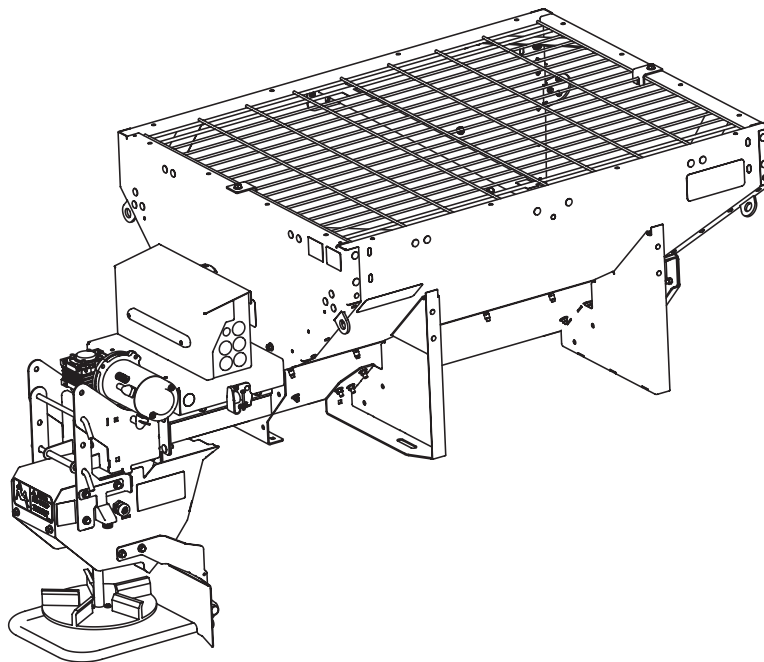




HELIXX™ Stainless Steel Hopper Spreader

0.7 yd³ for Half-Ton Trucks

Installation Instructions



⚠ CAUTION

Read this document before installing
or operating the spreader.

These Installation Instructions are for HELIXX Stainless Steel Hopper Spreaders
with serial numbers beginning with 200706 and higher.

SAFETY

SAFETY DEFINITIONS

⚠ WARNING

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

⚠ CAUTION

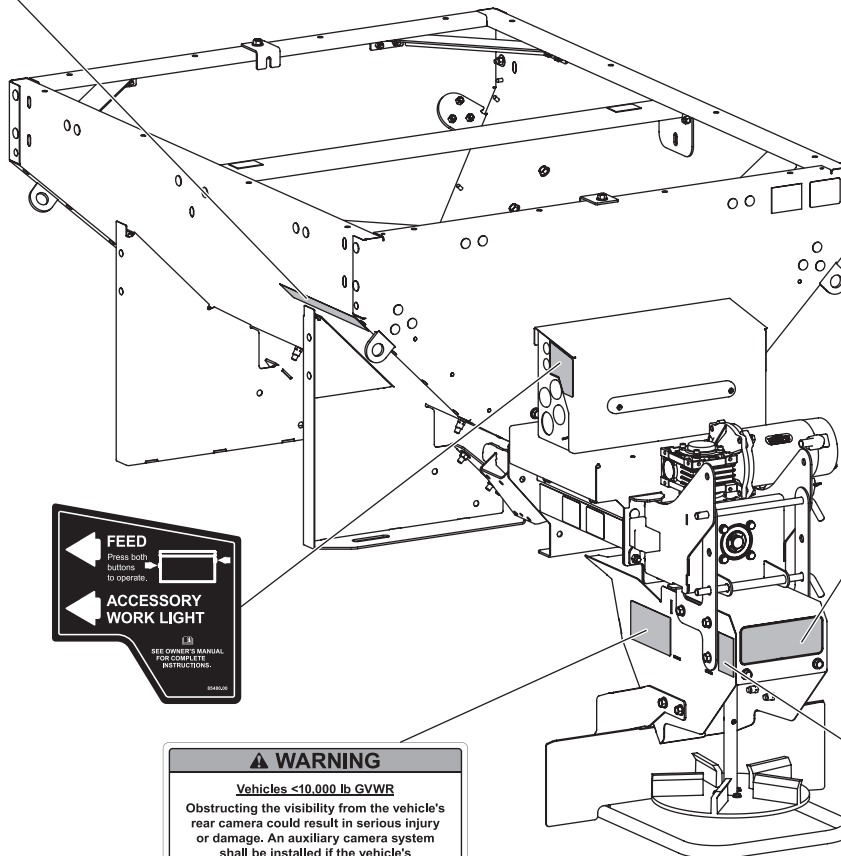
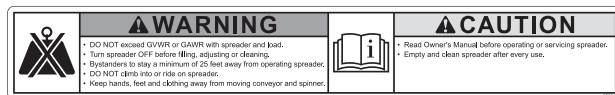
Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

