

AutoJet[®] VC10 Industrial Heated Spray System

OWNER'S MANUAL

AutoJet[®]
TECHNOLOGIES



Spraying Systems Co.[®]
Experts in Spray Technology

ML00VC10HTSYS
spray.com

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SECTION 1

PREFACE

1.1 IMPORTANT

This AutoJet® VC10 Heated Spray Control System and all components are produced and checked at the factory. The system can be dangerous if used incorrectly. Read this manual carefully and read all safety instructions.

Operators must always follow the general safety instructions in the working area and aim to prevent accidents.

The manufacturer reserves the right to make changes in standard construction without prior notification.

Images and diagrams in this manual may not be exact representations of your system configuration.

1.2 HOW TO USE THIS MANUAL

This manual is intended to be a source of information for the operators and technicians who may be installing, interacting with, or servicing/maintaining Spraying Systems Co.® systems and components.

This manual contains important safety warnings, installation/operating instructions, troubleshooting and maintenance information.

ICONS



WARNING: The user can be seriously injured, damage their health, and/or damage the system.



CAUTION: Product, process, or environment can be damaged or be in danger if the instructions are not followed correctly.



ATTENTION: Supplementary information for the user that draws attention to possible problems.

SECTION 2

SAFETY

2.1 GENERAL SAFETY INFORMATION

READ AND FOLLOW INSTRUCTIONS

All safety-related and operating instructions should be read before the system is operated. Follow all operating instructions.

SERVICING

Do not attempt to service this system unless you have been trained or authorized to conduct repairs. Only authorized and qualified service personnel should attempt to service this system. Service by unauthorized personnel may void any and all warranties.



WARNING: Before performing any maintenance, make sure electrical power is off and any air/liquid pressure is bled from the system.

UNINTENDED USE

Use of Spraying Systems Co.® equipment in ways other than those described in the documentation supplied with the equipment may result in injury to persons or damage to property. Examples of unintended use of equipment would be:

- Using incompatible materials/damaged parts
- Making unauthorized modifications/using unapproved auxiliary equipment
- Removing or bypassing safety guards or interlocks
- 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 Spraying Systems Co.® equipment will be voided if instructions for installation, operation, and service are not followed. All phases of equipment installation must comply with federal, state, and local codes.

PERSONAL PROTECTIVE EQUIPMENT

Spraying Systems Co.® strongly recommends the use of appropriate safety equipment when working in potentially hazardous environments and chemicals. This safety equipment includes, but is not limited to, the following:

- Protective hat
- Safety glasses or face shield
- Chemical-resistant safety gloves and apron
- Long sleeve shirt and long pants

Users of this product should never place themselves in the path of the spray. Users should consult and follow the recommendations of the Safety Data Sheet (SDS) of any chemical or fluid sprayed using this system.

PRESSURIZED SYSTEMS

It is important to recognize proper safety precautions when using a pressurized spray system. When dealing with pressure applications, the system pressure should never exceed the lowest rated component. Always know your system, all component capabilities, maximum pressures and flow rates.



WARNING: Fluids under pressure can penetrate skin and cause severe injury.



ATTENTION: Always remember to carefully read the chemical manufacturer's labels, follow SDS and all directions.

WARNING OF SHOCK HAZARD

To reduce the risk of electric shock, do not open the cover on electrical control panel. For service contact Spraying Systems Co.® at 1-866-321-2250.



WARNING: Plug panels into a GFCI outlet.

WARNING: To prevent injury, avoid contact with potentially hot parts. Components can cause severe burns. Do not aim the spray at any person or part of the body. Do not place any part of your body into the spray pattern.

USE OF CHEMICAL COMPONENTS

Spraying Systems Co. does not manufacture or supply any of the chemical components used in this equipment and is not responsible for their effects. Because of the large number of chemicals that could be used and their different chemical reactions, the buyer and user of this equipment should determine compatibility of the materials used and any of the potential hazards involved.

2.2 UNPACKING THE SYSTEM

The system components come packaged to protect them from damage. Use caution when opening the crate. The crate will contain all parts needed to install the unit. Parts of the unit may be wrapped in bubble wrap. Remove all of the packaging material wrapping the system. Once unpacked and removed from the crate, the system is ready for installation and connection.



CAUTION: The packaging may contain exposed cables, hoses, or other components. Always exercise caution when opening boxes to avoid accidental damage or slicing of various components.

OVERVIEW OF VC10

3.1 INTRODUCTION

The Spraying Systems Co. AutoJet® VC10 Industrial Heated Spray System can be used at the heart of any spray application when temperature and pressure control is needed in a variety of viscous heated applications. The system provides temperature control to heat any fluid that must maintain a specific higher temperature for spraying. This system conveniently pairs with many nozzle or spray header setups that are desired for your heated spray system applications.

3.2 PRODUCT FEATURES

The AutoJet® VC10 Industrial Heated Spray System consists of a stainless steel pressure tank with a heater for constant heating of your process fluid. The desired temperature of your process fluid is controlled by a liquid heater pump that is constantly recirculating water through the heater. An agitator keeps the fluid moving around the heater to ensure consistent temperature and helps to maintain your fluids in suspension. This system is also equipped with a manual pressure control, auto-refill, and continuous level sensor for auto-refill.

