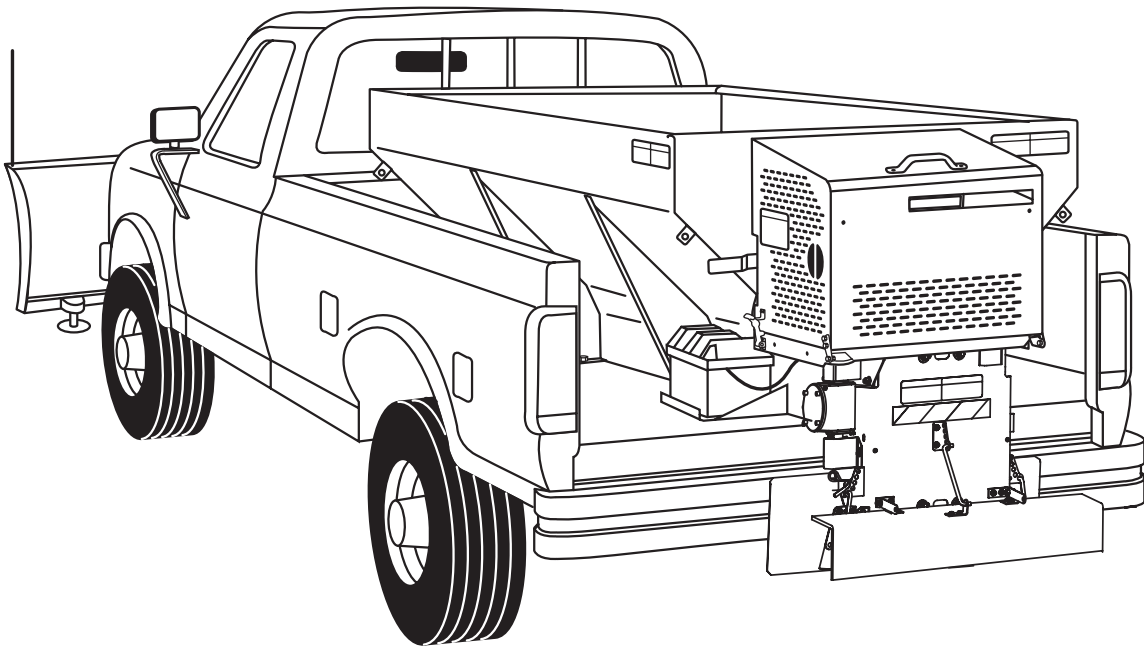




Regular and High Capacity ICE BREAKER™ Hopper Spreader

Installation Instructions



⚠ CAUTION

Read this document before installing
or operating the spreader.

These Installation Instructions are for WESTERN® ICE BREAKER Hopper Spreaders with serial numbers beginning with 0402-0608.

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.

