

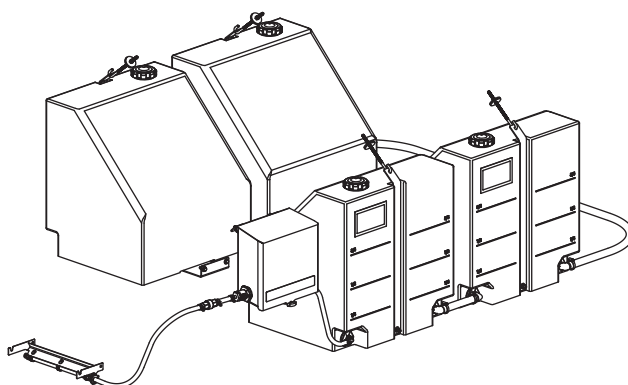
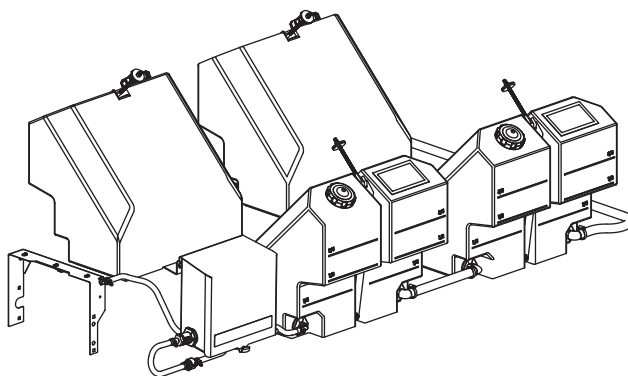


February 1, 2019
Lit. No. 70428, Rev. 04

Hopper Spreader Pre-Wet Kit (Full Feature System)

#76410, 76425, 76450

Installation Instructions / Owner's Manual / Parts List



⚠ CAUTION

Read this manual before installing or
operating the pre-wet kit.

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SAFETY

SAFETY DEFINITIONS

WARNING

Indicates a potentially hazardous situation that, if not avoided, could result in death or serious personal injury.

CAUTION

Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

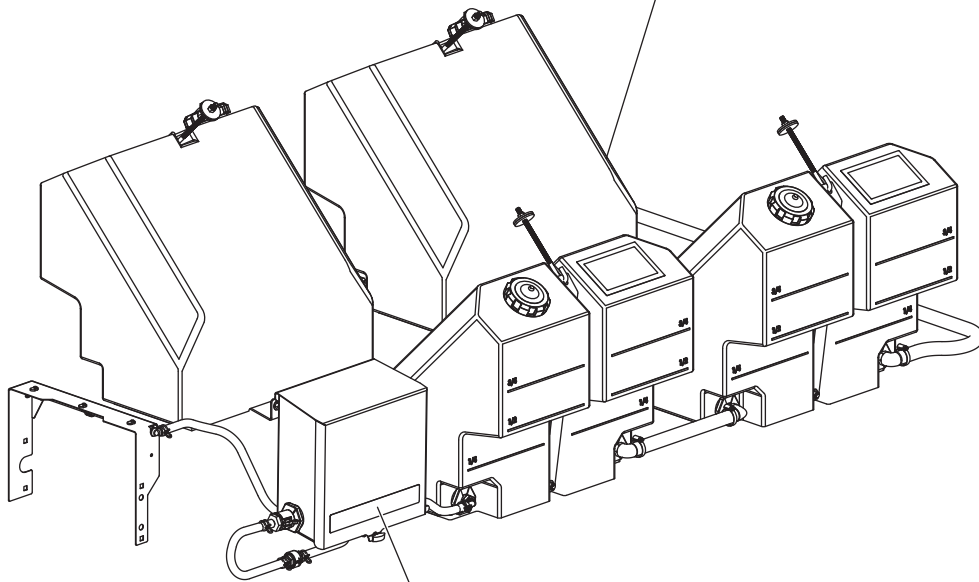
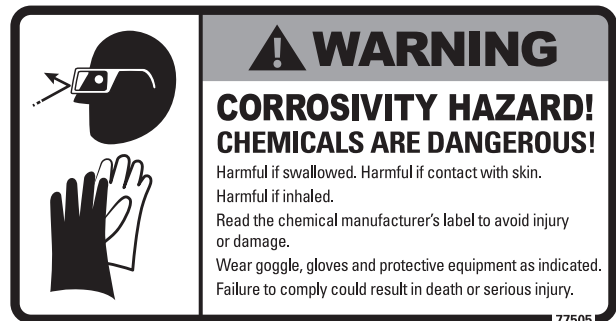
NOTE: Indicates a situation or action that can lead to damage to your pre-wet system and vehicle or other property. Other useful information can also be described.

WARNING/CAUTION LABELS

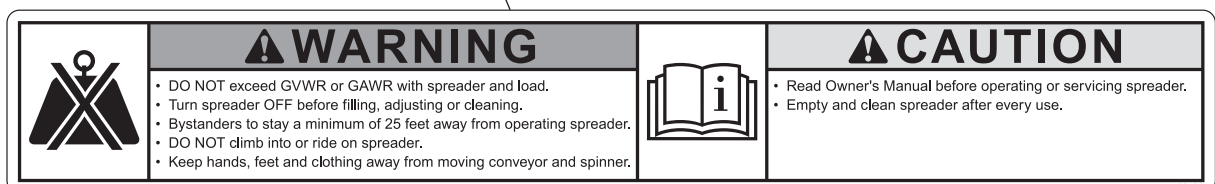
Please become familiar with the warning and caution labels on the pre-wet system.

NOTE: If labels are missing or cannot be read, see your sales outlet.

Warning Label – Corrosivity Hazard



Warning/ Caution Label



SAFETY

SAFETY PRECAUTIONS

Improper installation and operation could cause personal injury and/or equipment and property damage. Read and understand labels and the Owner's Manual before installing, operating, or making adjustments.

WARNING

- Driver to keep bystanders a minimum of 25 feet away from operating pre-wet system.
- Before working with the pre-wet system, secure all loose-fitting clothing and unrestrained hair.
- Before operating the pre-wet system, verify that all safety guards are in place.
- Before servicing the pre-wet system, wait for conveyor and spinner to stop.
- Do not climb into or ride on pre-wet system.

WARNING

Overloading could result in an accident or damage. Do not exceed GVWR or GAWR ratings as found on the driver-side door cornerpost of the vehicle. See Loading section of your spreader Owner's Manual to determine maximum volumes of spreading material.

WARNING

- The drive shafts, conveyor, and spinner assemblies transmit great amounts of power and, accordingly, are hazardous when in operation. All maintenance, inspections, or operator adjustments must be made with all source power OFF.
- Keep pre-wet system and surrounding area clear of personnel and property when operating.
- When traveling, especially fully loaded, this machine may have a high center of gravity, and care should be exercised when turning or driving on banked surfaces.
- Unauthorized modifications to the pre-wet system and related components may impair the function and/or safety.

CAUTION

- Do not operate a pre-wet system in need of maintenance.
- Before operating the pre-wet system, reassemble any parts or hardware removed for cleaning or adjusting.
- Before operating the pre-wet system, remove materials such as cleaning rags, brushes, and hand tools from the pre-wet system.
- While operating the pre-wet system, use auxiliary warning lights, except when prohibited by law.
- Tighten all fasteners according to the Torque Chart. Refer to Torque Chart for the recommended torque values.

CAUTION

Disconnect electric and/or hydraulic power and tag out if required before servicing or performing maintenance.

CAUTION

DO NOT leave unused material in hopper. Material can freeze or solidify, causing unit to not work properly. Empty and clean after each use.

PERSONAL SAFETY

- Remove ignition key and put the vehicle in PARK or in gear to prevent others from starting the vehicle during installation or service.
- Wear only snug-fitting clothing while working on your vehicle or pre-wet system.
- Do not wear jewelry or a necktie, and secure long hair.
- Wear safety goggles to protect your eyes from battery acid, gasoline, dirt, dust, and brine.
- Avoid touching hot surfaces such as the engine, radiator, hoses, and exhaust pipes.
- Always have a fire extinguisher rated BC handy, for flammable liquids and electrical fires.

SAFETY INFORMATION

CELL PHONES

A driver's first responsibility is the safe operation of the vehicle. The most important thing you can do to prevent a crash is to avoid distractions and pay attention to the road. Wait until it is safe to operate Mobile Communication Equipment such as cell phones, text messaging devices, pagers, or two-way radios.

VENTILATION

WARNING

Vehicle exhaust contains lethal fumes. Breathing these fumes, even in low concentrations, can cause death. Never operate a vehicle in an enclosed area without venting exhaust to the outside.

BATTERY SAFETY

CAUTION

Batteries normally produce explosive gases which can cause personal injury. Therefore, do not allow flames, sparks, or lit tobacco to come near the battery. When charging or working near a battery, always cover your face and protect your eyes, and also provide ventilation.

- Batteries contain sulfuric acid which burns skin, eyes, and clothing.
- Disconnect the battery before removing or replacing any electrical components.

NOISE

Airborne noise emission during use is below 70 dB(A) for the pre-wet system operator.

VIBRATION

Operating pre-wet system vibration does not exceed 2.5 m/s² to the hand-arm or 0.5 m/s² to the whole body.

TORQUE CHART

CAUTION

Read instructions before assembling. Fasteners should be finger tight until instructed to tighten according to torque chart. Use standard methods and practices when attaching pre-wet system, including proper personal protective safety equipment.

Recommended Fastener Torque Chart

Inch Fasteners Grade 5 and Grade 8

Size	Torque (ft-lb)		Size	Torque (ft-lb)	
	 Grade 5	 Grade 8		 Grade 5	 Grade 8
1/4-20	8.4	11.9	9/16-12	109	154
1/4-28	9.7	13.7	9/16-18	121	171
5/16-18	17.4	24.6	5/8-11	150	212
5/16-24	19.2	27.3	5/8-18	170	240
3/8-16	30.8	43.6	3/4-10	269	376
3/8-24	35.0	49.4	3/4-16	297	420
7/16-14	49.4	69.8	7/8-9	429	606
7/16-20	55.2	77.9	7/8-14	474	669
1/2-13	75.3	106.4	1-8	644	909
1/2-20	85.0	120.0	1-12	704	995

Metric Fasteners Class 8.8 and 10.9

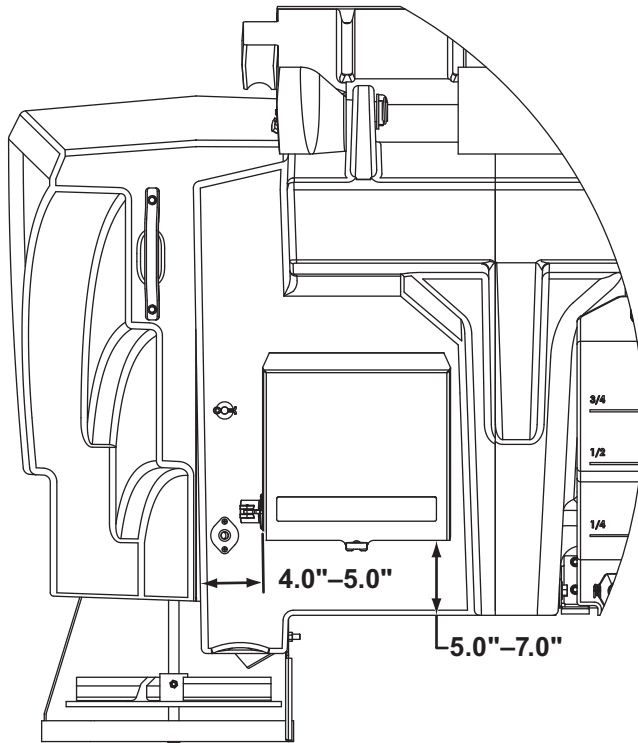
Size	Torque (ft-lb)		Size	Torque (ft-lb)	
	 Class 8.8	 Class 10.9		 Class 8.8	 Class 10.9
M6 x 1.00	7.7	11.1	M20 x 2.50	325	450
M8 x 1.25	19.5	26.9	M22 x 2.50	428	613
M10 x 1.50	38.5	53.3	M24 x 3.00	562	778
M12 x 1.75	67	93	M27 x 3.00	796	1139
M14 x 2.00	107	148	M30 x 3.50	1117	1545
M16 x 2.00	167	231	M33 x 3.50	1468	2101
M18 x 2.50	222	318	M36 x 4.00	1952	2701

These torque values apply to fasteners except those noted in the instructions.

MOUNTING PUMP BOX & SPRAY BRACKET – POLY HOPPER

MOUNTING THE PUMP BOX

1. Remove the pump box cover.
2. Position the pump box as shown below and mark the four mounting holes.



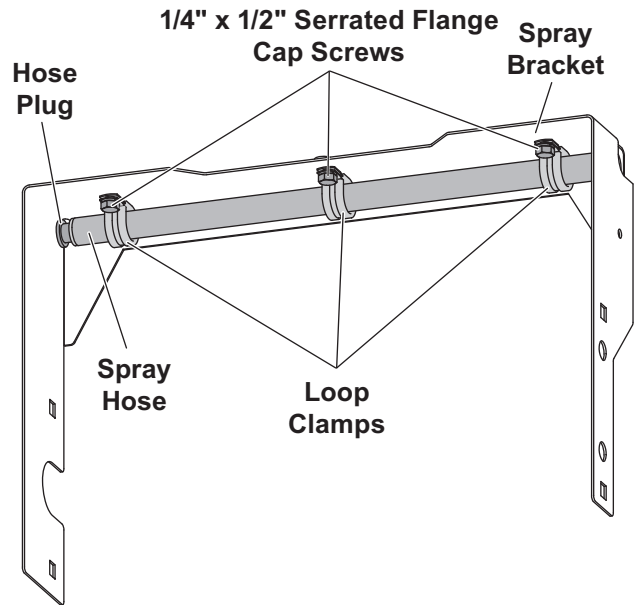
⚠ CAUTION

Before drilling holes, check to be sure that no vehicle wiring or other components could be damaged.

