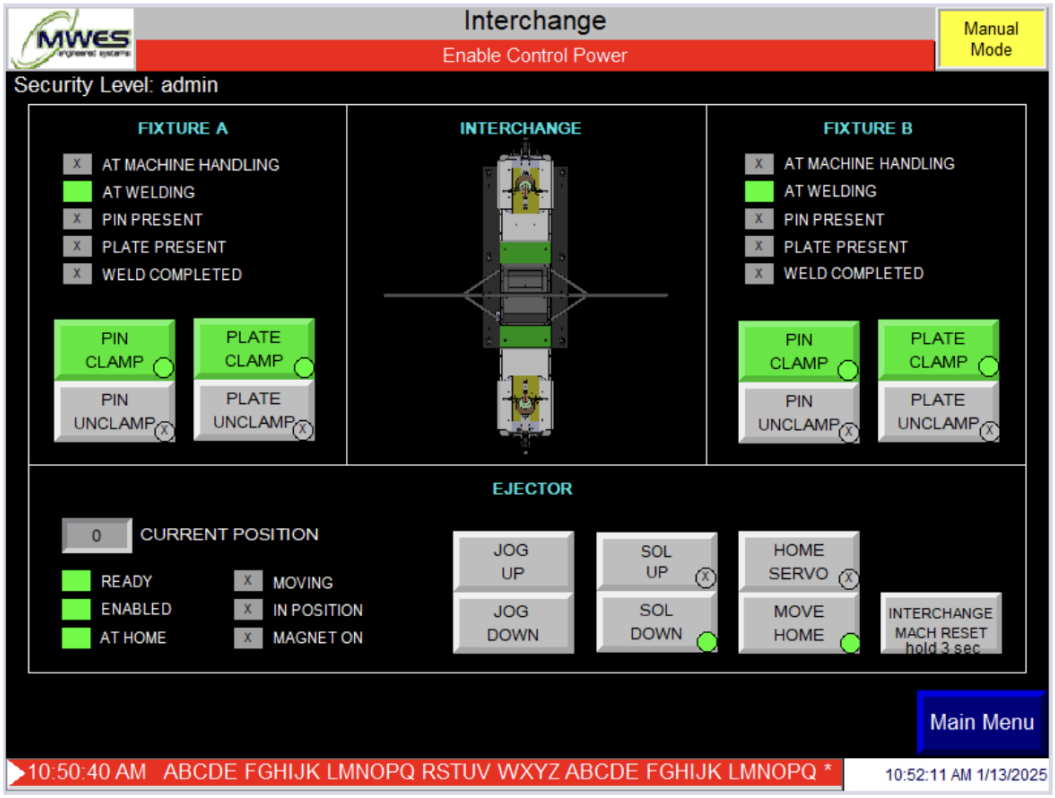
Screen Definitions:

Regrip Magnet On/Off	Push Buttons to turn Pin Workstations Regrip Magnet on or off. *Indicator in bottom right of button updates the Magnets current status.*
Buffer Magnet On/Off	Push Buttons to turn Pin Workstation Buffer Magnet on or off. *Indicator in bottom right of button updates the Magnets current status.*
Regripper Open/Close	Push Buttons to open or close Plate Stations Regripper. *Indicator in bottom right of button updates the Regrippers current status.*
Regrip Justify On/Off	Push Buttons to turn Plate Stations Regrip Justify On/Off. *Indicator in bottom right of button updates the Regrips Justify current status.*
Stamp	Push Button to start plate stamper. Will begin stamping predetermined stamp for plate.

1.10.Interchange Screen

The Interchange *Screen* is shown below, and appears when the *Interchange* button is pressed. This screen represents the Interchange and provides the operator to control individual operations and see the status of the Interchange sensors.

Operators with Maintenance or Administrative security level have access to this screen.



Screen Definitions:

Fixture A

Pin Clamp/Unclamp Push Buttons to Clamp/Unclamp Fixture A's pin.

