

Rev. 8/2017



SSF

Stepp Street Flusher



OPERATIONS/MAINTENANCE/PARTS MANUAL



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INTRODUCTION

SSF Street Flusher

Thank you for selecting *Stepp Mfg* highway maintenance equipment. We are confident you will be satisfied with the *Stepp SSF Street Flusher*. *Stepp Manufacturing* is backed by over 50 years of experience in the design and manufacture of highway maintenance equipment. This experience along with our innovative design and unique features make the *Stepp SSF* the most efficient tanker available. Continued research and development, along with input from you, the user, help make this possible.

In order to assure safe operation of this equipment, the operator must read and understand all operating procedures and safety notices contained in this manual. In addition, the operator must receive instruction on how to safely operate the *Stepp SSF Street flusher*. Contact the manufacturer if any questions arise or if you desire training for additional staff members.

Operating instructions, adjustments and periodic maintenance procedures are given so you ... the operator, can keep your unit working like new and expect many years of dependable service from it. Remember ... any machine, regardless of design or type, will perform only in relation to the way it is operated and the maintenance it receives.

Read this manual carefully and observe all Warnings and Cautions. If you have any recommendations or comments regarding this manual, please send them attention to: Engineering Dept., Stepp Manufacturing Co. Inc., 12325 River Road, North Branch MN. 55056-6225 or call 651-674-4491.

When ordering parts or making any inquiry about the *Stepp SSF* be sure to include the model number and serial number found on the data plate attached to the frame.

SSF Street Flusher

IMPORTANT NOTICE!

This manual contains cautions and warnings that alert you to potential safety issues.

 **WARNING** is used to inform you of conditions or operations that could cause serious injury or death.

 **CAUTION** is used to inform you of conditions or operations that could cause damage to the equipment.

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Before Starting or Operating this Machine

Understand and observe all the following Warnings, Cautions, and Notes.

General Safety

- Stepp Manufacturing Co Inc assumes no liability for an accident or injury incurred through the improper use of this machine.
- Read this manual in it entirety before operating this machine.
- Obey all CAUTIONS and WARNINGS signs on this machine.

WARNINGS

- ♦ This equipment contains mechanical and heating components that may cause serious injury or death if not handled or maintained properly. All personnel must be properly trained in the operation and maintenance of this equipment.
- ♦ Wear personal protective clothing when operating. This includes gloves, safety glasses and or shield (especially when loading and unloading) Keep hands, feet and clothing away from moving parts.
- ♦ Before refueling, Shut off the engine.

CAUTIONS

Know the materials being used and know the proper handling, application, clean-up, and storage procedures. Not all materials are compatible with each other.

NOTES

- ♦ Become familiar with the Material Safety Data Sheet (MSDS) for the material being used in the machine and take appropriate safety precautions. Wear the proper clothing and protective gear as recommended by the MSDS and your safety director.
- ♦ DO NOT use the equipment unless it is in good condition.
- ♦ Carry a fire extinguisher (s) as recommended by your safety director.
- ♦ The GVWR may exceed the weight allowed by Local, State and Federal laws. GVWR is the maximum weight so as not to exceed the structural design of the vehicle. The Operator must be familiar with load weights and local laws, and ensure that the load is within the safe and legal limits.
- ♦ Do not load the vehicle beyond maximum rating printed on the metal data plate which specifies the Gross Vehicle Weight Rating (GVWR). The GVWR is the maximum allowable total weight of the vehicle, payload, and any equipment on the vehicle.

Notify your supervisor or the manufacturer if any questions arise concerning the operation of this equipment.

OPERATIONS

Warranty

Stepp Manufacturing Company Inc. hereby warrants to the original purchaser that products manufactured by Stepp Mfg will be free from defects in material and workmanship for a period of 1 year from the date of purchase.

Stepp Mfg, at its discretion, will provide for the repair or replacement of any part found upon examination by Stepp Mfg to be defective, except as noted below. Such repair or replacement will be free of charge to the original purchaser for a period of 1 year from the date of purchase, except as noted below. The tank shall have a limited life-time warranty on leaks do to manufacture defect.

No warranty is extended to cover:

- Product pump wear or damage caused by foreign object.
- Routine maintenance, cleaning, and adjustments.
- Parts or components that have been altered, misused, improperly adjusted or maintained.
- Transportation to and from the place of warranty repair.
- Removal of material from equipment.

The following items are covered solely by their manufactures warranty:

- Engines
- Hydraulic components
- Burners
- Pumps
- Tires
- Other component parts

Disclaimer of further warranty:

Stepp Mfg makes no warranty, expressed or implied, other than this warranty. The implied warranties of merchantability and fitness for particular purpose are hereby disclaimed. Repair or replacement of products or parts proving to be defective in material or workmanship shall be the exclusive remedy for breach of this warranty.

Stepp Mfg shall not be liable for incidental or consequential damages. Including but not limited to, damages for inconvenience, rental or purchase of replacement equipment, for loss of profits, loss of material, or other loss resulting from breach of this warranty.

Stepp Mfg reserves the right to incorporate any changes in design into its products without obligation to make such changes on products previously manufactured.

Specification	
Capacity	2000 or 3000 gallons
Tank Construction	Steel or Optional 304 or 316L Stainless
Manway	20"
Pump Output	750 GPM @80PSI self priming, with circulation for freezing weather operation.
Hydraulic System	Load Sensing Piston Pump
PTO	Constant Mesh
Drive Mechanism	Direct Coupled to water pump
Controls	PLC Can Buss in cab with color display
Hose Reel	50' of 1" with adjustable nozzle
Spray Nozzles	Steel pipe with flexible connections 2 Mid ship 2 Rear with Aluminum Duckbill Optional front nozzles and water cannon.
Dump Valve	6" Air Operated allows for complete draining of pump and manifold
Baffles	2 horizontal

DESCRIPTION

The **Stepp SSF Street Flusher** is designed to tackle many different operations. The heated recirculation and hydraulically driven 750 GPM pumping system make it a year round truck. Whether it is flushing your streets, flooding your ice rinks, anti-icing operations, pre-wetting for sweeping, or flushing manways and catch basins, the Stepp SSF will get the job done. Adding the water cannon option to reach the hard-to-wash areas makes this the most versatile water truck in the industry.

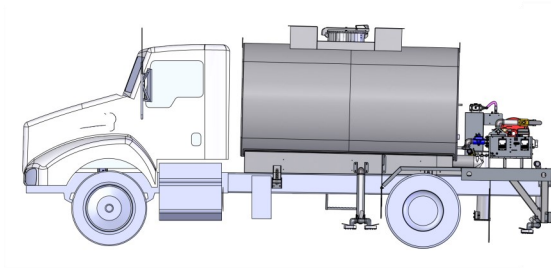
Each base unit includes: 50' Hose with electric rewind hose reel, 750 GPM Hydraulically Driven Water pump, 4 Nozzles: 2 midship, 2 rear, constant mesh PTO with load sense pump, IMF can buss control with PLC color display controller, 6" Air operated dump valve with splash plate, Anti Siphon Fill pipe, Force America Add-a-Fold Valve



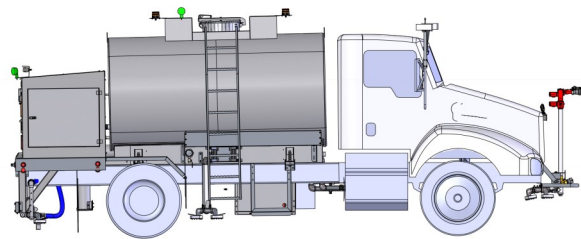
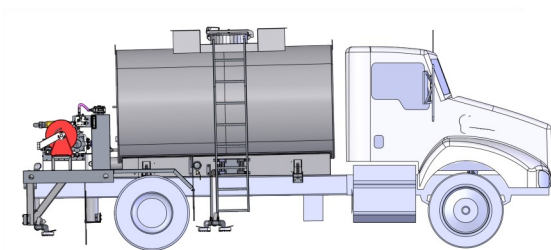
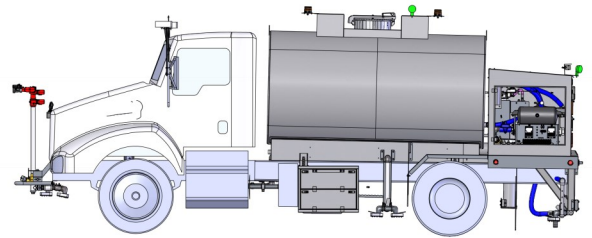
DESCRIPTION