3. Use a 1/2" drill bit to drill through the poly hopper wall in the marked locations.
4. Insert the four 1/4" rubber well nuts into the drilled holes.
5. Use the 1/4" x 1-1/2" cap screws and 1/4" washers to secure the pump box to the rubber nuts.

MOUNTING THE SPRAY BRACKET

1. Insert the 1/2" barb hose plug and then use the hose clamp to secure.
2. Use the three loop clamps and 1/4" x 1/2" cap screws to install the spray hose onto the spray bracket. Verify that the slits face the spinner chute when installed.

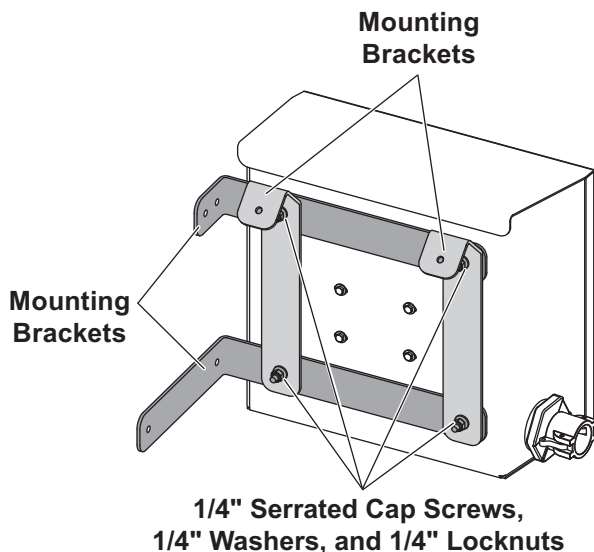


3. From the rear of the sill, remove the two bearing bolts and two rearmost gear box mounting bolts.
4. Use the hardware from Step 3 to install the spray bracket assembly.
5. Insert the barb elbow in the open end of the spray hose and secure using spring-type clamp.

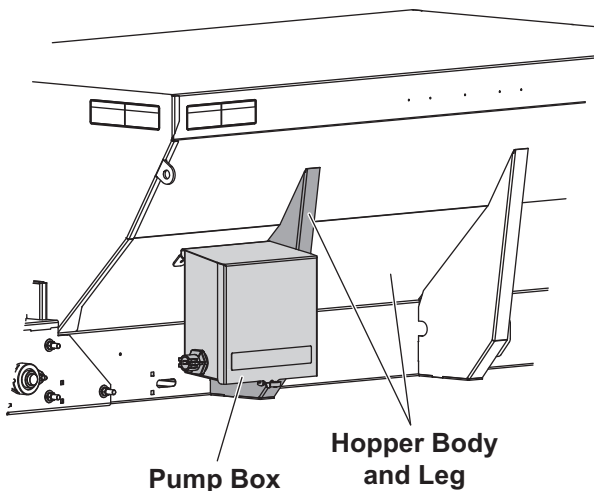
MOUNTING PUMP BOX & SPRAY BRACKET – STEEL HOPPER

MOUNTING THE PUMP BOX

1. Remove the pump box cover.
2. Position the four stainless steel mounting brackets and secure using the 1/4" serrated cap screws, 1/4" flat washers, and 1/4" locknuts.



3. Position the pump box against the hopper body and leg. Ensure that there is at least 3" between the pump box and truck bed.



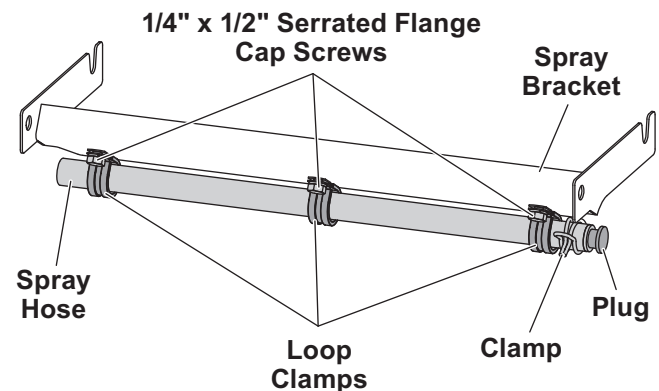
⚠ CAUTION

Before drilling any holes, check both sides of the material for any wires, fuel lines, fuel tanks, etc., that may be damaged by drilling.

4. Mark the location of the six mounting holes and use a 1/4" drill set to drill the holes.
5. Use 1/4" hardware to secure the pump box to the hopper body.

MOUNTING THE SPRAY BRACKET

1. Install the plug into the spray hose and install the clamp.
2. Use the three loop clamps and 1/4" x 1/2" serrated flange cap screws to install the spray hose onto the spray bracket. Verify that the slits face the spinner chute when installed.



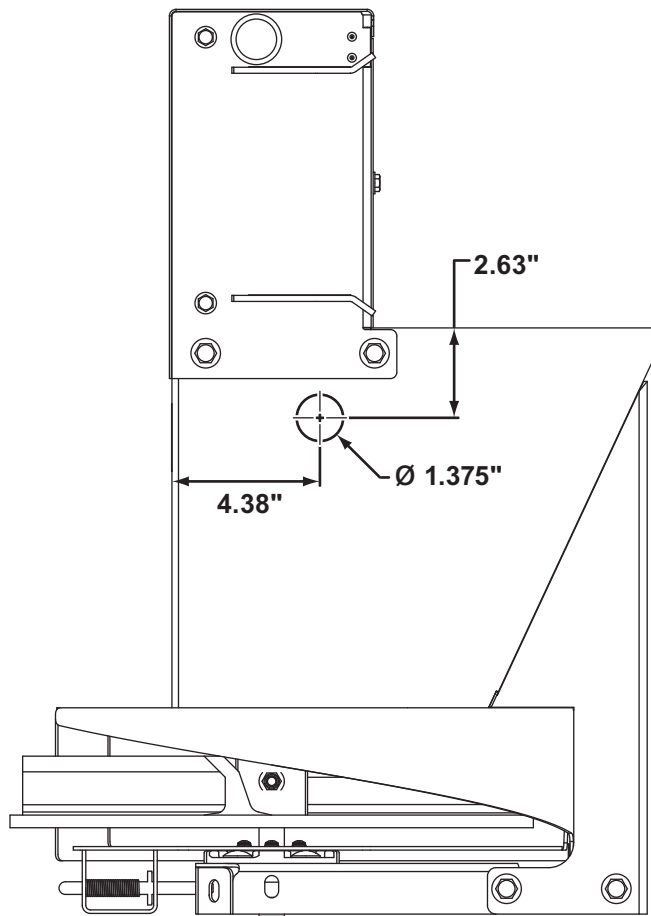
3. Install the 1/2" hose mender into the open end of the spray hose, and then attach 1/2" clear PVC hose to the other end of the hose mender. Secure using spring-type clamps.
4. Remove the chute from the unit.

MOUNTING PUMP BOX & SPRAY BRACKET – STEEL HOPPER

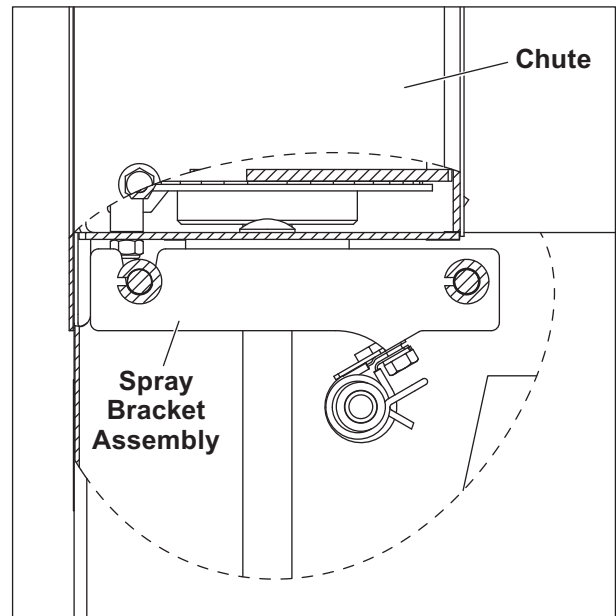
⚠ CAUTION

Before drilling any holes, check both sides of the material for any wires, fuel lines, fuel tanks, etc., that may be damaged by drilling.

5. Use a fine-tooth hole saw to drill a 1-3/8" hole in the chute in the position shown below.



6. Deburr the edges of the hole and then insert the rubber grommet.
7. Remove the four fasteners that attach the upper section of the chute to the lower. Insert 1/2" PVC hose through the grommet until the spray bracket assembly is in position. Replace the fasteners to secure the assembly.



NOTE: Periodically throughout the snow and ice control season, verify that mounting devices are secure.

MOUNTING THE TANKS (POLY & STEEL)

MOUNTING THE TANKS

NOTE: While handling the hopper, ensure that the hopper mounting bolts do not damage the pre-wet tanks.

If this is a new hopper spreader installation, follow the installation steps as outlined in the hopper Installation Instructions. Once the hopper has been located in the vehicle and the mounting holes have been made, remove the hopper from the vehicle. Ensure that the mounting bolts are in the mounting bar holes before installing the pre-wet tanks to the hopper.

If this hopper has been previously installed in the vehicle, remove the hopper from the vehicle. Ensure that the spreader mounting bolts are in the mounting bar holes before installing the pre-wet tanks to the hopper.

Once the tanks have been installed onto the hopper, place the hopper back into the vehicle and mount the hopper to the vehicle as described in the hopper spreader Installation Instructions.

DRILLING THE MOUNTING HOLES

1. Determine the desired tank configuration.

CAUTION

Before drilling holes, check to be sure that no vehicle wiring or other components could be damaged.

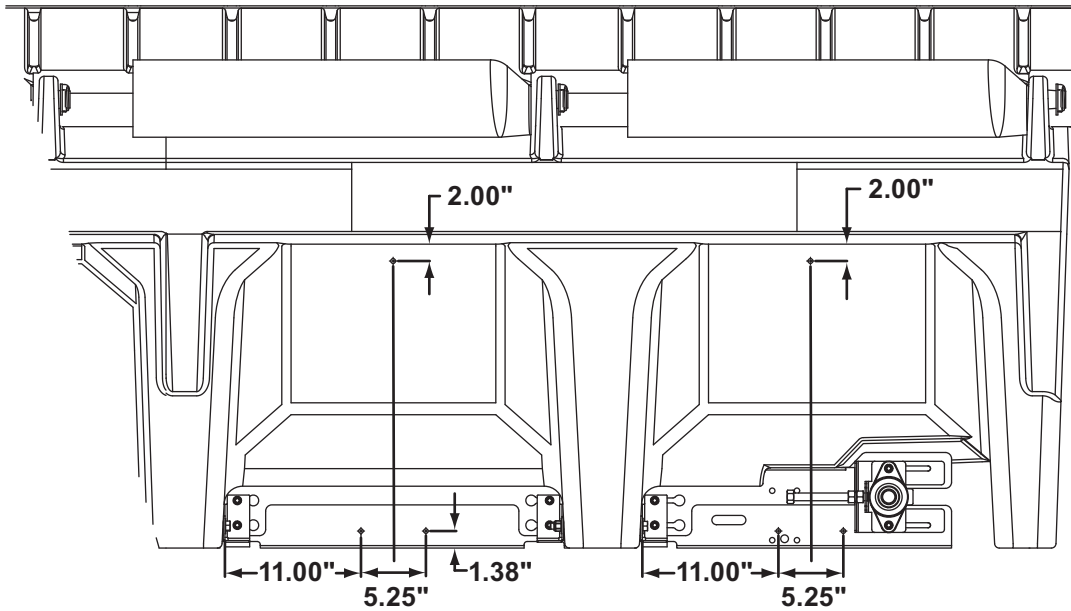
2. Use a 3/8" drill bit to drill three holes per tank. The upper holes are centered between the lower two holes and are measured from the bend along the hopper body, as shown in the diagrams on the following pages.

NOTE: For optimal weight distribution, mount the tanks on opposing sides of the vehicle.