The control panel for the system can be mounted to the frame with a 1750+ or 2150+ Spray Control Panel for easy spray control access. Power is distributed to the pump and heater from the system control panel. The control panel consists of an illuminated "Power On" and "Power off" power pushbuttons, and various illuminated selector switches. A lockout/disconnect switch is mounted on the door. A low-level indicator is illuminated when the tank is low. Illuminated selector switches for "Pump On", "Heater On", and "Auto-Refill On" (optional) are used to activate said features; lamps will be lit when features are running. The heater can be turned on only when the circulation pump is running.

3.3 SPECIFICATIONS

PANEL POWER REQUIREMENTS DATA:

Voltage: 480 VAC +/-15% 1 ϕ
 Frequency: 60 Hz
 Current : 30 A max
 Phase : 3

AIR INPUT REQUIREMENT DATA :

Pressure : 0 psi (min), 100 psi (max)
 Inlet Port : Tank : 1/4" NPT (F)
 Consumption: Main System: 5 SCFM maximum

ENVIRONMENTAL DATA:

To be installed indoors
 Operating temperature range: 41 to 104°F
 (0 to 42.8°C)
 Humidity Range: 5 to 90% (non-condensing)
 Enclosures: NEMA 4 (None Explosion Proof)
 Height above sea level: <3,280 ft.

CONSTRUCTION DETAILS:

Control panel/tank skid:
 Height – 72 in.
 Length – 34 in.
 Depth – 40 in.

LEVEL SWITCHES DATA:

TDR (Time Domain Reflectometry) Level Sensor
 -4 to 302°F (-20 to 150°C)
 232 psi max. (16 bar)
 24 V DC
 High Frequency Capacitive Level Switch (stand pipe)
 185°F max. (85°C) continuous, 302°F short time
 (150°C)
 232 psi max. (16 bar)
 30 V DC

PRESSURE TANK DATA:

Tank capacity: 10 gallons, 40-100 PSI Max, 200F Max
 Material: 304 SS, jacketed, insulated

CENTRIFUGAL PUMP DATA:

1/3 hp 208-230/480 VAC 1 ϕ

IMMERSION HEATER DATA:

304 SS screw plug
 6K W 480 VAC 1 ϕ
 Stainless steel heating element
 70 - 200°F range
 Safety Shut Off



3.4 SYSTEM USAGE

- Spray controller provide on/off timing and flow control of the nozzles
- Will feed directly: the liquid delivery line, distribution manifold, and nozzle (s).
- Conditioning fluid pump should be primed and ran using clean water.
- Agitator component should be used with filtered, regulated, and lubricated air.
- Process fluid can be drained using 3-way ball valve on the fluid outlet.
- Zone control panel for specific application targeting by turning on and off individual groups or nozzles.

3.5 LIQUID DELIVERY TANK

- 10 gallon, 304 stainless steel ASME pressure tank
- Air inlet with manual air inlet pressure regulator, gauge, manual 2-way ball valve for quick safety relief of tank pressure.
- Continuous liquid level sensor with auto-refill addition.
- Liquid outlet unit with manual 3-way ball valve for tank draining, and 2-way ball valve for direct fluid line shut off.
- Air motor driven liquid agitator unit that is equipped with a stainless-steel shaft propeller.
- The regulator-filter-lubricator must be mounted by the customer and provided its own separate line of air for the air motor on the agitator.

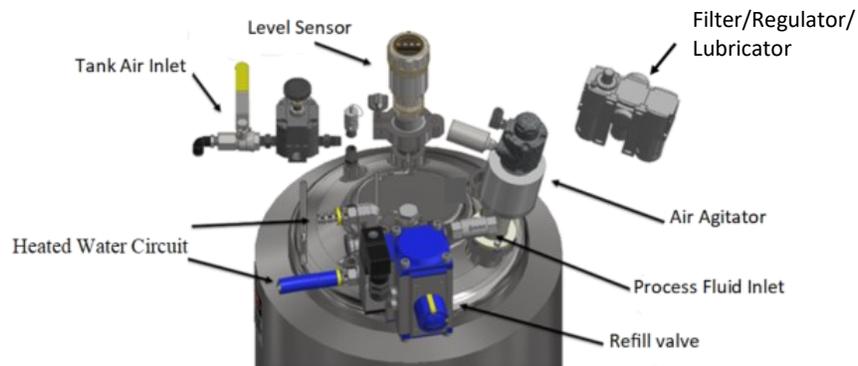


Figure 1. Components on Top of Tank

3.6 ZONING CONTROL SYSTEM OPTIONS

Optional zone control provides the means to individually trigger spray nozzles or groups of spray nozzles. The system includes the following equipment to enable zone control:

NOTE: Zone control provides the ability to trigger the spray nozzles, or groups of spray nozzles, independently, however, all spray nozzles will operate at the same duty cycle.



Figure 2: Manual Zone Control (Optional)



Figure 3: Digital Zone Control (Optional)

Figure 2: Manual Zone Control(Optional)
Manual 8-zone control panel which includes the following components mounted into a stainless-steel hinged enclosure:

- Eight (8) manual enclosure cover mounted on-off switches.
- Terminal strips.
- Cord grips for cable entry.

Figure 3: Digital Zone Control (Optional)

Digital 8-zone control panel with/ or without timing control which includes the following components mounted into a stainless-steel hinged enclosure:

- Programmable logic controller with Ethernet for timing control
- HMI touch screen control and display
- Four (4) Model 1022 digital 2-switch modules
- Power Supply
- Terminal strip
- Cord grips for cable entry

3.7 SPRAY CONTROL PANEL OPTIONS

Spray control modules pair with the optional variable spray mount and provides the means to set operating parameters and control the functioning of the automatic spray nozzles. AutoJet® offers three updated panel models to choose from. The controllers are designed to run electric actuated spray nozzles.

