

D2K Screen Description Manual

Customer Product Manual
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Change Record

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Common Screen Description Elements

The majority of HMI screen descriptions will comprise the following elements.

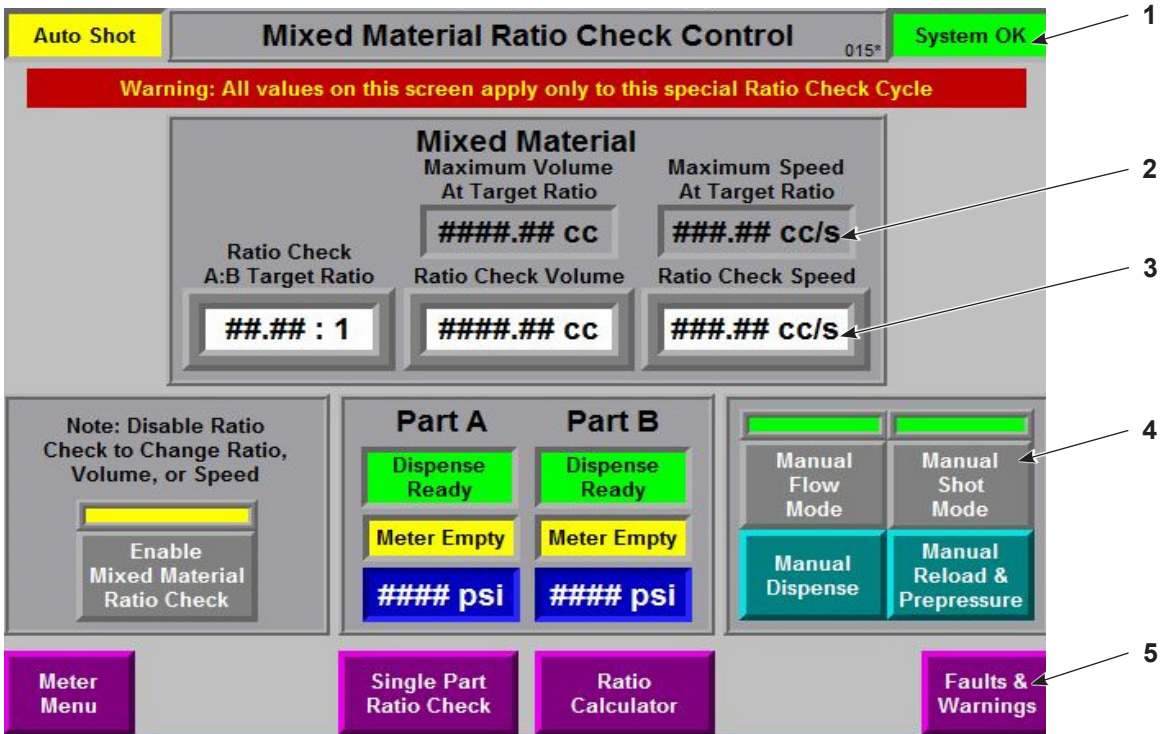


Figure 1 Common Screen Description Elements

1. Pilot light indicator
2. Data display
3. Data entry field
4. Push button with indicator light
5. Push button

Elements

See Figure 1. The majority of HMI screen descriptions will comprise the following elements:

Pilot Light Indicator

Pilot light indicators are shown as rectangles. A black or grey background means that the indicator is OFF. A colored background (green for normal conditions, yellow for caution or warnings, red for faults, etc.) means that the indicator is ON. A dark gray background indicates that the indicator is for an option that has not been selected for the particular application.

Push Button

Push buttons are shown as raised rectangular objects containing text. General operational control buttons (used to select modes, enable/disable features, etc.) are typically colored cyan. Push Buttons that initiate action (Manual Dispense, Manual Reload, etc.) are typically colored green. Screen navigation push buttons are colored magenta.

Push Buttons With Indicator Light

Push buttons are shown as raised rectangular objects containing text. General operational control buttons (used to select modes, enable/disable features, etc.) are typically colored cyan. The indicator light accompanying the push button indicates a particular feature is enabled.

Data Displays

Data displays are shown as rectangles that display alphanumeric information. Data displays have fixed or preset values which do not change during normal operation. They cannot be used to change the value that is displayed. Data displays with black backgrounds show live data which constantly changes during operation.

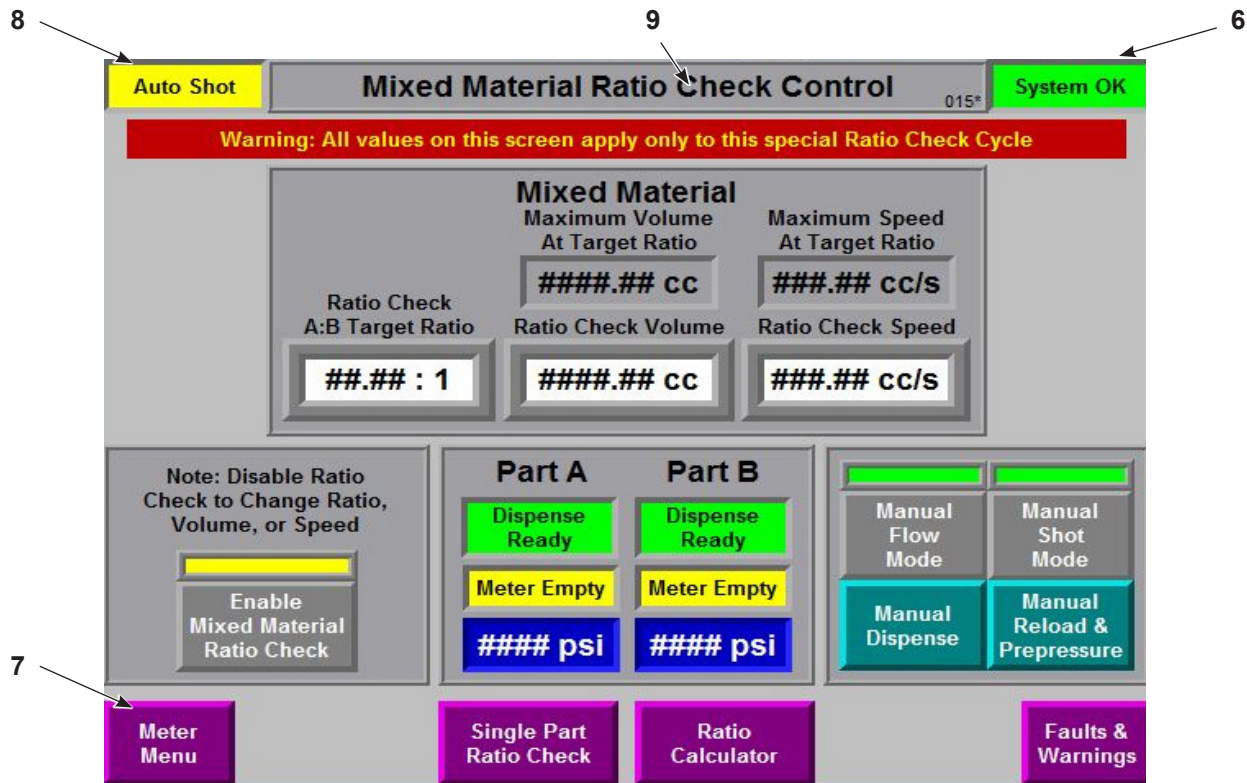


Figure 2 Typical Screen Layout

6. Mode indicator
- 7.Navigation button
8. Status indicator
9. Title bar

Typical Screen Layout

See Figure 2.