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

WARNING/CAUTION LABELS

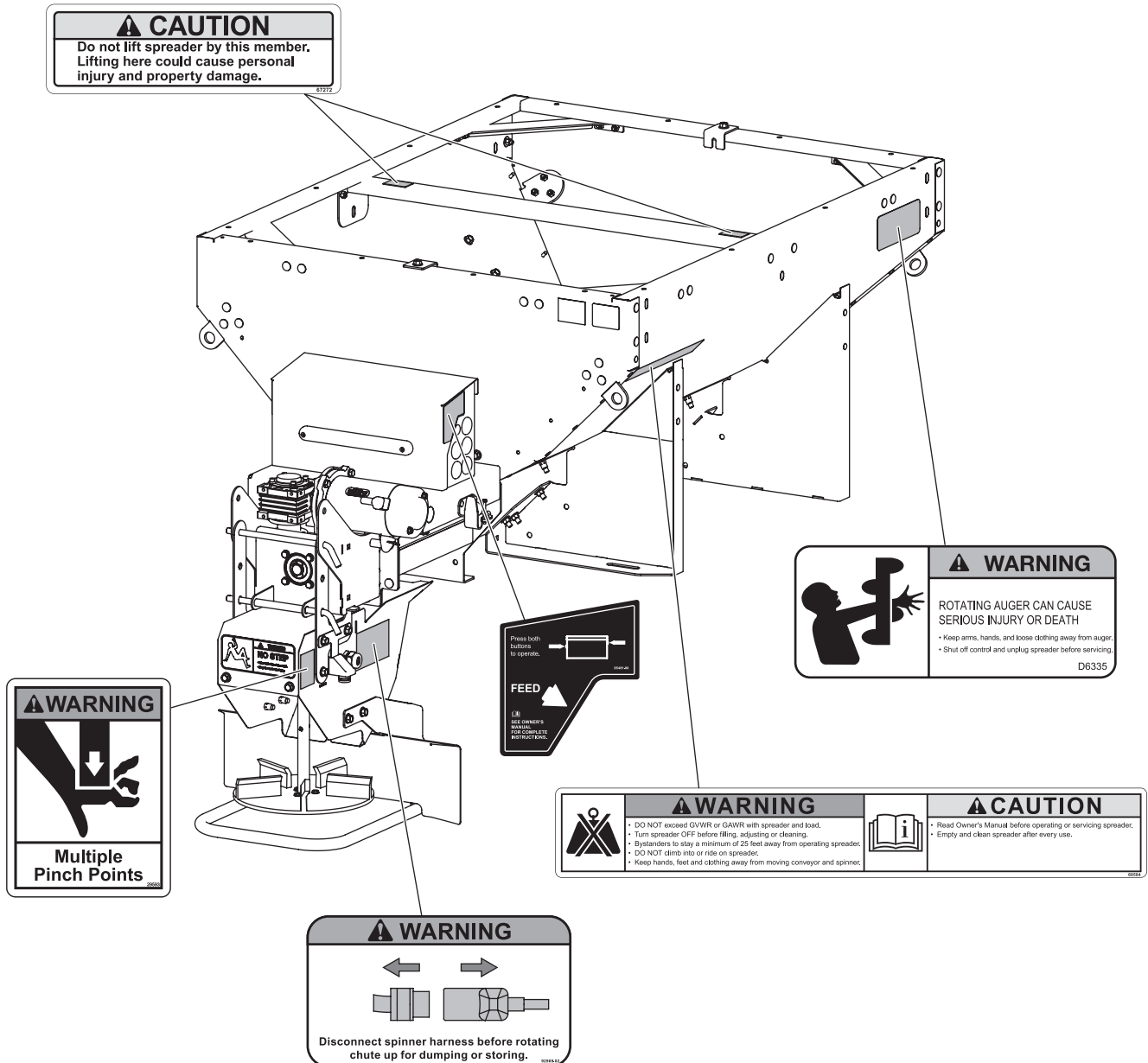
Become familiar with and inform users about the warning and caution labels on the spreader.

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



SAFETY

WARNING/CAUTION LABELS *continued*



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 minimum of 25 feet (7.62 m) away from operating spreader.
- Before working with the spreader, secure all loose-fitting clothing and unrestrained hair.
- Before operating the spreader, verify that all safety guards are in place.
- Before servicing the spreader, wait for conveyor, auger, and spinner to stop.
- Do not climb into or ride on spreader.

WARNING

Do not exceed GVWR, GAWR, or maximum vehicle load capacity, including the spreader and ballast. See Loading section to determine maximum volumes of spreading material.

WARNING

Do not install the control for this product in the deployment path of an air bag. Refer to vehicle manufacturer's manual for air bag deployment area(s).

WARNING

Vehicles <10,000 lb GVWR: Obstructing the visibility from the vehicle's rear camera could result in serious injury or damage. An auxiliary camera system shall be installed if the vehicle's rear camera is removed or blocked.

CAUTION

If rear directional, CHMSL light, or brake stoplights are obstructed by the spreader, the lights shall be relocated, or auxiliary directional or brake stoplights shall be installed.

CAUTION

During the hopper installation we recommend the addition of an OSHA compliant Backup Alarm. This alarm is required for OSHA governed employers.

CAUTION

- Do not operate a spreader in need of maintenance.
- Before operating the spreader, reassemble any parts or hardware removed for cleaning or adjusting.
- Before operating the spreader, remove materials such as cleaning rags, brushes, and hand tools from the spreader.
- Before operating the spreader, read the engine owner's manual, if so equipped.
- While operating the spreader, 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.

NOTE: Lubricate grease fittings after each use. Use a good quality multipurpose grease.

SAFETY

FUSES

The electrical system contains several automotive-style fuses. If a problem should occur and fuse replacement is necessary, the replacement fuse must be of the same type and amperage rating as the original. Installing a fuse with a higher rating can damage the system and could start a fire. Fuse Replacement, including fuse ratings and locations, is located in the Maintenance section of the Owner's Manual.

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 spreader.
- Do not wear jewelry or a necktie, and secure long hair.
- Wear safety goggles to protect your eyes from battery acid, gasoline, dirt, and dust.
- 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.

FIRE AND EXPLOSION

WARNING

Gasoline is highly flammable and gasoline vapor is explosive. Never smoke while working on vehicle. Keep all open flames away from gasoline tank and lines. Wipe up any spilled gasoline immediately.

Be careful when using gasoline. Do not use gasoline to clean parts. Store only in approved containers away from sources of heat or flame.

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 spreader operator.









VIBRATION

Operating spreader 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 the torque chart.
Use standard methods and practices when attaching spreader, 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.					

LOADING

These Installation Instructions cover vehicles that have been recommended for carrying the hopper spreader. Please see your local dealer for proper vehicle applications.

WARNING

Do not exceed GVWR, GAWR, or maximum vehicle load capacity, including the spreader and ballast.

CAUTION

Never use wet materials or materials with foreign debris with any of these spreaders. These units are designed to handle dry, clean, free-flowing material.

CAUTION

Read and adhere to manufacturer's ice-control material package labeling, including Safety Data Sheet requirements.

MATERIAL WEIGHTS

Material	Density		
	(lb/ft ³)	(lb/yd ³)	(kg/m ³)
Salt	80	2160	1282
Sand	100	2700	1602

Material densities are approximate and are based on dry, loose material. It is the responsibility of the operator to know the weight of the material to be spread and the vehicle carrying capacity.

CERTIFICATION

WARNING

New untitled vehicle installation of a spreader requires National Highway Traffic Safety Administration altered vehicle certification labeling. Installer to verify that struck load of snow or ice control material does not exceed GVWR or GAWR rating label and complies with FMVSS.