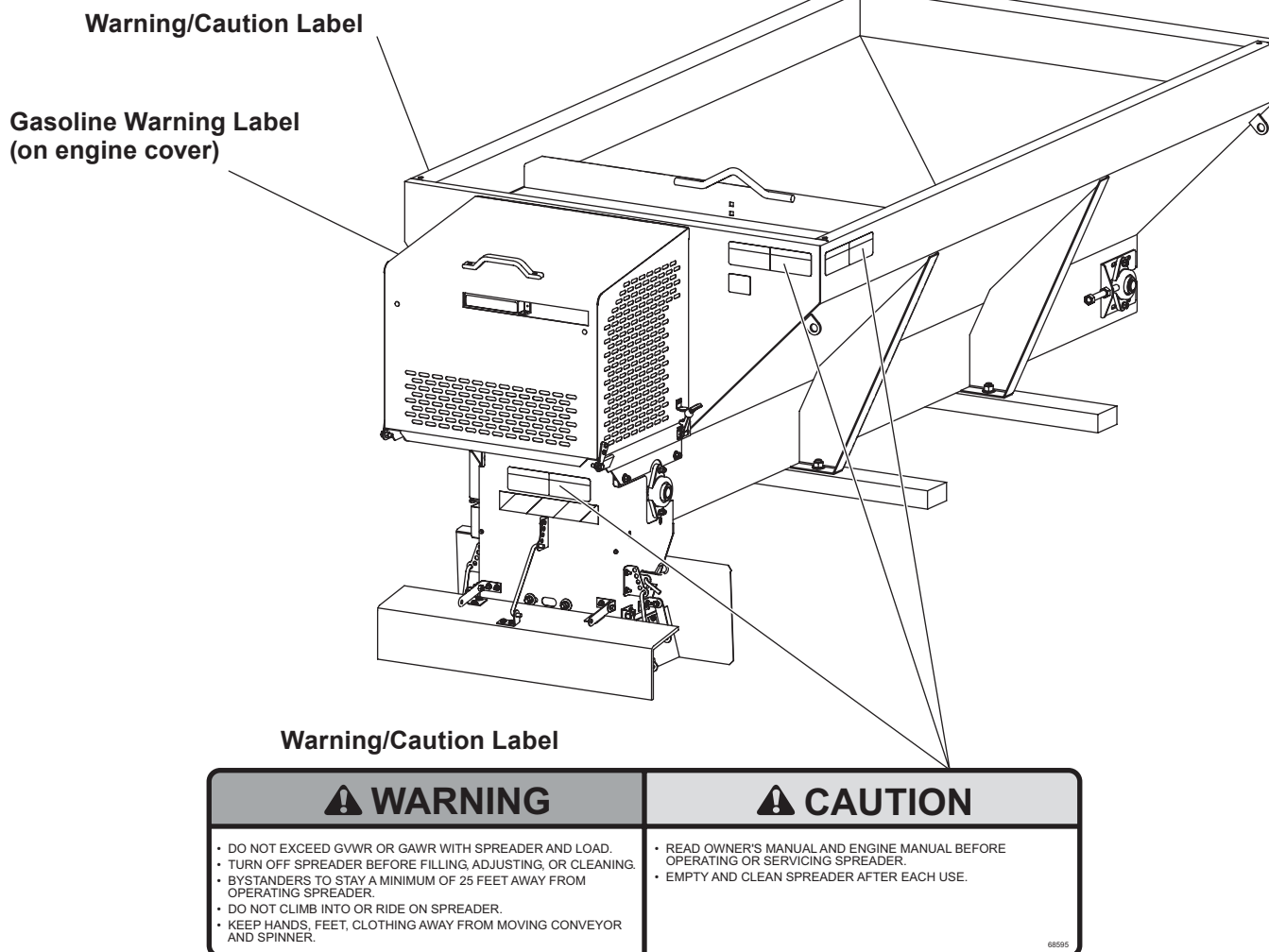
Gasoline Warning Label

⚠ WARNING

Gasoline is flammable.

- Turn off engine and allow it to cool before filling gas tank.
- DO NOT smoke or use open flame within 25 feet of spreader.
- Allow spilled gas to evaporate completely before starting engine.
- Gasoline engine produces poisonous gases while running. DO NOT operate in an enclosed area.
- Gasoline engine has hot and moving parts that can cause injury. Use care when working with or near the gasoline engine and its parts.
- Shut off engine when not in use, even for short periods of time, to avoid damage to equipment or property.

88201



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).

⚠ WARNING



Hydraulic fluid under pressure can cause skin injection injury. If you are injured by hydraulic fluid, get medical attention immediately.

⚠ 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 blade-style automotive 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.

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/s² to the hand-arm or 0.5 m/s² 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

These instructions cover vehicles which 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



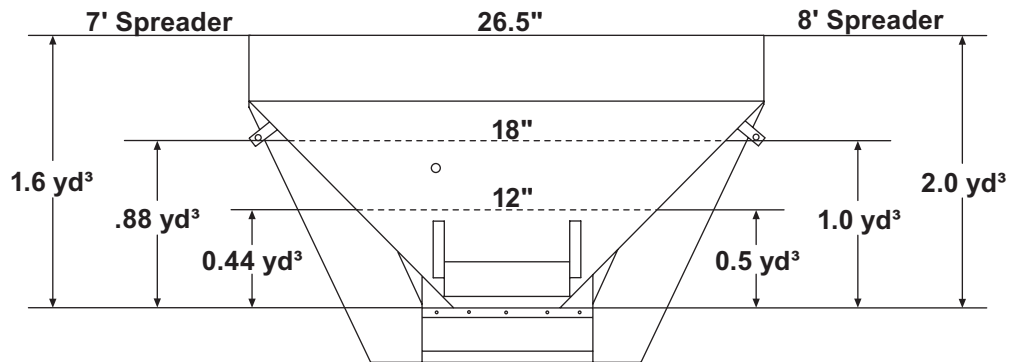
Read and adhere to manufacturer's ice-control material package labeling, including Material Safety Data Sheet requirements.

MATERIAL WEIGHTS

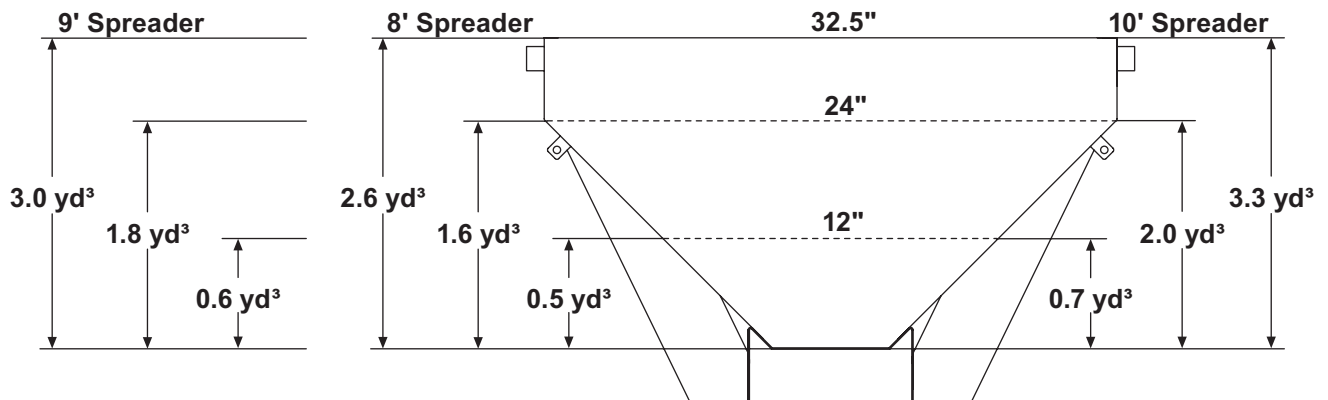
Material	Density		
	(lb/ft ³)	(lb/yd ³)	(kg/m ³)
Salt	80	2160	1282
Sand	100	2700	1602

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.