Mode Indicator

The mode indicator is shown in the upper left corner of the screen. It will display the currently active mode (NO MODE, MANUAL, AUTO, or JOG).

Navigation Buttons

Navigation buttons are located along the bottom of the screen. On normal operation screens, the button to return to the Main Menu Screen is usually found in the lower left corner. On most setup screens, this position is occupied by the button to return to the appropriate Setup Menu Screen.

Status Indicator

Shown in the upper right corner, It will display the current system status (SYSTEM OK, WARNING, or FAULT).

Title Bar

The top center of the screen contains a title bar which contains a unique, descriptive title for the screen.

System Setup

Flow Rate Setup

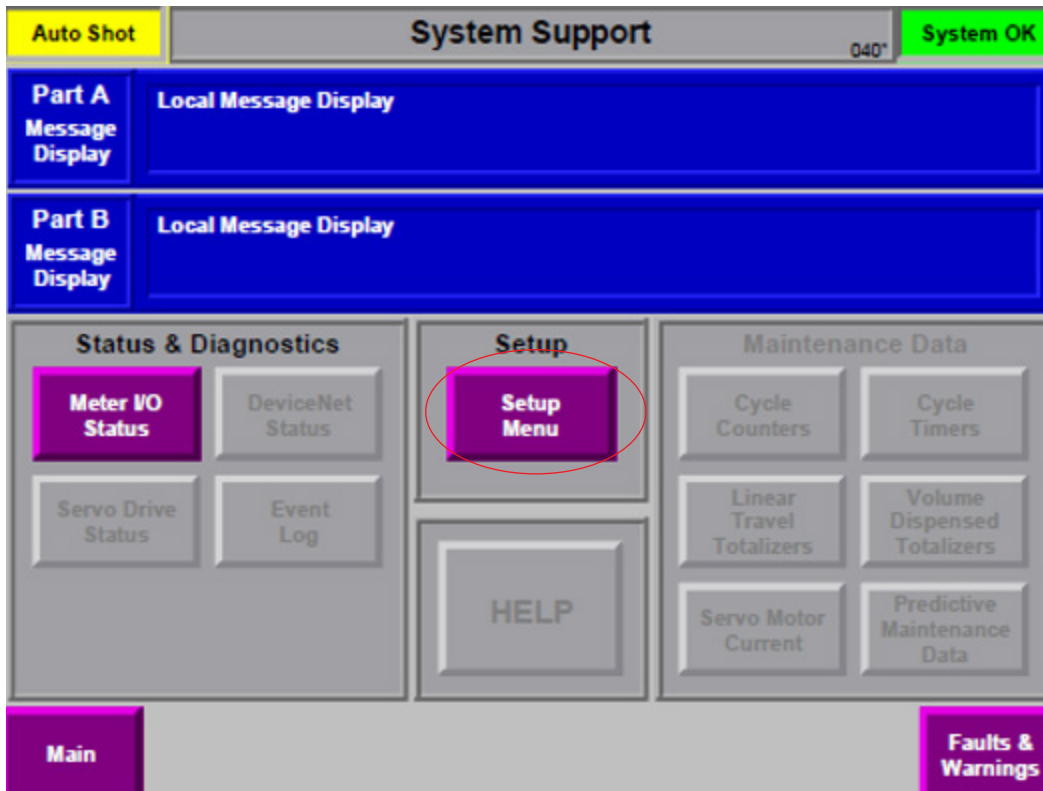


Figure 3 System Support

See Figure 3.

- Proceed to *System Support* HMI Screen.
- Proceed to *Setup Menu*.

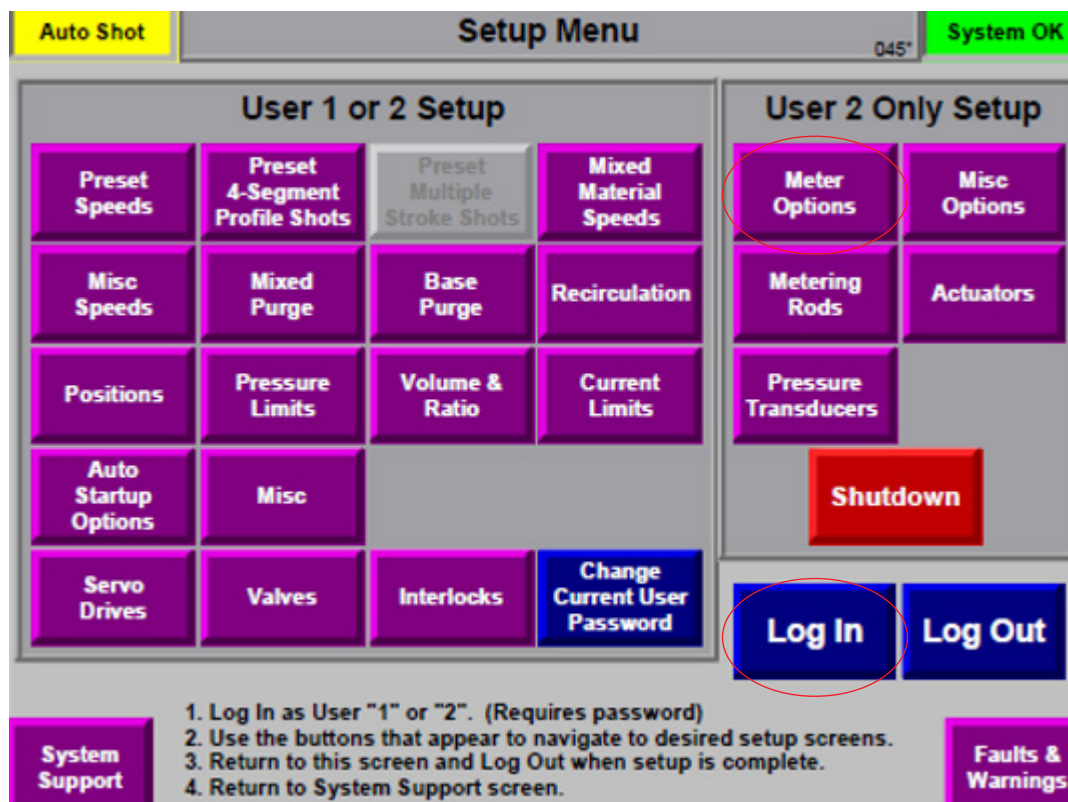


Figure 4 Setup Menu

See Figure 4.

- Proceed to *Log In* and elect S as username and 2 as the password. .
- Proceed to *Setup Menu*.
- Return to *Setup Menu* HMI Screen.
- Proceed to *User 2 Only Setup* and elect *Meter Options*.