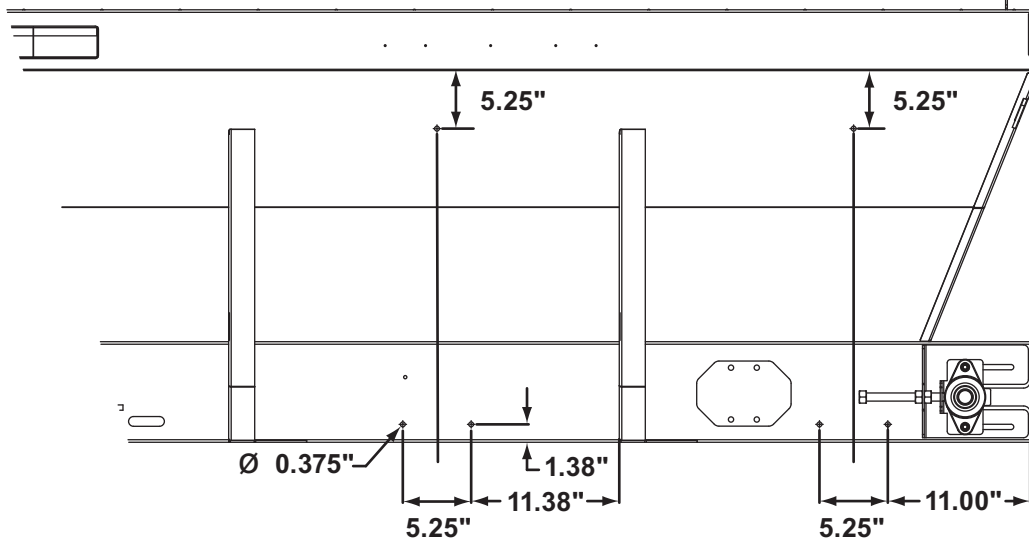
MOUNTING THE TANKS (POLY & STEEL)

MOUNTING HOLE LOCATIONS

25 Gallon Tanks – Poly Hoppers

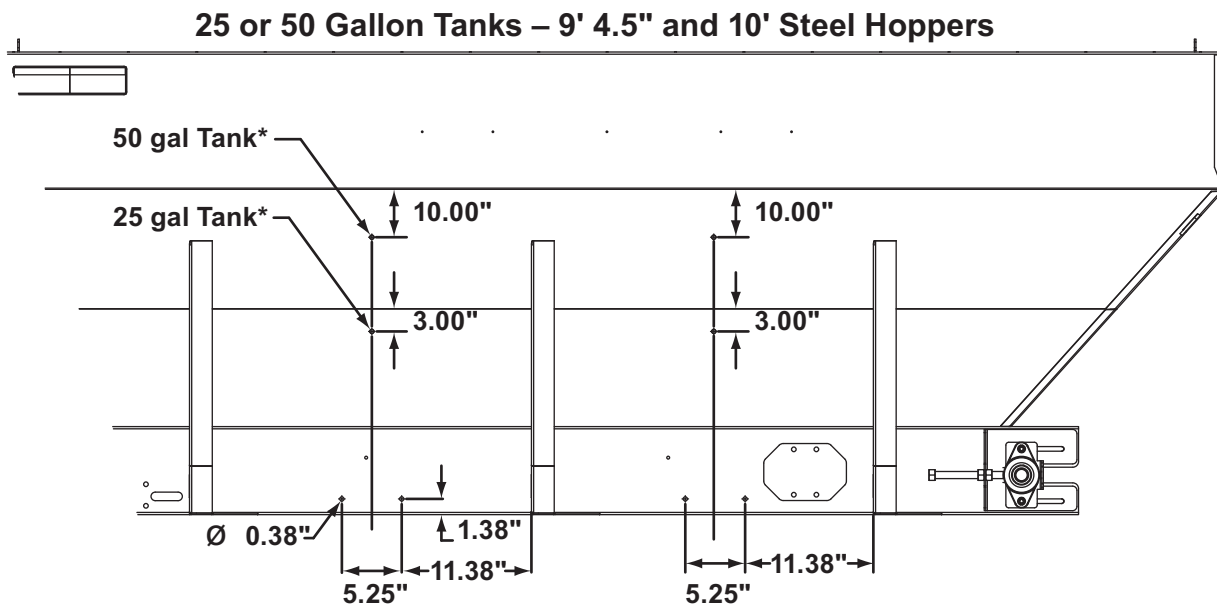
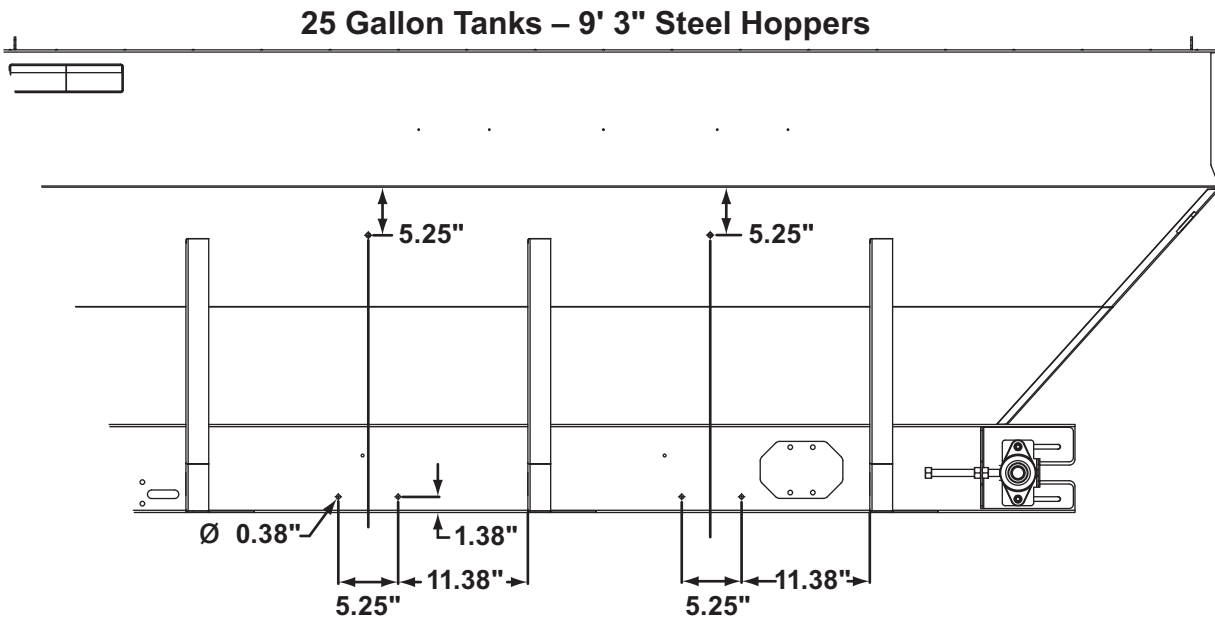


25 Gallon Tanks – 7' & 8' Steel Hoppers



MOUNTING THE TANKS (POLY & STEEL)

MOUNTING HOLE LOCATIONS



* Both the 25 & 50 gallon tanks can be installed on these hoppers.
Drill only one upper mounting hole per tank.

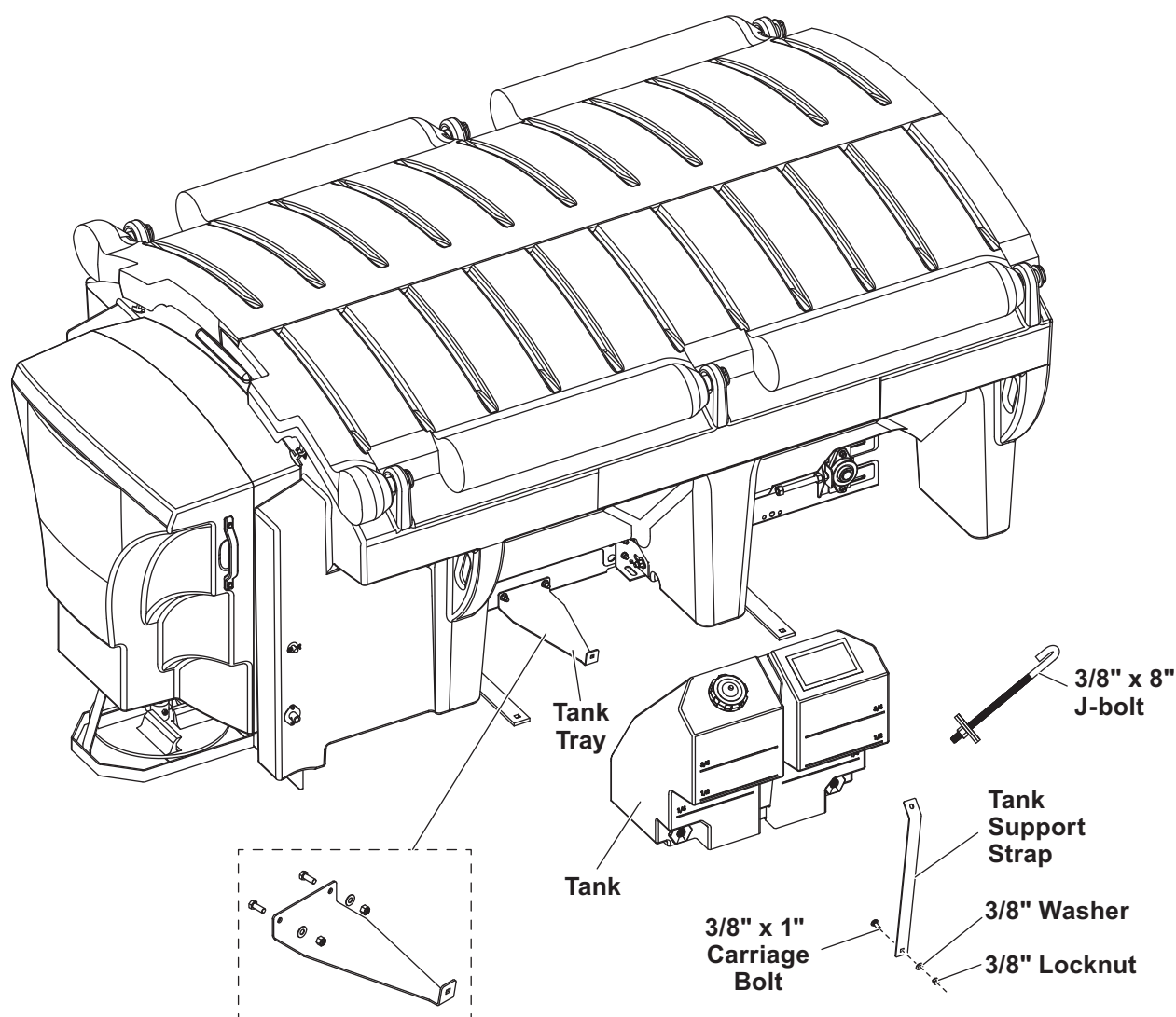
INSTALLING TANKS & STRAPS (POLY & STEEL)

INSTALLING TANKS & STRAPS

1. Use the stainless steel 3/8" cap screws, 3/8" washers, and 3/8" locknuts to install the tank trays to the sill. Verify that washers are used on both sides.
2. Insert a 3/8" x 1" carriage bolt into the tank tray facing outward.
3. Place the tank on the tank tray. Verify that the recess in the bottom of the tank is seated into the tray.
4. Use the 3/8" x 1" carriage bolt and 3/8" hardware to install the tank support strap.
5. Loop the 3/8" x 8" J-bolt through the tank support strap and insert it through the drilled hole in the hopper body.
6. Inside the hopper body, install two 2" fender washers per J-bolt and secure with a 3/8" locknut.

NOTE: Do not use power tools to tighten the J-bolts; use hand tools only. Overtightening can cause galling of the stainless steel threads.

7. Cut the excess bolt length from the J-bolt if desired.



PLUMBING THE SYSTEM – POLY HOPPER

Secure all connections using hose clamps.

- **1/2" Hoses:** Use spring-type clamps.
- **1" Hoses:** Use stainless band clamps.

Use the provided pipe sealant on all NPT fittings.

PLUMBING THE OUTPUT SIDE

⚠ CAUTION

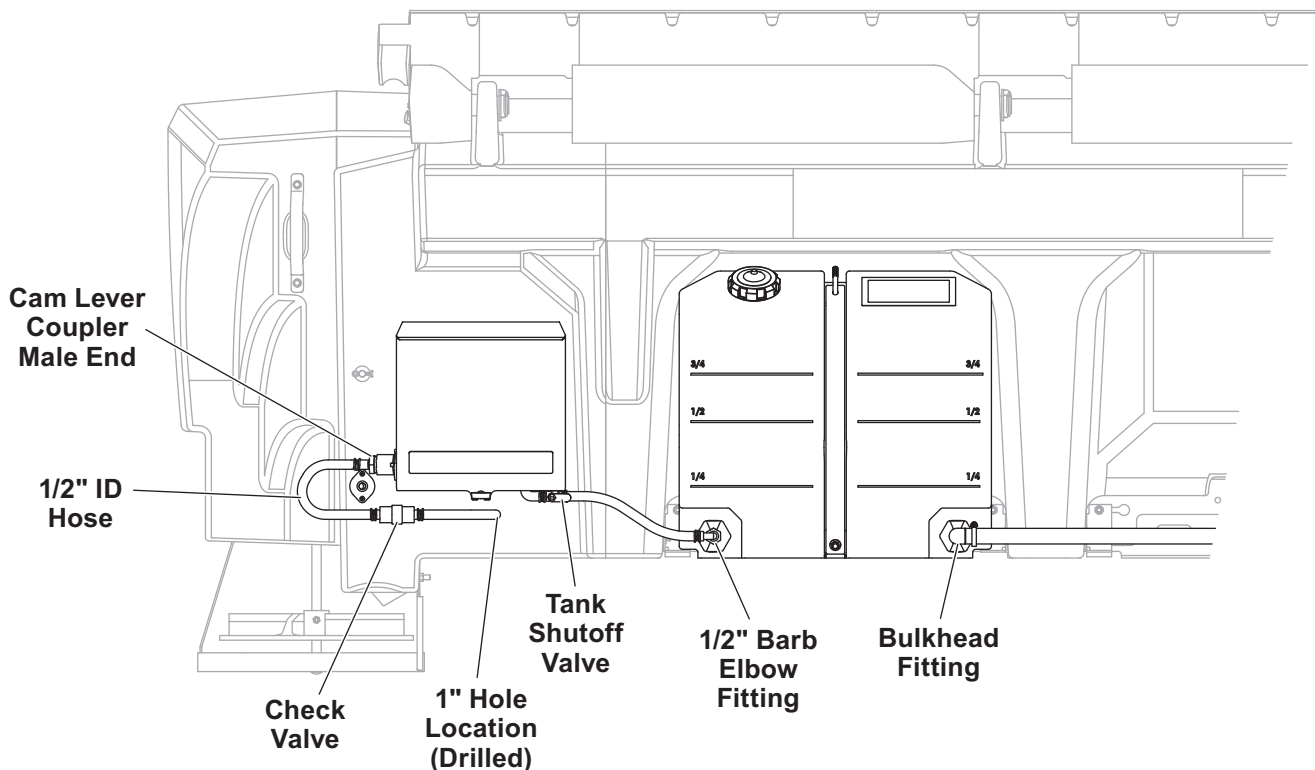
Before drilling any holes, check both sides of the material for any wires, fuel lines, fuel tanks, etc., that may be damaged by drilling.

1. Drill a 1" hole below the pump box through both walls of the poly hopper body leading into the sill compartment.
2. Insert the 1/2" ID hose through the hole and connect it to the barb elbow in the spray bracket. Use spring-type clamps to secure it to the barb elbow.
3. Add the check valve in line with the hose using two 1/2" barb fittings. Verify that the flow indicator arrow is pointing in the direction of flow from the pump box to the spray bracket.

4. Cut the hose to a suitable length to reach the quick coupler on the pump box. Install the cam lever coupler (male end) and connect it to the pump box.

