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How to Install a New Sensor Module

1. Power **OFF** the MCP-8I Control Unit, and wait for a few minutes for all of the circuits to properly discharge.
2. **Remove** the 'MCP-8I's Display Cover' by unscrewing the 4 retaining screws holding it in place to the control's base assembly.



Figure 1: MCP8I Overlay Screw Locations

3. **Insert** the 'Sensor Module' into the next available empty slot.

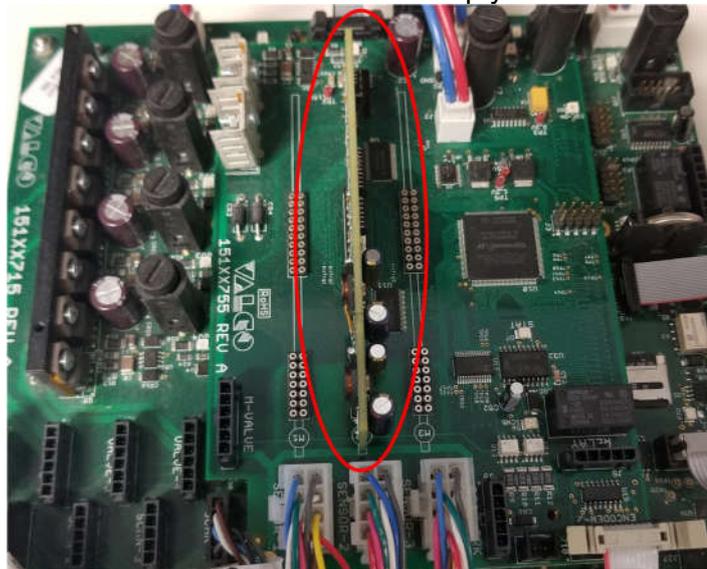


Figure 2: Inserted Sensor Module

4. **Replace** the 'MCP-8I's Display Cover' using the attached 4 retaining screws.

Note1 – It is advised that the person installing the **Sensor Module**, use a electronic grounding strap to eliminate possible electronic damage due to static discharge.

Note2 – It is not advised to remove a **Sensor Module** and replace it with another in the same slot.

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How to Update the MCP-8I's Software Via USB

It is **ALWAYS** advised to perform a '**System Settings Backup**' before applying any update in case there are issues and the current control settings are lost.

1. Perform a '**System Settings Backup**'. Check [here](#) for instructions.
2. After performing a '**System Settings Backup**', power **OFF** the control.
3. Insert the USB Stick with the Software Update into the Control's USB Port.
4. Power **ON** the control and wait a few minutes for the update process to complete.
Note – *The control's screen display will turn on after the update is completed.*
5. The USB Stick can be removed from the control after the update process is complete.
Note – *If the control is not behaving properly after the update, a '**System Settings Restore**' should be performed to ensure the correct settings are being used. Check [here](#) for instructions.*

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How to Perform a System Settings Back-Up

1. Navigate to the 'Archive Window' by pressing the button labeled 'ARCHIVE' on the main function bar located at the bottom of the screen.

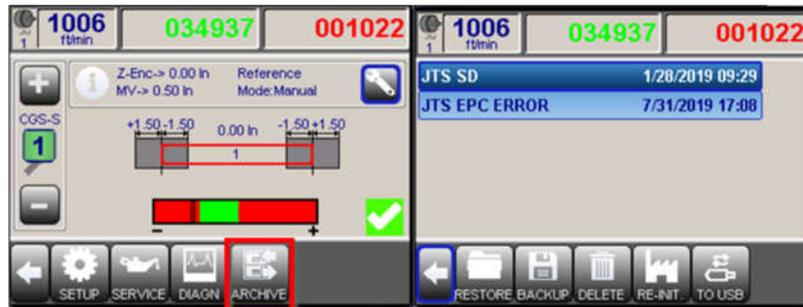


Figure 3: Navigate to Archive Window

2. Press the button labeled 'BACKUP'.



Figure 4: Select "Backup" Key

3. A keyboard will appear for the user to enter the name that the settings file will be named. Typically, members of Technical Service and Engineering name them using their initials as part of the name to identify who performed the backup. After the desired file name is entered, press the button labeled 'BACKUP' to complete.

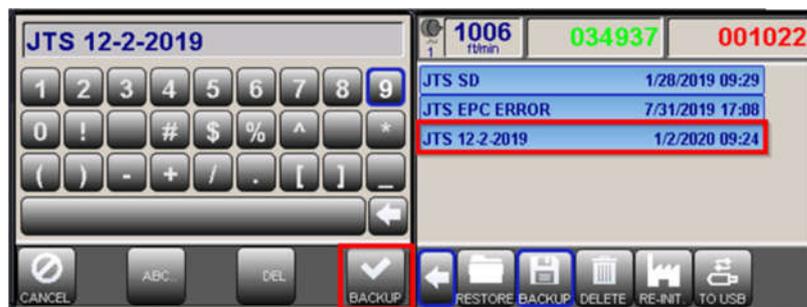


Figure 5: Insert Backup Name & Save

Note – When a USB Stick is in the MCP-8I's USB Port, the desired directory should be selected **before performing the backup**. If the last button on the tool bar is labeled 'TO USB' the controls internal SD Card Directory is currently selected, and backups will be saved to the SD Card. If the last button on the tool bar is labeled 'TO SD' the USB Sticks Directory is currently selected, and backups will be saved to the USB Stick.

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How to Perform a System Settings Restore

1. Navigate to the 'Archive Window' by pressing the button labeled 'ARCHIVE' on the main function bar located at the bottom of the screen. Select the settings backup file that you wish to restore and then press the button labeled 'RESTORE'.

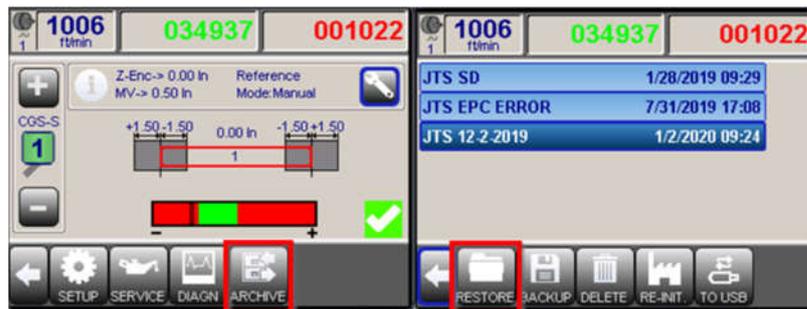


Figure 6: Archive Window Restore

2. Confirm the 'Settings Restore' by pressing the button labeled 'Yes'.
Note – All current data on the control will be **lost and overwritten** and it can not be recovered afterwards. Before performing a **system restore**, it would be safer to perform a backup first.



Figure 7: Settings Restore Overwrite Warning

Note – When a USB Stick is in the MCP-8I's USB Port, the desired directory should be selected **before continuing**. If the last button on the tool bar is labeled 'TO USB' the controls internal SD Card Directory is currently selected, and saved backups are loaded from there. If the last button on the tool bar is labeled 'TO SD' the USB Sticks Directory is currently selected, and saved backups are loaded from there.

Jam Window Details Explained

Understanding Jam Window Graphics

Window Display Conditions

The Jam Window will look different based on the following conditions:

- Glue Station Type



Figure 8: Glue Station Setup Menu

- Sensor Modules Installed
- Using the Inspection Sync Scanner OR External Inspection Learn Input

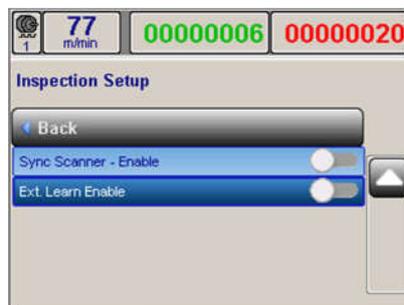


Figure 9: Inspection System Settings
(Sync & External Learn Enable)

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Window Display Graphics

- **Global Jam Setting Input Box** – is used to set the Jam Distance for all Jam Channels at the same time. **Note** – Each Channel still has to be Enabled and Disabled. Once the Desired Channels are Enabled, the Global Jam Setting will be transferred.

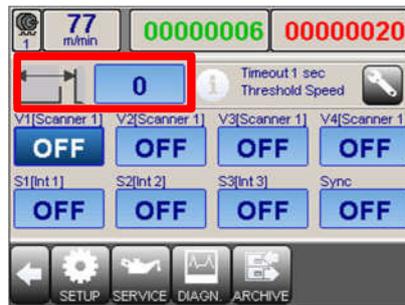


Figure 10: Jam Global Setting Input Box

- **Jam Option Text Descriptions**
 - Valve Channel Jam
 - 'V' – Indicates Valve Channel
 - 1 – Indicates the Valve Index
 - 'Scanner 1' – Indicates the Scanner/Trigger Input Selection.



Figure 11: Valve Jam Prompt

- Sensor Channel Jam
 - 'S' – Indicates Sensor Channel
 - '1' – Indicates the Sensor Index
 - 'Int 1' – Indicates the Scanner/Trigger Input Selection.
Int 1 = Scanner that is connected to Sensor 1 Sensor.



Figure 12: Sensor Jam Prompt

- Sync Scanner Jam



Figure 13: Sync Scanner Jam Prompt

Note – This will only be present when the Sync Scanner is Enabled and the External Learn is Disabled.

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Configuration Examples

- Regular MCP8I (074xx101), 1 Sensor, & Sync Scanner

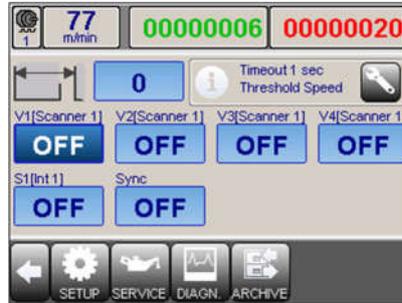


Figure 14: Jam Window Regular MCP8I (074xx101),
1 Sensor, Sync Scanner

- TipSealer MCP8I (JTS0134), 1 Sensor, & External Learn Enabled



Figure 15: Jam Window TipSealer MCP8I (JTS0134),
1 Sensor, & External Learn

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Inspection Details Explained

Understanding Inspection Window Graphics

On the 'Inspection Window' the displayed pattern graphic contains useful relative to the inspection process and analysis.

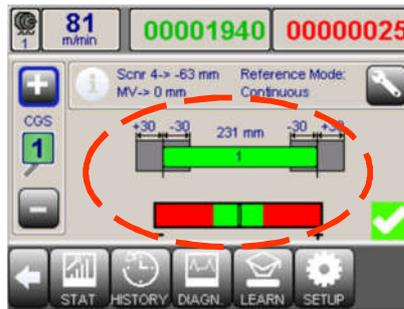


Figure 16: Inspection Window

Measured Pattern Length

The **Measured Pattern Length** is displayed in the center of the Glue Inspection Graphic, above the Glue Pattern Animation.

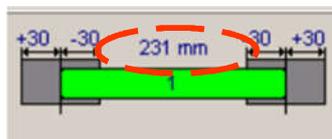


Figure 17: Glue Pattern Graphic (Pattern Length)

Pattern Index

The **Pattern Index** is displayed in the center of the Glue Pattern Animation that is drawn on top of the Glue Inspection Tolerance Graphic.



Figure 18: Glue Pattern Graphic (Pattern Index)

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Early and Late Start Tolerances

The Sensor's **Early and Late Start Tolerances** are displayed on the Top-Lefthand side of the Glue Inspection Tolerance Graphic. The Number displayed on the Lefthand side indicates the current setting of the **Early Start Tolerance**. The Number displayed on the Righthand side indicates the current setting of the **Late Start Tolerance**.

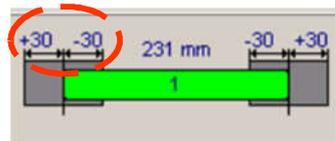


Figure 19: Glue Pattern Graphic (Start Tolerances)

Early and Late End Tolerances

The Sensor's **Early and Late End Tolerances** are displayed on the Top-Righthand side of the Glue Inspection Tolerance Graphic. The Number displayed on the Lefthand side indicates the current setting of the **Early End Tolerance**. The Number displayed on the Righthand side indicates the current setting of the **Late End Tolerance**.

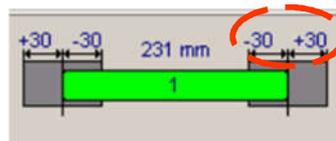


Figure 20: Glue Pattern Graphic (End Tolerances)

Glue Pattern Animation Types

Centered Pattern Animation

There are 4 different scenarios that will cause the Pattern Animation to be Centered between the vertical lines on both of the tolerance boxes to the left and right of the pattern.

- The Glue Animation will be Centered and Green in the following scenarios:
 - After performing a Learn.
 - When the last evaluated product's Glue Start and Glue Length matches the learned positions



Figure 21: Centered Green Glue Pattern Animation

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- The Glue Animation will be Centered, and Transparent with a Red Outline. When the last evaluated product's Glue Pattern was Missing.

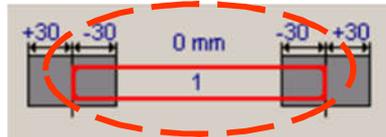


Figure 22: Centered Transparent/Red Pattern Animation

- The Glue Animation will be Centered, and Yellow with a Red Outline. When the product is evaluated and a learn has not been performed.



Figure 23: Centered Yellow/Red Pattern Animation

Started Early Pattern Animation

The Pattern Animation is considered to be **Started Early** when the start of the pattern drawn is to the left of the 'zero point' (the vertical line) of the tolerance box.

When the pattern started early and it is still within the 30mm tolerance, the start of the pattern is drawn within the grey tolerance box and the color of the glue animation is green.

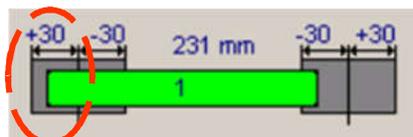


Figure 24: Started Early (in Tolerance) Pattern Animation

When the pattern starts early and it is outside the 30mm tolerance, the start of the pattern is drawn to the left of the grey tolerance box and the color of the glue animation is red.



Figure 25: Started Early (out of Tolerance) Pattern Animation

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Started Late Pattern Animation

The Pattern Animation is considered to be **Started Late** when the start of the pattern drawn is to the right of the 'zero point' (the vertical line) of the tolerance box.

When the pattern starts late and it is still within the 30mm tolerance, the start of the pattern is drawn within the grey tolerance box and the color of the glue animation is green.



Figure 26: Start Late (in Tolerance) Pattern Animation

When the pattern starts late and it is outside the 30mm tolerance, the start of the pattern is drawn to the right of the grey tolerance box and the color of the glue animation is red.

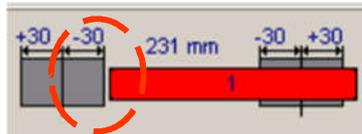


Figure 27: Start Late (out of Tolerance) Pattern Animation

Ended Early Pattern Animation

The Pattern Animation is considered to be **Ended Early** when the end of the pattern drawn is to the left of the 'zero point' (the vertical line) of the tolerance box.

When the pattern ends early and it is still within the 30mm tolerance, the end of the pattern is drawn within the grey tolerance box and the color of the glue animation is green.



Figure 28: End Early (in Tolerance) Pattern Animation

When the pattern ends early and it is outside the 30mm tolerance, the end of the pattern is drawn to the left of the grey tolerance box and the color of the glue animation is red.