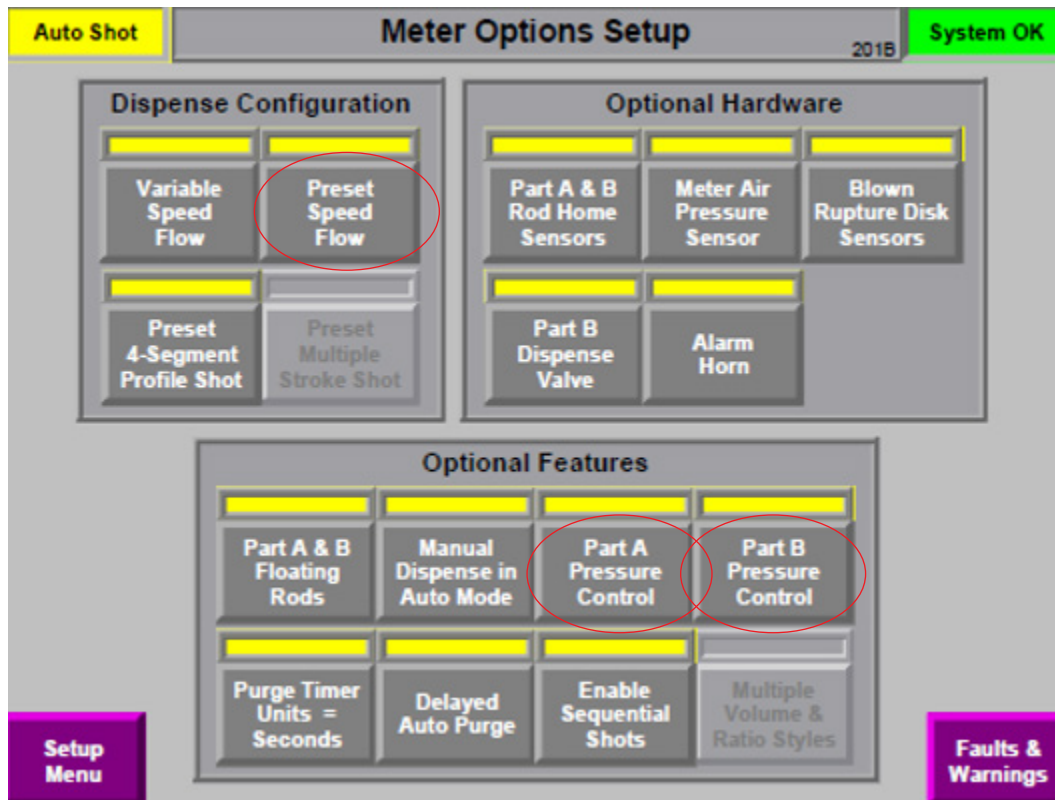


Figure 5 Meter Options Setup

See Figure 5.

- Enable *Preset Speed Flow*.
- Enable *Part A Pressure Control*.
- Enable *Part B Pressure Control*.

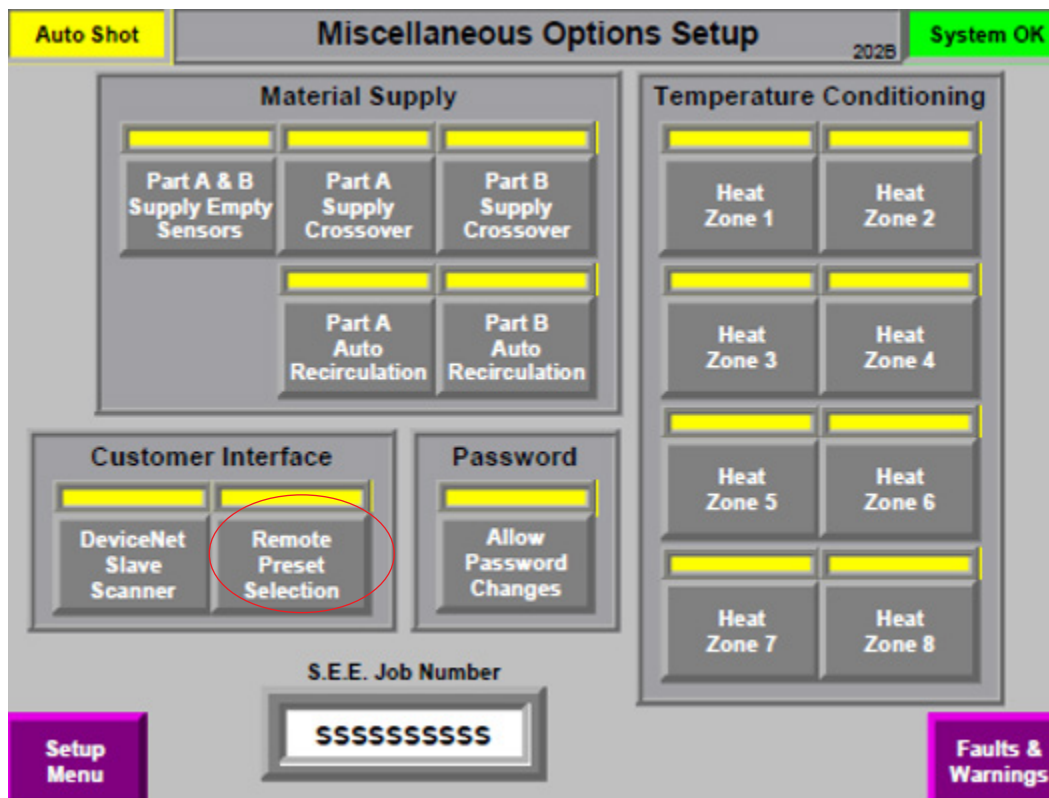


Figure 6 Miscellaneous Options Setup

See Figure 6.

- Go to *Miscellaneous Options Setup* HMI Screen.
- Enable Remote Preset Selection.

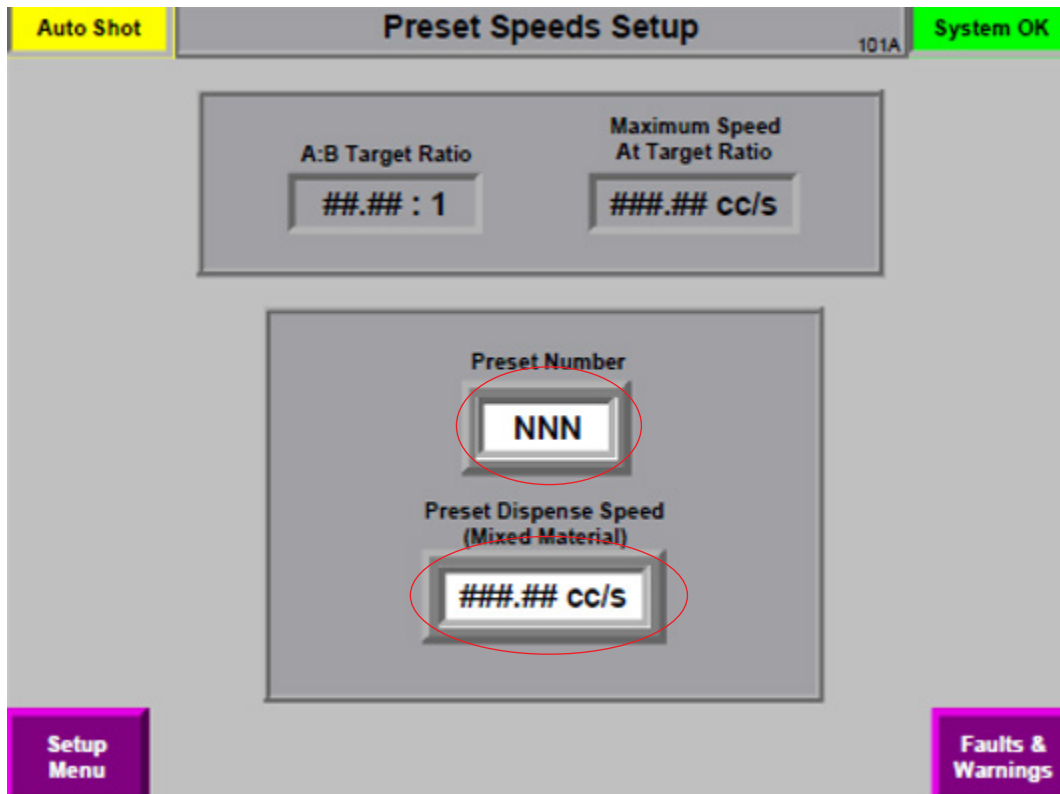


Figure 7 Preset Speeds Setup

See Figure 7.

