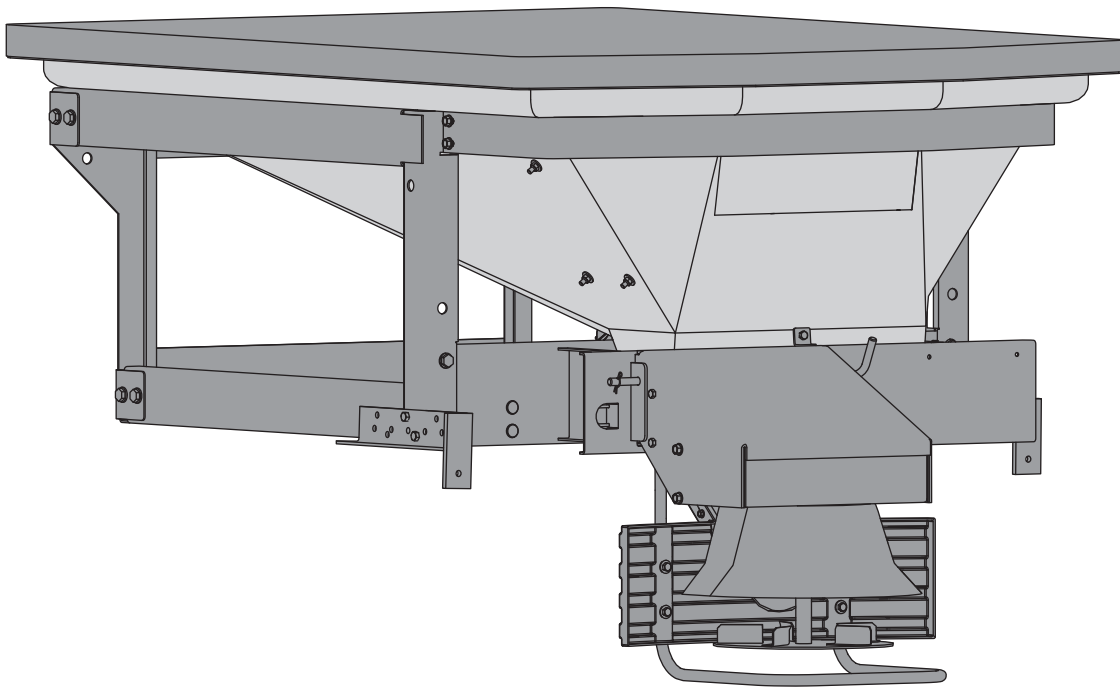




# Tornado™ LT Hopper Spreader

#78901

**Owner's Manual**  
*Original Instructions*



**⚠ CAUTION**

Read this document before operating  
or servicing the spreader.

This manual is for WESTERN® Tornado LT hopper spreaders with  
serial numbers beginning with 0000 and higher.

**This manual supersedes all editions with an earlier date.**



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## PREFACE

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This manual has been prepared to acquaint you with the safety information, operation, and maintenance of your new hopper spreader. Please read this manual carefully and follow all recommendations. This will help ensure profitable and trouble-free operation of your hopper spreader. Keep this manual accessible. It is a handy reference in case minor service is required.

When service is necessary, bring your hopper spreader to your distributor. They know your spreader best and are interested in your complete satisfaction.

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**NOTE: This spreader is designed to spread snow and ice control materials only. Do not use it for purposes other than those specified in this manual.**

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Register your spreader online at [www.westernplows.com](http://www.westernplows.com)