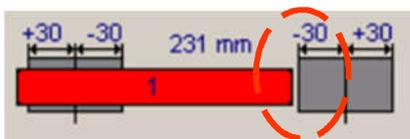


Figure 29: End Early (out of Tolerance) Pattern Animation

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Ended Late Pattern Animation

The Pattern Animation is considered to be **Ended Late** when the end of the pattern drawn is to the right of the 'zero point' (the vertical line) of the tolerance box.

When the pattern ends late and it is still within the 30mm tolerance, the end of the pattern is drawn within the grey tolerance box and the color of the glue animation is green.

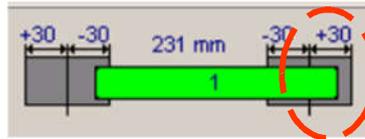


Figure 30: End Late (in Tolerance) Pattern Animation

When the pattern ends late and it is outside the 30mm tolerance, the end of the pattern is drawn to the right of the grey tolerance box and the color of the glue animation is red.



Figure 31: End Late (out of Tolerance) Pattern Animation

Volume Animation



Figure 32: Volume Tolerances Navigation

When 'Volume Inspection' is enabled the 'Volume Bar Graphic' will be displayed at the bottom of the window. The 'Volume Bar' is a graphical representation of the products current measured volume.

As shown in Figure 25, there are 3 different Volume Analysis Results:

- **Low Glue / Under Glued Area Indicator** – is represented on the left side (Section 1) of the volume bar and is colored red. When the black indicator is in this area, the product's glue volume is **outside/below** the Sensor's **Negative Volume Threshold Tolerance**.
- **Good Glue Area Indicator** – is represented in the center (Section 2) of the volume bar and is colored green. When the black indicator is in this area, the product's glue volume is **good/inside** the Sensor's **Positive and Negative Volume Threshold Tolerances**.
- **Excess / Over Glued Area indicator** – is represented on the right side (Section 3) of the volume bar and is colored red. When the black indicator is in this area, the product's glue volume is **outside/over** the Sensor's **Positive Volume Threshold Tolerance**.

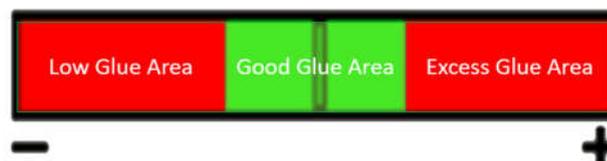


Figure 33: Inspection Window's Volume Animation

A way to interpret 'Volume' is to think of the amount of glue on the product. Since the amount of glue can sometimes fluctuate during production, this is a way to make sure products are being glued consistently.

Note1 – Since the **volume** of the inspection is **relative to the volume of the glue on the learned product**, it is best to **learn after running a few products** because **glue can dry on the valve and could cause the first product to not be glued correctly**.

Note2 – When **receiving numerous volume errors**, first try performing a **new learn to recalibrate the learned volume**. If that does not help, **increasing the Positive and Negative Volume Tolerances can help fix and filter volume error messages**.

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Pattern Tolerance Examples and Explanations

Glue Line Start Early & Late Tolerances



Figure 34: Glue Line Start Tolerances Navigation

The **Glue Line – Early Start** is the maximum allowed distance the pattern is allowed to start early and still be considered **Good and within tolerance**. The **Glue Line – Late Start** is the maximum allowed distance the pattern is allowed to start late and still be considered **Good and within tolerance**. Anything outside of the +/- Tolerance will trigger a failure.

As shown in Figure 27:

- Zone 1 - is the Pattern Start location that will cause a failure because the pattern **Started Early Outside of the Tolerance window**.
- Zone 2 - is the Pattern Start location that will cause a pass because the pattern **Started Early within of the Tolerance window**.
- Zone 3 - is the Pattern Start location that will cause a pass because the pattern **Started Late within of the Tolerance window**.
- Zone 4 - is the Pattern Start location that will cause a failure because the pattern **Started Late Outside of the Tolerance window**.

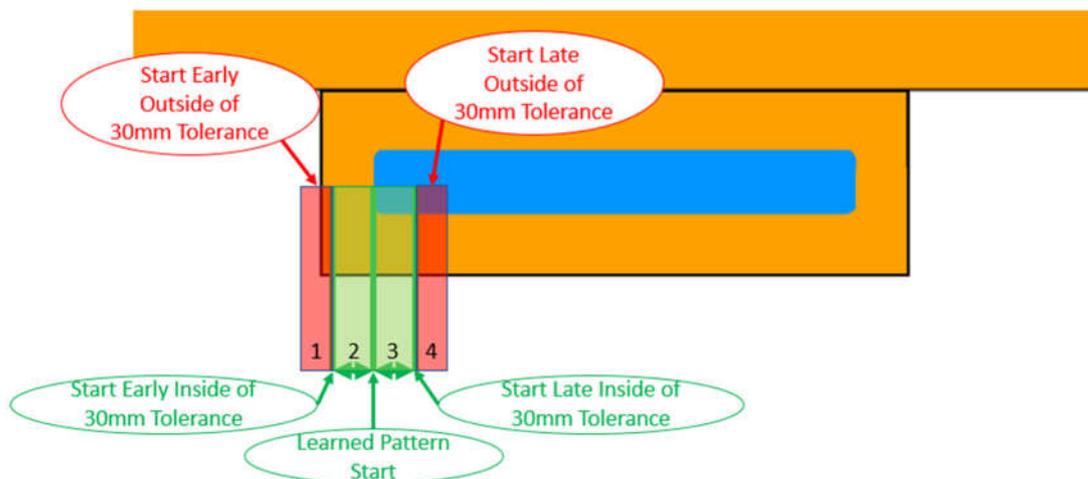


Figure 35: Start Tolerances Example

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Glue Line End Early & Late Tolerances

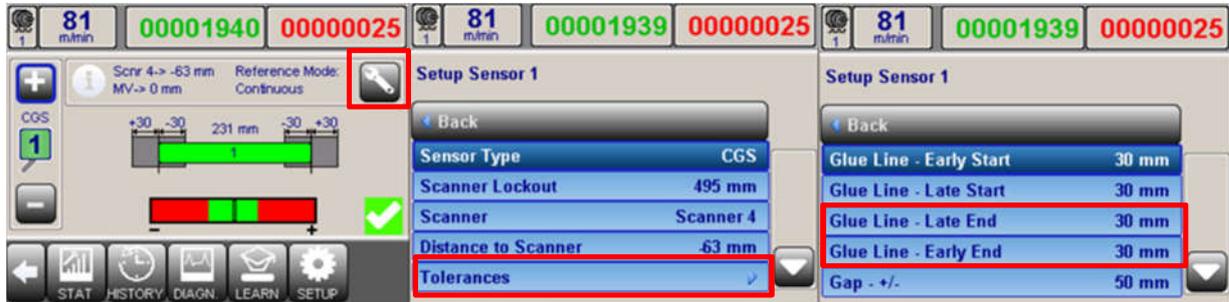


Figure 36: Glue Line End Tolerances Navigation

The **Glue Line – Early End** is the maximum allowed distance the pattern is allowed to end early and still be considered **Good and within tolerance**. The **Glue Line – Late End** is the maximum allowed distance the pattern is allowed to end late and still be considered **Good and within tolerance**. Anything outside of the +/- Tolerance will trigger a failure.

As shown in Figure 29:

- Zone 1 - is the Pattern End location that will cause a failure because the pattern **Ended Early Outside of the Tolerance window**.
- Zone 2 - is the Pattern End location that will cause a pass because the pattern **Ended Early within of the Tolerance window**.
- Zone 3 - is the Pattern End that will cause a pass because the pattern **Ended Late within of the Tolerance window**.
- Zone 4 - is the Pattern End that will cause a failure because the pattern **Ended Late Outside of the Tolerance window**.

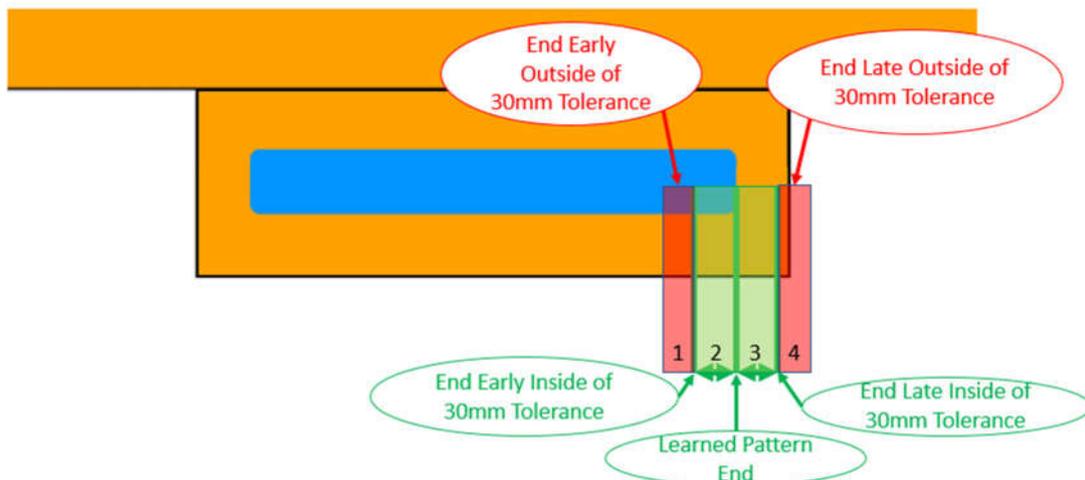


Figure 37: End Tolerances Example

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Gap Tolerance



Figure 38: Gap Tolerance Navigation

The **Gap Tolerance** is the maximum allowed gap that can occur inside of a pattern. Sometimes while gluing, the glue can have a lower glue volume in portions of the pattern. This can lead the inspection to identify the **learned pattern** as two smaller patterns. A **Gap Error** will occur, if the distance between the end of the first small pattern and the start of the second smaller pattern is **larger** than the **Gap Tolerance**.

Gap Tolerance Example:

In Figure 31, we can see the Learned Glue Pattern.



Figure 39: Learned Pattern With No Gaps

In Figure 32, we can see that the glue volume dropped out a bit, causing a gap that is less than 50mm tolerance. Since the gap did not exceed 50mm, it is still considered a full pattern and the product will pass inspection.

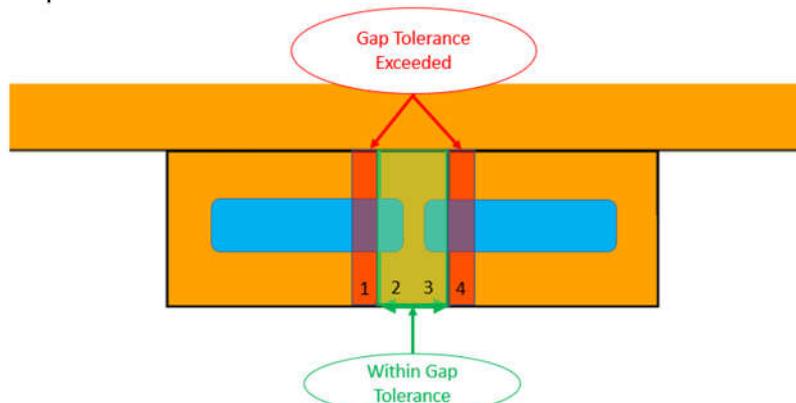


Figure 40: Pattern with Gap Less than 50mm

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In Figure 33, we can see that the glue volume dropped out a bit more, causing a gap that is greater than the 50mm tolerance. This will cause a Gap Error and/or a Extra Pattern Error since there are technically 2 patterns now.

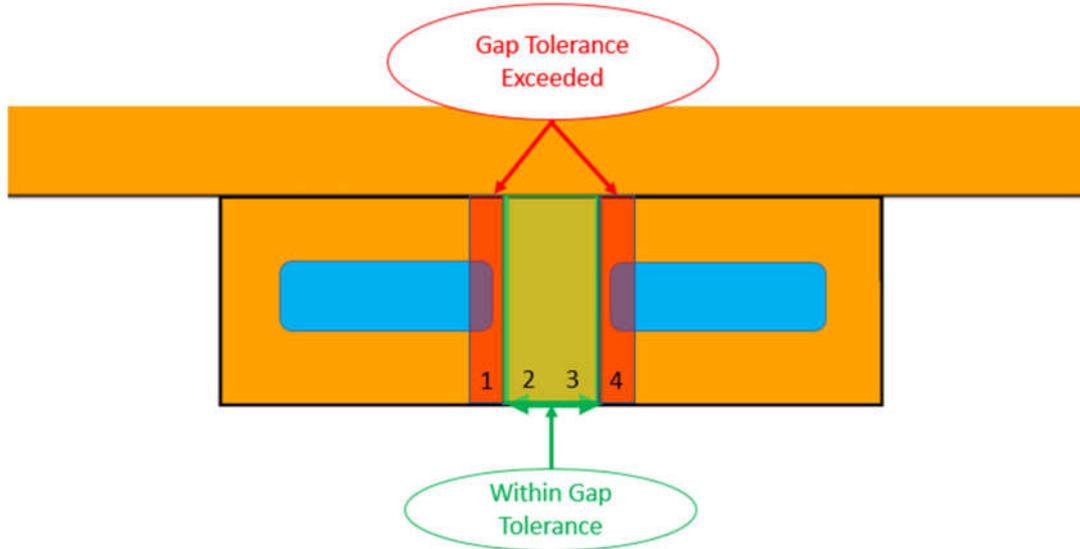


Figure 41: Pattern with Gap Greater Than 50mm

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Glue Pattern Correction Explained

What is the Glue Pattern Correction?

Each Inspection channel has its own set of parameters for the Glue Correction Start and Glue Correction End. For the CGS Sensor, the Start & End Corrections have a Default of -8mm. The Default for all other sensor types is 0mm.

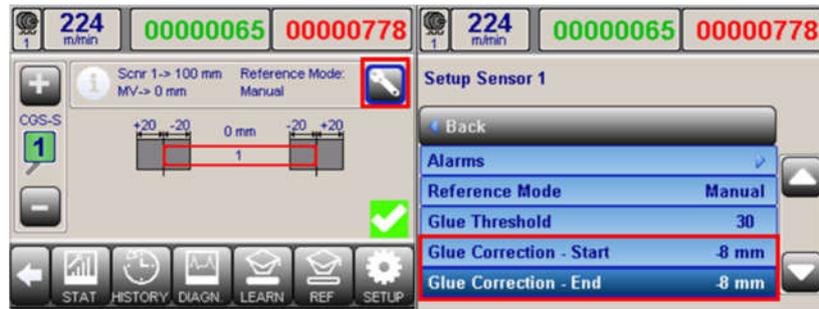


Figure 42: Navigating to the Sensor's Pattern Correction

How does Glue Correction Work?

Glue correction is useful when the inspection software is not properly identifying the Pattern's Glue Start and the Pattern's Glue Length (also referred to as the Pattern's Glue End). The Glue Correction Start and End Parameters are meant to be one of the last parameters to be tweaked. They should only have to +/-5mm from their default setting. So, the Inspection process should be properly identifying a majority of the pattern. Since the mouth of the CGS-40 sensor is so wide, it is common that the inspection identifies a Glue Pattern that is larger than the actual Glue Pattern on the product. That is where the Glue Correction Start and End come into play.

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Example: Glue Correction – Start

Note: It is assumed that the valve is functioning properly and that the glue pattern is being applied to the exact locations mentioned in the example.

The Glue Pattern is supposed to start at 20mm from the edge of the tab. The Glue Pattern is supposed to have a length of 160mm.