Regular Capacity Load Volume



High Capacity Load Volume



MOUNTING THE SPREADER

Mounting the Spreader onto the Vehicle

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

⚠ CAUTION

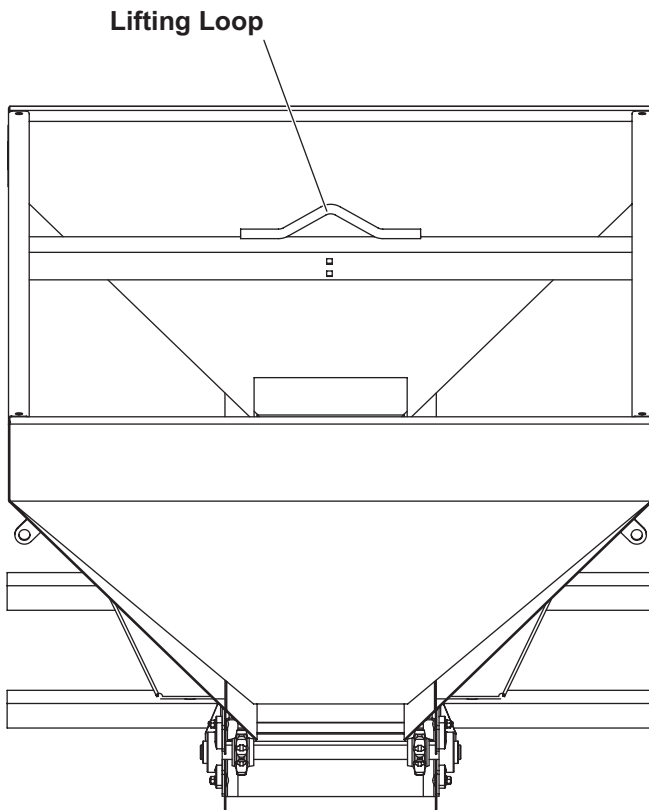
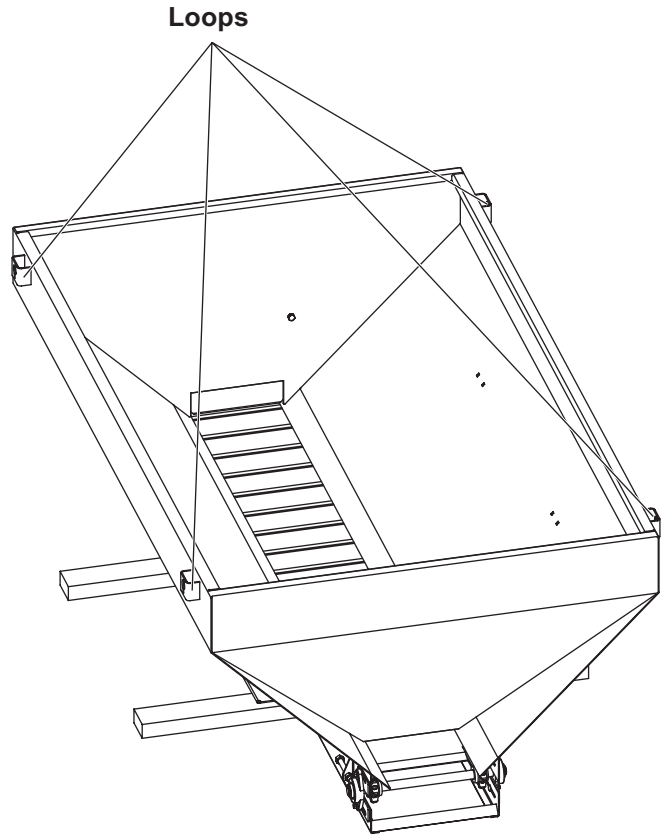
Before lifting, verify hopper is empty of material. The lifting device must be able to support the spreader's weight.

1. Remove the tailgate from the truck.
2. Lift the spreader. See appropriate instructions below.

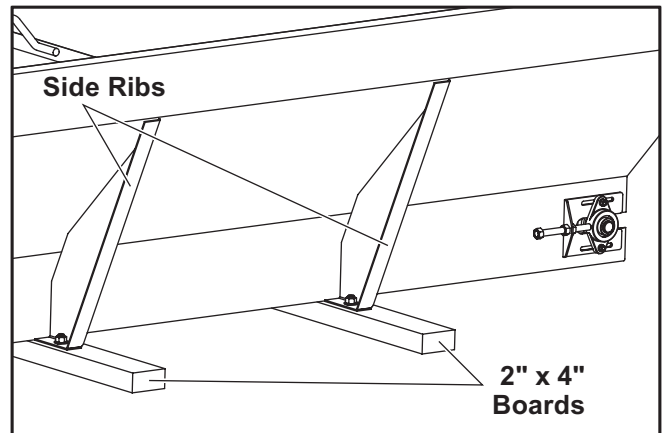
Regular Capacity: Lift spreader by hooking the loop located on rear cross channel inside hopper.

NOTE: The loop is located at the approximate balance point of the spreader. The balance point may vary with engine fluid levels, battery, top screen, or residual material in hopper.