Plate Clamp/Unclamp Push Buttons to Clamp/Unclamp Fixture A's plate.

Fixture B

Pin Clamp/Unclamp Push Buttons to Clamp/Unclamp Fixture B's pin.

Plate Clamp/Unclamp Push Buttons to Clamp/Unclamp Fixture B's pin.

Ejector

Jog Up/Down Push Buttons to Jog Part Ejector Servo up or down.

Sol Up/Down Push Buttons to move Part Ejector Servo to complete up or down position.

Home Servo Push Button to update Part Ejector Servo's Home position to the position it is currently at.

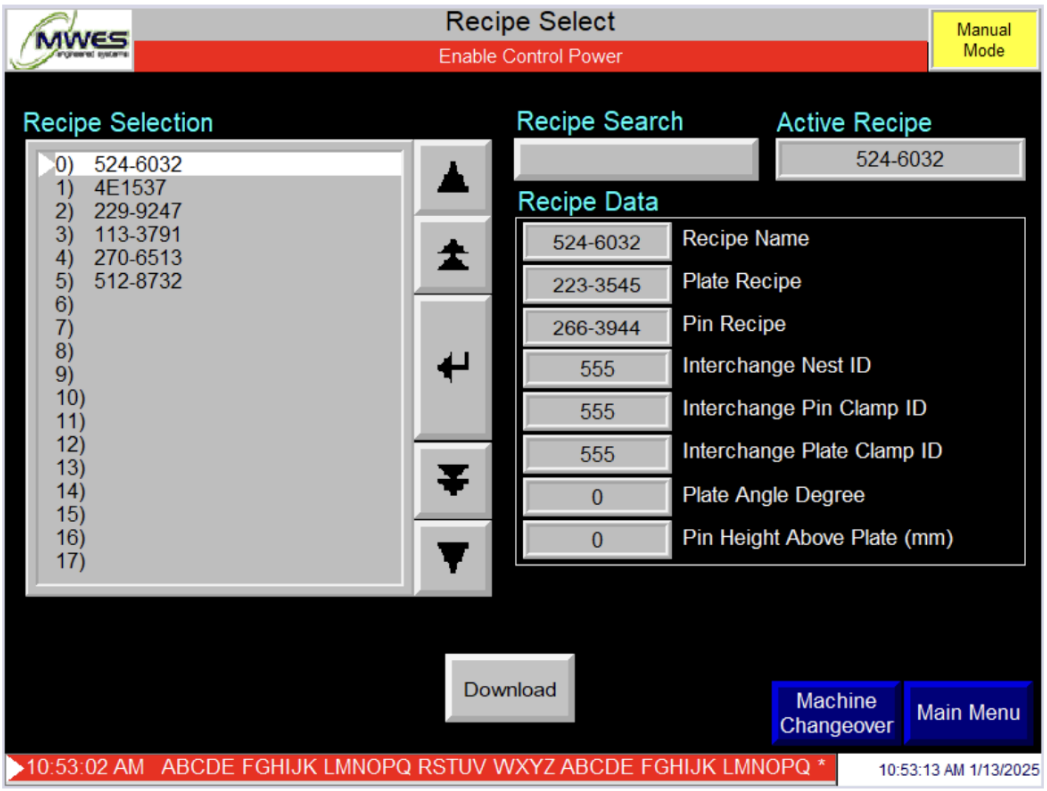
Move Home Push Button to move Part Ejector Servo to its Home position.

1.11.Recipe Select Screen

The *Recipe Selection Screen* is shown below. The *Recipe Selection Screen* appears when the *Recipe Select* button is pressed. The Recipe Screen is divided into two areas: Recipe Selection and Recipe Data.

Recipe Select area allows the operator to select the recipe to be loaded. The operator can either search for the desired recipe by typing it in *Recipe Search* or the operator can choose the recipe via the recipe list box.

Recipe Data section allows the operator to view the selected/active recipe's data.



