CP Gun/SDS Meter-PCI Controller with Integrated Temperature Conditioning

Manual 1064311A−02
Issued 11/07

NORDSON CORPORATION • AMHERST, OHIO • USA

Contact Us

Nordson Corporation welcomes requests for information, comments, and inquiries about its products. General information about Nordson can be found on the Internet using the following address:
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Safety

Read and follow these safety instructions. Task- and equipment-specific warnings, cautions, and instructions are included in equipment documentation where appropriate.

Make sure all equipment documentation, including these instructions, is accessible to persons operating or servicing equipment.

Qualified Personnel

Equipment owners are responsible for making sure that Nordson equipment is installed, operated, and serviced by qualified personnel. Qualified personnel are those employees or contractors who are trained to safely perform their assigned tasks. They are familiar with all relevant safety rules and regulations and are physically capable of performing their assigned tasks.

Intended Use

Use of Nordson equipment in ways other than those described in the documentation supplied with the equipment may result in injury to persons or damage to property.

Some examples of unintended use of equipment include

- using incompatible materials
- making unauthorized modifications
- removing or bypassing safety guards or interlocks
- using incompatible or damaged parts
- using unapproved auxiliary equipment
- operating equipment in excess of maximum ratings

Regulations and Approvals

Make sure all equipment is rated and approved for the environment in which it is used. Any approvals obtained for Nordson equipment will be voided if instructions for installation, operation, and service are not followed.

Personal Safety

To prevent injury follow these instructions.

- Do not operate or service equipment unless you are qualified.
- Do not operate equipment unless safety guards, doors, or covers are intact and automatic interlocks are operating properly. Do not bypass or disarm any safety devices.
- Keep clear of moving equipment. Before adjusting or servicing moving equipment, shut off the power supply and wait until the equipment comes to a complete stop. Lock out power and secure the equipment to prevent unexpected movement.
- Relieve (bleed off) hydraulic and pneumatic pressure before adjusting or servicing pressurized systems or components. Disconnect, lock out, and tag switches before servicing electrical equipment.
- While operating manual spray guns, make sure you are grounded. Wear electrically conductive gloves or a grounding strap connected to the gun handle or other true earth ground. Do not wear or carry metallic objects such as jewelry or tools.
- If you receive even a slight electrical shock, shut down all electrical or electrostatic equipment immediately. Do not restart the equipment until the problem has been identified and corrected.
- Obtain and read Material Safety Data Sheets (MSDS) for all materials used. Follow the manufacturer's instructions for safe handling and use of materials, and use recommended personal protection devices.
- Make sure the spray area is adequately ventilated.
- To prevent injury, be aware of less-obvious dangers in the workplace that often cannot be completely eliminated, such as hot surfaces, sharp edges, energized electrical circuits, and moving parts that cannot be enclosed or otherwise guarded for practical reasons.

High-Pressure Fluids

High-pressure fluids, unless they are safely contained, are extremely hazardous. Always relieve fluid pressure before adjusting or servicing high pressure equipment. A jet of high-pressure fluid can cut like a knife and cause serious bodily injury, amputation, or death. Fluids penetrating the skin can also cause toxic poisoning.

If you suffer a fluid injection injury, seek medical care immediately. If possible, provide a copy of the MSDS for the injected fluid to the health care provider.

The National Spray Equipment Manufacturers Association has created a wallet card that you should carry when you are operating high-pressure spray equipment. These cards are supplied with your equipment. The following is the text of this card:

WARNING: Any injury caused by high pressure liquid can be serious. If you are injured or even suspect an injury:

- Go to an emergency room immediately.
- Tell the doctor that you suspect an injection injury.
- Show him this card
- Tell him what kind of material you were spraying

MEDICAL ALERT—AIRLESS SPRAY WOUNDS: NOTE TO PHYSICIAN

Injection in the skin is a serious traumatic injury. It is important to treat the injury surgically as soon as possible. Do not delay treatment to research toxicity. Toxicity is a concern with some exotic coatings injected directly into the bloodstream.

Consultation with a plastic surgeon or a reconstructive hand surgeon may be advisable.

The seriousness of the wound depends on where the injury is on the body, whether the substance hit something on its way in and deflected causing more damage, and many other variables including skin microflora residing in the paint or gun which are blasted into the wound. If the injected paint contains acrylic latex and titanium dioxide that damage the tissue's resistance to infection, bacterial growth will flourish. The treatment that doctors recommend for an injection injury to the hand includes immediate decompression of the closed vascular compartments of the hand to release the underlying tissue distended by the injected paint, judicious wound debridement, and immediate antibiotic treatment.

Fire Safety

To avoid a fire or explosion, follow these instructions.

- Ground all conductive equipment. Use only grounded air and fluid hoses. Check equipment and workpiece grounding devices regularly. Resistance to ground must not exceed one megohm.
- Shut down all equipment immediately if you notice static sparking or arcing. Do not restart the equipment until the cause has been identified and corrected.
- Do not smoke, weld, grind, or use open flames where flammable materials are being used or stored.
- Do not heat materials to temperatures above those recommended by the manufacturer. Make sure heat monitoring and limiting devices are working properly.
- Provide adequate ventilation to prevent dangerous concentrations of volatile particles or vapors. Refer to local codes or your material MSDS for guidance.
- Do not disconnect live electrical circuits when working with flammable materials. Shut off power at a disconnect switch first to prevent sparking.
- Know where emergency stop buttons, shutoff valves, and fire extinguishers are located. If a fire starts in a spray booth, immediately shut off the spray system and exhaust fans.
- Shut off electrostatic power and ground the charging system before adjusting, cleaning, or repairing electrostatic equipment.
- Clean, maintain, test, and repair equipment according to the instructions in your equipment documentation.
- Use only replacement parts that are designed for use with original equipment. Contact your Nordson representative for parts information and advice.

Halogenated Hydrocarbon Solvent Hazards

Do not use halogenated hydrocarbon solvents in a pressurized system that contains aluminum components. Under pressure, these solvents can react with aluminum and explode, causing injury, death, or property damage. Halogenated hydrocarbon solvents contain one or more of the following elements:

Element	Symbol	Prefix
Fluorine	F	“Fluoro-”
Chlorine	Cl	“Chloro-”
Bromine	Br	“Bromo-”
Iodine	I	“Iodo-”

Check your material MSDS or contact your material supplier for more information. If you must use halogenated hydrocarbon solvents, contact your Nordson representative for information about compatible Nordson components.

Action in the Event of a Malfunction

If a system or any equipment in a system malfunctions, shut off the system immediately and perform the following steps:

- Disconnect and lock out system electrical power. Close hydraulic and pneumatic shutoff valves and relieve pressures.
- Identify the reason for the malfunction and correct it before restarting the system.

Disposal

Dispose of equipment and materials used in operation and servicing according to local codes.

Description

The CP Gun/SDS Meter PCI controller with integrated temperature conditioning uses signals from the robot controller and other sensors to control the gun dispensing rate. A constant bead size is maintained by adjusting the dispensing rate for changes in robot speed.

The PCI controller also

- heats, cools, and circulates conditioned water through the system.
- displays recovery procedures if operation faults are generated by the controller or gun.
- communicates faults to the robot controller.

The PCI controller has a software program configured by Nordson Corporation for your application.

See Figure 1 and refer to Table 1 for a description of the major components.

Theory of Operation

The robot controller sends a 0 to 10 volt DC analog signal that is proportional to the speed of the robot. This voltage can be a 12-bit word in the case of DeviceNet I/O systems, or a single-ended voltage in a discrete I/O system. This voltage controls material flow rate through the CP Gun and SDS Meter.

A bead size adjustment is provided to allow global increase or decrease of the amount of the robot analog signal sent to the servomotor or CP Gun, giving the operator the ability to increase or decrease the amount of material dispensed without the need to change the robot program.

If the air swirl option is used, a second analog signal from the robot passes through the controller to a proportioning air regulator. The proportioning air regulator controls the amount of swirl air flowing to the nozzle.

Temperature Conditioning

The temperature conditioning system in the PCI controller maintains temperature based on feedback from an RTD in the material stream, typically in a coaxial material hose.

Temperature is maintained by heating or chilling the water that is circulated throughout the system. Temperature setpoint and out-of-range limits are user adjustable. If the process temperature goes outside of this limit, a fault is posted, along with on-screen help information for use in troubleshooting.

The heating element features an adjustable overtemperature thermostat that will disable power to the heater if the temperature of the water exceeds a factory-set limit.

Alarms

The PCI controller alerts the operator when a fault occurs by lighting the alarm tower. The fault screen on the operator interface provides a description of the fault, the appropriate corrective action to take, and how to contact Nordson Corporation for assistance. A fault log screen displays a list of faults.

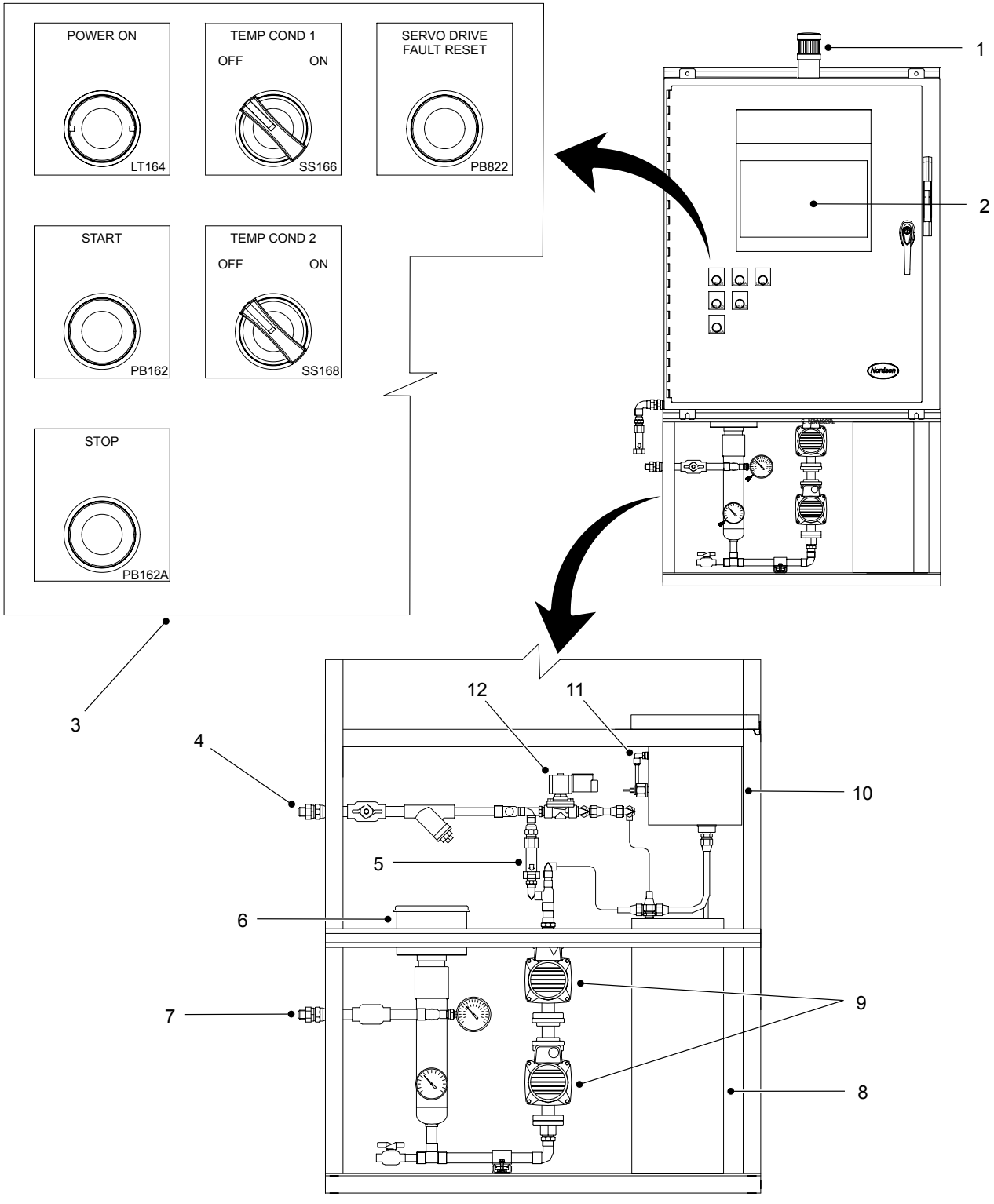


Figure 1 Typical PCI Controller

Table 1 Major Components

Item	Description
1	Alarm Tower—Alerts the operator that a fault condition exists within the system.
2	Touch Screen—Operator interface for the system. Refer to the *Operator Interface* section for more information.
3	Operator Controls: POWER ON—Main power pilot light. START—Enable power to the controller. STOP—Disable power to the controller. TEMP COND 1 and TEMP COND 2—Enables temperature conditioning section. SERVO DRIVE RESET—Resets the SDS Meter after a fault occurs.
4	From Process—Return water hose connection; $^1/_2$−in. JIC fitting.
5	Flow-setters—One located in the main water loop between the inlet and outlet of the water chiller that meters the correct amount of chilled water into the main loop when the solenoid valve opens. **NOTE:** The flow-setters should not be fully open or closed during normal operation.
6	Circulation Heater—Heats the water in the process loop. An adjustable high-temperature thermostat disables the heater circuit and sets the HEATER HIGH TEMP FAULT if the water gets too hot, whether or not the controller sends a signal for heat.
7	To Process—Supply water hose connection; $^1/_2$−in. JIC fitting.
8	Chiller—Cools water for use in maintaining the material process setpoint temperature. The internal water reservoir uses a thermostat set at approximately 50 °F to maintain the water temperature. **NOTE:** The chiller is only available on the Heat and Cool versions.
9	Circulation Pumps—Maintain continuous water flow through the closed-loop temperature control circuit.
10	Water Reservoir—Has a float switch that senses the water level. If the water drops below the normal level, the temperature conditioning section shuts down and a fault message appears on the controller screen. **! CAUTION !** To prevent damage to the system, refer to the *Water Treatment* section for information on the types of water, corrosion inhibitors, and Biocides to use.
11	Needle Valve—Typically set at approximately $^1/_2$ gpm; provides circulation in the water reservoir to prevent stagnant water.
12	Solenoid Valve—Closes to prevent water from the main circulation loop to flow through the chiller when cooling is not required; opens when cooling is required.
Items not Shown	
Water Traced Covers—consist of layers of nylon-reinforced fabric with high-density thermal insulation. They are wrapped around the hose and zipped closed. The covers also have a series of parallel passages that contain flexible polyurethane tubing. Conditioned water from the temperature conditioning section circulates through the poly tubes, thereby maintaining the material temperature inside the hose.	
Electrical Cables—for connecting the controller to the gun, robot controller, and optional equipment.	

Water Treatment

The temperature conditioning section is constructed of the following materials. Always refer to this list if different water, corrosion inhibitors or biocides other than those listed in the following sections are used.

Black Iron Pipe	Stainless steel	Nylon
Brass	PVC Plastic	Copper
Buna Rubber	Aluminum	Polyurethane
Steel	EPDM Rubber	PTFE

Water Types

Refer to Table 2. To minimize the introduction of contaminants that may degrade system components, review these guidelines before selecting the type of water to use.

NOTE

Water types are listed in order of preference.

Corrosion Levels

To maintain proper performance, minimum levels of corrosion to aluminum and copper must be maintained. To maintain safe operation keep the corrosion levels of

- aluminum at or below 3 mil/year (0.003 in./yr).
- copper at or below 1 mil/year (0.001 in./yr).

When adding water to the system, corrosion inhibitor must be added. CorrShield MD405 corrosion inhibitor is shipped with the PCI controller. This is a Molybdate-based corrosion inhibitor that contains an Azole additive to protect copper and is used in the concentration of 1.5 ounces per gallon of water to maintain a concentration of 250−350 ppm.

The Ford Tox number for CorrShield MD 405 is 149163

The GM FID number for CorrShield MD 405 is 225484

Refer to the *Parts* section to order CorrShield MD 405.

Biocide Water Treatment

Do not use the following Biocides:

- oxidizers, such as chlorine, bromine, hydrogen peroxide, iodine, ozone, etc.
- cationic, or positively charged biocides.

Biocides for use with CorrShield MD405 are BetzDearborn Spectrus NX114. The recommended concentration of Spectrus NX114 is 150−PPM which is 0.017 oz./gal (0.5 ml/gal).

The Ford Tox Number for Spectrus NX114 is 148270.

Table 2 Water Types

Water	Description
1. Distilled	No minerals and chemicals Lacks the nutrients necessary to support biological growth and the minerals that wear away at system components Neutral nature reduces interaction with additives used to protect the system **NOTE** Distilled water is the best choice for use in the temperature conditioning section.
2. Well	Contains an abundance of minerals that can support plant and animal life Contains minerals like calcium and iron that are abrasive; accelerates wear and tear on components **NOTE** If well water is the only option available, it must be softened to reduce the mineral content.
3. City	Contains chlorine that can degrade all metals including stainless steel Hard on most non−metals Usually contains an abundance of minerals that are capable of supporting plant and animal life; accelerates wear on components
4. Weld (Tower)	Often heavily treated both for bacterial suppression and to make it more compatible with the welding and cooling tower processes Treatment process usually involves some aggressive chemicals that can degrade metals, plastics and other materials Usually contains an abundance of metals and other contaminants picked up from the welding and cooling tower processes that can interfere with the components of the temperature control system
5. DI	**! CAUTION !** Do not use DI water in this system. DI water draws free electrons from metal to normalize ion levels. This process causes degradation of metals.

Installation

WARNING

- Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.
- The robot controller contains electrical potentials that can be fatal. Disconnect and lock out electrical power before making connections.

1. Unpack the PCI controller and inspect it for dents, scratches, corrosion, or other physical damage. If there is any visible damage, call your Nordson Corporation representative immediately.
2. Install the controller as close to the robot controller as possible.

Guidelines

Review the following guidelines:

- Hard-wire the controller to a dedicated power supply to provide safe operation and reduce interference from electrical noise.
- Install all electrical connections to local code.
- Install a locking disconnect switch or breaker in the service line ahead of any electrical equipment.
- Electrical, fluid, and air connections are dependent upon application requirements. Use the System Layout and Interconnect drawings provided with the system documentation for all connections.
- Make sure that there is enough slack in all hose and cable routings to allow for proper system operation.

Configure the Robot Controller

Use the following data to configure the robot controller analog signals.

Analog #1

See Figure 2. Configure your robot controller to vary the analog #1 (or tool speed) signal from 0 to 10 Vdc over the full range of robot speed.

1. Determine the highest and lowest robot speeds to be used in production.
2. Configure the robot controller to output an analog #1 signal of +10 Vdc when the robot is moving at, or slightly above maximum speed.
3. Configure the robot controller to output the analog #1 signal of 0 Vdc when the robot is stationary.

NOTE

Figure 2 presents an example of the approximate relationship between robot speed and analog #1 voltage as a guide for the operator. A robot speed of 80% corresponds to 8 Vdc. A robot speed of 40% corresponds to 4 Vdc.

Analog #2

If the air swirl option is used, a second analog signal from the robot passes through the controller to a proportioning air regulator. The proportioning air regulator controls the amount of swirl air flowing to the nozzle.

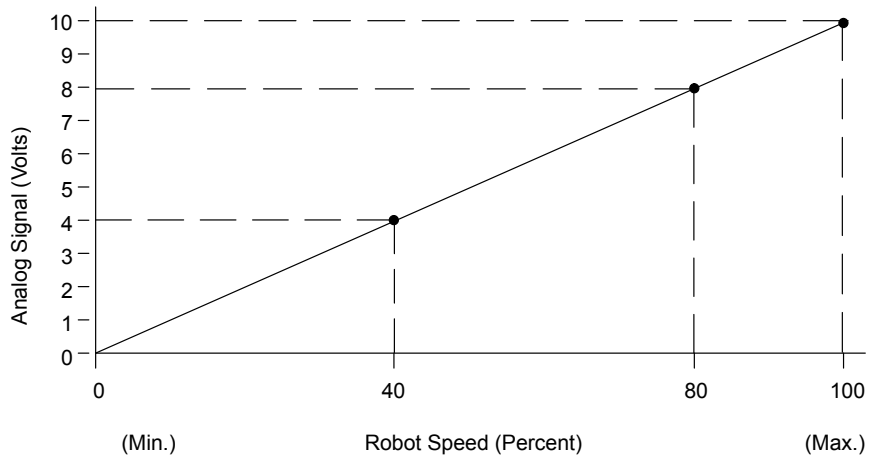


Figure 2 Relationship between Analog Signal #1 and Robot Speed

Set CP Gun Timing Sequences

There are two CP Gun signal sequence configurations; RS4 and Non-RS4. Review the applicable paragraph for the desired signal sequence.

CP Gun RS4 Signal Sequence

Refer to Table 3 and see Figure 3 for a description of a CP Gun RS4 signal sequence.

Table 3 CP Gun RS4 Signal Sequence

Sequence	Description
1	Robot checks for Dispenser Ready input.
2	Robot raises Robot In Process output.
3	Robot raises desired Part ID output bits for part to be dispensed.
4	Robot pulses Style Strobe output. Pulse must be at least 100mS long.
5	Part ID bits are dropped at this time.
6	Robot sends analog flow voltage and raises Dispense On output as required to apply desired material bead.
7	At end of part, robot pulses Dispense Complete output. Pulse must be at least 100 mS long.
8	Robot drops Robot In Process output.
9	Robot checks for presence of Volume OK input to verify part volume was within the acceptable limits.