### OWNER'S INFORMATION

Owner's Name: \_\_\_\_\_

Date Purchased: \_\_\_\_\_

Outlet Name: \_\_\_\_\_ Phone: \_\_\_\_\_

Outlet Address: \_\_\_\_\_

Vehicle Model: \_\_\_\_\_ Year: \_\_\_\_\_

Spreader Type (Model): \_\_\_\_\_ Serial #: \_\_\_\_\_

Length: \_\_\_\_\_ Weight: \_\_\_\_\_ lb/kg: \_\_\_\_\_

# SAFETY

## SAFETY DEFINITIONS

### WARNING

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

### CAUTION

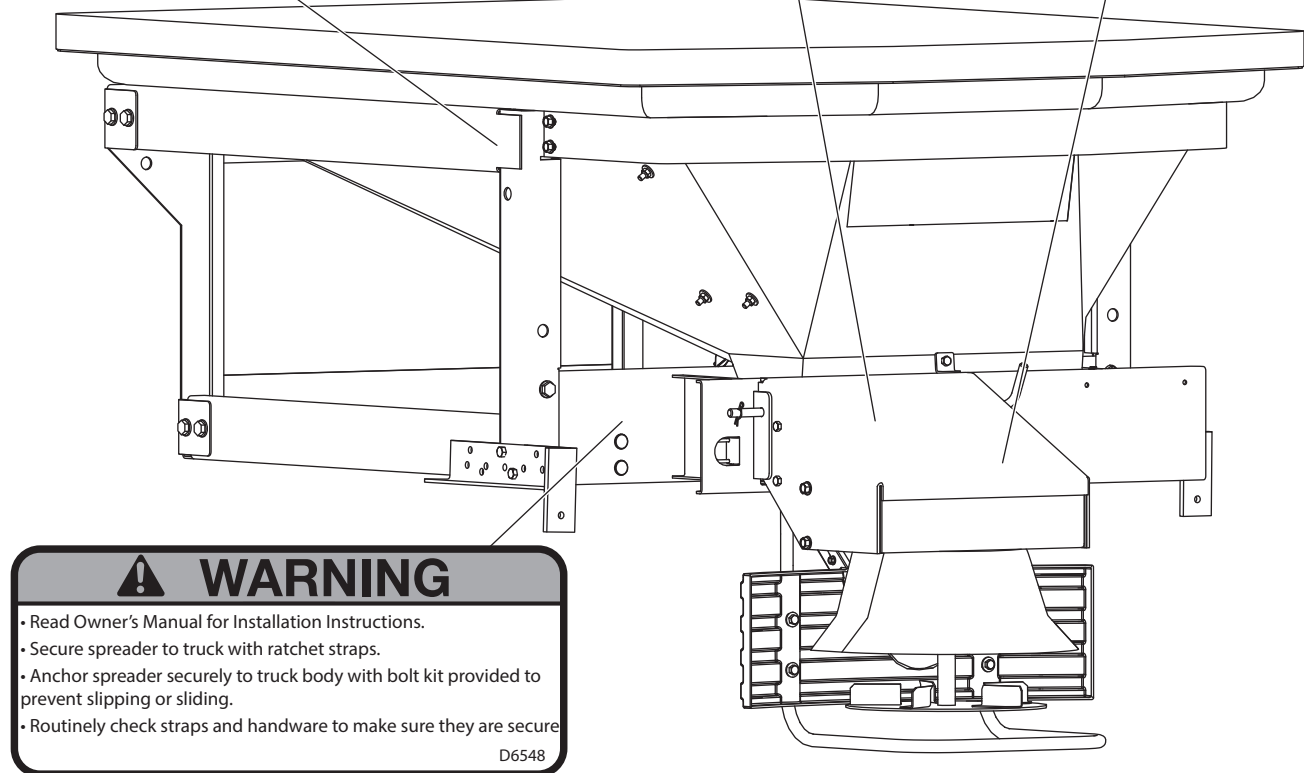
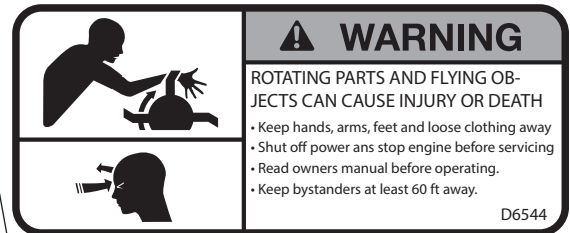
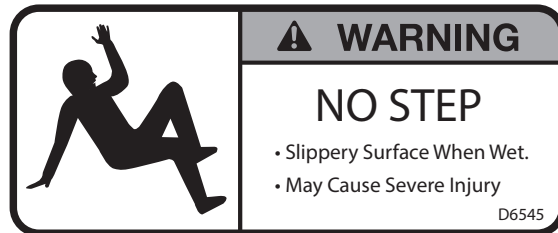
Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