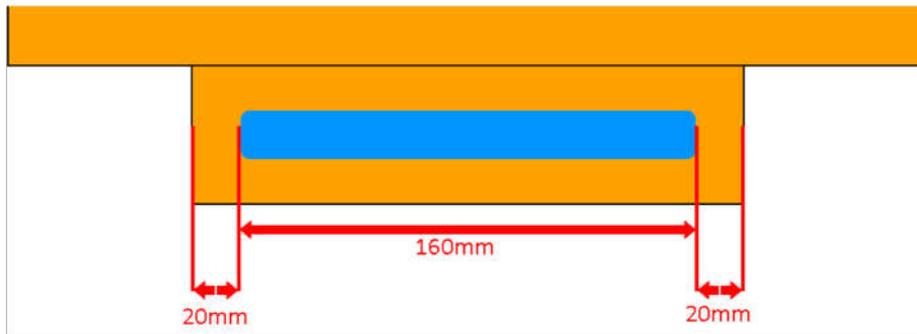


Figure 43: Product Glued Correctly

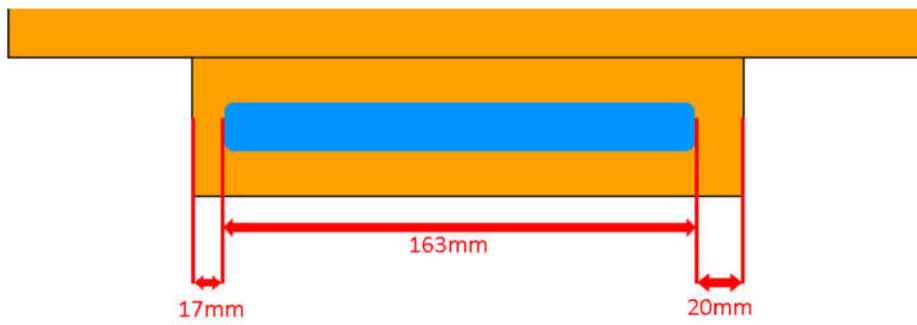


Figure 44: Product Not Glued Correctly

The CGS-40 Sensor identified the Glue Pattern Start at 17mm from the edge of the tab. The Glue Pattern Length was identified as 163mm long. We have verified that the Glue Pattern on the product started at 20mm and was 160mm long. To help the Inspection Process identify the correct pattern dimensions, we need to **Lower the Glue Correction – Start** from “-8mm” to “-11mm”.

Increasing the Glue Correction – Start from -8mm to -5mm would cause the Glue Pattern’s Start to be identified at 14mm. It would also increase the Glue Pattern’s Length to 166mm. So, it is important to understand the relationship between this parameter and the Pattern’s Start. The higher (less negative) the number the bigger the adjustment towards the edge of the tab. The Lower the number (more negative) the bigger the adjustment from the edge of the tab.

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Example: Glue Correction – End

Note: It is assumed that the valve is functioning properly and that the glue pattern is being applied to the exact locations mentioned in the example.

The Glue Pattern is supposed to start at 20mm from the edge of the tab. The Glue Pattern is supposed to have a length of 160mm.

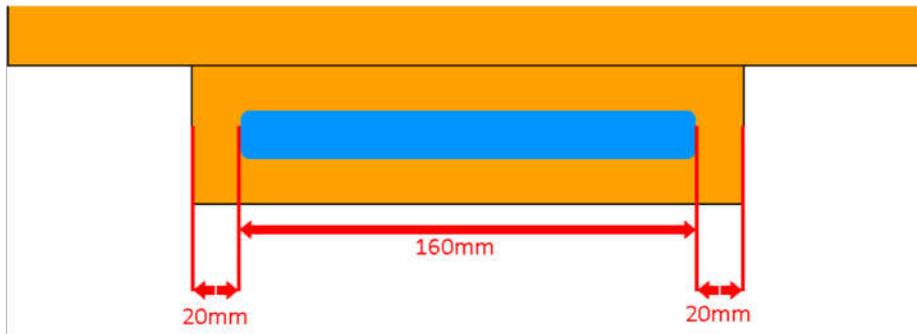


Figure 45: Product Glued Correctly

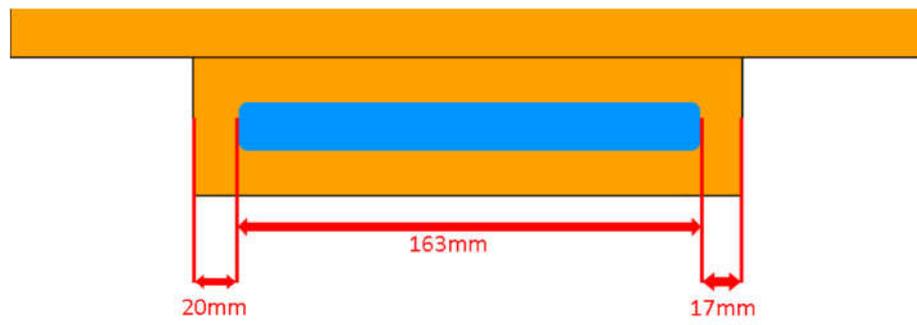


Figure 46: Product Not Glued Correctly

The CGS-40 Sensor identified the Glue Pattern Start at 20mm from the edge of the tab. The Glue Pattern Length was identified as 163mm long. Meaning, the Inspection Process identified the Glue Pattern End at 183mm. We have verified that the Glue Pattern on the product started at 20mm and was 160mm long. Meaning, the Glue Pattern was supposed to End at 180mm. To help the Inspection Process identify the correct pattern dimensions, we need to **Lower the Glue Correction – End** from “-8mm” to “-11mm”.

Increasing the Glue Correction – End from -8mm to -5mm would cause the Glue Pattern’s End to be identified at 186mm. Meaning, the Glue Pattern’s Length would increase to 166mm. So, it is important to understand the relationship between this parameter and the Pattern’s End and Pattern’s Length.

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Example: Glue Correction Start & End

Note: It is assumed that the valve is functioning properly and that the glue pattern is being applied to the exact locations mentioned in the example.

The Glue Pattern is supposed to start at 20mm from the edge of the tab. The Glue Pattern is supposed to have a length of 160mm.

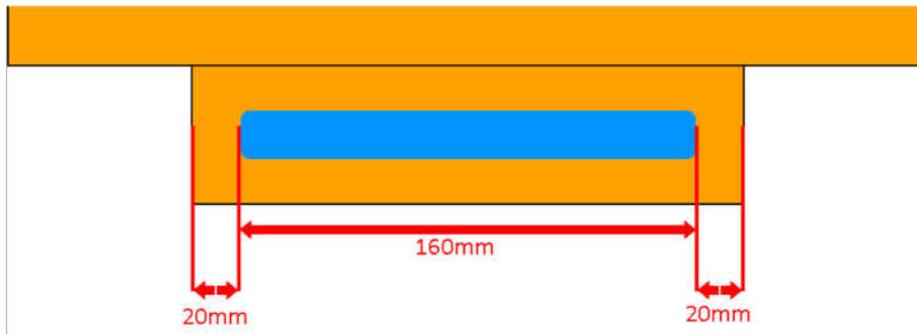


Figure 47: Product Glued Correctly

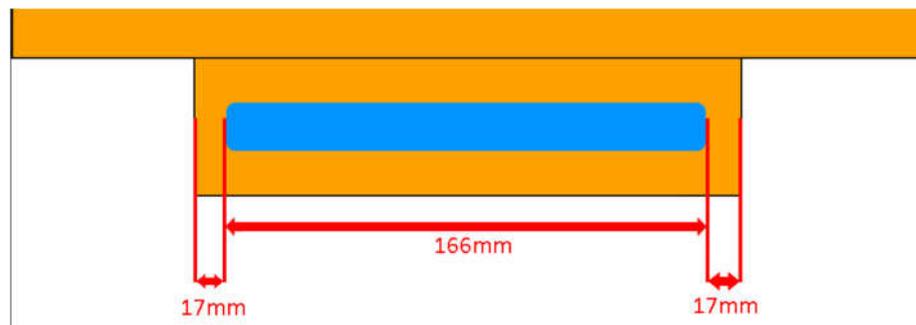


Figure 48: Product Not Glued Correctly

The CGS-40 Sensor identified the Glue Pattern Start at 17mm from the edge of the tab. The Glue Pattern Length was identified as 166mm long. Meaning, the Inspection Process identified the Glue Pattern End at 183mm. We have verified that the Glue Pattern on the product started at 20mm and was 160mm long. Meaning, the Glue Pattern was supposed to Start at 20mm and End at 180mm.

To help the Inspection Process identify the correct pattern dimensions, we need to do **both**:

- **Lower the Glue Correction – Start** from **-8mm** to **-11mm**.
- **Lower the Glue Correction – End** from **-8mm** to **-11mm**.

Increasing the Glue Correction – Start from **-8mm** to **-5mm** would cause the Glue Pattern's Start to be identified at 14mm. It would also increase the Glue Pattern's Length by 3mm. The higher (less negative) the number the bigger the adjustment towards the leftmost edge of the tab. The Lower the number (more negative) the bigger the adjustment from the leftmost edge of the tab. **Increasing the Glue Correction – End** from **-8mm** to **-5mm** would cause the Glue Pattern's End to be identified at 186. Meaning, the Glue Pattern's Length would increase by 3mm. The higher (less negative) the number the bigger the adjustment towards the rightmost edge of the tab. The Lower the number (more negative) the bigger the adjustment from the rightmost edge of the tab.

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Use Valve Pattern/Parameters Explained

The Use Valve Parameters Setting will change where the “Standard/Learned” Pattern Data comes from. Depending on the setting the Inspection Analysis will behave differently.

What are the different Use Valve Parameters Modes?

There are 2 Different Use Valve Parameters Modes.

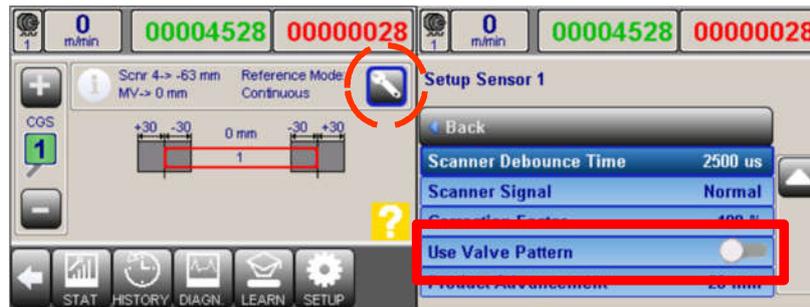


Figure 49: Navigating to the Use Valve Parameters Setting

Not Linked/Off (Default)

After the **Learn** Button is pressed, the Sensor’s Data for the next triggered product, will be used as the “Standard/Learned” Pattern Data. The operator should verify that the learned pattern data displayed on the screen is accurate, because this mode could learn the wrong pattern dimensions if there was an issue with the Gluing operation (Clogged Glue Valve, Pressure issues, Etc.).

Linked/On

The Pattern Data from the corresponding Glue Channel (Sensor 1 to Valve 1, Sensor 2 to Valve 2, Etc.) will be used as the “Standard/Learned” Pattern Data. Depending on how the system is configured, the a Learn will still need to be performed for each job.

MCP-8I Quick Start Guide

Configuring the Linked Sensor for "Auto-Learning"

The Sensor Channel can be setup so that the operator is not required to press the Learn Button for each job.

For this to work, the following conditions must be met:

- The **Linked Valve Channel's Mode** is **Standard**.

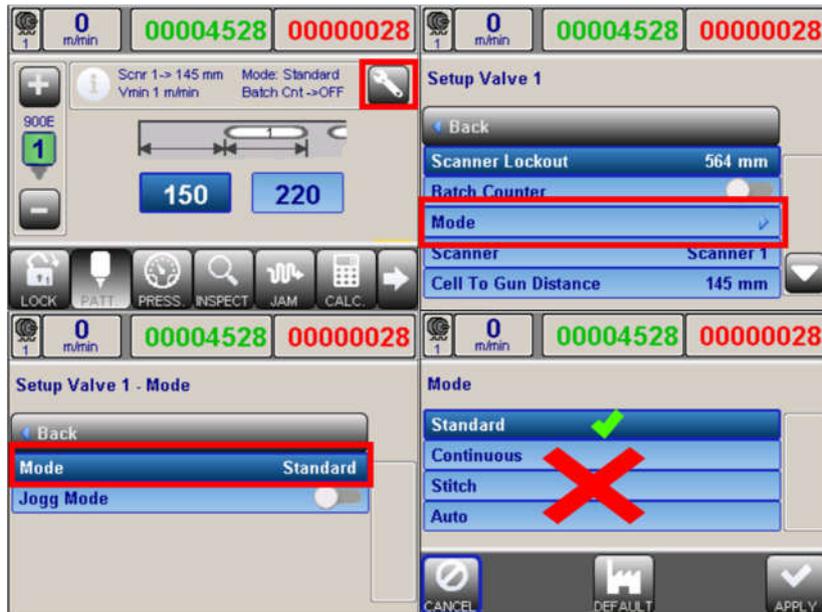


Figure 50: Valve Mode Configuration For AutoLearning

- **Volume Inspection** must be **Disabled**.
- **Product Length Inspection** must be **Disabled**.

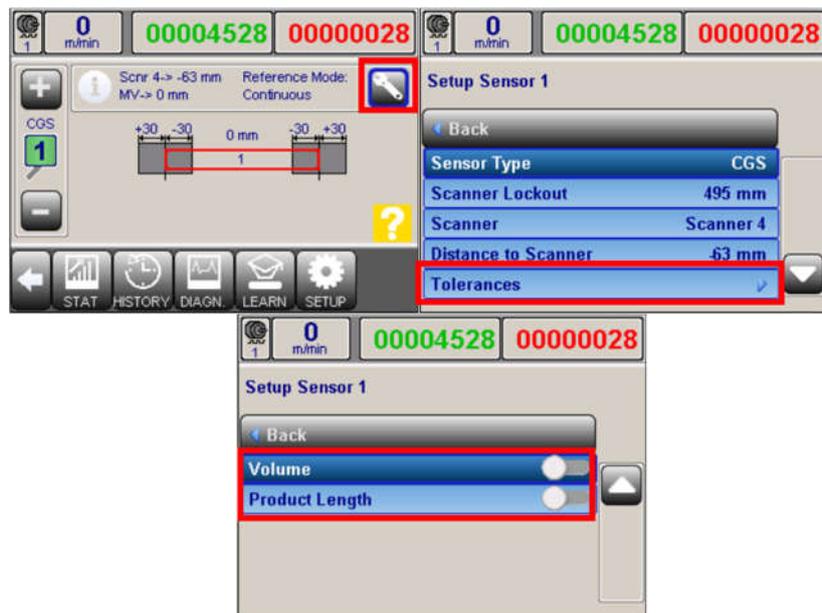


Figure 51: Inspection Configuration For AutoLearning

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For Systems with 1 Sensor Channel, the Learn Button will Disappear all together.
For Systems with multiple Sensor Channels, the Learn Button might still appear, and a Learn may need to be performed for the other channels, but not for the channel configured for Auto Learning.