PLUMBING THE INPUT SIDE

1. Use the 1/2" ID hose to connect the strainer in the pump box to the closest tank using a 1/2" barb elbow fitting.
2. Cut the hose and install the tank shutoff valve in a suitable location.
3. For a single tank, install the 3/4" plug into the bulkhead fitting.
4. To connect additional tanks, install a 1" barb elbow into the bulkhead and use a 1" hose to connect the tanks in series. Install the 3/4" plug in the final tank.
5. Verify that all bulkhead fittings are tightened to 20 ft-lb.



PLUMBING THE SYSTEM – STEEL HOPPER

Secure all connections using hose clamps.

- **1/2" Hoses:** Use spring-type clamps.
- **1" Hoses:** Use stainless band clamps.

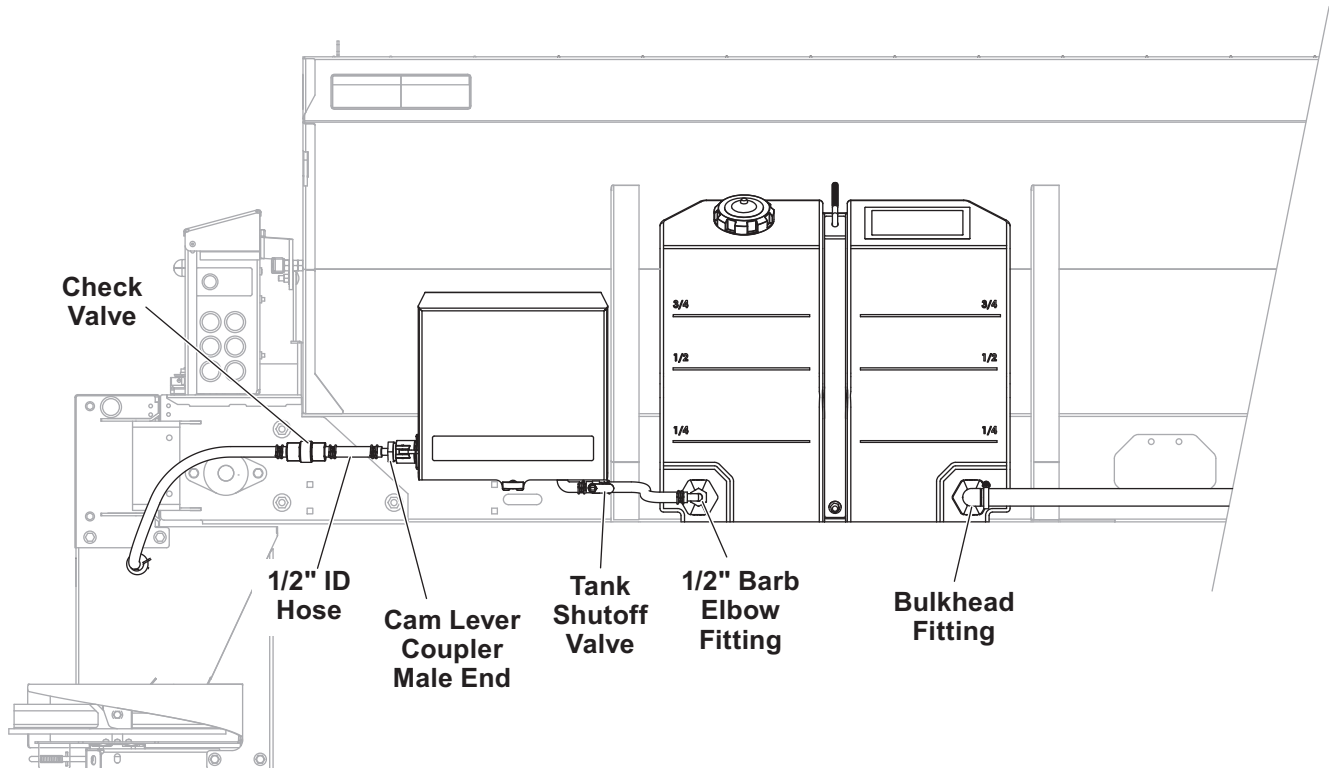
Use the provided pipe sealant on all NPT fittings.

PLUMBING THE OUTPUT SIDE

1. Connect the 1/2" ID hose to the hose mender in the spray bracket.
2. Add the check valve in line with the hose using two 1/2" barb fittings. Ensure that the flow indicator arrow is pointing in the direction of flow from the pump box to the spray bracket.
3. Cut the hose to a suitable length to reach the quick coupler on the pump box. Install the male cam lever coupler and connect it to the pump box.

PLUMBING THE INPUT SIDE

1. Use the 1/2" ID hose to connect the strainer in the pump box to the closest tank using a 1/2" barb elbow fitting. Pass the hose through the open grommet in the base of the pump box.
2. Cut the hose and install the tank shutoff valve in a suitable location.
3. For a single tank, install the 3/4" plug into the bulkhead fitting.
4. To connect additional tanks, install a 1" barb elbow into the bulkhead and use a 1" hose to connect the tanks in series. Install the 3/4" plug in the final tank.
5. Verify that all bulkhead fittings are tightened to 20 ft-lb.



WIRING & HARNESS INSTALLATION – POLY HOPPER

INSTALLING THE PUMP KIT

NOTE: Install a pre-wet accessory harness kit on poly hoppers with serial numbers ending in 78001, 78004, or 78007. The pre-wet accessory harness kit provides an ON/OFF switch to activate the pre-wet system from inside the vehicle.

To properly wire the full feature pump kit, follow these instructions and refer to the "Pre-Wet Harness Wiring Diagram" on page 25.

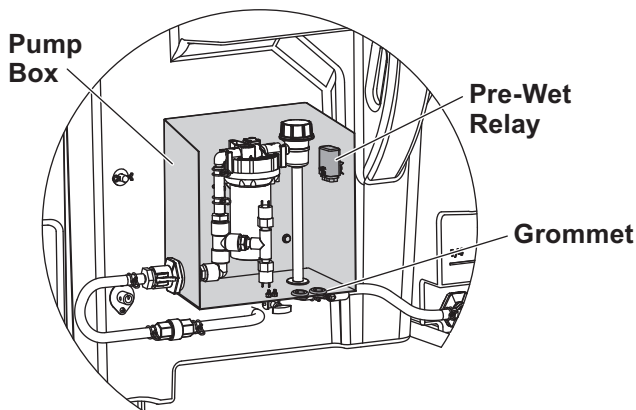
Install the Hopper-Side Harness

1. Install the full feature pump kit.
2. Remove the chute from the spreader.

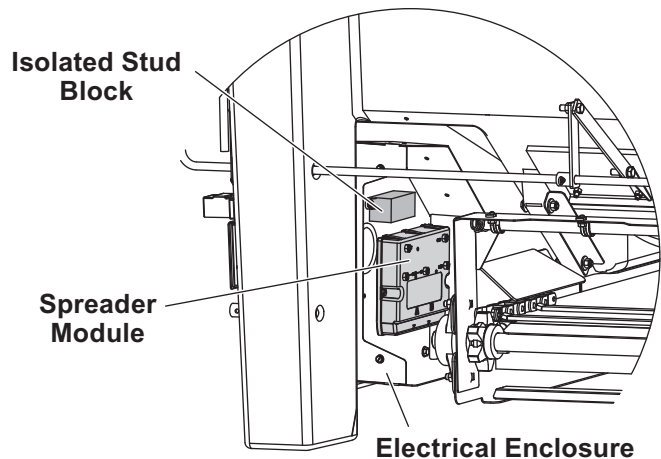
⚠ CAUTION

Before drilling any holes, check both sides of the material for any wires, fuel lines, fuel tanks, etc., that may be damaged by drilling.

3. Drill a 3/4" hole in the hopper's foot below the pump box and adjacent to/forward of the hole previously drilled for the spray hose, which runs from the pump box and through the hopper's foot.
4. Route the pre-wet relay assembly harness out of the pump box through the grommet installed in the slot at the bottom of the box, through the hole drilled in Step 3, and into the area where the conveyor motor is located.



5. Remove the cover from the hopper electrical enclosure located on the inside of the driver-side foot.
6. Route the pre-wet relay assembly harness with the conveyor motor cable assembly into the electrical enclosure. Use cable ties to attach the pre-wet relay assembly harness to the motor cable.
7. Remove the cover from the isolated stud block.
8. Attach the ring terminal connected to the red wire of the pre-wet harness to the POSITIVE (+) terminal of the isolated stud block.
9. Attach the ring terminal connected to the black wire of the pre-wet harness to the NEGATIVE (–) terminal of the isolated stud block.
10. Connect the male bullet terminal of the pre-wet wire assembly harness to the orange wire coming from the spreader module.



11. Reinstall the cover onto the isolated stud block and electrical enclosure.
12. Route the spreader-side cable assembly out of the pump box through the second grommet installed in the slot in the bottom of the box.
13. Secure all harnessing to prevent damage to the wires.

WIRING & HARNESS INSTALLATION – POLY HOPPER

Install the Vehicle-Side Harness

NOTE: Before beginning this installation, remove the **POSITIVE (+)** and **NEGATIVE (-)** battery cables from the vehicle battery.

1. Lay out a path for routing the vehicle battery cable from the passenger-side rear of the vehicle bed to the engine compartment. Be sure to avoid any hot, sharp, or moving parts of the truck.

NOTE: Routing may vary from vehicle to vehicle.

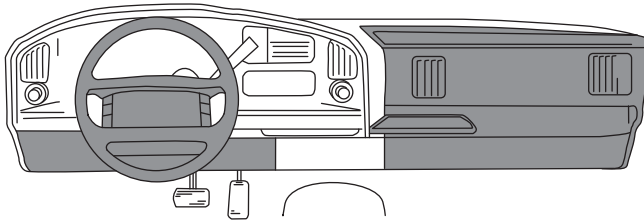
2. Route the vehicle battery cable using the path laid out in Step 1 and secure to the vehicle using cable ties. Verify that the cable assembly cannot drop onto the road when it is disconnected from the spreader.
3. Wiring installation is complete.

Install the Cab Cable Assembly

When installing the cab cable assembly, choose a location that is within easy reach of the vehicle operator without restricting access to vehicle controls or vehicle instrumentation. Do not mount the control in areas prohibited by the vehicle manufacturer for crashworthiness. See the vehicle's body builder's book, owner's manual, or service manual for details. The shaded areas in the illustration below show the most commonly restricted areas.

⚠ CAUTION

Do not alter, modify, or install additional components in shaded areas shown below. Failure to comply may interfere with airbag deployment or cause injury to operator in an accident.



1. Lay out a path for routing the cab cable assembly from where it will be connected to the vehicle battery cable into the cab of the vehicle.

NOTE: The path may follow already existing spreader control harnessing.

2. Identify a convenient location for the pre-wet control that can be reached by the cab cable assembly.

⚠ CAUTION

Before drilling any holes, check both sides of the material for any wires, fuel lines, fuel tanks, etc., that may be damaged by drilling.

3. If necessary, drill a 5/8" hole in the fire wall so the cab cable assembly can reach the desired pre-wet control location.
4. Insert the supplied rubber grommet into the hole.
5. Route the cab cable assembly into the cab as laid out in Step 1 and use cable ties to secure to the vehicle.
6. Plug the cab cable assembly into the vehicle battery cable.

WIRING & HARNESS INSTALLATION – POLY HOPPER

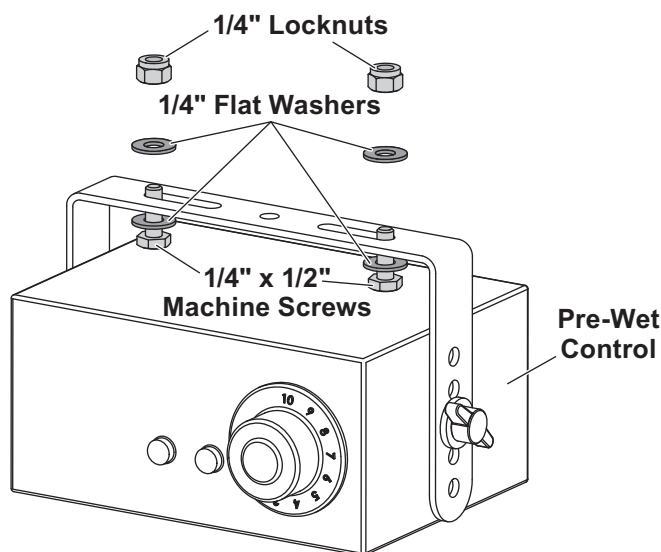
Install the Pre-Wet Control

1. Position the pre-wet control at the selected location in the vehicle cab.

⚠ CAUTION

Before drilling any holes, check both sides of the material for any wires, fuel lines, fuel tanks, etc., that may be damaged by drilling.

2. Use the bail of the control as a template to drill two 9/32" holes that align with the mounting holes in the bail.
3. Use the two 1/4" x 1/2" machine screws, 1/4" flat washers, and 1/4" locknuts to attach the pre-wet control.



4. Connect both of the cab cable assembly connectors to the connectors at the rear of the pre-wet control.

NOTE: Use dielectric grease on all electrical connections.

WIRING & HARNESS INSTALLATION – STEEL SPREADER (GAS)

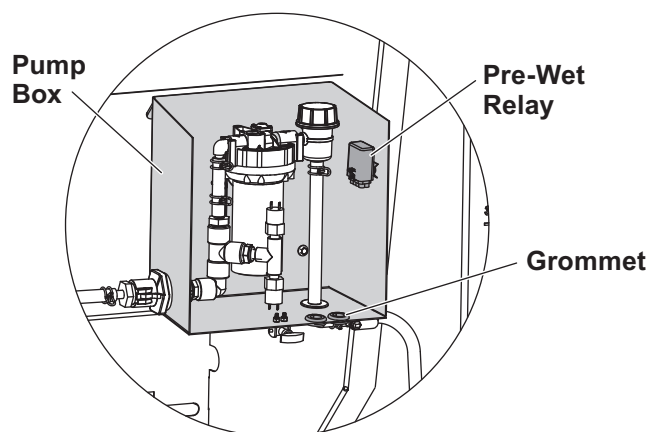
INSTALLING THE PUMP KIT

To properly wire the full feature pump kit, follow these instructions and refer to the "Pre-Wet Harness Wiring Diagram" on page 25.