**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.

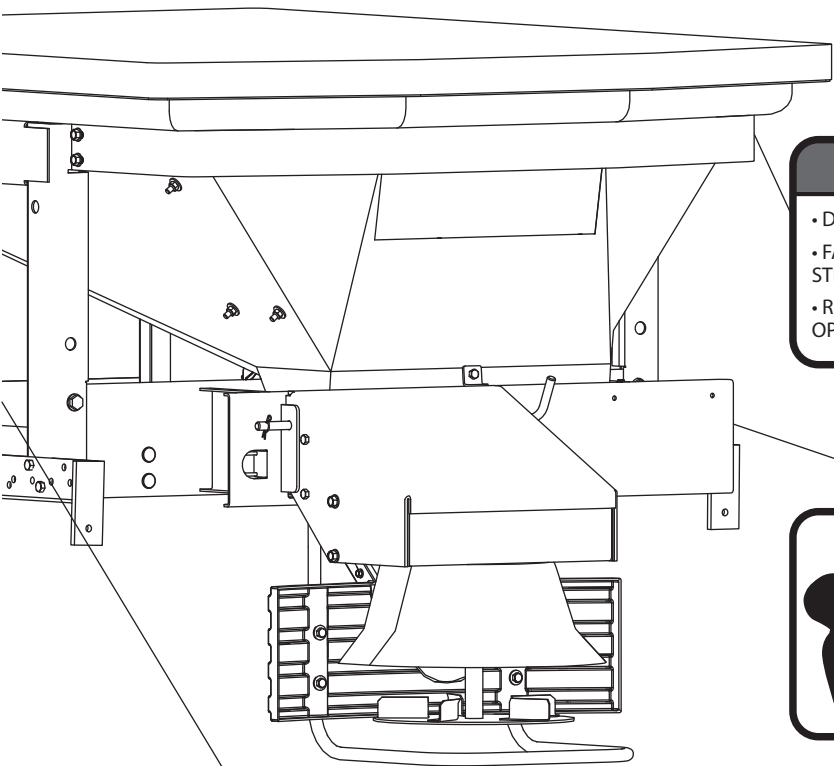
## WARNING/CAUTION LABELS

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**



**DANGER**

- DO NOT REMOVE SPREADER WITH MATERIAL IN HOPPER
- FASTEN SPREADER DOWN WITH APPROVED RATCHET STRAPS AND BOLT KIT
- REAR FRAME LOCATOR BARS MUST BE IN PLACE BEFORE OPERATING VEHICLE

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**WARNING**

ROTATING AUGER CAN CAUSE SERIOUS INJURY OR DEATH

- Keep arms, hands, and loose clothing away from auger.
- Shut off control and unplug spreader before servicing.

D6335

**SERIAL NUMBER LABEL**

(Located on driver's side, next to warning/caution label.)

XXXXXXXXXXXXXXXXXXXXXXXXXXXX

**YYMMDDLXXXXZZZZZ**

Code	Definition
YY	2-Digit Year
MM	2-Digit Month
DD	2-Digit Day
LL	2-Digit Location Code
XXXX	4-Digit Sequential Number
ZZZZZ	5- to 7-Digit Assembly PN

# 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 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



Overloading could result in an accident or damage. Do not exceed GVWR or GAWR ratings as found on the driver-side vehicle door cornerpost. 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).

### 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.

## 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.

# SAFETY

## 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/s<sup>2</sup> to the hand-arm or 0.5 m/s<sup>2</sup> to the whole body.