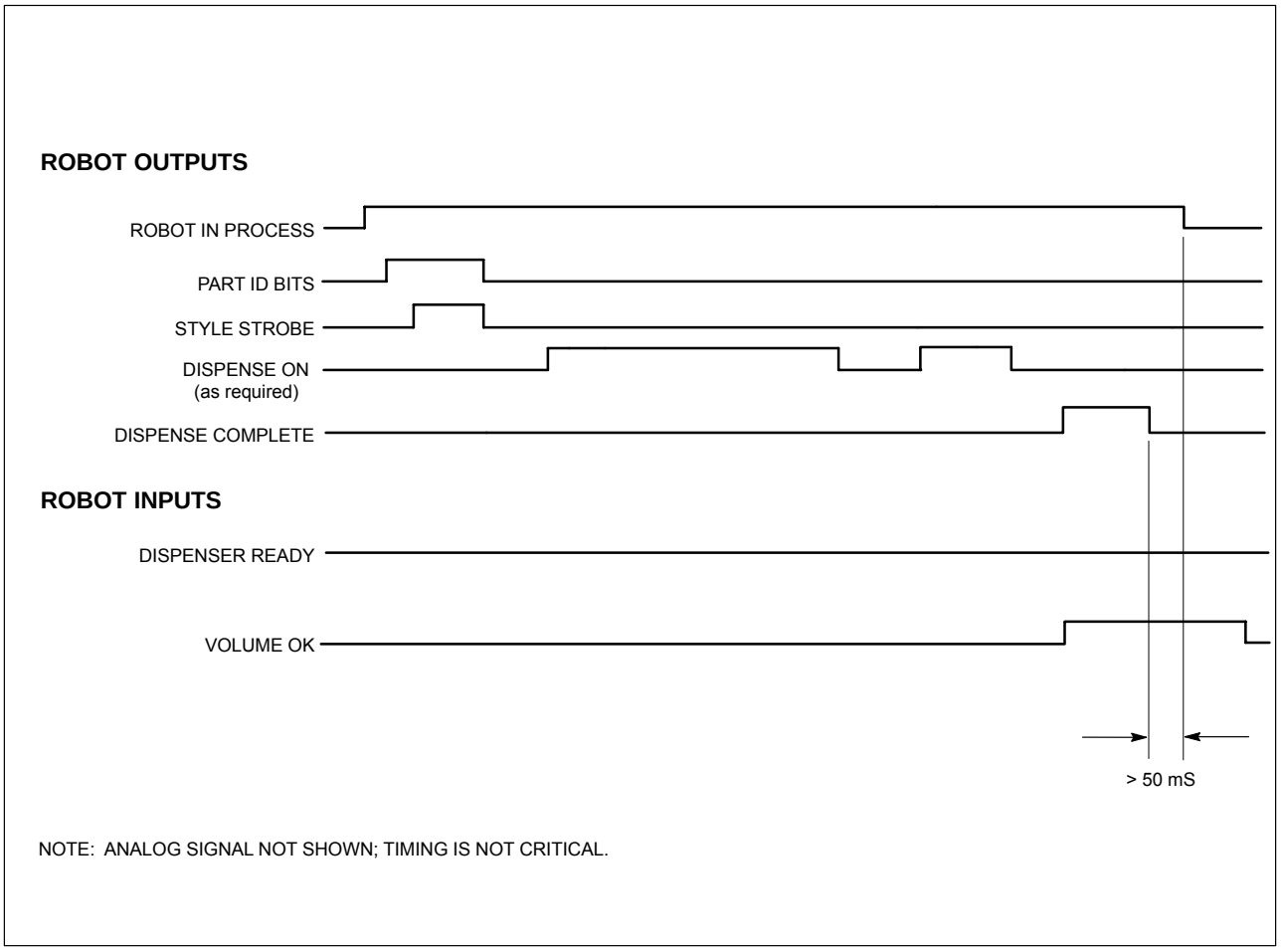


Figure 3 CP Gun RS4 Signal Timing Chart

CP Gun Non-RS4 Signal Sequence

Refer to Table 4 and see Figure 4 for a description of a CP Gun Non-RS4 signal sequence.

Table 4 CP Gun Non-RS4 Signal Sequence

Sequence	Description
1	Robot checks for Dispenser Ready input.
2	Robot raises desired Part ID output bits for part to be dispensed.
3	Robot raises Style Strobe output.
4	Part ID bits are dropped at this time.
5	Robot sends analog flow voltage and raises Dispense On output as required to apply desired material bead.
6	At end of part, robot drops Style Strobe output.
7	Robot checks for presence of Volume OK input to verify part volume was within the acceptable limits.

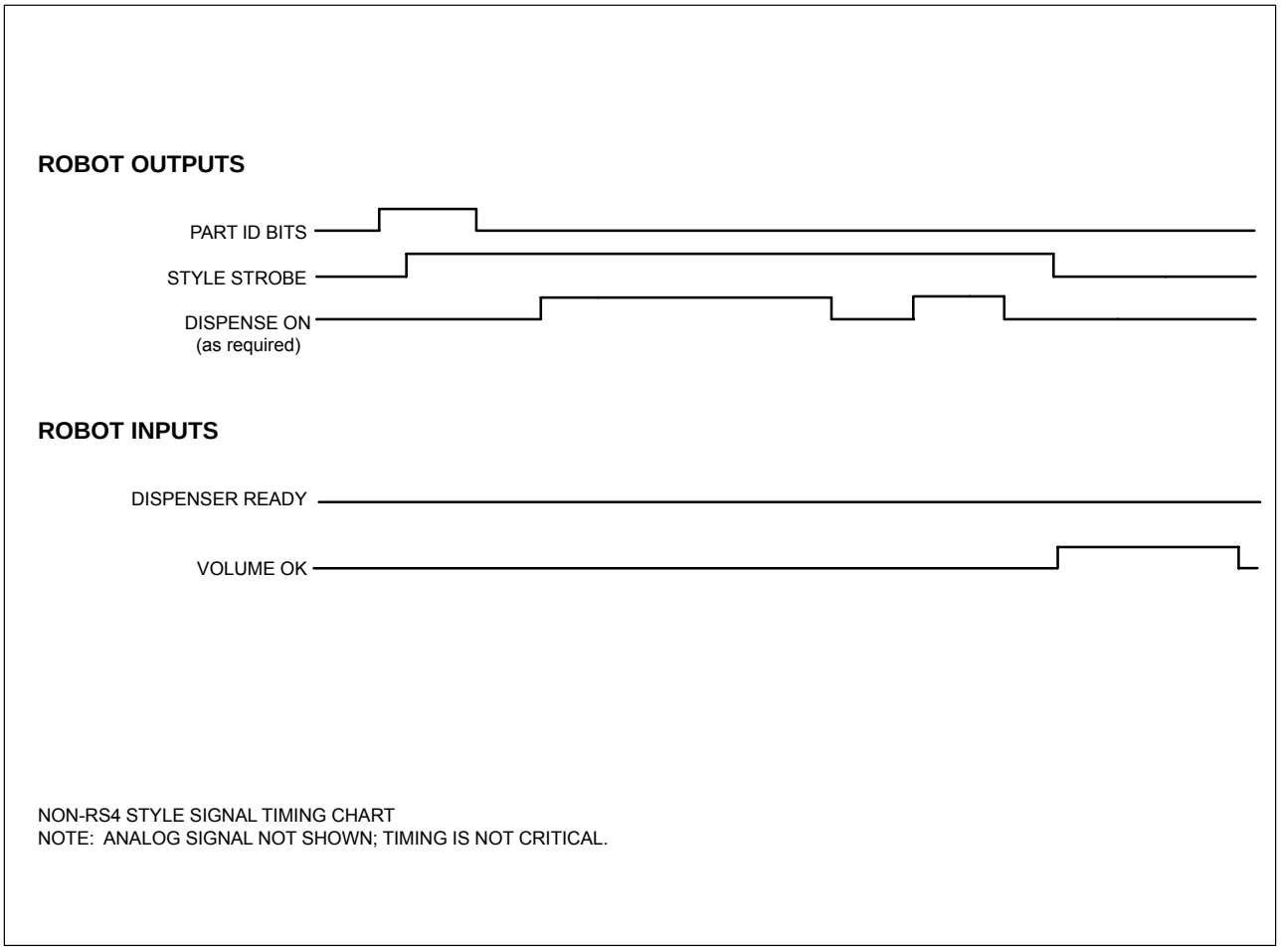


Figure 4 CP Gun Non-RS4 Signal Timing Chart

Set SDS Meter Timing Sequences

There are two signal sequence configurations; RS4 and Non-RS4. Review the applicable paragraph for the desired signal sequence.

RS4 Signal Sequence

Refer to Table 5 and see Figure 5 for a description of an RS4 signal sequence.

Table 5 RS4 Signal Sequence

Sequence	Description
1	Robot checks for Dispenser Ready input.
2	Robot raises Robot In Process output.
3	Robot raises desired Part ID output bits for part to be dispensed.
4	Robot pulses Style Strobe output. Pulse must be at least 100mS long.
5	Robot waits for Meter Prepressurized input.
6	Part ID bits are dropped at this time.
7	Robot sends analog flow voltage and raises Dispense On output as required to apply desired material bead.
8	At end of part, robot pulses Dispense Complete output. Pulse must be at least 100 mS long.
9	Robot drops Robot In Process output.
10	Robot checks for presence of Volume OK input to verify part volume was within the acceptable limits.

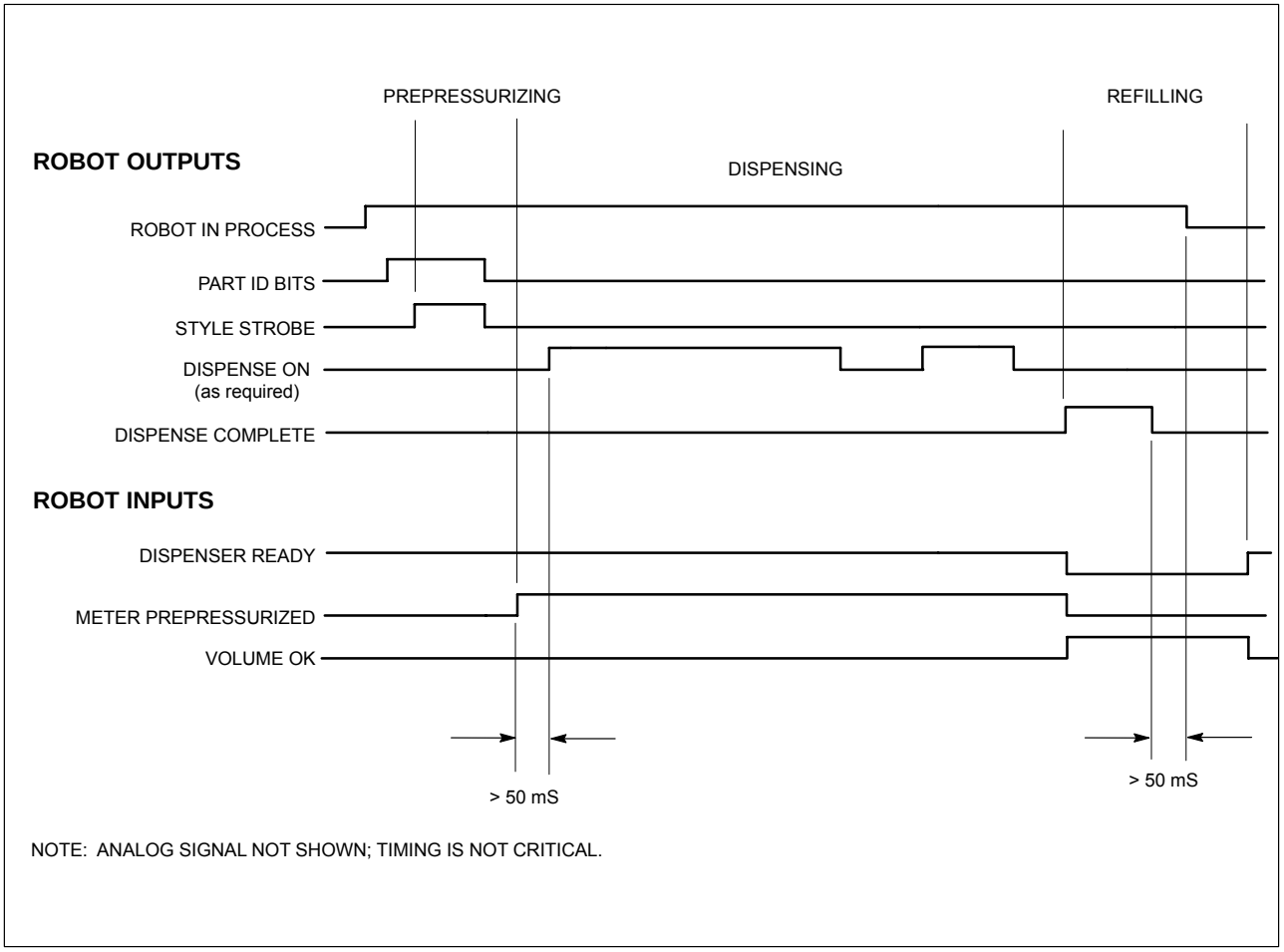


Figure 5 SDS Meter RS4 Signal Timing Chart

Non-RS4 Signal Sequence

Refer to Table 6 and see Figure 6 for a description of a Non-RS4 signal sequence.

Table 6 Non-RS4 Signal Sequence

Sequence	Description
1	Robot checks for Dispenser Ready input.
2	Robot raises desired Part ID output bits for part to be dispensed.
3	Robot raises Style Strobe output.
4	Robot waits for Meter Prepressurized input.
5	Part ID bits can dropped at this time.
6	Robot sends analog flow voltage and raises Dispense On output as required to apply desired material bead.
7	At end of part, robot drops Style Strobe output.
8	Robot checks for presence of Volume OK input to verify part volume was within the acceptable limits.

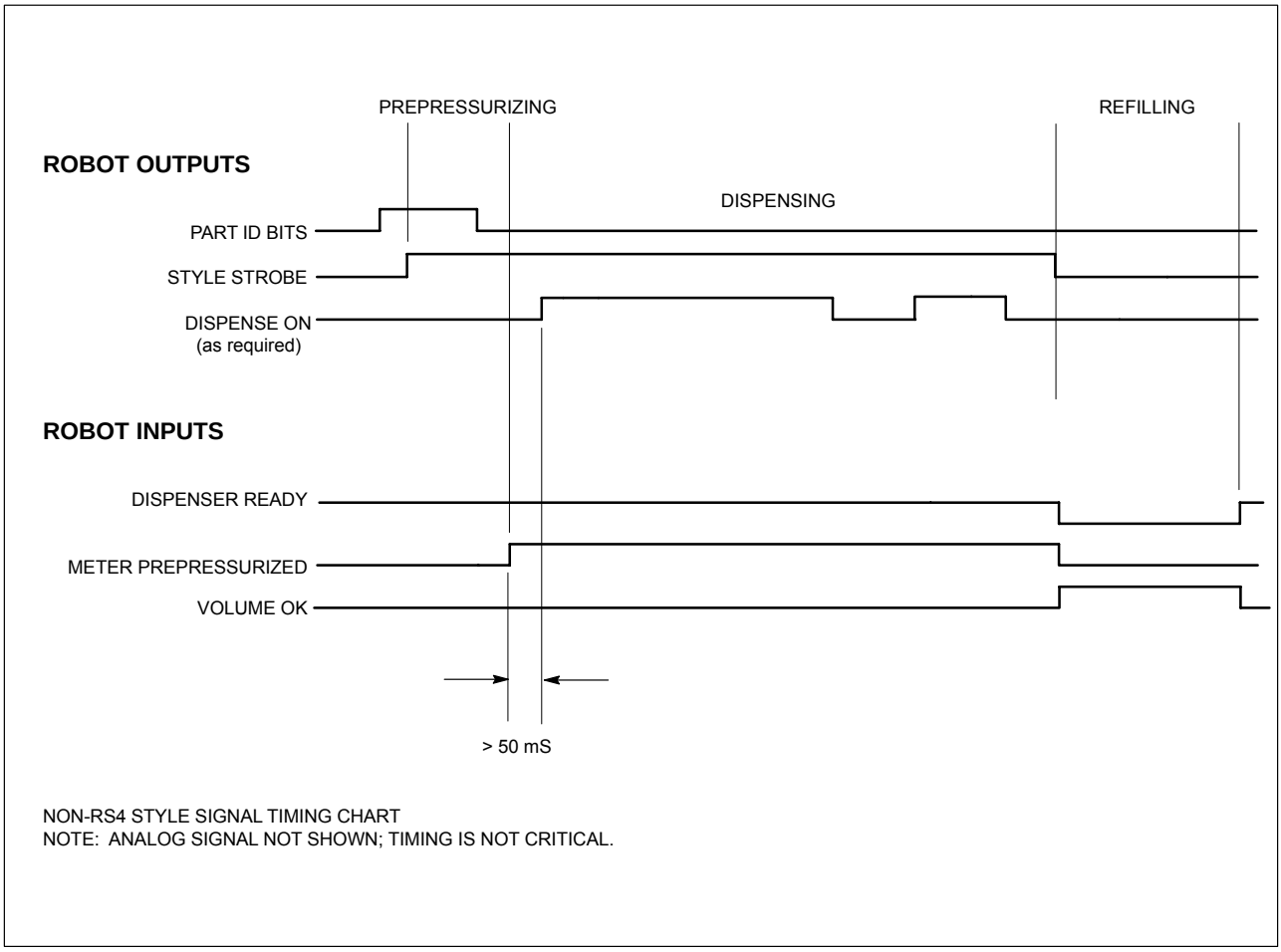


Figure 6 SDS Meter Non-RS4 Signal Timing Chart

SDS Meter Prepressure Setpoints

To optimize the start of the dispensed bead, the Prepressure Setpoint parameter is entered in the Setup menu. This menu is hidden in the Service Menu to limit access.

The value entered for prepressure should be close to the dynamic value seen during dispensing of the part.

When the style strobe is received, the SDS ball screw will begin moving forward until the prepressure value entered for the current Part ID is reached. At this point, the ball screw will stop and the Meter Prepressurized signal is sent to the robot, indicating that dispensing can begin.

Operator Interface and Screens

NOTE

Typical screens are shown. Screens may vary in appearance due to specific application requirements.

See Screen 1.

Touch the screen to select one of seven main menus (1):

SYSTEM STATUS	PROCESS DATA
VIEW FAULTS	ONLINE MANUAL
TEST POINTS	PREV. MAINT. (Preventive Maintenance)
SYSTEM SET-UP	

Refer to Table 7 for a description of the operator interface functions.

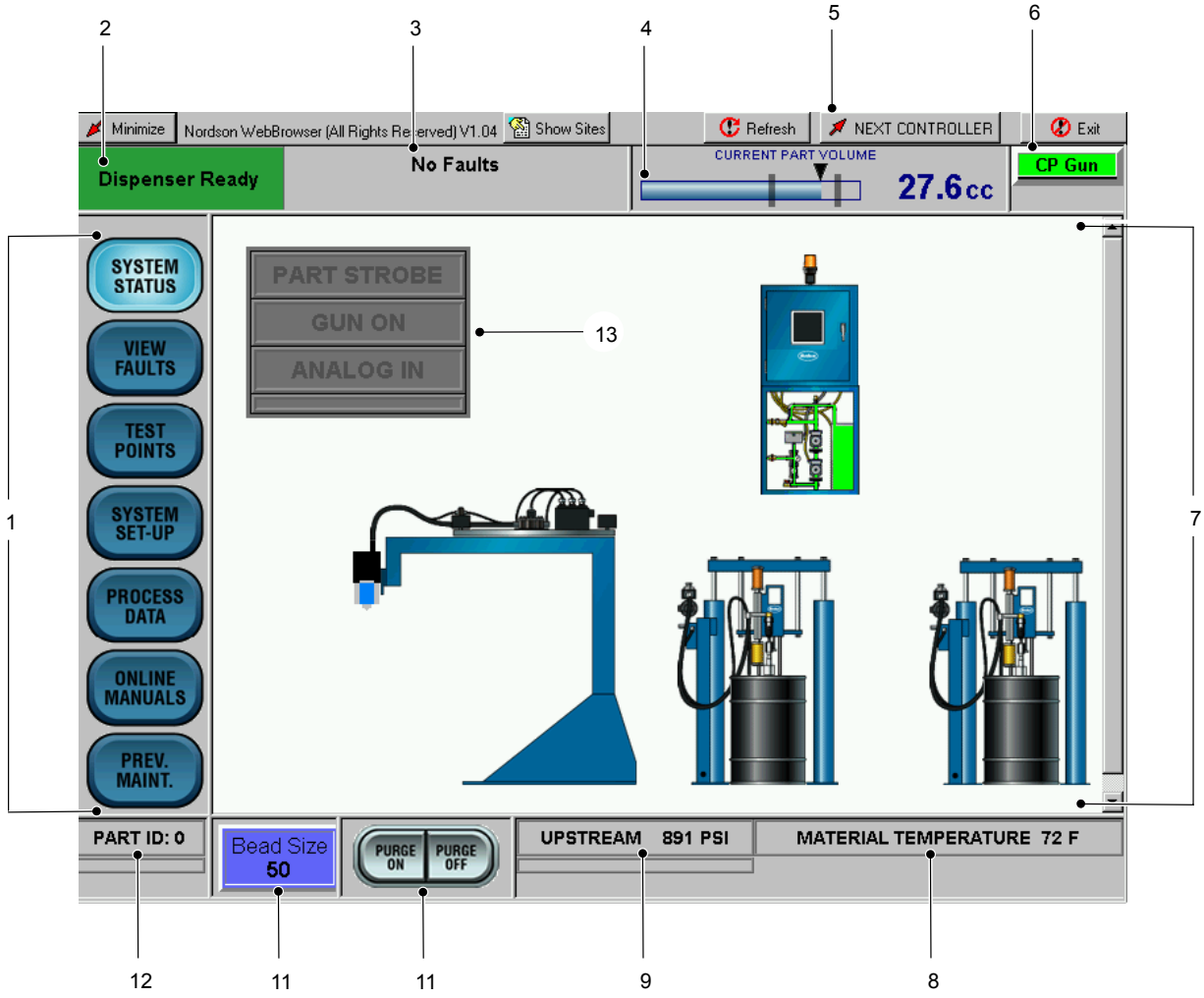
SYSTEM STATUS

See Screen 1.

The **SYSTEM STATUS** menu is the default screen. It monitors material dispensing characteristics during production.

Touch a system component to view the

- system illustration that flashes when a fault condition occurs. To view the fault, touch the flashing part or touch the **VIEW FAULTS** button.
- status of **STYLE STROBE**, **GUN ON**, **ANALOG IN**, and **DISPENSE COMPLETE** signals.



Screen 1 CP Gun Operator Interface

Table 7 Operator Interface Functions

Item	Description	Function
1	Menu Buttons	Set and view parameters of the application.
2	Dispenser field	Indicates the status of the dispenser: Ready or Not Ready.
3	Fault Indicator field	Displays fault messages.
4	**CURRENT PART VOLUME**	Visually indicates the percent of the job which is completed and the actual dispensed volume at the end of the part cycle.
5	**NEXT CONTROLLER**	Toggle between dispensing systems if using a Dual-PCI controller.
6	Label	User-defined label; indicates the current operator interface that is displayed on the screen. The user-defined label can be up to 10 charaters.
7	**SYSTEM STATUS**	Appears as the default screen; displays the system configuration.
8	**MATERIAL TEMP**	Indicates material temperature.
9	**PRESSURE**	Indicates system operating pressures.
10	**BEAD SIZE**	Displays bead size. Bead size is an arbitrary number between 1 and 99. Touch BEAD SIZE to increase or decrease bead size.
11	**PURGE ON PURGE OFF**	**CP Gun only**—Starts and stops the CP Gun purge function. Not available on SDS Meter system.
12	**PART I.D.**	Displays the current part I.D.
13	I/O Indicators	Displays robot signals—Non-RS4 I/O configuration shown. **DISPENSE COMPLETE** appears on RS4 I/O configuration.