High Capacity: Lift spreader by hooking all four loops located at the corners of the hopper.

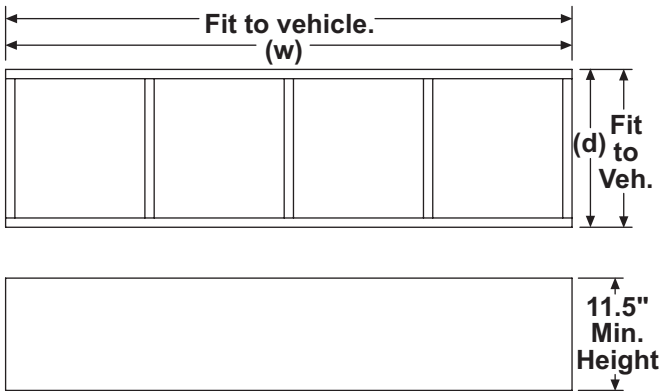


3. Before lowering the spreader, place lengths of lumber (2" x 4" x 48" minimum) under the side ribs. By elevating the spreader off of the vehicle, it is easier to remove excess material that accumulates under the spreader.



MOUNTING THE SPREADER

- Center the spreader on the vehicle with the end of the spreader sills 11" to the rear of the nearest vertical obstructions (bumper, trailer hitch, etc.).
- Measure the distance from the front of the truck bed to the sills and make a spacer to place between the bed and the rails.



⚠ WARNING

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

- Bolt the spreader to the vehicle frame through the lengths of lumber using the holes located at each lower support leg. Use 1/2" hardware as required by vehicle application. If 2 x 4s are not directly over the truck box supports, the truck bed must be braced to the frame to prevent buckling or deforming the truck bed.

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.

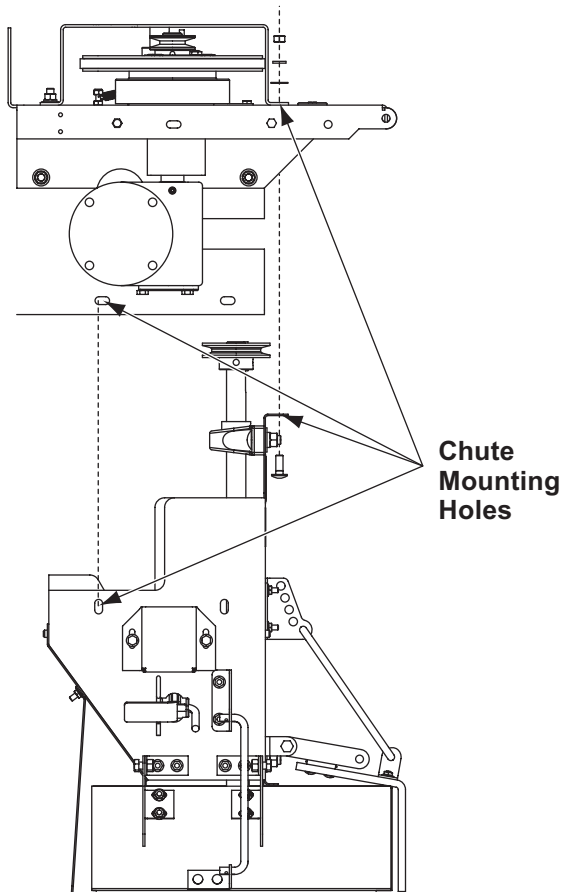
CHUTE ATTACHMENT INSTRUCTIONS

Chute Assembly – Center Belt Drive Gas Engine Hopper

NOTE: Chute assembly is a two person activity.

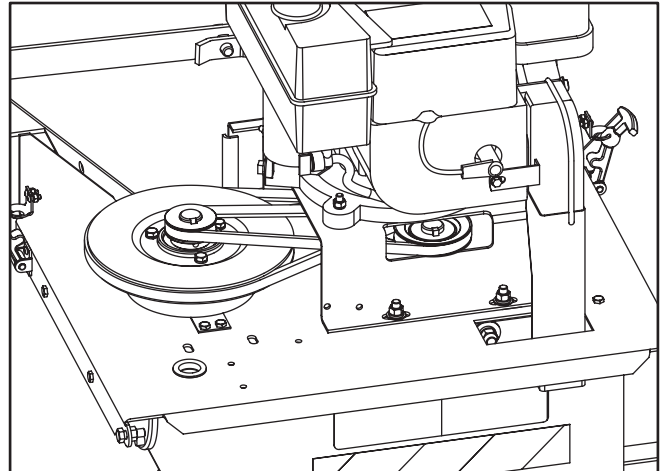
NOTE: For an alternate chute mounting procedure, see instructions for mounting to a hydraulic hopper.

1. **26" Chute Only:** Remove the access panel on the back of the chute housing.
2. Loosely attach the chute assembly using four 3/8" x 1" carriage bolts, flat washers, lock washers, and nuts with the heads of the fasteners on the inside of the chute.



3. Push the chute assembly toward the front of the vehicle. DO NOT tighten the bolts at this time.

4. Install the belt between the spinner shaft pulley and the gear case pulley. Raise chute up to bottom of engine base and tighten four mounting bolts.

