



MVP® Snowplow

Installation Instructions

⚠ CAUTION

Read this document before installing the snowplow.

⚠ CAUTION

See your WESTERN® outlet/website for specific vehicle application recommendations before installation. The Quick Match selection system has specific vehicle and snowplow requirements.

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 snowplow and vehicle or other property. Other useful information can also be described.

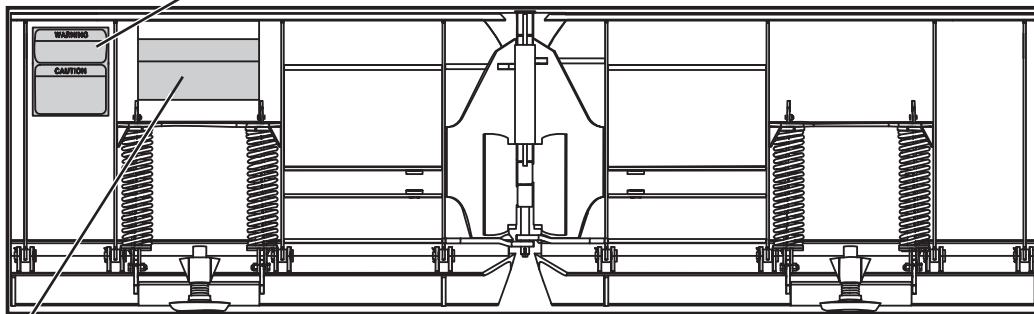
WARNING/CAUTION AND INSTRUCTION LABELS

Become familiar with and inform users about the warning/caution and instruction labels on the back of the blade.

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

Warning/Caution Label

⚠ WARNING	
	Blade could drop unexpectedly, crushing or trapping limbs. Lower blade when vehicle is parked.
	Overloading could negatively affect vehicle handling. To avoid serious injury or death, do not exceed GVWR or GAWR including blade and ballast.
⚠ CAUTION	
	Read Owner's Manual before operating or servicing snowplow.
	Transport speed should not exceed 45 mph (72 km/h). Further reduce speed under adverse travel conditions.
	Plowing speed should not exceed 10 mph (16 km/h).
	See your sales outlet/website for specific vehicle application recommendations.



Instruction Label

INSTRUCTIONS	
MOUNTING PLOW (ON) <small>Read Owner's Manual for complete instructions.</small>	
STEP 1 After seating plow horns in receiver brackets, pull handle up. Shoe will lift off the ground.	STEP 2 Pull and hold Lock Pin out, then rotate Handle UP and release Lock Pin. It must lock into UPPER hole. Stand Hook must grip Receiver Pin.
STEP 3 Plug in electrical connections. Repeat Steps 1 and 2 on other side of snowplow.	STEP 2 Pull and hold Lock Pin out, then rotate Handle DOWN and release Lock Pin. It must lock into LOWER hole.
REMOVING PLOW (OFF) <small>Read Owner's Manual for complete instructions.</small>	
STEP 1 After lowering blade and turning control OFF, disconnect electrical connections.	STEP 2 Push top of shoe DOWN. Shoe will be on the ground. Repeat Steps 2 and 3 on other side of snowplow. Back vehicle away.

US patents 6,941,695; 7,134,227; 7,400,098; 7,430,821; 7,737,576; 9,200,416; 9,822,563; 10,763,056.
 CAN patents 2,354,257; 2,358,145; 2,358,354; 2,456,195; 2,639,052; 2,843,990; and other patents pending.

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

Lower blade when vehicle is parked. Temperature changes could change hydraulic pressure, causing the blade to drop unexpectedly or damaging hydraulic components. Failure to do this could result in serious personal injury.

WARNING

The driver shall keep bystanders clear of the blade when it is being raised, lowered, or angled. Do not stand between the vehicle and the blade or within 8 feet of a moving blade. A moving or falling blade could cause personal injury.

WARNING

Keep hands and feet clear of the blade and T-frame when mounting or removing the snowplow. Moving or falling assemblies could cause personal injury.

WARNING

Do not exceed GVWR or GAWR including blade and ballast. The rating label is found on driver-side vehicle door cornerpost.

