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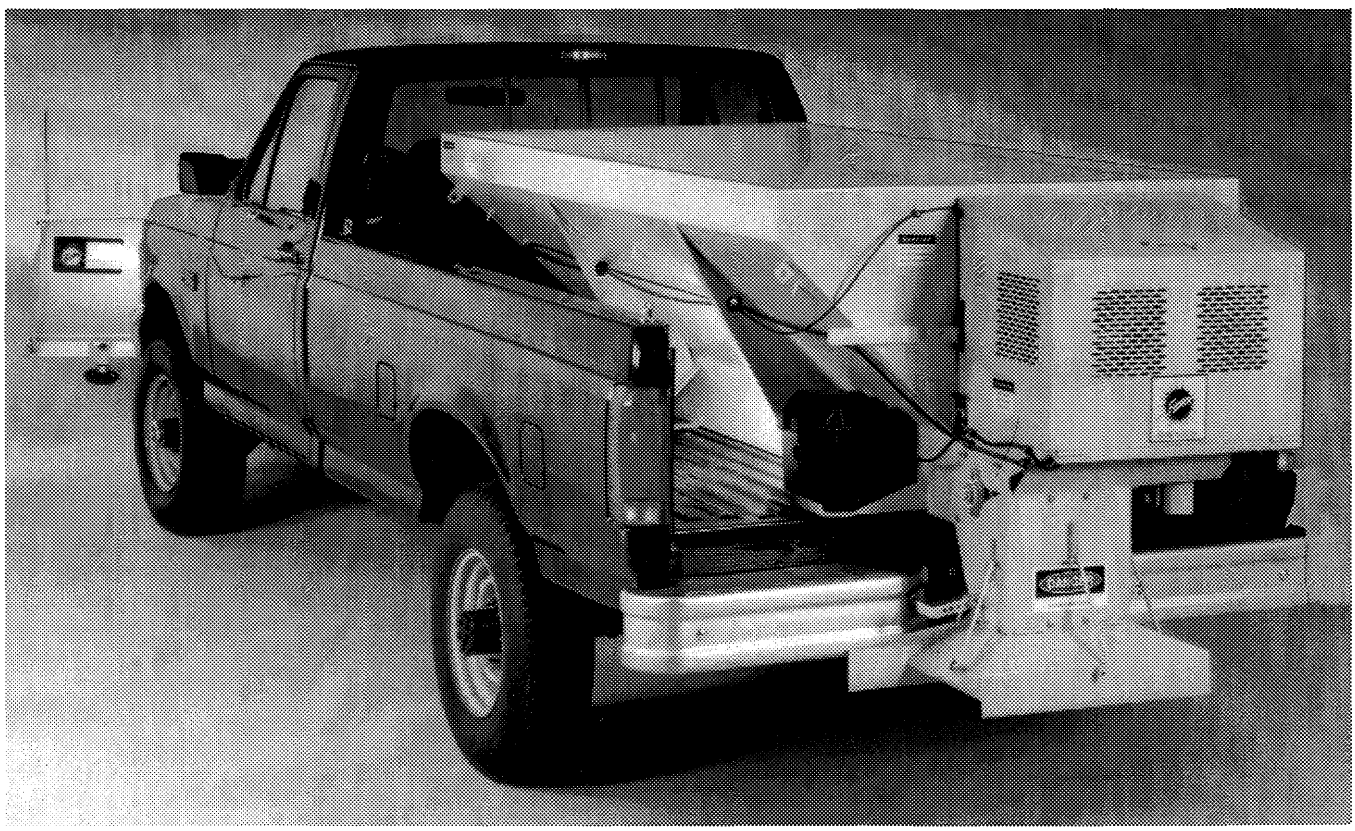
Gasoline Engine Regular and High Capacity Hopper Spreader Installation Instructions



Read the Installation Instructions before installing this unit.
This manual for Fisher Regular and High Capacity Hopper Spreaders with serial numbers (2600 -).

TABLE OF CONTENTS

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Fisher Engineering reserves the right under its product improvement procedures to change construction or design details and furnish equipment when so altered without reference to illustrations or specifications used herein. Fisher Engineering and the vehicle manufacturer may require and/or recommend optional equipment for hopper spreaders. Do not exceed the gross vehicle weight rating or gross axle weight rating with a spreader. Fisher Engineering offers a one-year limited warranty for all hopper spreaders. See separately printed page for this important information. FISHER® is a registered® trademark of Douglas Dynamics, L.L.C.

SAFETY

Safety Definitions

WARNING: The symbol at left identifies a **SAFETY WARNING** that indicates a potentially hazardous situation that, if not avoided, could result in death or serious personal injury.

CAUTION: Indicates a situation that, if not avoided, could result in damage to product or property.

NOTE: Identifies tips, helpful hints, and maintenance information the reader should know.