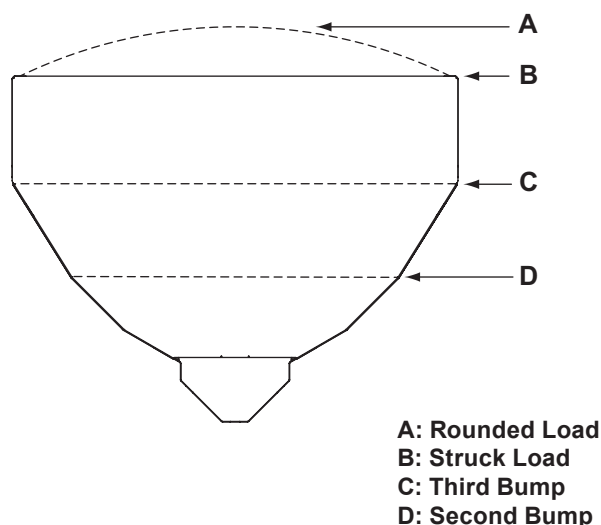
SPREADER SPECIFICATIONS

Hopper Model	Overall Length	Bed Length	Empty Weight	Overall Width	Bed Height	Capacity Struck
0.7 yd ³	82 in (208 cm)	54 in (137 cm)	337 lb (153 kg)	43 in (109 cm)	27.5 in (70 cm)	0.7 yd ³ (0.54 m ³)

LOADING

LOAD VOLUME

Hopper Model	Load Volume (yd ³)			
	A	B	C	D
0.7 yd ³	0.85	0.7	0.4	0.06
	Load Volume (m ³)			
	A	B	C	D
	0.65	0.54	0.31	0.05



DETERMINING VEHICLE PAYLOAD

⚠ 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 to determine maximum volumes of spreading material.

1. Install the hopper spreader and optional equipment according to the Installation Instructions.
2. Install or attach any other equipment that will be on the vehicle while the hopper spreader will be in use (step bumper, trailer hitch, snowplows, etc.). Fill fuel tanks.
3. Obtain the Gross Vehicle Weight Rating (GVWR), Front Gross Axle Weight Rating (FGAWR), and Rear Gross Axle Weight Rating (RGAWR) from the certification label located inside the driver-side door jamb or door.
4. With the occupants in the vehicle for normal hopper spreader operation, weigh the vehicle to obtain gross vehicle weight (GVW).
5. Subtract the GVW from the GVWR to determine the available material payload.
6. Obtain the weight per cubic yard (lb/yd³) or cubic meter (kg/m³) of the desired material. Divide the weight into the payload to determine the maximum volume of material that can be carried.
7. Refer to the Load Volume table and diagrams to determine the maximum fill level for the material.
8. Fill the hopper with material to the calculated level. Reweigh the vehicle with occupants and verify that the Loaded Gross Vehicle Weight, Front Gross Axle Weight, and Rear Gross Axle Weight are less than the vehicle's ratings.
9. Repeat Steps 6–8 for each type of material.

The worksheet for Determining Vehicle Payload (next page) includes an example.

LOADING

Determining Vehicle Payload Worksheet

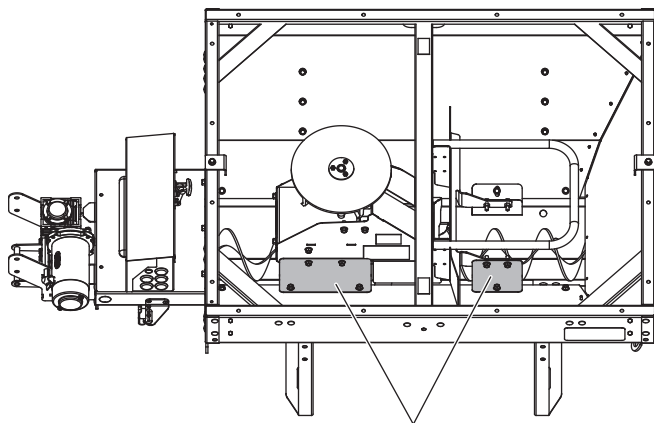
	Material Type	<i>Example:</i> Dry Salt			
A	Equipment installed when vehicle was weighed	0.7 yd ³ Hopper Spreader			
B	Front Gross Axle Weight Rating [FGAWR]	6000 lb (2722 kg)			
C	Rear Gross Axle Weight Rating [RGAWR]	7000 lb (3175 kg)			
D	Gross Vehicle Weight Rating [GVWR]	11,000 lb (4990 kg)			
E	Gross Vehicle Weight [GVW], empty	– 7402 (3358 kg)			
F	Payload Available	= 3598 lb (1632 kg)			
G	Material Density	÷ 2160 lb/yd ³ (1282 kg/m ³)			
H	Maximum Volume	= 1.67 yd ³ (1.27 m ³)			
I	Maximum Material Fill Level, approx. Refer to Load Volume table and diagrams.	A			
J	Loaded Front Gross Axle Weight (lb/kg) Must be less than weight in Row B.				
K	Loaded Rear Gross Axle Weight (lb/kg) Must be less than weight in Row C.				
L	Loaded Gross Vehicle Weight [GVW] (lb/kg) Must be less than weight in Row D.				

UNPACKING THE SPREADER

REMOVE SHIPPING BRACKETS AND LOCATE COMPONENTS

The spreader is shipped from the factory with its components secured inside the hopper and the top screen in place. Before installing the spreader, remove the shipping brackets and top screen, and locate components.

1. Take off the top screen by removing the 3/8" flanged cap screws and the top screen brackets. Set the screen and all fasteners aside for reinstallation.



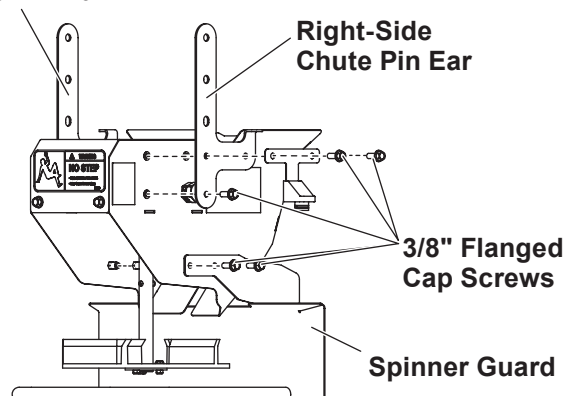
Remove brackets.

2. Inside the hopper, remove the 3/8" steel cap screws from the four shipping brackets (two on each side) that secure the chute enclosure and the spinner deflector assembly to the hopper for shipment. Set the chute enclosure and spinner deflector assembly aside, and discard the brackets and hardware.
3. Immediately install the six supplied 3/8" stainless steel flanged cap screws from the parts bag to fasten the hopper body to the drivetrain.

CHUTE ASSEMBLY

1. Install four of the provided 3/8" stainless steel flanged cap screws through the spinner guard holes into the rivnuts on the chute enclosure.