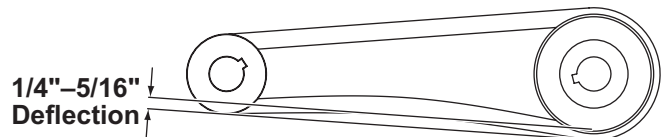


5. Verify the pulleys are in line, *the set screws are tight*, and there is adequate clearance between the pulley and the engine mount.

⚠ CAUTION

Overtightening the belts may damage the bearings on the gear case, the engine, and/or the spinner shaft. Overtightening will also shorten the life of the belt.

6. To adjust belt tension, loosen the spinner shaft bearing bolts and move the spinner shaft away from the gear case. Correct belt tension allows 1/4" to 5/16" deflection midway between the pulleys when belt is pushed with your finger. Make sure the spinner shaft is vertical and the pulleys are lined up before retightening the fasteners.



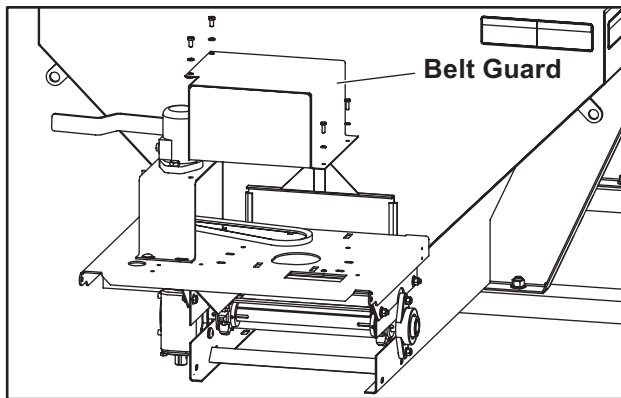
7. **26" Chute Only:** Secure the access panel onto the chute housing.
8. Tighten all fasteners according to the torque chart.

CHUTE ATTACHMENT INSTRUCTIONS

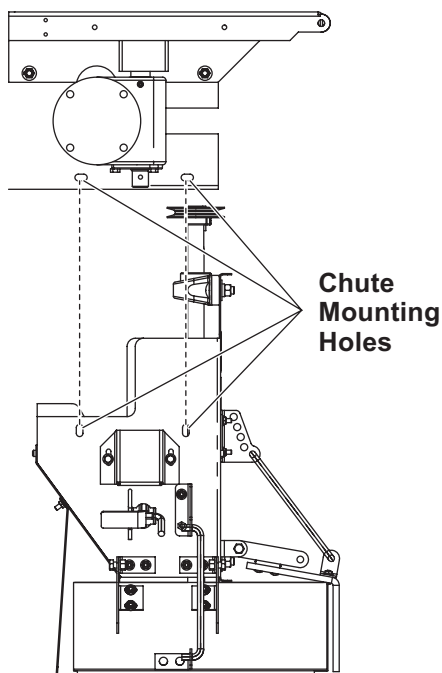
Chute Assembly – Center Belt Drive Hydraulic Hopper

NOTE: Chute assembly is a two person activity.

1. **26" Chute Only:** Remove the access panel on the back of the chute housing.
2. Remove belt guard from hopper.



3. Loosely attach the chute assembly using four 3/8" x 1" carriage bolts, flat washers, lock washers, and nuts with the heads of the fasteners on the inside of the chute.

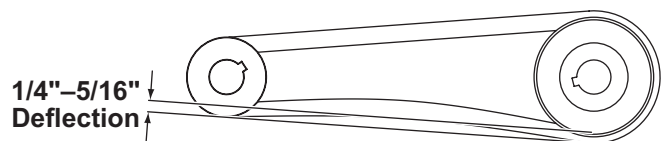


4. Push the chute assembly toward the front of the vehicle. DO NOT tighten the bolts at this time.
5. Install the belt between the spinner shaft pulley and the gear case pulley. Raise chute up to bottom of engine base and tighten four mounting bolts.
6. Verify the pulleys are in line and *the set screws are tight*. (You may have to lower the pulley on the chute about 2 inches).

⚠ CAUTION

Overtightening the belts may damage the bearings on the gear case, the engine, and/or the spinner shaft. Overtightening will also shorten the life of the belt.

7. To adjust belt tension, loosen the spinner shaft bearing bolts and move the spinner shaft away from the gear case. Correct belt tension allows 1/4" to 5/16" deflection midway between the pulleys when belt is pushed with your finger. Make sure the spinner shaft is vertical and the pulleys are lined up before retightening the fasteners.



8. Additional belt tension may be applied by pulling the chute assembly toward the rear.
9. Install belt guard.
10. **26" Chute Only:** Secure the access panel onto the chute housing.
11. Tighten all fasteners according to the torque chart.

WIRING AND HARNESS PLUG INSTRUCTIONS

Wiring Instructions

To properly wire the hopper spreader, please adhere to the following recommended installation sequence.

1. Install either the Spreader or Vehicle Battery Kit per the instructions included with the kit.
2. Install the vehicle harness included with the spreader per the following instructions.
3. Install the cab control per the instructions included with the cab control.

Vehicle Harness Installation

All spreaders are shipped from the factory with the spreader harness wired to the engine, clutch, and electric throttle.

NOTE: Use dielectric grease on all electrical connections.

1. Plug the vehicle harness into the spreader harness.
2. Lay out a path for routing the vehicle harness into the cab of the truck. Make sure the vehicle harness avoids any hot or moving parts of the truck. Routing will vary from truck to truck.
3. Identify a convenient location for the cab control that can be reached by the harnesses and wiring.