Safety Precautions

Observe the following safety procedures before and during the use of the spreader. By following these rules and applying common sense, possible personal injury and potential damage to the product may be avoided.

WARNING:

- Before working with the spreader, secure all loose fitting clothing and unrestrained hair.
- Before starting the spreader, check that all personnel and equipment are clear of the spreader and the spray area.
- Before operating the spreader, check that all safety guards are in place.
- Keep hands, feet, and clothing away from power-driven parts and the conveyor chain.
- Do not climb on or allow others to climb on the spreader at any time while operating.

CAUTION:

- Before operating the spreader, reassemble any parts or hardware that were removed.
- Before operating the spreader, remove materials such as cleaning rags, brushes, and hand tools from the spreader.

Torque Chart

When tightening fasteners, refer to Table 1, Torque Chart, for the recommended fastener torque values.

Table 1: Torque Chart

Recommended Fastener Torque Chart (Ft.-Lb.)			
Size	SAE Grade 2	SAE Grade 5	SAE Grade 8
1/4-20	6	9	13
5/16-18	11	18	28
3/8-16	19	31	46
3/8-24	24	46	68
7/16-14	30	50	75
1/2-13	45	75	115
9/16-12	66	110	165
5/8-11	93	150	225
3/4-10	150	250	370
7/8-9	202	378	591
1-8	300	583	893
Metric Grade 8.8 (Ft.-Lb.)			
Size	Torque	Size	Torque
M 6	7	M 12	60
M 8	17	M 14	95
M 10	35	M 16	155
These torque values apply to mount assembly fasteners except those noted in the instruction.			

Material Weights

Refer to Table 2, Material Weights, for the weight per cubic yard of common spreading materials.

Table 2: Material Weights

MATERIAL	WEIGHT (lb. per cubic yd.)
Fine Salt - Dry	2,025
Coarse Salt - Dry	1,431
Coarse Sand - Dry	2,700
Coarse Sand - Wet	3,240
Cinders	1,080

Regular Capacity

See Figure 1 to determine the correct amount of spreading material for the regular capacity hopper spreader.

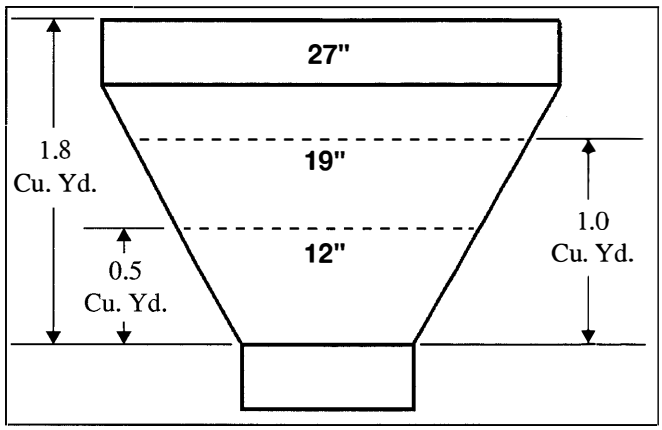


Figure 1

High Capacity

See Figure 2 to determine the correct amount of spreading material for the high capacity hopper spreader.

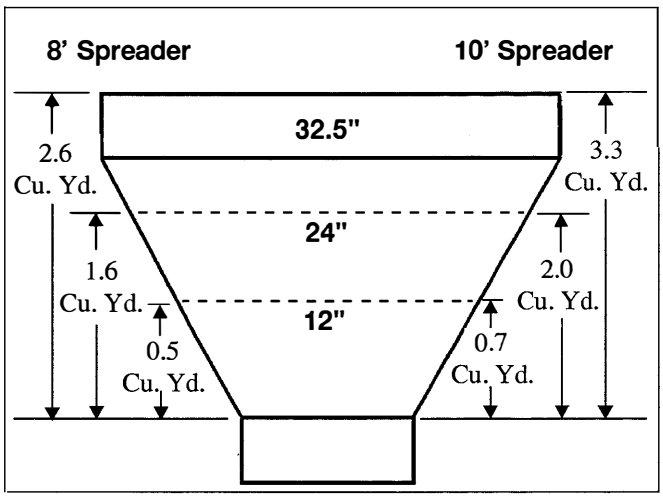


Figure 2

Mounting the Spreader onto the Vehicle

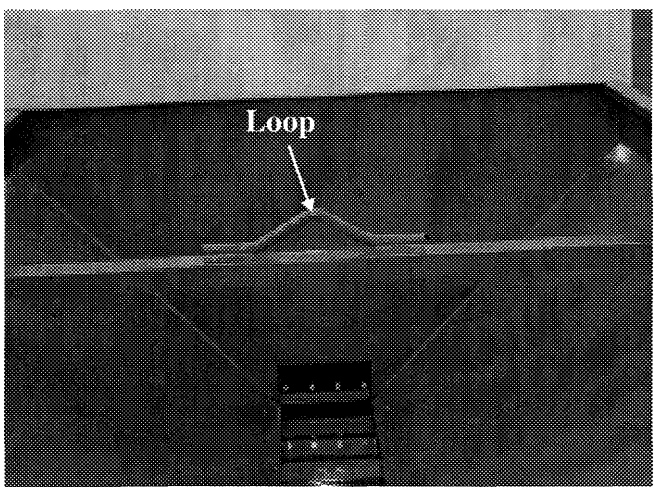
NOTE: Periodically through the snow season, verify the mounting devices are secure.