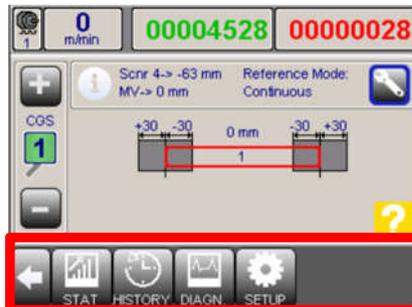


Figure 52: Inspection Learn Button Hidden

What happens when the Sensor is Linked to a Valve in AutoGlue

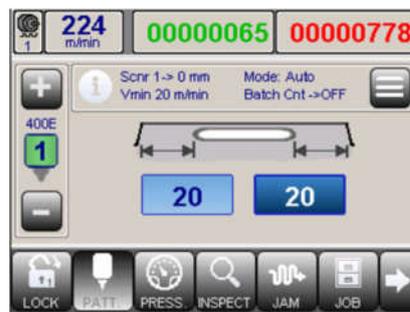


Figure 53: Valve Channel's Mode In AutoGlue

Since the Glue Pattern can change based on the Product's Length, a **Learn** **MUST** be performed for each job. After the 'Learn' Button is pressed, the "Standard/Learned" Pattern Data is calculated using the measured product length and the Start & End Delay's from the corresponding Glue Channel (Sensor 1 to Valve 1, Sensor 2 to Valve 2, Etc.). The Inspection Channel needs to know what to inspect against, and cannot know if the change in the product length is due to a job change or an actual glue failure.

MCP-8I Quick Start Guide

Analog Sensor Reference Modes

What are the different types of reference modes?

There are 4 different reference modes available, but there are only two that are commonly used.

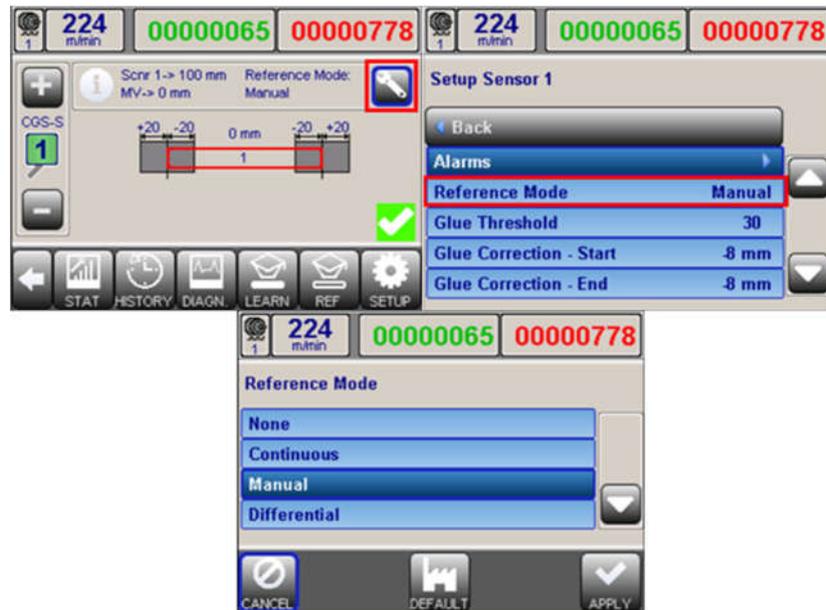


Figure 54: Analog Sensor's Reference Modes

For the CGS-40 Gate Sensor (280xx910):

The **RED CGS-40 Gate Sensor** should be running in **Continuous Reference mode** unless told otherwise from a member of Engineering. This is also going to be the most common mode for the sensor to run in. The Continuous Reference mode still requires the learning of a glued sample. More information can be found [here](#).

For the CGS-40S Gate Sensor (280xx244):

The **White CGS-40S Gate Sensor** should be running in **Manual Reference** mode unless told otherwise from a member of Engineering. This is also going to be the most common mode for the sensor to run in. The Manual Reference mode requires learning an unglued sample at the start of each job ([More Info](#)) and also requires learning the glued sample ([More Info](#)).

For the AS-303 (280xx353) & AS-303HM (280xx373) Glue Sensors:

The **AS-303 & AS-303HM Sensors** should be running in **Manual Reference** mode unless told otherwise from a member of Engineering. This is also going to be the most common mode for the sensors to run in. The Manual Reference mode requires learning an unglued sample at the start of each job ([More Info](#)) and also requires learning the glued sample ([More Info](#)).

Alarms

Configuring the Control's Inspection Alarm Modes

Each of the 3 Alarms (Alarm Light, Buzzer, and Consecutive Fault's Relay) have 3 alarm modes that can be configured under the **Inspection Setup Window->Alarms Setup**.

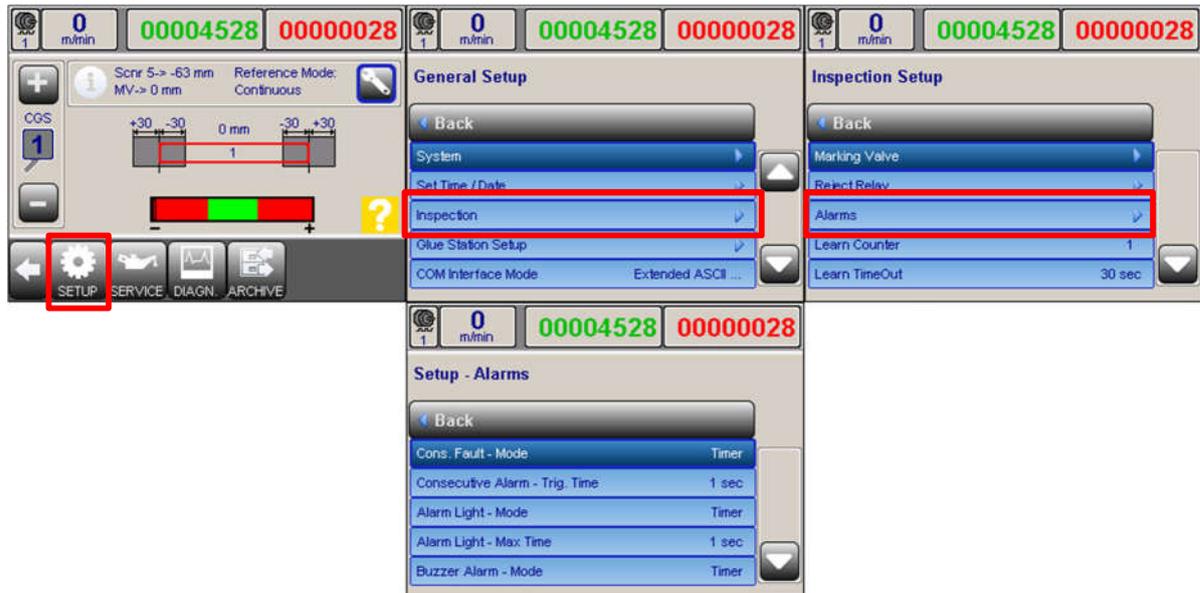


Figure 55: Inspection Alarm's Setup Window Navigation

Timer Mode:

The Alarm will be active for the set trigger time.

Next Good Product:

The Alarm will remain active until the next good product.

User Reset:

The Alarm will remain active until the operator clears the message banner that appears at the top of the screen.

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Enabling the Alarm's for the Sensor Channel

Each Sensor Channel Requires the Alarms to be enabled and configured. Under the Sensor Channel's Settings Window.

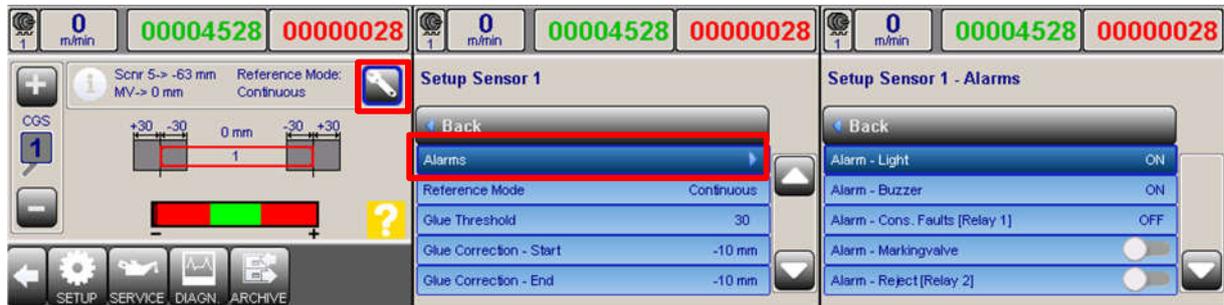


Figure 56: Sensor Channel Alarm Setup Window

Sensor Channel - Alarm Light, Buzzer, and Consecutive Fault's Enable Settings:

Each Alarm has 3 mode settings:

- Off – Inspection Faults will not trigger alarm for this channel.
- On – Inspection Faults will trigger alarm for this channel.
- ON > Vmin – Inspection Faults will trigger alarm when the machine speed is above the VMin setting.

Note: The Vmin setting for the channel is located in the same window.

Sensor Channel – Reject Relay:

If Enabled, Inspection Faults will trigger Relay 2 to active to trigger an ejector.

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Sensor Channel - Marking Valve Enable & Marking Valve Distance to Sensor:

Inspection Faults will be Marked or Kicked if the Alarm is Enabled for the Inspection Channel. If the Marking Valve is Enabled, the '**Distance to MarkValve**' Setting will appear. This is the Distance from the Sensor to the Marking Valve. It must be entered correctly in order for the marking valve to fire at the correct location.

Note – The Distance to the Marking Valve **MUST** be set for each Sensor Channel.



Figure 57: Marking Valve Enable

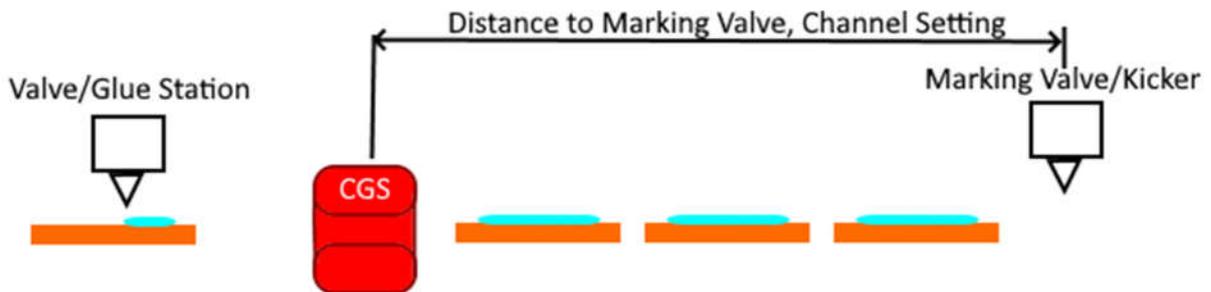


Figure 58: Distance to Mark Valve Illustration

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Sensor Channel – Sensor Disconnect Alarm:

The Sensor Disconnect Alarm will trigger the selected output when the sensor connection is disconnected. There are 3 output alarm options: Red Alarm Light, Relay, or Both.

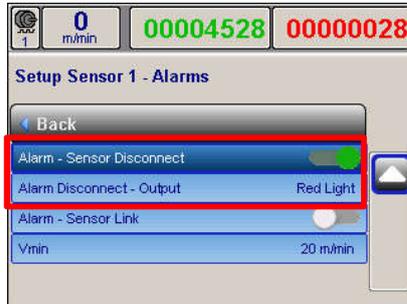


Figure 59: Sensor Channel Disconnect Alarm

Sensor Channel – Sensor Link Disconnect Alarm:

If the Sensor Link Disconnect Alarm is Enabled, when the corresponding valve channel is on and the Sensor Channel is off, the selected alarm output option will trigger. There are 3 output alarm options: Red Alarm Light, Relay, or Both.

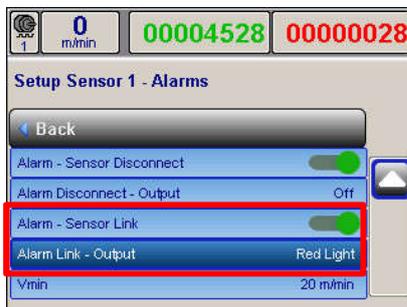


Figure 60: Link Disconnect Alarm



Figure 61: Disconnect Alarm Output Options

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Marking Valve System Settings

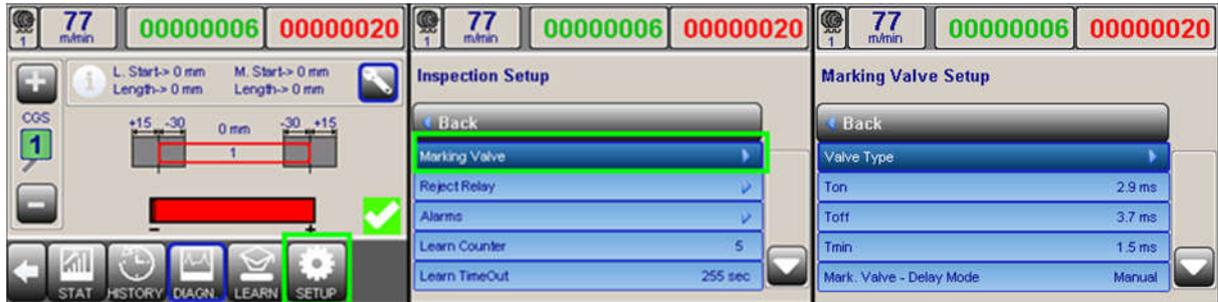


Figure 62: Marking Valve Setup Window Navigation

The **'Marking Valve Setup'** Window is located under the **'Inspection Setup'** Window. This is where you will set the Valve Type, and other typical Valve Settings.

Settings Worth Discussing:

- **Voltage Correction** – This setting should remain at 100% unless discussed with members of Engineering. It is only used for early versions of the control to compensate the Marking Valve's Voltage Regulator when incoming AC Voltage is noisy.



Figure 63: Marking Valve Voltage Correction

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- **Mark. Valve – Delay Mode** – This setting has two modes, ‘Auto’ and ‘Manual’.
 - **Auto Mode** – will set the ‘Mark. Valve – Delay’ based on the settings used for the first gluing channel. Meaning, if you do not start gluing until after 20mm, the Spray for defective products will not Spray on Bad Products until after 20mm.
 - **Manual Mode** – will display an option to the user to manually set ‘Mark. Valve – Delay’, allowing the operator to change the Spray start location as they see fit.
- **Mark. Valve – Length Mode** – This setting has two modes, ‘Auto’ and ‘Manual’.
 - **Auto Mode** – will set the ‘Mark. Valve – Length’ based on the settings used for the first gluing channel. Meaning, if you are gluing for 200mm, the Spray for defective products will Spray on Bad Products for 200mm.
 - **Manual Mode** – will display an option to the user to manually set ‘Mark. Valve – Length’, allowing the operator to change the Spray Length as they see fit.



Figure 64: Marking Valve Delay & Length Modes

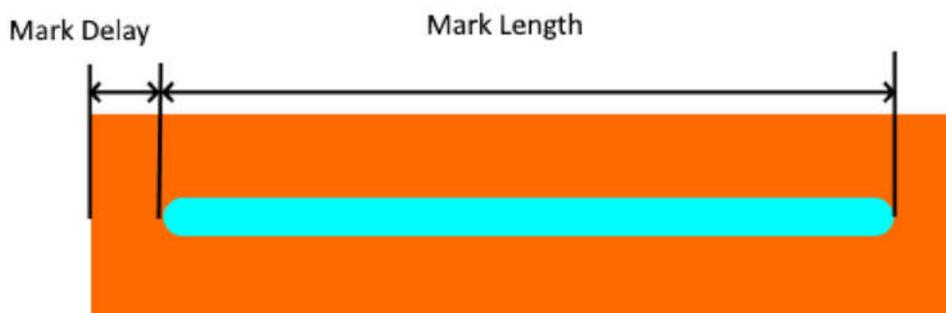


Figure 65: Mark Delay & Length Illustration

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System Diagnostic Window Details Explained



Figure 66: Diagnostic's Window Navigation

The **'Diagnostic's Window'** contains useful information about your controls software. It contains Software Version, System Communication Connections, Voltage, Scanner/Trigger Input, TipSealer, and Output State Information.