WARNING

To prevent accidental movement of the blade, always turn the control OFF whenever the snowplow is not in use. The power indicator light will turn OFF.

WARNING

Remove blade assembly before placing vehicle on hoist.

CAUTION

Refer to the current Quick Match selection system for minimum vehicle recommendations and ballast requirements.

HYDRAULIC SAFETY

WARNING

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

- Always inspect hydraulic components and hoses before using. Replace any damaged or worn parts immediately.
- If you suspect a hose leak, DO NOT use your hand to locate it. Use a piece of cardboard or wood.

FUSES

The WESTERN® electrical and hydraulic systems contain 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 snowplow.
- 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.

SAFETY

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.

TORQUE CHART

⚠ CAUTION

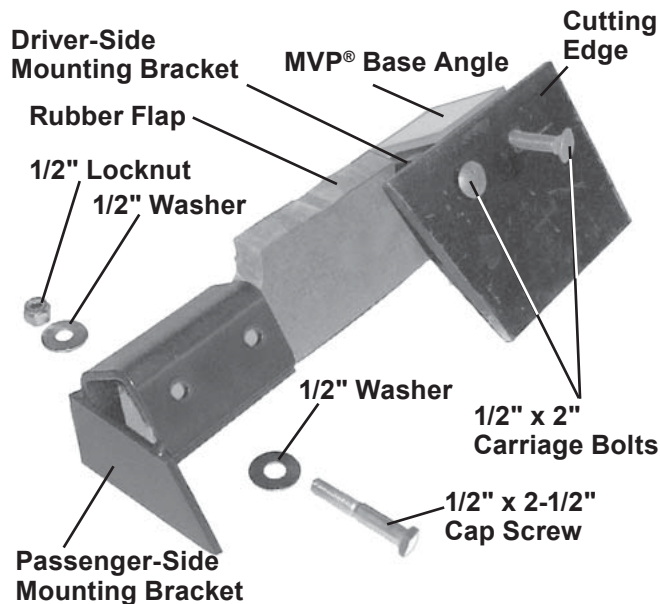
Read instructions before assembling. Fasteners should be finger tight until instructed to tighten according to torque chart. Use standard methods and practices when attaching snowplow including proper personal protective safety equipment.

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.					

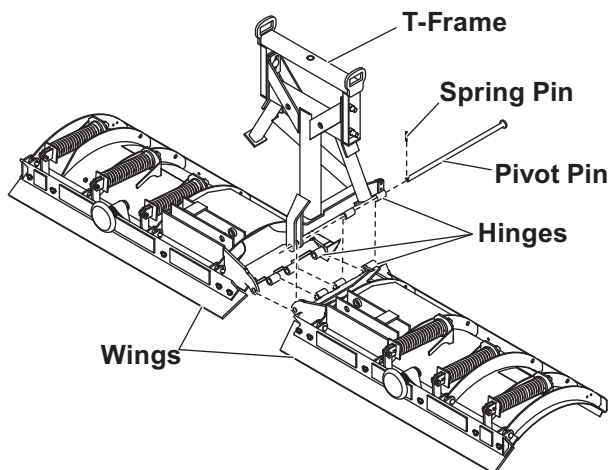
INSTALLATION INSTRUCTIONS

BLADE, T-FRAME, AND RUBBER FLAP

1. Before uncrating or assembling blade wings, install the rubber flap mounting brackets to the inside end of each base angle using four 1/2" x 2" carriage bolts and 1/2" locknuts. Tighten fasteners. Do not install the rubber flap at this time.



2. Lay both wings face down (on cardboard) next to each other.



3. Push the blade wings together so that the holes in the hinges are aligned.

4. Insert the T-frame hinges between the blade wings so that the holes in the T-frame hinges are aligned with the blade wing hinges.
5. Insert the pivot pin completely through all the hinges of the blade wings and the T-frame.

NOTE: Greasing the pin before inserting it, rotating the T-frame from side to side, and lifting the blade wing ends off the floor will help to insert the pin.