Features	AutoJet 1000+	AutoJet 1750+	AutoJet 2150+
HMI Touch Screen	4.3"	4.3"	7"
Power Input	110-240 VAC, 50/60, 1Ph., 3A	110-240 VAC, 50/60 1 ph., 5A	120 VAC, 50/60, 1Ph., 8A
Washdown Closure	✓	✓	✓
Recipes	✓	✓	✓
Trigger Input	✓	✓	✓
Global Compatibility, multi-voltage power cords available	✓	✓	✓
Stainless Steel Control Panel	✓	✓	✓
Power On/Off Switch	✓	✓	✓
Level Switch	✓	✓	✓
Pulse Width Modulation (PWM)	✗	✓	✓
System Outputs	✗	✓	✓
Dual Channel*	✓	✗	✓
HMI Wi-Fi Access	✗	✓	✓
2300 Series Controls	✗	✓	✓
Precision Spray Control	✗	✓	✓
Encoder Input	✗	✗	✓
Flow Monitoring	✗	✗	✓
Pressure Input Sensor	✗	✗	✓
Ethernet IP	✗	✗	✓
High Capacity	✗	✗	✓

Controllers not included with this system package. These controllers are suggested.

*Dual Channel 1000+ is only capable with electric actuated spray nozzles and air nozzles can only work with a single channel.



INSTALLING THE SYSTEM



WARNING: The air supplied to the machine must be clean, free of moisture and lubricating fluids; failure to do this voids all warranties.

The AutoJet[®] VC10 Industrial Heated Spray System is powered by wiring into 480 VAC 1 ϕ service. **Do not connect power until all wiring, and connection of the system is complete.**

4.1 FILLING THE HEATING LOOP

A circulating conditioning line provides heated fluid to all the jacketed components of the system. This line consists of a 1/3 HP 480 VAC centrifugal pump, immersion heater, thermometer, pressure gauge, and return reservoir.

- **Centrifugal pump**- circulates the heated fluid throughout all the jacketed components.
- **Immersion heater**- maintains the temperature set point of the heated fluid and the process fluid.
- **Temperature controller**- provides temperature regulation to the in-line immersion heater.
- **High limit switch**- turns heater off at 300°F for fail safe protection. Temperature feedback is provided by the thermometer in the tank for reference.
- **Level switch**- verifies that enough fluid is in the system so that components are not damaged.
- **Regulator**- allows for the system to be filled with a pressurized source of water or glycol solution. Deionized water (DI) is recommended to limit mineral deposits. A 50/50 mixture of propylene (or ethylene) glycol and water must be used for temperatures of 180 to 200°F. The regulator limits the pressure of the system for safe operation.
- **Return reservoir**- provides room for expansion of the heated fluid, and pressure relief for over filling of the system. Note that all the conditioning lines from the pump, through all jacketed components, and back to the return reservoir must be run in series. Never split the flow path as this could result in cold spots.

DIRECTIONS FOR FILLING THE HEATING LOOP:

- 1) Begin by turning the disconnect switch to the “On” position. Apply power to the system using the “Power On” pushbutton. The amber indicator will light up.
- 2) Prior to the system being run for the first time, the heating circuit must be filled with conditioning fluid. Connect the conditioning fluid source to the 1/4” NPT (F) valve in the middle of the standpipe.
- 3) To fill the reservoir, open the valve and adjust the regulator. The regulator should be set to 5 psi. The over-pressurization valve past the regulator will open at 10 psi.
- 4) Open the air purge vents located on the return line and the pump; these will automatically purge air out of the water line.
- 5) As conditioning fluid fills the reservoir, loosen the 1/2 G threaded level switch connection recognizable by an O-ring (bottom connection on the stand pipe).
- 6) Allow the fluid and air mixture to escape from the loosened connection until no air bubbles are seen; hand-tighten the sensor to begin building pressure.
- 8) Once the small, yellow light on the sensor is lit, allow the system to continue to fill for several minutes. Wait until the inlet regulator at the top of the standpipe levels off at a pressure, and make sure it is adjusted to 5 psi at a no-flow condition.
- 9) Turn the pump on by using the selector switch on the system control panel. If the standpipe fluid level drops below the level sensor, the pump will automatically be turned off and the Pump On light will be off.
- 10) If water begins to leak out of the purge vents, tighten again.

- 11) As the system continues to fill, the pump should resume operation. When the pump is running, water pressure at the outlet of the pump should be approximately between 20-35 psi.
- 12) During the fill operation if the water pressure does not exceed above 20 psi, ensure all the air vents are open.
- 13) Once all air is purged out of the system, the pressure at the pump outlet should remain steady.