Version Tab Details

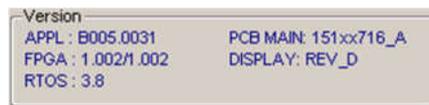


Figure 67: Diagnostic's Version Tab

- **APPL** -> Is the Control's Current Application Version.
- **FPGA** -> Is the Control's FPGA Version. The number in front of 'f' is the Version of FPGA1, and the number after is the Version of FPGA2.

Voltage Tab Details

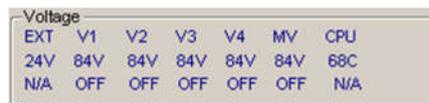


Figure 68: Diagnostic's Voltage Tab

- **EXT** -> Is the External Output Voltage.
- **V1** -> Is the Voltage for Valve 1.
 - 84v is the Voltage
 - OFF indicates the Valve Channel is Currently Off.
- **V2** -> Is the Voltage for Valve 2.
 - 84v is the Voltage
 - OFF indicates the Valve Channel is Currently Off.
- **V3** -> Is the Voltage for Valve 3.
 - 84v is the Voltage
 - OFF indicates the Valve Channel is Currently Off.
- **V4** -> Is the Voltage for Valve 4.
 - 84v is the Voltage
 - OFF indicates the Valve Channel is Currently Off.
- **MV** -> Is the Voltage for the Marking Valve.
 - 84v is the Voltage
 - OFF indicates the Marking Valve is Currently Off.

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Interface/Communication Tab Details

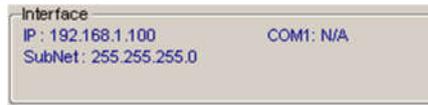


Figure 69: Diagnostic's Interface Tab

- **IP** -> Ethernet IP Address of the Control.
- **SubNet**-> Ethernet SubNet Address of the Control.
- **COM1** -> Indicates the Machine Interface Communication Type.

Scanner Tab Details

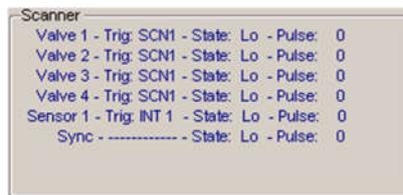


Figure 70: Diagnostic's Scanner Tab

This Tab will display all of the current Valve and Sensor Channel's:

- **Trigger Selection (Trig)** – Selected Scanner Input Channel
- **State** – Is the Current State of the Scanner/Trigger Input.
- **Pulse** – Last Product's Scanner/Trigger Pulse Count.

TipSealer Tab Details



Figure 71: Diagnostic's TipSealer Tab

- **Glue Station Type** – Selected TipSealer Type.
- **TipSealer Status** – Status of TipSealer, based on Manifold State, Machine Running, and Trigger Input.
- **Manifold State** – State of Switch on Manifold Assembly.
- **Feed Enable** – State of Feed Enable Input.
- **External Purge** – State of External Purge on Manifold Assembly.

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I/O Tab Details

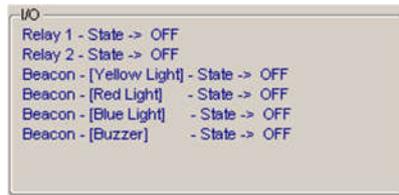


Figure 72: Diagnostic's I/O Tab

Tab Indicates the State of Control Outputs:

- **Relay 1** -> State of the Consecutive Fault, Machine Stop, Feed Stop Relay.

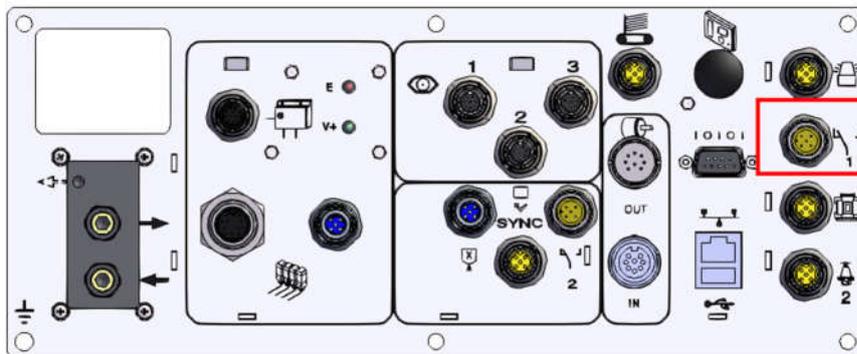


Figure 73: Relay 1 Location Indicator

- **Relay 2** -> State of the Ejector/Reject Relay.

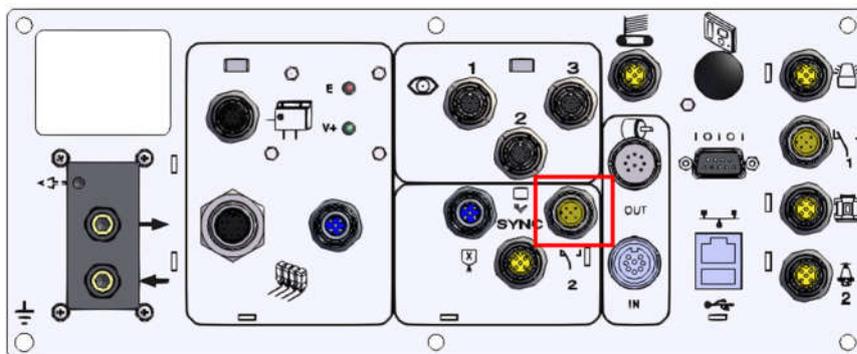


Figure 74: Relay 2 Location Indicator

- **Beacon – Yellow Light** - State of the Beacon's Output for the Yellow Light.
- **Beacon – Red Light** - State of the Beacon's Output for the Red Light.
- **Beacon – Blue Light** - State of the Beacon's Output for the Blue Light.
- **Beacon – Buzzer** - State of the Beacon's Output for the Buzzer.

Frequently Asked Questions

How to Update Inspection Tolerances

1. Navigate to the 'Inspection Window' by pressing the button labeled 'INSPECT'.

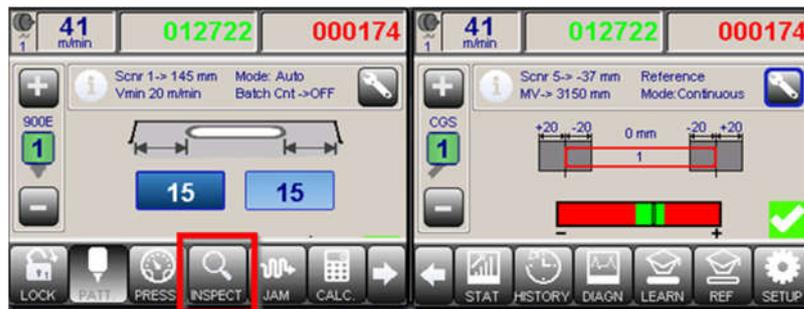


Figure 75: Navigating to the Inspection Window

2. Navigate to the 'Inspection Channel's Settings Menu' by pressing the 'Wrench' button.

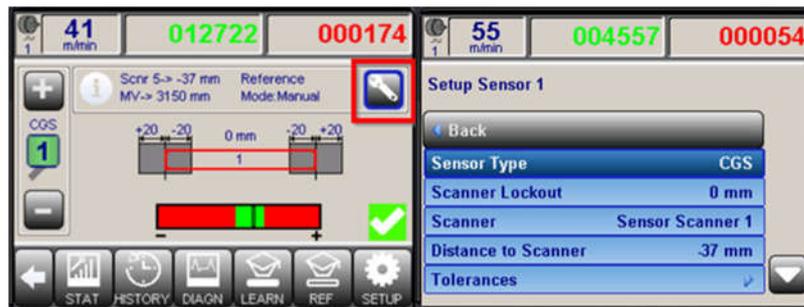


Figure 76: Navigating to the Sensor Channel's Settings

3. Enter the 'Tolerances Sub-Menu' and Select the desired 'Tolerance' to update.



Figure 77: Inspection Channel's Tolerance Menu

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- Using the thumbwheel buttons, set the desired value and press the button labeled 'APPLY'.



Figure 78: Updating a Tolerance

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How to Configure the Volume Tolerances

1. First, **Learn** the Product's **Unglued Reference**.
2. Next, **Learn** a Glued Product's **Pattern & Volume**.
3. Manually adjust the **Valve's / Glue Wheel's** glue amount to the **Absolute Minimum Glue** amount that is **acceptable**.
4. Run a few products and **check** where the black '**Current Volume Indicator**' is on the '**Volume Bar**'. If the indicator is in the red '**Low / Under Glued Area**' increase the '**Negative Volume Tolerance**' and then run a few more products. If the black '**Current Volume Indicator**' is in the green '**Good Glue**' area, but not near the red '**Low / Under Glued Area**' decrease the '**Negative Volume Tolerance**' and then run a few more products. Repeat this process until the black '**Current Volume Indicator**' is in the green '**Good Glue**' area, but near the red '**Low / Under Glued Area**'.
5. Manually adjust the **Valve's / Glue Wheel's** glue amount to the **Absolute Maximum Glue** amount that is **acceptable**.
6. Run a few products and **check** where the black '**Current Volume Indicator**' is on the '**Volume Bar**'. If the indicator is in the red '**Excess / Over Glued Area**' increase the '**Positive Volume Tolerance**' and then run a few more products. If the black '**Current Volume Indicator**' is in the green '**Good Glue**' area, but not near the red '**Excess / Over Glued Area**' decrease the '**Positive Volume Tolerance**' and then run a few more products. Repeat this process until the black '**Current Volume Indicator**' is in the green '**Good Glue**' area, but near the red '**Excess / Over Glued Area**'.
7. Manually adjust the **Valve's / Glue Wheel's** glue amount to the amount that it was **before** this **calibration test**.
8. Run a few products and **re-learn** the Product's **Pattern & Volume**.

The '**Volume Tolerances**' are now set.

Note – The **Tolerances** for each sensor are set in the '**Inspection Channel's Settings Menu**' under the '**Tolerances Sub-Menu**'. Click [here](#) for instructions.

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How to Learn an Unglued Sample (Learn the Reference)

Only necessary for the **WHITE CGS-40S** Sensor running in **Manual Reference Mode**.

1. Navigate to the 'Inspection Window' by pressing the button labeled 'INSPECT'.

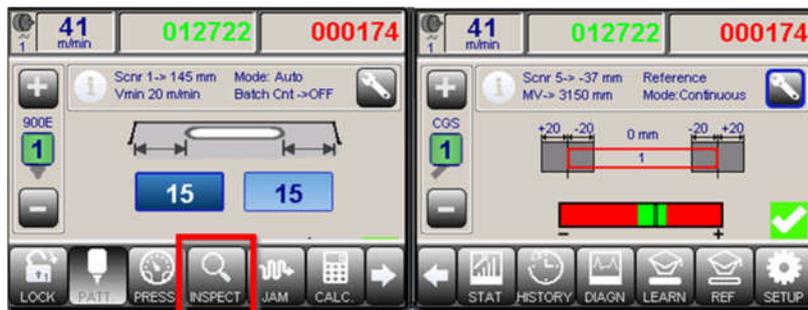


Figure 79: Navigating to the Inspection Window

2. To Start the Learn Process for an Unglued Sample, Press the button labeled 'REF'.

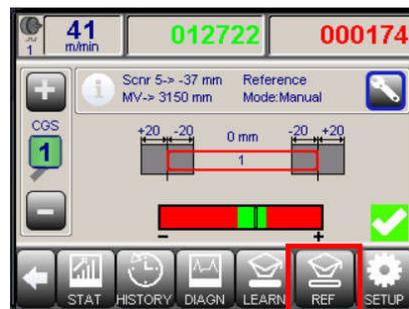


Figure 80: Learn Unglued Sample Button

3. When the 'Waiting...' prompt appears, feed product into the machine. Once the Learn is completed, Confirm the 'Learn was successful' prompt.



Figure 81: Unglued Sample Learn Prompts

Note1 – The Glue Valves and/or Glue Wheel should be **Disabled** when learning an Unglued Sample.

Note2 – The 'Learn Wait Timeout' can be increased if desired. Click [here](#) for instructions.

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How to Learn a Glued Sample

1. Navigate to the 'Inspection Window' by pressing the button labeled 'INSPECT'.

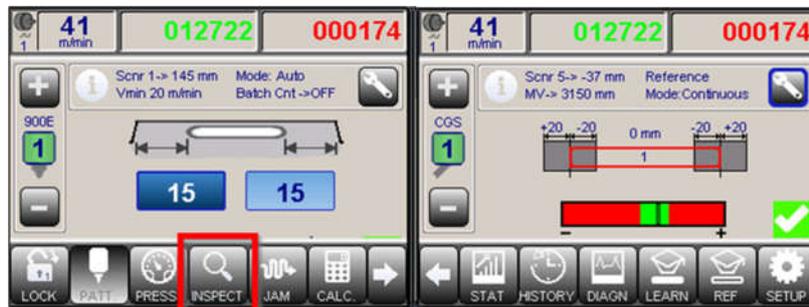


Figure 82: Navigating to the Inspection Window

2. Press the button labeled 'LEARN'.

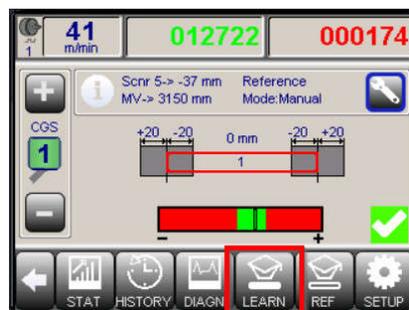


Figure 83: Inspection Learn Button

3. When the 'Waiting...' prompt appears, feed product into the machine. Once the Learn is completed, Confirm the 'Learn was successful' prompt.



Figure 84: Learn Wait Prompt & Success Prompt

Note1 – If the **Learn** was **not successful**, repeat steps 2 & 3.

Note2 – The '**Learn Wait Timeout**' can be increased if desired. Click [here](#) for instructions.

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How to Clear the Inspection Counters

1. Navigate to the 'Inspection Window' by pressing the button labeled 'INSPECT'.



Figure 85: Navigating to the Inspection Window

2. Navigate to the 'Statistics Window' by pressing the button labeled 'STAT'.



Figure 86: Navigation to Statistics Menu

3. On the 'Statistics Window', press the button labeled 'CLEAR' and Confirm the verification prompt by pressing the button labeled 'Yes'.