# SAFETY

## 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

This Owner's Manual covers vehicles that have been recommended for carrying the hopper spreader. Please see your local dealer for proper vehicle applications.

### 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.

#### WARNING

Overloading could result in an accident or damage. Do not exceed GVWR or GAWR as found on the driver-side cornerpost of vehicle.

#### CAUTION



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

### MATERIAL WEIGHTS

Material	Density		
	(lb/ft <sup>3</sup> )	(lb/yd <sup>3</sup> )	(kg/m <sup>3</sup> )
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.*

## LOADING

### 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 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, snowplow, etc.). Fill gas 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 truck 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/yd<sup>3</sup>) of the desired material. Divide the weight into the payload to determine the maximum volume of material that can be carried.
7. Compare the maximum volume to determine the maximum height of the material in the hopper spreader.
8. Fill the hopper with the material to the calculated height. Reweigh the vehicle with occupants and verify that the 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.

#### **⚠ WARNING**

**Do not overload vehicle. Use the Material Weights table to calculate weight of material. Weights given in table are averages for dry materials.**

#### **⚠ 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.**

## MOUNTING THE SPREADER

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

### **⚠ WARNING**

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

### **⚠ CAUTION**

Before lifting, verify that hopper is empty of material. The lifting device must be able to support the spreader's weight.

1. Remove the tailgate from the truck bed.
2. Load the spreader onto the truck bed.
3. Mount the chute to the deflector using the supplied hardware kit.

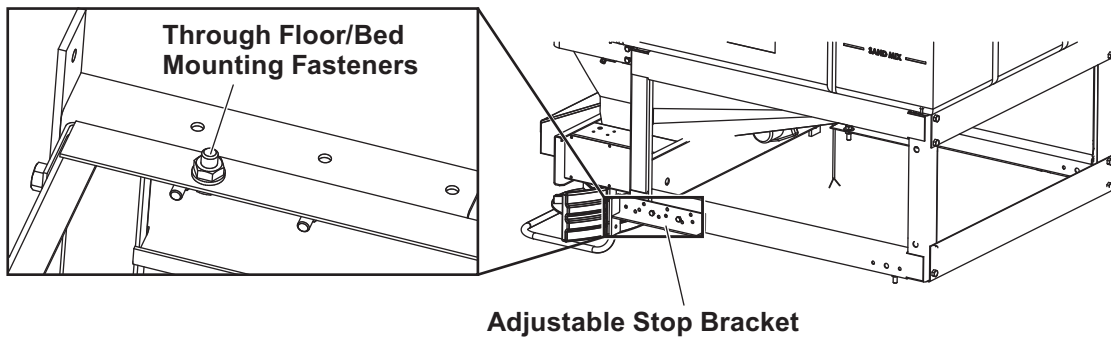
4. Mount the chute/deflector assembly to the spinner assembly with supplied hardware to form the drive assembly.
5. Mount the drive assembly to the spreader with a bent pin and secure with a hairpin cotter.
6. Slide the spreader forward until the deflector/chute assembly makes contact with the vehicle. Then slide spreader back approximately 1" to allow proper clearance.

### **⚠ 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.

7. Install stop bars using supplied hole patterns (see illustration below). If the holes are not present or do not align in this position, refer to the Installation Instructions.