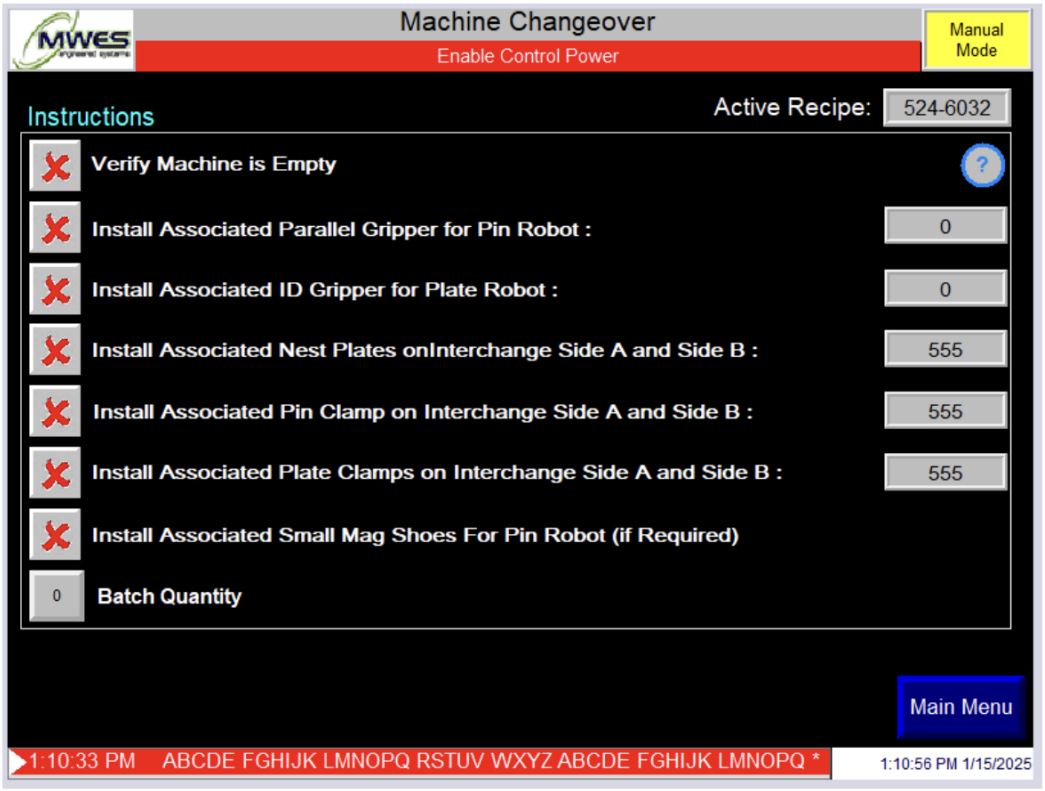
Screen Definitions:

Download Push Button to download selected recipe as the new active recipe. Will display *Machine Changeover Screen* to confirm cell is empty and prepared for the new recipe.

Machine Changeover Push Button to display *Machine Changeover Screen*.

1.12.Machine Changeover Screen

The *Machine Changeover Screen* is shown below. The *Machine Changeover Screen* appears when the *Download Button* or *Machine Changeover Button* is pressed. To begin a new recipe, all boxes on the *Machine Changeover Screen* must be marked with a green checkmark, and the batch quantity must be set. This ensures the machine is empty and the proper tool-handling parts are installed to prepare for the new recipe. The associated tool-handling names for the selected recipe are displayed in grey boxes to the right.