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

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

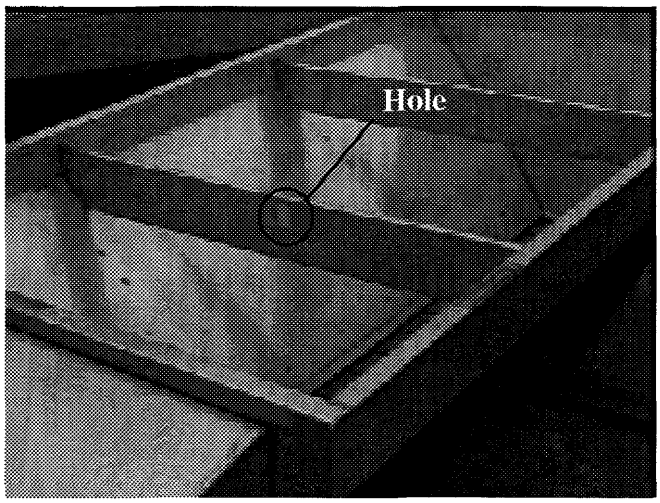
Regular Capacity: Lift spreader by hooking the loop (Mild Steel) or hole (16-Gauge Stainless Steel) located on rear cross channel inside hopper.

NOTE: The loop or hole 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. See Figures 3 and 4.



Mild Steel Spreader

Figure 3



Stainless Steel Spreader

Figure 4

High Capacity: Lift spreader by hooking all four loops located at the corners of the hopper. See Figure 5.

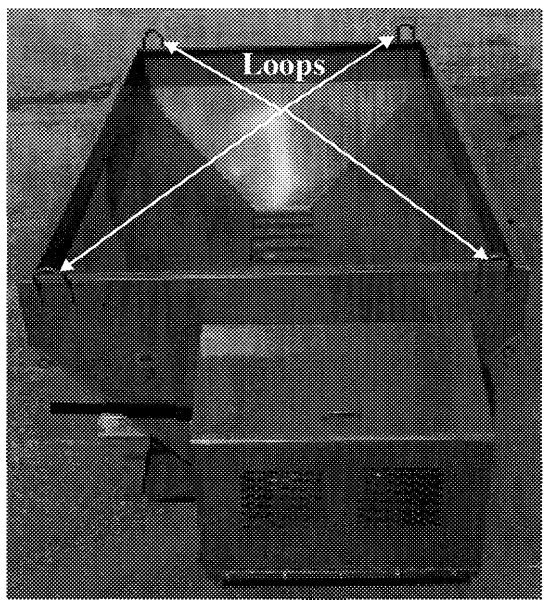


Figure 5

3. Before lowering the spreader, place lengths of lumber (2"x4"x48" 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. See Figure 6.

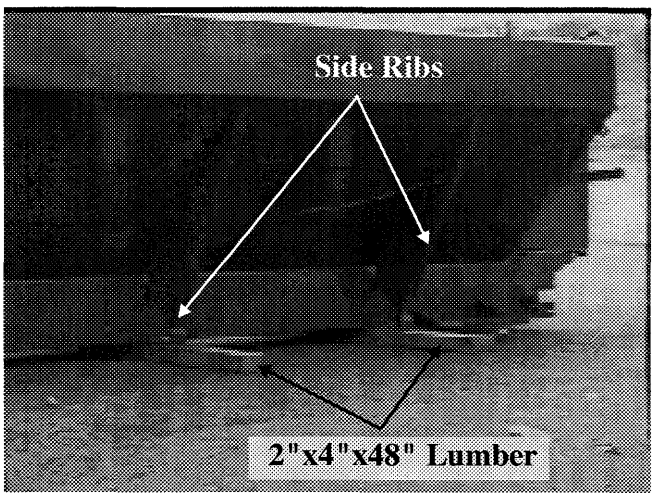
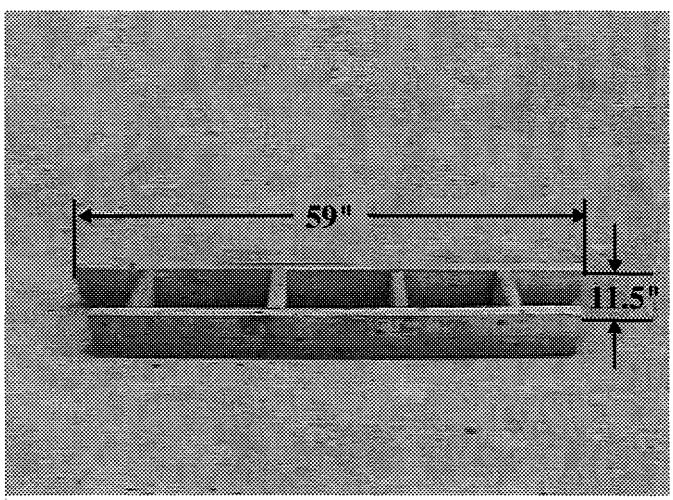