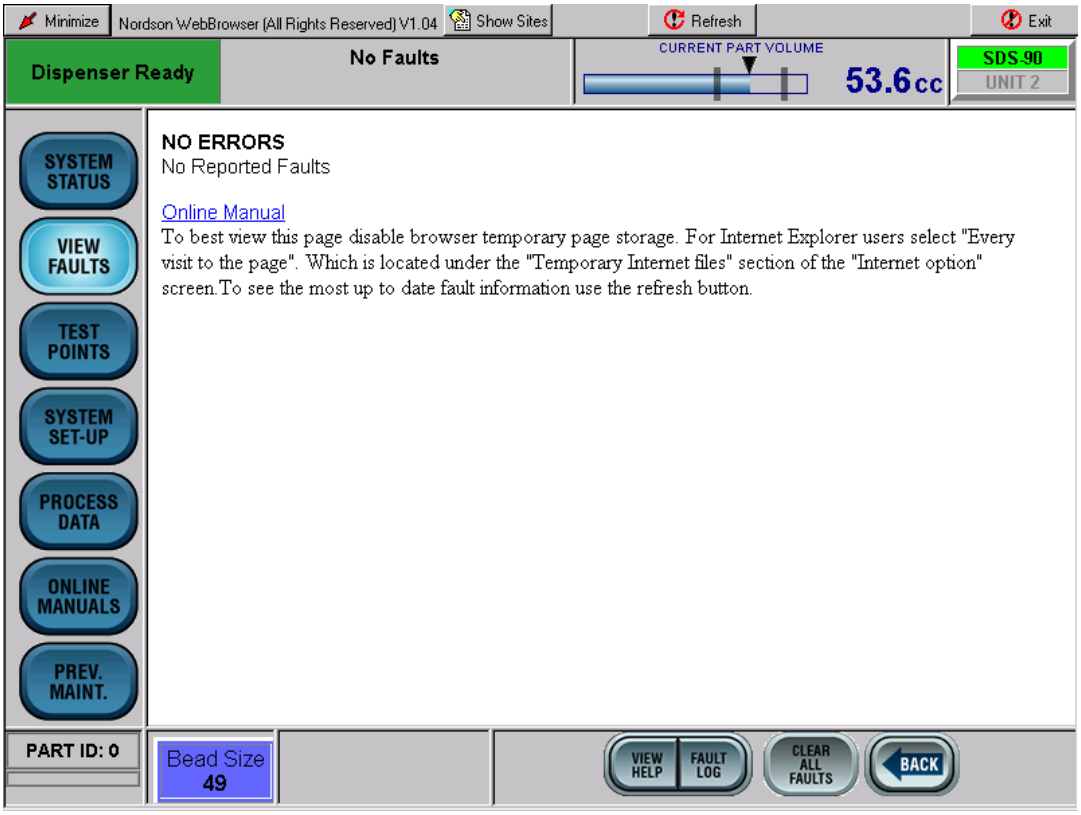
VIEW FAULTS

See Screen 2.

The **VIEW FAULTS** menu displays the description a fault and the corrective action.

NOTE: Touch any of the bold or underlined text to proceed directly to the correction.

Touch **VIEW FAULTS**>**VIEW HELP** to view the corrective action for a fault.

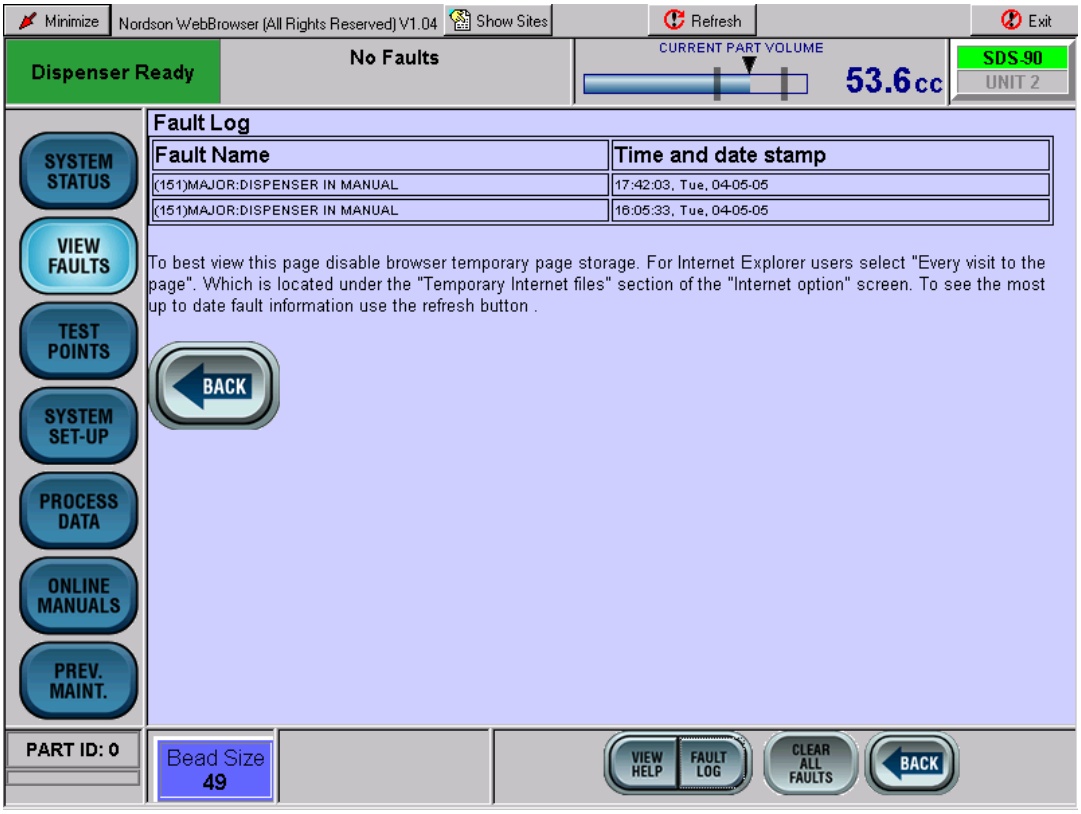


Screen 2 View Faults

See Screen 3.

Touch **VIEW FAULTS**>**FAULT LOG** to view the name of the fault and that date and time that the fault occurred.

Touch **VIEW FAULTS**>**CLEAR ALL FAULTS** to clear the fault.



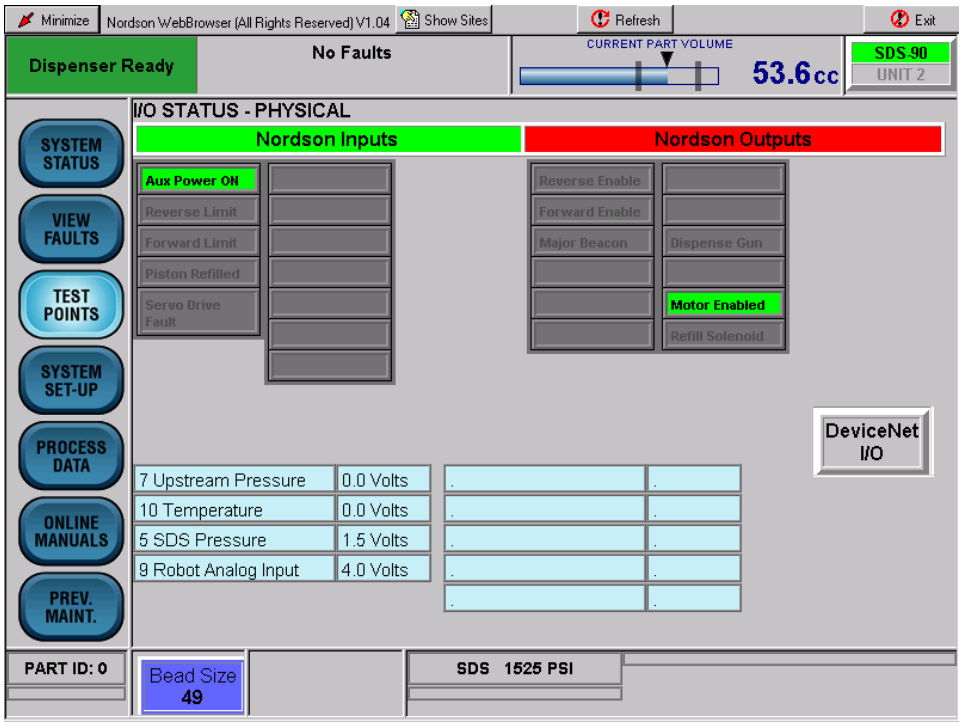
Screen 3 Fault Log

TEST POINTS

See Screen 4.

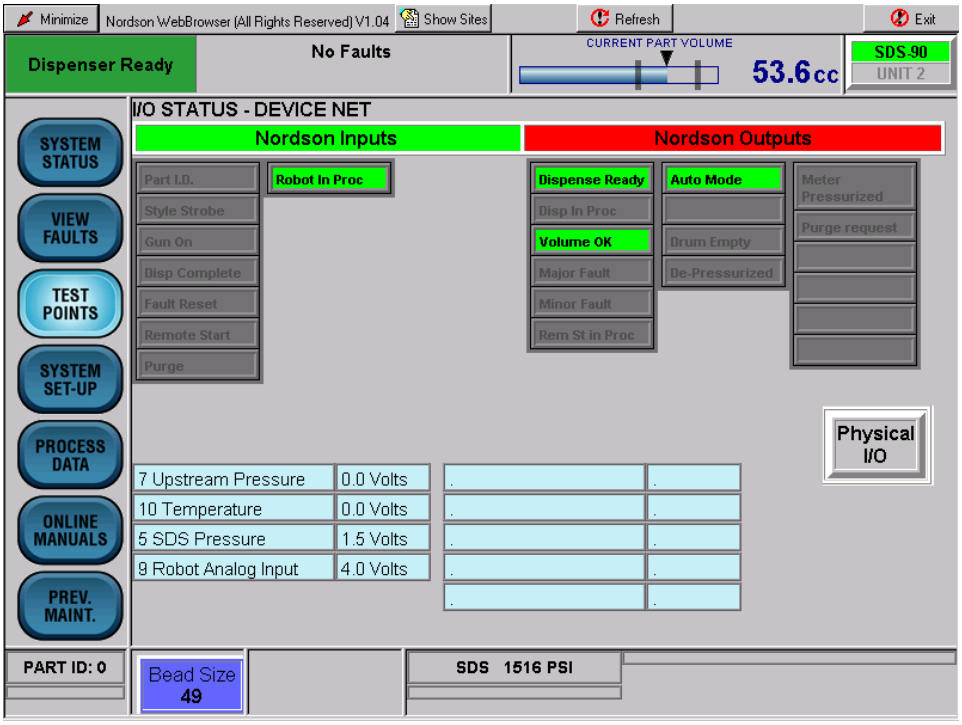
These menus are used to verify that the robot signals are being sent and received by the PCI controller.

Touch either **Physical I/O** or **DeviceNet I/O** to toggle between the screens



Physical I/O Screen

DeviceNet I/O Screen

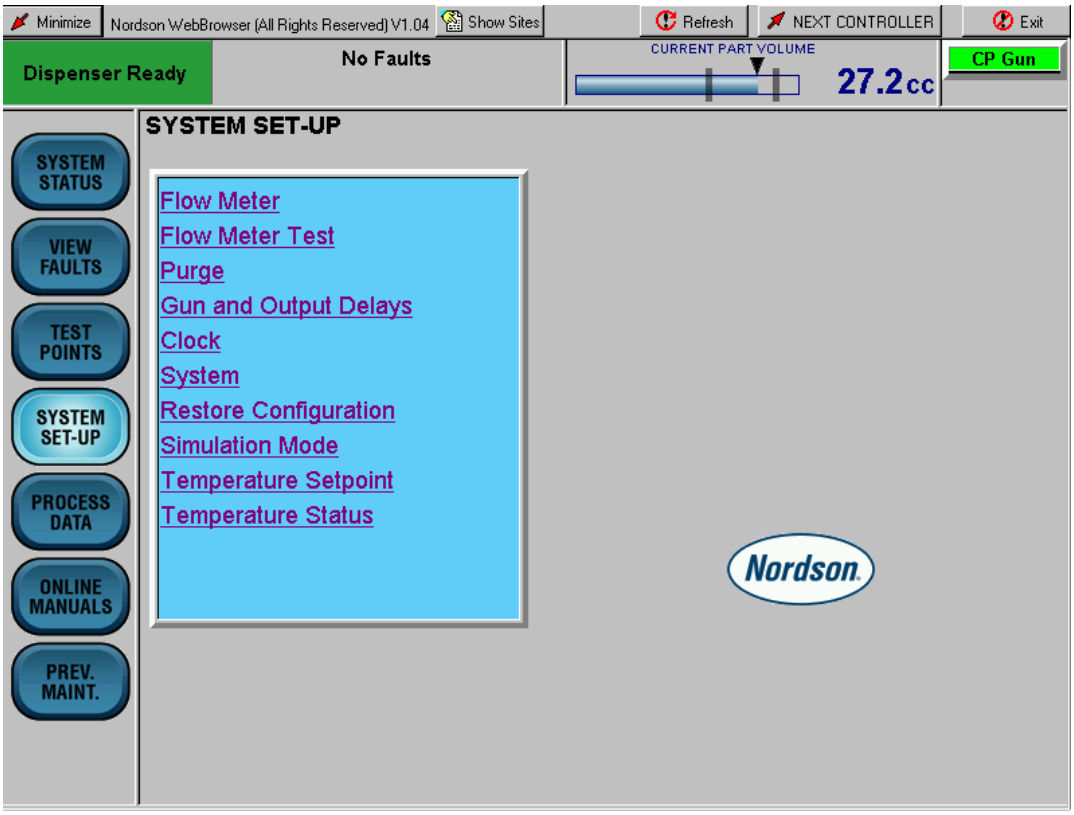


Screen 4 TEST POINTS

SYSTEM SET-UP

See Screen 5.

Use the **SYSTEM SET-UP** screen to configure the system parameters. The following paragraphs provide a description of each system parameter.



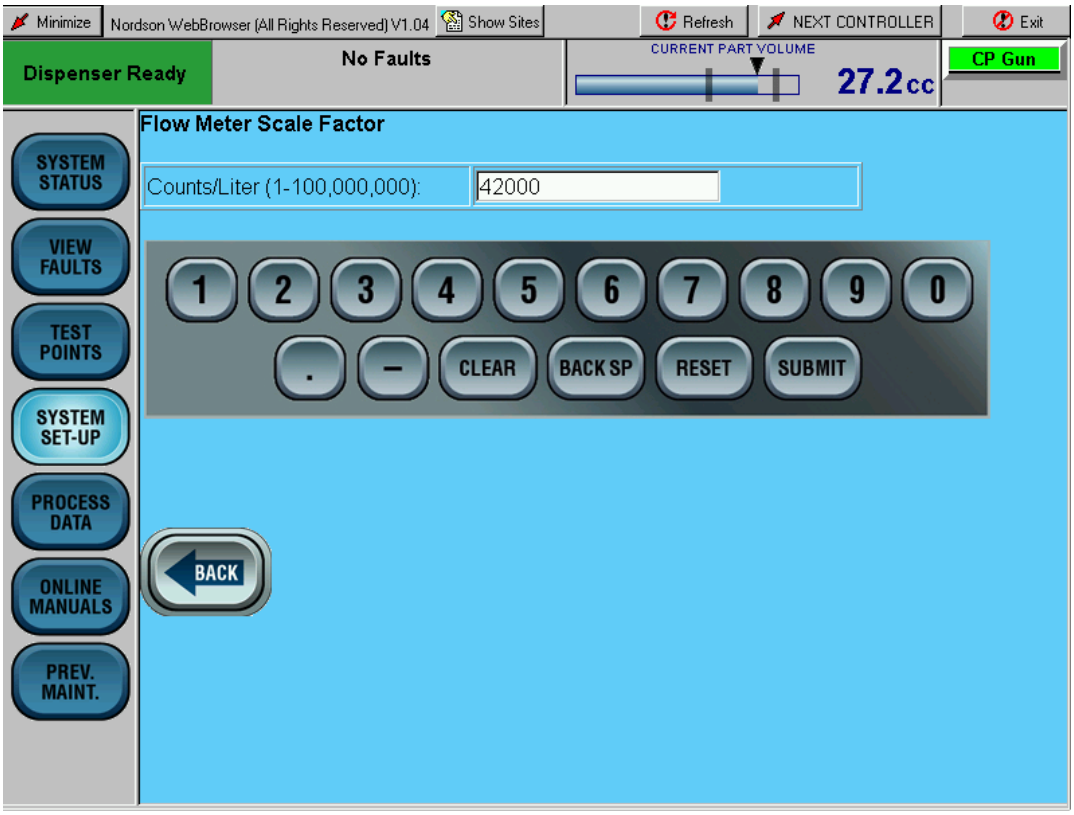
Screen 5 SYSTEM SET-UP

Flow Meter

See Screen 6.

When a new flowmeter is installed, enter its flow rate (or K-value) in counts/liter. The K-value is stamped on the side of the flowmeter body.

Touch the screen keyboard to enter counts/liter from 1−100,000,000.

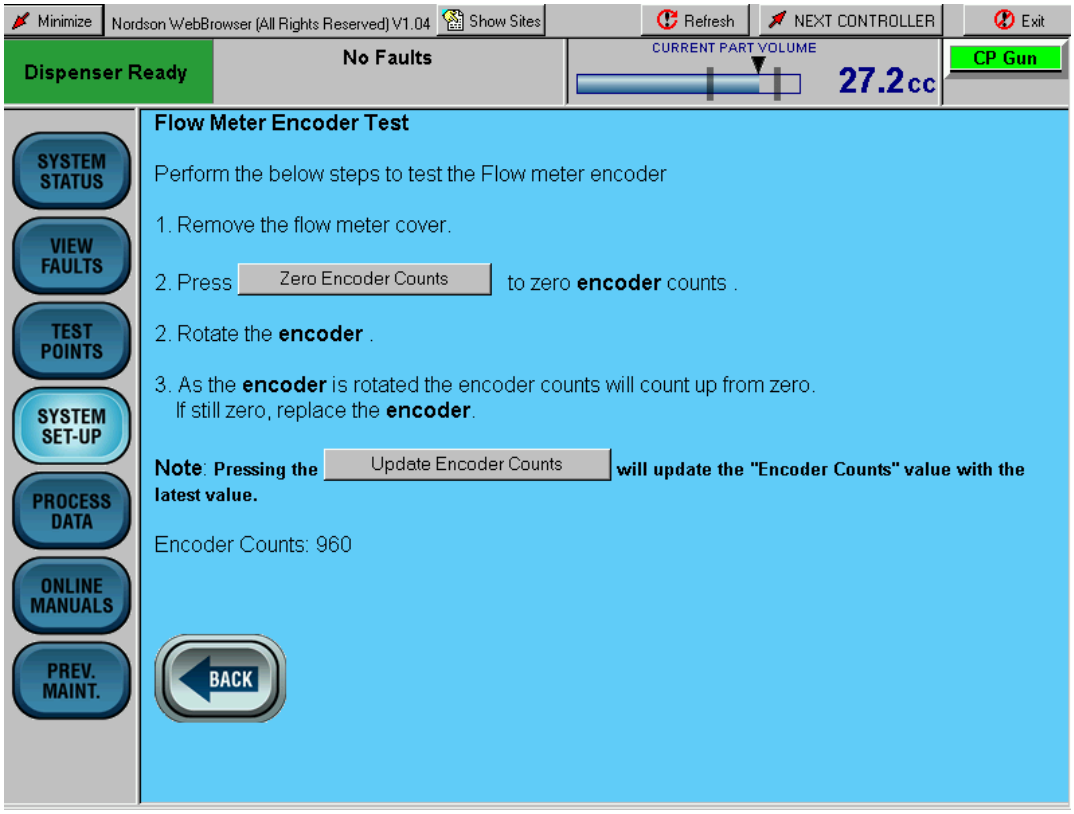


Screen 6 Flow Meter

Flow Meter Encoder Test

See Screen 7.

Follow the directions on the screen to test the flowmeter encoder.



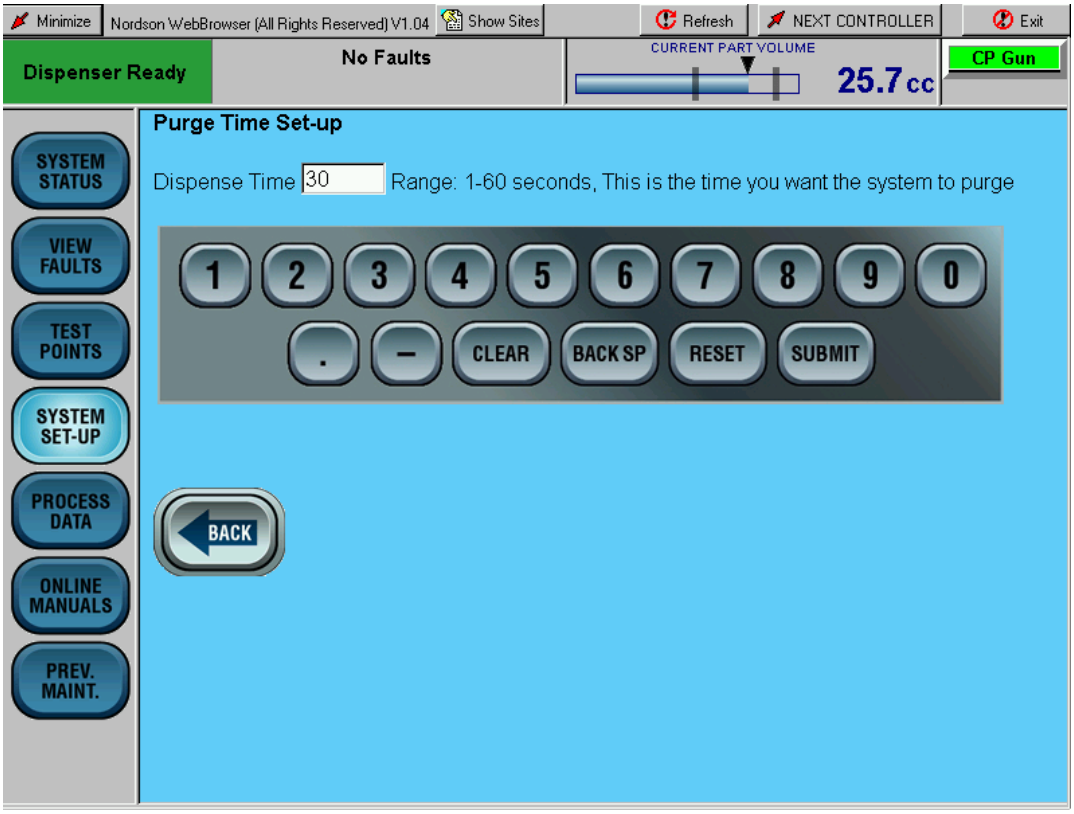
Screen 7 Flow Meter Diagnostic

Purge

See Screen 8.