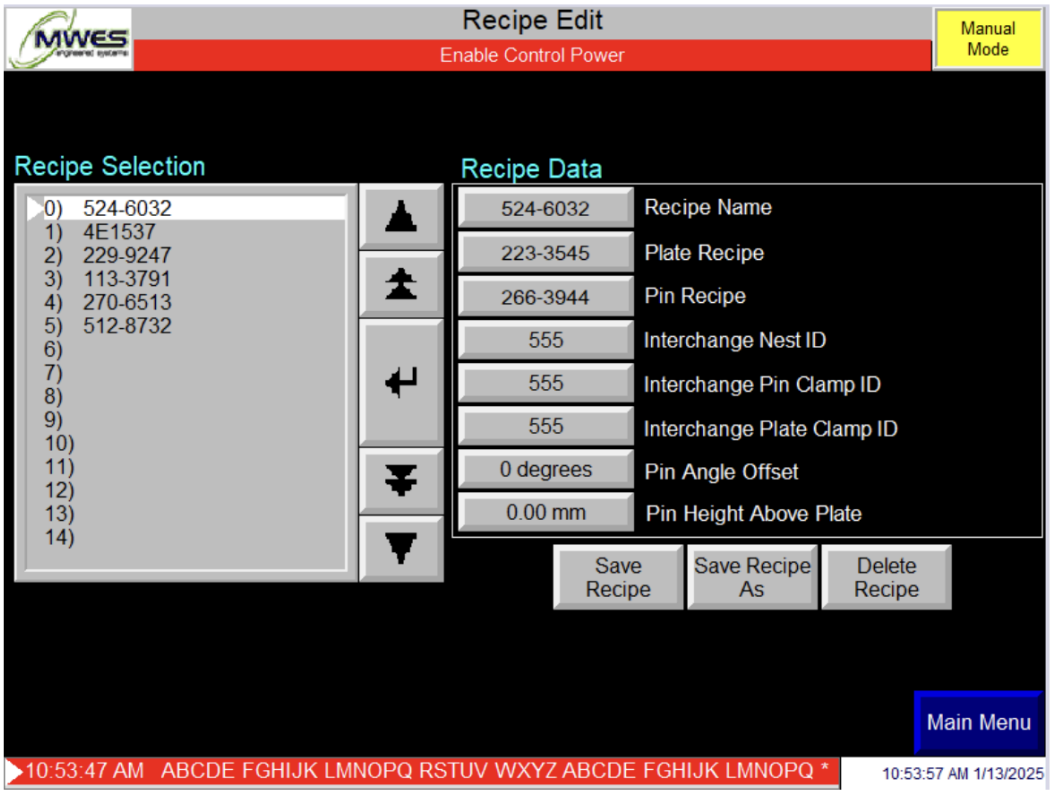


1.13.Recipe Edit Screen

The *Recipe Edit Screen* is shown below. The *Recipe Edit Screen* appears when the *Recipe Edit* button is pressed. The Recipe Edit Screen is divided into two main areas: Recipe Selection and Recipe Data.

- Recipe Selection area allows the operator to select the recipe to be loaded.
- Recipe Data area allows the operator to view and edit the selected / active Recipe's data, Save a new Recipe or delete a Recipe.

Operators with Maintenance or Administrative security level have access to this screen.