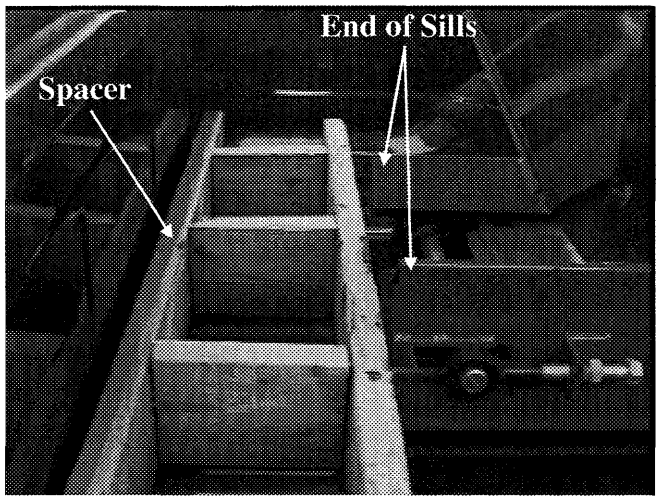
Figure 6

4. Center the spreader on the vehicle with the end of the spreader sills 11" to the rear of the nearest vertical obstruction (bumper, trailer hitch, etc.).
5. Measure the distance from the front of the truckbed to the sills and make a spacer to place between the bed and the rails. See Figures 7 and 8 for approximate size, shape, and location of spacer.



Example of a Spacer

Figure 7



Placement of the Spacer

Figure 8

6. Bolt the spreader to the vehicle frame through the lengths of lumber (step 3, page 3) using the holes located at each lower support leg. Use 1/2" hardware as required by vehicle application.

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.

7. Using the tie-down chains, secure the spreader to the vehicle using the tabs located at the corners of the spreader and the vehicle's factory-installed anchor points.

WARNING: Spreader must be bolted to vehicle frame. Do not rely on tie-down chains alone to hold spreader in vehicle.

Chute Assembly

1. Loosely attach the chute assembly using four 3/8" x 3/4" bolts, flat washers, lock washers, and nuts with the heads of the bolts on the inside of the chute. See Figure 9.

NOTE: ***High Capacity*** - Remove access panel on back of chute housing to aid installation.

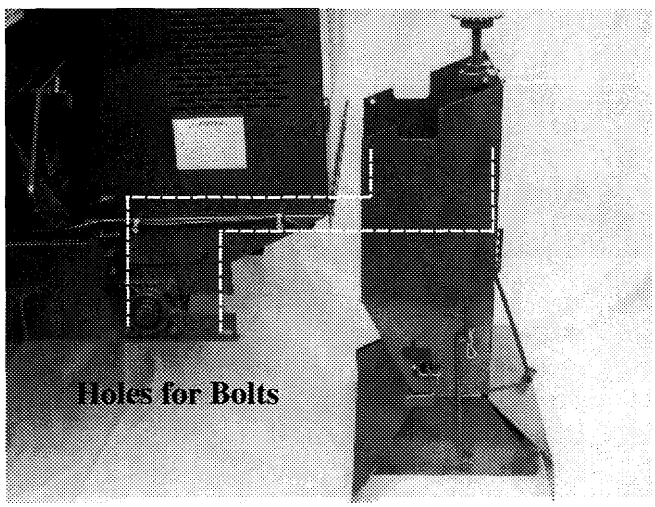


Figure 9

2. Push the chute assembly toward the front of the vehicle. DO NOT tighten the bolts at this time.
3. Install the roller chain between the spinner shaft sprocket and the gear case sprocket with the master link. See Figure 10.