- Go to *Preset Speeds Setup* HMI Screen.
- Enter 1 for *Preset Number*.
- Enter 5 for *Preset Dispense Speed* (this can be changed here for a larger or smaller bead size)
- Refer to page 4 of electrical schematic *EL-105-018*.
 - I:0/8 is the input for Binary 1. Set this high before cycle. This will choose the preset speed of Preset number 1.
 - When the signal for I:0/6 Remote Dispense Command is high the meter will dispense whatever preset is selected in the binary inputs available.

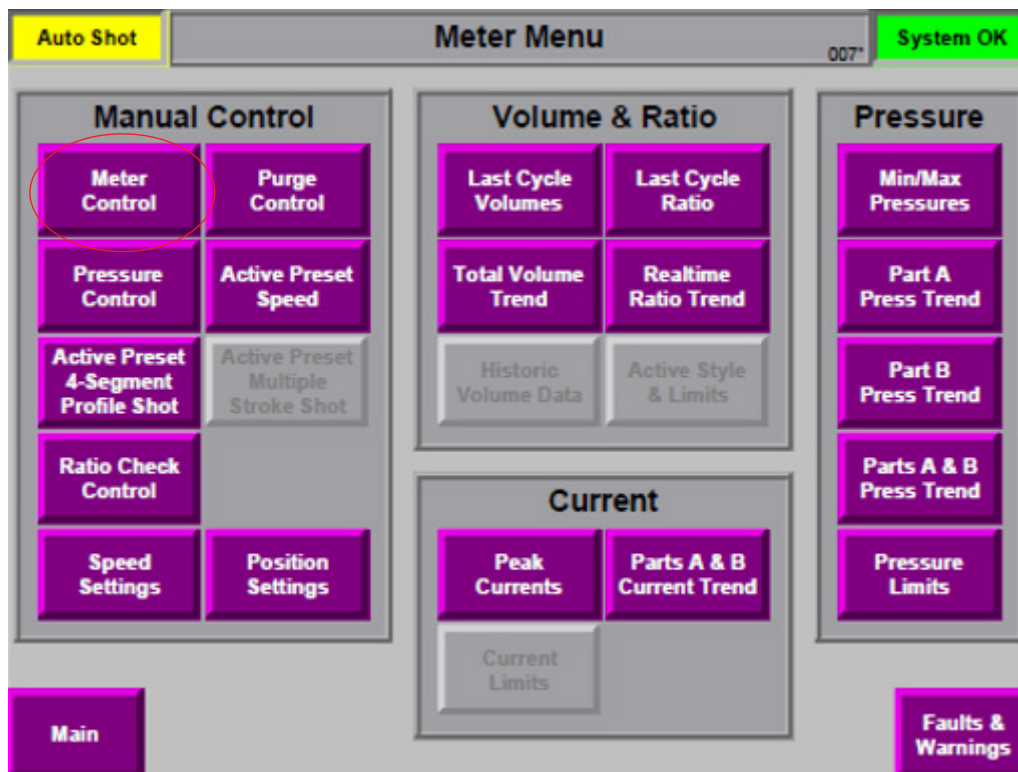


Figure 8 Meter Menu

See Figure 8.

- Log out of Setup Menu.
- Proceed to Meter Menu.
- Select *Meter Control*.

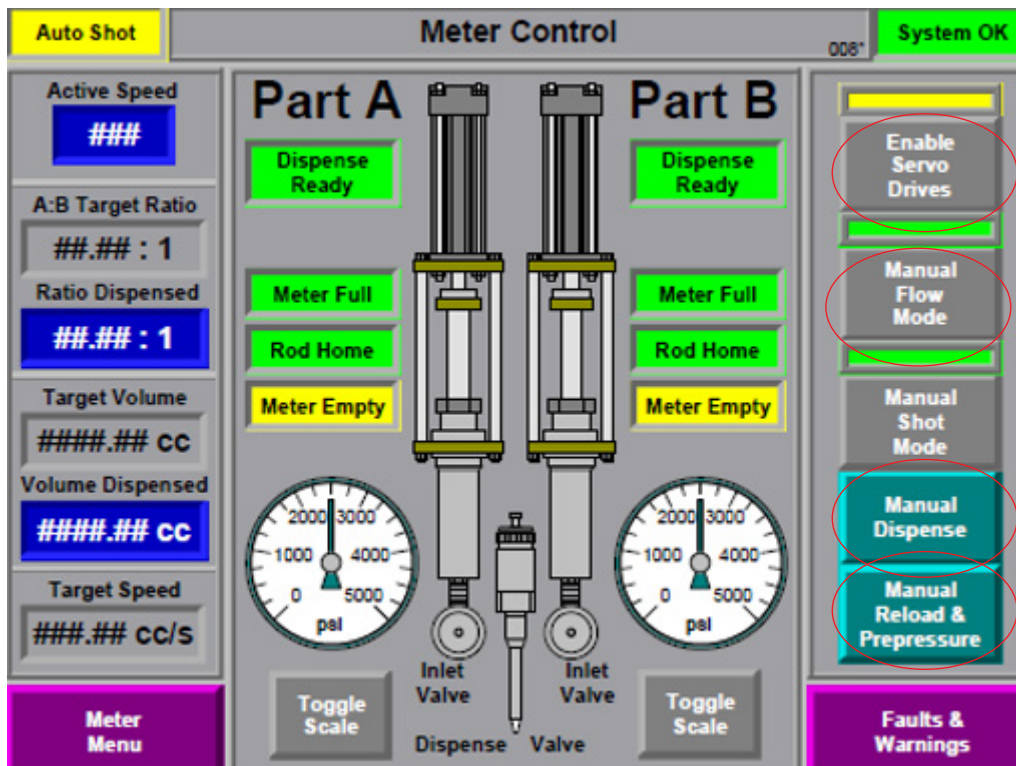


Figure 9 Meter Control

See Figure 9.

- Select *Enable Servo Drives* push button.
- Select *Manual Flow Mode* push button.
- Select *Manual Reload* push button.
- When you have dispense ready on both part A and B then select *Manual Dispense* push button.
- Record the dynamic pressure for both the part A and B about half way through the stroke of meter.
- This will be the reload pressure settings for A and B.