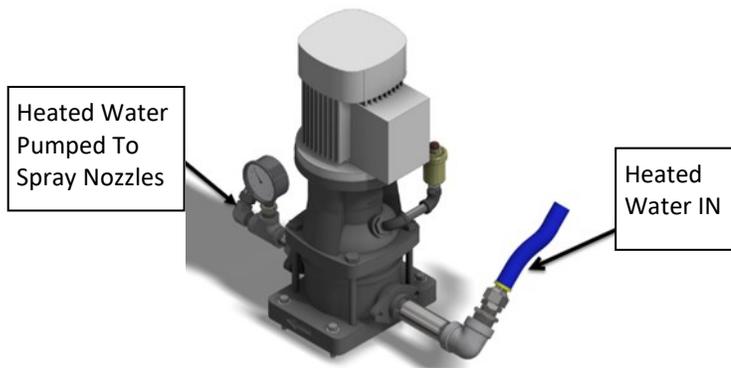


Figure 4: Pump

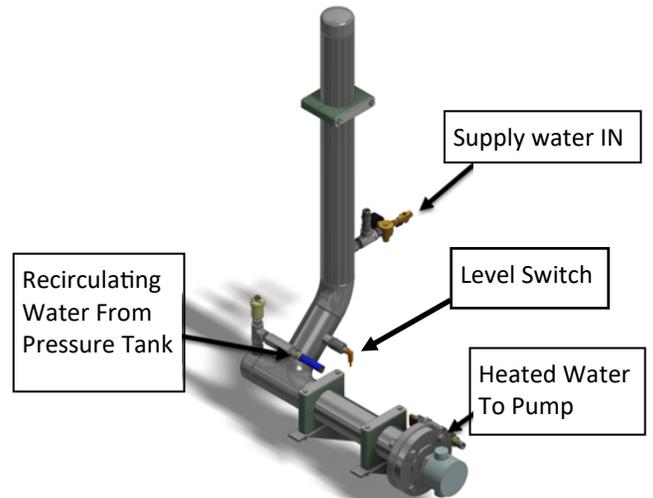


Figure 5: Heater

4.2 PROCESS FLUID DELIVERY

Fluid delivery is accomplished via a jacketed pressure tank, jacketed valves, jacketed hoses, and a jacketed spray nozzle (s).

The tank, is a pressure vessel that is pressurized with air to maintain a given setpoint at the nozzle location.

- 1) To ensure complete heating in every possible liquid delivery component, including the ball valves mounted on the tanks, are jacketed to maintain consistent heating. The hose delivering the fluid from the tank to the nozzles is completely jacketed.
- 2) Finally, the nozzles themselves are jacketed to maintain set temperatures. The tank is an ASME pressure vessel. The tank comes equipped with 125 psi safety valve, air regulator, and ball valves.
- 3) The main air supply goes into the inlet 2-way shut off valve.
- 4) Before opening the pressure tank, make sure the pressure in the system is relieved.