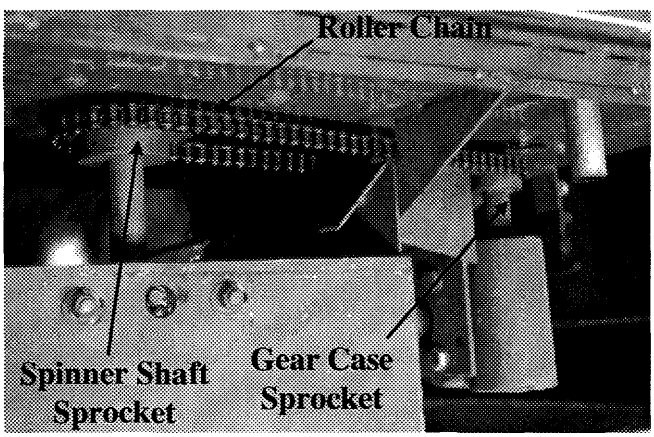


Figure 10

4. Verify the sprockets are in line and the set screws are tight.
5. To adjust roller chain tension, loosen the spinner shaft bearing bolts and move the spinner shaft away from the gear case. Correct chain tension allows a 5/16" deflection midway between the sprockets. See Figure 11.

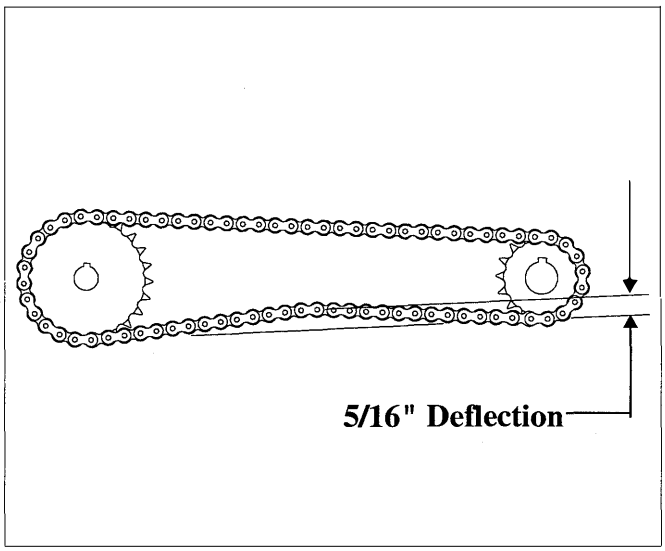


Figure 11

Make sure the spinner shaft is vertical and the sprockets are lined up before re-tightening the fasteners.

6. Additional chain tension may be applied by pulling the chute assembly toward the rear.

CAUTION: Overtightening the roller chains may damage the bearings on the gear case, the engine, and/or the spinner shaft. Overtightening will also shorten the life of the roller chain and of the sprockets.

7. Tighten all fasteners according to the Torque Chart on page 2.
8. Install the chain guard using 1/4" x 3/4" long hex cap screws, lock washers, and nuts. See Figure 12.

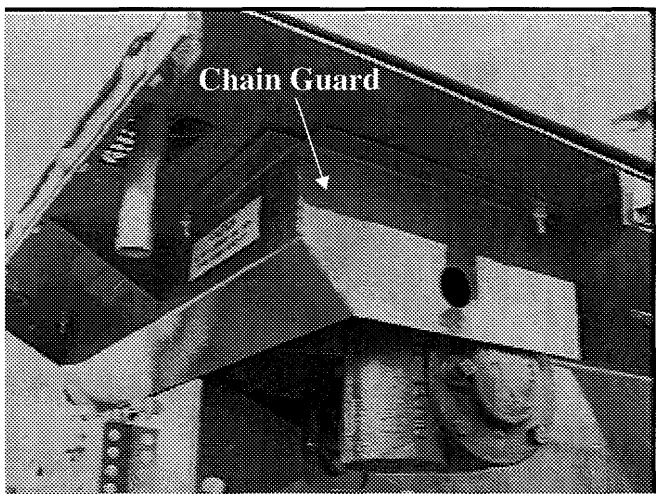


Figure 12

9. ***High Capacity Hopper Spreader Only***: Secure the access panel onto the chute housing.

Cab Control and Wire Harness Installation

NOTE: Use dielectric grease (provided) on all electrical connections.

1. All spreaders are shipped from the factory with the spreader harness wired to the engine, clutch, and electric throttle.
   Regular Capacity Spreaders: Attach the spreader harness to the side of the spreader using pre-drilled holes, #6 clamp loops, and tap screws.
   High Capacity Spreaders: The spreader harness is already routed.
2. Plug the vehicle harness into the spreader harness.
3. Lay out a path for routing the vehicle harness into the cab through the floor of the truck checking that the vehicle harness avoids any hot or moving parts of the truck. The routing will vary from truck to truck.
4. Identify a convenient location for the cab control that can be reached by harnesses and wiring.

NOTE: Due to the variety of possible in-cab locations, a mounting bracket is not provided.

5. Drill a 5/8" hole in the floor so that the vehicle harness can reach the desired cab control location.

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.

6. Insert the grommet into the hole.
7. Route the harness to the desired location.
8. Secure the harness to the truck. Verify the harness cannot drop onto the road when it is disconnected from the spreader.