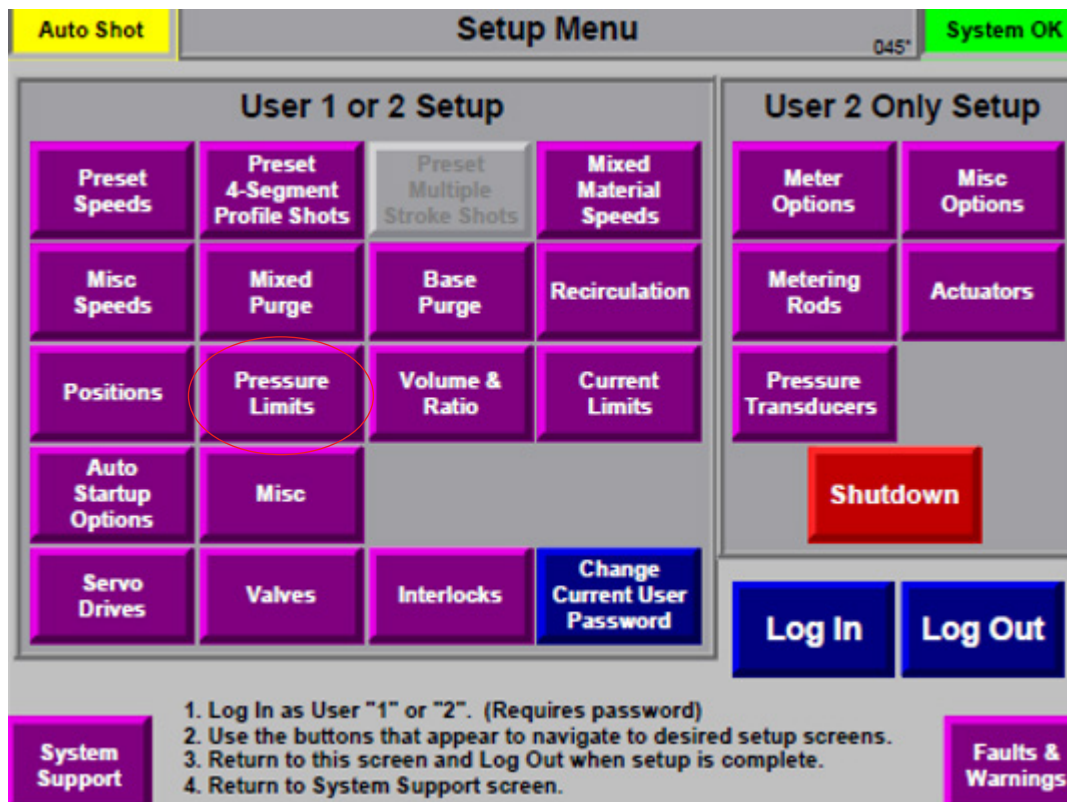


Figure 10 Setup Menu

See Figure 10.

- Return to *Setup Menu* HMI Screen.
- Select *Pressure Limits* push button to proceed to *Part A Pressure Limits Setup* HMI Screen.

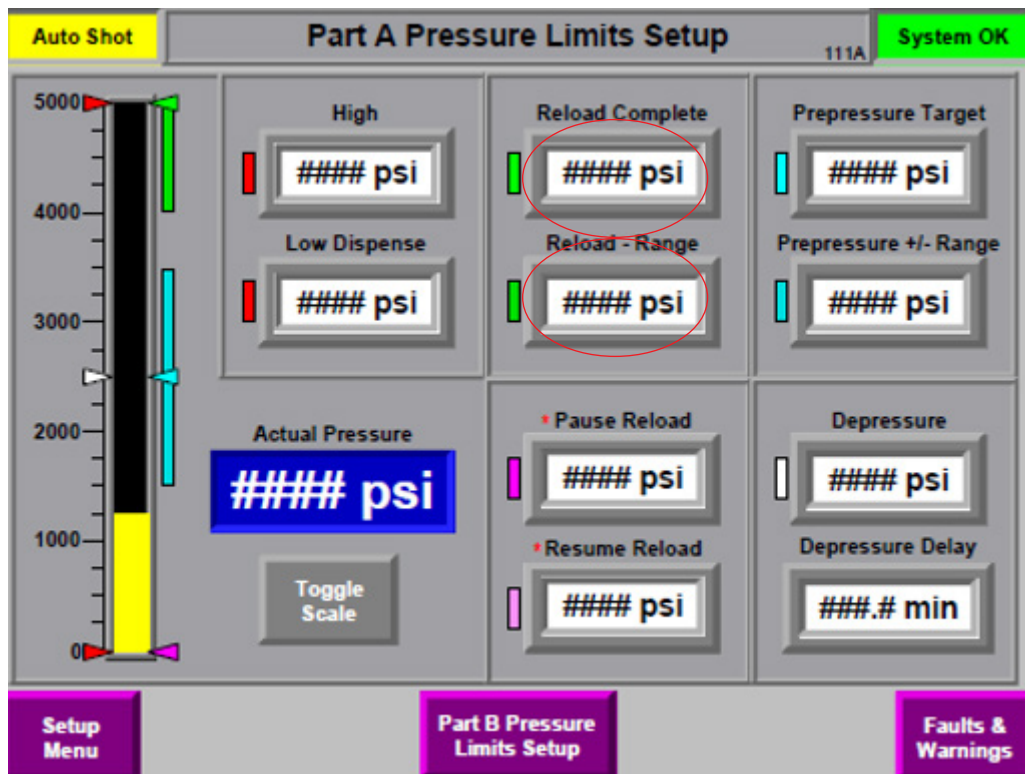


Figure 11 Part A Pressure Limits Setup

See Figure 11.

- Set *Reload Complete* to the dynamic recording for Part A.
- Set the *Reload-Range* to 50.
- Set the rest of the pressure settings necessary for the application.
- Select the *Part B Pressure Limits Setup* push button.

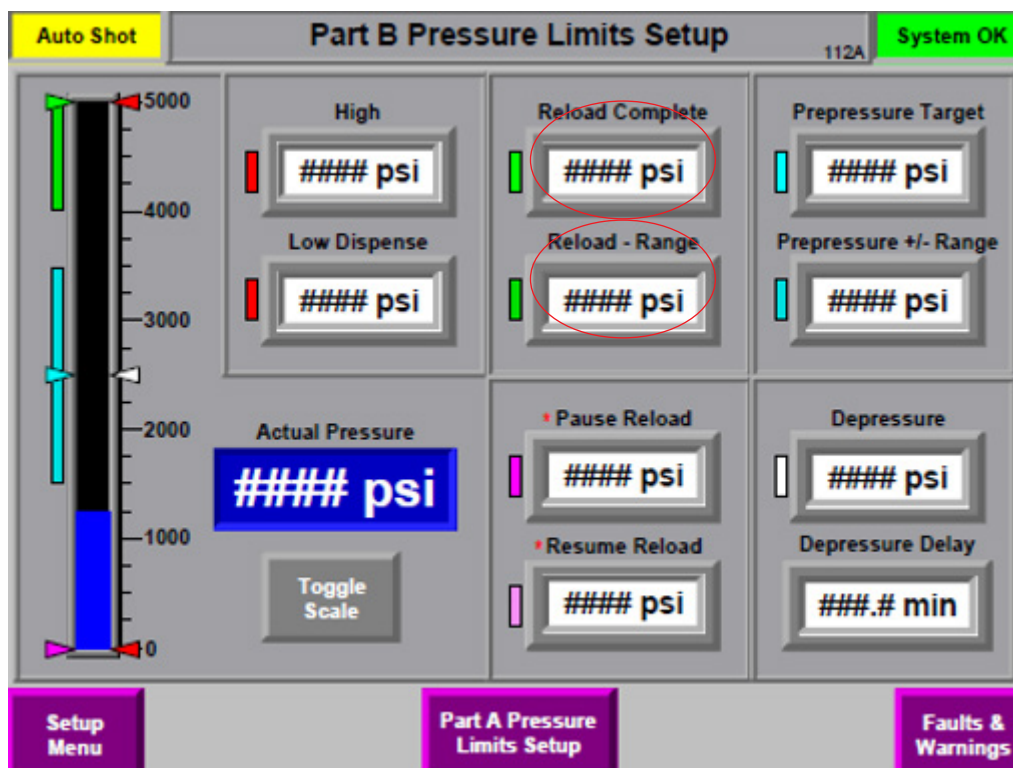


Figure 12 Part B Pressure Limits Setup

See Figure 12.

- Set *Reload Complete* to the dynamic recording for Part B.
- Set the *Reload-Range* to 50.
- Set the rest of the pressure settings necessary for the application.
- Initiate a bead and make changes to flow rate, pressure settings and robot speed to achieve desired bead size.

Mixed Material Speeds Setup

Figure 13 Mixed Material Speeds Setup

See Figure 13.