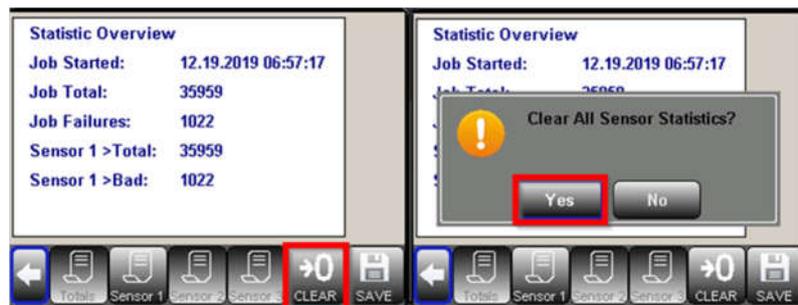


Figure 87: Clearing the Statistic Counters

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How to Change the Learn Wait Prompt Timeout

1. Navigate to the 'Inspection Window' by pressing the button labeled 'INSPECT'.

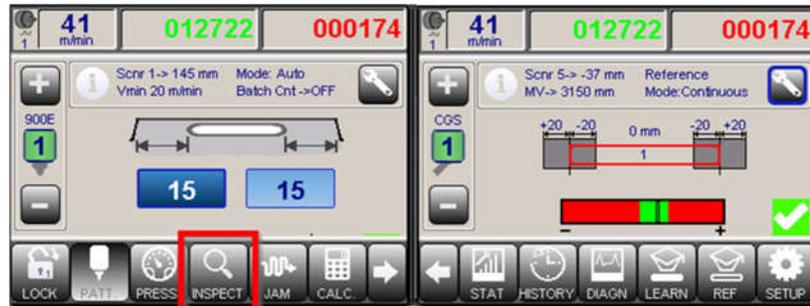


Figure 88: Navigating to the Inspection Window

2. Navigate to the 'Inspection System Settings Menu' by pressing the button labeled 'SETUP'.



Figure 89: System Inspection Settings Window

3. Select the 'Learn Timeout' parameter.



Figure 90: Learn Timeout Setting

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How to Enable/Disable Volume Inspection (Analog Sensors Only)

1. Navigate to the 'Inspection Window' by pressing the button labeled 'INSPECT'.



Figure 91: Navigating to the Inspection Window

2. Navigate to the 'Inspection Channel's Settings Menu' by pressing the 'Wrench' button.

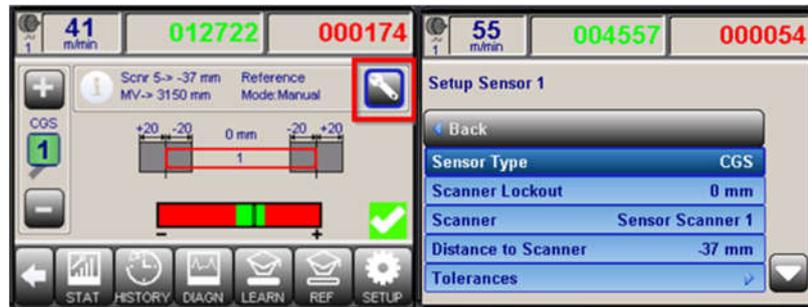


Figure 92: Navigating to the Sensor Channel's Settings

3. Enter the 'Tolerances Sub-Menu' and Select the desired 'Tolerance' to update.



Figure 93: Inspection Channel's Tolerance Menu

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4. Locate the 'Volume Switch', and set it as desired.

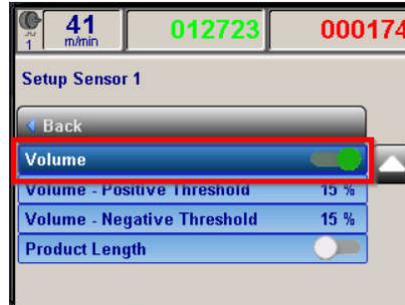


Figure 94: Volume Inspection Enable

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How to Check the Last Failed Product's Signal Data using the Inspection Diagnostic's Window

1. Navigate to the 'Inspection Window' by pressing the button labeled 'INSPECT'.

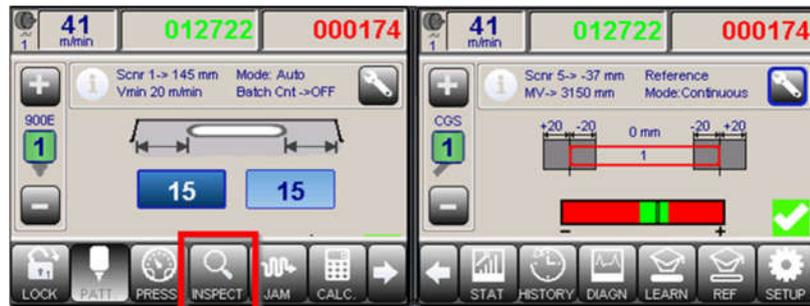


Figure 95: Navigating to the Inspection Window

2. Navigate to the 'Inspection Diagnostic's Window' by pressing the button labeled 'DIAGN'.

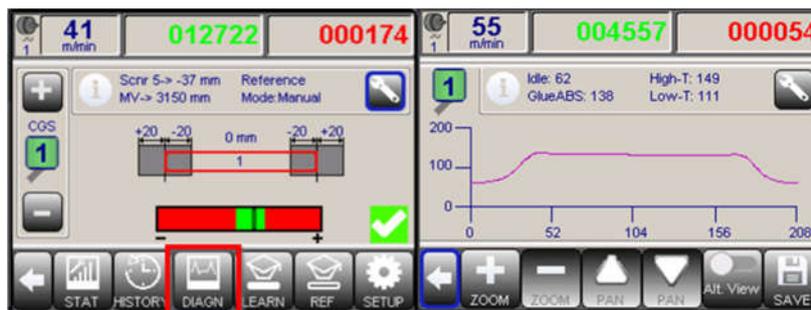


Figure 96: Navigating to the Inspection Diagnostic Window

The 'Inspection Diagnostic's Window' is used to do a **Visual Verification** of the **Sensor's Data**. In the image above, there is a typical signal form a CGS sensor that is not being used in a continuous gluing application. Comparing the current product's signal data shown with the last failed product's signal data, can be an easy way to identify why the product failed. To do this, we need to set the '**Alt. View**' parameter setting to '**Last Error**'.

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3. Navigate to the 'Inspection Diagnostic Window's Settings Menu' by pressing the 'Wrench' button.

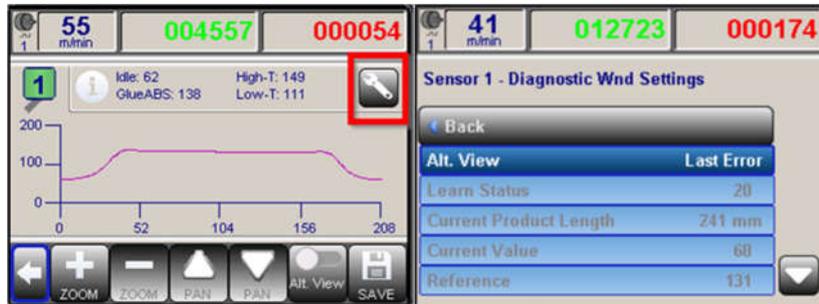


Figure 97: Inspection Diagnostic Window's Settings

4. Select the 'Alt. View' parameter and Set it to 'Last Error'. Then press the button labeled 'APPLY'.



Figure 98: Diagnostic Graph View Select

5. Exit the 'Inspection Diagnostic Window's Settings Menu' and return to the 'Inspection Diagnostic's Window'.
6. Setting the 'Alt. View Activation Switch' to ON, will now display the last fail product's signal data. Setting the switch to OFF, will display the current product's signal data. Using the images below as a reference, the last failed product's signal data (on the right) looks very different than the current product's signal data (on the left). Using this tool can help identify why the last product failed. Whether the error was 'Early / Last Start', 'Early / Late End', or 'Pattern Missing'.

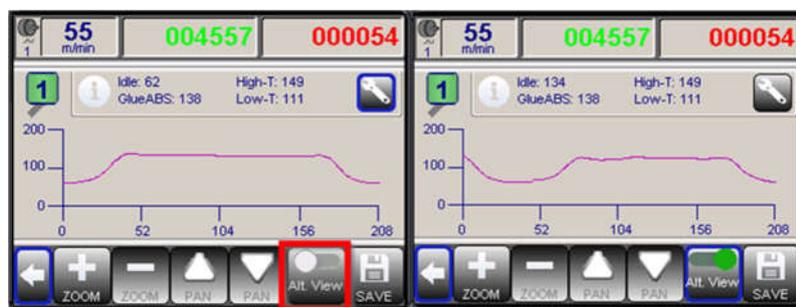


Figure 99: Enabling Alternative View

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How to Save the Sensor's Data to Send for Assistance

1. Insert a USB Stick into the MCP-8I's USB Port.
2. Navigate to the 'Inspection Window' by pressing the button labeled 'INSPECT'.

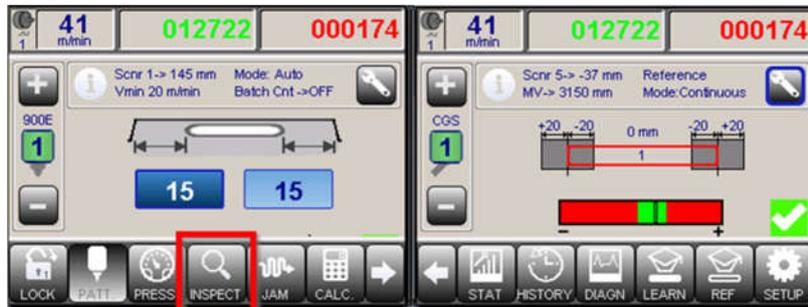


Figure 100: Navigating to the Inspection Window

3. Navigate to the 'Inspection Diagnostic's Window' by pressing the 'DIAGN' button.

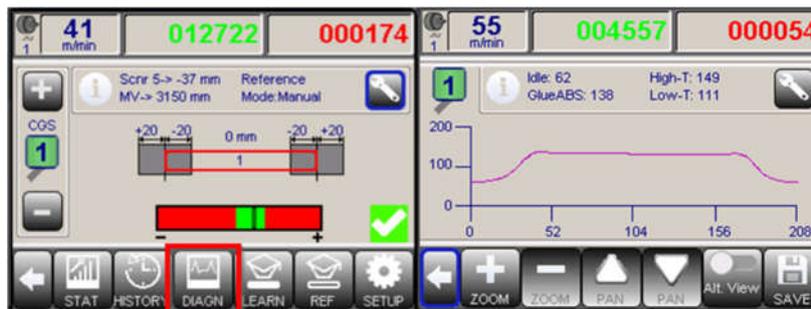


Figure 101: Navigating to the Inspection Diagnostic Window

4. Press the button labeled 'SAVE' and then Confirm by pressing the button labeled 'Yes'.

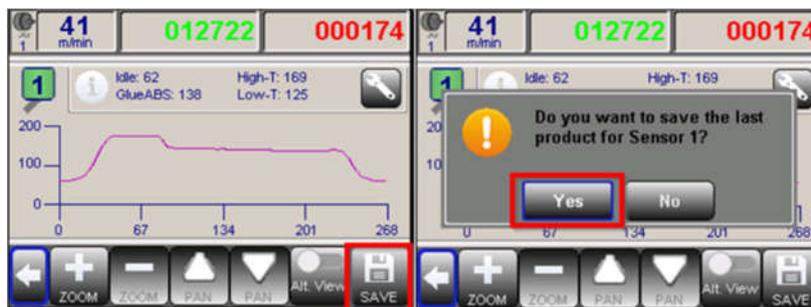


Figure 102: Saving Sensor's Data to USB

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- After the 'Processing Data...' message disappears it is now safe to remove the USB Stick.



Figure 103: Saving Data Wait Prompt

- On a Windows PC, the files will be located in a folder on the USB stick labeled (sensordata). This folder will have sub folders that include the sensor type the data was stored for, and a special date and time code built into the name. The files inside the folder will be what is needed to troubleshoot issues.

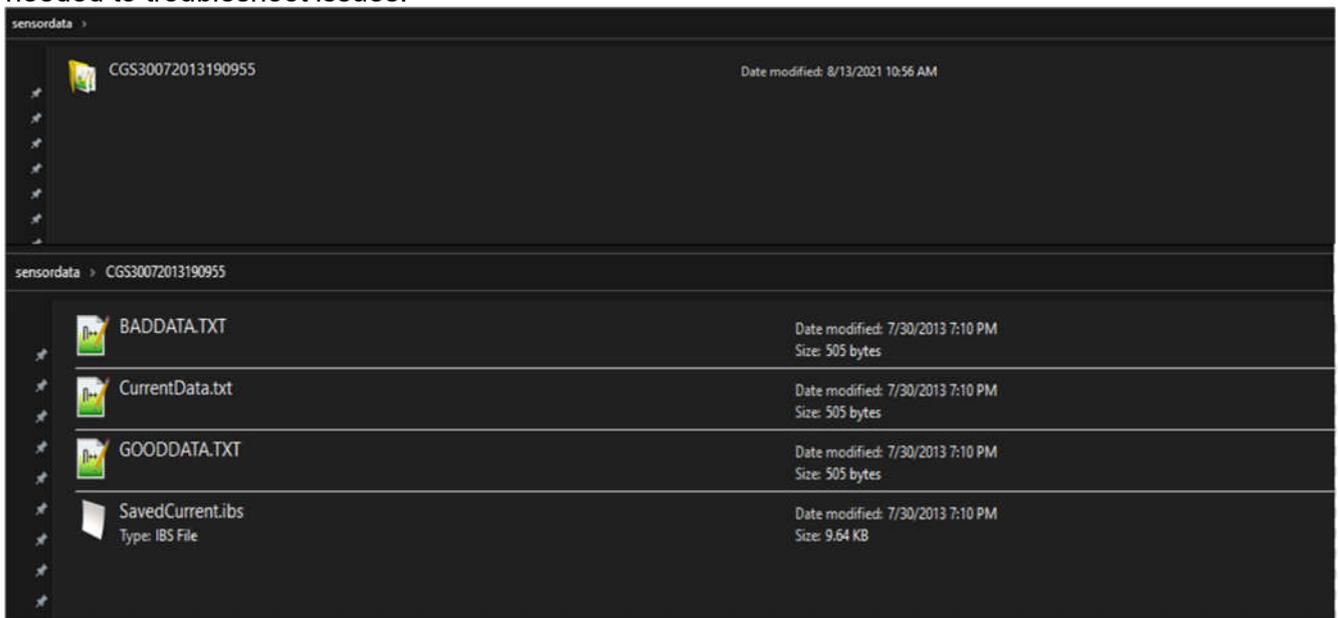


Figure 104: Inspection BackUp Files

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How to Determine the Sensor's Signal 'Delta / Range / Amplitude'

1. Navigate to the 'Inspection Window' by pressing the button labeled 'INSPECT'.



Figure 105: Navigating to the Inspection Window

2. Navigate to the 'Inspection Diagnostic's Window' by pressing the 'DIAGN' button.

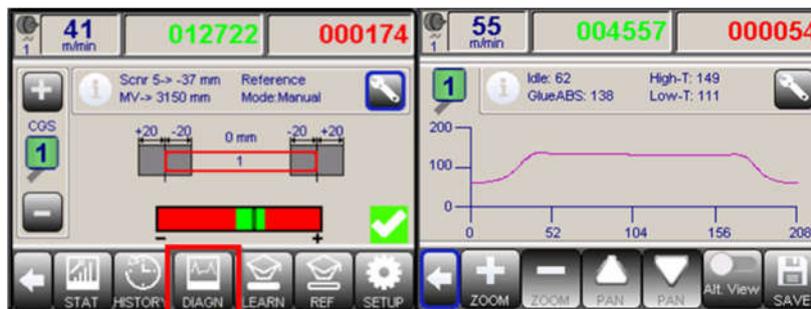


Figure 106: Navigating to the Inspection Diagnostic Window

3. Jog an 'Unglued Product' up to the sensor and **stop with the product underneath the sensor**.
4. When the belts are **stopped**, the 'Information Bar's' description changes to display the text '**Current**'. The number next to the text is the sensor's '**Current Value**'. Record this number as the '**Low Point**'.



Figure 107: Current Sensor Value For Product Without Glue

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5. Jog a '**Glued Product**' up to the sensor and **stop with the product underneath the sensor**.
6. With the belts **stopped** as before, Record the sensor's '**Current Value**' as the '**High Point**'.