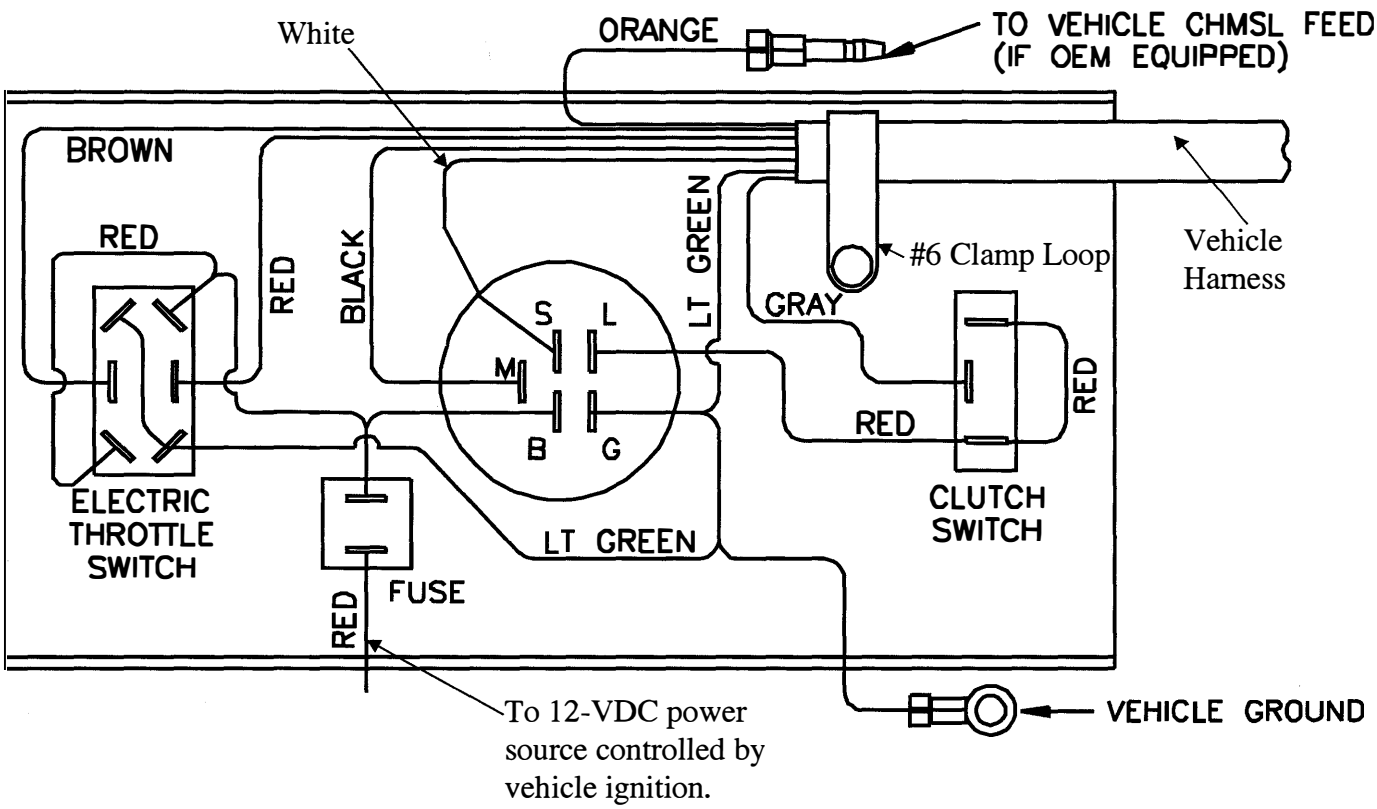


Figure 13

Refer to Figure 13 for steps 9-12.

9. Use a #6 clamp loop to secure the vehicle harness to the cab control bracket.
10. Connect the vehicle harness wires to the spreader cab control electrical terminals.
11. Connect the light green wire from the vehicle harness to a known ground on the vehicle.
12. Connect the power wire—red to an accessory wire/terminal that is controlled by the vehicle's ignition switch.
13. Fabricate any needed brackets and fasten cab control bracket in the cab of the truck.

CAUTION: Protect the wire harnesses from abrasion and cutting caused by sharp edges during installation and operation. Use tape, grommets, etc.

14. Install the plug cover and hook onto the harnesses.

Plug Cover Installation

Figure 14 shows how to install the plug cover.