Left-Side Chute Pin Ear



2. Remove and retain the cable boot bracket, dust cover, and fasteners. Install the left and right side chute pin ears to the chute enclosure with six provided 3/8" flanged stainless steel cap screws. Reinstall the cable boot bracket and dust cover.
3. Set chute aside for installation after the spreader has been installed on the vehicle.

MOUNTING THE SPREADER

INSTALL HOPPER IN VEHICLE BED

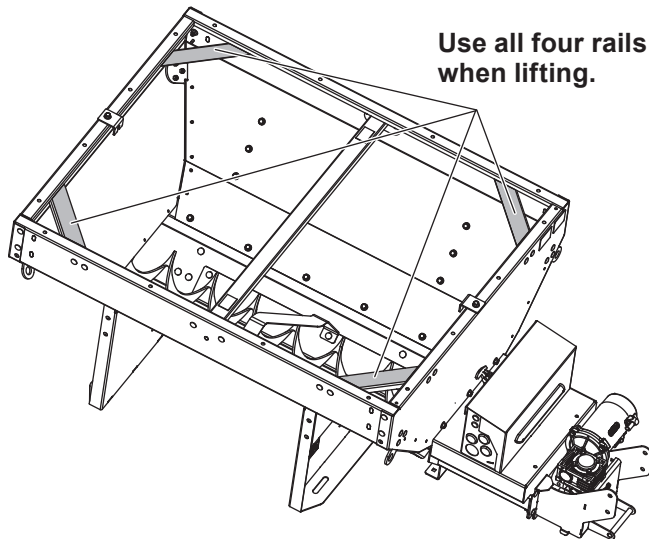
NOTE: Periodically throughout the snow and ice control season, verify that mounting devices are secure.

1. Remove the vehicle tailgate.
2. Remove the wood shipping rails from the hopper legs.

⚠ CAUTION

Before lifting, verify that the hopper is empty of material. The lifting device must be able to support the spreader's weight as shown in the Spreader Specifications table.

3. Using slings or chains, lift the spreader by all four diagonal corner rails and move it into the vehicle bed.



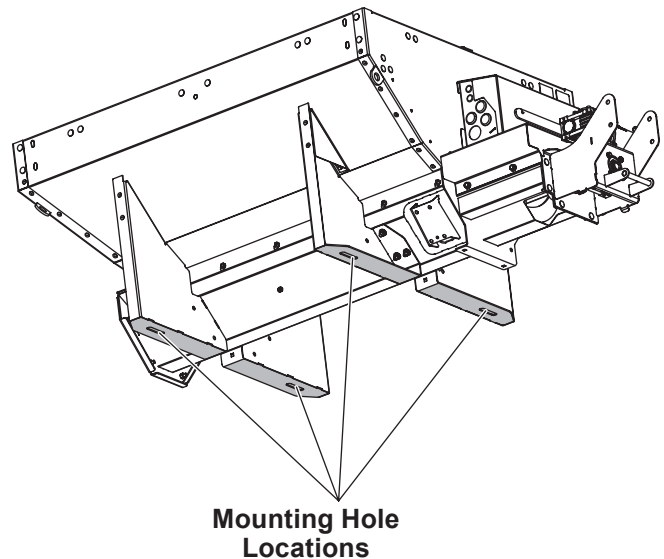
4. Center the spreader from side to side. Shift the spreader forward or backward to a position that will allow the chute, once installed, to overhang the rear of the vehicle and the bumper. With two people, trial-fit the chute to check for clearance.

5. Use the holes in the four hopper support legs as a template to mark mounting hole positions on the vehicle bed.

⚠ CAUTION

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

6. Move the spreader temporarily to allow access, and drill 5/8" holes as marked.



NOTE: Pay special attention when drilling or clamping dissimilar metals to aluminum bodies. Galvanic corrosion can occur if not handled properly. Contact vehicle manufacturer for recommended attachment practices.

MOUNTING THE SPREADER

1. Move the spreader back into position. Secure the spreader to the vehicle with four (installer-supplied) 5/8" Grade 5 cap screws as required by the vehicle application, with 5/8" flat washers on both sides, and 5/8" locknuts.

If the mounting holes are not directly over the vehicle box supports, the vehicle bed must be braced to the frame to prevent buckling or deforming the vehicle bed. Accessory mounting bars are available for installations that require additional bracing. Contact your authorized dealer.

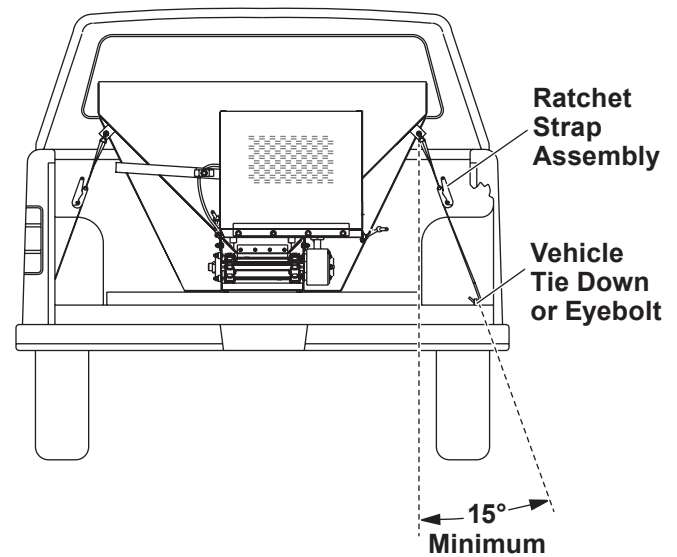
2. Remove the cable tie holding the wire harness to the conveyor chain. Connect the vehicle-side harness to the hopper-side harness.
3. Reinstall the top screen with the removed cap screws and brackets.

Install Tie-Down Straps

⚠ WARNING

Spreader shall be bolted to vehicle frame. Do not rely on the tie-down chains or straps alone to hold spreader in vehicle.

Install tie-down straps from the tie-down loops on the spreader body to the vehicle frame as shown. Use one strap per loop, pulling diagonally away from the hopper body.