**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

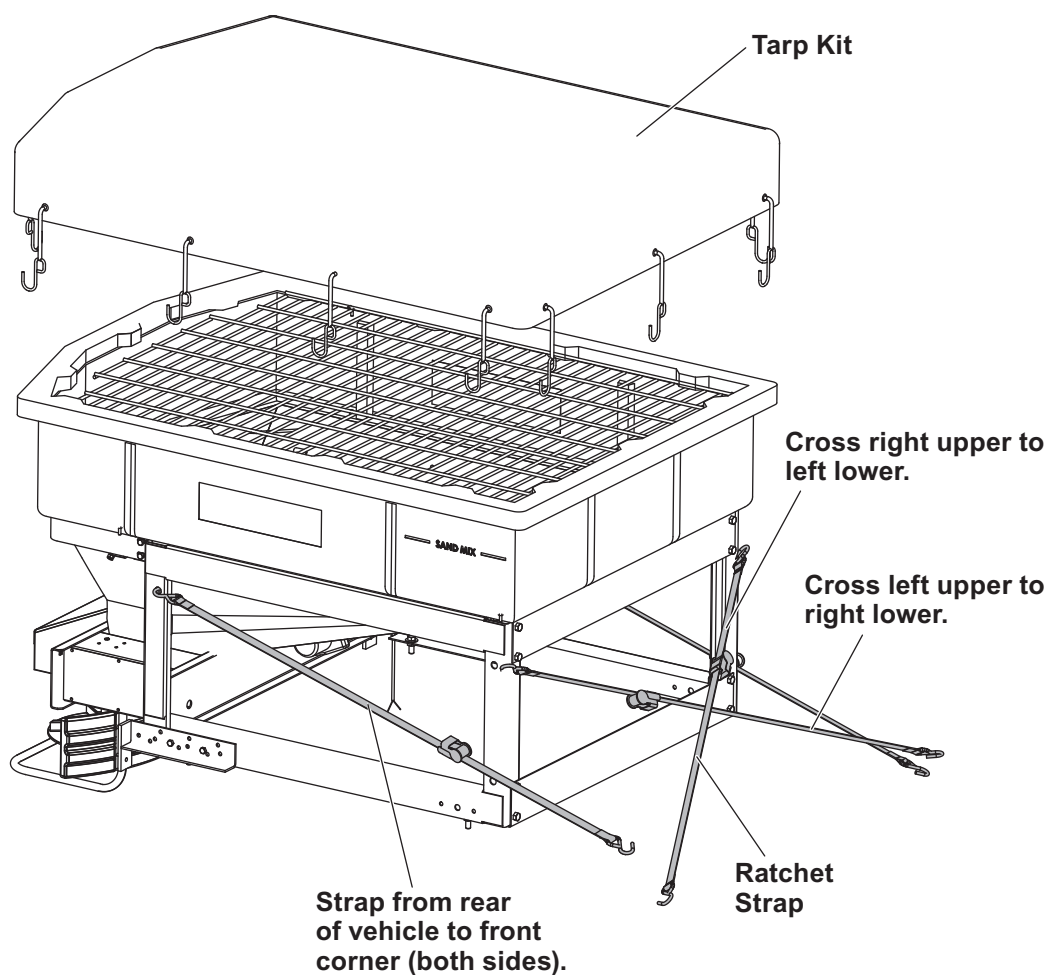
8. Once the spreader is positioned front to back, center it left to right. Looking at the inside front and rear corner of the lower frame area, you will notice four holes in the bottom of the frame.

9. Install and tighten all four cap screws.

10. Install the four ratchet straps as shown below.

**NOTE: It is important for safety that this strapping method be used as the standard mounting procedure.**

11. Connect the spreader power cord to vehicle main power plug mounted at the rear of the vehicle (refer to Installation Instructions for wiring instructions).



## OPERATING THE SPREADER – CAB CONTROL

### **⚠ WARNING**

Never operate equipment when under the influence of alcohol, drugs, or medications that might alter your judgment and/or reaction time.

### **⚠ WARNING**

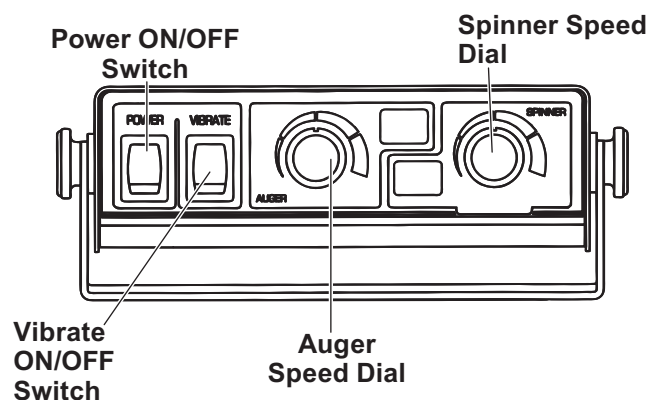
Never exceed 45 mph (72 km/h) when loaded spreader is attached to vehicle. Braking distances may be increased and handling characteristics may be impaired at speeds above 45 mph (72 km/h).