The primary use of the *Mixed Material Speed Setup* HMI Screen is to program the manual flow rate, slow jog dispense and 10 volt dispense command.

Manual Dispense: The manual dispense speed applies to the flow rate or dispense rate when the system is set in the Manual Flow Mode.

Slow Jog Dispense: The slow jog dispense speed applies to the flow rate or dispense rate when the *Slow Jog Dispense* option is enabled

10 Volt Dispense Command: The 10v Dispense Speed Command applies to an external means of variable speed control. This speed only applies when the system is set in the variable dispense speed configuration. A 0-10 volt analog input signal can be used to control the flow rate or dispense speed. The settings intent is to limit the max flow rate at 10 volts. The actual flow rate during a dispense cycle will vary linearly from zero to this value as the analog input varies from 0 to 10VDC.

Displayed Data: The current volumetric A/B Target Ratio is displayed in the top left. This is for display and reference purposes only. The programmed ratio is controlled elsewhere. The Maximum Speed at Target Ratio display is on the top right. This display is for reference only. The max speed at target ratio is automatically calculated by the PLC.

Mixed Purge Setup

The screenshot displays the 'Mixed Purge Setup' screen with the following fields and options:

- Auto Shot** (Yellow button)
- Mixed Purge Setup** (Title)
- 106A** (Identifier)
- System OK** (Green status indicator)
- A:B Target Ratio**: $##.## : 1$
- Maximum Volume At Target Ratio**: $####.## \text{ cc}$
- Maximum Speed At Target Ratio**: $###.## \text{ cc/s}$
- Purge Timer**
 - * Warning Time: $###.## \text{ min}$
 - * Fault Time: $###.## \text{ min}$
- Purge Counter**
 - Max Purge Cycles: $###$
 - Delayed Auto Purge Option Enabled (Green button)
- Mixed Purge Shot**
 - Volume: $####.## \text{ cc}$
 - Speed: $###.## \text{ cc/s}$
- Setup Menu** (Purple button)
- Faults & Warnings** (Purple button)

Figure 14 Mixed Purge Setup

See Figure 14.

The primary use of the mixed purge setup screen is to program and or adjust the timed intervals, volumes, speeds and consecutive purge cycle limits. The purge cycles intended use is to expel mixed material from the mixing tube before it begins to react and solidify. The purge cycle settings will be programmed according to the following.

TDS Cure Schedule: The technical data sheets for the adhesive will list a cure time, gel time, and or work life. Use the time listed on the sheet to program a suitable purge warning time and purge fault time.

Mixer Volume: The mixed purge shot volume will be programmed according to the size mixer in use. The mixed purge shot volume must expel the entire contents of the mixer.

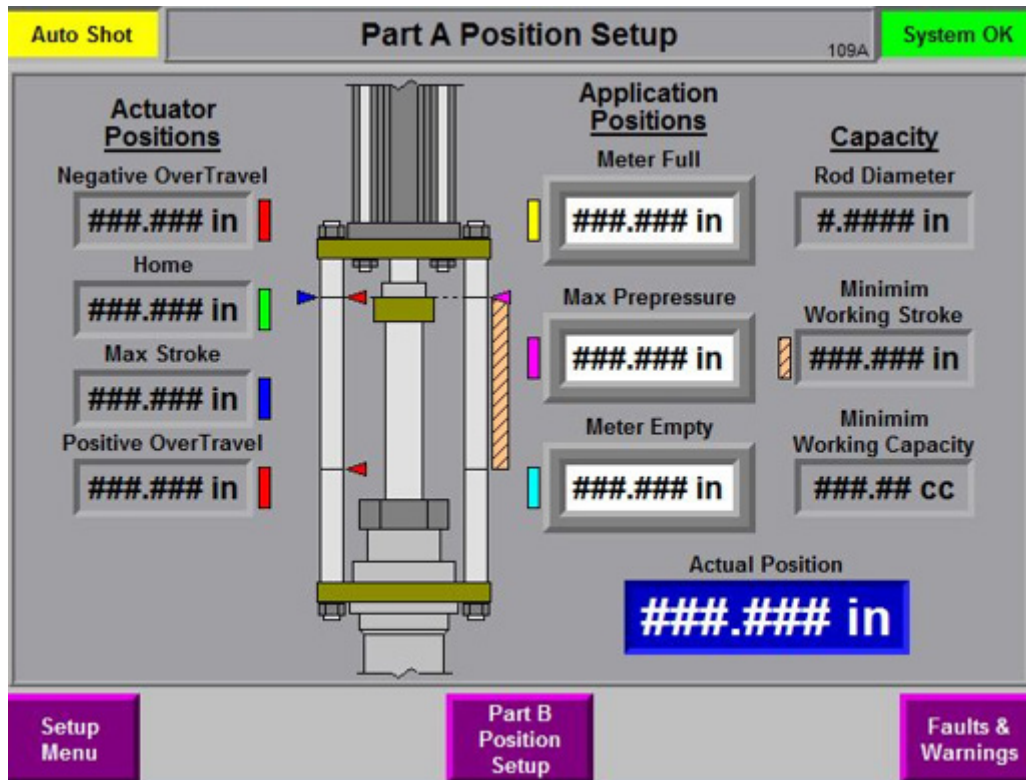


Figure 15 Part A Position Setup

See Figure 15.

The primary use of the Position A Setup Screen is to define or adjust the full, empty, and max pre-pressure zone limits. The full, max pre-pressure, and fixed home zone settings work in conjunction with the pre-pressure option. The max pre-pressure limit will only be editable when the pre-pressure option is enabled. The full limit is defined as the position at which the metering rods stop at the end of the refill cycle and the starting point for the pre-pressure cycle. The max pre-pressure limit is defined as the maximum distance the rods will travel in the positive direction during the pre-pressure routine. The home zone acts as the limit for the pre-pressure movement in the negative direction. The empty limit defines the end of the meters total stroke. The empty limit is typically not adjusted.

The data displays to the far left and right are reference positions and calculated volumes that are defined on another screen. The intent of the displayed data is to give reference to the meter capacity versus to compare against process requirement while fine tuning the adjustable limits. The actual servo position box in the lower right corner displays the servo positioning live. Changing the meter full and max pre-pressure zones will reduce the total volume output. You must know the total volume required for the cycle and set the zones accordingly.

If the zones are too small, you may generate pre-pressure zone faults.

Typical zone ranges will be:

1. METER FULL .250"
2. MAX PRE-PRESSURE .500"

These ranges may be smaller or larger depending on your specific material and process requirement.