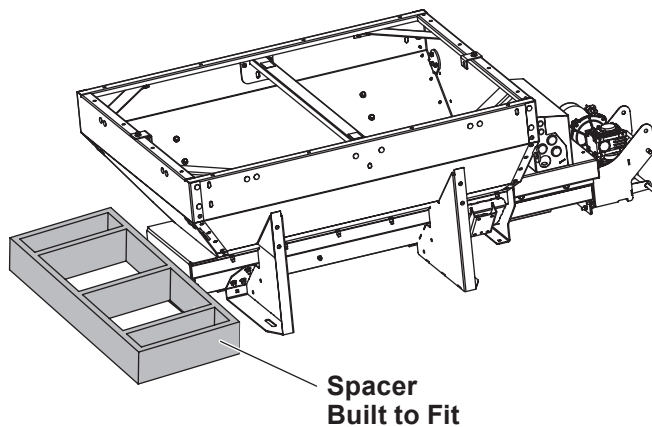
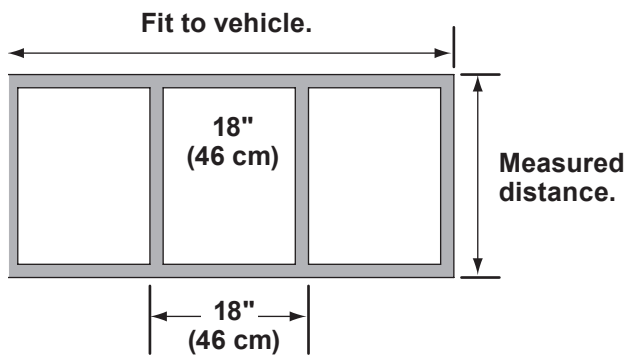
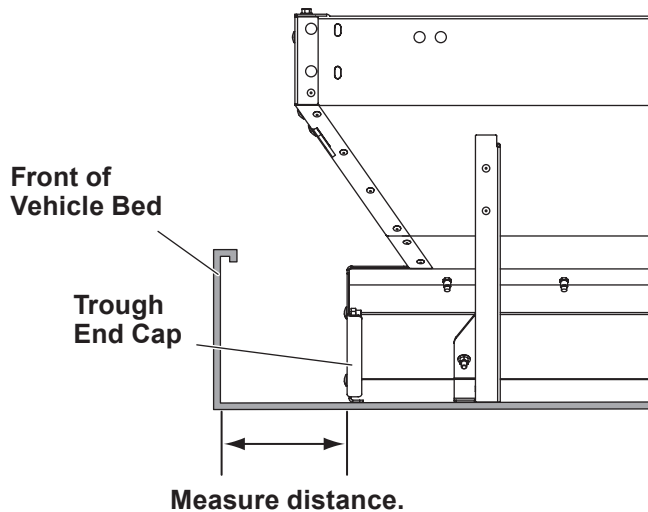


MOUNTING THE SPREADER

Construct Sill Spacer

Measure the distance from the front end of the hopper sill to the front of the vehicle bed and make a spacer from 2" x 8" lumber to fit that area.

Failure to install a spacer could result in damage to the spreader.

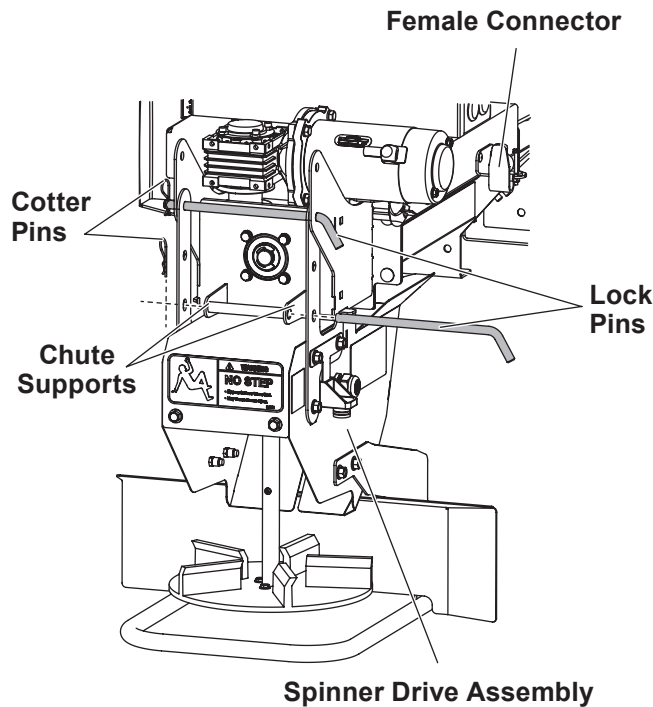


TOP SCREENS & SPINNER DRIVE ASSEMBLY

INSTALL SPINNER DRIVE ASSEMBLY

NOTE: Complete the assembly installation in the Chute Assembly section before proceeding with these instructions.

1. Carefully set the spinner drive assembly on the ground. Orient it in operating position as shown below.



2. Attach the spinner drive assembly to the spreader with the lock pins from the parts box. *Install the upper lock pin first.*

The upper lock pin goes through the lower chute support holes and the upper chute pin ear holes.

The lower lock pin goes through the lower chute pin ear holes and the chute support.

Secure each lock pin with a cotter pin.

3. Connect the spinner motor harness to the female connector extending from the rear of the hopper.

WIRING AND HARNESS INSTRUCTIONS

WIRING INSTRUCTIONS

Spreaders are shipped from the factory with the spreader harness wired to the motor and spreader module.

To properly wire the hopper spreader, follow this recommended installation sequence:

1. Install the vehicle battery cable and control harness included with the spreader, following the steps given below.
2. Install the cab control as described under "Cab Control Installation."

NOTE: Use dielectric grease on all electrical connections.

Vehicle Battery Cable Installation

1. Before beginning this installation, remove the battery cables from the vehicle battery.
2. Using the 1/4" x 3/4" cap screws, 1/4" flat washers, and 1/4" locknuts, mount the fuse holder near the vehicle battery so that the 22" battery cable can be installed from the POSITIVE (+) battery terminal to the fuse holder. Install the fuse into the fuse holder and hand tighten the nuts.
3. Attach one end of the 22" battery cable to the fuse holder so that the ring terminal is on top of the fuse. Replace the lock washer and nut.
4. Lay out a path for routing the vehicle battery cable from the rear of the vehicle bed to the vehicle battery. Make sure that the path avoids any hot, sharp, or moving parts of the vehicle. Routing will vary from vehicle to vehicle.
5. Route the vehicle battery cable as laid out in Step 4.
6. Using cable ties, secure the battery cable to the vehicle. Verify that the harness cannot drop onto the road when it is disconnected from the spreader.
7. Attach the vehicle battery cable red wire to the other fuse holder stud so that the ring terminal is on top of the fuse. Replace the lock washer and nut.
8. Torque the fuse holder nuts to 106–159 in-lb and snap the fuse holder cover into place.
9. Attach the other end of the 22" battery cable to the POSITIVE (+) battery terminal.
10. Connect the positive battery cable to the POSITIVE (+) battery terminal.
11. Connect the negative battery cable to the NEGATIVE (–) battery terminal.