Component Location

BASE MODEL



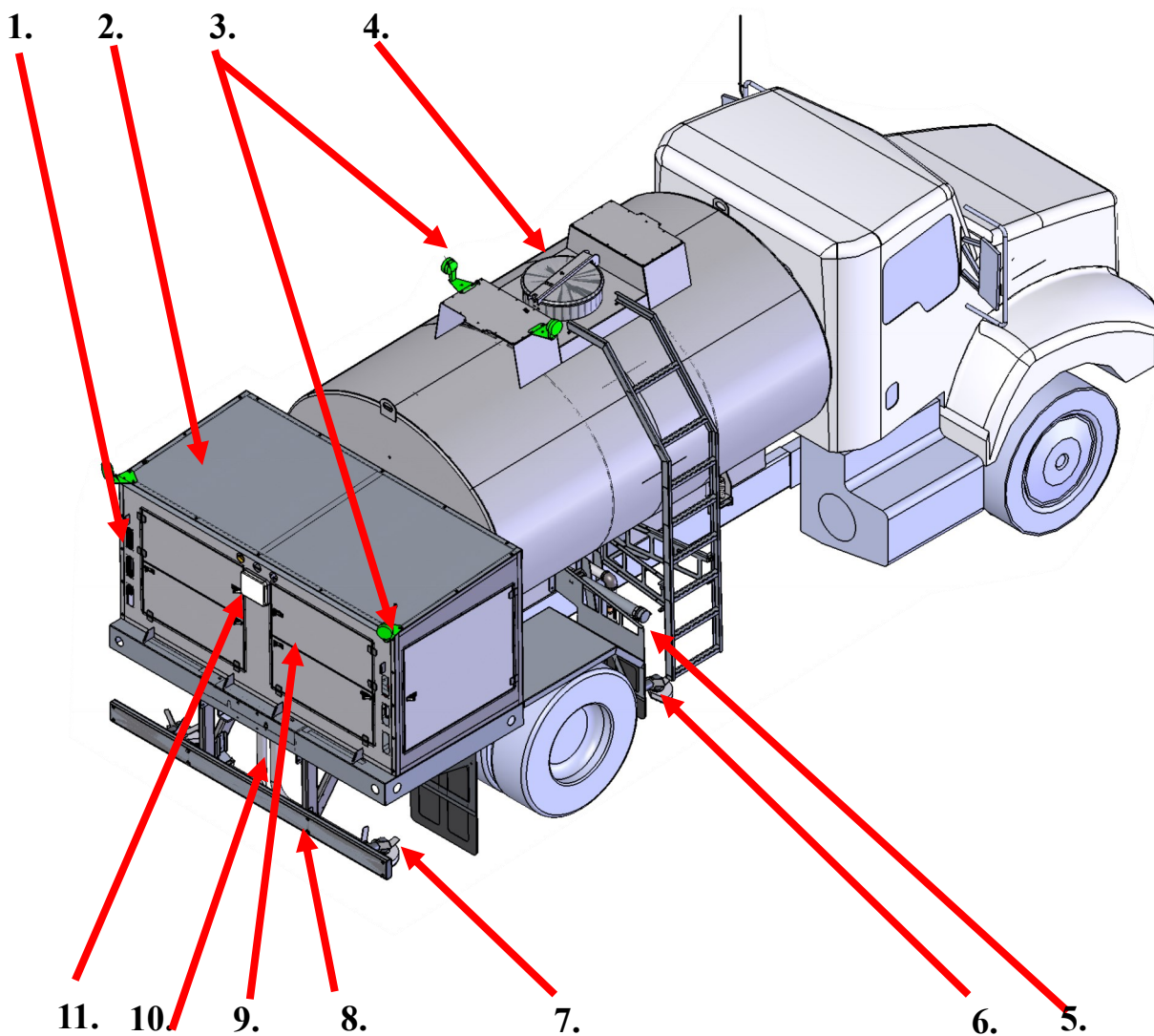
ALL OPTIONS



DESCRIPTION

Component Location

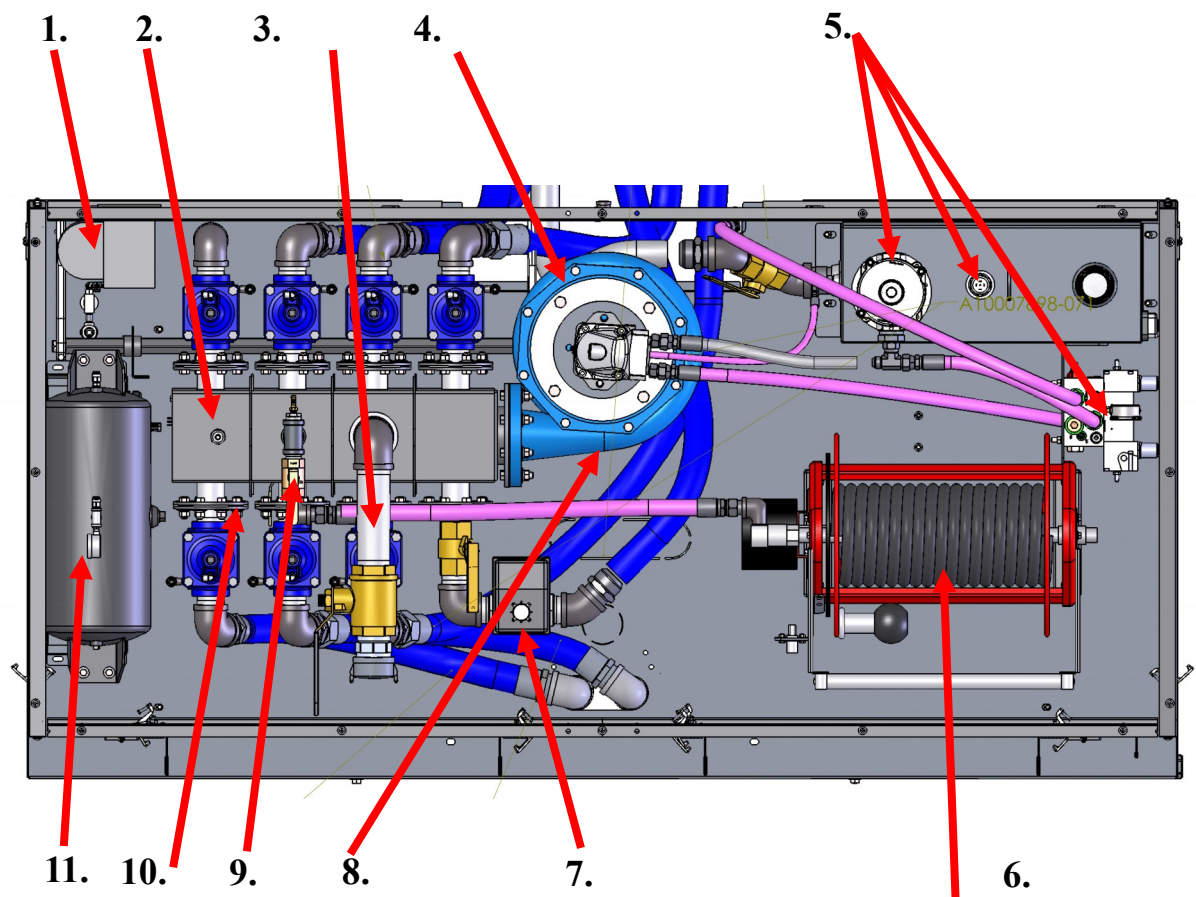
1. Optional Whelen Super LED light system
2. Optional Heated Stainless steel cabinet
3. Work Lights
4. Manway
5. Tank Fill with bleeder valve (to prevent wet shoes)
6. Midship Adjustable nozzles (2) curb and street side with Duckbills
7. Rear Adjustable nozzles curb (2) and street side with Duckbills
8. Optional Sprinkler Bar
9. Hose reel
10. 6" Dump Valve
11. Optional Whelen Scene Light