Install the Hopper-Side Harness

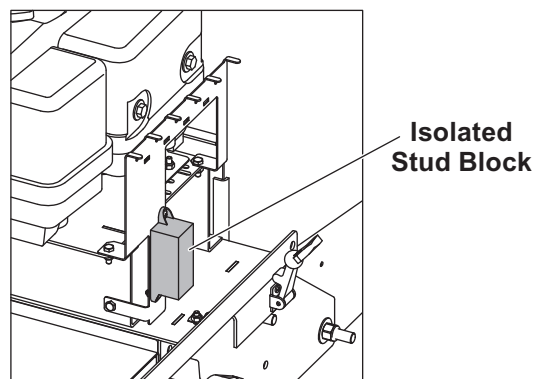
NOTE: The accessory harness and enclosure kit must be installed before installing the full feature pump kit.

1. Install the full feature pump kit.
2. Open the engine hood.
3. Route the pre-wet relay assembly harness out to the pump box, through the grommet installed in the slot at the bottom of the box, and into the engine compartment where the isolated stud block is located.



4. Remove the cover from the isolated stud block.
5. Attach the ring terminal connected to the red wire of the pre-wet harness to the POSITIVE (+) terminal of the isolated stud block.
6. Attach the ring terminal connected to the black wire of the pre-wet harness to the NEGATIVE (–) terminal of the isolated stud block.

7. Connect the male bullet terminal of the pre-wet wire assembly harness to the orange wire coming from the hopper-side accessory harness, previously installed with the accessory harness and enclosure kit.
8. Reinstall the cover onto the isolated stud block.



9. Route the spreader-side cable assembly out of the pump box through the second grommet installed in the slot at the bottom of the box.
10. Secure all harnessing to prevent damage to the wires.

Install the Vehicle-Side Harness

NOTE: Before beginning this installation, remove the POSITIVE (+) and NEGATIVE (–) battery cables from the vehicle battery.

1. Lay out a path for routing the vehicle battery cable from the passenger-side rear of the vehicle bed to the engine compartment. Be sure to avoid any hot, sharp, or moving parts of the truck.

NOTE: Routing may vary from vehicle to vehicle.

2. Route the vehicle battery cable using the path laid out in Step 1 and secure to the vehicle using cable ties. Verify that the cable assembly cannot drop onto the road when it is disconnected from the spreader.
3. Wiring installation is complete.

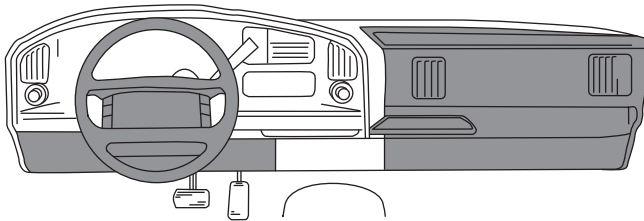
WIRING & HARNESS INSTRUCTIONS – STEEL SPREADER (GAS)

Install the Cab Cable Assembly

When installing the cab cable assembly, choose a location that is within easy reach of the vehicle operator without restricting access to vehicle controls or vehicle instrumentation. Do not mount the control in areas prohibited by the vehicle manufacturer for crashworthiness. See the vehicle's body builder's book, owner's manual, or service manual for details. The shaded areas in the illustration below show the most commonly restricted areas.

⚠ CAUTION

Do not alter, modify, or install additional components in shaded areas shown below. Failure to comply may interfere with airbag deployment or cause injury to operator in an accident.



1. Lay out a path for routing the cab cable assembly from where it will be connected to the vehicle battery cable into the cab of the vehicle.

NOTE: The path may follow already existing spreader control harnessing.

2. Identify a convenient location for the pre-wet control that can be reached by the cab cable assembly.

⚠ CAUTION

Before drilling any holes, check both sides of the material for any wires, fuel lines, fuel tanks, etc., that may be damaged by drilling.

3. If necessary, drill a 5/8" hole in the fire wall so the cab cable assembly can reach the desired pre-wet control location.
4. Insert the supplied rubber grommet into the hole.

5. Route the cab cable assembly into the cab as laid out in Step 1 and use cable ties to secure to the vehicle.
6. Plug the cab cable assembly into the vehicle battery cable.

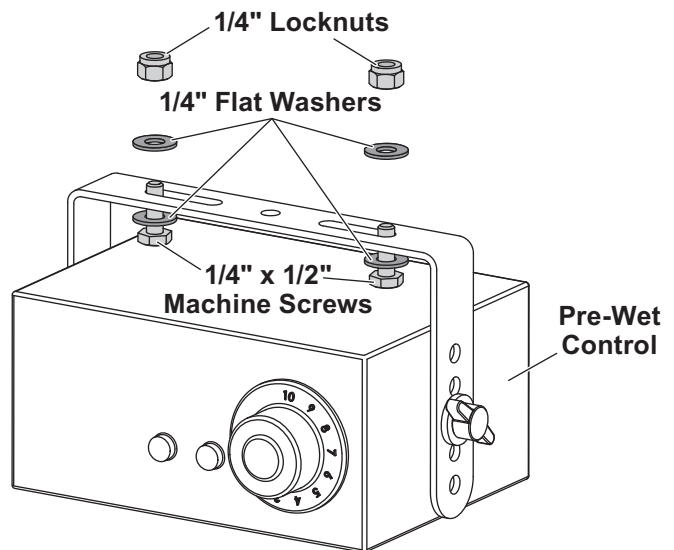
Install the Pre-Wet Control

1. Position the pre-wet control at the selected location in the vehicle cab.

⚠ CAUTION

Before drilling any holes, check both sides of the material for any wires, fuel lines, fuel tanks, etc., that may be damaged by drilling.

2. Use the bail of the control as a template to drill two 9/32" holes that align with the mounting holes in the bail.
3. Use the two 1/4" x 1/2" machine screws, 1/4" flat washers, and 1/4" locknuts to attach the pre-wet control.



4. Connect both of the cab cable assembly connectors to the connectors at the rear of the pre-wet control.

NOTE: Use dielectric grease on all electrical connections.

WIRING & HARNESS INSTALLATION – STEEL SPREADER (HYDRAULIC)

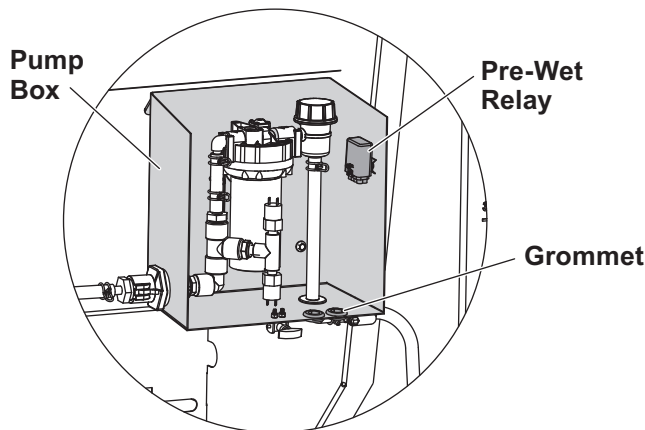
INSTALL THE FULL FEATURE PUMP KIT

To properly wire the full feature pump kit, follow this recommended installation sequence and refer to the "Pre-Wet Harness Wiring Diagram" on page 25.

Install the Hopper-Side Harness

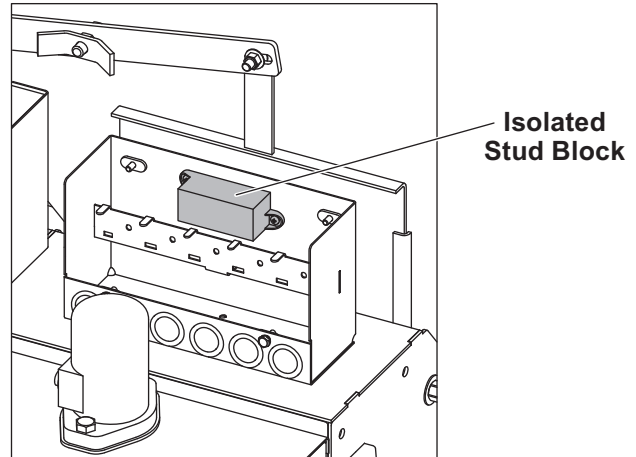
NOTE: The accessory harness and enclosure kit must be installed before installing the full feature pump kit.

1. Install the full feature pump kit.
2. Remove the cover from the accessory enclosure.
3. Route the pre-wet relay assembly harness out to the pump box through the grommet installed in the slot at the bottom of the box and into the electrical enclosure through one of the unused break-thru plugs.



4. Remove the cover from the isolated stud block.
5. Attach the ring terminal connected to the red wire of the pre-wet harness to the POSITIVE (+) terminal of the isolated stud block.
6. Attach the ring terminal connected to the black wire of the pre-wet harness to the NEGATIVE (–) terminal of the isolated stud block.

7. Connect the male bullet terminal of the pre-wet wire assembly harness to the orange wire coming from the hopper-side accessory harness, previously installed with the accessory harness and enclosure kit.



8. Reinstall the covers onto the isolated stud block and the accessory enclosure.
9. Route the spreader-side cable assembly out of the pump box through the second grommet installed in the slot at the bottom of the box.
10. Secure all harnessing to prevent damage to the wires.

Install the Vehicle-Side Harness

NOTE: Before beginning this installation, remove the POSITIVE (+) and NEGATIVE (–) battery cables from the vehicle battery.

1. Lay out a path for routing the vehicle battery cable from the passenger-side rear of the vehicle bed to the engine compartment. Be sure to avoid any hot, sharp, or moving parts of the truck.

NOTE: Routing may vary from vehicle to vehicle.

2. Route the vehicle battery cable using the path laid out in Step 1 and secure to the vehicle using cable ties. Verify that the cable assembly cannot drop onto the road when it is disconnected from the spreader.
3. Wiring installation is complete.

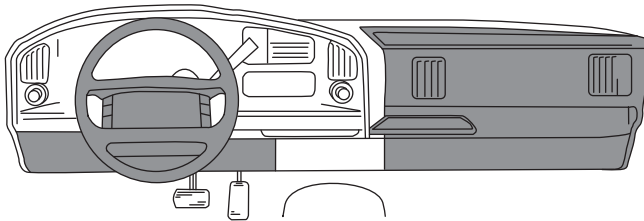
WIRING & HARNESS INSTALLATION – STEEL SPREADER (HYDRAULIC)

Install the Cab Cable Assembly

When installing the cab cable assembly, choose a location that is within easy reach of the vehicle operator without restricting access to vehicle controls or vehicle instrumentation. Do not mount the control in areas prohibited by the vehicle manufacturer for crashworthiness. See the vehicle's body builder's book, owner's manual, or service manual for details. The shaded areas in the illustration below show the most commonly restricted areas.

⚠ CAUTION

Do not alter, modify, or install additional components in shaded areas shown below. Failure to comply may interfere with airbag deployment or cause injury to operator in an accident.



1. Lay out a path for routing the cab cable assembly from where it will be connected to the vehicle battery cable into the cab of the vehicle.

NOTE: The path may follow already existing spreader control harnessing.

2. Identify a convenient location for the pre-wet control that can be reached by the cab cable assembly.

⚠ CAUTION

Before drilling any holes, check both sides of the material for any wires, fuel lines, fuel tanks, etc., that may be damaged by drilling.

3. If necessary, drill a 5/8" hole in the fire wall so the cab cable assembly can reach the desired pre-wet control location.
4. Insert the supplied rubber grommet into the hole.

5. Route the cab cable assembly into the cab as laid out in Step 1 and use cable ties to secure to the vehicle.
6. Plug the cab cable assembly into the vehicle battery cable.

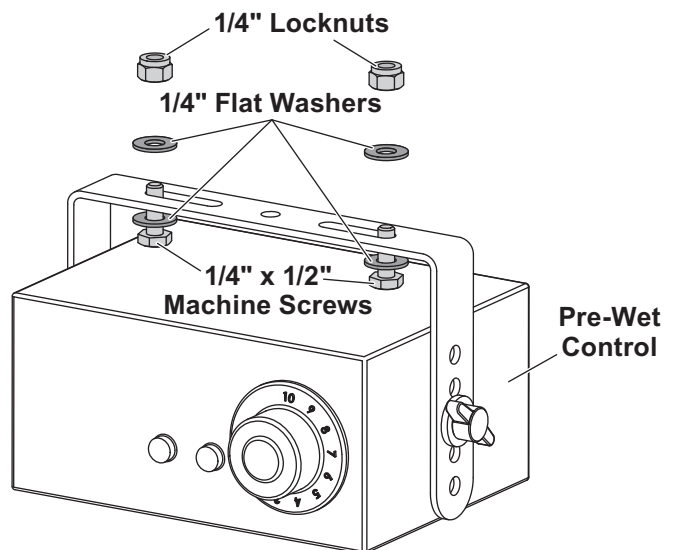
Install the Pre-Wet Control

1. Position the pre-wet control at the selected location in the vehicle cab.

⚠ CAUTION

Before drilling any holes, check both sides of the material for any wires, fuel lines, fuel tanks, etc., that may be damaged by drilling.

2. Use the bail of the control as a template to drill two 9/32" holes that align with the mounting holes in the bail.
3. Use the two 1/4" x 1/2" machine screws, 1/4" flat washers, and 1/4" locknuts to attach the pre-wet control.



4. Connect both of the cab cable assembly connectors to the connectors at the rear of the pre-wet control.

NOTE: Use dielectric grease on all electrical connections.