### **⚠ WARNING**

Never allow children to operate or climb on equipment.

## STARTING AND STOPPING MOTOR

1. To start the spreader, press the POWER switch to ON position on the control.
2. Press the POWER switch to the OFF position to stop the spreader. Speed of auger and spinner may be adjusted separately to get desired flow and spread distance.



**NOTE:** The truck ignition must be ON to start the spreader.

**NOTE:** If truck ignition is turned OFF while spreader is running, the motors will stop.

## ADJUSTING AUGER/SPINNER SPEED

1. Turn speed dial clockwise to increase speed. When POWER switch is set to ON position, the spreader will accelerate to speed set on spinner and auger dials.
2. Turning speed dial counterclockwise will decrease speed.

**NOTE:** Always use the tarp kit on the hopper to prevent moisture buildup. Do not let spreader sit idle with material in the hopper for an extended period of time. This can cause material to compact, reduce, or stop the flow of material and cause permanent hopper body deformation.

**NOTE:** The vibrator switch is needed for dense material or to increase the flow to the auger. This eliminates bridging of material in hopper.

**NOTE:** A material baffle has been installed in your spreader to stop fine material from free flowing. If using dense or damp material, or if more flow is desired, remove material baffle. However, it is recommended that the material baffle remain in place if using bulk salt.

# OPERATING THE SPREADER – CAB CONTROL

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## SPREADING TIPS

- Spread ice melters with the storm to prevent unmanageable levels of ice.
- Never exceed 10 mph (16 km/h) when spreading.
- For a wider pass, increase spinner speed.
- For a heavier pass, drive slower or increase auger speed.
- Never operate spreader near pedestrians.
- Calculate spread pattern when near vegetation.

## ACCESSORIES

The following accessories are available from your distributor:

### Optimum Flow Kit

The optimum flow kit improves material flow and allows spreading of a 50/50 salt/sand mix with a vibrator and dual pitch baffle.

### Auger Tube Restrictor Kit

The auger tube restrictor kit prevents leaking issues when handling fine pellet and flake materials.

## AUTO-REVERSE "AR" FEATURE

1. If your control displays "OL," this could indicate a jammed auger.
2. Switch OFF the main power for 3 seconds.
3. Switch the main power ON. When the machine starts to back up, the "AR" sequence will automatically start and the auger will reverse for several rotations to clear the jam.
4. After a pause of several moments, the auger will automatically return to correct rotation.
5. If the jam is still not cleared, the control will again display "OL" code.
6. You may repeat Steps 2 and 3 for a second and third time.
7. If after the third attempt the control displays "OL" code, you **must** extract the material that is causing the problem.
8. Follow all safety instructions when clearing jams.

## MAINTENANCE

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### WARNING

Never remove spreader with material in hopper.

### CAUTION

Disconnect electric power at spreader electrical wiring harness connection and tag out if required before servicing or performing maintenance.

### CAUTION

- When replacing parts use only original manufacturer's parts. Failure to do so will void warranty.
- The control is a solid state electronic unit and is not serviceable. Any attempt to service will void warranty.
- There are no serviceable parts in the motor/transmission assembly. Any attempt to service will void warranty.
- Spinner motor is not designed for continuous duty. Allow motor to cool between long cycle times.
- When pressure washing motor enclosure area, keep spray at least 36" away from motor enclosures.

## LUBRICATION

To keep your spreader running smoothly, observe the following recommendations:

- Lubricate bearings after every 20 hours of use.

## AFTER EACH USE

- Wash out the hopper and rinse off all external surfaces.
- Apply dielectric grease on all electrical connections to prevent corrosion.