DESCRIPTION

Component Location

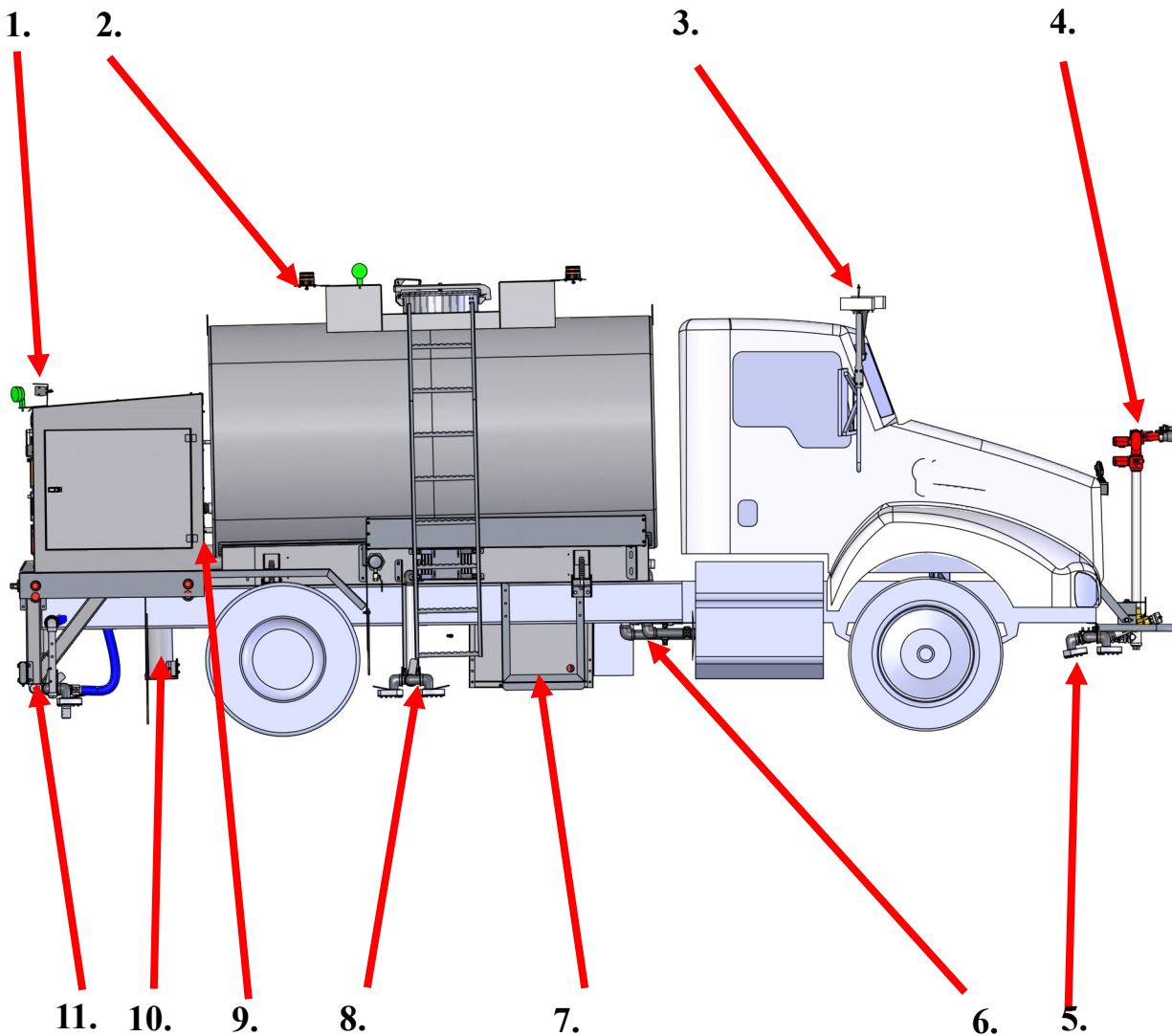
1. Cabinet Heater
2. Pressure Sensor
3. Equipment fill
4. Hydraulic Driven water pump
5. Hydraulic Valve, Filter and Oil level sensor
6. Hose Reel
7. Water Cannon operator valve
8. Pressure sensor
9. Hose reel shut off valve
10. Pump Manifold with clayton diaphragm valve to operate water lines
11. Air tank and air valves to operate water lines



DESCRIPTION

Component Location

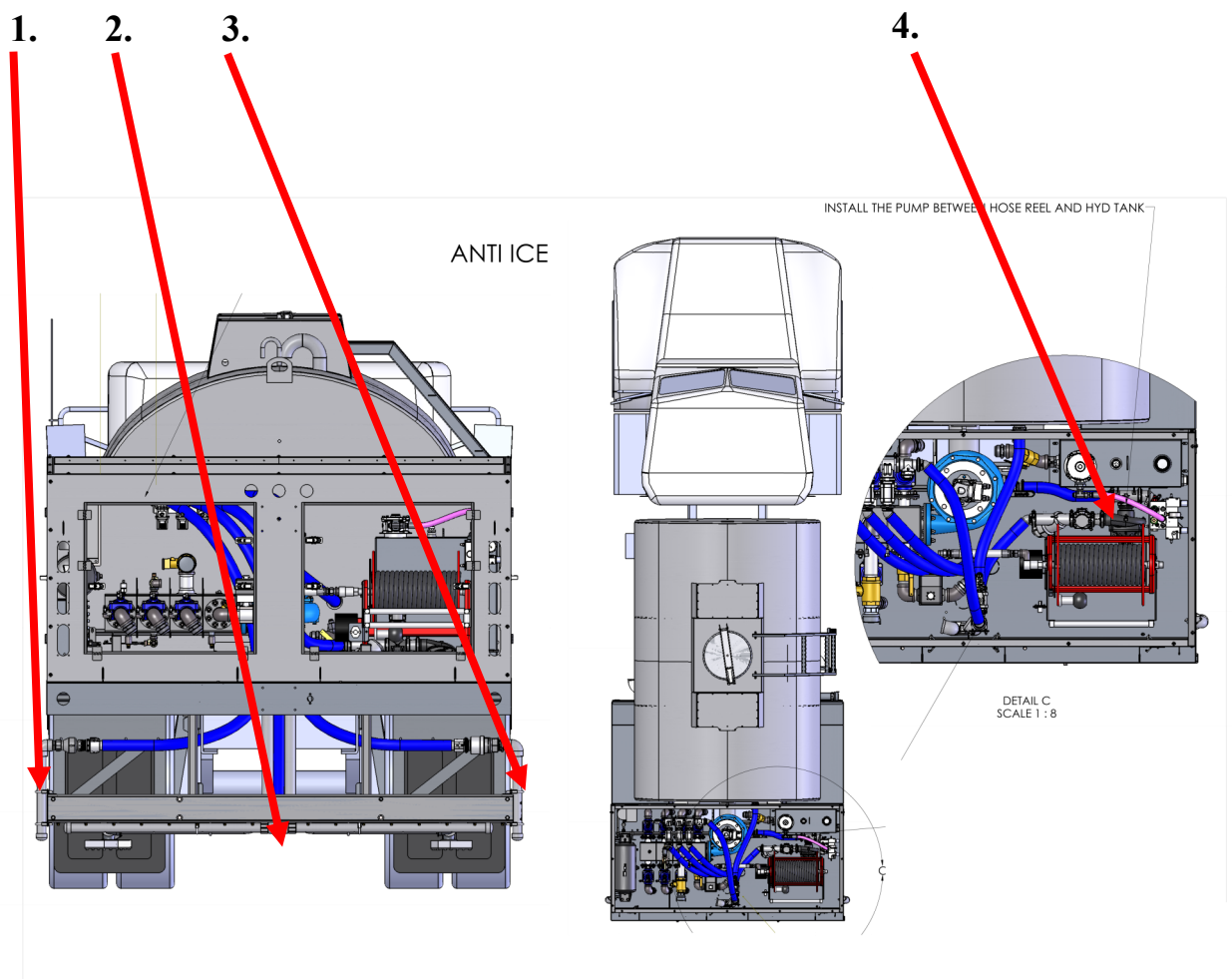
1. Optional camera or Arrow board
2. Optional Strobe light beacon style
3. Optional Whelen Super LED light system with front mounted strobes
4. Optional Water Cannon
5. Optional Front mounted nozzles with Duckbills
6. Steel or optional stainless steel plumbing
7. Optional pressure washer tray
8. Mid Ship nozzles
9. Fill indicator light, Blinks faster as you fill tank
10. 6" Dump Valve
11. Optional Anti icing 3 lane spraybar



DESCRIPTION

1. Street Side spray bar
2. Center lane spray bar
3. Curb side spray bar
4. Anti Icing Pumping system

Anti-Icing Component Location



WARNING: *Before refueling, shut off the engine.*

⚠ CAUTION: *Be sure operators have been properly instructed in starting and operating all equipment before beginning.*

NOTE: *See following pages for specific instructions on operating burners and heating systems.*

Pre-Trip Inspection

1. See Truck manufactures pre trip inspection for truck related items.
2. Check hydraulic fluid level. Oil should be visible on the clear sight gauge.
3. Drain air line moisture trap and check oil on air line oiler located on the rear of the street side near air tank.
4. Inspect unit for any physical damage.
5. Check operation of lights and brakes.