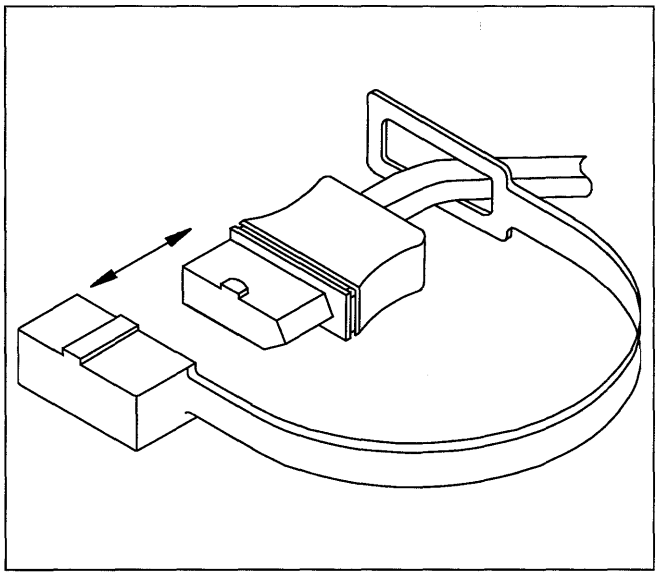


Figure 14

Hook Installation

Refer to Figure 15 for the following steps.

1. Position the legs of the hook over the spreader harness.
2. Twist the hook to spread the wire.
3. Rotate the hook and push over the spreader harness.
4. Squeeze the legs of the hook together and slide the hook over the spreader harness plug.

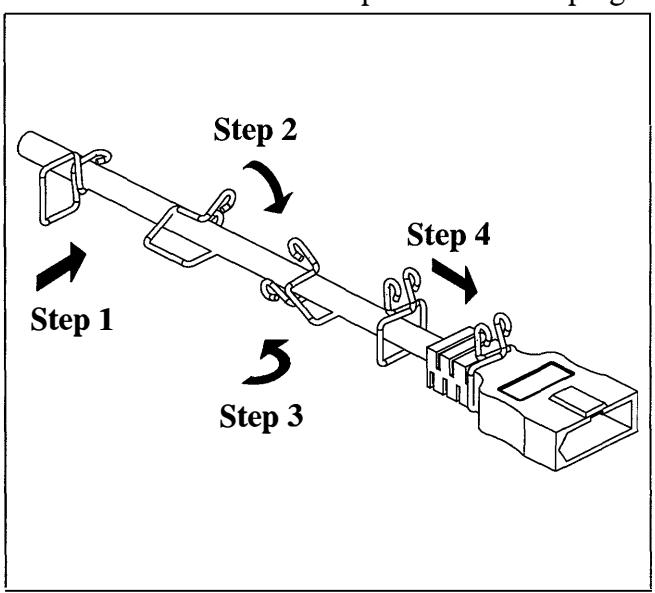


Figure 15

Using the Hook

After connecting the spreader harness plug with the vehicle harness plug, secure the plug cover into the legs of the hook as shown in Figure 16.

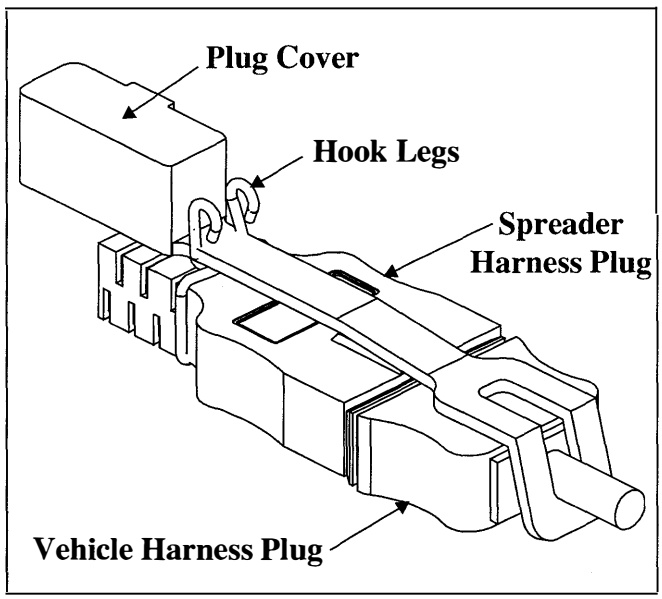


Figure 16

Spreader Battery Installation

NOTE: Apply dielectric grease to all electrical terminals before assembly.

Battery Safety

WARNING: Follow these warnings to avoid personal injury and damage to the equipment.

- Avoid exposing battery to a spark or flame.
- Always charge battery in a well ventilated area.
- Avoid serious contact with battery acid. It can cause serious personal injury and damage to the equipment.
- Always disconnect battery before removing or replacing any electrical components.
- Never lay anything on a battery. This could result in electrical shock or burns, or damage to the vehicle or equipment.

Install a 12-volt battery with a minimum of 400 cold cranking amps rating. The battery box will accept any Group 65, 64, 27, 24, or 22 series Top Terminal battery. See Figure 17.