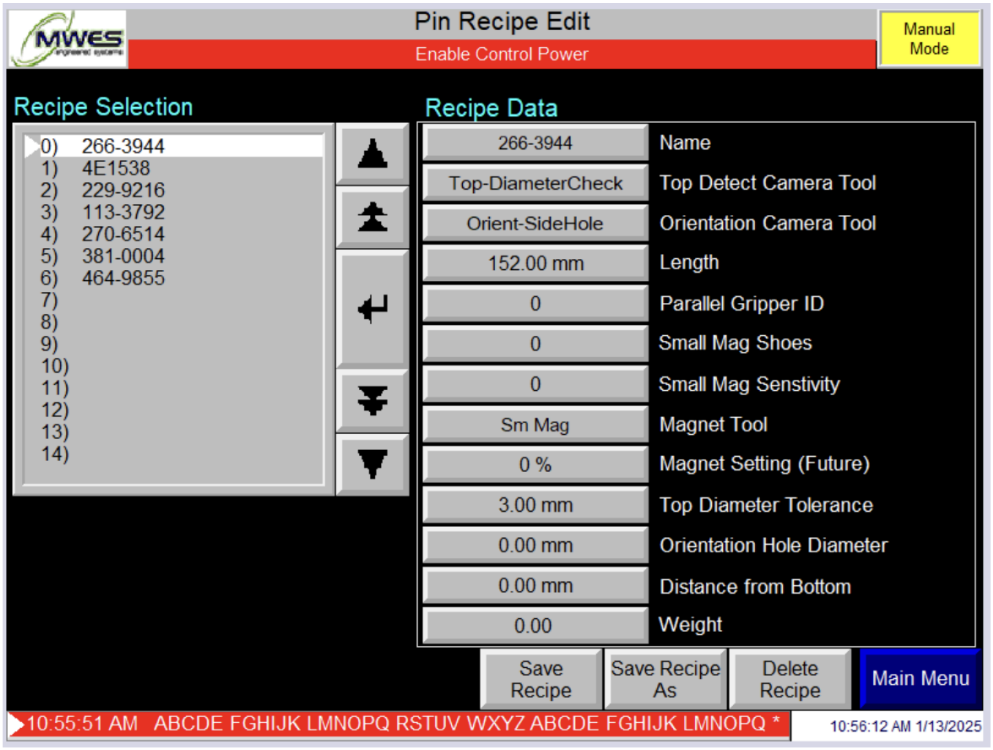


1.14.Plate Recipe Edit Screen

The *Plate Recipe Edit Screen* is shown below. The *Plate Recipe Edit Screen* appears when the *Plate Recipe Edit* button is pressed. The Screen is divided into two main areas: Plate Recipe Selection and Plate Recipe Data.

- Recipe Selection area allows the operator to select the plate recipe to be loaded.
- Recipe Data area allows the operator to view and edit the selected / active Plate Recipe's data, save a new Plate Recipe or delete a Plate Recipe.

Operators with Maintenance or Administrative security level have access to this screen.