Transporting

1. Do not load the vehicle beyond maximum rating printed on the metal data plate which specifies the Gross Vehicle Weight Rating (GVWR). The GVWR is the maximum allowable total weight of the vehicle, payload, and any equipment on the vehicle.
2. The GVWR may exceed the weight allowed by Local, State and Federal laws. GVWR is the maximum weight so as not to exceed the structural design of the vehicle. The Operator must be familiar with load weights and local laws, and ensure that the load is within the safe and legal limits.

WARNING: *Prior to transporting, the driver of the vehicle must assure the safety of the operation.*

General Operations Procedures:

⚠ CAUTION: The equipment should not be subjected to freezing temperatures. Allowing the contents to freeze will cause equipment damage. If storage at freezing temperatures is anticipated, ALL water must be drained from the tank, hoses, pipes, valves, and pump via the dump valve. Store equipment with all valves ½ open, and Cam-Lock caps removed. Substantial travel to and from loading and unloading sites during freezing temperatures may require periodic flushing of drain valves.

Filling

You may fill through the tank fill or from the over head manway.

Manway Filling:

⚠ WARNING: Use extra precautions to clear overhead obstructions when man way filling.

1. Position vehicle under overhead fill line or hose.
2. Fill tank to desired level and return fill line or hose to storage position.
3. Make sure that the truck key switch is in the on position and that you push fill light rubber button to activate the side mounted filling light on the rear of the unit. The fill light will be off when the tanker is empty and will start to blink faster as the level increases and will be constantly on when full.
4. Close and fasten man way cover properly.
5. turn fill light rubber button to the off position or it will stay lit and blink as the tank level drops during use.

Tank Fill:

⚠ WARNING: The end of the hose must be securely attached to the cam-lock fitting on the truck tank before opening any valves to avoid a violent "whipping" action of the hose resulting in serious injury or death.

1. Attach cam lock side of the hose to the tank fill on the curb side of unit.
2. Attach the hose to your hydrant or other filling station.
3. Make sure that the truck key switch is in the on position and that you push fill light rubber button to activate the side mounted filling light on the rear of the unit. The fill light will be off when the tanker is empty and will start to blink faster as the level increases and will be constantly on when full.
4. Open hydrant slowly and allow tank to fill.
5. Once fill light is constantly on turn hydrant or fill source off.
6. Open 1/2" ball valve to drain water from vertical internal tank fill with air gap.
7. Disconnect hose and turn fill light rubber button to the off position or it will stay lit and blink as the tank level drops during use.



Pressure Discharge

⚠ WARNING: Water discharge may be under high pressure. Clear area of all people, pets, or any objects that may be damaged or injured by high pressure water prior to beginning pumping operations.

This operation provides a pressure discharge from the tank, through the pump, and out any combination of flushing nozzles, water cannon or the hose reel.

1. Open manual Butterfly Valve at pump inlet to prime pump. This may be left on during long periods of use. The handle position depicts the position of the water flow. Never run pump dry.
2. Select the desired nozzles. Pressing the switch will turn the indicator light from red to green on the switch bank on the cab mounted control panel.
3. Select the water pump to Manual mode or Automatic mode using the rubber button on the display. Increase or decrease using the up and down arrows on the center rubber button on the display. Manual mode allows for increasing the pump speed via a set rate. Automatic mode will set rate via pressure and maintain the pressure that it is set at automatically ramping up and down when nozzles are turned on/off. Note that it takes approximately 20 PSI to open the valves. Once open the rate can be set to less than 20PSI by adjusting the rate down.
4. Push sys off/on rubber button to turn pump on. You will hear the pump turn on. The PTO is constant and does not require to turn on or off. Adjust to desired setting.
5. Turn ON the master switch to start the flow of water to your selected nozzles.
6. Turn Off master or any combination of nozzles to stop or change the flow.
7. If equipped with optional air purge select each nozzle used separately and then push and hold the air purge button to use truck air to purge the lines out. We suggest doing each line separately to ensure that each line is blown out properly. Note the front and midship nozzles are long runs and take additional time to purge.
8. Turn off the pump with the sys off rubber button to turn pumping system off.



Note During cold weather operations leave pumping system on to maintain flow through pump and valves. Turning off pump may result in freezing in pumping system and valve manifold.

Note that the system will not allow you to spray once tank level is 10% or lower. This allows for the pump to continue to recirculate for use during cold weather operations.

Note operating the dump valve will completely drain the tank. Do not operate the pump when tank is empty. Doing so can cause premature pump wear and failure.

OPERATIONS

Optional Water Cannon And Anti Icing

Operate Water Cannon

1. Turn sys on/off to on position.
2. Set to auto or manual mode.
3. Set desired rate.
4. Squeeze joystick to turn on cannon.
Note that it may take 20-30 seconds to purge air from line. You may also turn switch on lower portion to on to continuously spray through cannon.
5. Operate switch on top of joystick to fan or stream your spray pattern.
6. Operate up/down and right left with joystick.
7. Increase engine rpm to 1000 rpms for max flow and pressure.
8. Disconnect camlock and electrical connector during freezing weather operations.



Adjusting Water Lines

All of the water lines come equipped with hammer locks installed on the nozzles.

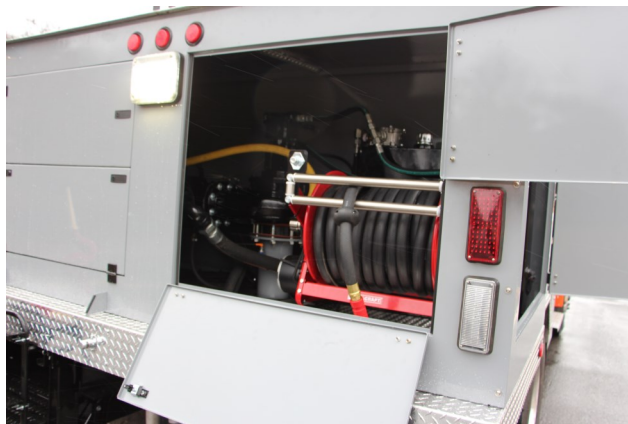
1. To adjust up/down right /left hit the hammer lock tab counterclockwise to loosen.
2. Make adjustment and tap tight. Overtightening will cause the hammer lock to strip.



For best results you should have the duckbill pointed slightly down for street flushing.
For dust control tip duckbill slightly up.

Operating the Hose and Hose Reel

1. Turn Pump on
2. Open manual ball valve on manifold. This may be left on when using for long periods of time.
3. Pull hose out of hose reel.
4. Twist open hose nozzle to desired flow.
5. Return hose to hose reel push the button for the power rewind hose. Use caution because powered hose reel is very fast.



Note shut off manual ball valve and blow out hose for freezing weather operation.

OPERATIONS

Optional Water Cannon And Anti Icing

Operate Water Cannon

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6. Operate up/down and right left with joystick.
7. Increase engine rpm to 1000 rpms for max flow and pressure.
8. Disconnect camlock and electrical connector during freezing weather operations.



NOTICE

General Safety Information

1. Keep work areas clean, equipment will last longer, and reduce the possibility of injury.
2. Drain the liquids from the system before attempting to service, remove or relocate the system.
3. Maintain system regularly. Always keep surface clean, check fittings to make sure they are tight. Clean salt residue from tank fittings, and all exposed surfaces. Perform major cleaning annually before storing product.
4. Follow instructions, stay alert, and use common sense when operating this equipment.