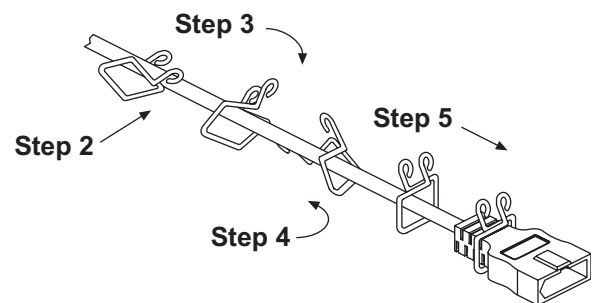
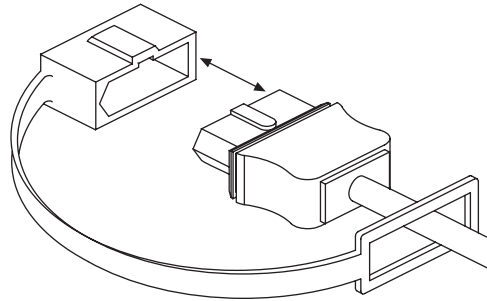
⚠ CAUTION

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

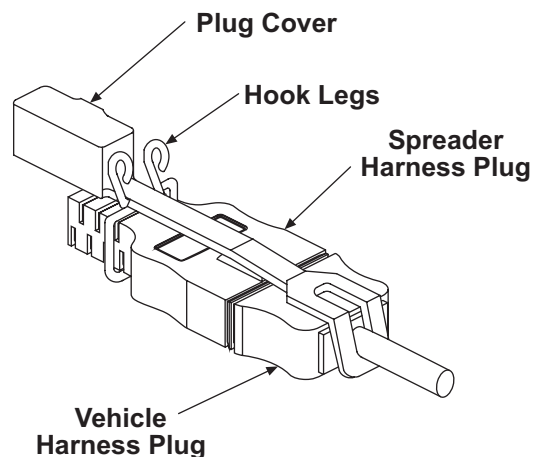
4. Drill a 5/8" hole in the fire wall so that the vehicle harness can reach the desired cab control location.
5. Insert the rubber grommet into the hole.
6. Route the harness to the desired location.
7. Secure the vehicle harness to the truck. Verify that the harness cannot drop onto the road when it is disconnected from the spreader.

Harness Plug and Hook Instructions

1. Install the plug cover as shown.



2. Position the legs of the hook over the spreader harness.
3. Twist the hook to spread the wire.
4. Rotate the hook and push over the spreader harness.
5. Squeeze the legs of the hook together and slide the hook over the spreader harness plug.
6. After connecting the spreader harness plug with the vehicle harness plug, secure the plug cover into the legs of the hook.



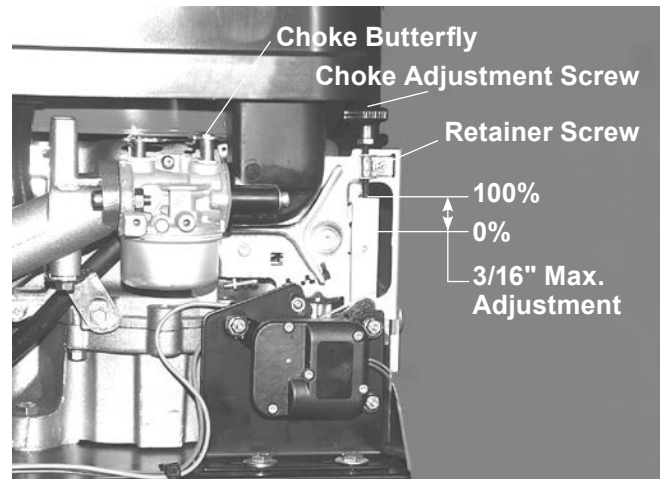
CHOKE ADJUSTMENT PROCEDURE

Tecumseh Choke Adjustment Procedure

1. The choke linkage and choke adjustment screw is shipped from the factory with the choke butterfly set to **75% fully closed choke**.
2. With the choke set at 100% the engine will not stay running in the choked position. This position is for *extremely* cold conditions. Throttle linkage travel from 0% to 100% choke is 3/16". Four and one-half turns of the choke adjustment screw (clockwise when viewed from above the engine) will take the maximum choke setting from fully closed to fully open (no choking at all).
3. To adjust your choke setting, loosen the adjustment retainer screw and rotate the choke adjustment screw clockwise one full turn (scratch a mark on the knob to indicate position). This will generally allow the engine to run very roughly with the throttle linkage at maximum choke. This is

approximately the equivalent of 75% fully closed choke. **(This is the factory setting.)**

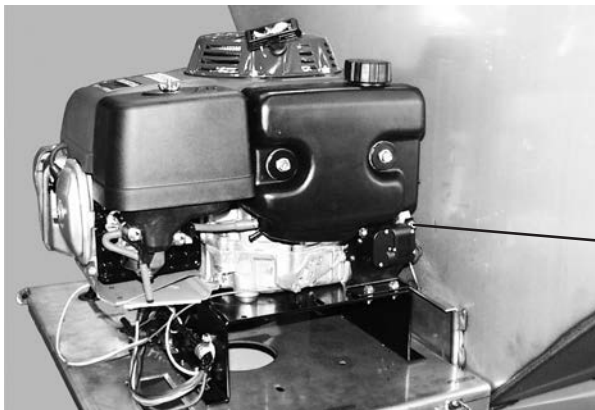
4. Additional adjustments can be made by 1/4 turn increments until you reach the desired start/run in choke setting of your preference/need.