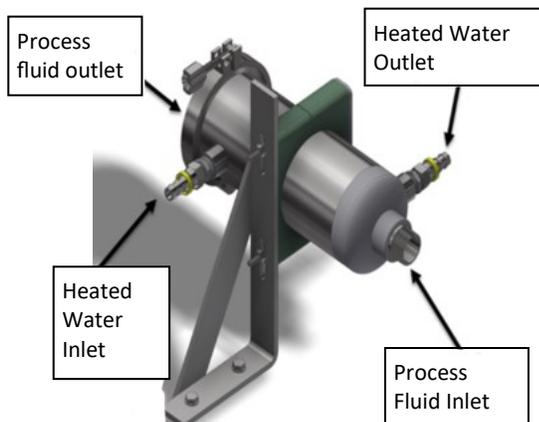


Figure 6: Strainer

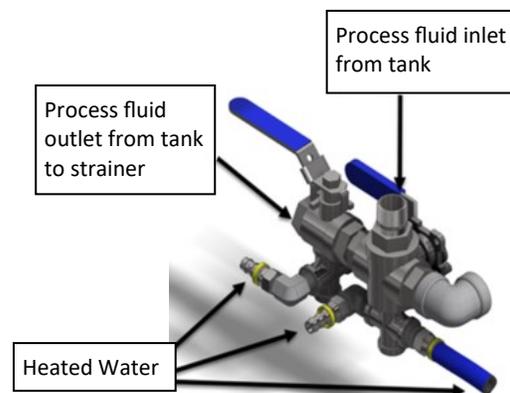


Figure 7: Fittings beneath Pressure Tank

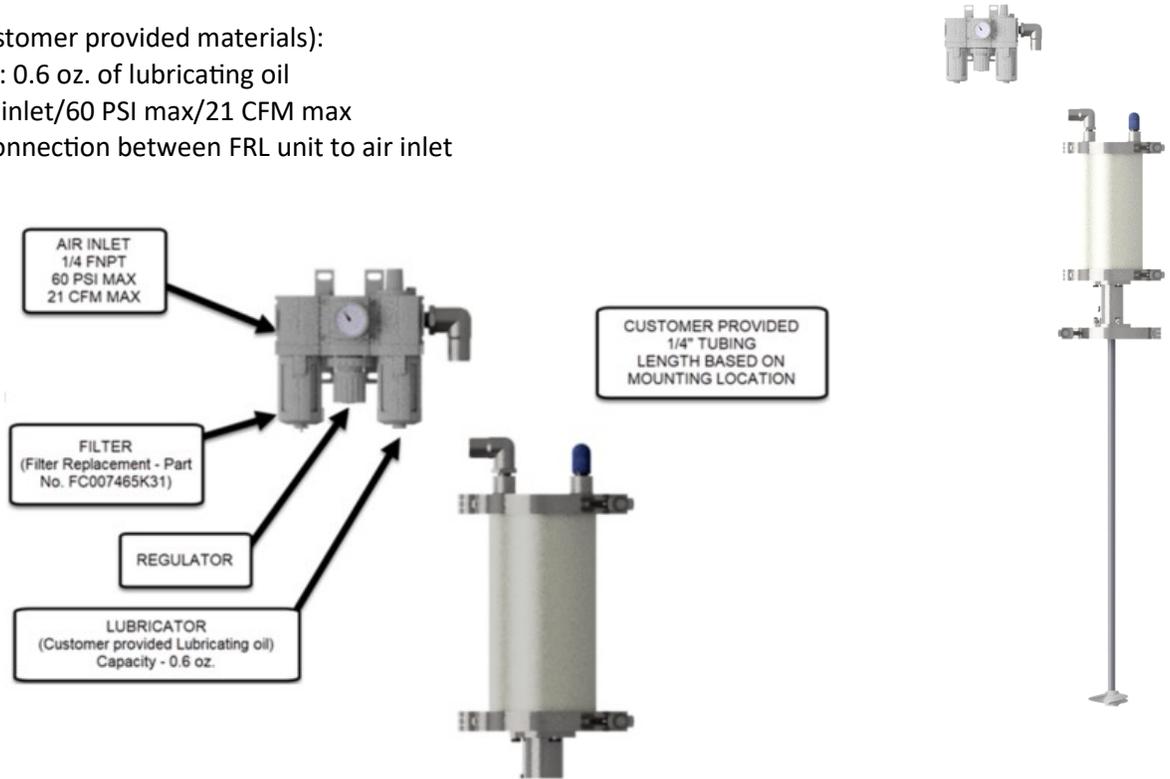
4.3 AGITATOR AND FRL UNIT

Customer mounted agitator and FRL Unit that helps keep the liquid in suspension. The filter/regulator/lubricator (FRL) unit provides a consistent oiled air supply to the agitator. The filter in unit will remove particles down to 5 microns in size.

CAUTION: The agitator should never be operated without an oiled air supply. Running without oiled air can result in a mechanical failure. Providing more pressure to the agitator than recommended can result in a mechanical failure of the unit.

Specifications (customer provided materials):

- Bowl capacity: 0.6 oz. of lubricating oil
- 1/4" FNPT air inlet/60 PSI max/21 CFM max
- 1/2" tubing connection between FRL unit to air inlet



SYSTEM START-UP AND OPERATION

Before beginning system start-up, walk through once more and check to confirm all your fluid and electrical connections are connected as shown in your provided Customer Drawing Package.

5.1 HEATED SPRAY SYSTEM

- 1) First, you will need to supply 480VAC to the control panel with the cord provided. This one cord will supply power to the entire system and different components can be turned on and off from the control panel. You do not need to supply individual components their own power supply source.
- 2) Your immersion heater and pump should be already programmed correctly. You may set your desired heating temperature for the 10-Gal. tanks main supply.
- 3) Locate your level sensor drawing in the customer provided drawing package for details on programming your level sensor. Level sensor must be programmed while the tank is empty to calibrate the sensor appropriately.
- 4) Confirm your liquid outlet 3-way valve is directed to your fluid line and not the draining port.
- 5) Your variable spray mount with nozzles (or other possible spray setup) should be hooked up, mounted and adjusted to your initial expectations. Ensure all fluid lines have been connected to your nozzle(s) before supplying pressure to the tank.
- 6) Turn on all your spray control boxes (zoning box, spray controller, auto-refill control box, etc.)
- 7) At this point, the tank should currently be empty, and the auto-refill will begin filling the pressurized tank supply from your main supply.
- 8) Once the tank is filled completely - your level sensor will display 100%, then the auto-refill will shut off.
- 9) Open your valve on the air inlet to be in-line with the regulator, set your pressure regulator to the desired spray pressure and the tank will begin filling.
- 10) Begin supplying air to your agitator unit to keep your process fluid in suspension.
- 11) The fluid supply line to your nozzle setup should be full of your process fluid but should have some air trapped. The fluid needs to be purged before starting your application/ production.
- 12) Whether you have a manual/ digital zone control box, make sure all nozzles are switched on before performing a spray purge with all nozzles. (If you need details on zone control box operations and guidance, please see manual provide on Customer's project flash drive and see the customer's drawing package for component details).
- 13) Purge the nozzles and the fluid supply line through the purge button in your spray controller or by simply setting the spray controls to variable and local trigger. Set duty cycle to 100% and trigger your nozzle until all air has been removed from the line. This will also insure there is no clog in the nozzle tip.
- 14) Once purged, the system is ready for an application.