TAKE NECESSARY STEPS TO PROTECT PERSONNEL AND EQUIPMENT

 **Warning** Do not attempt to use this product for anything other than its intended use.

PRESEASON CHECKLIST

1. Changes in ambient temperature will cause the liquid tank to expand and contract throughout the year.
2. Insure all manual ball valves are in the closed position. In the closed position the valve handle will be perpendicular to the body.
3. Remove the strainer basket and check the filter element for any debris that may have been collected during factory testing.
4. Check nozzle body caps for tightness. This should be done periodically throughout the season.
5. Check hose clamps for tightness.
6. When making electrical connections be sure to use dielectric grease.
7. If the tank is equipped with an internal baffle system remove the manway cover to check for product settling. If settling has occurred please call and order more product.

Anti-icing system

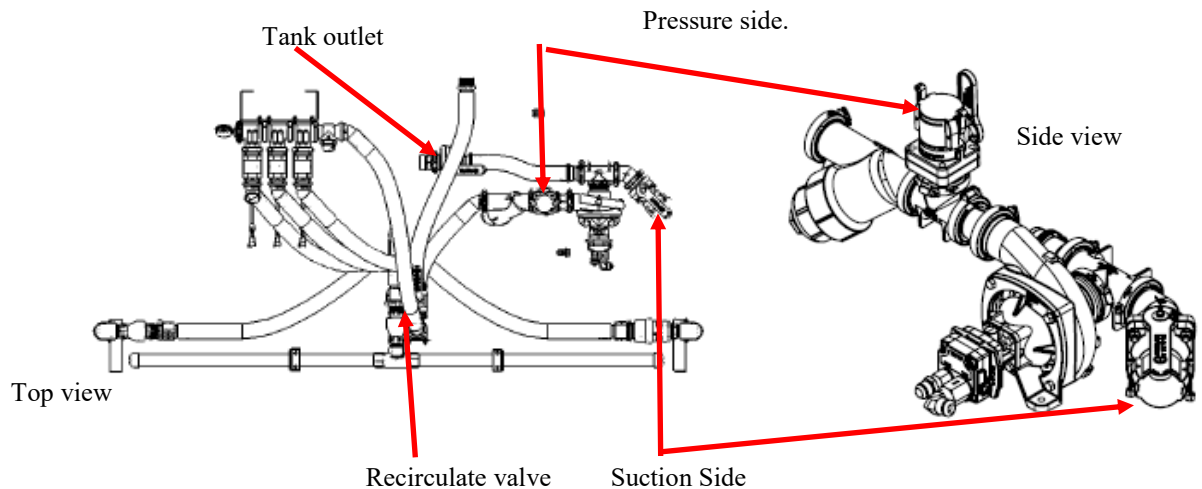
The anti icing system is designed to operate independently of the water pumping system. The system includes a Varitech 3 lane spray bar with 5100ex controller for rate controlled application. Includes a 200 GPM independent pumping system and flow meter, gps speed sensor and operator valves.

1. Close manual butterfly valve to ensure that brine does not enter the main water pump. Close ball valve (if equipped) on the clear recirculate line.
2. Fill with brine by attaching cam lock side of the hose to the tank fill on the curb side of unit.
3. Attach the hose to your brine filling station.
4. Make sure that the truck key switch is in the on position and that you push fill light rubber button to activate the side mounted filling light on the rear of the unit. The fill light will be off when the tanker is empty and will start to blink faster as the level increases and will be constantly on when full.
5. Open brine filling station valve and allow tank to fill.
6. Once fill light is constantly on turn hydrant or fill source off.
7. Open 1/2" ball valve to drain water from vertical internal tank fill with air gap.
8. Disconnect hose and turn fill light rubber button to the off position or it will stay lit and blink as the tank level drops during use.
9. You may also fill using the brine pumping system.



TANK FILLING USING A GROUND BASE PUMP

1. Facing the rear of the unit, remove the camlock cap from the ball valve and camlock assembly on the suction side of the pump.
2. Connect the 2" female camlock on the fill hose end to the 2" male camlock on the suction side.
3. Once connected, open the manual ball valve at the camlock connection and the manual valve at the tank outlet.
4. If there is a manual ball valve on the fill hose end open this valve as well.
5. Activate ground based pump.
6. Once the tank is full, close the manual valve on the fill hose, the manual valve at the camlock connection, and the manual valve on the tank in order.
7. Disconnect the camlock connection and replace the camlock cap.

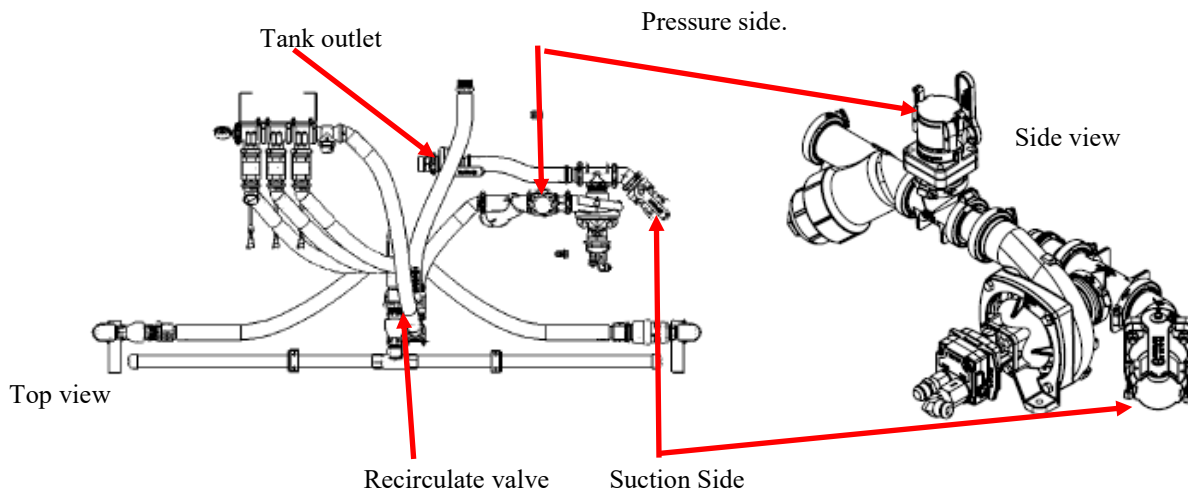


TANK FILLING USING THE SELF FILL OPTION

1. While facing the rear of the unit, remove the camlock cap from the ball valve and the camlock assembly on the suction side of the pump.
2. Connect the 2" female camlock on the fill hose end to the 2" male camlock on the quick fill port.
3. Once connected, close the tank outlet valve and open the manual ball valve at the camlock connection and the manual valve on the recirculation line, on the discharge side of the pump. The recirculation line will have a length of 1 ½" hose going back to the liquid tank.
4. If there is a manual ball valve on the fill hose end open this valve as well.
5. Activate the anti-ice pump using the spreader control in the truck cab.
6. Once the tank is full, close the manual valve on the fill hose, the manual valve at the camlock connection, and the manual valve on the recirculation line in this order.
7. Disconnect the camlock connection and replace the camlock cap.

STANDARD APPLICATION THROUGH SPRAY BAR

1. Open the manual ball valve on the tank outlet and the manual ball valve on the recirculation line.
2. Activate the anti-ice pump using the spreader control in the truck cab.
3. If the anti-ice pump generates a load, the system is primed and ready to spray, you can proceed to the next step. If the anti-ice pump is spinning freely, remove the camlock cap on the discharge side of the pump and prepare to open the manual ball valve to bleed it from the pump. Be sure personnel and equipment are clear of the valve, and slowly crack the valve handle.
4. Once the anti-ice pump is properly returning product through the recirculation line, turn the pump off and close the recirculation line manual ball valve.
5. The system is now ready to operate.



TANK RECIRCULATION

NOTE: Certain anti-icing liquids need to be recirculated in order to keep the product from settling out. Check with your Chemical supplier to verify whether or not your liquid needs to be recirculated. If it does, follow the steps below.