Purge determines how long the gun stays open each time the **PURGE ON** button is pressed.

Touch the screen keyboard to enter a **Dispense Time** from 1−60 seconds.

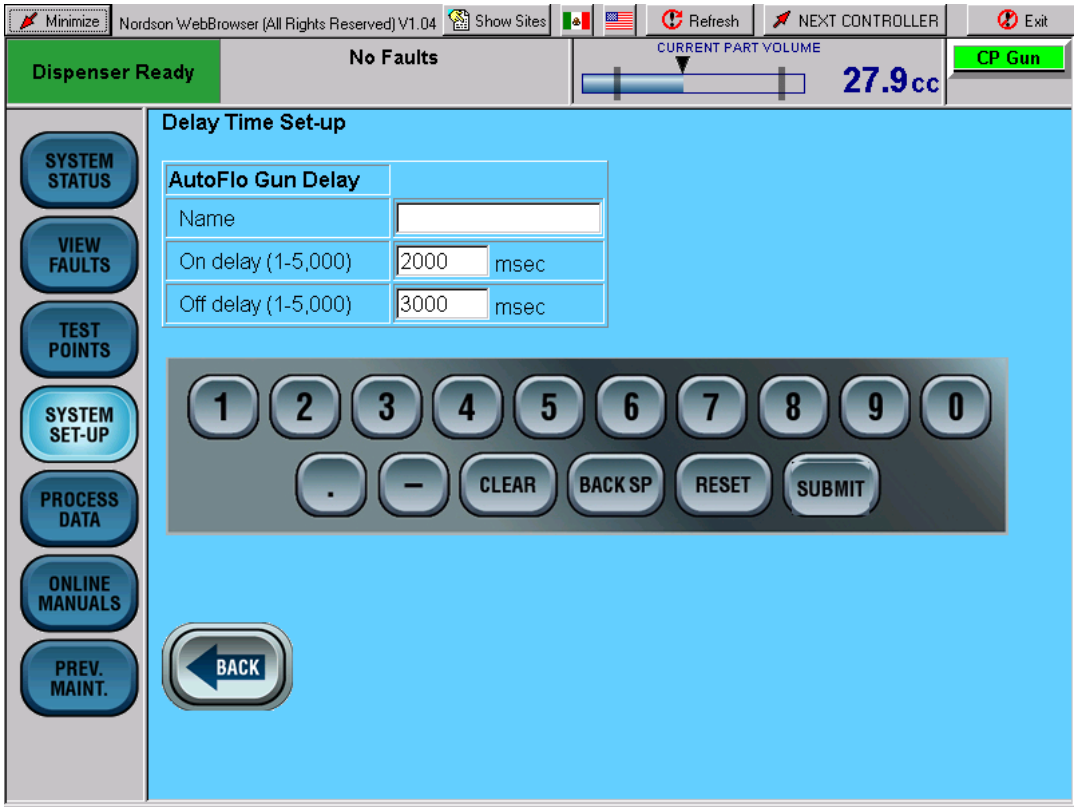


Screen 8 Purge

CP Gun Delays

See Screen 9.

To optimize dispense bead start/stop times, Digital Output delays can be used to delay opening and closing the CP Gun Auto-Flo dispense valve.



Screen 9 Gun and Output Delays

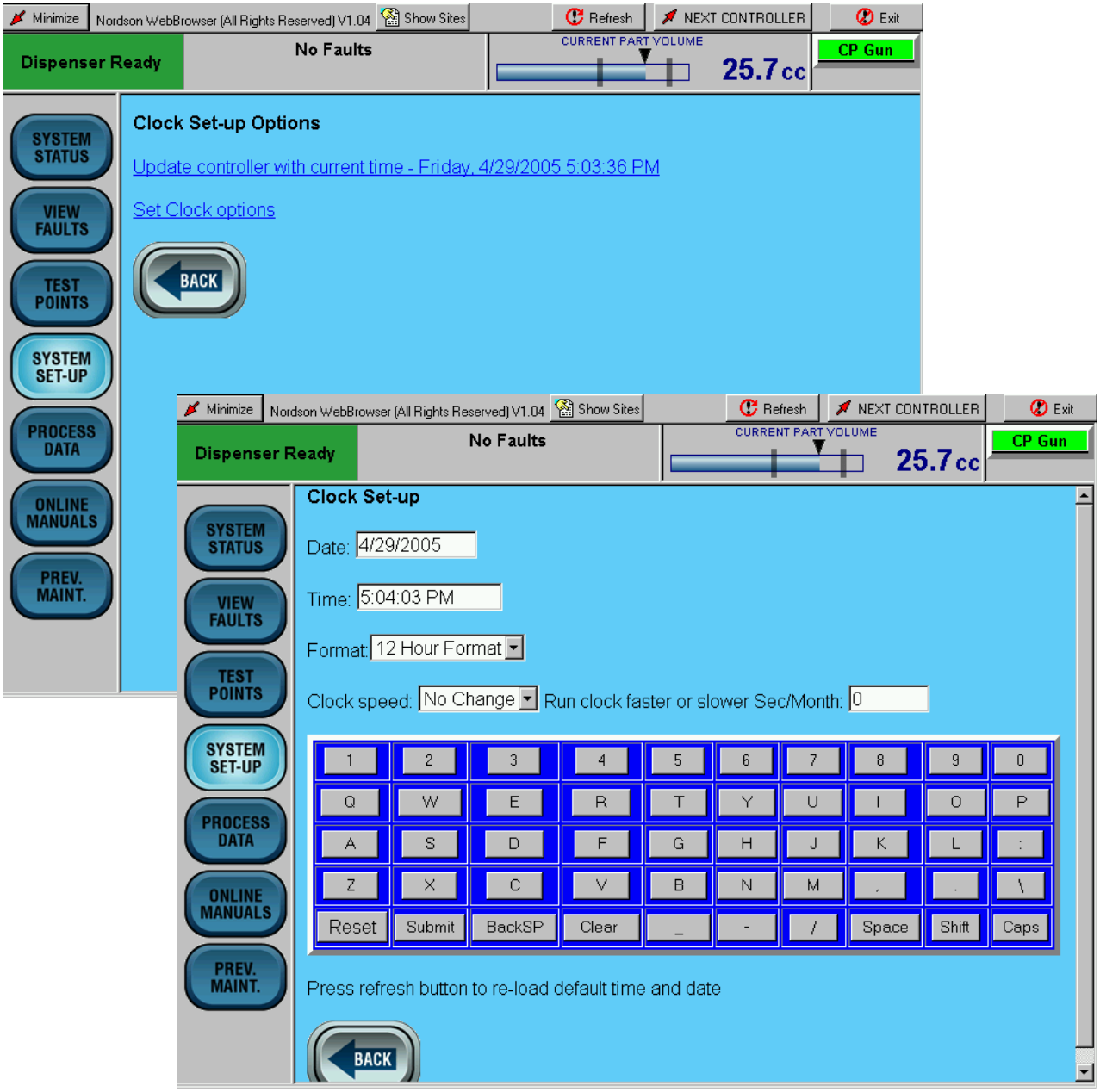
Clock

See Screen 10.

Although the time and date are set during initial setup, you may change the parameters manually or automatically.

To update the time and date automatically, touch **Update controller with current time**.

To update the time and date manually, touch **Set Clock options**. The **Clock Set-up** screen appears. Touch the screen keyboard to set the parameters.

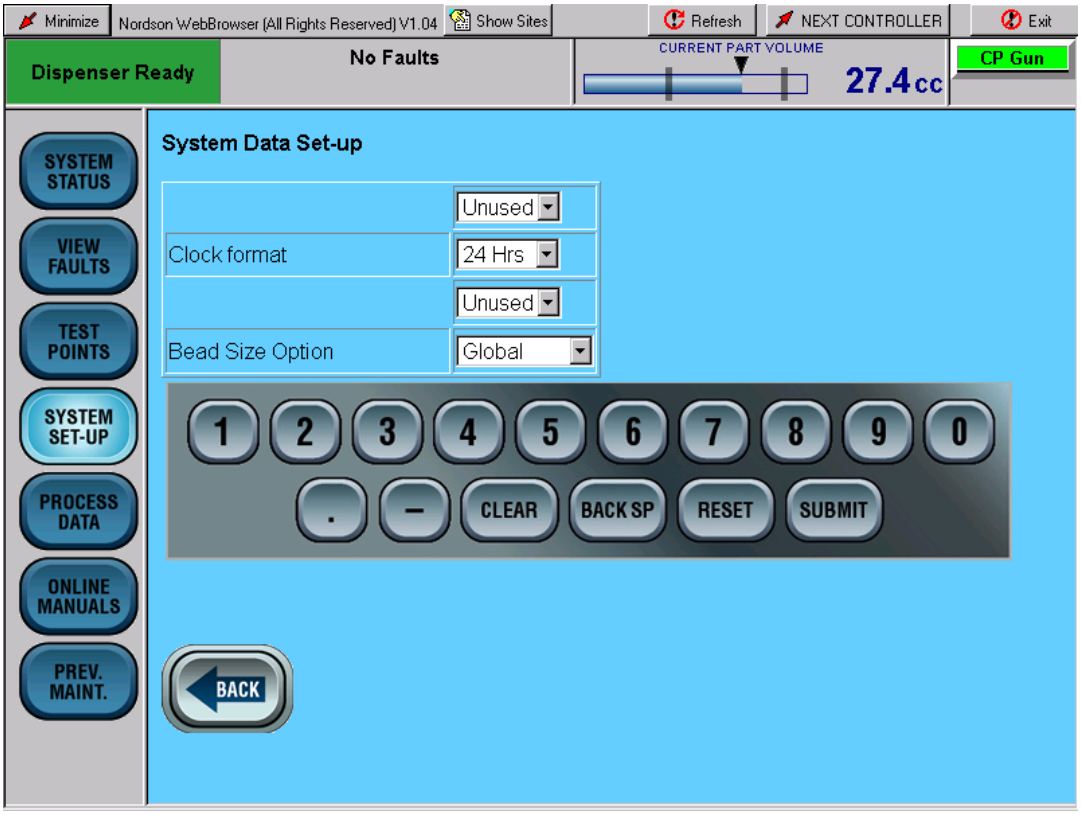


Screen 10 Clock

System

See Screen 11.

Touch the keyboard to select Metric or English system units; clock format; type of pressure unit; bead size global or by Part ID

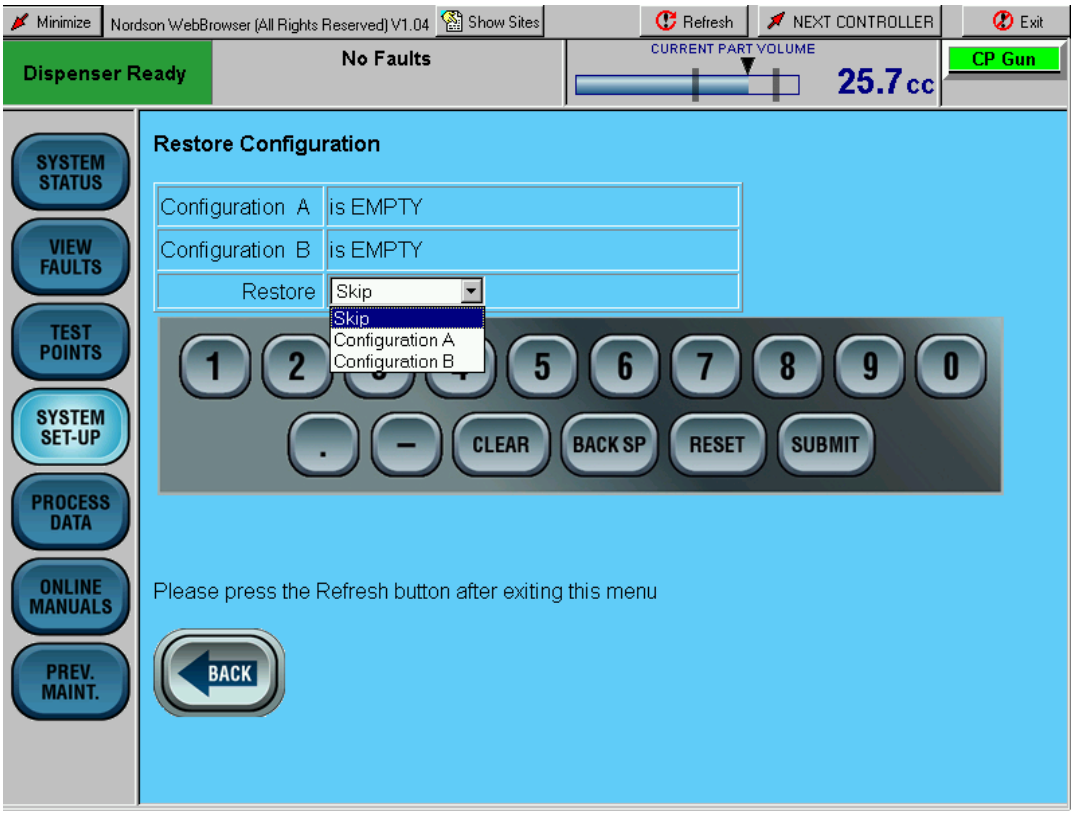


Screen 11 System

Restore Configuration

See Screen 12.

Use the drop-down menu to select a previously stored configuration.

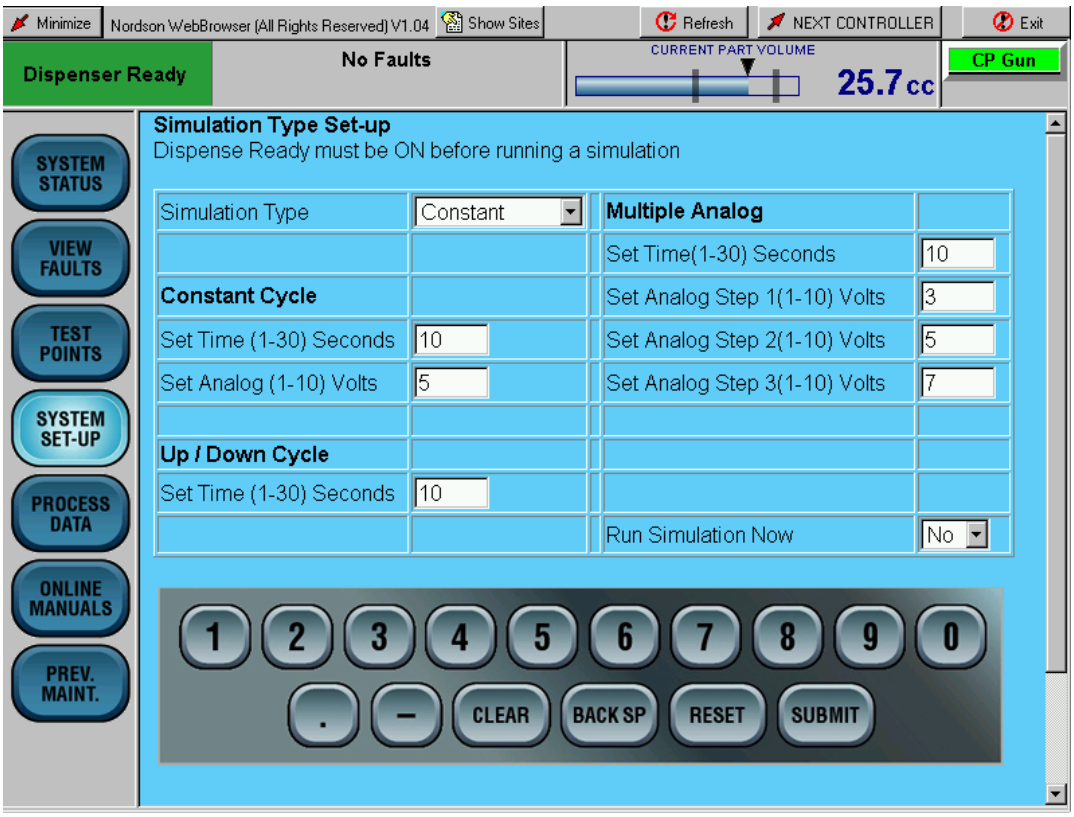


Screen 12 Restore Configuration

Simulation Mode

See Screen 13.

The **Simulation Mode** screen is used to dispense part cycles without the use of the robot. The dispensed parts are logged on the **Process Data** screen.

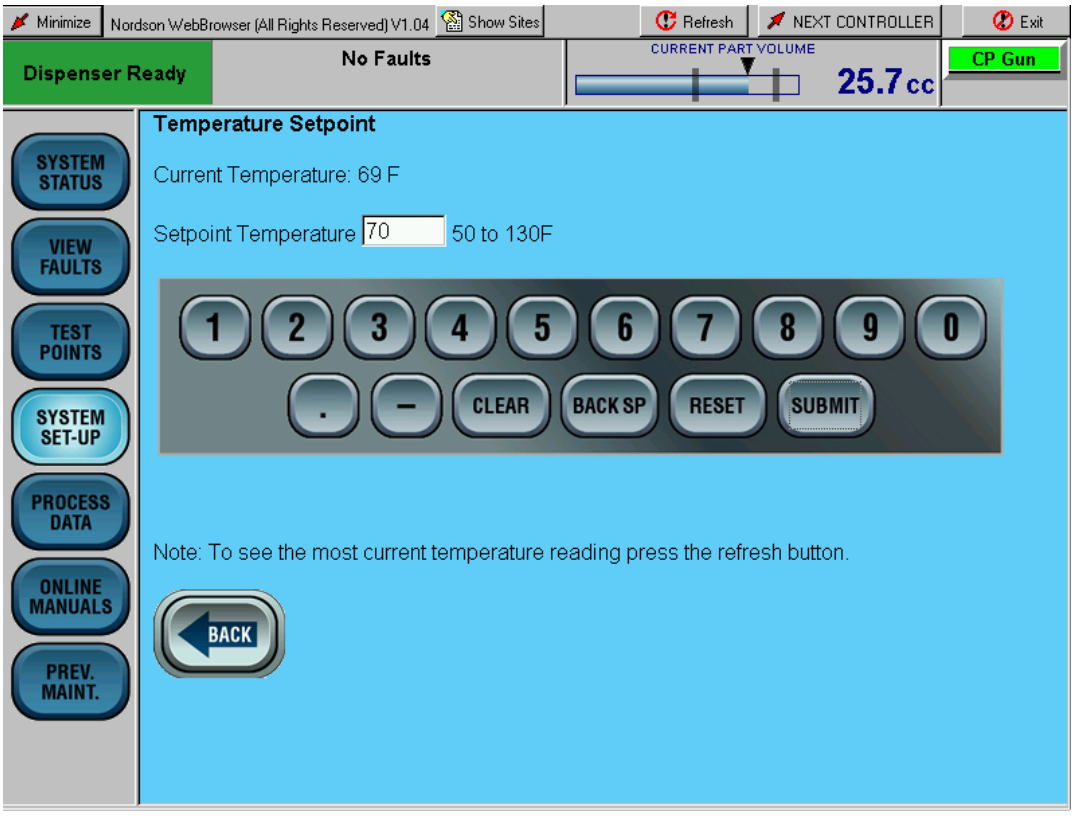


Screen 13 Simulation Mode

Temperature Setpoint

See Screen 14.

Touch **Temperature Setpoint** to view and adjust material temperature.



Screen 14 Temperature Setpoint

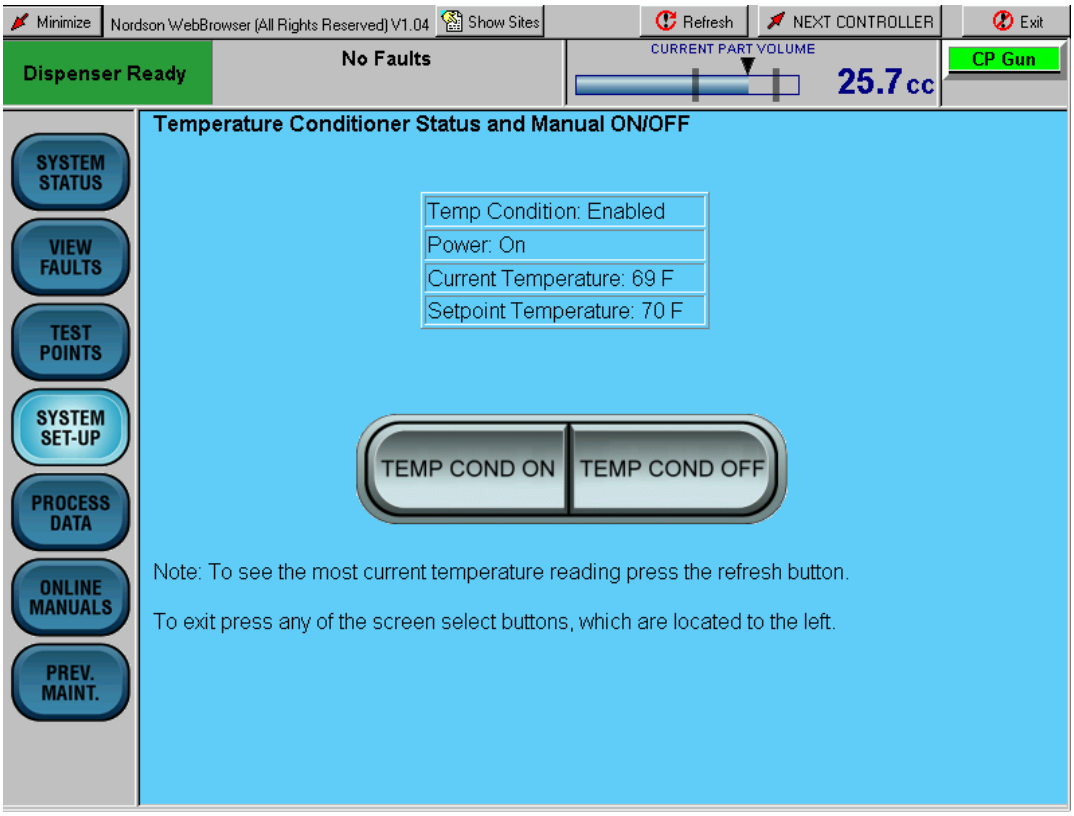
Temperature Status

See Screen 15.