WIRING AND HARNESS INSTRUCTIONS

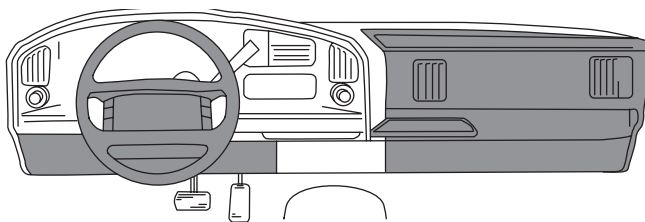
Vehicle Control Harness Installation

1. Plug the vehicle harness into the spreader harness.
2. Lay out a path for routing the vehicle control harness from its attachment point on the vehicle battery cable into the cab of the vehicle. Make sure that the path avoids any hot, sharp, or moving parts. Routing will vary from vehicle to vehicle.
3. Choose a cab control mounting location that can be reached by the harness. The location must be within easy reach of the vehicle operator without restricting access to vehicle controls or instrumentation.

Do not mount the control in areas prohibited by the vehicle manufacturer for reasons of crashworthiness. See the vehicle's body builder's book, owner's manual, or service manual for details. The shaded portions 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.



⚠ 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.

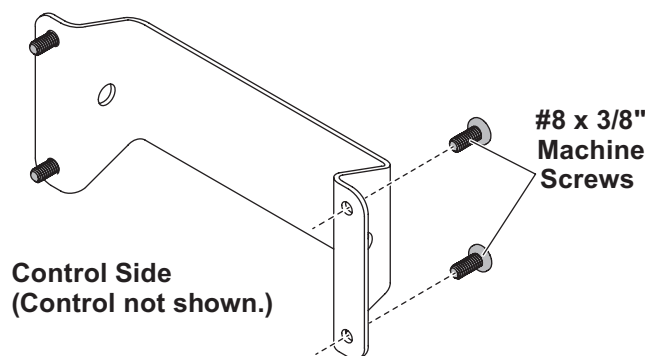
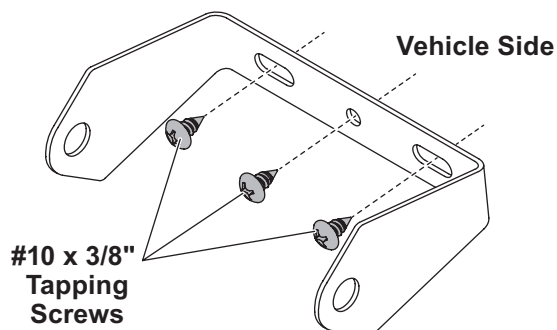
4. Drill a 5/8" hole in the fire wall so that the vehicle control harness can reach the desired cab control location.
5. Insert a rubber grommet into the hole.
6. Route the harness as laid out in Step 2.
7. Secure the vehicle control harness to the vehicle.
8. Attach the red wire to a switched accessory circuit.

WIRING AND HARNESS INSTRUCTIONS

Cab Control Installation

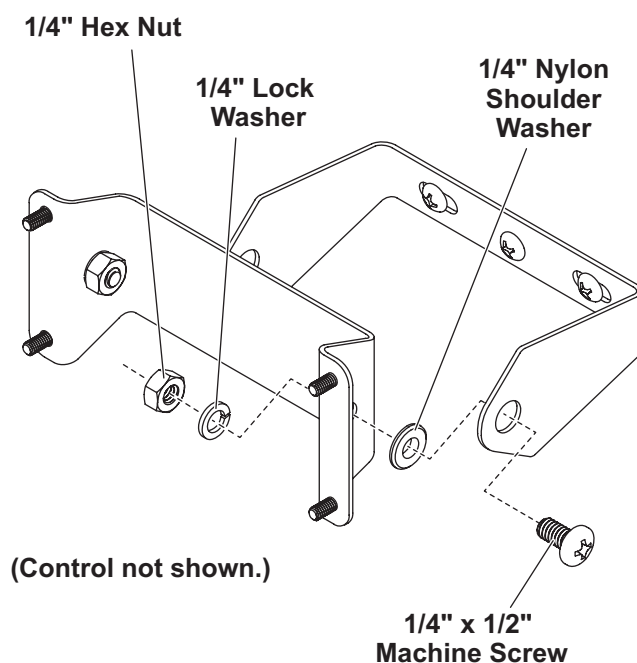
1. Confirm that the chosen cab control mounting position will not interfere with other equipment or allow unintentional starting of the spreader.

2. Install the vehicle side of the mounting bracket using three #10 x 3/8" Phillips head tapping screws.



3. Install the control side of the bracket to the control using four #8 x 3/8" Phillips head machine screws.

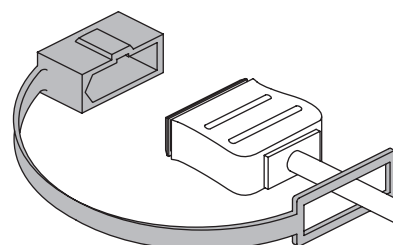
4. Install the control side of the bracket to the vehicle side using 1/4" x 1/2" Phillips head machine screws, 1/4" nylon shoulder washers, 1/4" lock washers, and 1/4" locknuts.



5. Plug the vehicle control harness into the cab control.

Harness Plug Cover

Install the supplied harness plug cover by slipping the loop end of the cover over the harness plug.



WIRING AND HARNESS INSTRUCTIONS

CENTER HIGH-MOUNTED STOPLIGHT (CHMSL)

An LED center high-mounted stoplight is standard equipment on all HELIXX™ stainless steel hopper spreaders.

The orange wire from the spreader vehicle harness is for the CHMSL. Splice the orange wire into an existing CHMSL circuit wire tap. Location of the tap varies according to specific vehicle model, and may be located either in the cab or in the rear of the vehicle.

Always use the tap provided by the OEM.

DO NOT splice the orange wire into the wire coming off the stoplight switch by the brake pedal. Splicing at the stoplight switch may affect transmission shifting, cruise control, or other vehicle functions.