1. Open the manual ball valve on the tank outlet, and the manual ball valve on the recirculation line.
2. Activate the anti-ice pump using the spreader control in the truck cab.
3. If the anti-ice pump generates a load the system is primed and ready to recirculate, you can proceed to the next step. If the anti-ice pump is spinning freely, remove the camlock cap on the discharge side of the pump and prepare to open the manual ball valve to bleed air from the pump. Be sure personnel and equipment are clear of the valve, slowly crack the valve handle. Once the pump generated a load close the valve and replace the camlock cap.
4. Once the anti-ice pump is properly returning product through the recirculation line, allow the pump to run as long as needed.
5. When done recirculating, close the recirculation line manual ball valve.

TANK OFFLOADING USING A GROUND BASED PUMP

1. While facing the rear of the unit, remove the camlock cap, from the ball valve and camlock assembly on the suction side of the pump.
2. Connect the 2" female camlock on the fill hose end to the 2" male camlock connection and the quick fill port.
3. Once connected, open the manual ball valve at the camlock connection and the manual valve at the tank outlet.
4. If there is a manual Ball valve on the fill hose end, open this valve as well.
5. Activate ground base pump.
6. Once the tank is empty, close the manual valve on the fill hose, the manual valve at the camlock connection, and the manual valve on the tank in this order.
7. Disconnect the camlock connection and replace the camlock cap.

TANK OFFLOADING USING THE SELF OF-FLOAD OPTION

1. While facing the rear of the unit, remove the camlock cap from the ball valve, and camlock assembly on the discharge side of the pump.
2. Connect the 2" female camlock on the fill hose end to the 2" male camlock on the discharge port.
3. Once connected, open the manual ball valve at the camlock connection, and the manual valve at the tank outlet.
4. If there is a manual ball valve on the fill hose end open this valve as well.
5. Activate the anti-ice pump using the spreader control in the truck cab.
6. Once the tank is empty, close the manual valve on the fill hose, the manual valve at the camlock connection, and the manual valve on the tank in this order.
7. Disconnect

TROUBLE SHOOTING

<u>Symptoms</u>	<u>Probable Cause(s)</u>	<u>Corrective Action(s)</u>
Low or no discharge	Pump not primed Air leaks in inlet line Blocked or clogged line strainer Impeller plugged Bypass Adjustment Screw not set properly	Refer to "Standard application through spray bar" page for air bleed process. Check and reseal inlet fittings. Inspect strainer and clear any debris from screen. Inspect and clear obstructions. Adjust bypass screw on side of hydraulic motor in until the desired output is attained.
Flow meter feedback error	Flowmeter turbine is clogged Faulty sensor cable	Disassemble flowmeter to check for debris, Clean and reassemble. If clogging is frequent, use a finer mesh strainer filter. Disconnect the flowmeter sensor cable from the controller harness at the back of the truck. Using a wire jumper, tap across pins B and C to simulate pulse. If pulse is present replace flowmeter sensor cable. If pulse is not present, troubleshoot the spreader control.
Lane valve will not open	Incorrect connector pinouts Faulty valve actuator	Confirm the valve connector pinouts are A-red/power B- black/ground and C-white/signal. Disconnect the lane valve connector from the controller harness at the back of the truck. With the lane switch turned on, test for voltage on the controller harness across the pins. A and B also B and C using a voltmeter .If voltage is present replace the valve actuator. If voltage is not present troubleshoot the spreader control.

POSTSEASON CHECKLIST

1. Changes in ambient temperature will cause the liquid tank to expand and contract throughout the year.
2. Insure that all manual ball valves are in the closed position. In the closed position the valve handle will be perpendicular to the valve body.
3. Remove the strainer basket and check the filter element for any debris that may have been collected during the winter season.
4. Check nozzle body caps for tightness.
5. Check hose clamps for tightness.
6. When disconnecting electrical plugs be sure to use dielectric grease prior to installing dust caps.
7. Be sure to rinse the system with freshwater and flood the system with an RV type anti-freeze mix. The anti-freeze mix will insure that the inner workings of the pump, flowmeter, and lane valves stay lubricated throughout the summer months.

Operate the 5100EX Controller

Stepp Mfg. Utilizes the Force America SSC5100EX controller. This controller is designed to operate both granular, prewet and direct application/brine application. Stepp only utilizes the direct mode for spraying brine. Below is the operations for spraying a 3 lane system for brine applications. To see full calibration and complete operations manual please see the Force America 5100EX manual online at

<https://forceamerica.com/products/electronic-controls-harnessing/spreader-controls/5100ex>

The SSC5100ex is a self-contained spreader system. It has two rotary adjustment knobs, five pairs of “switches” that act as pushbuttons for SSC5100ex functions, and an interlock “switch” on the back of the controller. The functions that they control change depending on what options are enabled. The left side of the SSC5100ex has a single USB port, which can be used to import and export calibration files or upgrade the firmware.

The Operation Screen The Operation Screen is the main screen of the SSC5100ex, and provides controls for all of the system functions as well as access to the Menus. The Operation Screen is divided into three distinct parts:

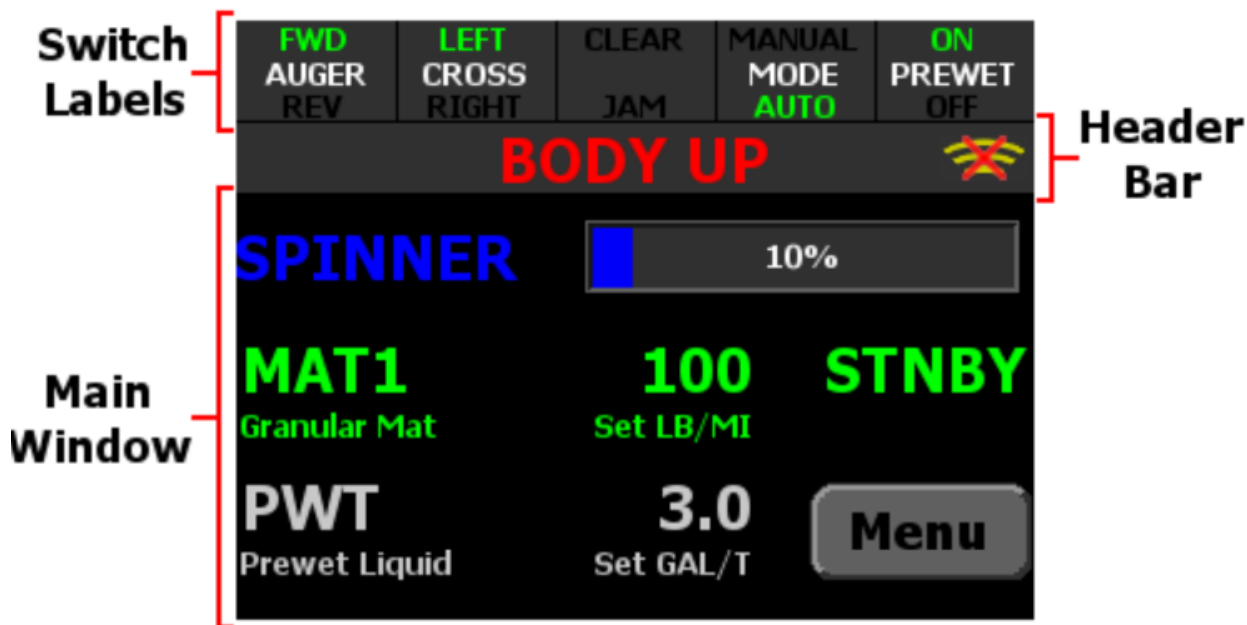


Figure 4: SSC5100ex Operation Screen

5100 Direct Mode / Used in Brine applications

Switch Labels The 5 Switch Labels always run across the very top of the screen. Each label corresponds to the switch directly above it. Active switch functions are indicated with a green color. If a switch is currently not used the label is left blank. The switch label will appear red if the operator selected the Disable option on the stuck switch error condition at startup. When in this state the affected function will not be able to be activated.

Switches can be pressed at any time during normal operation, whether the spreader is applying material or in standby.