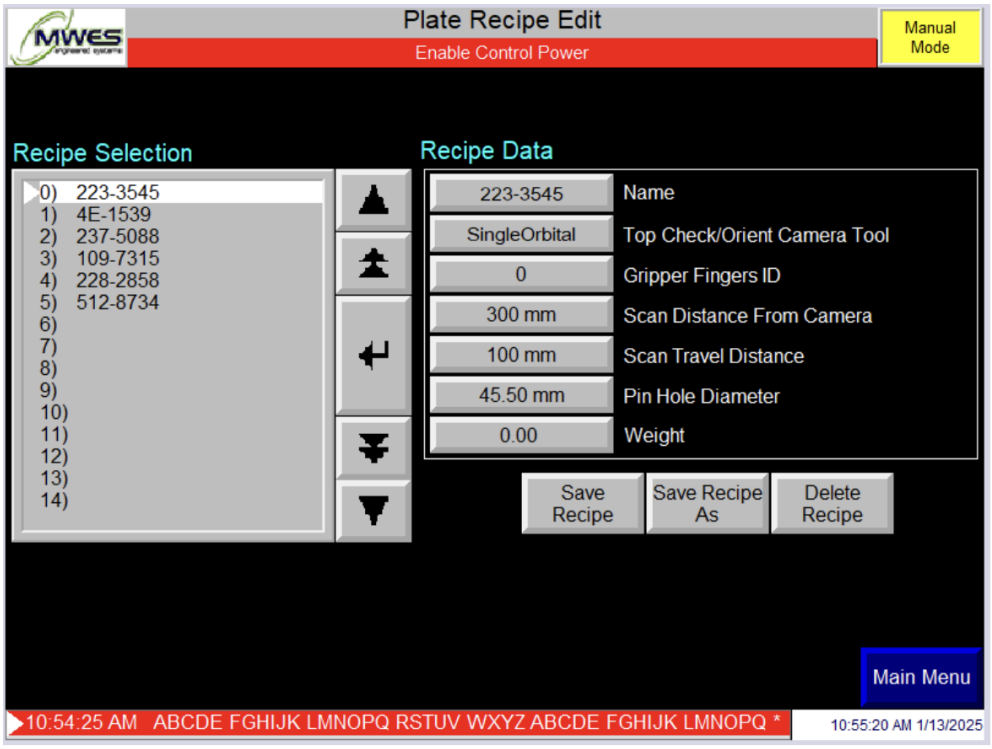


1.16.Camera Programs Screen

The *Camera Programs Screen* is shown below. The *Camera Programs Screen* appears when the *Camera Programs Screen* button is pressed. This screen has two selection options: Pin Camera Selection and Plate Camera Selection.

- *Edit Program Name* allows the operator to edit a Camera Program name or create a new one.

Operators with Maintenance or Administrative security level have access to this screen.

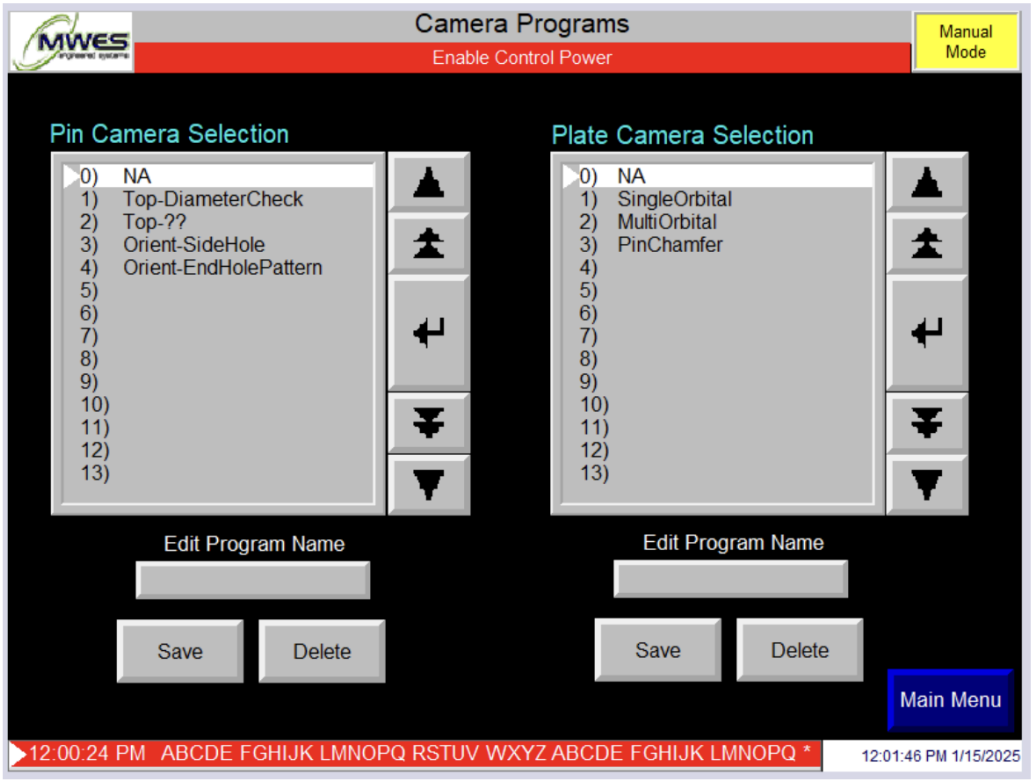


1.15.Pin Recipe Edit Screen

The *Pin Recipe Edit Screen* is shown below. The *Pin Recipe Edit Screen* appears when the *Pin Recipe Edit* button is pressed. The Screen is divided into two main areas: Pin Recipe Selection and Pin Recipe Data.

- Recipe Selection area allows the operator to select the pin recipe to be loaded.
- Recipe Data area allows the operator to view and edit the selected / active Pin Recipe's data, Save a new Pin Recipe or delete a Pin Recipe.