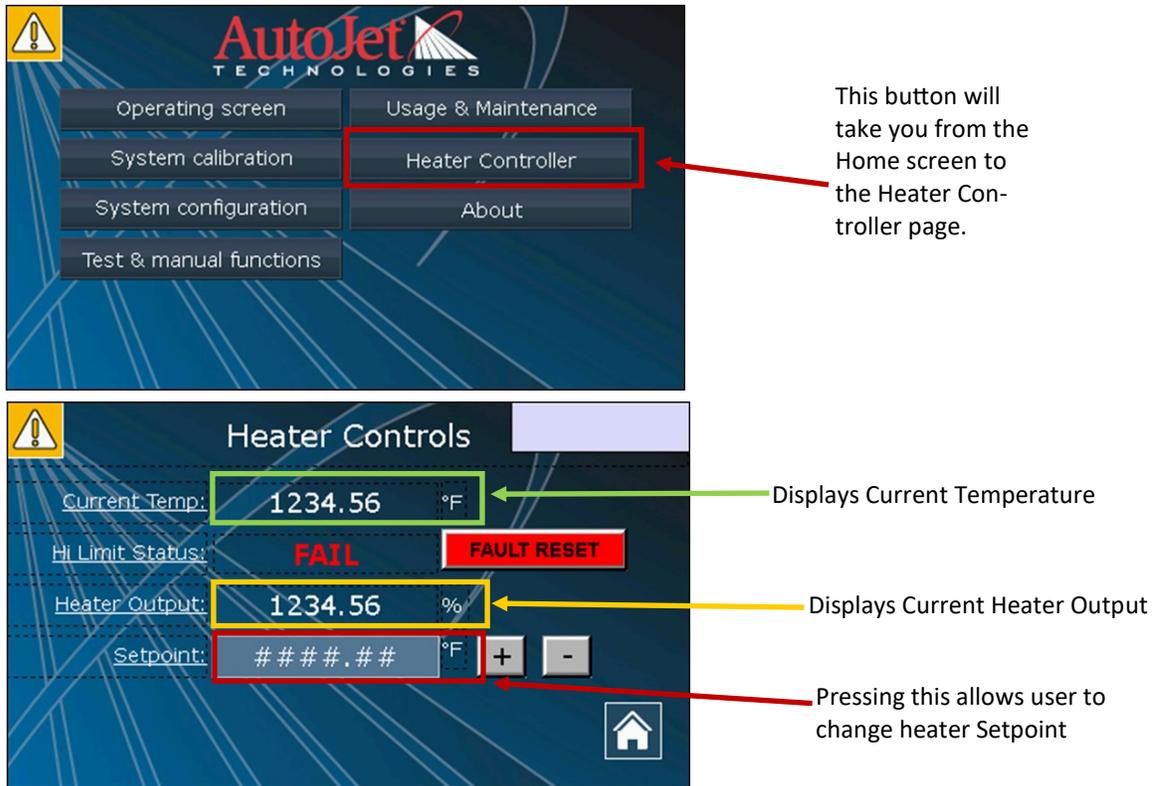
5.2 FRONT PANEL CONTROLS AND INDICATORS

- **Power on pushbutton, illuminated** – when momentarily pressed, applies power to the AutoJet[®] VC10 Industrial Heated Spray System.
- **Power on indicator**- when indicator is on, indicates power is applied to the system.
- **Power off pushbutton** - when momentarily pressed, turns off power to the AutoJet[®] VC10 Industrial Heated Spray System.
- **Disconnect** - use to disconnect power from the panel and components.
- **Pump selector switch illuminated** – when selector switch is on, pump is enabled.
- **Pump on indicator**- when indicator is on, pump is on.
- **Heater selector switch illuminated** – when selector switch is on, heater is enabled (pump must be turned on).



- **Heater on indicator**- when indicator is on, heater is on.
- **Auto-Refill selector switch illuminated** – when selector switch is on, Auto-Refill is enabled.
- **Auto-Refill on indicator**- when indicator is on, Auto-Refill is filling the tank.
- **Low Level indicator**- when indicator is on, indicates the level in the tank is below the low level setpoint.
- **Heater control**- use HMI to input the heater set points.

The VC10 allows for control of the integrated Watlow unit through the HMI



See component manual for further operating instructions.

5.3 SEQUENCE OF OPERATIONS

General Information:

- 1) Disconnect turned on
- 2) Operator powers system on
- 3) Operator opens air vents on the heating loop
- 4) Operator fills system with conditioning fluid (water)
- 5) Operator turns pump on and purges air in line
- 6) Observe the conditioning fluid pressure (20-30psi)
- 7) Operator sets water temperature with arrows on the heat controller
- 8) Turn on heater and observe temperature and adjust to desired temperature if needed
- 9) Turn off heater/pump
- 10) After use disconnect air and drain tank if needed.

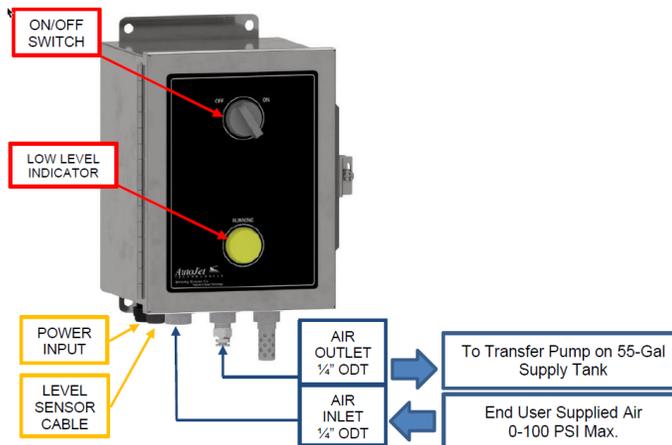
5.4 Automatic Refill and Level Sensor

The automatic refill module allows the refill of the liquid pressure tank without having to shut down the spray process. Auto-refill (optional) comes with a level sensor, pneumatic ball valve, and optional drum pump. The auto refill module accepts a signal from the level sensor that sticks out of the top of the tank showing a gauge for the liquid amount and triggers a drum pump to refill the tank.

- Air operated valve timer control panel
- Dip tube with sanitary clamp connection for liquid pressure tank.
- Auto-refill control box – air operated.
- Continuous liquid level sensor – low level indicator for auto-refill timer control box

AUTO-REFILL PROCEDURE:

1. Connect power to the controller.
2. Plug the level sensor cable into the sensor mounted to the main tank unit.
3. An NPT thread push tube fitting needs to be added to the air inlet port on the bottom of the controller (provided by customer).
4. The auto-refill controller unit will supply air to the transfer pump only when the main tank level is low. In that case, the yellow light on the controller will illuminate indicating the automatic refill has been triggered and is currently filling.
5. Supply air to the inlet on the control box (0-100 PSI max.)