Switch	Function	Availability Requires
	Opens the left lane ball valve for direct application. Pressing the top switch will select turn on the output, opening the valve and the bottom will select turn off the output closing the valve.	The Application mode in calibration must be Direct 3 Lane or Gran/Dir 3 Lane. The current mode must be set to Direct.
	Opens the center lane ball valve for direct application. Pressing the top switch will select turn on the output, opening the valve and the bottom will select turn off the output closing the valve	The Application mode in calibration must be Direct 3 Lane or Gran/Dir 3 Lane. The current mode must be set to Direct.
	Opens the right lane ball valve for direct application. Pressing the top switch will select turn on the output, opening the valve and the bottom will select turn off the output closing the valve	The Application mode in calibration must be Direct 3 Lane or Gran/Dir 3 Lane. The current mode must be set to Direct.
	Activates or deactivates Manual mode for direct. Pressing the top switch will turn on Manual Mode and the bottom switch will turn it off. See page 10.	Direct Manual Mode must be enabled in Calibration.

Main Window

The Main Window displays important information about the materials the system is spreading.

The blue spinner row contains information about your spinners set rate. The spinner row will only appear when applying granular materials and adjusted using the blue knob.

The green row contains information about your primary material, its set rate, and its actual output rate. It will display granular or direct (Brine) information depending on which type of material you are applying. This row is always visible and adjusted using the green knob.

The white prewet row contains information about your prewet material, its set rate, and its actual output rate. The prewet row will only appear when applying granular materials and Prewet is enabled in Calibration. It is white when Prewet is activated and gray when Prewet is not activated.



Blast

Blast is a spreader feature that runs the granular or direct/ brine output (if enabled) at a set rate for a set amount of time. Usually it is configured to run at a high output setting in order to “Blast” a portion of road with extra material.

When Blast is activated, the granular row will display the word “BLAST” instead of the material name.

Direct Material for ten seconds at 65 gallons per mile.

To activate Blast:

STEP 1: Press the Blue Blast Knob on the Operator Interface. The system will blast for its configured amount of time or distance and return to normal operation. The Blast feature works whether or not the system is in Standby or the vehicle is moving.

To deactivate Blast before it automatically shuts off:

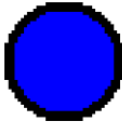
STEP 1: While the system is Blasting, press the Blue Blast Knob on the Operator Interface. The Blast feature will shut off and return to its previous operation (spreading or standby).

Mode

The Mode menu item allows you to switch between Granular and Direct application. To access this menu item, Application Mode must be set to Gran/Dir 1 Lane, or Gran/Dir 3 Lane by a supervisor in Calibration. The direct liquid type either is set to a particular mode in Calibration, or can be adjusted using the Direct Type menu below.

Direct Type

The Direct Type menu item allows you to choose the type of direct liquid to apply. The supported liquid types are Anti-Ice, Dust Control, and Herbicide. To access this menu item, Application Mode must be set to Gran/Dir 1 Lane, or Gran/Dir 3 Lane and the Direct Type must be set to User-Selected by a supervisor in Calibration.

Input	Input	Function
Green On / Standby Knob 	Twist Left	Decrease the auger or direct set rate.
	Twist Right	Increase the auger or direct set rate.
	Pushbutton	Place the system in standby. Remove the system from standby.
Blue Blast Knob 	Twist Left	Decrease the spinner set rate.
	Twist Right	Increase the spinner set rate.
	Pushbutton	Blast granular material. Cancel Blast.



Liquid Remaining

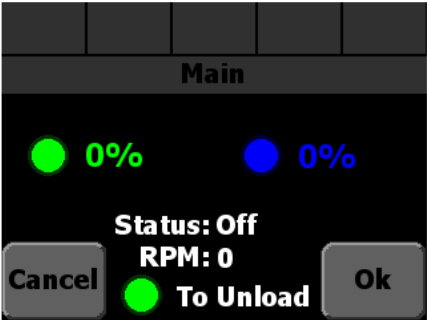
The Liquid Remaining menu item will allow you to set the amount of liquid remaining in the Direct Tank. Use the up and down arrow buttons to increase or decrease the selected digit. Use the left and right arrow buttons to select different digits. Pressing a digit directly will also select it. The direct liquid remaining can be set anywhere from 0 to the tank size set up by a supervisor in Calibration. Ok will save your selection and pressing Cancel will discard it. To access this menu item both Direct and Material Countdown must be enabled by a supervisor in Calibration.

Unload/Prime

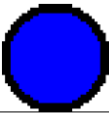
The Unload/Prime menu allows you to unload granular or direct materials or prime the prewet pump.

Unload

The Unload menu item allows you to run the auger and spinner or direct pump to unload material while the system is stationary. See Unload on page 16 for more information. To access this menu item Unload mode must be enabled by a supervisor in Calibration.



Each rotary adjustment knob on the Operator Interface performs a different function when unloading granular material. See the table below.

Input	Action	Function
Green On / Standby Knob 	Twist Left	Decrease the auger or direct output percentage.
	Twist Right	Increase the auger or direct output percentage.
	Pushbutton	Start unloading material. Stop unloading material.
Blue Blast Knob 	Twist Left	Decrease the spinner output percentage. (If available)
	Twist Right	Increase the spinner output percentage. (If available)
	Pushbutton	None

To unload direct material:

STEP 1: Ensure that the system is in Standby.

STEP 2: Press the Menu button in the lower right corner of the screen to enter the main menu.

STEP 3: Press the Unload/Prime button on the screen to access the Unload/Prime menu.

STEP 4: Press the Unload button on the screen to access the unload screen.

STEP 5: Use the Green Knob to adjust the direct output percent.

STEP 6: Press the Green Knob to begin unloading direct material.

STEP 7: Press the Green Knob to finish unloading direct material.

STEP 8: Press the Ok button to return to the Main Menu when finished.

Note: If 3 lane mode is enabled, the lane valve outputs are disabled in unload mode. The use of a manually operated 1/4 turn ball valve and unload port is required to unload the tank.

Backlight

The Backlight menu item allows you to set the screen's brightness. Use the left and right arrow buttons on the screen to select between the different levels. Available options are Low, Medium, High, and Max. As with all options pressing OK will save your selection and pressing Cancel will discard it. The screen actual brightness will update when the OK button is pressed.

Quick Guide For Controller

Push buttons to activate Right, Center, or Left spray zones on Spray bar

Push Blue Blast Knob for preset Direct Material for ten seconds at 65 gallons per mile.



Auto or Manual Modes

Auto mode will ramp output up and down depending on speed. (desired setting)

Manual will output your lanes per mile rate and will not ramp up or down with chaining speed.

Rotate Green Knob Right to increase/ Left to decrease Gallons per lane mile.

Push in to turn ON/OFF

MAINTENANCE

REPLACEMENT PARTS

PARTS

PARTS

PARTS

PARTS

PARTS

PARTS



Consumer Warranty Guide

12325 River Road, North Branch, MN 55056~ Phone: 651-674-4491~ Fax: 651-674-4221 www.steppmfg.com



Introduction

Congratulations on your purchase of equipment built by Stepp Manufacturing for your asphalt maintenance needs. Your equipment has been designed and constructed to give you the most in performance, ease of use, and reliability. It is our desire that you will find operating the equipment both productive and profitable.

Warranty Procedures Through A Dealer

If your equipment requires repair, or needs parts for repair, please contact your area dealer. For repairs, the unit must be brought to the dealer for warranty. The dealer will require purchase date information, where the machine was purchased, and the Vehicle Identification Number (VIN) of the equipment. This information is needed so the dealer can submit a warranty claim. The dealer will repair your equipment, once warranty is approved, at no charge to you under the provisions of the warranty policy.

Warranty Procedures Direct Through The Factory *(when no servicing dealer is available in your area)*

Contact Stepp Manufacturing's Customer Service Department at (651) 674-4491.

In this situation, it may be advantageous for you to repair the machine and be reimbursed direct from the factory for warranty repairs. If you do not have the facilities, or the technicians, to perform the repair, the unit can be brought to a local repair facility. In either case, Stepp Manufacturing **MUST** be contacted and authorize the warranty repair **PRI-OR** to any work being performed. If work is done prior to authorization, the warranty will not be honored.

If parts are required for the warranty repair, contact Customer Service at Stepp Manufacturing for replacements. When warranty replacement parts are shipped to you, a Warranty Authorization Number will be issued. If asked to return the defective parts, "tag" the defective parts with the Warranty Authorization Number, then package them in the same box the new parts were shipped in. Ten (10) business days will be allowed for return of the defective parts. If the defective part is not received back at the factory within this allotted time, the warranty will not be honored.