Touch **Temperature Status** to view the status, and to either turn the temperature control unit (TCU) on or off.

The TCU icon on the **System Status** screen is

- green when **TEMP COND ON** is touched.
- gray when **TEMP COND OFF** is touched.
- red when a TCU fault occurs.



Screen 15 Temperature Control Status

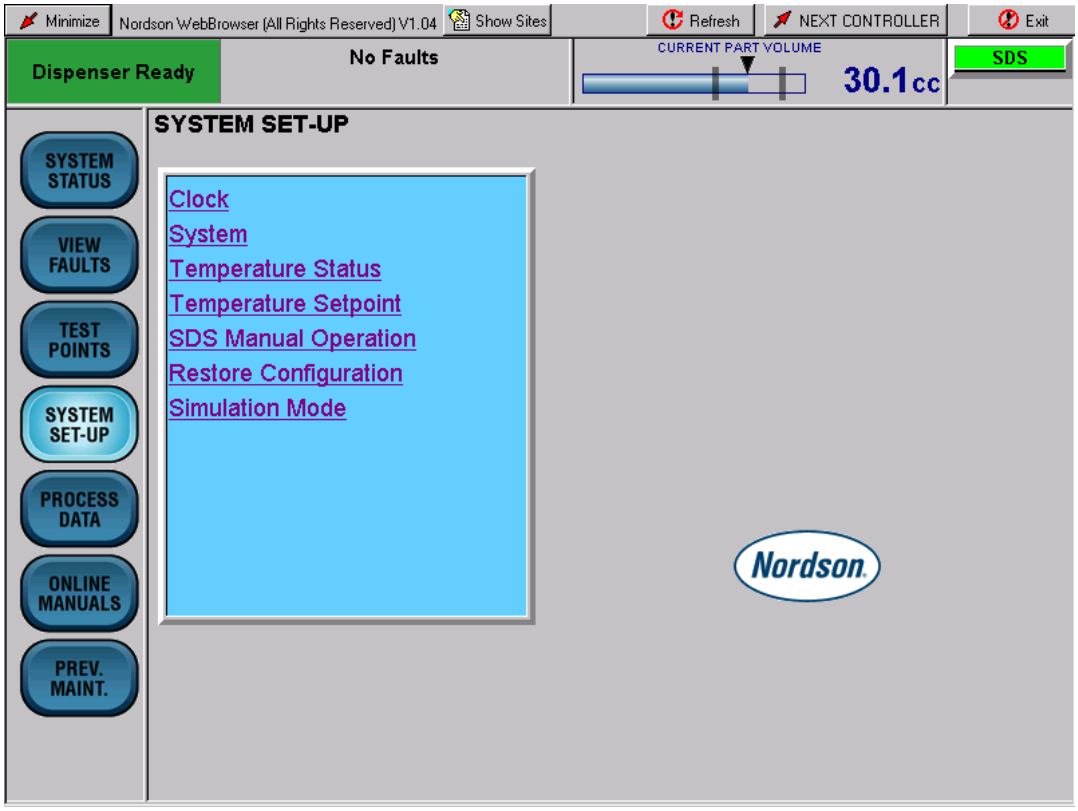
SDS Meter SYSTEM SET-UP

See Screen 16.

Use the **SYSTEM SET-UP** screen to configure the SDS Meter system parameters.

NOTE

The SDS Meter **SYSTEM SET-UP** screens are identical to the CP Gun **SYSTEM SET-UP** screens with the exception of the **SDS Manual** screen. Refer to the following paragraph for a description of this screen.



Screen 16 SYSTEM SET-UP

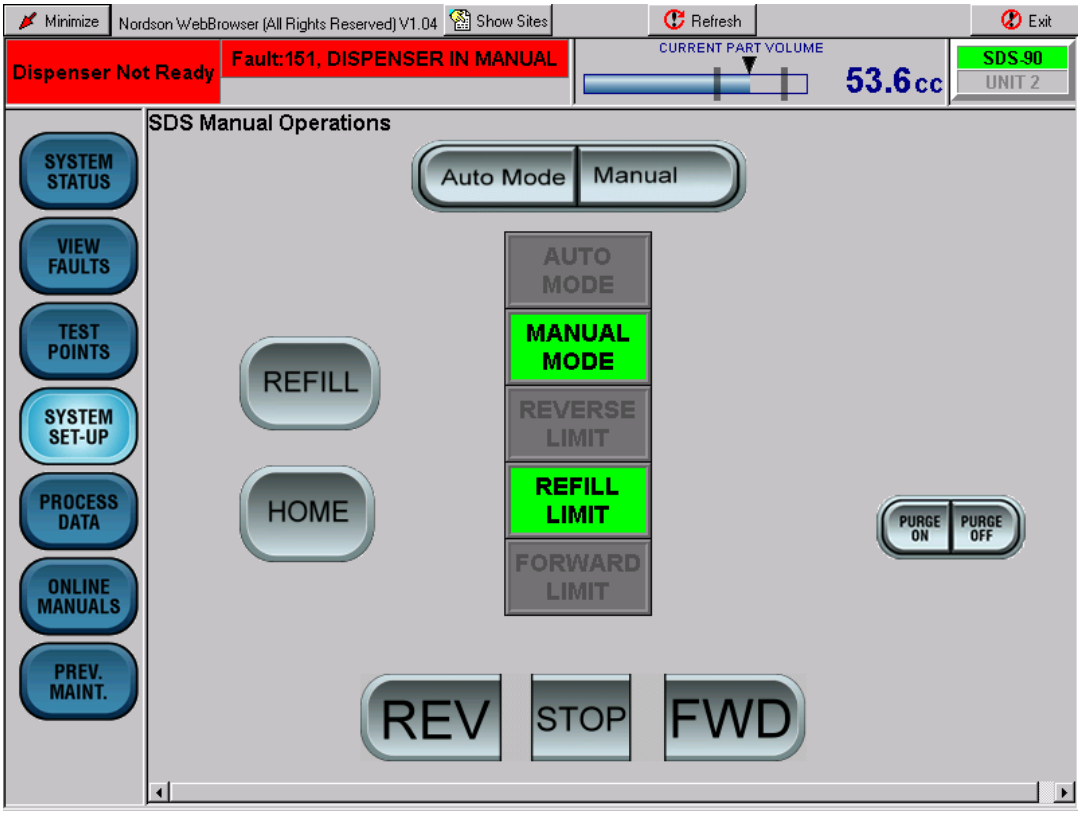
SDS Manual

See Screen 17.

Use this screen to manually operate the dispense meter. The system must be in the **MANUAL** mode to use this screen.

Touch **PURGE ON.** The meter starts to dispense until **PURGE OFF** is touched or the meter dispenses the entire volume of the meter.

Touch either **REFILL** or **AUTO MODE** to refill the meter.

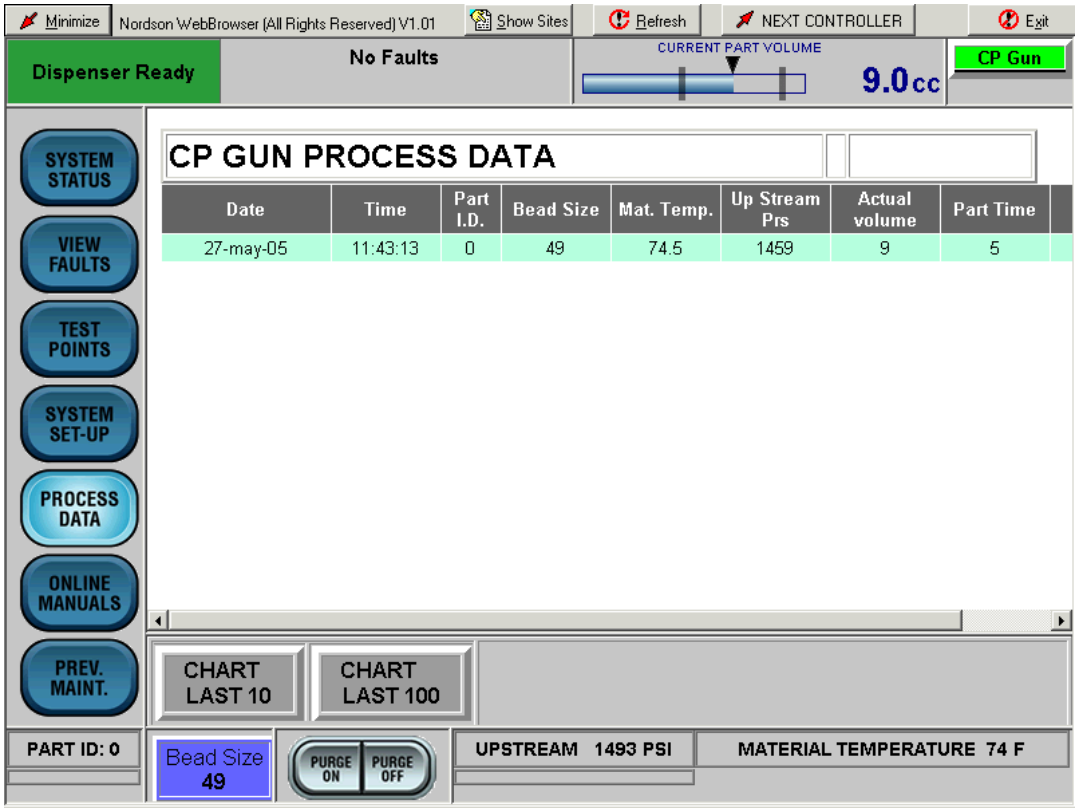


Screen 17 SDS Manual

PROCESS DATA

See Screen 18.

Touch **PROCESS DATA** to view production data.



Screen 18 PROCESS DATA (Typical)

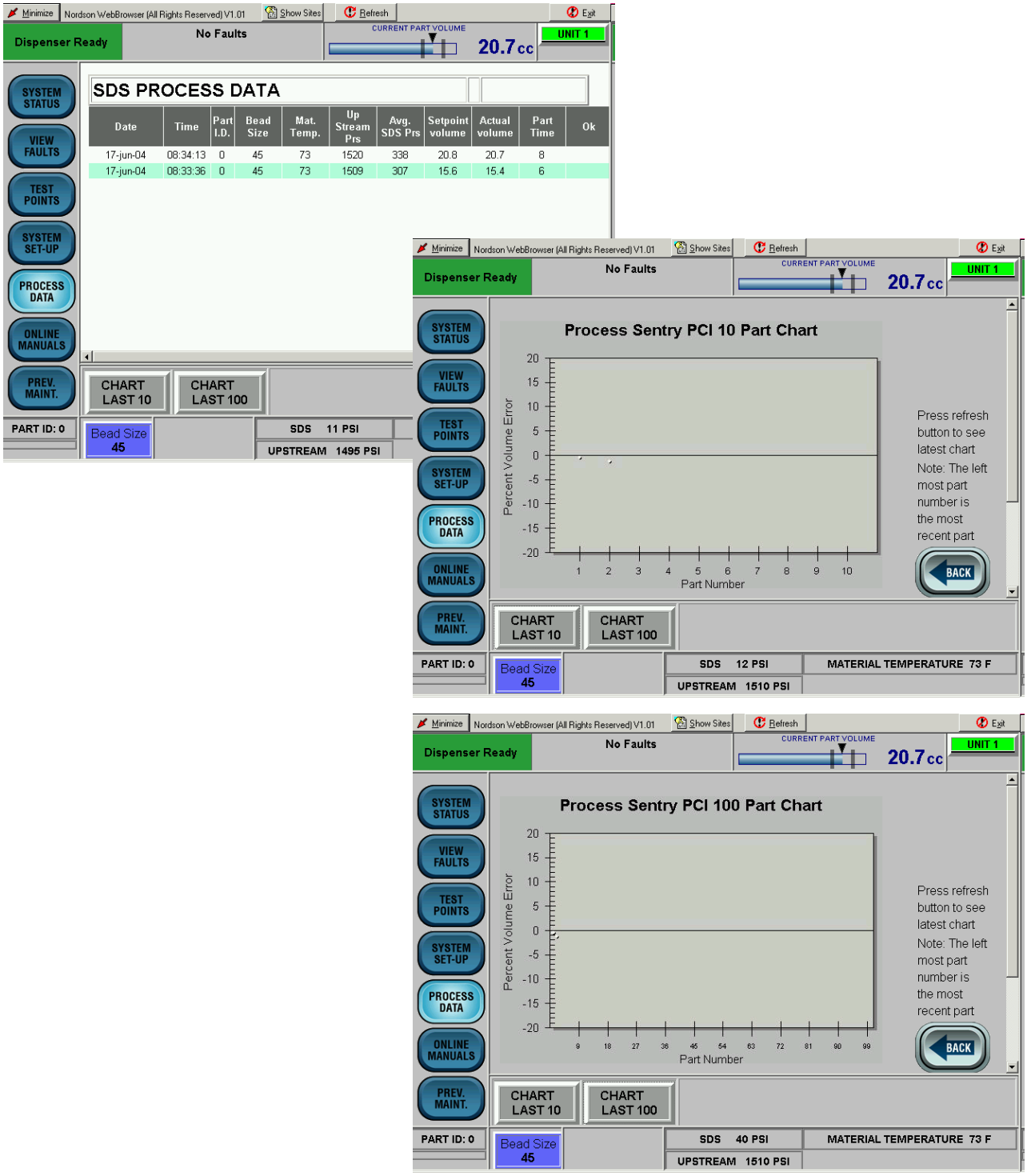
SDS Meter PROCESS DATA Part Charts

NOTE

Part charts are only available on the SDS Meter.

See Screen 19.

Touch **CHART LAST 10** to view the last 10 parts. Touch **CHART LAST 100** to view the last 100 parts.

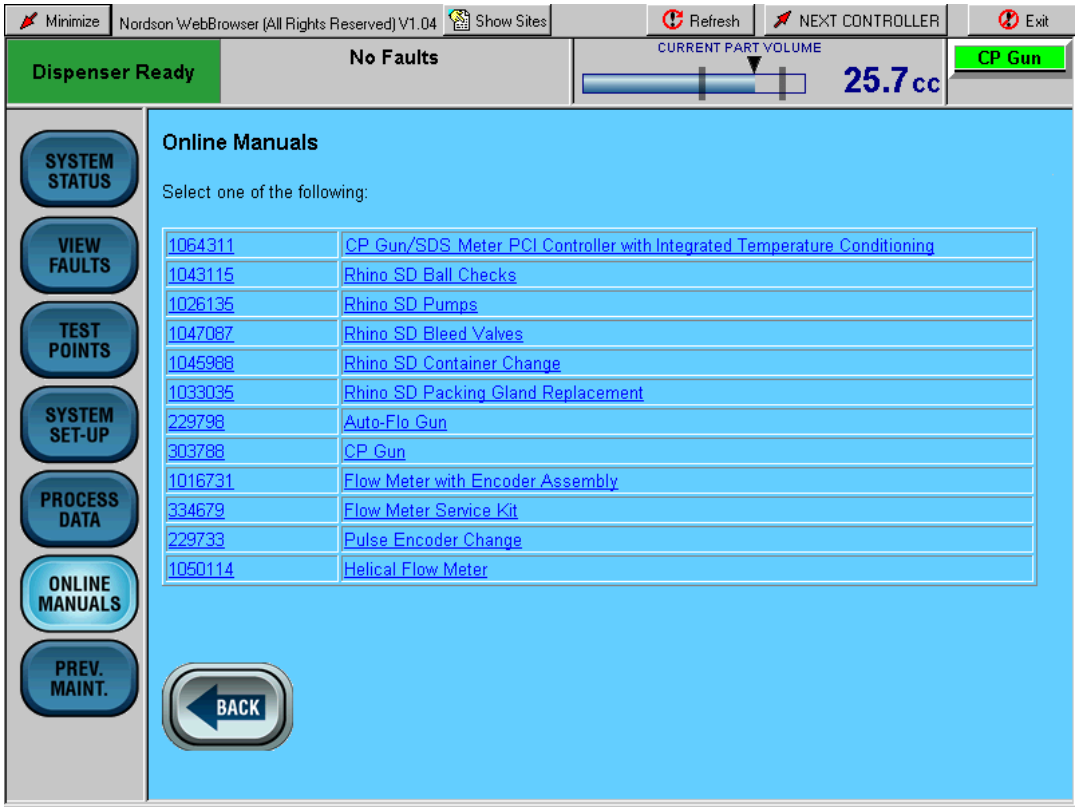


Screen 19 SDS Meter PROCESS DATA Part Chart

ONLINE MANUALS

See Screen 20.

Touch **ONLINE MANUALS** for links to documentation. Touch either a part number or a manual title to access documentation that is applicable to the dispensing system.

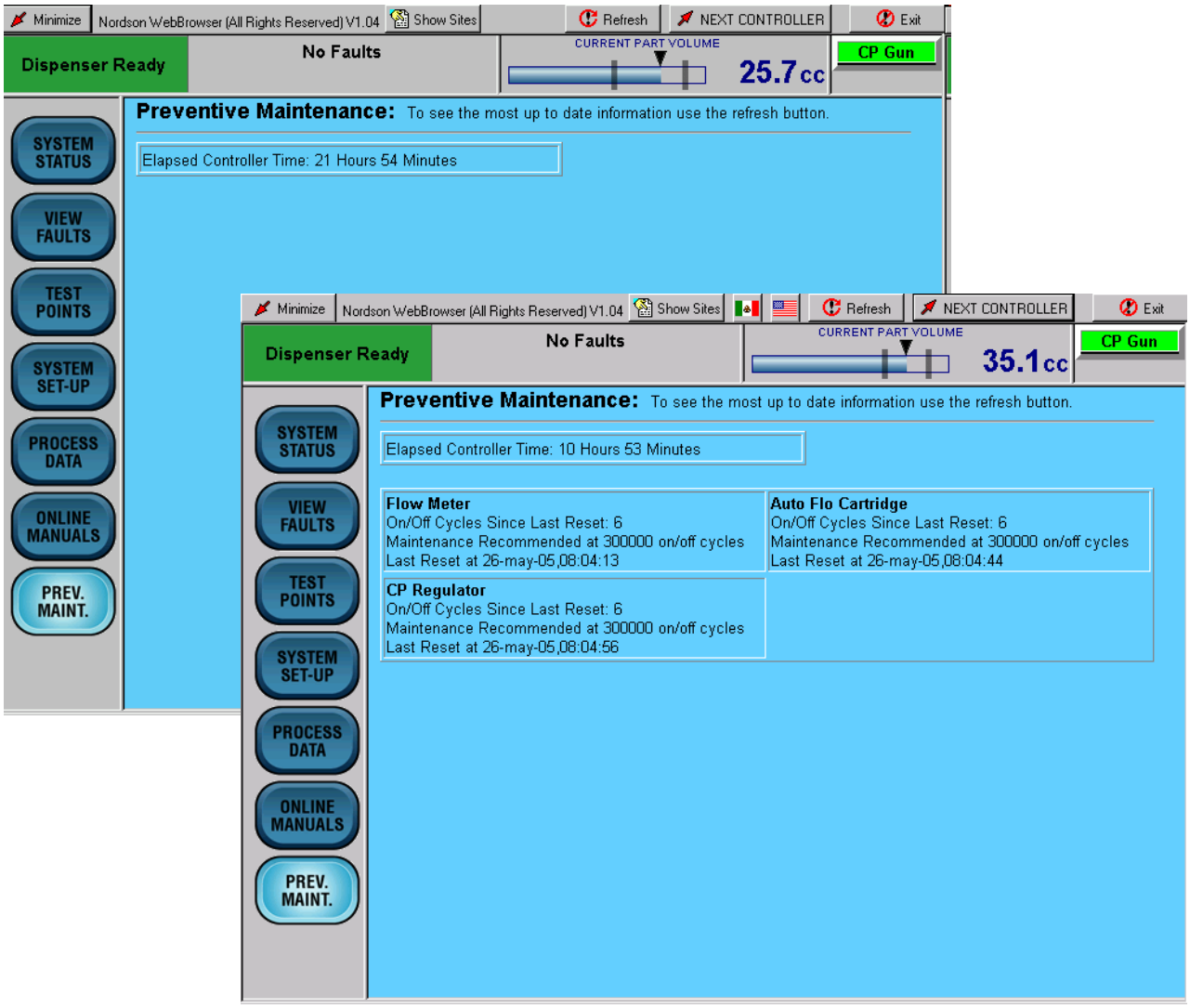


Screen 20 ONLINE MANUALS (Typical)

PREV. MAINT.

See Screen 21.

Touch **PREV. MAINT.** to view preventive maintenance data. This screen can be accessed from the hidden service menu. It displays reminders for wear items in the dispensing system.



Screen 21 PREV. MAINT.