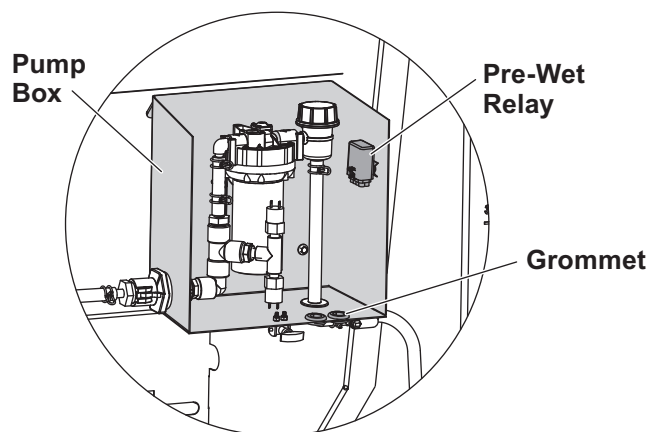
WIRING & HARNESS INSTALLATION – STEEL SPREADER (ELECTRIC)

INSTALLING THE PUMP KIT

To properly wire the full feature pump kit, follow this recommended installation sequence and refer to the "Pre-Wet Harness Wiring Diagram" on page 25.

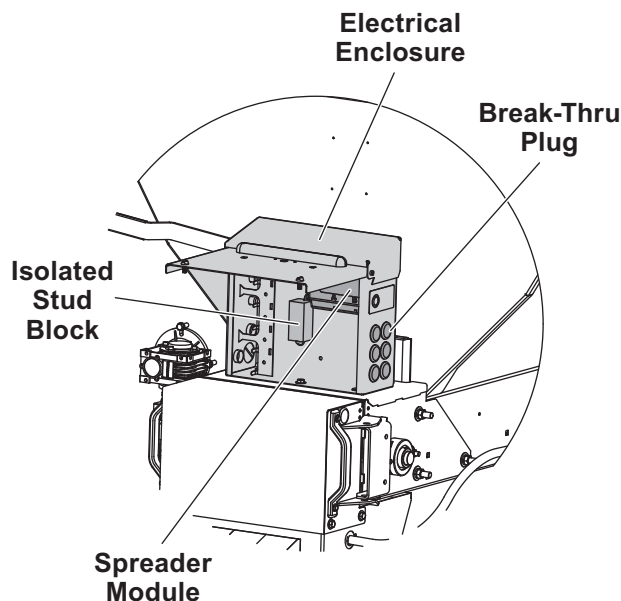
Install the Hopper-Side Harness

1. Install the full feature pump kit.
2. Remove the cover from the electrical enclosure.
3. Route the pre-wet relay assembly harness out of the pump box through the grommet installed in the slot at the bottom of the box and into the electrical enclosure through one of the unused break-thru plugs.



4. Remove the cover from the isolated stud block.
5. Attach the ring terminal connected to the red wire of the pre-wet harness to the POSITIVE (+) terminal of the isolated stud block.
6. Attach the ring terminal connected to the black wire of the pre-wet harness to the NEGATIVE (–) terminal of the isolated stud block.
7. Connect the male bullet terminal of the pre-wet wire assembly harness to the orange wire coming from the spreader module.

8. Reinstall the covers onto the isolated stud block and the electrical enclosure.



9. Route the spreader-side cable assembly out of the pump box through the second grommet installed in the slot at the bottom of the box.
10. Secure all harnessing to prevent damage to the wires.

Install the Vehicle-Side Harness

NOTE: Before beginning this installation, remove the POSITIVE (+) and NEGATIVE (–) battery cables from the vehicle battery.

1. Lay out a path for routing the vehicle battery cable from the passenger-side rear of the vehicle bed to the engine compartment. Be sure to avoid any hot, sharp, or moving parts of the truck.

NOTE: Routing may vary from vehicle to vehicle.

2. Route the vehicle battery cable using the path laid out in Step 1 and secure to the vehicle using cable ties. Verify that the cable assembly cannot drop onto the road when it is disconnected from the spreader.
3. Wiring installation is complete.

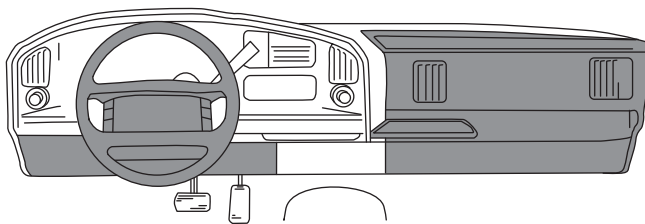
WIRING & HARNESS INSTALLATION – STEEL SPREADER (ELECTRIC)

Install the Cab Cable Assembly

When installing the cab cable assembly, choose a location that is within easy reach of the vehicle operator without restricting access to vehicle controls or vehicle instrumentation. Do not mount the control in areas prohibited by the vehicle manufacturer for crashworthiness. See the vehicle's body builder's book, owner's manual, or service manual for details. The shaded areas in the illustration below show the most commonly restricted areas.

⚠ CAUTION

Do not alter, modify, or install additional components in shaded areas shown below. Failure to comply may interfere with airbag deployment or cause injury to operator in an accident.



1. Lay out a path for routing the cab cable assembly from where it will be connected to the vehicle battery cable into the cab of the vehicle.

NOTE: The path may follow already existing spreader control harnessing.

2. Identify a convenient location for the pre-wet control that can be reached by the cab cable assembly.

⚠ CAUTION

Before drilling any holes, check both sides of the material for any wires, fuel lines, fuel tanks, etc., that may be damaged by drilling.

3. If necessary, drill a 5/8" hole in the fire wall so the cab cable assembly can reach the desired pre-wet control location.
4. Insert the supplied rubber grommet into the hole.

5. Route the cab cable assembly into the cab as laid out in Step 1 and use cable ties to secure to the vehicle.
6. Plug the cab cable assembly into the vehicle battery cable.

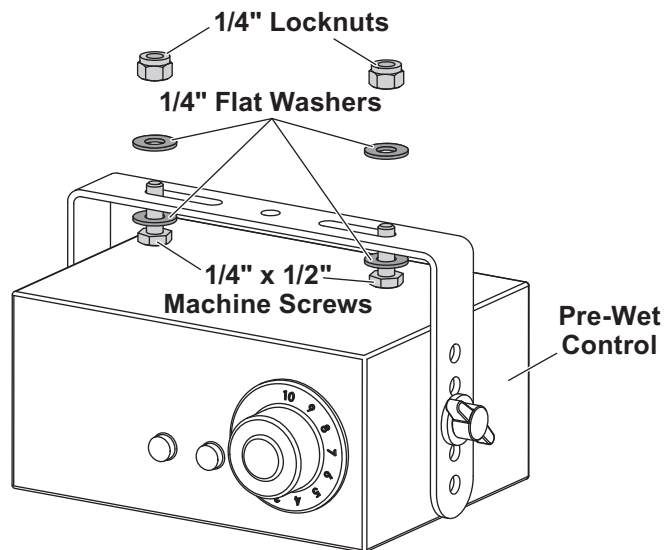
Install the Pre-Wet Control

1. Position the pre-wet control at the selected location in the vehicle cab.

⚠ CAUTION

Before drilling any holes, check both sides of the material for any wires, fuel lines, fuel tanks, etc., that may be damaged by drilling.

2. Use the bail of the control as a template to drill two 9/32" holes that align with the mounting holes in the bail.
3. Use the two 1/4" x 1/2" machine screws, 1/4" flat washers, and 1/4" locknuts to attach the pre-wet control.

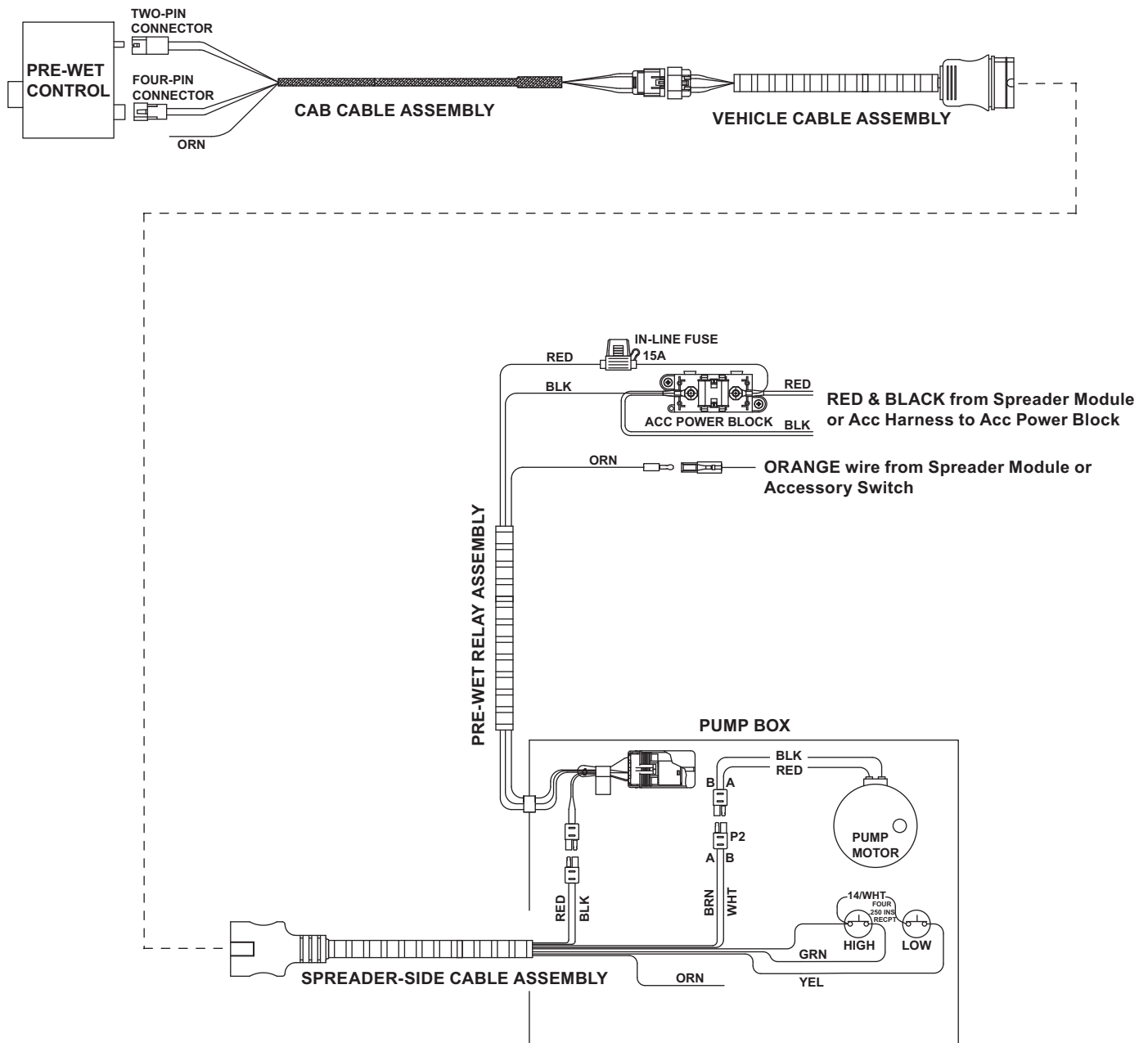


4. Connect both of the cab cable assembly connectors to the connectors at the rear of the pre-wet control.

NOTE: Use dielectric grease on all electrical connections.

WIRING & HARNESS INSTALLATION (POLY & STEEL)

PRE-WET HARNESS WIRING DIAGRAM



OPERATING INSTRUCTIONS (POLY & STEEL)

ADJUSTING THE FLOW

The following table shows the flow rates for the full feature system. These values are approximate and can vary based on system configuration, age of components, brine composition, and other factors.

The full feature system uses an in-cab control to control the flow of the pump. Use the "Rate" dial to adjust the flow of the system.

Full Feature Flow Rates	
Rate	gal/min
1	0.13
2	0.5
3	0.88
4	1.25
5	1.63
6	1.88
7	2.13
8	2.5
9	2.63
10	2.63

MANUALLY CALIBRATING THE FLOW

To obtain a more precise measurement of the flow rate, follow the steps below.

1. Adjust the pre-wet system to the desired setting.
2. Disconnect the 1/2" hose connected to the spray hose and place it in a 5-gallon bucket.
3. Turn on the pre-wet system and time how long it takes (in seconds) for the system to fill the 5-gallon bucket.
4. Determine the flow in gal/min by dividing 300 by the results from Step 3 (in seconds).