You will be billed for all parts shipped that require returning of defective parts. However, when the defective parts are returned and evaluated, you will receive credit for the cost of the part only. Thus, it is important that all defective parts are turned to Stepp Manufacturing in the allotted ten (10) day period.

Engine Warranty Claims

When a warranty issue develops with the engine, bring the unit to the engine manufacturer nearest authorized service center for repair. Be prepared to supply them with proof of purchase information with purchase dates.

Stepp Manufacturing cannot process engine warranty claims. However, we will be happy to offer assistance in locating the nearest service center.

Equipment Owner Responsibilities

As the equipment owner, you are responsible for:

- Using the equipment in accordance with the correct operating procedures as shown in the operators manual.
- Assuring all maintenance items are completed in accordance with the operators/maintenance manuals.
- Transporting the equipment to the place where warranty repairs can be completed.
- Supplying purchase date and VIN information to establish warranty coverage.



General Warranty Statement Stepp Manufacturing's One (1) Year Limited Warranty

Stepp Manufacturing Co., Inc. hereby warrants, to the original purchaser of new equipment, that products manufactured by Stepp Manufacturing will be free from defects in material and workmanship for a period of one (1) year from the date of purchase from Stepp Manufacturing.

Stepp Manufacturing, at its discretion, will provide for the repair or replacement of any part found, upon examination by Stepp Manufacturing, to be defective, except as noted below. Such repair or replacement shall be free of charge to the original purchaser of new equipment for a period of one (1) year from the date of purchase, except as noted below.

No warranty is extended to cover:

- Product pump wear or damage caused by foreign objects.
- Routine maintenance, cleaning, and adjustments.
- Parts or components that have been altered, misused, improperly adjusted, or improperly maintained.
- Transportation to and from the place of warranty repair.
- Removal of materials from equipment.

The following items are covered solely by their manufacturer's warranty:

- Engines
- Hydraulic components
- Burners
- Pumps
- Axles
- Tires
- Other component parts not solely manufactured by Stepp Manufacturing

The following items are covered by a pro-rata warranty:

- Hoses that carry heated materials
- Heating elements for material hoses and wands

Disclaimer of further warranty:

Stepp Manufacturing makes no warranty, expressed or implied, other than this warranty. The implied warranties of merchantability and fitness for a particular purpose are hereby disclaimed. Repair or replacement of products or parts proving to be defective in material or workmanship shall be the exclusive remedy for breach of this warranty.

Stepp Manufacturing shall not be liable for incidental or consequential damages. Including, but not limited to, damages for inconvenience, rental or purchase of replacement equipment, loss of profits, or other loss resulting from breach of this warranty.

Stepp Manufacturing reserves the right to incorporate any changes in design into its products without obligation to make such changes on products previously manufactured.



Twelve (12) Month Pro-Rata Limited Warranty Heated Asphalt Hose and Heating Elements

Effective for Equipment Delivered After 5/1/2012

Stepp Manufacturing Co., Inc. hereby warrants to the original purchaser, on a pro-rated basis, that the heated asphalt hose and heating elements installed on NEW Stepp Manufacturing's equipment shall be free from defects in material and workmanship for period of twelve (12) months for the heated asphalt hose and six (6) months for the heating element.

In the event that a heated asphalt material hose or a heating element fails under normal use during the warranty period, Stepp Manufacturing will supply a replacement heated asphalt hose or heating element, along with one-half (0.5) hour for installation labor on a pro-rated adjustment basis.

- If the failure occurs under normal use within the first three (3) months from date of purchase, Stepp Manufacturing will supply a replacement, and provide for one-half (0.5) hour installation labor at no charge to the customer.
- If the failure occurs under normal use within the fourth (4th) through twelfth (12th) months, Stepp Manufacturing will supply a replacement, and provide for one-half (0.5) hour installation labor on a pro-rata basis.

The pro-rated adjustment is based on the total number of months elapsed since the purchase date of the new equipment from Stepp Manufacturing. This rate is then applied to the one-half (0.5) hour labor rate and the current suggested retail price of the proper replacement heated asphalt hose or heating element supplied by Stepp Manufacturing. This is the amount the customer will have to pay. Freight will not be included in the reimbursement. If a new heated asphalt hose or heating element is needed prior to warranty inspection, you will be billed for all parts shipped that require returning of defective parts. However, when the defective parts are returned and evaluated, you will receive credit for the cost of the part only. **Thus, it is important that all defective parts are turned in to Stepp Manufacturing in the allotted ten (10) day period, or warranty will be denied.**

In no case will the warranty coverage extend beyond the six (6) month period for the heating element or the twelve (12) month period for the heated asphalt hose, from the original purchase date of the new equipment from Stepp Manufacturing. *Physical damage is not covered by this warranty.* Physical damage may include, but is not limited to:

- Broken heating element (typically caused by repeated bending to less than a one (1) foot radius).
- Heated asphalt hoses burnt from the inside (typically caused by operating the heating element in an empty hose).
- External cuts or abrasions on the heated asphalt hose (typically caused by dragging on the ground).

The chart below shows the pro-rated amount, by percentage, that will be allowed by warranty, pending examination of the heated asphalt hose or heating element.

Heated Asphalt Hose		
Failure Date	Warranty's Responsibility	Customer's Responsibility
0-3 Months 0-90 Days	100%	0%
3-6 Months 91-180 Days	70%	30%
6-7 Months 181-211 Days	60%	40%
7-8 Months 212-242 Days	50%	50%
8-9 Months 243-273 Days	40%	60%
9-10 Months 274-304 Days	30%	70%
10-11 Months 305-335 Days	20%	80%
11-12 Months 336-365 Days	10%	90%
After 12 Months	0%	100%

Heating Element		
Failure Date	Warranty's Responsibility	Customer's Responsibility
0-3 Months 0-90 Days	100%	0%
3-4 Months 91-121 Days	60%	40%
4-5 Months 122-152 Days	40%	60%
5-6 Months 153-180 Days	20%	80%
After 6 Months	0%	100%



Warranty Claim Authorization Number: _____
 Call Customer Service at 651-674-4491 to obtain prior approval or warranty will be denied.
 Date of Authorization Request _____

Equipment Owner		Warranty to be Performed by	
Customer Name		Company Name	
Street Address		Address	
City/State/Zip		City/State/Zip	
Equipment Model #		Contact Name	
Equipment VIN		Contact Phone #	
Hour Meter Read			
Purchase Date		Date of Malfunction	
Dealer Purchased Form		Date of Repair	
Warranty Authorization		Signature for Authorization	
Date of Malfunction		X	
Date of Repair			
Symptoms / Diagnostics / Action			
Symptoms	Diagnostics	Action	
<i>Describe the symptoms in detail, be as specific as possible. Ex: Burner ignites and runs for 35 seconds, then goes out.</i>	<i>Describe issues found, be as specific as possible. Ex: Part failed due to loose connection, resulting in misalignment and premature wear.</i>	<i>Describe action taken, be as specific as possible. Ex: Removed damaged section of wire harness, soldered new leads in place, and insulated splices w/ heat shrink tubing.</i>	
Parts and Labor			
Labor Time to Correct Problem (reimbursed at \$55/hour)		Parts Used to Correct Problem	
<u>Labor Time (in hours)</u>	<u>Repair Made</u>	<u>Part Number</u>	<u>Description</u>
Parts Return			
All parts returned must be tagged with the warranty authorization number and a copy of this claim. Retain all parts until credit is received from the factory. When requested, return the parts, along with this claim, to: Stepp Manufacturing Co., Inc. Attn: Warranty Department 12325 River Road North Branch MN 55056 *Note: If defective parts are not returned within 10 days, or this warranty claim does not accompany the returned parts, the claim will be denied.			
Office Use Only			
Date Claim/Parts Received?		Is this a warrantable claim?	Yes No
Claim Reviewed By:		Original Invoice # for Parts	
Date of Review:			
Warranty Totals			

SCHEMATICS

SIDEWINDER WATER CANNON

GOULD WATER PUMP 3656

REEL CRAFT HOSE REEL

HYDRAULIC PUMP & PUMP CONTROL MODULE

HYDRAULIC OIL MSDS

VARITECH – ANTI ICE SYSTEM