5.5 PROGRAMMING THE LEVEL SENSOR

The tank level sensor comes pre-programmed. However, the setpoints can be adjusted to configure the system specifically for the application.

The level sensor displays the tank level as a percent (%) full. However, all parameters are measured in millimeters (mm) from the bottom of the probe. The usable range of the level sensor is between 10 mm and 410 mm from the bottom of the probe, a 400 mm range.

There are two switching outputs that can be adjusted: Q1 and Q2. Output Q1 is used for the Auto-Refill feature and output Q2 is used for the Low Tank Level indicator.

Output	Parameter	Name	Description	Preset
Q1	SP1	Switching Point 1	High Level – Auto-Refill stops filling	390 mm
	RP1	Reset Point 1	Low Level – Auto-Refill begins filling	250 mm
	<i>OU1</i>	<i>Switching Function</i>	<i>Output type – (Normally Open/Closed)</i>	<i>Qx-Hnc</i>
Q2	SP2	Switching Point 2	Not Low Level – Indicator will turn off at or above this value (SP2=RP1 + 10)	50 mm
	RP2	Reset Point 2	Low Level – Indicator will turn on at or below this value (RP2=RP1)	10 mm
	<i>OU2</i>	<i>Switching Function</i>	<i>Output type – (Normally Open/Closed)</i>	<i>Qx-Hno</i>
NA	<i>QAHIGH</i>	<i>High Range Limit</i>	<i>Maximum tank level (QAHIGH>QALOW)</i>	<i>390 mm</i>
NA	<i>QALOW</i>	<i>Low Range Limit</i>	<i>Minimum tank level</i>	<i>10 mm</i>
NA	<i>Length</i>	<i>Probe Length</i>	<i>Length of probe for this application</i>	<i>558 mm</i>
NA	<i>DspVal</i>	<i>Display Value</i>	<i>Sets display value to % of usable range</i>	<i>Percen</i>

**Italicized parameters are preset and should only be changed in the event of a factory reset.*

To access the above parameters from the main display (% full), press and hold the “Set” button. Use the up and down arrows to navigate to “Q1MENU” or “Q2MENU” and press the “Set” button. Use the up and down arrows to navigate to “SP1” or “RP1” (or “SP2” and “RP2”) and press the “Set” button. Use the up and down arrows and the “Set” button to change the numeric values assigned to the given parameter. Instructions for setting other parameters can be found on pages 32-35 of the provided component manual (LS00FP1000G1NMB).

Assuming the tank has been initially filled and given the values in the above table, as the system is being used the level in the tank will decrease. Once the fluid reaches 250 mm from the bottom of the probe, 63% full ($100\% * (250-10)/380=63\%$), Auto-Refill will turn on. As the fluid level rises and reaches 390 mm from the bottom of the probe, 100% full, Auto-Refill will be turned off.

If Auto-Refill is switched off or the supply is interrupted, and the fluid level reaches 10 mm from the bottom of the probe, 0% full, the Low Tank Level indicator will turn on. This is intended as a warning that the system is not automatically refilling. The Low Tank Level indicator will turn off once the fluid level rises above 50 mm from the bottom of the probe, 10% full.

Operating within a small range with the tank mostly full, like in the above example, is ideal for maintaining the temperature of the system while using Auto-Refill. When using Auto-Refill and the supply fluid is within 15°F of the final temperature, it is not necessary to use a short-range fill cycle.

HEATING THE SYSTEM

Set temperature on the heater via the heat controller screen on the front panel. Once the system is filled and the heating fluid is circulating properly, turn on the heater. Wait until the system reaches the desired setpoint. At this point the fluid has expanded to its full capacity, and any excess will escape the relief port on the return reservoir.

-For spray control operation please reference the provided 1750+/2150+ Spray Control Panel Owner’s Manual.



SECTION 6

RECOMMENDED MAINTENANCE

NOTE: Any long term shut-down requires that all liquid lines, liquid components, pumps, spray guns be flushed and cleaned thoroughly.

	Monthly	Every 6 Months	Every 12 Months
Control Panel	<ul style="list-style-type: none"> • Check that all indicator lights work. • Check all ribbon cable connections. • Check all other cable type connections. 	<ul style="list-style-type: none"> • Retighten screw terminal connections to insure bonding. • Check control relays for connection. 	<ul style="list-style-type: none"> • Check calibration of all controls. See individual control component manuals for calibration procedures.
Pneumatic Connections	<ul style="list-style-type: none"> • Check all pneumatic connections for leaks and tighten. • Check system main air pressure as specified. 	<ul style="list-style-type: none"> • Tighten all screw terminal connections to insure proper bonding. 	<ul style="list-style-type: none"> • Check component calibration. See individual control component manuals for calibration procedures.
Liquid Controls	<ul style="list-style-type: none"> • Check all liquid connections, components, tubes, and hoses for leaks. • Check liquid in-line filters and replace with recommended filter mesh size for system. 		
	Daily	Monthly	
Spray Nozzles	<ul style="list-style-type: none"> • Check all spray guns for leaks or mechanical malfunctions. See spray gun data sheet for maintenance and repair details. 	<ul style="list-style-type: none"> • Clean, lubricate, and adjust all spray guns. See spray gun data sheet for maintenance and repair details. 	