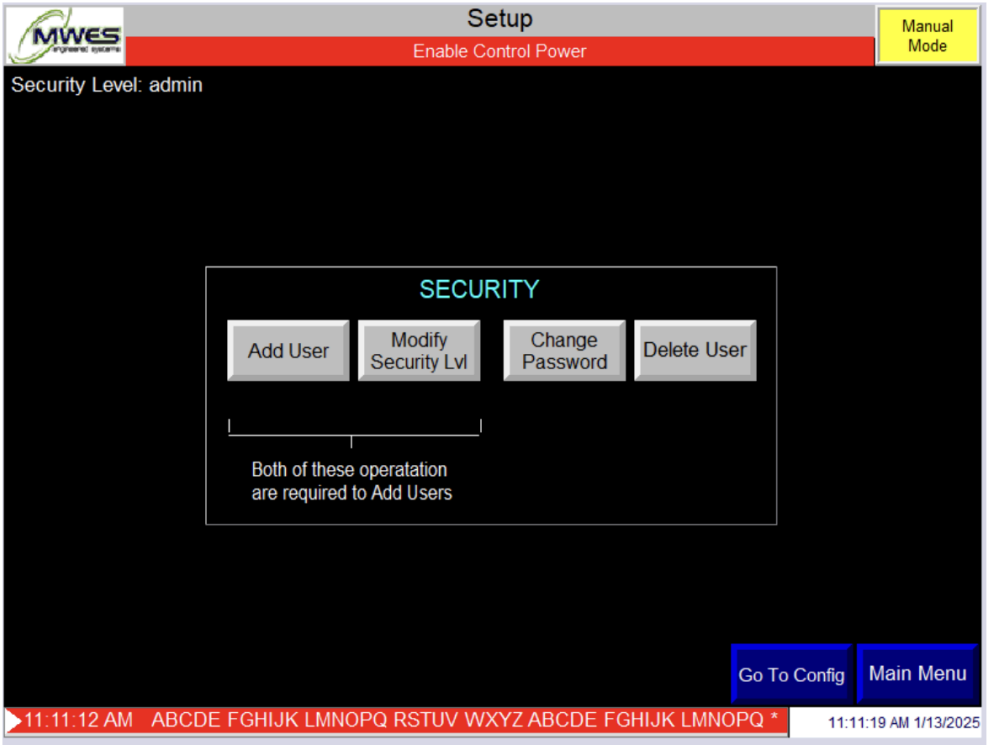
Operators with Maintenance or Administrative security level have access to this screen.



1.17.Setup Screen

The *Setup Screen* is shown below. The *Setup Screen* appears when the *Setup* button is pressed. This screen allows modification of users, and the ability to add or delete a user.

Operators with Maintenance or Administrative security level have access to this screen.