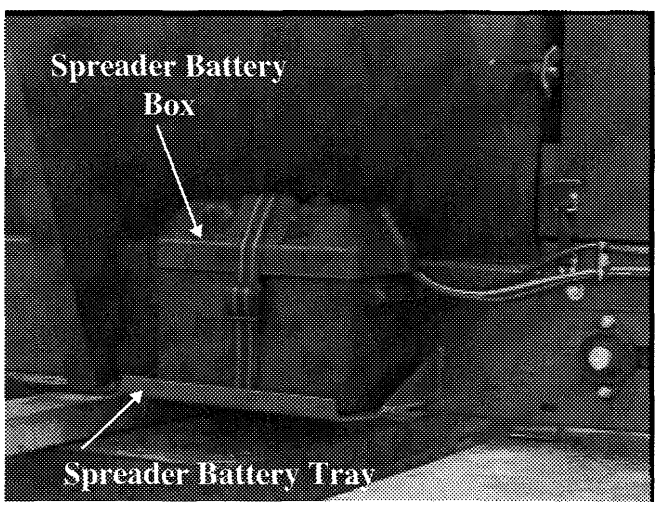


Figure 17

Chains

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. See Figure 18.

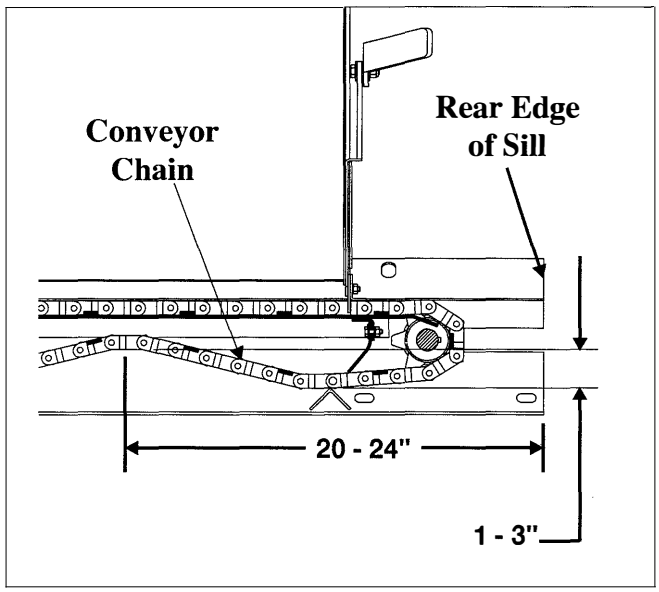


Figure 18

Use the (2) 5/8 x 6" take-up bolts at the front of the spreader to adjust the conveyor chain tension. Turn both bolts equal amounts to ensure the tension is equally distributed across both sides of the conveyor chain.

Continued on next page.

Check engine-to-electric clutch roller chain tension. Correct tension allows 5/16" deflection midway between the sprockets.
To increase chain tension: loosen the four (4) engine mount-to-engine base bolts and pull the engine away from the electric clutch. Re-tighten bolts. See Figure 19.

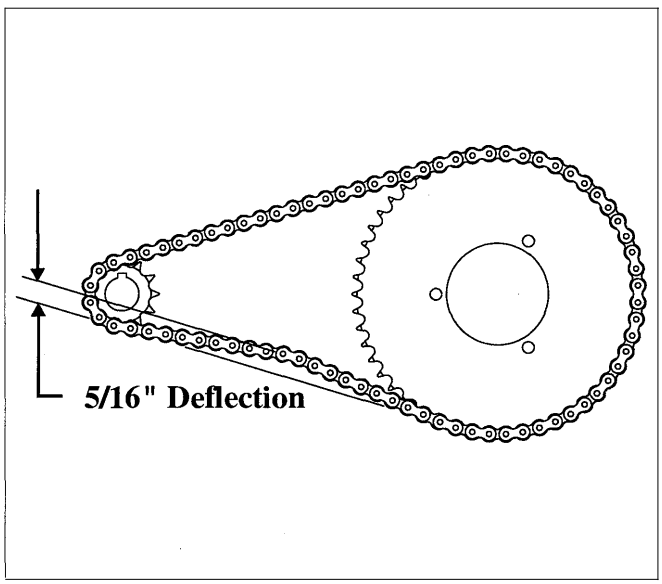


Figure 19

CAUTION: Overtightening the roller chains may damage the bearings on the gear case, the engine, and/or the spinner shaft. Overtightening will also shorten the life of the roller chain and of the sprockets.

Final Checklist

- ☐ Verify correct engine oil level. (See *Briggs & Stratton Engine Owner's Manual.*)
- ☐ Verify gear case oil level is level with the fill hole.
- ☐ Verify correct engine-to-clutch sprocket alignment and chain tension.
- ☐ Verify correct gear case to spinner shaft sprocket alignment and chain tension.
- ☐ Verify correct conveyor chain tension.
- ☐ Verify the sprocket set screws are tightened.
- ☐ Verify dielectric grease is applied to all electrical connections.
- ☐ Verify wire harnesses are properly secured away from hot or moving parts.
- ☐ Verify vehicle harness cannot drop down below the truckbed when the spreader is removed from the truck.

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