## STORAGE

Store control in a cool dry place during the off season.

### At the End of Each Season or After Extended Storage

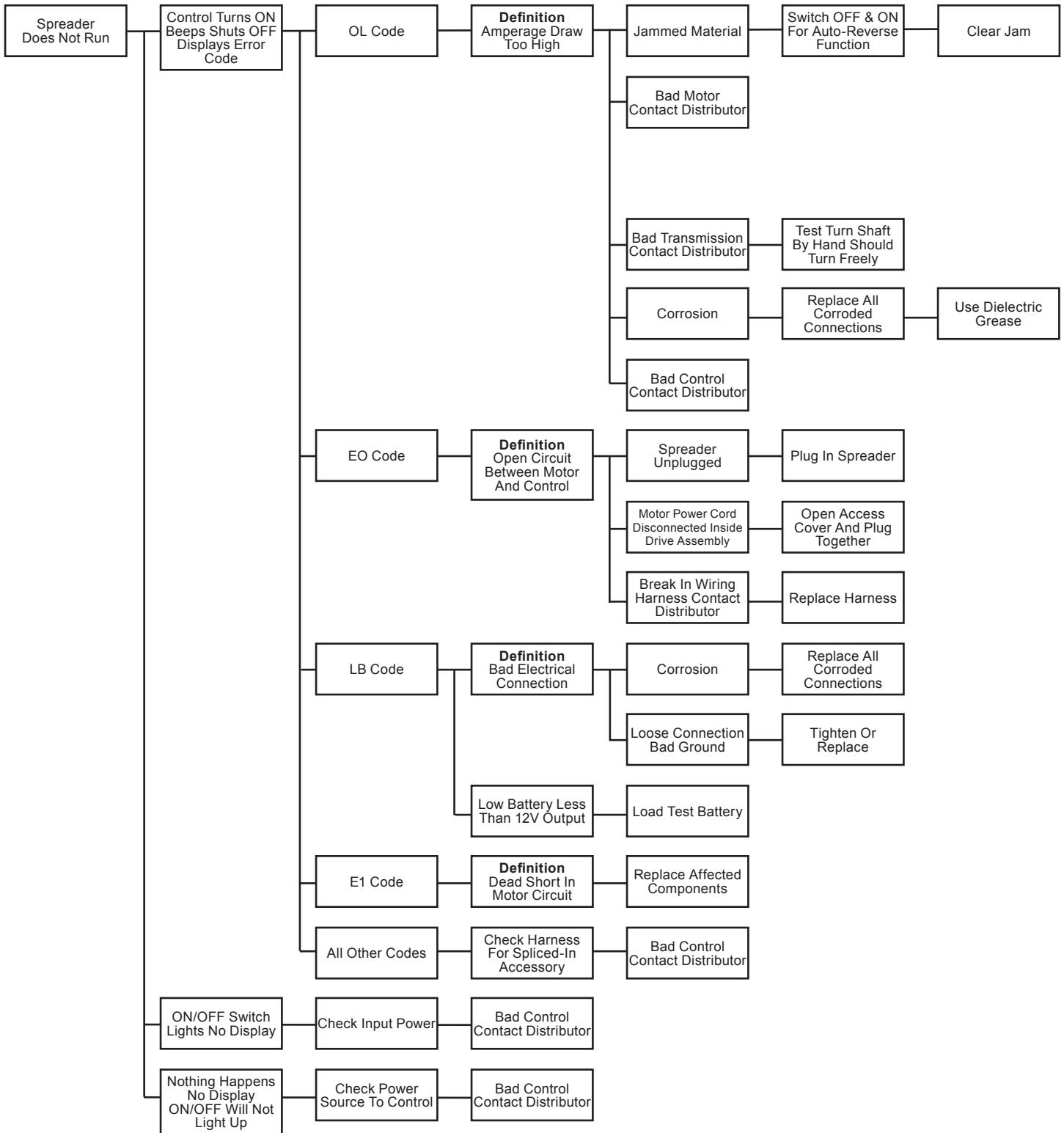
- Wash out the hopper and rinse off all external surfaces.
- Apply dielectric grease on all electrical connections to prevent corrosion.
- Lubricate all grease fittings with good quality multipurpose grease.
- Oil or paint all bare metal surfaces.
- If motor cover is removed for any reason, use silicone sealant to ensure weatherproofing of enclosure.
- After first use, tighten all fasteners on spreader and mount.