Example:

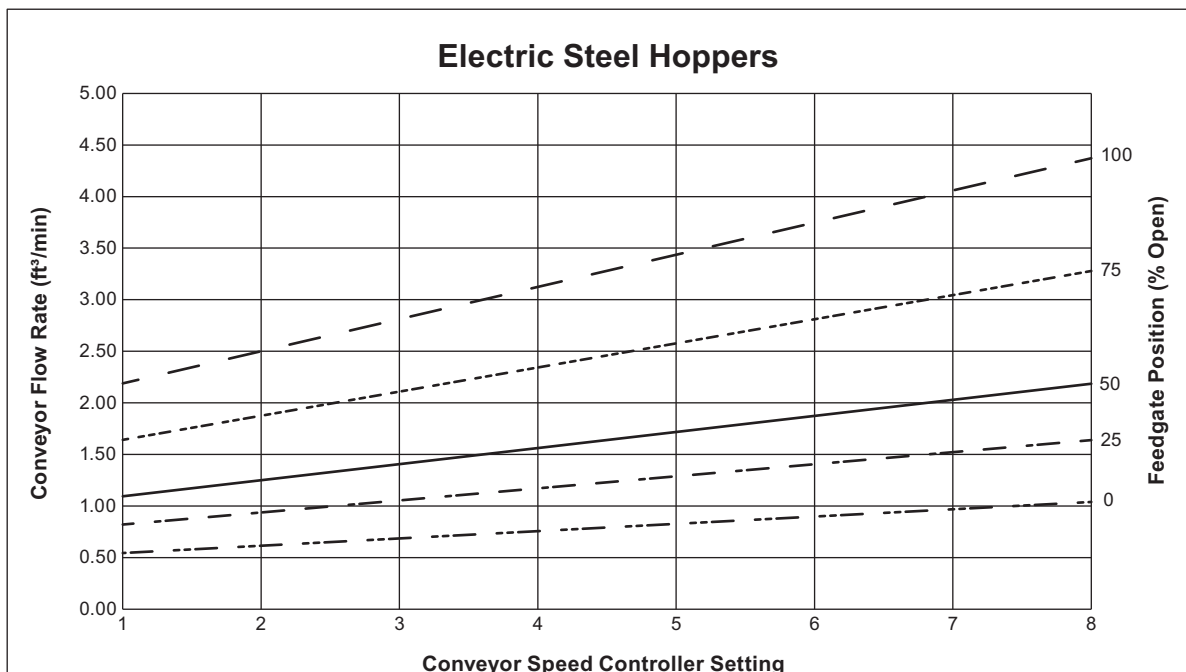
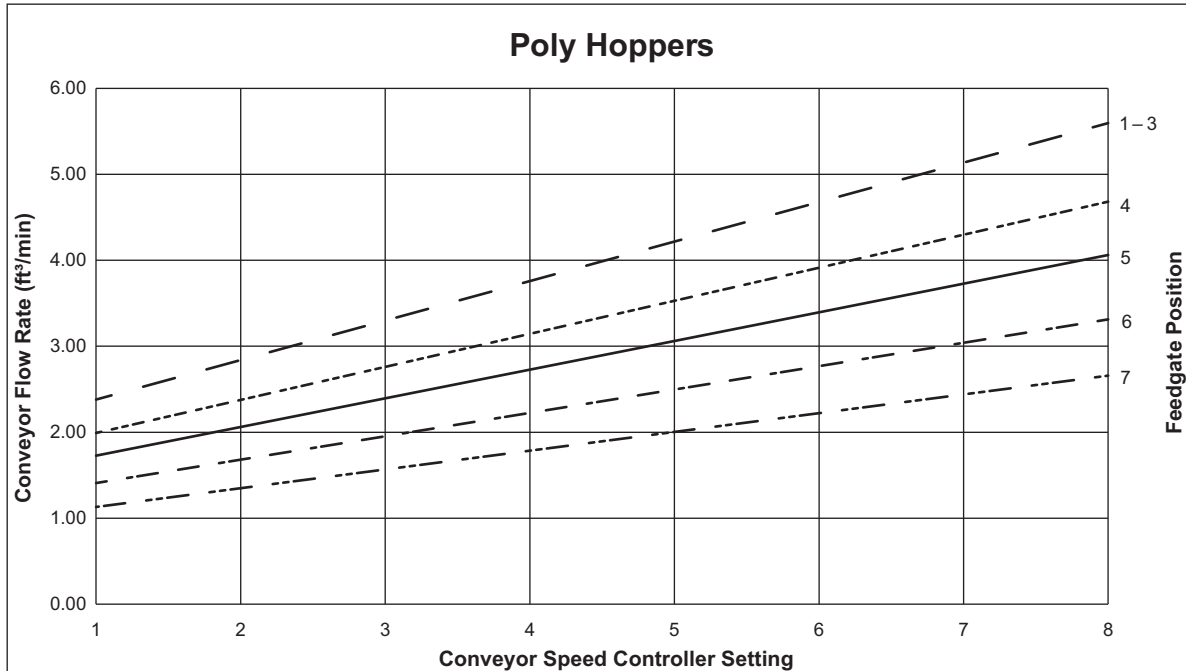
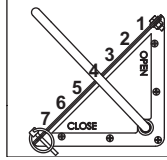
It took 165 seconds to fill the bucket.

$$\frac{300}{165} = 1.82 \text{ gal/min}$$

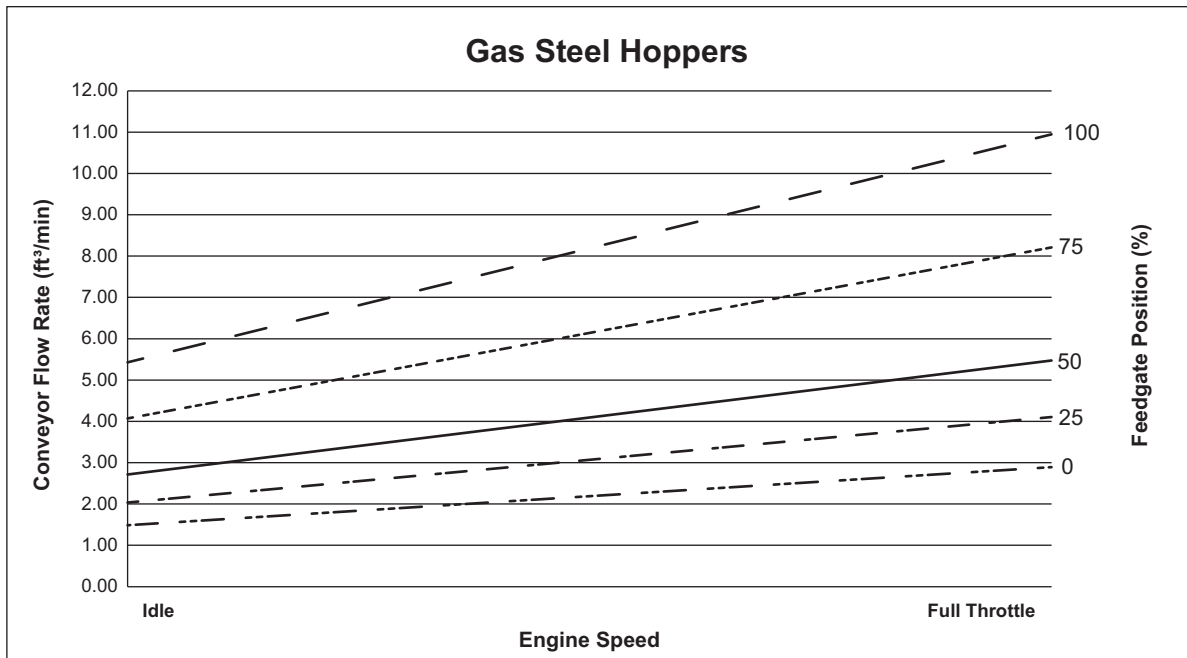
OPERATING INSTRUCTIONS (POLY & STEEL)

APPLICATION RATES

The following application charts show the approximate material delivery rate for each hopper spreader model. Use these charts to determine the conveyor delivery rate of de-icing salt, which is based on the conveyor speed and feed gate setting.



OPERATING INSTRUCTIONS (POLY & STEEL)



After the conveyor delivery rate has been determined, use the following table to determine the optimal flow rate for the pre-wet system.

NOTE: This value may vary depending on de-icing chemicals used and weather conditions. Consult the manufacturer's recommended application rates. Gallons per ton refers to the amount of pre-wetting agent applied per ton of de-icing salt.

Optimal Flow Rate

Delivery Flow Rate (ft³/min)	Gallons per Ton			
	6	8	10	12
0.5	0.11	0.15	0.19	0.22
1	0.22	0.30	0.37	0.44
1.5	0.33	0.44	0.56	0.67
2	0.44	0.59	0.74	0.89
2.5	0.56	0.74	0.93	1.11
3	0.67	0.89	1.11	1.33
3.5	0.78	1.04	1.30	1.56
4	0.89	1.19	1.48	1.78
4.5	1.00	1.33	1.67	2.00
5	1.11	1.48	1.85	2.22
5.5	1.22	1.63	2.04	2.44
6	1.33	1.78	2.22	2.67
7	1.56	2.07	2.59	—
8	1.78	2.37	—	—
9	2.00	2.67	—	—
10	2.22	—	—	—
11	2.44	—	—	—
12	2.67	—	—	—

OPERATING INSTRUCTIONS (POLY & STEEL)

Applications Example: *An electric steel hopper is running at speed 7 with the feed gate at 75% open. The desired pre-wet rate is 8 gallons per ton.*

Use the following procedure to determine the optimal flow rate in gal/min.

1. On the Electric Steel Hopper Application Rate chart on page 27, find the point where the 7 on the Conveyor Speed axis and the 75% line on the Feedback Position axis intersect.
2. Follow the line across to the Conveyor Flow Rate axis. The delivery flow rate is 3.0 ft³/min.
3. On the Optimal Flow Rate table on page 28, find the Delivery Flow Rate value (previously determined in Step 2 (3.0 ft³/min) and the Pre-Wet Rate (8 gal/min).
4. Find the point at which these two values meet on the chart. This box shows the Optimal Flow Rate for this pre-wet application (0.89 gal/min).
5. Adjust the system to 0.89 gal/min. For details, refer to "Adjusting the Flow" on page 26.

ALIGNING THE SPRAY HOSE

Poly Hoppers: Position the hose to spray on the de-icing material as it leaves the conveyor, but not directly spraying on the drive train components, as this can cause premature wear and corrosion.

Steel Hoppers: Position the rubber spray hose to spray on the de-icing material as it contacts the spinner.

Follow this procedure to adjust the position of the spray hose.

1. Disconnect and remove the chute.
2. Loosen the three 1/4" fasteners that secure the spray hose.
3. Twist the hose to the desired angle and retighten the three 1/4" fasteners.

NOTE: The hose has a line painted along the discharge hole to indicate the spray angle.

4. Start the pre-wet system to verify the spray angle. Make additional adjustments as needed.
5. Reinstall the chute.

MAINTENANCE

PERIODIC MAINTENANCE

- Wash unit after each use to prevent material build-up and corrosion.
- Use dielectric grease on all electrical connections to prevent corrosion each time power or signal plugs are disconnected.
- Inspect unit for damage, such as broken, worn, or bent parts.
- Inspect all tubing, hoses, and harnesses for cracks and leaks.
- Clean the brine filter as needed. Close the shut-off valve and access the filter by unscrewing the top cap, then unscrewing the filter cover.
- Retighten bolts, screws, and other connections after first use and as needed.

CLEANING

- Clean the unit as desired. When pressure washing motor enclosure area, keep spray at least 36" away from motor enclosures.
- Use caution if you are flushing the pumping system with water as it will accumulate in the valves and can cause damage if the water inside freezes. Use antifreeze if unit is to be stored in freezing temperatures.

END OF SEASON AND STORAGE

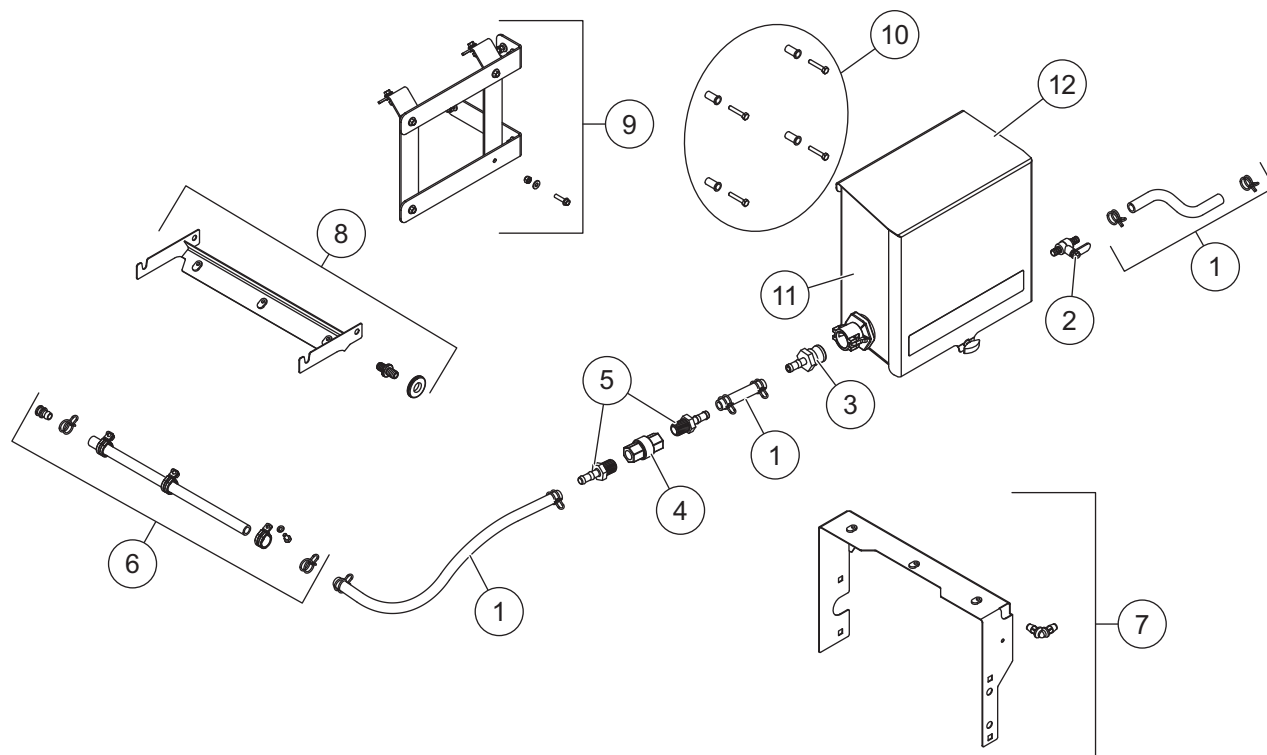
- Before long periods of storage, flush out the tanks and pumping system to remove salt build-up and prevent corrosion.
- Do not leave unused material in the unit for a prolonged period of time.