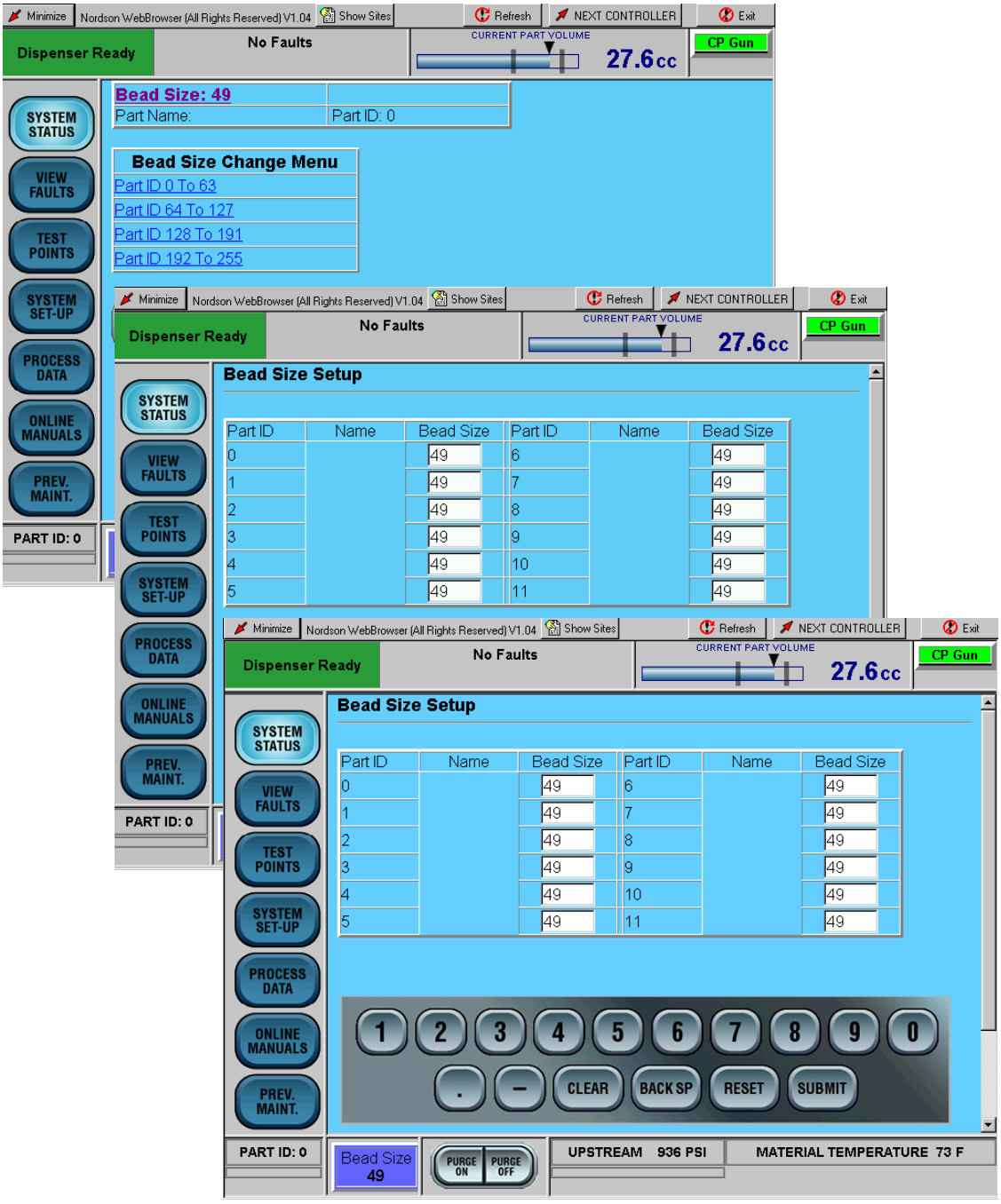
BEAD SIZE

See Screen 22. Touch **BEAD SIZE** to access the bead size screens. Bead size is an arbitrary number between 1 and 99. Bead sizes can be either by Part ID or Global.

A Part ID bead size value applies to one part. Up to 256 Part ID bead sizes can be entered.

A Global bead size value applies to all Part IDs. If the Global bead size value changes, the bead size for all Part IDs change to that value.

Touch the applicable link on the **Bead Size Menu** to access the **Bead Size Setup** screen and change the bead sizes.



Screen 22 BEAD SIZE

Operation

WARNING

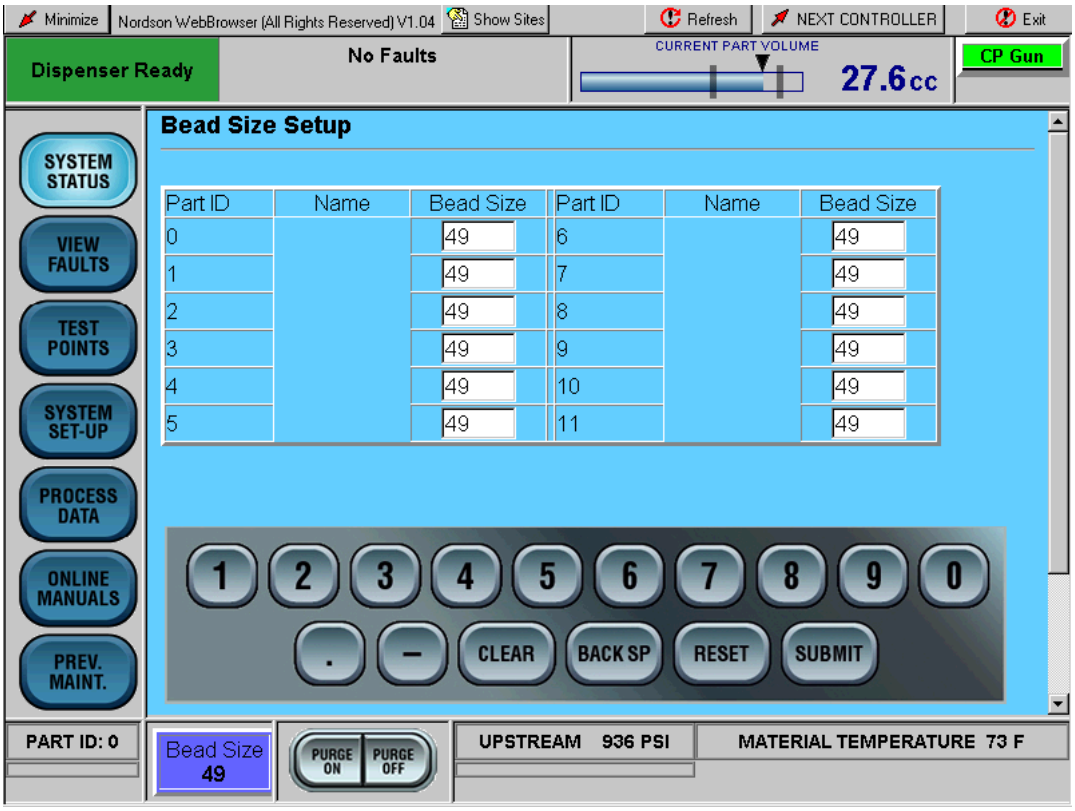
- Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.
- Read and understand this section before operating the PCI controller. The procedures in this section assume that the PCI controller was configured by a Nordson Corporation representative.

NOTE

- Before operating the controller, make sure that each robot is taught the proper tool path. Refer to the robot controller manual for procedures.
- When entering data, touching the field next to the corresponding parameter positions the cursor inside of the field.

See Screen 23. Some parameters require the use of the screen keyboard to enter data. When entering data, touch

- **CLEAR** to delete the current value in a field.
- **BACK SP** to backspace.
- **RESET** to restore a value.
- **SUBMIT** to save changes.



Screen 23 Typical Screen Keyboard

Start the Temperature Conditioning Unit

NOTE

Only perform this procedure for new PCI controllers that have not been used in production.

1. Flush the piping system with water, drain and refill.
2. Fill the water reservoir. Refer to the *Fill the Water Reservoir* procedure in this section.
3. **Heat and Cool Versions Only**—Turn off the chiller and heater circuit breakers.
4. Power up the PCI controller. Turn the TEMP COND switch(s) to ON.
5. From the **Temperature Status** screen, touch **TEMP COND ON** to enable the temperature control and water circulation loop. The system is now circulating water.
6. Check the pressure gauge for each circuit. Normal operating pressure is between 22 to 28 psi. If the pressure is below 20 psi make sure all air is purged from system and both pumps in the circuit are operating.
7. See Figure 7. If necessary, purge the air and prime the pumps:
   a. Access the **Temperature Setpoint** screen. Set the temperature below the process value to allow the solenoid valve to open.
   b. Close the From Process return line valve (2). Disconnect the hose (3) and hold it in the reservoir (4).
   c. If the pumps are air locked, push the water reservoir float switch down to disable the pumps and allow air to exit from the system. If the pressure is above the normal range, there may be a restriction in the circulation loop such as a closed valve, pinched water line, etc.
   d. Connect the hose (3). Open the From Process return line valve (2).
8. Once the system is fully charged with water and the air has been removed from the system, turn the TEMP COND switch(s) to OFF.
9. Turn on the chiller and heater breakers.
10. Press the SEALER POWER ON switch to turn on the system.

Verify Pipe and RTD Connections

To verify proper pipe and RTD connections, test one control loop at a time.

1. Disconnect an RTD and check that an error is displayed on the correct controller.
2. Enter a set point value on the controller that is higher than ambient and observe that the
   - process temperature begins to increase
   - heat indicator on the controller is illuminated
   - thermometer reflects an increase in water temperature.
3. Reverse this procedure for cooling function.

Fill the Water Reservoir

Use the following procedure to fill the reservoir.

! CAUTION !

- Do not use DI water in this system. To prevent damage to the system, refer to the *Water Treatment* section for information on the types of water to use.
- CorrShield MD405 corrosion inhibitor must be added to the water to minimize corrosion of system components.

1. See Figure 7. Remove the cover (1) on the reservoir (4).
2. Mix 1.5 oz of Corrshield MD405 with a gallon of water. Pour this mixture into the reservoir (4).
3. Install the cover (1) onto the reservoir (4).

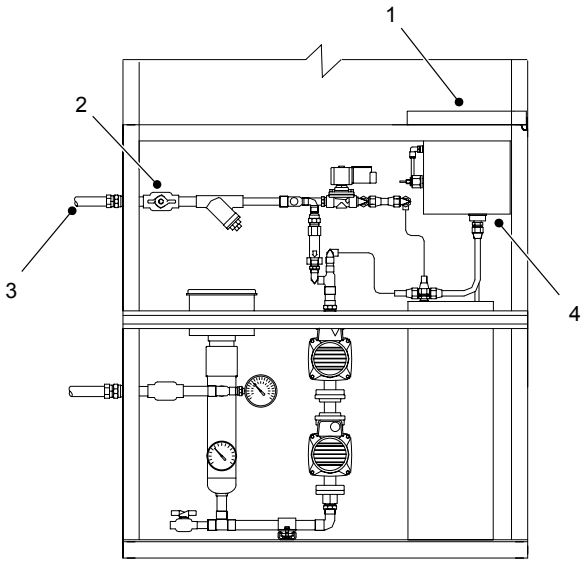


Figure 7 Filling the Water Reservoir

Start the Controller

Use the following procedures to start the controller.

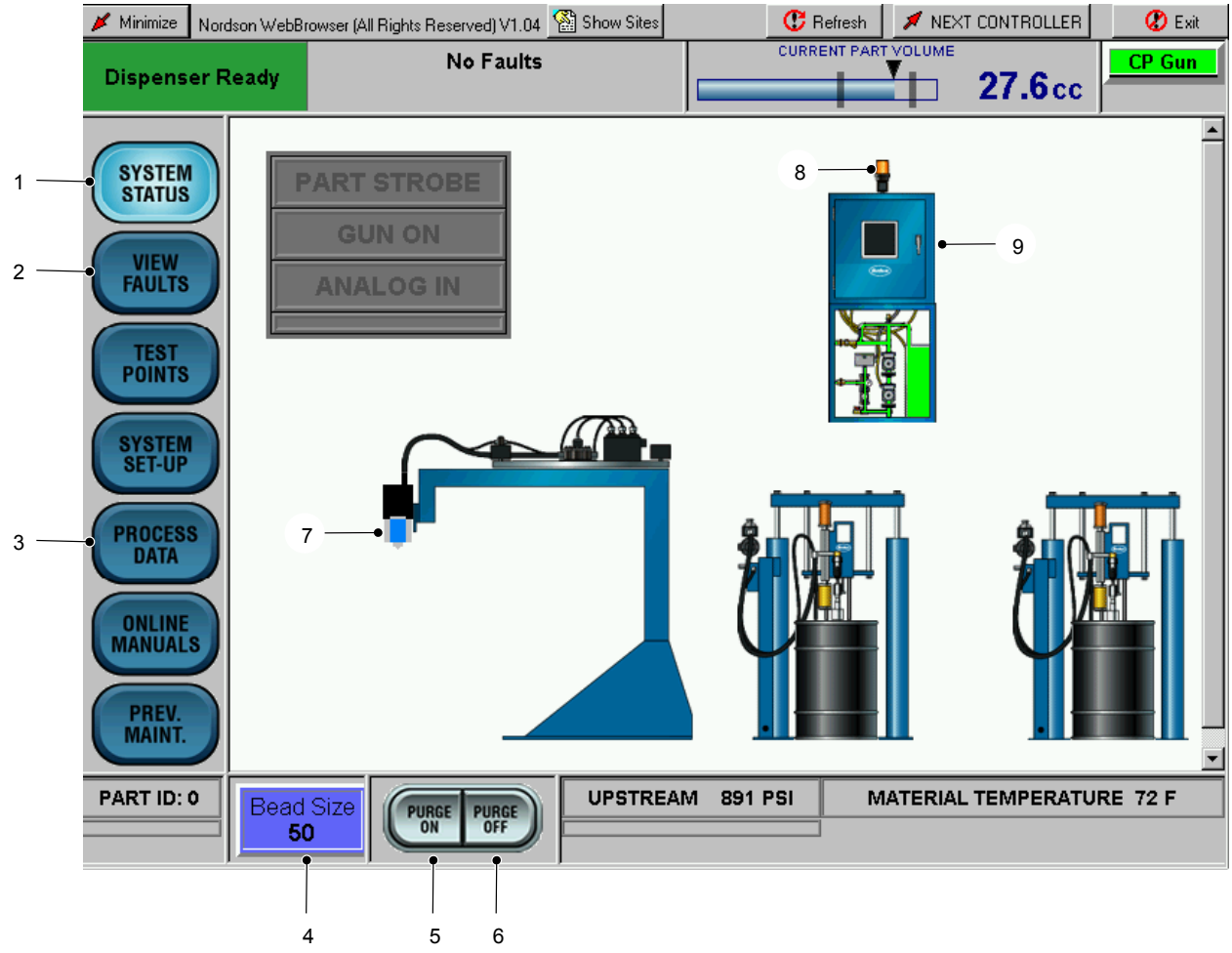
1. Turn on power to the controller.
2. After the system finishes the boot-up process, press the POWER ON button on the front of the cabinet.
3. Perform the *CP Gun System* and *SDS Meter System* procedures in this section.

NOTE

Operating procedures may vary due specific application requirements. Refer to your System Parameter Sheet for specific operating settings.

CP Gun System

1. See Screen 24. Place a waste container under the gun (7).
2. Verify that the pumps are at operating pressure.
3. Touch **PURGE ON** (5) to remove air from the material supply hose and nozzle.
4. Purging stops after the purge time has elapsed. If desired, press **PURGE OFF** (6) to stop purging immediately.
5. Check the correct bead size used for the part being run. Touch **BEAD SIZE** (4) to make adjustments.
6. In the **Bead Options** fields, touch the keyboard to change the values.



Screen 24 Typical Operator Interface

SDS Meter System

See Screen 25.

1. Turn on power to the controller (2). After the system finishes the boot-up process, press the POWER ON button.
2. Place a waste container under the dispense gun (4).
3. Verify that the bulk unloader (3) is on and that the supply pressure is within the normal operating range.
4. Install a nozzle on the dispense gun (4).
5. To purge the nozzle, use the robot command to raise the Purge input or perform the following procedure:
   a. Touch **System Setup** (5), to access the **SDS Manual Operation** screen (12).
   b. From the **SDS Manual Operation** screen (12), touch **Manual** (7).
   c. Touch **PURGE ON** (9).

   NOTE

   The meter performs the purge function until it is either empty or **PURGE OFF** (8) is touched.

6. Perform one of the following to refill the meter:
   - Drop the robot Purge input.
   - Touch **REFILL** (10).
   - Touch **Auto Mode** (11) to put the system back into AUTO.
7. Check the bead size for the part being run. Touch **BEAD SIZE** (13) to access the **Bead Size Menu** and make adjustments if necessary.
8. Touch **PROCESS DATA** (14) to monitor material dispensing characteristics.
9. Position the part and begin dispensing from the robot controller.

Dispense Material

1. Position the part and begin dispensing from the robot controller.
2. See Screen 25. If desired, touch
   - **PROCESS DATA** (14) to monitor material dispensing characteristics.
   - **NEXT CONTROLLER** (15) to toggle between CP Gun and SDS Meter **SYSTEM STATUS** screens.

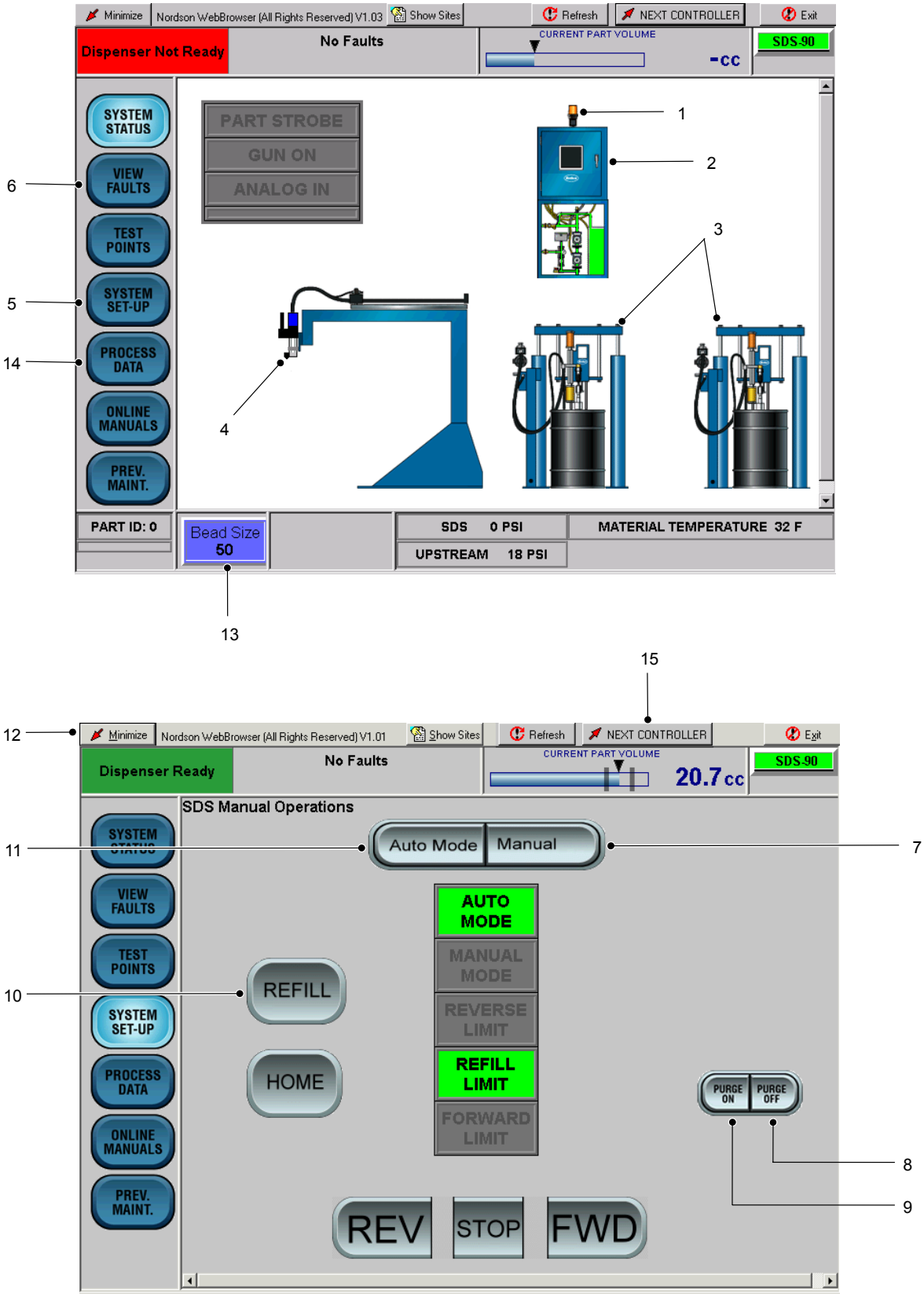
   NOTE

   During dispensing, the robot signal indicators illuminate when signals are received from the robot controller. During normal operation, these lights flash on and off in specific sequence.

Fault Messages

See Screen 25. If a fault is detected during operation, the alarm tower (1) red light turns on and the type of fault is indicated on the operator interface.

1. Touch **VIEW FAULTS** (6). A description of the fault appears along with the corrective action.
2. Touch any of the bold or underlined text to proceed directly to the correction.



Screen 25 Typical Startup

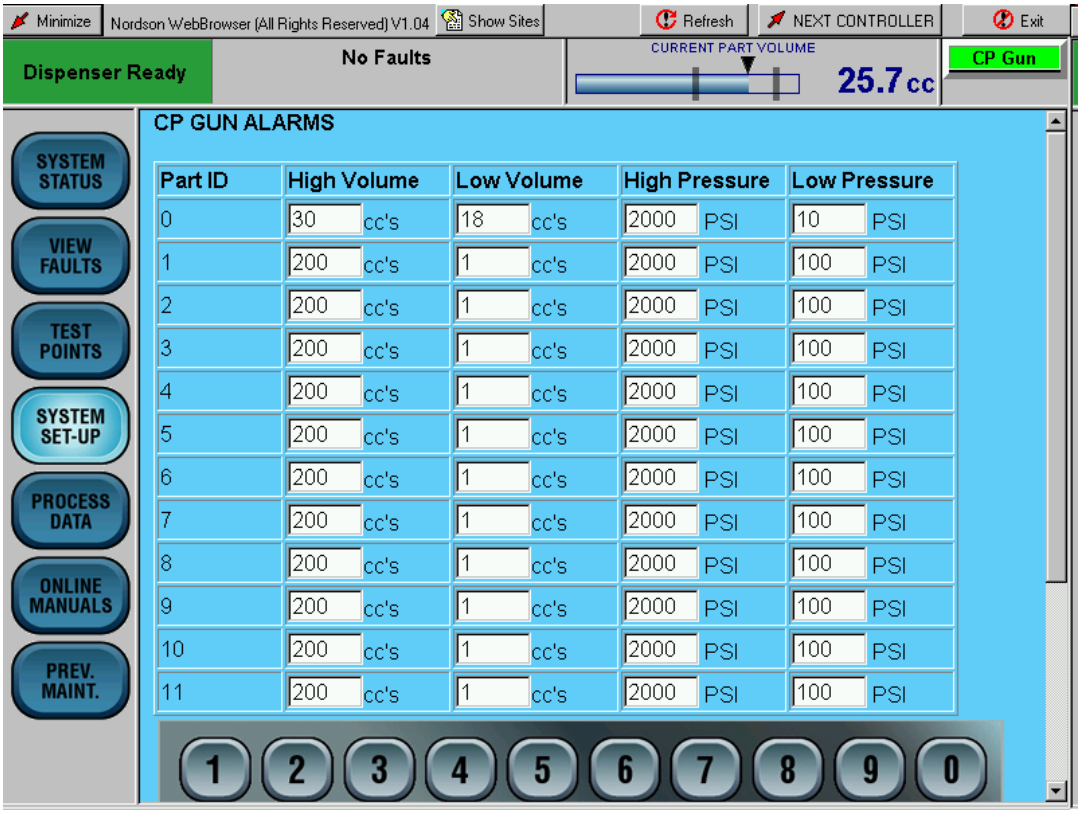
CP Gun Alarm Settings

See Screen 26. The Alarm setup screen can only be accessed through the hidden Service Menu.

Alarm trip points for low and high part volume and material pressure are programmable by Part ID.

When the material pressure value falls outside of the programmable limits, a major fault appears on the **VIEW FAULTS** screen along with a Help message.