CLEANING PROCEDURE

NOTE: Cleaning procedure is only a suggestion. Customer is ultimately responsible for a sanitation procedure that meets their requirements and standards.



CAUTION: De-pressurize the system before opening the pressure tank for any reason.

PROCEDURE:

- 1) Turn the auto-refill switch on the main control panel to the “OFF” position (if applicable).
 - 2) Close the ball valve on the tank’s incoming air inlet port.
 - 3) De-pressurize the pressure tank by opening the regulator and pulling the ring on the tank’s safety valve for a faster de-pressurization.
 - 4) Empty the contents of the pressure tank by using the 3-way valve at the bottom of the tank outlet.
 - 5) Return the 3-way outlet valve to its normal position and re-open the ball valve on the tank’s incoming air inlet port to re-pressurize the tank.
 - 6) Use the control panel to spray the nozzles until all process fluid remaining in the hoses, manifolds and nozzles is discharged.
 - 7) De-pressurize the tank, open and remove the agitator from the large port on top of the tank. Use this port for putting your cleaning solution in the tank. Fill the tank with cleaning solution for auto-refill into main tank.
 - 8) Clean the auto-refill system (as applicable)
 - A) Liquids for cleaning, rinsing, and sanitation can be fed through the auto-refill inlet port.
 - B) Turn the auto-refill switch to the “ON” position (provide air to the auto-refill pump) to begin filling.
 - C) When complete, turn the auto-refill switch to the “OFF” position to stop pumping.
 - D) Repeat this process with appropriate fluids till the system is thoroughly flushed.
 - 9) Clean the pressure tank, delivery hose and nozzle assemblies.
 - A) Liquids for cleaning, rinsing, and sanitation can be added through the largest port on top of the tank or fed through the auto-refill system.
 - B) Manually clean or wipe down the inside of the pressure tank/sensors/dip tubes.
- CAUTION: The lining of the jacketed hose is easily damaged; brushes or other tools should never be used to clean or remove solids from the hose.**
- C) Close any ports on the top of the pressure tank and reopen the ball valve on the tank’s incoming air inlet port to re-pressurize the tank.
 - D) Use the control panel to spray and move cleaning/sanitizing fluids through the hoses, manifolds, and nozzles.
 - E) Large volumes of cleaning/sanitizing fluid can be removed from the tank directly through the 3-way valve at the bottom of the tank.
 - This should never be done while the tank is under pressure.
 - This valve will divert the tank’s outlet but isolate any fluid remaining in the hoses, manifolds, and nozzles. This fluid needs to be flushed through the nozzles under pressure.
- 10) The fluids, time to flush, repetitions, etc.... are to be determined by the end user to meet your required level of cleaning and sanitation.
 - 11) After cleaning and sanitation, return all valves and port covers to their production ready state.



SECTION 8

TROUBLESHOOTING

- 1) System won't power on:
 - a. Be sure disconnect is on
 - b. Measure power input at the disconnect
 - c. Check fuses
- 2) System does not spray:
 - a. Check air supply pressure on tank
 - b. Check air pressure in tank
 - c. Check ball valves at the bottom of the tank
 - d. Power to the Spray Control Panel
 - e. Check wiring between the Spray Control Panel and the PulsaJet gun(s)
 - f. Verify Trigger signal
 - g. Fluid may have solidified in supply lines, reconfigure heating supply, or increase temperature.
 - h. Check nozzle for clogging.
- 3) Conditioning Fluid pressure low (less than 10psi):
 - a. Air in the system, purge
 - b. Check for leaks in the conditioning line circuit, tighten or replace fittings
- 4) System not heating:
 - a. Check for power
 - b. Check heater selector switch
 - c. Check the heating circuit level switch
 - Yellow lights near M12 connector, system should run
 - No lights present, insufficient water in the heating jacket loop or damaged sensor.
 - d. Heater faulty, or maximum temperature exceeded, Press the "EZ" button on the heat controller to reset.

SECTION 9

SPARE PARTS

Part Number	Description
AA10000-72440T-EPM8	Heated PulsaJet Spray Nozzle - Threaded Connection.
LS00LMT100	Level Sensor, Point Switch.
PL00416TV	Air Vent
FT003133-JT_AC20	20 ft Jacketed Hose
PR00301DFW254D	Pressure Gauge, 0 - 60 psi.
TE00TM4341	RTD Temperature Sensor
HT00BHN717N5C	Heater, 6KW, 480VAC, 3-Alloy 800 elements, 304SS Nut (2" NPT), 17.75" Long.
VA0046495K23_AC01	Valve, Manual Ball Valve, 2-way, Threaded, Jacketed, 316SS.
VAXXEASSBBAFAFO_AC01	Valve, Manual Ball Valve, 3-way, Threaded, Jacketed, 316SS
VA007768K16	Check Valve, 1/4" NPT male x 1/4" NPT male, 1 PSI cracking pressure
VC00110-BC	1/4" Pressure Regulator, 1/4 NPT (female) End Plates, 0-100 PSI
VC003823T321	Regulator - Air/Water - For filling Heating Circuit
160TS16MV0018W5_SU01	Filter/regulator/Lubricator (FRL) Unit for oiled air supply to agitator

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Spraying Systems Co.®

North Avenue and Schmale Road, P.O. Box 7900, Wheaton, IL 60187-7901 USA

Tel: 1.800.95.SPRAY

Intl. Tel: 1.630.665.5000

Fax: 1.888.95.SPRAY

Intl. Fax: 1.630.260.0842

www.spray.com