Figure 108: Current Sensor Value For Product With Glue

These data points can then be given to a member of the Technical Service or Electrical Engineering groups to assess if this sensor will be a good fit for glue inspection on the customers machine.

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How to Eliminate False Triggers

False Triggers will cause a lot of **issues** with the **Inspection System** and the **Sensor's Data** that is collected. A **False Trigger** occurs when the **'Photo-eye / Scanner'** is triggered by **scrap or flying debris**. For the CGS Sensor, it is recommended to have the trigger **'after / behind'** the sensor to better filter out triggers due to scrap. We can also **filter out these triggers** using the **'Minimum Product Length'** setting for each sensor channel.

Here is how to configure the **'Minimum Product Length'** setting:

1. Navigate to the **'Inspection Window'** by pressing the button labeled **'INSPECT'**.

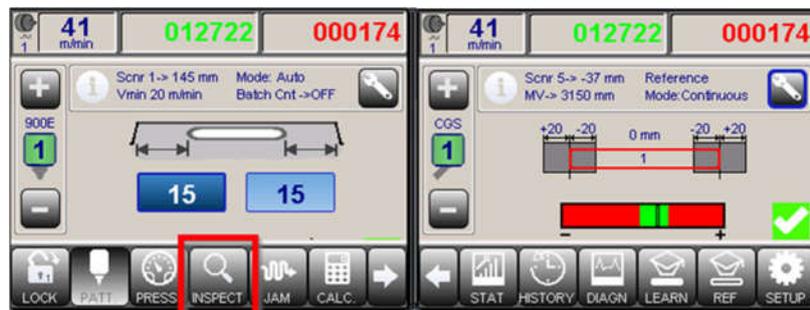


Figure 109: Navigating to the Inspection Window

2. Navigate to the **'Inspection Channel's Settings Menu'** by pressing the **'Wrench'** button.



Figure 110: Navigating to the Sensor Channel's Settings

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3. Select the '**Min. Product Length**' setting. Using the thumbwheel buttons, set the desired value and press the button labeled '**APPLY**'.



Figure 111: Setting the Minimum Product Length

After setting the '**Minimum Product Length**' setting, trigger signals less than that duration will be filtered out and ignored.

Note1 – This must be done for each inspection channel that triggers need to be filtered for.

Note2 – For the CGS Sensor Only: If the trigger is after the sensor, the '**Distance to Scanner**' setting will be negative.

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How to Configure the CGS Sensor for a Continuous Gluing Application

The 'Encoders Z-Pulse' will be used to trigger the CGS Sensor's Inspection Evaluation Process. The Sensor Channel's 'Scanner' parameter will need to be set to 'Z-Signal Encoder'. The Sensor Channel's 'Distance to Scanner' parameter should be set to 0 mm. The Sensor Channel's 'Reference Mode' parameter should be set to 'Manual'. The Sensor Channel's 'Glue Correction – Start / End' parameters should be set to 0 mm.

Each of these parameters are found under the 'Inspection Channel's Settings Menu'. Here are instructions to navigate to the settings menu:

1. Navigate to the 'Inspection Window' by pressing the button labeled 'INSPECT'.

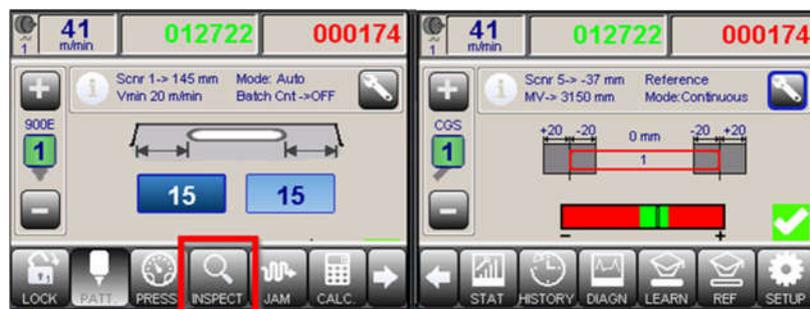


Figure 112: Navigating to the Inspection Window

2. Navigate to the 'Inspection Channel's Settings Menu' by pressing the 'Wrench' button.



Figure 113: Navigating to the Sensor Channel's Settings

3. Find and set each of the parameters mentioned above in the parameter list.

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How to Ignore Product Failures Below a Certain Speed

For some applications, it may be necessary to **Ignore Inspection Faults** that occur below a certain speed threshold. When you have the **Beacon Buzzer Alarm** and/or **Consecutive Faults Relay** configured it could be hard to get product running when the buzzer and machine stop or feed stop are continually being activated. To get around this, the **Inspection Alarm Light, Buzzer, and Consecutive Faults Relay** activation parameters has a '**ON > Vmin**' option. This will cause the control to not alarm until the machine speed is above the Sensor Channel's '**Vmin**' threshold.

These parameters can be found under the '**Inspection Channel's Settings – Alarms Menu**'. Here are instructions to configure the settings:

1. Navigate to the '**Inspection Window**' by pressing the button labeled '**INSPECT**'.

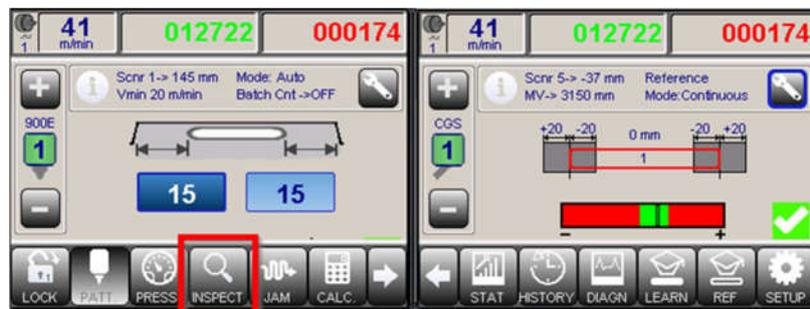


Figure 114: Navigating to the Inspection Window

2. Navigate to the '**Inspection Channel's Settings Menu**' by pressing the '**Wrench**' button.



Figure 115: Navigating to the Sensor Channel's Settings

3. Navigate to the '**Alarms Sub Menu**'.

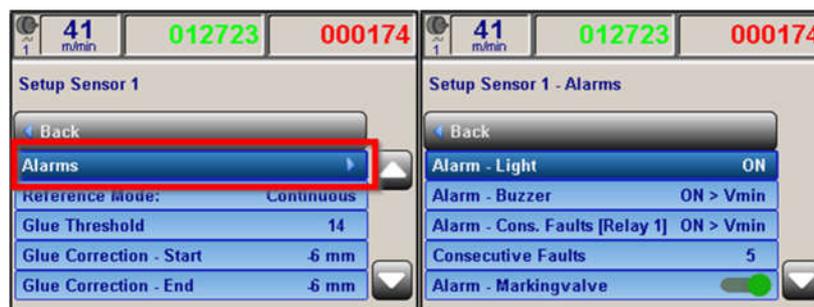


Figure 116: Navigating to the Sensor Channel's Alarm Menu

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- Select **each** of the desired '**Alarm Activation**' parameters that need to be suppressed until the machine speed is above the Sensor Channel's '**Vmin**' speed, and select the activation mode to '**ON > Vmin**'. Then press the button labeled '**APPLY**'.



Figure 117: Setting Alarm On Above Vmin

- In the same menu, Select the Sensor Channel's '**Vmin**' setting. Using the thumbwheel buttons, set the desired machine speed at which the desired alarms can be activated and press the button labeled '**APPLY**'.



Figure 118: Setting the Sensor Channel's Vmin Setting

Note1 – Products that fail and have the alarm activation suppressed will still be shown on the control's display and will be counted in the '**Inspection Statistics**' as an **Error**.

Note2 – Alarm Activation Suppression **must** be configured for each Inspection Channel.

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How to Configure External Learn Trigger

The External Learning Feature uses Scanner/Trigger Input 4. When the Input is triggered for the set duration, the Inspection will enter learning mode.

1. Navigate to the **Inspection Setup Window**.

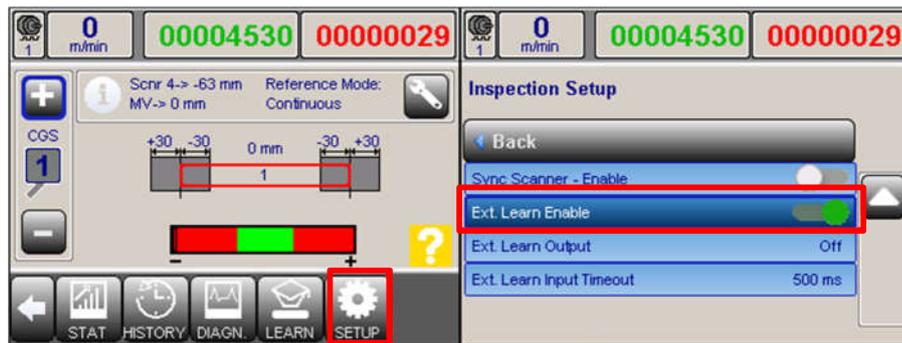


Figure 119: Navigate to the Inspection Setup Window External Learn Settings

2. Set '**Ext. Learn Enable**' to **ON**.
3. Set the Learn Output (**Optional**).
4. Set the Learn Input Timeout, this is the Time Duration necessary to enter learning mode.

Note1 – This feature is will only work with the Sync Scanner Input. This means that when this is being used, the Sync Scanner feature cannot be used.

Note2 – The External Learn will trigger a Pattern Learn, Volume Learn, Inspection Length Learn, or Barcode Learn. This will depend on the Sensor Type and the configuration for the sensor channel. For Example: If the Sensor is Linked with the Valve Channel, the Learn can trigger copying the Valve Channel's Pattern Data to the Inspection.

Note3 – Below is the Diagram for the Signal Timing.

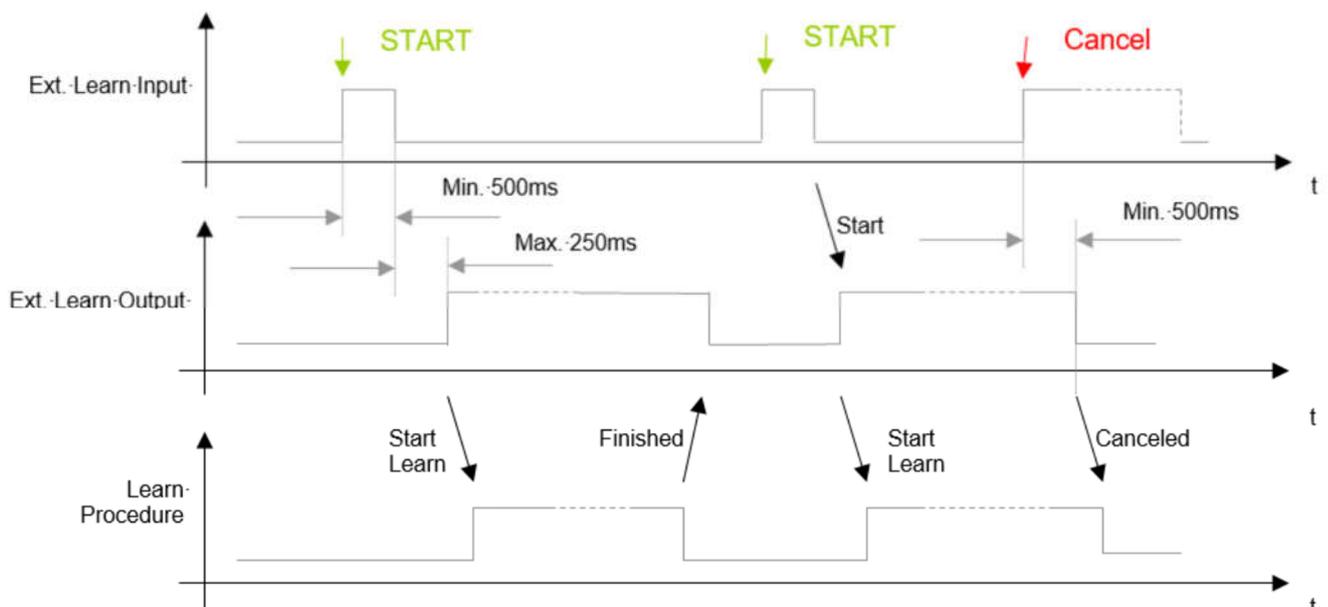


Figure 120: External Learn Timing Diagram

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Note4 – Use the following Diagram for the wiring of the External Learn Input.

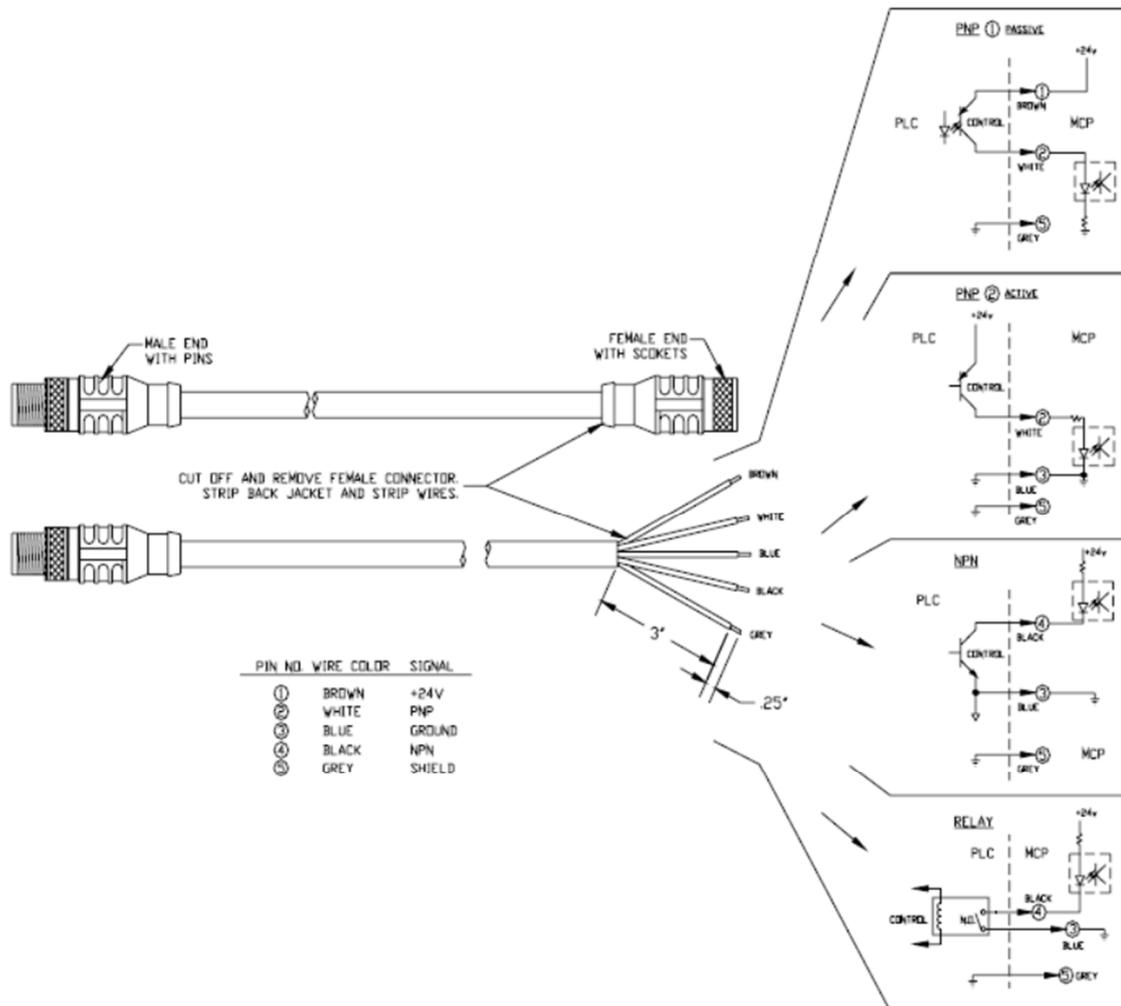


Figure 121: External Learn Input Wiring Diagram

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How to Configure Machine Interface

The Machine Interface Communication is used to send and receive data to configure the control without user interaction. The parent machine is connected to the DB-9 connector on the front of the control.