Honda® Choke Adjustment Procedure

1. Engines are shipped with choke adjusted to the completely closed position when the choke is engaged. The choke only requires adjusting if inspection reveals the choke is not fully closing.
2. Move throttle control to full choke position.
3. Turn choke adjusting screw counter-clockwise five to seven turns.
4. Attempt to move choke rod in the direction of the choke adjusting screw. If the rod has no movement, no adjustment is necessary.

5. Return the choke adjusting screw to its original position or clockwise until it touches choke lever.
6. If the choke rod has movement, bend engaging tab in the direction away from choke adjusting screw until there is no choke rod movement.
7. In the event bending the tab fails to remove all choke rod movement, partially straighten out the bend in the choke rod. This bend is near the governor arm.
8. The choke adjustment screw, when properly adjusted, stops excessive force from being exerted on the choke actuator.



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HYDRAULIC UNIT INSTALLATION INSTRUCTIONS

Hydraulic Unit Installation

Recommended sequence of installation is as follows:

1. Pump (not provided).
2. Install hydraulic reservoir.
3. Install cab control valve (optional).
4. Install hydraulic hoses (not provided).
5. Fill hydraulic reservoir and check system.

Pump

Because of the wide range of possible installations of this hopper spreader, no pump is supplied with the unit. If your truck does not have a pump suitable to your application, one may be purchased from a local truck equipment supplier. This pump should produce 9 GPM at 1,500 psi at normal operating speed and have 1" NPT suction and discharge ports.

Hydraulic Reservoir Installation

Position the reservoir outlet as high, or higher than, the pump inlet. Keep the hose distance as short as possible. (Reservoir used should have a capacity of 1-1/2 to 2 times the pump maximum flow rate in GPM.)

Cab Control Valve Installation

1. With the seat fully forward, select a suitable location to mount the cab control valve allowing for the operator to adjust the control and to turn it ON and OFF.
2. Check for clearance with ALL controls in the cab.
3. Under the cab, check for interference with transmission, etc.
4. Check to see that the cab control valve location does not interfere with entering or leaving cab.
5. Fabricate a bracket to mount cab control valve in selected location.
6. Insert a grommet into all holes drilled for this installation.
7. Mount valve and plumb pump and motor to valve.

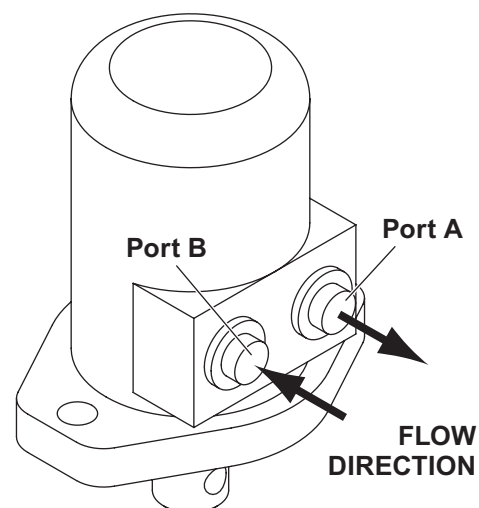
For single hydraulic motor and valve option:

Plumb Port "T" to reservoir, Port "P" to pressure side of pump, and Port "REG" of the valve to Port "B" of the gear box motor.

For dual hydraulic motor and valve option:

Plumb Port "Auger" to Port "B" of gear box motor and Port "Spinner" to Port "B" of spinner motor.