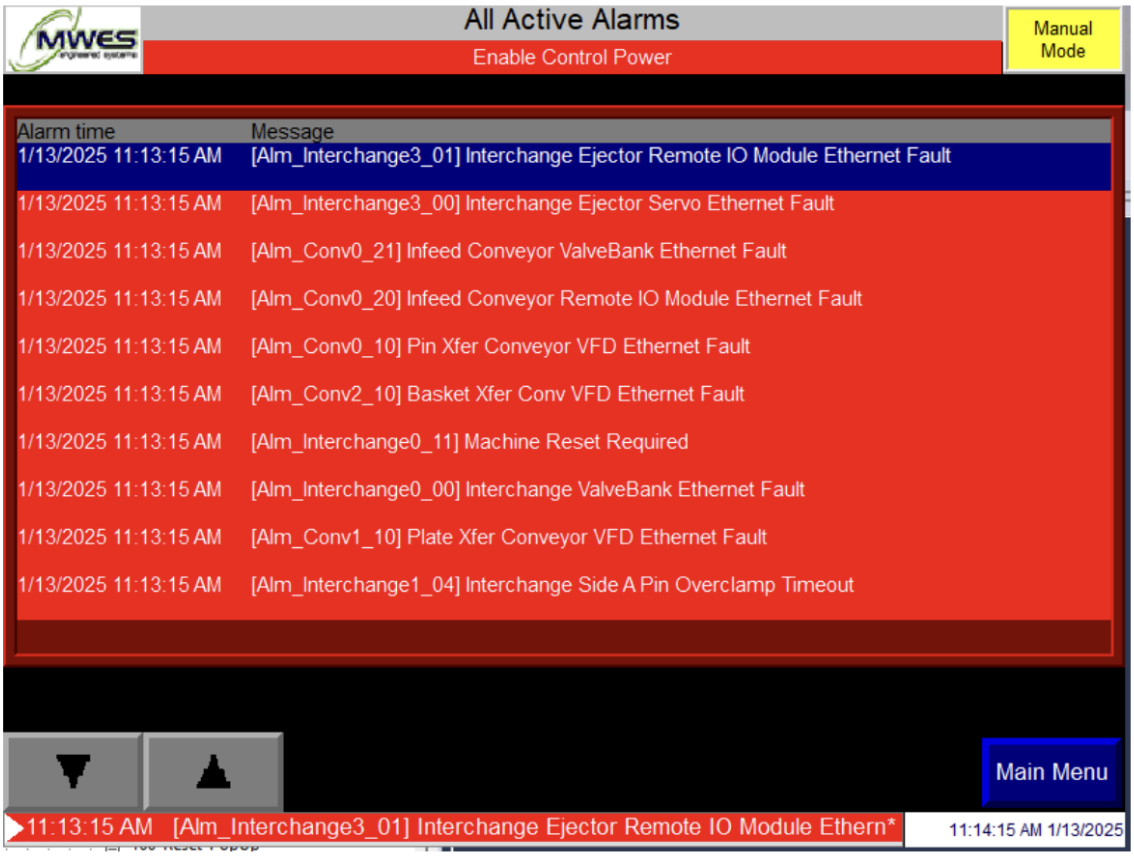


Screen Definitions:

Go To Config	Push Button to shut down the PanelView display and put it in configuration mode.

1.18.Alarm Manager Screen

The *Alarm Manager Screen*, shown below, appears when the *Alarm Manager* button is pressed. Active alarms are displayed and can be reset by pressing the Fault Reset button on the operator console.



1.19.Alarm History Screen

The *Alarm History Screen*, shown below, appears when the *Alarm History* button is pressed. This screen provides the operator with an alarm history. Use scroll buttons to scroll up and down the alarm list.


Alarm History
Enable Control Power
Manual Mode
Alarm time
Message
1/14/2025 2:52:41 PM [Alm_RobWeld2_12] Weld Robot Key Not In Auto - Place in Auto
1/14/2025 2:52:41 PM [Alm_RobWeld2_00] Weld Robot Ethernet Fault
1/14/2025 2:52:41 PM [Alm_RobPlate2_12] Plate Robot Key Not In Auto. Place in Auto
1/14/2025 2:52:41 PM [Alm_RobPlate2_11] Plate Robot TP Enabled. Disable Teach Pendant
1/14/2025 2:52:41 PM [Alm_RobPlate2_04] Plate Robot Step Mode Active
1/14/2025 2:52:41 PM [Alm_RobPlate2_00] Plate Robot Ethernet Fault
1/14/2025 2:52:41 PM [Alm_RobPin2_12] Pin Robot Key Not In Auto - Place in Auto
1/14/2025 2:52:41 PM [Alm_RobPin2_11] Pin Robot TP Enabled - Disable Teach Pendant
1/14/2025 2:52:41 PM [Alm_RobPin2_04] Pin Robot Step Mode Active
1/14/2025 2:52:41 PM [Alm_RobPin2_00] Pin Robot Ethernet Fault
Main Menu
2:52:41 PM [Alm_RobWeld2_12] Weld Robot Key Not In Auto - Place in Auto
2:53:44 PM 1/14/2025