For vehicles with a tap along the frame rail or at the rear cross member:

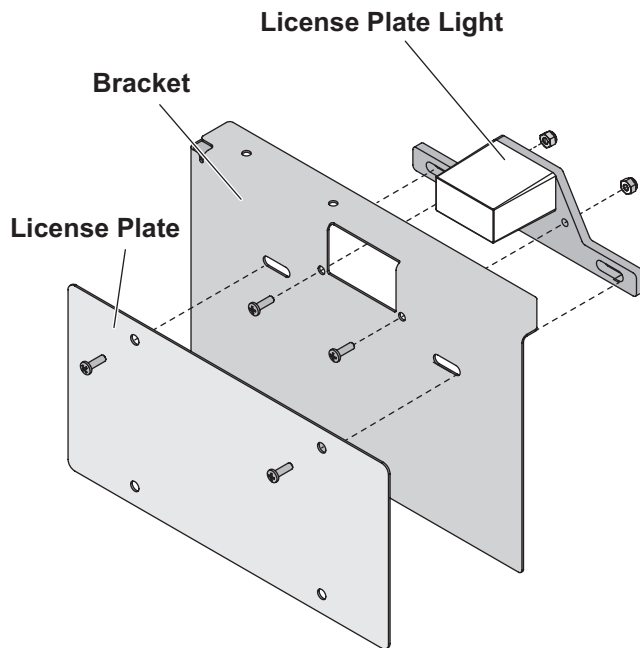
1. Cut the tape holding the orange wire where it exits the convoluted tubing.
2. Pull out the orange wire to the location where the vehicle CHMSL tap is located. Cut a small V notch in the tubing for the wire to exit. Pull the wire through the V notch and tape the tubing on each side of the exit point.
3. Trim any excess length from the orange wire and splice into the vehicle tap.

Coil and cable-tie the brown wire away from any hot, sharp, or moving parts.

INSTALL LICENSE PLATE

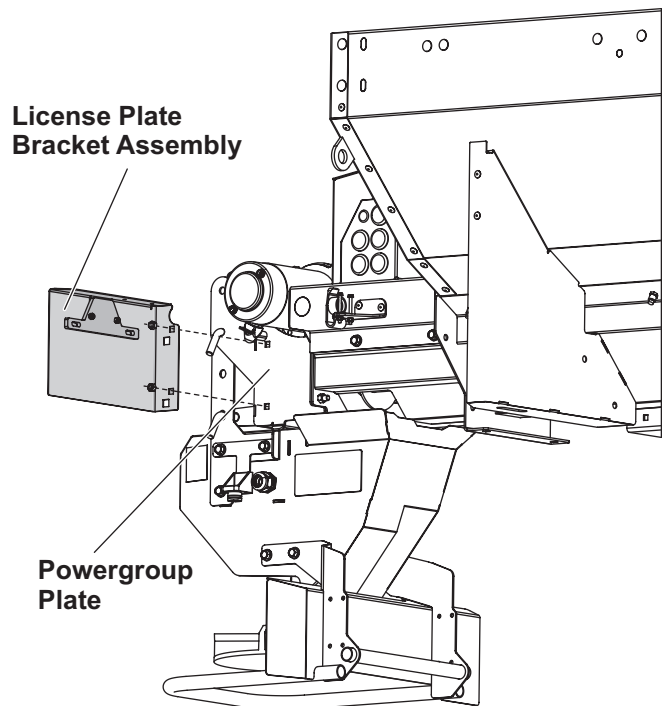
INSTALL LICENSE PLATE

1. Using the two #10-32 x 5/8" screws and #10-32 locknuts, fasten the license plate light to the bracket.



2. Using the two license plate screws and square nuts, attach the license plate to the bracket and license plate light.

3. At the passenger's side of the spreader, insert two 5/16" carriage bolts from the inside face of the powergroup plate, through the plate, then through the license plate bracket assembly. Secure each fastener with a 5/16" locknut as shown.



4. Route the license plate light electrical lead through a grommet on the electrical box.

WIRING AND HARNESS INSTRUCTIONS

Electrical Connections—Hopper Side

1. Locate the 2-pin connector (brown and black wire) on the spinner harness (PN 80101). Unplug the connector from main harness and cut the brown wire 2" back from the connector. Strip the insulation so that approximately 1/4" of wire is exposed on the plug side only.
2. Locate the black and white leads from the license plate lamp. Strip the insulation so that approximately 1/4" of wire is exposed.
3. Crimp the supplied ring terminal to the black wire and cover it with heat shrink tubing.
4. Crimp the white wire from the plate light to the brown wire on the spinner harness using the supplied butt connector.
5. Connect the ring terminal to the NEGATIVE (–) side of the isolation block.
6. Reconnect the 2-pin connector of the spinner harness to the main harness.

Electrical Connections—Vehicle Side

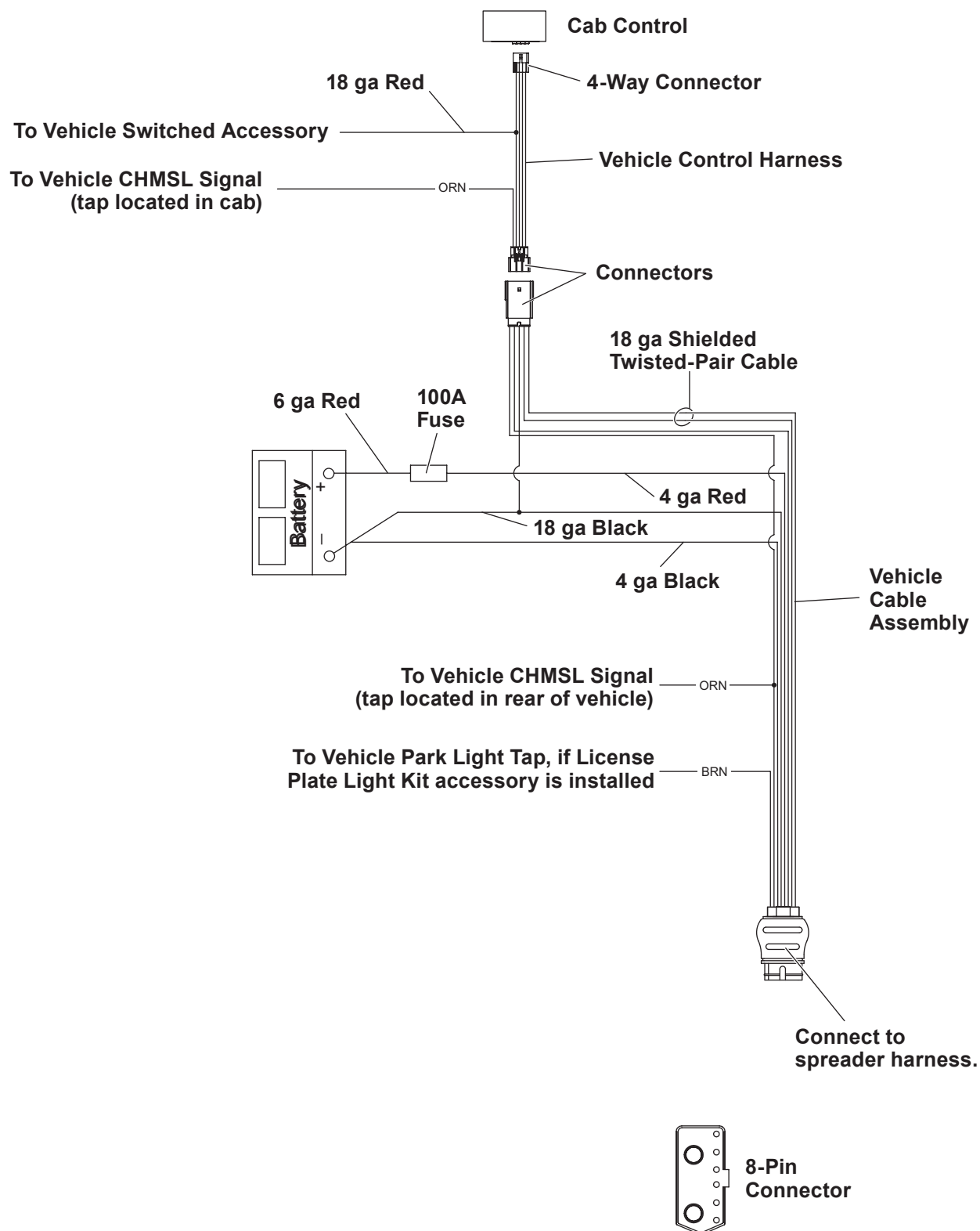
1. Locate a spot on the vehicle cable assembly approximately 20" from the main molded connector.
2. At this spot open the convoluted tubing that covers the cable assembly and pull out the brown wire.
3. Splice the brown wire to the vehicle license plate lamp or park lamp circuit.