1. Navigate to the **System Setup Window** and Select '**COM Interface Mode**'.

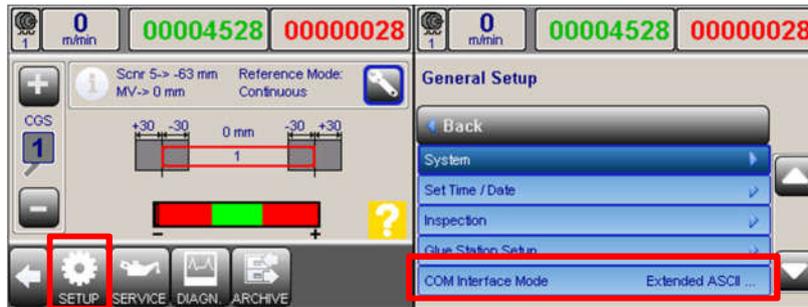


Figure 122: Navigate to the COM Interface Mode

2. Select Desired Communication Mode, and Click '**Apply**'.

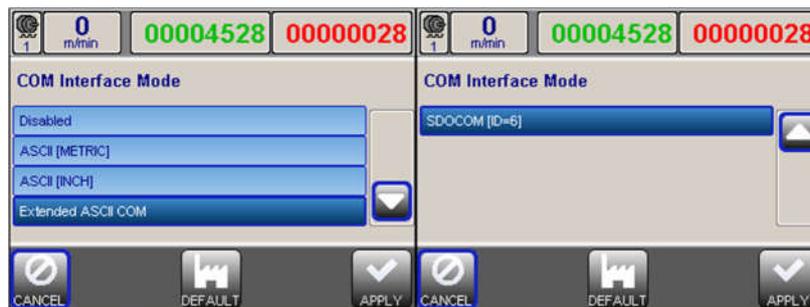


Figure 123: COM Interface Communication Mode

3. Power Cycle the Control using the switch on the power entry module.

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Using the MCP-8I Simulator

1. Load the IBS File that contains all of the controls settings by clicking the button at the top of the application labeled 'Load IBS File'.

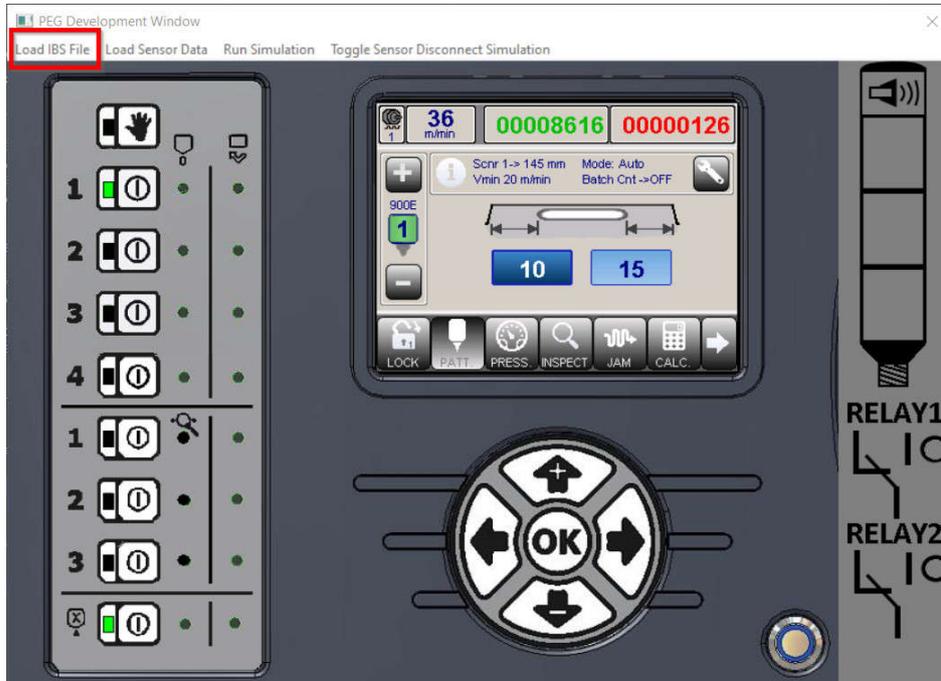


Figure 124: Simulator 'Load IBS File' Button

2. Load the file named 'SavedCurrent.ibs'.

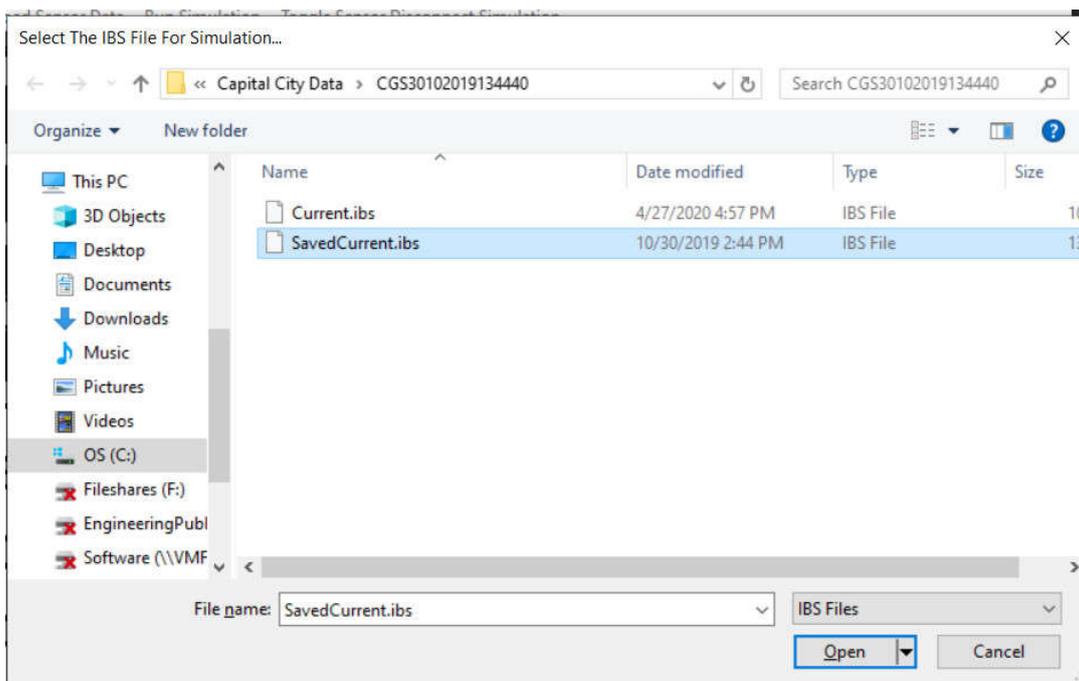


Figure 125: Loading the 'SavedCurrent.IBS' File

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- Load the Sensor's Data by clicking the button at the top of the application labeled '**Load Sensor Data**', then select which channel to load the data to. Unless otherwise noted, load the data to Sensor Channel 1.

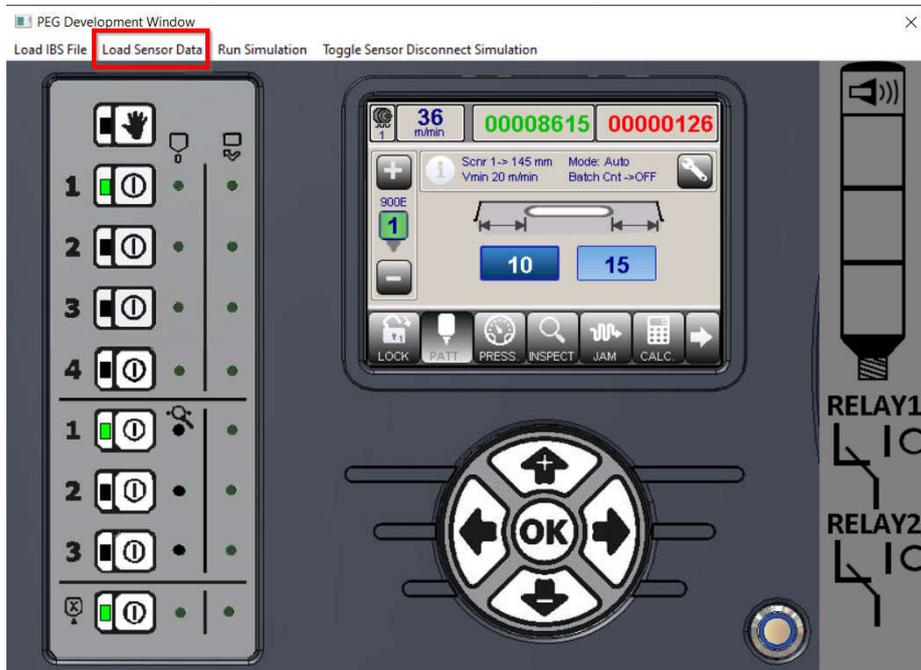


Figure 126: MCP8I Simulator 'Load Sensor Data' Button

- Usually, there will be 3 data files to choose from, GOODDATA.txt, BADDATA.txt, and CurrentData.txt.

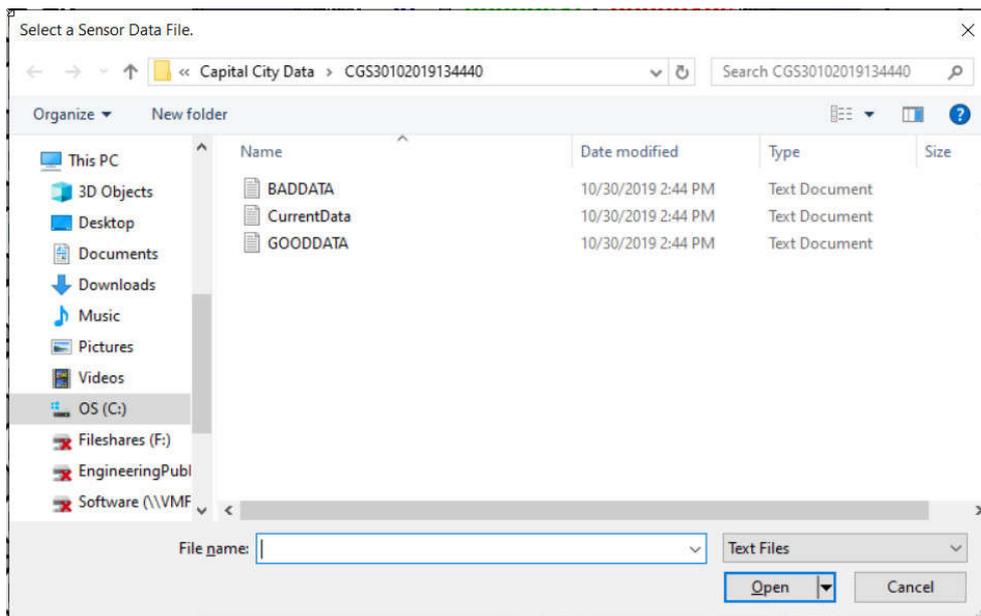


Figure 127: Loading Sensor Data Files

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- Now that the data is loaded, you can run simulations by clicking the 'Run Simulation' button at the top of the application. If the simulation passed you will see the green result light next to the sensor activation button. If the simulation failed you will see the red result light next to the sensor activation button.

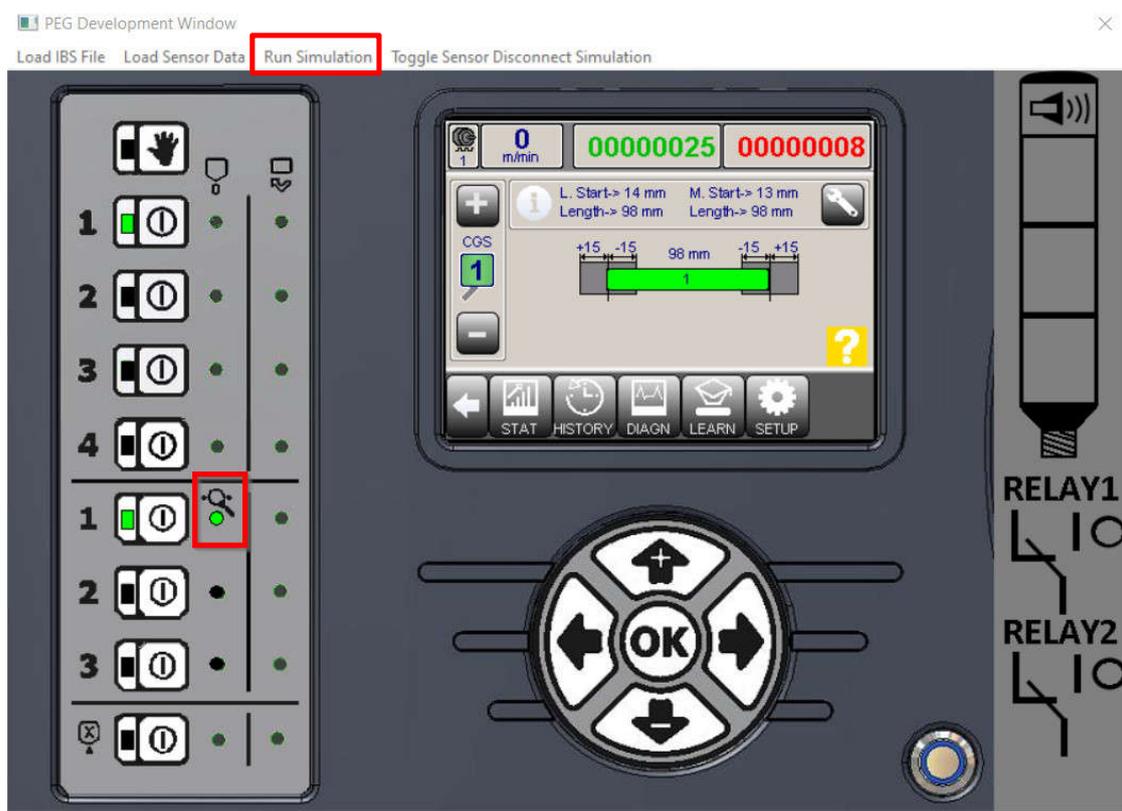


Figure 128: MCP8I Simulator Run Simulation Button

Note1 – The Simulator was originally meant just to show the different control windows and parameters. The MCP8I Simulator allows the user to run the simulation code based on the settings that are set. That being said, you can change settings and rerun the simulation and get different results.

Note2 – The Simulator has the ability to show the Inspection Alarm States. This is only available for the Inspection Simulation and the Alarm Beacon States for other control features are not included.

Note3 – The Simulator may have a software bug or two, since it is more of a development tool, not much time has been spent on enhancing its features. If you do encounter an issue, please send an email to 'Jason.Scott@valcomelton.com', and I will try to resolve it with a reasonable time.



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Revision Notes:

- Version: 4.0 – 08/25/2021
 - Added Jam Window Descriptions
 - Added Marking Valve System Settings Description
 - Added Diagnostics Menu Descriptions