8. Check machine for proper rotation of drive shafts and hydraulic leaks.

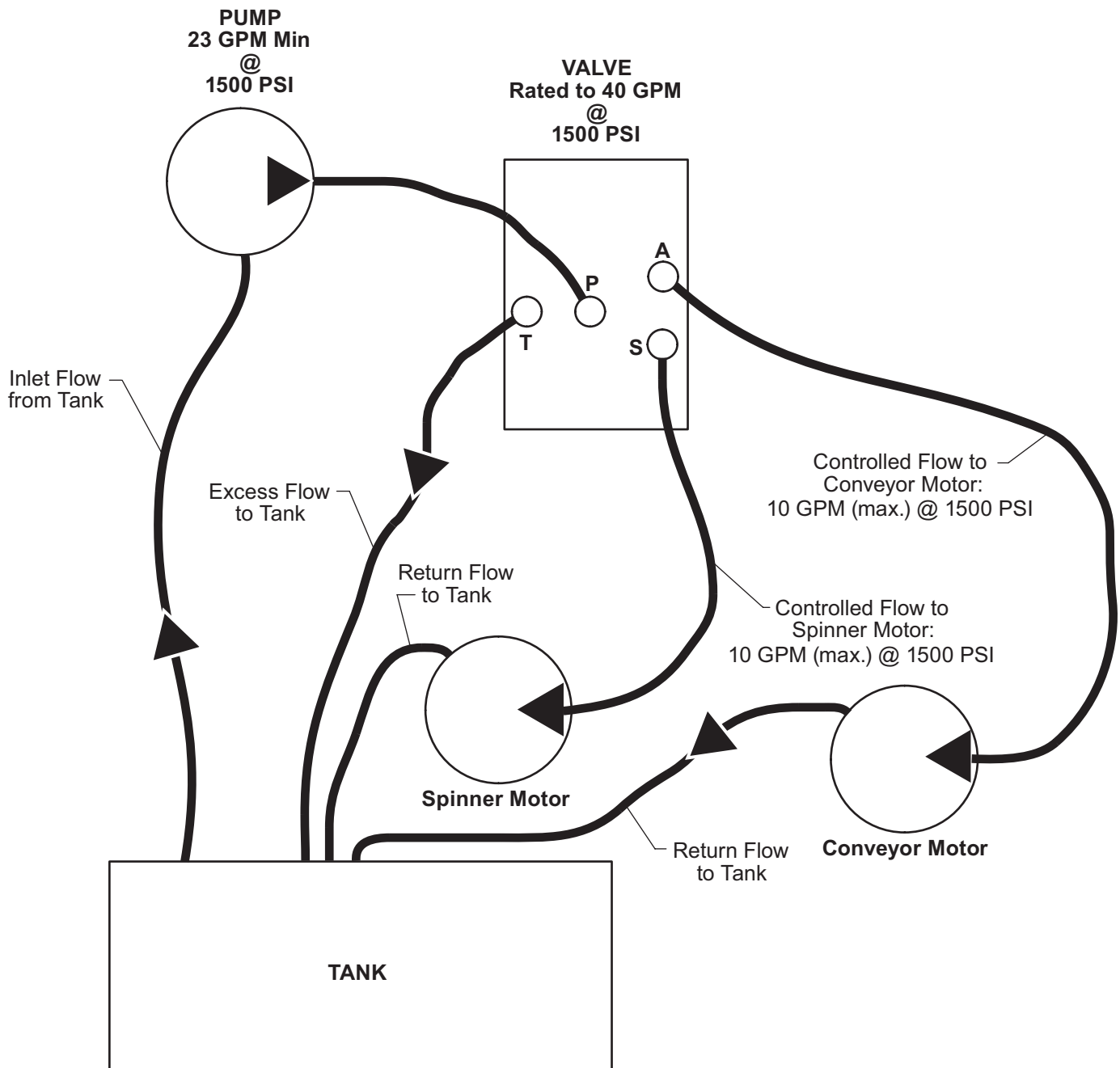


Hydraulic Motor Plumbing

DUAL HYDRAULIC CIRCUIT DIAGRAM

Typical Hydraulic Circuit

Dedicated Fixed Displacement Pump



FINAL ADJUSTMENTS

Drive Belts and Conveyor Chain

NOTE: Overtightening the belt or chain may result in damage to the motor or gear box bearing.

Check engine to electric clutch and clutch to spinner pulley belt tension. Correct tension allows 1/4"–5/16" deflection midway between the pulleys.

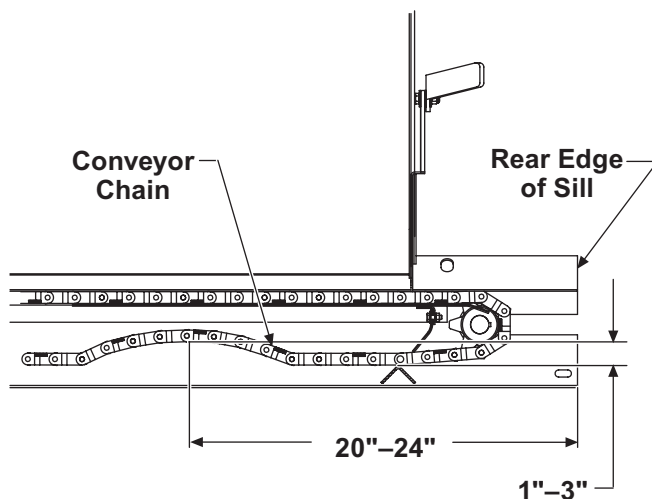
To *increase* spinner belt tension:

Loosen spinner bearing bolts, and pull shaft assembly away from the clutch. After correct tension is achieved, retighten the bearing bolts.

Check the conveyor chain tension. To check the tension, measure in 20"–24" from the end of the sills. Push up on the chain with your hand. The conveyor chain should lift 1"–3" off the conveyor chain guide or cross angles.

To *increase* chain tension:

Use the two 5/8" x 6" take-up bolts at the front of the spreader to adjust conveyor chain tension. Loosen the locknuts before attempting to adjust the take-up bolts. Turn both bolts equal amounts to ensure the tension is equally distributed across both sides of the conveyor chain.



Final Checklist

- ☐ Verify correct engine oil level. (See engine manufacturer's Owner's Manual.)
- ☐ Verify the gear case oil level is level with the fill hole.
- ☐ Verify correct engine-to-clutch pulley alignment and belt tension.
- ☐ Verify correct gear case output shaft to spinner shaft alignment.
- ☐ Verify correct conveyor chain tension.
- ☐ Verify dielectric grease is applied to all electrical connections.
- ☐ Verify wire harnesses are properly secured away from hot or moving parts.
- ☐ Verify vehicle harness has sufficient ground clearance when the spreader is removed from the truck.
- ☐ Verify proper choke setting and choke light operation. See Choke Adjustment Procedure.



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