## FUSE REPLACEMENT

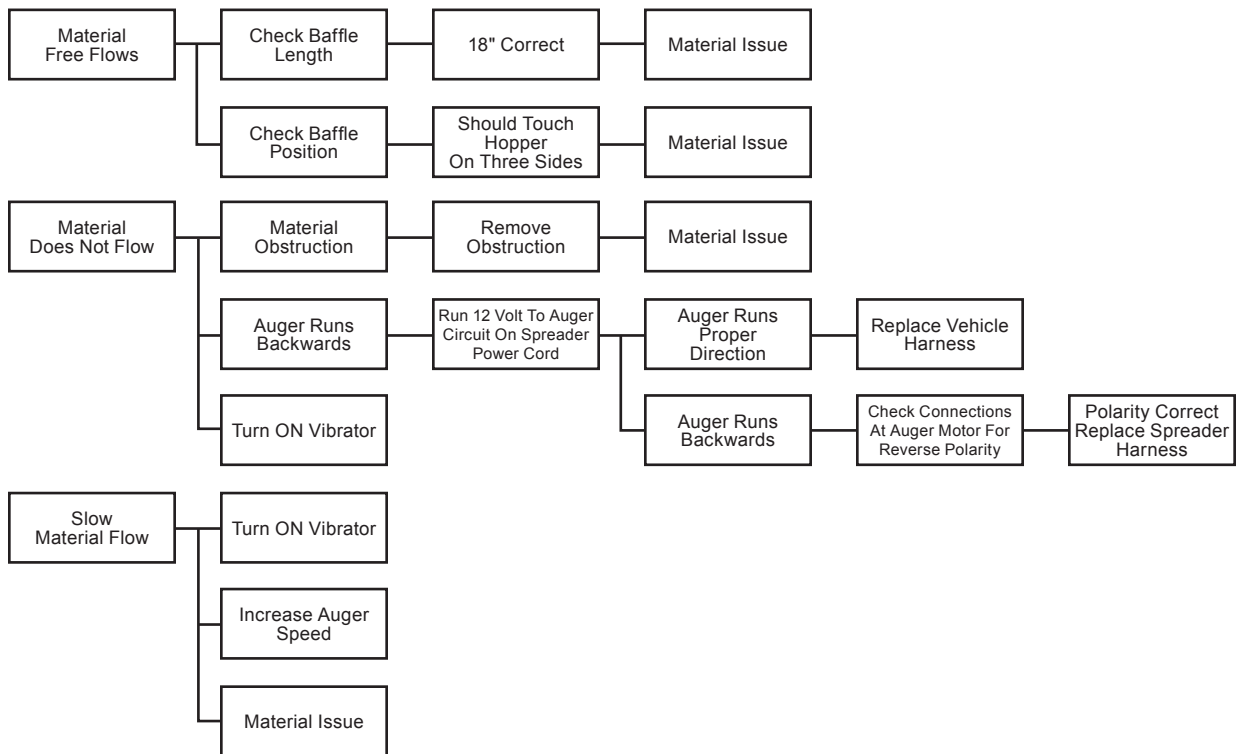
If a problem should occur and fuse replacement is necessary, the replacement fuse must be of the same type and amperage rating as the original. Installing a fuse with a higher rating can damage the system and could start a fire.



# TROUBLESHOOTING



# TROUBLESHOOTING







Western Products  
PO Box 245038  
Milwaukee, WI 53224-9538  
[www.westernplows.com](http://www.westernplows.com)

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