When dispensed volume is outside the programmable limits, a major fault appears at the end of the part cycle.



Screen 26 CP Gun Alarms

SDS Meter Statistical Process Control Data

The statistical process control (SPC) data that appears on the SDS **Process Data** screen is stored on the hard drive of the controller PC. Typical data that appears are:

- Date and Time
- Part ID
- Bead Size Setting
- Volume Setpoint
- Actual Volume
- Material Temperature

SDS Meter SPC Error and System Status Codes

Refer to Tables 8 and 9.

The PCI controller collects the following SDS Meter SPC Error Codes and SPC System Status Codes.

Table 8 SPC Error Codes

Code	Description
1	High dispensed volume
2	Low dispensed volume
2048	DeviceNet from robot failure
4096	Robot signals out of sequence
8192	Gun or controller failure
16384	Auxiliary device failure either temperature conditioning unit or pumps

Table 9 SPC System Status Codes

Code	Description
128	New configuration file or defaults have been loaded
256	SPC data has been downloaded
512	Dispenser Ready went from low to high prior to dispense cycle
1024	Dispenser Ready was low but robot attempted to run a part
32768	Part cycle ran in Simulation Mode

CP Gun Statistical Process Control Data

The statistical process control (SPC) data that appears on the CP Gun **Process Data** screen is stored on the hard drive of the controller PC. Typical data that appears are:

- Date and Time
- Part ID
- Bead Size Setting
- Actual Volume
- Material Temperature

Accessing SPC Data

The PCI controller saves the data in comma-delimited format for importing into a spreadsheet. Use the following procedure to access the SPC data.

NOTE

Only personnel with Administrator Level access to the PCI controller can perform this procedure.

1. Using Windows Explorer access the following folder:

   c:\Nordson\Serial

   The spc data for unit 1 is stored as

   spc.dat

   The data for unit 2 is stored as

   spc2.dat

2. If desired, export these files by copying them onto a USB memory device.

Adjusting the Chilled Water Flow

Use the following procedure to adjust the chilled water flow.

See Figure 8.

1. **Heat and Cool Versions Only**—Turn off the chiller circuit breaker.
2. Access the **Temperature Setpoint** screen. Raise the temperature setpoint above the current temperature. Make sure that the solenoid valve (3) closes.

NOTE

The flo-setter adjustment screw (2) must never be fully opened or closed during normal operation.

3. Adjust the flo-setter (1) to the fully opened position and record.
4. Adjust the flo-setter (1) to $^1/_2$ gpm less than full flow.
5. Set the temperature on the **Temperature Setpoint** screen back to the original value.
6. **Heat and Cool Versions Only**—Turn on the chiller circuit breaker.

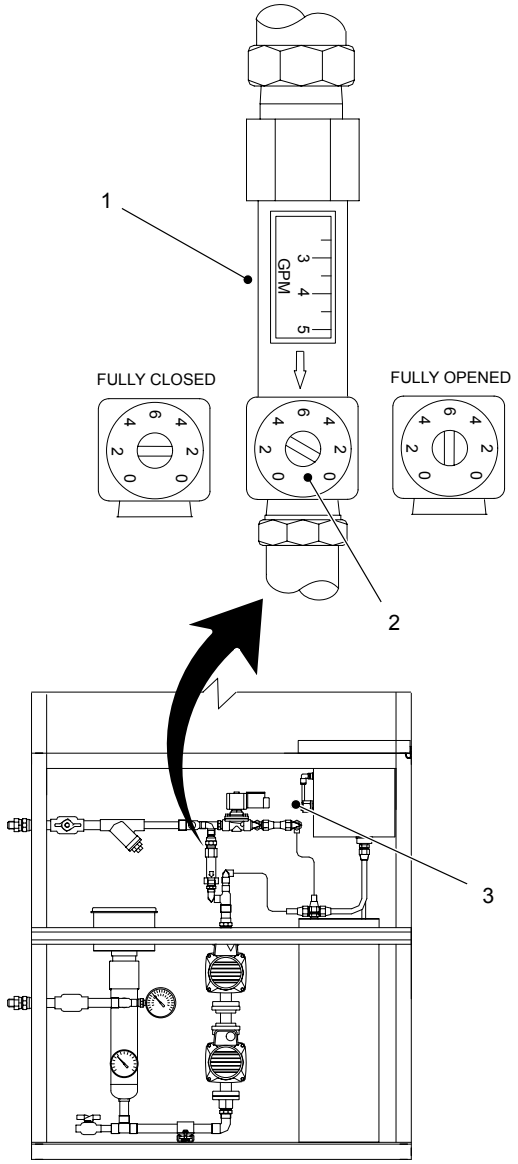


Figure 8 Adjusting the Chilled Water Flow—Typical

Shutdown

Use the following shutdown procedure to remove power from the PCI Controller:

1. See Figure 9. Touch **Minimize** (1) at the top of a screen display.
2. Touch **start** (2) on the Windows task bar to access the **Start Menu**.
3. Touch **Shut Down** (3) on the **Start Menu**.
4. Make sure that **Shut Down** is displayed in the **Shut Down Windows** field. Touch **OK** (4).
5. Turn the controller off and relieve all pressures.

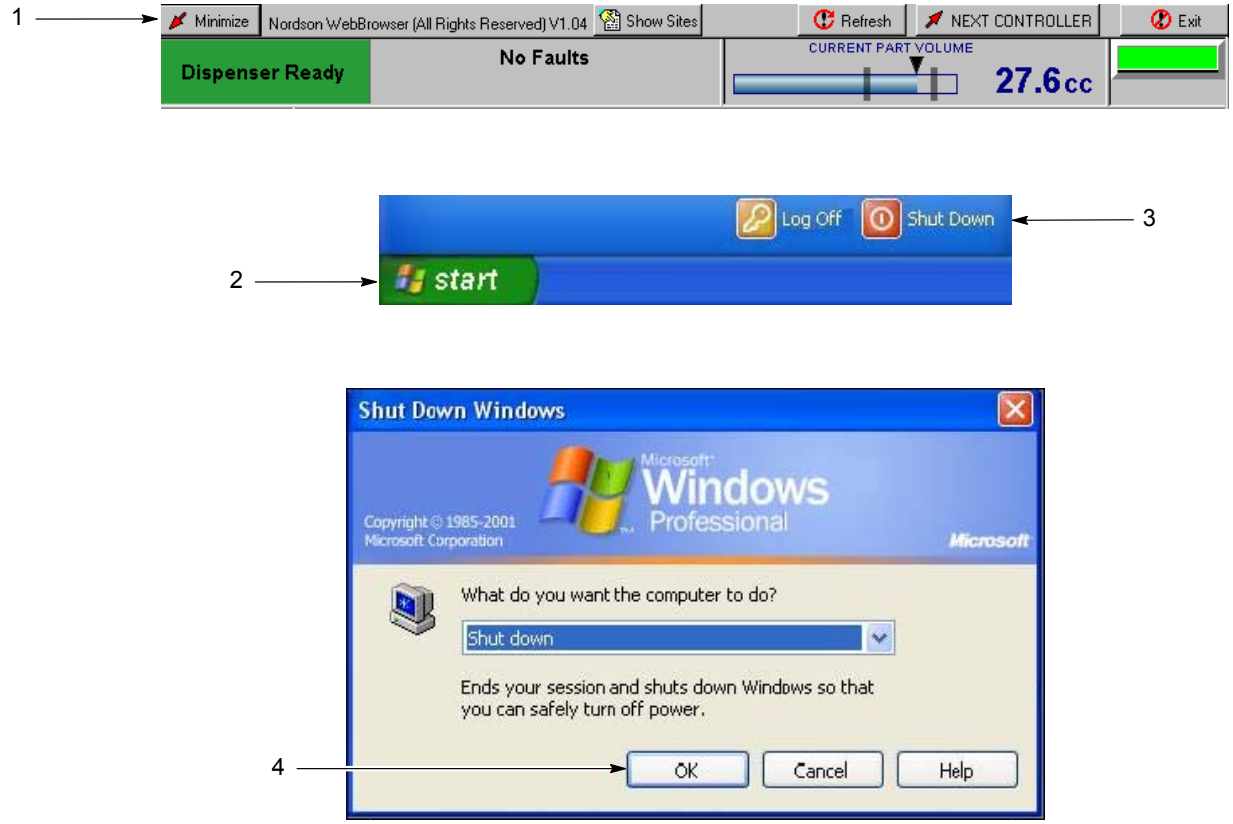


Figure 9 PCI Controller Shutdown

Maintenance

The following chart lists recommended maintenance tasks. The frequency of performing a task is dependent upon the system operating environment. Perform preventive maintenance according to your plant maintenance schedule.

WARNING

- Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.
- High pressure fluids are extremely dangerous. Do not place any part of your body in front of a dispensing device, drain, or leak in a high pressure system. A jet of high fluid can cause serious injury, toxic poisoning, or death. Relieve system and material pressure before disconnecting hoses.

Item	Task
Water Chiller	Inspect and clean the condenser coil on the water chiller. On some chiller units, airflow is from the inside to the outside of the coil; therefore inspect both sides for buildup of dust or other airborne dirt. Blowing compressed air through the coils in the opposite direction of normal airflow often can clean the coils
System Pressure	Observe the system pressure gauge. Normal operating pressure is 25 to 28 psi. Low pressure indicates a pumping problem, either a failed pump, or air in the system. High pressure indicates a flow blockage.
System Y-Strainer	Isolate the Y−strainer and remove the screen for cleaning and inspection. If the screen contains little dirt after several inspections, discontinue this check. If system pressure is high, flow blockage may be found in this strainer.
System Water	Perform a water quality test. The correct way to determine water treatment quality is to use a test kit, which is available from Nordson, part 1030974. The system was originally filled with CorrShield MD405 corrosion inhibitor water treatment. If the water quality test fails, use the following procedure to flush the system: 1. Note the temperature setting on the heater high-temperature Thermostat located in the heater electrical junction box, then reset to 0. To properly flush the water chiller, remove the chiller fuse and force the system into cooling by lowering the setpoint temperature. This will open the cooling solenoid and flow water through the chiller. 2. Flush the existing water from the system by bleeding a small amount of water to drain while adding fresh clean water to the reservoir. Continue to bleed water until the system water is clear. Once the water runs clear, close the system drain and add corrosion inhibitor per the manufacturer's recommendation, if a biocide is indicated add biocide at this time per manufacturer's recommendation. 3. Install the chiller fuse, reset the temperature setpoint on the PCI controller and reset the heater high-temperature Thermostat to its original setting. The system is now ready for operation
Water-Traced Covers	Inspect the water-traced covers for signs of wear or rubbing. Also inspect the clamping for signs of cutting or fabric tear.

Troubleshooting

This section contains troubleshooting procedures. These procedures cover only the most common problems that you may encounter. If you cannot solve the problem with the information given here, contact your local Nordson representative for help.

WARNING

Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

CP Gun System Problems

Problem	Possible Cause	Corrective Action
1. CP Gun does not dispense	Low material supply pressure	Make sure that material supply pump is on and that pressure is within normal operating range. Check the pressure display field on the **SYSTEM STATUS** screen and verify that all ball valves in the supply circuit are open.
	Controller power is off.	Press the POWER ON button on cabinet door.
	No air to CP gun air regulator or Auto-Flo gun solenoid.	Verify shop air pressure to regulator and solenoid.
	Robot signal not in proper sequence	See the IO timing charts (Figures 3 and 4) for proper robot IO sequence.
	Insufficient analog signal from robot.	Access the **TEST POINTS** screen and verify that analog flow signal is being sent during part cycle.
	Nozzle blocked	Remove and clean the nozzle.
2. Bead deposition “wiggles”	Nozzle too high above work piece	Lower the nozzle. Refer to the robot controller manual.
	Material speed through nozzle too low	Increase the bead size. Refer to *Startup* in the *Operation* section.
	Nozzle not large enough	Install a larger nozzle. Contact your Nordson Corporation representative for part numbers.
3. Unexpected bead size change	Nozzle partially blocked	Clean the nozzle.
	Material exceeded shelf life	Use fresh material.
4. Material leaks from Auto-Flo gun	Worn cartridge	Replace cartridge. Refer to the *Auto-Flo* gun manual for procedures.

SDS Meter Problems

Problem	Possible Cause	Corrective Action
1. Meter does not dispense	Major fault	Access the VIEW FAULTS screen to determine cause of fault condition.
	Controller in Manual Mode	Set PCI controller to the AUTO mode.
	No air to meter solenoids	Check supply air to the gun and refill meter solenoids. Make sure that the regulator is set to at least 70 psi.
	Robot signals not in proper sequence	See the IO timing charts (Figures 5 and 6) for proper robot IO sequence.
2. Meter does not refill	Low unloader pressure	Check the air pressure to the bulk unloaders. Make sure that there is enough air pressure to refill the meter cylinders.
	No air to meter solenoids	Check supply air to the gun and refill meter solenoids. Make sure that the regulator is set to at least 70 psi.
	Clogged refill valve(s)	Remove the refill valve and either clean or replace the refill valve cartridge.
	Refill proximity switch not within limits.	Make sure that the gap between the refill proximity switch and the piston target disk does not exceed 0.030 in. and that the alignment is correct. Adjust the proximity switch if necessary.
3. Bead deposition "wiggles"	Nozzle too high above work piece	Lower the nozzle. Refer to the robot controller manual.
	Material speed through nozzle too low	Increase the bead size. Refer to *Startup* in the *Operation* section.
	Nozzle not large enough	Install a larger nozzle. Contact your Nordson Corporation representative for part numbers.
4. Unexpected bead-size change	Nozzle partially blocked	Remove nozzle; clean or replace.
	Material exceeded shelf life	Use fresh material.

Temperature Conditioning Section Problems

Problem	Possible Cause	Corrective Action
1. Unit will not operate	Main power supply or fuses	Check the following: • supply power • main fuses • transformer fuses • control circuit breakers
2. Power on; does not operate	Temperature conditioning disabled.	Perform the following: 1. Access the **Temperature Status** screen. 2. Touch **TEMP COND ON**.
	Control breakers	Check the control breakers.
3. Temperature not maintained correctly	Restriction in water	Make sure that the hoses are not pinched and that valves in the water circuit are open.
	Y-strainer clogged	Remove and clean water strainer in return line of temperature conditioner. Make sure that distilled water is being used to fill reservoir.
	Flow-setter not properly adjusted	Make sure the the flow-setter is not fully opened. Refer to *Adjusting Chilled Water Flow* in the *Operation* section.
	TCU DeviceNet network not functioning	Verify that the POWER ON button is on.
	Broken RTD connection	Verify continuity of RTD and cable connections.

Problem	Possible Cause	Corrective Action
4. Material Temp. Range fault; material too warm	Water cooling system out of adjustment, dirty, or faulty	Perform the following steps: 1. Check the following: When cooling is required, the PCI controller cooling output should be on. This output is Output 2 on PCA405. When the PCI controller sends a cooling signal, the cooling output energizes and opens the water solenoid valve; indicated by an audible click at the solenoid valve. If the cooling light does not come on when the material is too warm, check the DeviceNet network and/or replace PCA405. If the light does come on and no audible click is heard, check the solenoid valve and/or solenoid fuse for failure. If the solenoid valve is operating and the cooling light is on, check the water flo-setter for proper adjustment. Refer to *Adjusting the Chilled Water Flow* in the *Operation* section. 2. Check the water chiller: If the problem still exists after performing step 1, the problem could be the water chiller. The water chiller uses a built−in thermostat to maintain a reservoir of cold water. When the thermostat energizes the chiller, the cooling fan blows air across the condenser coils. If the fan is not operating, check the chiller fuse located in the control panel. If the fan is operating, check the condenser coils for a buildup of dirt/dust and clean if necessary. **NOTE:** Some fans blow air from the inside to the outside; check both sides for dirt. If the fan is not operating and the fuse is good, or if the fan is operating with clean condenser coils but not cooling, a faulty water chiller is indicated. Contact Nordson for further chiller troubleshooting or replacement.

Continued on next page

Problem	Possible Cause	Corrective Action
5. Material Temp. Range Fault on; material too cool	Water heating system out of adjustment or faulty	Perform the following steps: 1. Check the following: Check the electronic controller:When heating is required, the controller heating output should be on. This output is Output 1 on PCA405. When the controller sends a heating signal, the heating output energizes and powers the water circulation heater. If the heating light does not come on when the material is too cool, check the DeviceNet network and/or replace PCA405. If the light comes on and no heating occurs, check the heater fuses located in the control panel and refer to the *Heater High Temperature Fault* in this section. 2. If the problem still exists after performing step 1, replace the circulation heater.
6. Heater High Temp. Fault on; system pressure above 25−28 psi	Closed valve	With the exception of the drain valve, make sure that all valves in the circuit are completely open.
	Pinched water hose, tubing, or water traced hose covers	Check to make sure that any water hose and tubing in the water traced hose covers are not pinched.
	Y−strainer clogged	Shut off power to the system and isolate the Y−Strainer. Inspect the screen in the strainer and remove any dirt. Circulation can be hindered if there is a significant amount of dirt build−up.
7. Heater High Temp. Fault on; system pressure below 25−28 psi	Bad pump or tripped circuit breaker	Check the breaker for each pump. If a pump is not operating the system pressure should be in the 12−15 psi range. If both pumps are getting power and the system pressure is below normal, check pumps for mechanical failure.
8. Low Water Level Fault is on	Low water level in reservoir	Add water to reservoir.
	Leaks in water circuit	Check for leaks in the water circuit and repair.

Cable Continuity

Cables should be checked periodically and replaced when worn or frayed. If a system malfunctions, make sure that the cable connections are tight.

! CAUTION !

Disconnect power before removing cables and testing them.

Check the cables for continuity with an ohmmeter. See the cable wiring diagrams included with your system documentation.

Repair

Repair consists of replacing the operator interface panel and the PCAs.

WARNING

- Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.
- Disconnect equipment from the line voltage. Failure to observe this warning may result in personal injury, death, or equipment damage.

Operator Interface Panel

Perform following procedure to replace the operator interface.

1. Turn off and lock out external electrical power to the controller.
2. See Figure 10. Open the enclosure door (1).
3. Disconnect the AC (4) and Serial (5) cables from the operator interface (3).
4. Remove the mounting clips (2) securing the operator interface (3) to the enclosure door (1). Remove the operator interface from the enclosure door (1).

NOTE

Do not apply sealing compounds to the operator interface. The operator interface has a sealing gasket that forms a compression-type seal.

5. Make sure that the sealing gasket on the operator interface (3) is properly positioned.
6. Install the new operator interface (3) into the enclosure door (1).
7. Install the mounting clips (2). Tighten the mounting clips to 10 in.-lb (1.1 N•m).
8. Connect the AC (4) and Serial (5) cables to the operator interface (3).
9. Close the enclosure door (1).

Typical PCA Replacement

The Netburner PCA is used as an example in the following procedure.

WARNING

This unit contains electrostatic sensitive devices (ESD). Wear a grounding wrist strap to prevent damage to ESD parts.

1. Turn off and lock out external electrical power to the controller.
2. See Figure 10. Open the enclosure door (1).
3. Disconnect the electrical connectors (8) from the PCA (6).
4. Remove the screws (7) from the PCA (6).
5. Install the new PCA using the screws (7). Do not over tighten the screws.
6. Connect the electrical connectors (8).
7. Close the enclosure door (1).

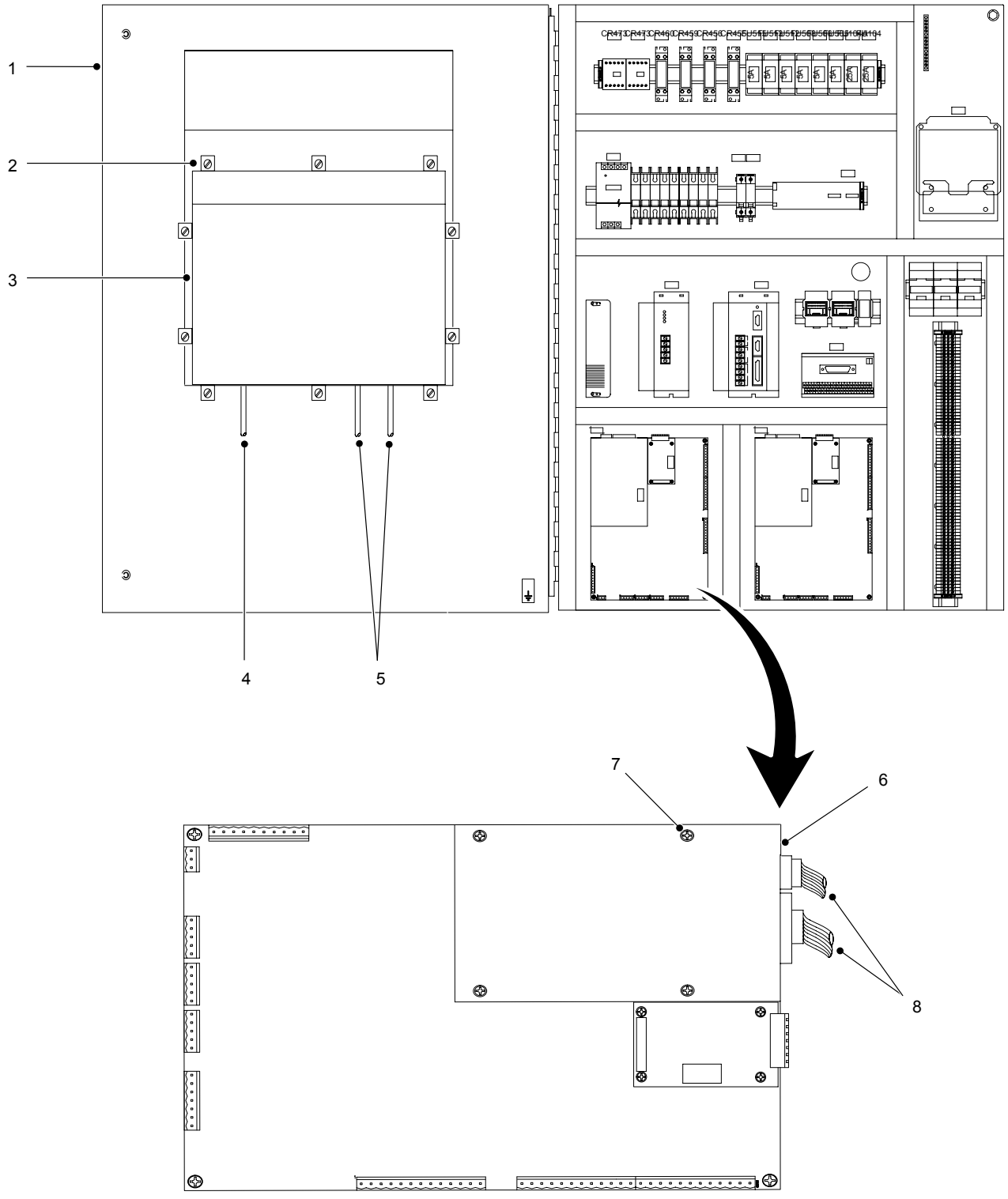


Figure 10 Typical Repairs

Restoring PCI Controller Programs

WARNING

Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

Use this procedure to restore the PCI controller programs and configuration.