TROUBLESHOOTING GUIDE

Problem	Possible Cause	Suggested Solution
Tank Empty light is on but tank is not empty.	1. Strainer is clogged.	1. Clean the strainer.
	2. Feed line is clogged.	2. Remove the feed line and clear out the clog.
	3. Pump seized.	3. Replace the pump.
	4. Tank valve is closed.	4. Open the tank valve.
High psi light is on.	1. Spray hose is clogged.	1. Clean spray hose with fresh water.
	2. Spray line is clogged.	2. Remove the spray line and clear out the clog.
	3. Check valve is on backwards.	3. Reverse the check valve.
Pump is not operating.	1. Loose electrical connection.	1. Check all electrical connections for corrosion.
	2. Blown fuse.	2. Replace the fuse.
	3. Pump seized.	3. Replace the pump.
Control shut down.	1. Loose electrical connection.	1. Check all electrical connections for corrosion.
	2. Electrical short.	2. Check for bare or burned wires.
	3. Control failure.	3. Replace the control.
	4. Blown fuse.	4. Replace the fuse.
Material being spread is not wet.	1. Pre-wet system is not running.	1. See Troubleshooting – Pump is not operating.
	2. Spray hose is misaligned.	2. See "Aligning the Spray Hose" on page 29.
	3. Flow rate is set too low.	3. See "Adjusting the Flow" on page 26.
Spray is uneven.	1. Spray hose is clogged.	1. Clean spray hose with fresh water.
	2. Spray hose is damaged.	2. Replace the spray hose.
Pump is leaking.	1. O-ring fittings are loose.	1. Verify that O-ring fittings are fully installed.
	2. O-rings are damaged or worn.	2. Replace the O-rings.
	3. Pump housing is damaged.	3. Replace the pump.

PARTS LIST

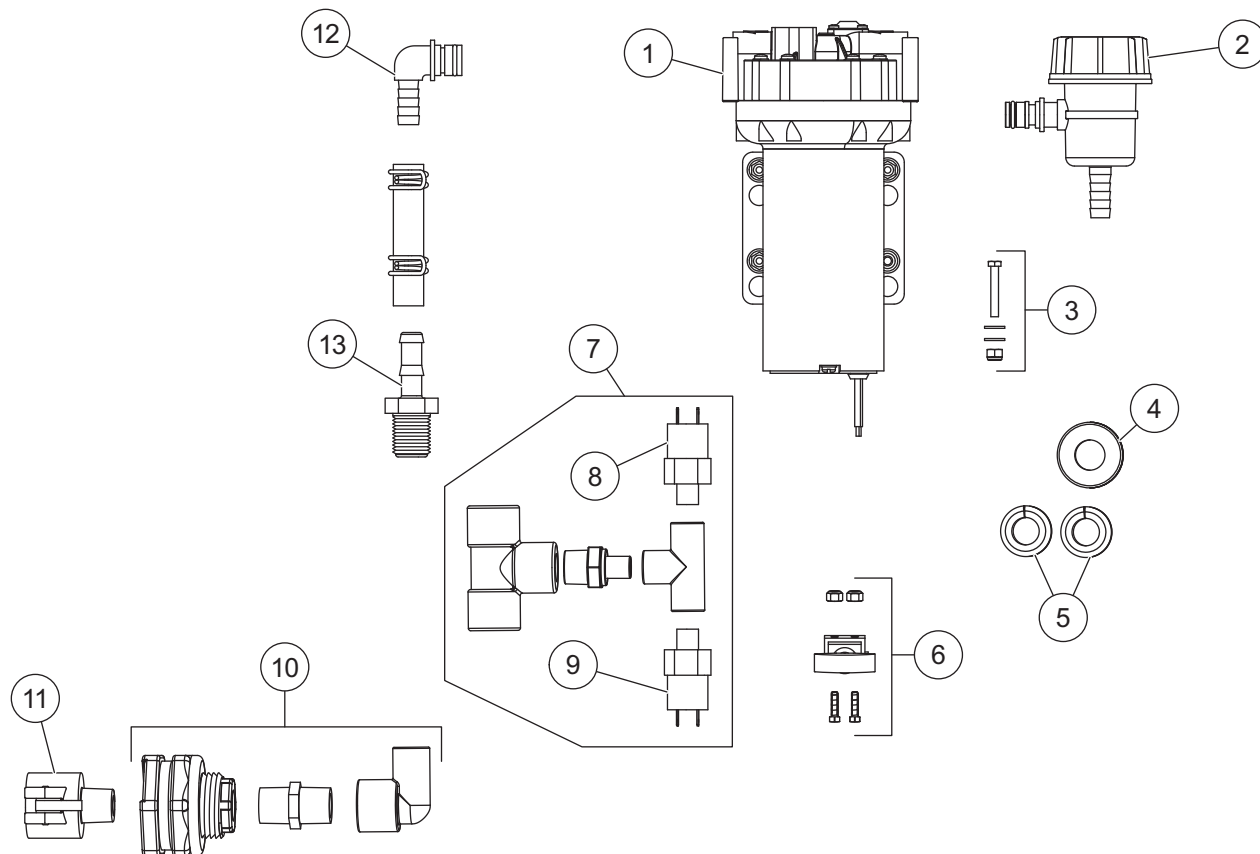
PUMP BOX COMPONENTS



Pump Box Components							
Item	Part	Qty	Description	Item	Part	Qty	Description
1	76406	1	1/2 x 48 Hose Kit	7	76411	1	Spray Bracket Kit, Poly Hopper
2	76309	1	Ball Valve, 1/2 Barb Ends	8	76412	1	Spray Bracket Kit, Steel Hopper
3	76407	1	Cam Lever Coupling, Male End	9	76413	1	Pump Box Mount Kit, Steel Hopper
4	76326	1	Check Valve, F NPT Ends	10	76414	1	Pump Box Mount Kit, Poly Hopper
5	76426	2	1/2 M NPT to 1/2 Barb Fitting	11	76432	1	Pre-Wet Box SS
6	76408	1	Pre-Wet Spray Hose Kit	12	76433	1	Pre-Wet Cover SS
Item 1 76406 1/2 x 48 Hose Kit							
		1	1/2 x 48 PVC Clear Hose			4	Double Spring 1/2" Clamp
Item 6 76408 Pre-Wet Spray Hose Kit							
	76316	1	Slit Rubber Tubing, 15-1/2"			3	1/4-20 x 1/2 Serrated Flange Hex Cap Screw SS
		2	Double Spring 1/2" Clamp			1	1/2 Barb Plug
		3	7/8 ID Loop Clamp SS				
Item 7 76411 Spray Bracket Kit, Poly Hopper							
		1	Pre-Wet Bracket			1	1/2 Barbed 90° Elbow
Item 8 76412 Spray Bracket Kit, Steel Hopper							
		1	Pre-Wet Bracket			1	1/2 Barb Hose Mender
		1	Grommet #2 Rubber				
Item 9 76413 Pump Box Mount Kit, Steel Hopper							
		4	Mounting Plate SS			10	1/4 Flat Washer SS
		10	1/4-20 x 1 Serrated Hex Cap Screw			10	1/4-20 Locknut, Waxed
Item 10 76414 Pump Box Mount Kit, Poly Hopper							
		4	1/4-20 x 1-1/2 Hex Cap Screw			4	1/4-20 Well Nut
SS = Stainless Steel F = Female M = Male							

PARTS LIST

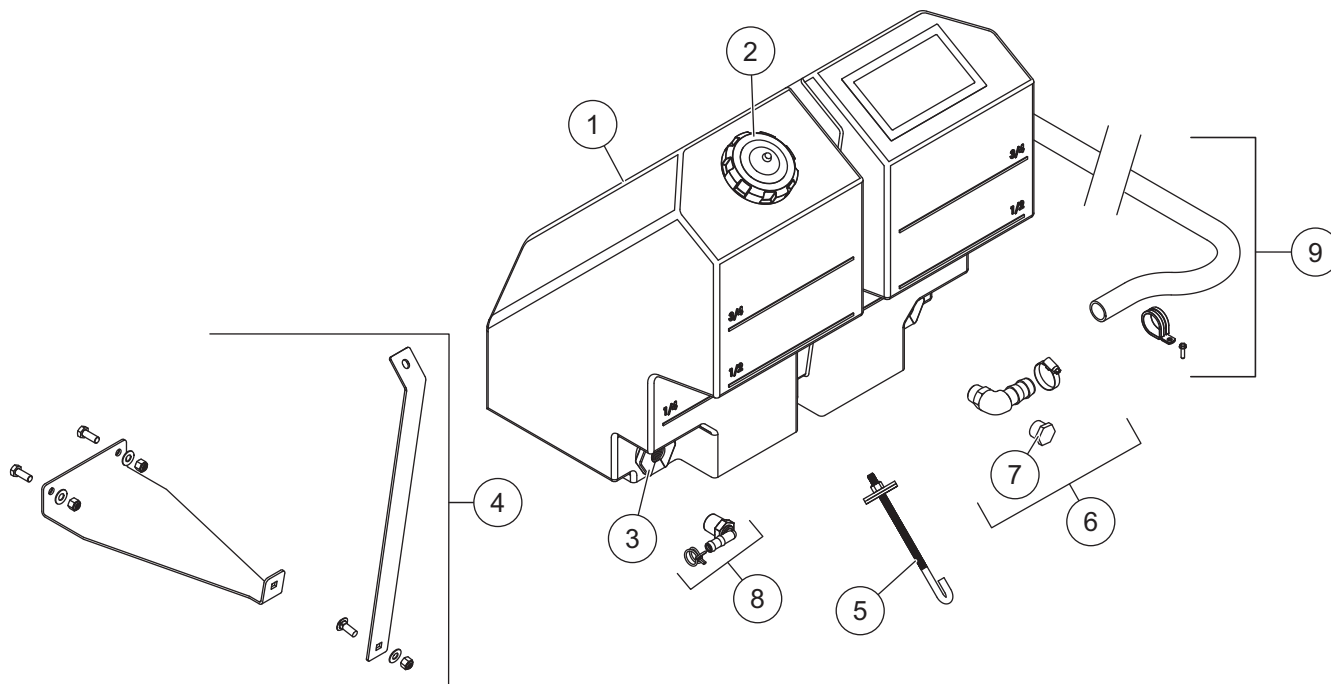
PUMP BOX COMPONENTS



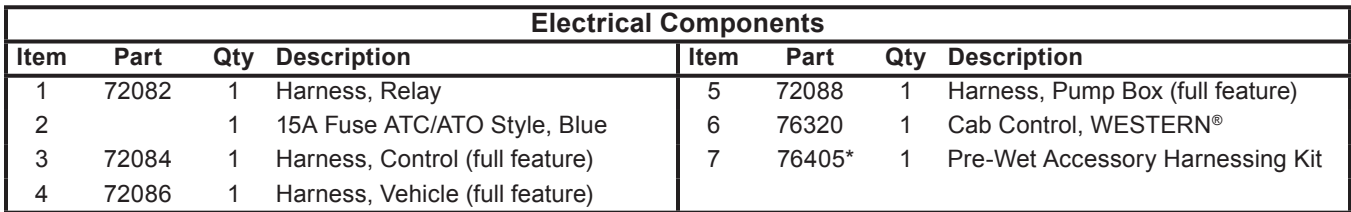
Pump Box Components							
Item	Part	Qty	Description	Item	Part	Qty	Description
1	76311	1	3 gal/min Pump, 60 psi Relief	8	99783	1	3 psi Pressure Switch
2	76427	1	1/2 Barb Line Strainer	9	99782	1	40 psi Pressure Switch
3	76409	1	Pump Mounting Hardware Kit	10	76417	1	Pump Box Bulkhead Kit
4	94299	1	Hose Grommet	11	76428	1	Cam Lever Coupling, Female End
5	21651	2	Harness Grommet	12	76312	1	3/4 QA to 1/2 Barb Elbow
6	76515	1	Rubber Latch Kit	13	76426	1	1/2 M NPT to 1/2 Barb Elbow
7	76416	1	Pressure Switch Kit (full feature)				
Item 3 76409 Pump Mounting Hardware Kit							
	4		#10-32 x 1-1/4 Hex Cap Screw		4		#10-32 Locknut, Waxed
	8		#10 Flat Washer SS				
Item 6 76515 Rubber Latch Kit							
	1		Rubber Hold Down Strap		2		#8-32 Hex Locknut SS
	2		#8-32 x 5/8 Machine Screw				
Item 7 76416 Pressure Switch Kit (full feature systems)							
8	99783	1	3 psi Pressure Switch		1		1/2 Pipe Tee
9	99782	1	40 psi Pressure Switch		1		1/4 NPT Poly Tee
		1	1/2 x 1/4 Reducing Bushing		1		1/4 Close Nipple
Item 10 76417 Pump Box Bulkhead Kit							
	1		1/2 Street Elbow, 90°		1		1/2 NPTF Bulkhead Fitting
	1		1/2 Short Nipple				
SS = Stainless Steel				M = Male			

PARTS LIST

TANK COMPONENTS



Tank Components							
Item	Part	Qty	Description	Item	Part	Qty	Description
1	76293	1	25 gallon Tank	6	76422	1	Add-a-Tank Fitting Kit
	76296	1	50 gallon Tank	7	76431	1	3/4 M NPT Plug
4	76418	1	25 gallon Strap Kit	8	76423	1	Tank to 1/2" Hose Kit
	76419	1	50 gallon Strap Kit	9	76424	1	1" Hose Kit – 15'
5	76421	1	J-Bolt Kit				
Item 1 76293 & 76296 25 Gallon/50 Gallon Tank							
2	76430	1	Pre-Wet Tank Cap	3	76447	2	3/4 Bulkhead Fitting
Item 4 76418 & 76419 25 Gallon/50 Gallon Strap Kit							
	1		Tray SS		1		3/8-16 x 1 Carriage Bolt
	1		Support Strap SS		5		3/8 Flat Washer SS
	2		3/8-16 x 1 Hex Cap Screw SS		3		3/8-16 Locknut, Waxed
Item 5 76421 J-Bolt Kit							
	1		3/8-16 x 8 J-Bolt SS		1		3/8-16 Locknut, Waxed
	2		3/8 x 2 Fender Washer SS				
Item 6 76422 Add-a-Tank Fitting Kit							
	1		1 x 3/4 M NPT Barb Elbow		1		11/16 – 1-1/2 Band Clamp
	76431	1	3/4 Poly Pipe Plug				
Item 8 76423 Tank to 1/2" Hose Kit							
	1		Hose Barb		1		Double Spring 1/2 Clamp
Item 9 76424 1" Hose Kit – 15'							
	1		1" ID x 15' PVC Clear Hose		5		#10 x 3/4 Hex Washer-Head Driller Screw
	3		1-1/4 ID Loop Clamp SS				
	2		11/16 – 1-1/2 Band Clamp				
SS = Stainless Steel				M = Male			





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