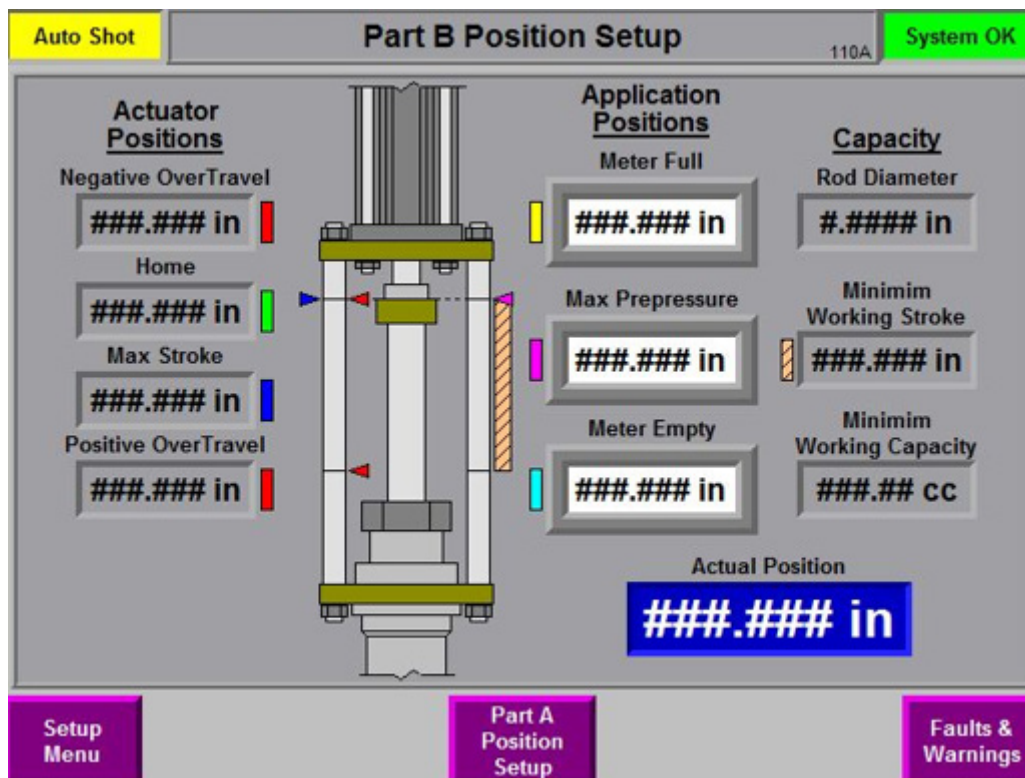


Figure 16 Part B Position Setup

See Figure 16.

The primary use of the Position B Setup Screen is to define or adjust the full, empty, and max pre-pressure zone limits. The full, max pre-pressure, and fixed home zone settings work in conjunction with the pre-pressure option. The max pre-pressure limit will only be editable when the pre-pressure option is enabled. The full limit is defined as the position at which the metering rods stop at the end of the refill cycle and the starting point for the pre-pressure cycle. The max pre-pressure limit is defined as the maximum distance the rods will travel in the positive direction during the pre-pressure routine. The home zone acts as the limit for the pre-pressure movement in the negative direction. The empty limit defines the end of the meters total stroke. The empty limit is typically not adjusted.

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System Faults

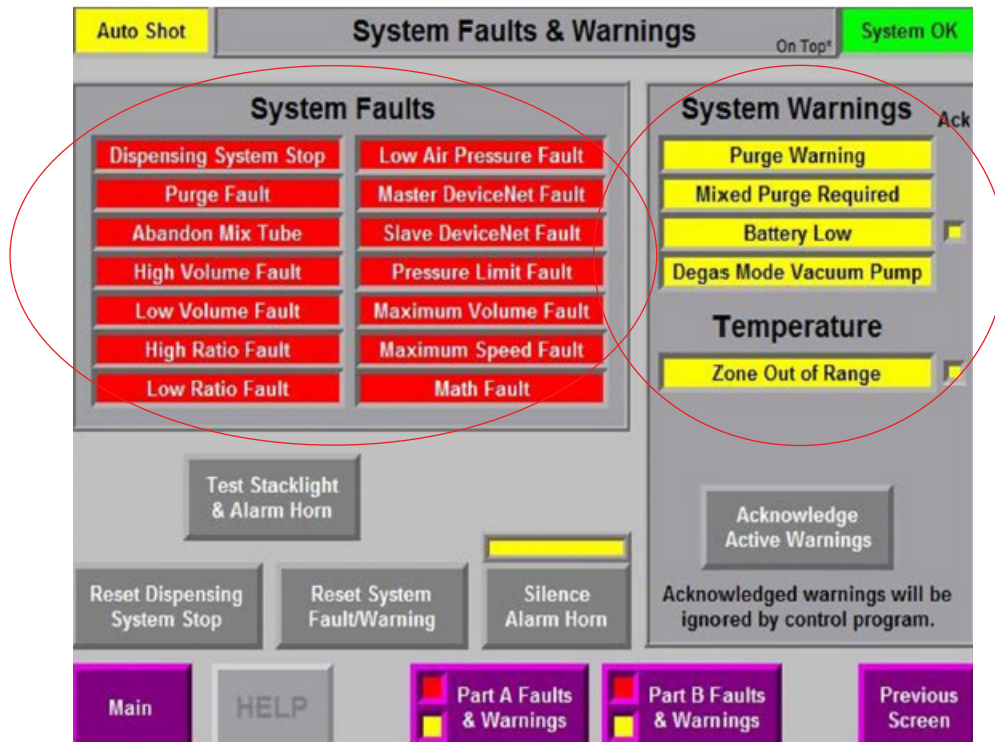


Figure 17 Sytem Fault and Warnings

See Figure 17.

Dispensing System Stop Fault

Problem:

The emergency stop button has been pressed.

Solution:

Follow all system safety procedures. Correct the condition that caused an operator to press the e-stop. If it is certain that it is safe to restart system and all safety policies of your employer are followed.

You may twist and pull the e-stop button. Hit the reset dispensing system stop button.

Purge Fault

Problem:

The purge timer has expired before a shot was taken or the purge cycle occurred. The purge timer settings must be inspected. Poor performance and additional faults will be the result if the purge timer settings are not inspected.

Solution:

Replace cured mix tube.

Do not attempt to clear a purge fault without first replacing the mix tube.

Abandon Mix Tube Fault

Problem:

The purge counter has reached the maximum limit of purges. If enabled, the system will limit the amount of purges in a row without taking a programmed shot. This is used to limit the waste of material.

Solution:

Remove and replace mixer(s). Clean and check dispense valve for cured material. Reset all faults.

High and Low Volume Faults

Problem:

When a recorded shot volume is above or below the programed volume.

Solution:

Check volume cycle screen. Verify if volume dispensed is correct. Clear fault and continue.

NOTE: False volume faults can be generated by robot calling shots too close together.

High and Low Ratio Faults

Problem:

When the recorded shot ratio is above or below the programmed ratio.

Solution:

Check Ratio Cycle Screen. Verify if the ratio is correct. Clear faults and continue.

Low Air Pressure Faults

Problem:

System air pressure is too low.

Solution:

Ensure system air pressure supplied to meter is within specifications.

Master and Slave DeviceNet Faults

Problem:

Internal component communications have been lost. Certain faults automatically suspend communications for safety. Communications during start up may take up 30 seconds.

Solution:

Hit the reset fault button. If condition continues beyond 30 seconds to 1 min., open the control box door and examine the device net fault code. The device net codes are displayed on the device net module. Use the code for reference within the device net manual.

Pressure Limit Fault

Problem:

A pressure limit fault has occurred. Refer to part A and B Faults Screen.

Solution:

Proceed to the part A and B Faults screen. Reset Faults.

Maximum Volume Fault/Maximum Speed Fault

Problem:

An attempt to input a speed or volume that exceeds the systems limits has occurred. Many programmed checks and balances within the system prevent this condition.

Solution:

Proceed to the part A and B Faults screen. Reset Faults.

Math Fault

Problem:

An attempt to input data that cannot be computed by the PLC. Many programmed checks and balances within the system prevent this condition.

Solution:

Cycle power and reset the system.

System Warnings

See Figure 17.

Purge Warning

Problem:

The purge timer is nearly expired.

Solution:

An automatic or manual purge is required. The robot and dispense valve must return to the ok purge position. Failure to do so will result in a purge fault and the mix tube will need to be replaced.

Mixed Purge Required

Problem:

A mixed purge is required after testing ratio in the ratio check screen. The robot must send the ok to purge signal to the meter.