INSTALL ACCESSORIES

To install any of the accessory kits that are available for the HELIXX™ stainless steel hopper spreaders, follow the instructions included with each kit.

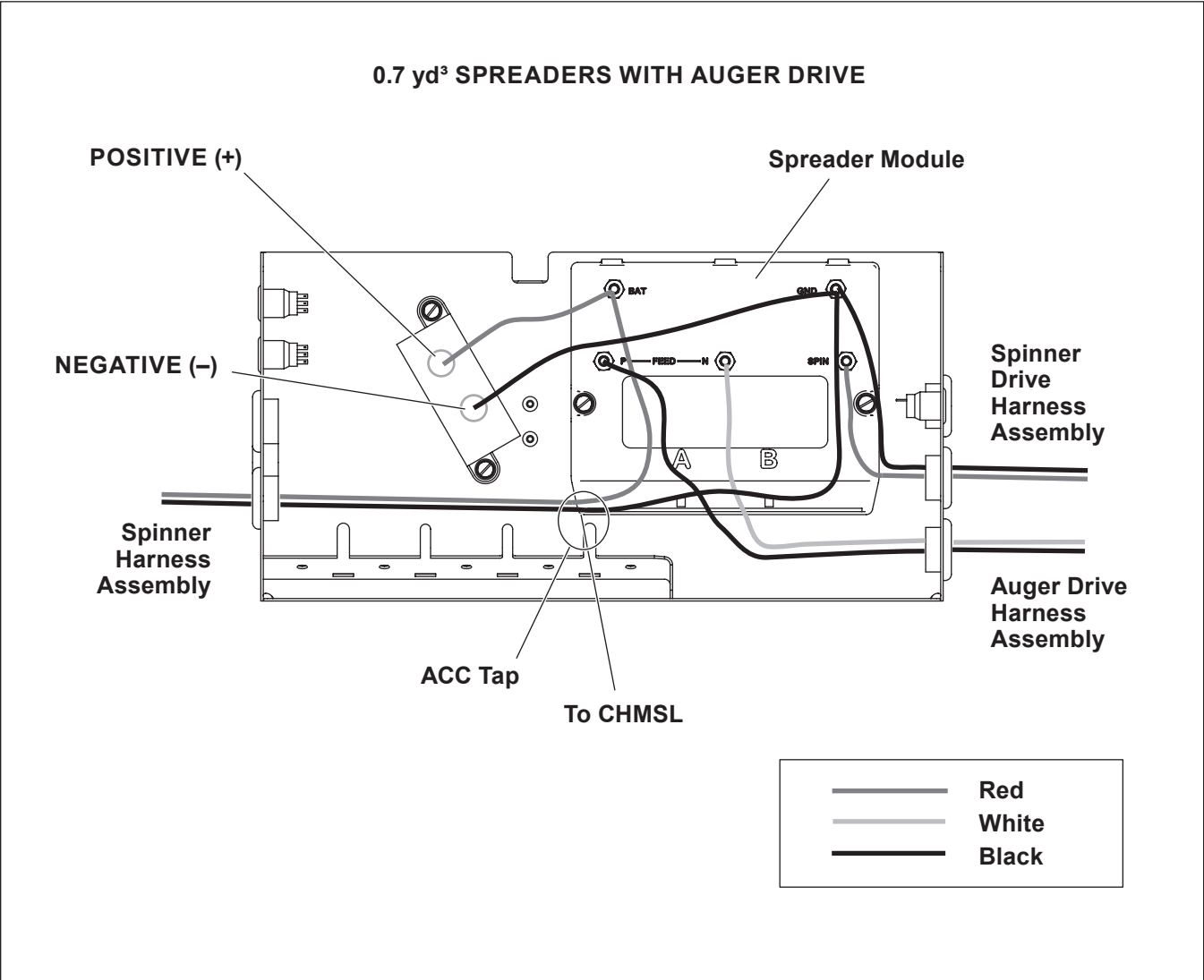
ELECTRICAL COMPONENTS

VEHICLE HARNESS DIAGRAM



ELECTRICAL COMPONENTS

ELECTRICAL CONTROL BOX



FINAL ADJUSTMENTS

FINAL CHECKLIST

- ☐ Verify that the auger and spinner turn freely.
- ☐ Verify that dielectric grease is applied to all electrical connections.
- ☐ Verify that wire harnesses and battery cables are properly secured away from hot, sharp, or moving parts.
- ☐ Verify that the vehicle battery cable has sufficient ground clearance when the spreader is removed from the vehicle.
- ☐ Verify that the CHMSL is properly wired and in working condition.

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



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