1. See Figure 11. Open the enclosure door (1).
2. Connect a mouse and USB-type keyboard to the VersaView PC (2).

   NOTE

   If a standard PS-2 style keyboard is used, the VersaView PC will have to be rebooted to recognize the keyboard.
3. Reboot the VersaView PC (2) if necessary.
4. Close all running programs.
5. Log out as the PCI user and log in as the Administrator. Enter the password. The default password is Nordson.
6. Using Windows Explorer, access the *C:\PCI Install\Release\Loader* folder.

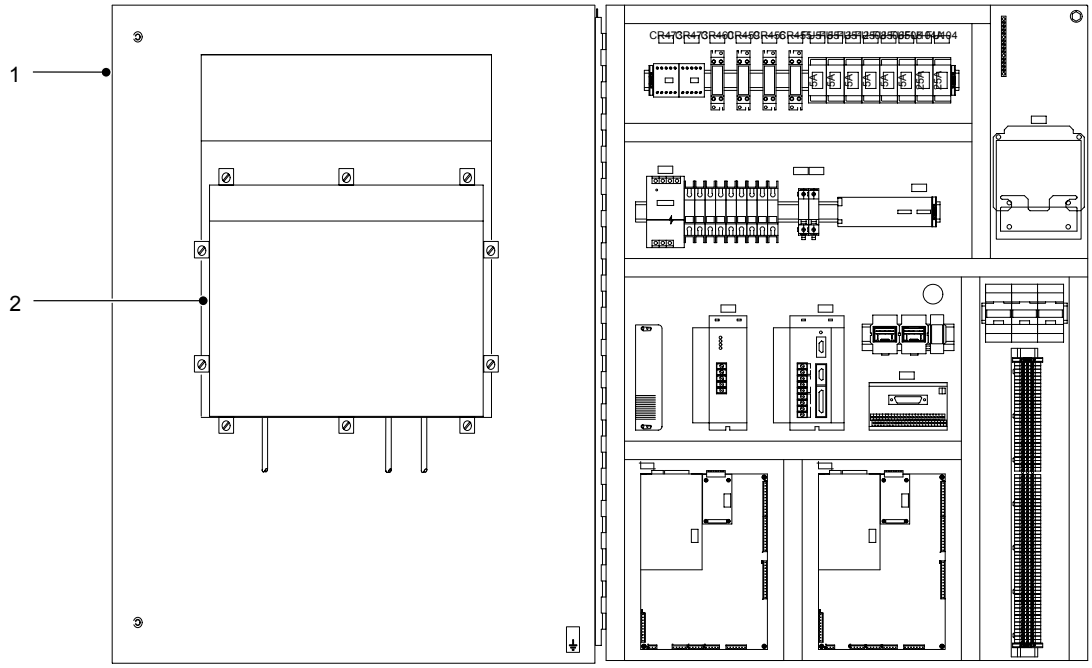


Figure 11 Accessing the Operator Interface

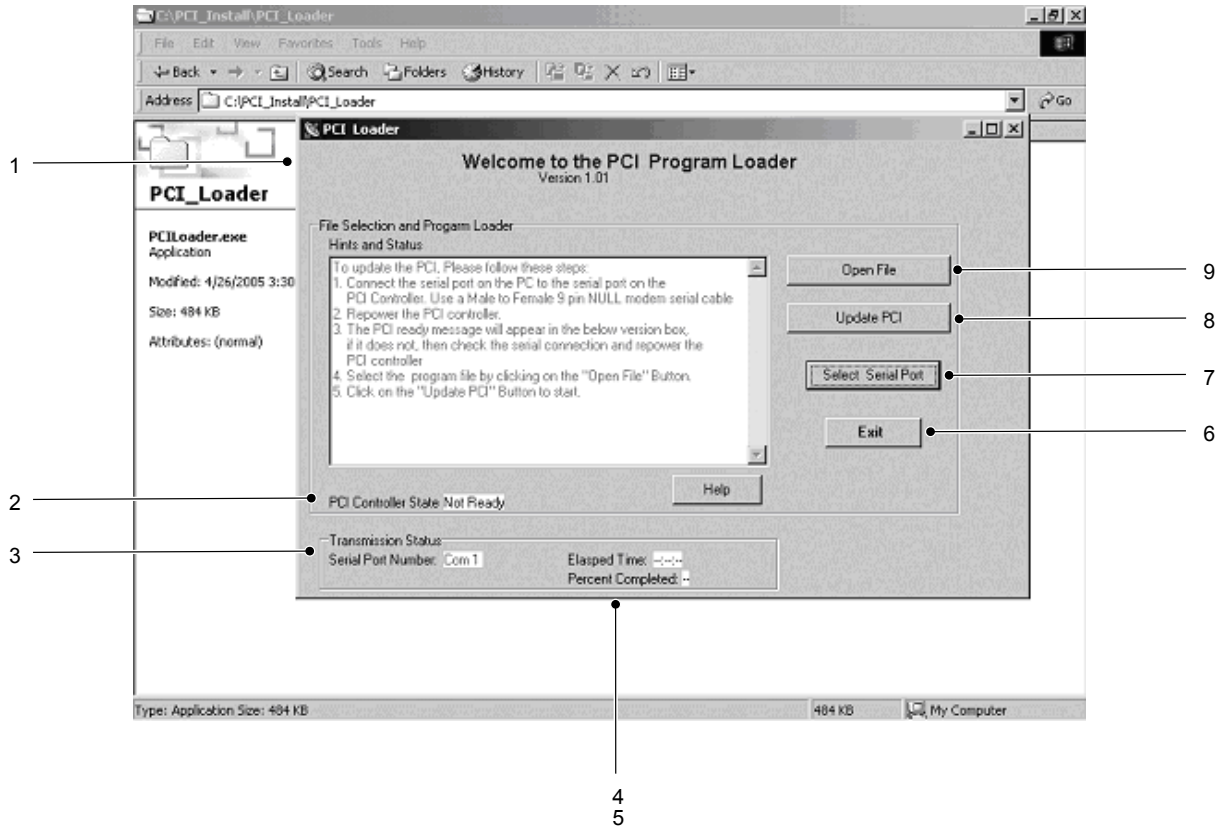
7. See Screen 27. Double-click on the *PCI Loader.exe* file to run the PCI Program Loader utility (1).
8. Check the **Serial Port Number** field (3) and make sure that the program is configured to load the software onto the correct board.

   If COM 1 appears in the **Serial Port Number** field, the software will be loaded onto the board connected to COM port 1. To change the serial port, click on **Select Serial Port** (7) and set the port to COM 2.
9. Cycle power to the PCI controller circuit boards. Refer to the PCI controller schematic for details.
10. When power is restored to the board, the message in the **PCI Controller State** field (2) changes from Not Ready to Controller Ready.

NOTE

Make sure that the correct *s19* file is loaded onto the correct board.

11. Click on **Open File** (9) and select the desired *s19* file. Click on **Update PCI** (8).
12. The time and file loading progress appears in the Elapsed Time (4) and the File Progress (5) fields.
13. When the process is done, click on **EXIT** (6) to exit Windows Explorer.
14. Disconnect the keyboard and mouse from the VersaView PC (2).
15. See Figure 11. Close the enclosure door and cycle power to the PCI controller.



Screen 27 PCI Program Loader Screen

Saving and Loading PCI Controller Configurations

WARNING

Allow only qualified personnel to perform the following tasks. Follow the safety instructions in this document and all other related documentation.

NOTE

Loading a configuration file from a floppy disk does not require a keyboard. Proceed to the *Loading Configurations* procedure.

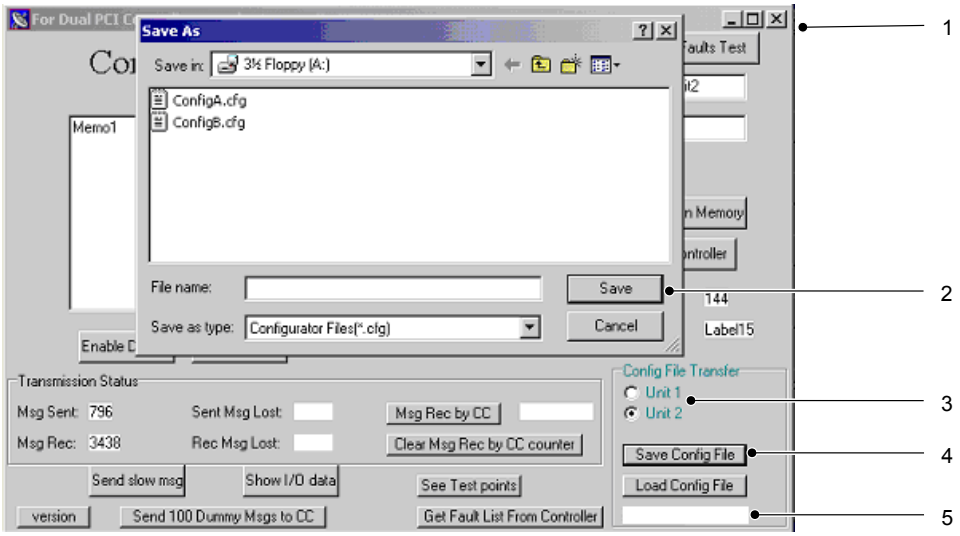
1. See Figure 11. Open the enclosure door (1).
2. Connect a USB-type keyboard to the VersaView PC to enter a file name and save configuration data onto a floppy disk or the hard drive.

NOTE

If a standard PS-2 style keyboard is used, the VersaView PC will have to be rebooted to recognize the keyboard.

Saving Configurations

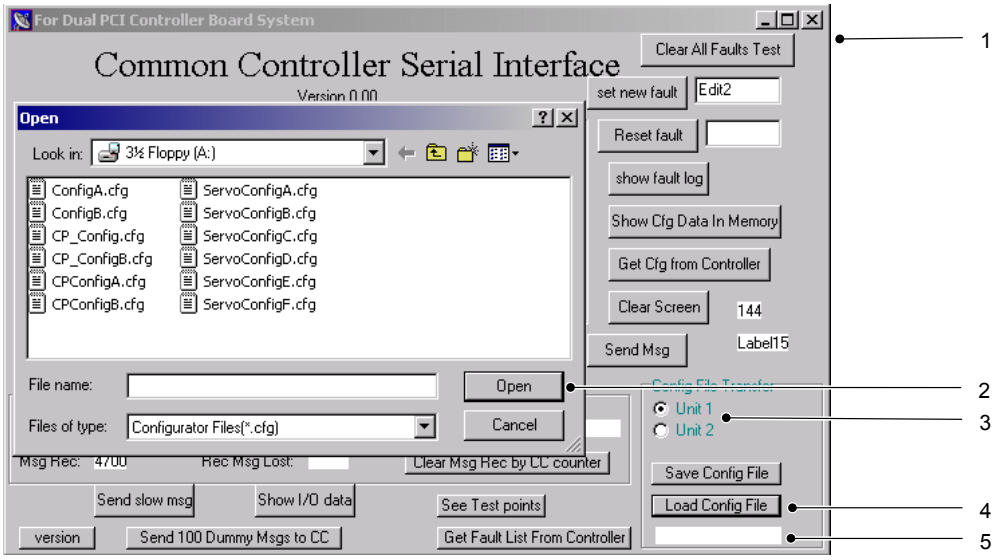
1. See Screen 24. Touch **Minimize** on the **System Status** screen to minimize the browser screen.
2. Maximize the **SerialCom** window (1).
3. See Screen 28. Touch either Unit 1 or Unit 2 in the **Config File Transfer** field (3) to save data from the applicable controller board.
4. Touch **Save Config File** (4). Using the keyboard, enter the name of the file to save in the file-name field. Touch **Save** (2).
5. When **OK-File Saved** appears in the field (5), minimize the **SerialCom** window (1).
6. See Screen 28. Touch **Maximize** on the **System Status** screen to maximize the browser screen.
7. See Figure 11. Close the enclosure door (1).



Screen 28 Saving Configurations

Loading Configurations

1. See Screen 24. Touch **Minimize** on the **System Status** screen to minimize the browser screen.
2. Maximize the **SerialCom** window (1).
3. See Screen 29. Touch either Unit 1 or Unit 2 in the **Config File Transfer** field (3) to load data to the applicable controller board.
4. Touch **Load Config File** (4).
5. Select the desired file to load and touch **Open**.
6. Wait for the PCI controller to update. When **Transfer Complete** appears in the field (5), minimize the **SerialCom** window (1).
7. See Screen 29. Touch **Maximize** on the **System Status** screen to maximize the browser screen.
8. See Figure 11. Close the enclosure door (1).



Screen 29 Loading Configurations

Parts

See Figure 12 and the following parts list. To order parts, call the Nordson Customer Service Center or your local Nordson representative.

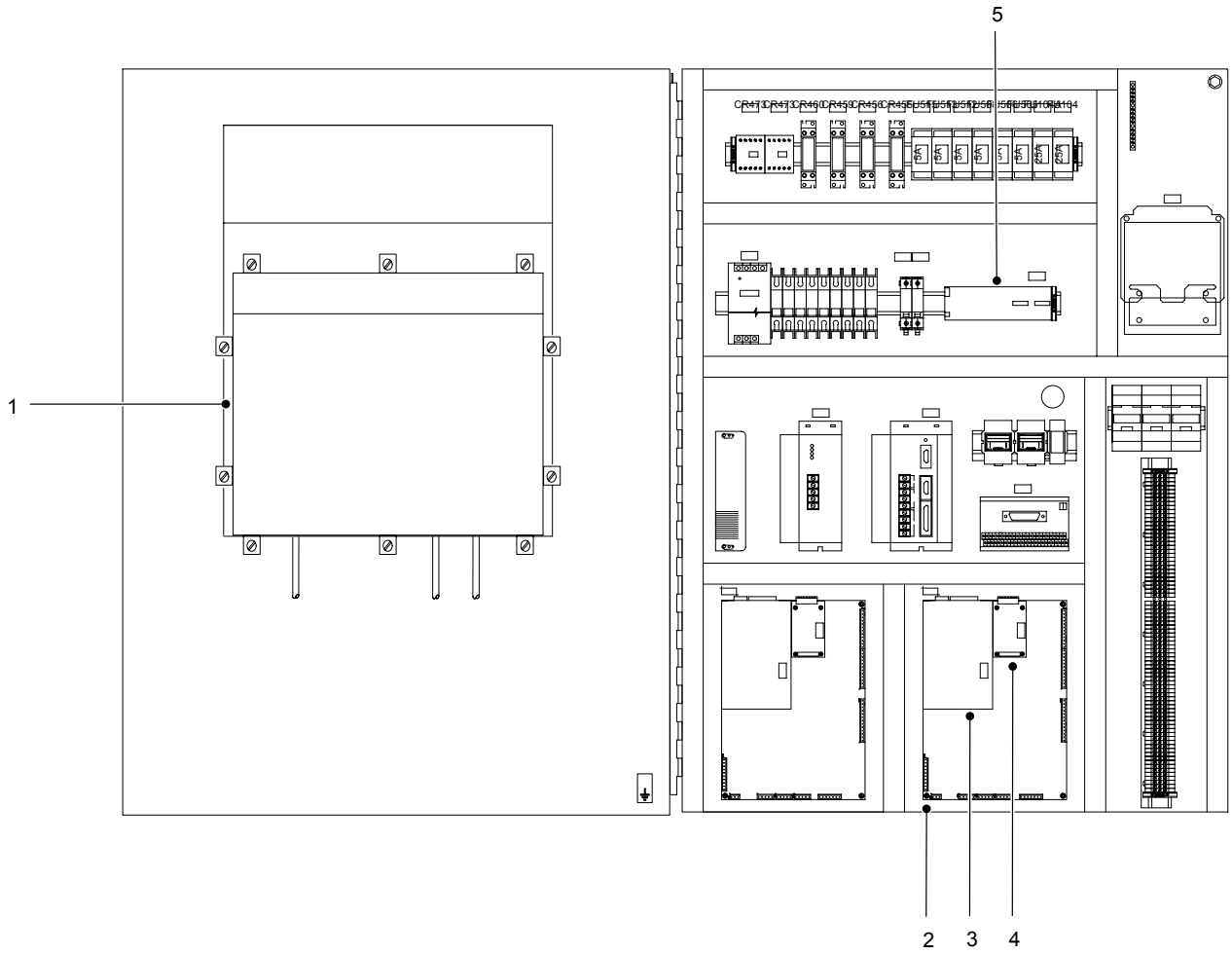


Figure 12 Dual-PCI Controllers

PCI Controller			1055777 2-Gun/2-Temp/2-Robot
Item	Part	Description	
1	1040541	Touch screen assembly	1
2	1060059	PCA, PCI controller, servo mod	2
3	1040544	Netburner PCA	2
4	320255	Hybrid, UCS-ON-1, Open PCB	2
5	1040549	DeviceNet Interface, Discrete I/O Board,	2

Temperature Conditioning Sections

See Figure 13 and the following parts list.

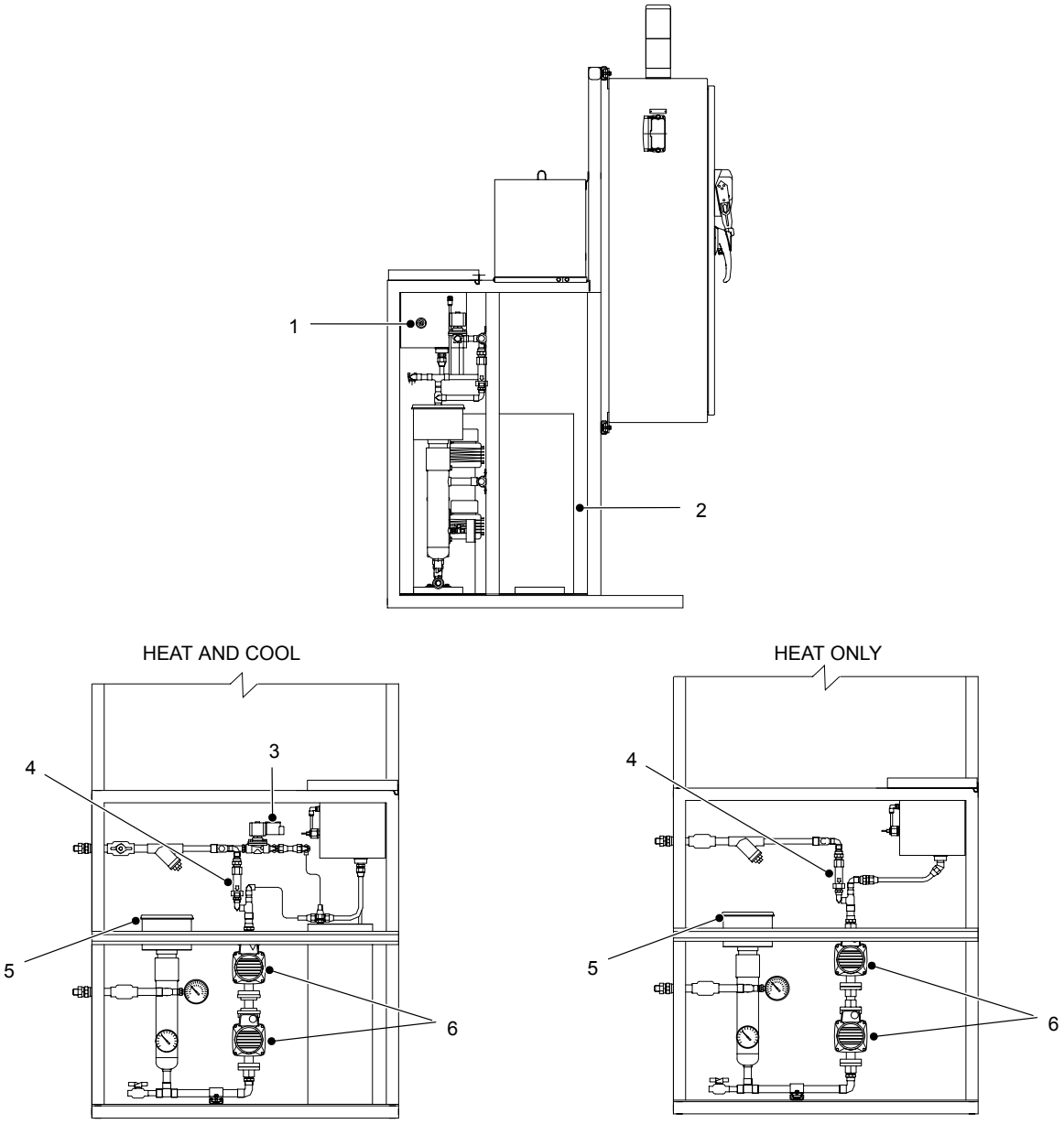


Figure 13 Temperature Conditioning Sections

Temperature Conditioning Sections			Heat and Cool 1-Channel	Heat and Cool 2-Channel	Heat Only
Item	Part	Description			
1	1042071	Float switch	1	1	1
2	221904	Chiller	1	1	—
3	252519	Solenoid valve, 24 VDC, $^1/_2$-in.	1	1	—
4	325130	Flo-setter, 4-gpm	1	2	1
5	225866	Circulation heater, 480 V	1	2	1
6	1048824	Circulation pump	2	4	2

Accessories and Kits

These accessories may be purchased separately.

Part	Description
281132	Valve, proportional assembly

Cables

Use this list to order replacement cables of the correct type and length.

Part	Description
330299	Cable, 16 pin, 70 ft
1058761	Cable, 24 pin, 70 ft

CorrShield MD405

NOTE

Similar products are available from other water treatment manufacturers. Concentrations may differ, therefore it is important to follow the manufacturer's recommendations for products other than Corrshield MD405.

Part	Description
1030974	BetzDearborn 2040 Molybdate Test Kit
1042028	1 pint (16 oz) bottle; treats 10.5 gallons of water
1030973	1 quart (32 oz) bottle; treats 21 gallons of water.

Specifications

Input Power: TYP 480 V, 3 ∅, , 60 Hz, 25 A
Interface Voltage; 24 Vdc

Schematics and Wiring Diagrams

See the system documentation for the schematics and wiring diagrams that are specific to your system.

Controller	Schematic
1055777 2-Gun/2-Robot/2-Temperature	1055778