Solution:

A manual purge will need to be completed before the system can continue.

Battery Low

Problem:

The PLC battery is nearly dead. Do not turn off power if this warning is present.



WARNING: Turning off power while the back up battery is dead will result in the loss of the PLC program.

Solution:

Replace the PLC battery while the power is still on.

Temp Zone Out Of Range

Problem:

The temperature controller is outside its optimum range.

Solution:

Allow the system to warm up or cool down.

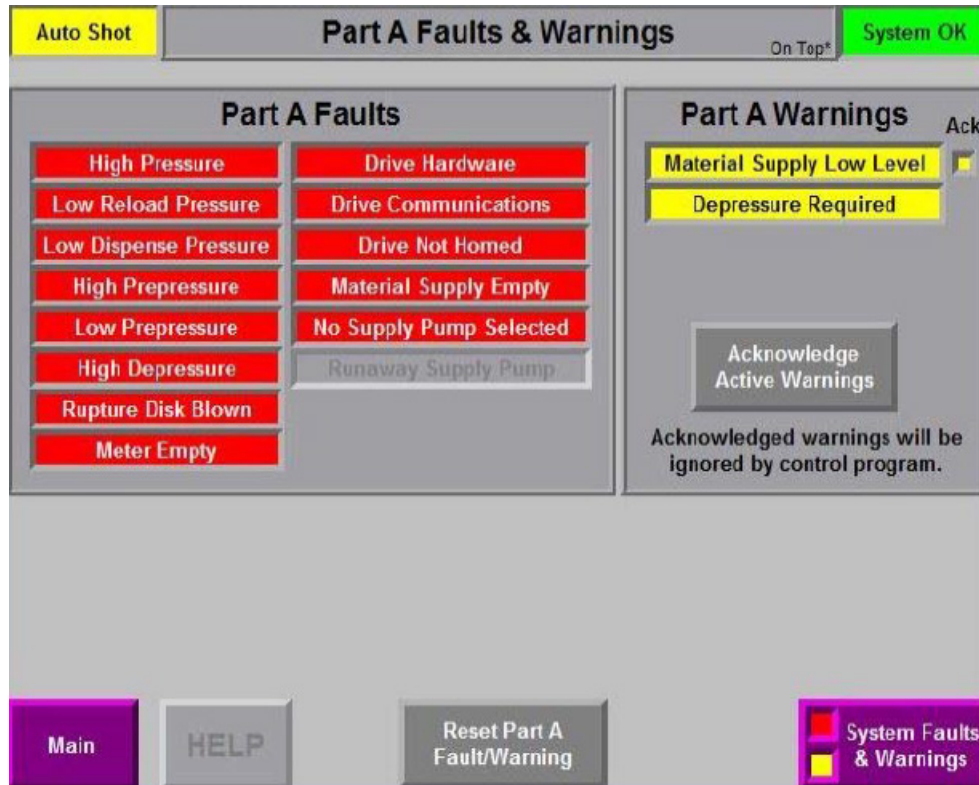


Figure 18 Part A Faults & Warnings

See Figure 18.

High Pressure

Problem:

The pressure inside the system has passed the maximum preset limit.

Common Causes:

- Cured mixer
- Purge timer expired
- Cured valve ports
- Blocked nozzle
- Dispense valve not opening
- Flow rate too fast

Solution:

NOTE: High pressure fault must be respected and solved before production can continue.

- Determine the cause of high pressure.
- Safely relieve high pressure.
- Replace mixer.
- Clean dispense valve and remove any clean blockages.
- Cycle system without the mixer. Examine if pressures return to normal range with the mixer removed.



WARNING: If high pressures continue, you must resolve the problem. Do not increase high pressure limits. The limits are set for normal operation. Changing limits will affect mix quality.

Low Reload Pressure

Problem:

The supply inlet pressure is below the reload complete pressure setting.

Common Causes:

- Supply pump setting too low
- Supply pump sticking
- Large air pocket present in supply pump
- Supply pump needs servicing
- Meter inlet valve stuck closed or blocked
- No oil in pump wet cup

Solution:

- Reset fault.
- Verify that the supply pump pressure is above the reload pressure setting.
- Increase supply pump pressure.
- Check condition of supply pump.
- Check condition of inlet hoses and valves.
- Cycle system without the mixer.
- Examine if pressures return to normal range with the mixer removed.

Low Dispense Pressure

Problem:

The pressure during the dispense has dropped below the allowed pressure setting.

Solution:

- Reset fault.
- Check for leaks.
- The dispense speed is too slow.
- The mixer is not attached.

High PrePressure Fault

Problem:

The pressure trapped in the system is higher than the pre-pressure target. The meter does not have enough space for movement to control the pressure.

Solution:

- Reset fault.
- Turn of pressure control temporarily.
- Switch the meter to manual mode.
- Purge one cycle in maunual mode.
- Turn on pressure control.
- Reload meter.
- The mixer is not attached.

Low PrePressure Fault

Problem:

The pressure trapped in the system is lower than the prepressure target. The meter does not have enough room to control the pressure.

Common Causes:

- Supply pressure abnormal.
- Pressure zones too small
- High pressure trapped prior to cycle.

Solution:

- Reset fault.
- Turn off pressure control temporarily switch the meter to manual mode.
- Purge one cycle in manual mode.
- Turn pressure control on.
- Select auto and relaod the meter.

Meter Empty Fault

Problem:

The meter reached the empty limit before the shot was complete. The meter is stuck in the empty position

Common Causes:

Operator or robot holding dispense command too long while in flow mode.

Solution:

Open the Setup Menu. Select Drive Setup Menu. Use the jog reload button to manually move the rod up off of the empty limit. Once the meter empty indicator is off, return to the Faults and Warnings Screen. Reset the fault. Hit the auto start up button or manually reload the meter.

NOTE: This problem will only occur if in the manual flow mode or if in the bead preset flow automatic mode.

Drive Hardware

Problem:

A problem has occurred with the servo motor or the servo motor driver.

Common Causes:

- Servos working too hard
- Servos near process limit
- Problem with servo cables
- Servo too hot
- Supply pressure too high
- Loose wires
- Servo needs service.

Solution:

Open the control panel door and record the error code flashing on the ultra drive module. The code will flash an “e” followed by two numbers. Use these two numbers to reference the ultra drive literature. The fault code list is provided in the engineering documentation. Use the fault description to troubleshoot the possible causes.

NOTE: The most common causes are servo over temp, loss of position, and an over voltage condition. Once the fault condition is corrected, cycle power and reset the fault.

Drive Communication

Problem:

The plc and driver have lost communication.

Solution:

Open the control panel and read the “e” code on the drive. Refer to the drive fault code list. Cycle power and clear the fault.

Drive Not Home

Problem:

The servo has lost its home or zero position. This can occur briefly upon start up. It is only temporary until the drive has fully booted. If the problem continues, you must re home the drive in the drive setup screen in the setup menu.



WARNING: Do not disconnect servo cables while power is on the system. Doing so may cause a loss of home position.

Common Causes:

- Servo unplugged while power on
- New servo installed before home reset
- Loose wires
- Power spike
- Power outage.

Solution:

Contact Nordson for support.

Material Supply Empty

Problem:

An interrupt fault has occurred in the tank system.

Solution:

Check the tank system HMI to correct the condition. You must reset the fault both on the tank system and the meter system.

Material Supply Low Level Warning

Problem:

A non-interrupt warning condition exists in the tank system. Refer to the tank hmi to correct the warning condition.

Common Causes:

Refer to the tank System Fault Descriptions.

Solution:

Refer to the tank System Fault Descriptions.