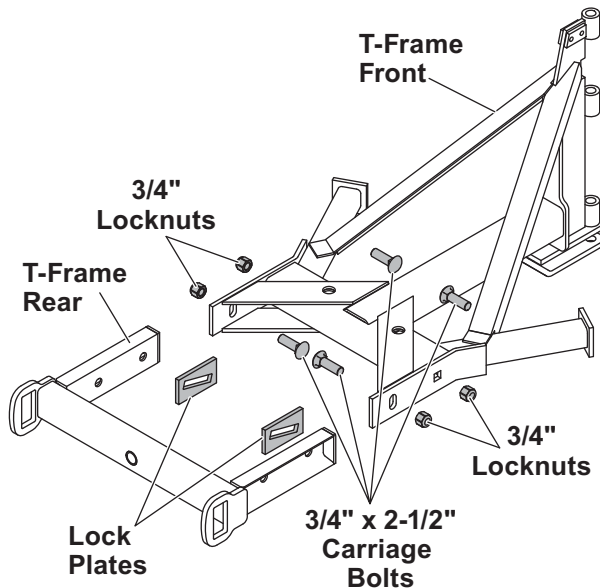
6. Insert a 1/4" x 2" spring pin through the hole in the pivot pin.
7. Place a 1/2" washer on a 1/2" x 2-1/2" cap screw and insert the cap screw with washer into a hole in the rubber flap. The rubber flap is mounted with the longest edge facing the ground.

INSTALLATION INSTRUCTIONS

- Place the rubber flap against the inside surface of the mounting plate and align the holes in flap and the plate.
- Insert the cap screw through the hole in the back plate of the mounting bracket. Add a 1/2" washer and 1/2" locknut. Tighten the locknut until the washer slightly deforms the rubber flap surface.
- Insert the second 1/2" cap screw through the rubber flap and mounting plate using the same washer and locknut assembly as mentioned above.

Front and Rear T-Frame Sections

- The channels of the T-frame's rear section slip over the outside of the flat bars on the T-frame's front section.
- Place the lock plates on the inside surfaces of the flat bars on the front section of the T-frame. **The lock plates must be placed so that the slope of the slot in the plate is forward and down, as shown.**



- Install four 3/4" x 2-1/2" carriage bolts from the inside of the T-frame sections. Secure with 3/4" locknuts but do not tighten.

- While the carriage bolts are still loose, the lock plates should still be able to move front to back and the rear T-frame section should be able to pivot up and down on the front 3/4" carriage bolts.
- Align the rear section of the T-frame with the front section. The rear carriage bolts should be in the center of the slots of the lock plates. Tighten the nuts until the rear T-frame cannot move. Required torque will be applied at final adjustment.

HYDRAULIC RAMS TO T-FRAME AND BLADE

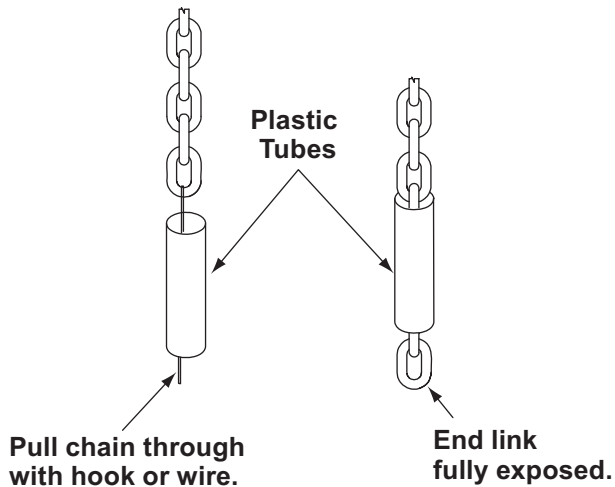
NOTE: Prior to connecting the angle rams to the wings and T-frame, refer to page 13 for the proper method to install SAE O-ring fittings and hydraulic hoses on the angle rams.

- Install fittings and hoses on the angle rams. (The hydraulic fittings and hoses are found in the hydraulics box.)
- Remove the port plugs from the angle rams and install a 90° SAE O-ring fitting into each port oriented horizontal toward each other.
- Attach a 42" hydraulic hose to each fitting.
- Swing the T-frame to one side.
- Verify that the fittings are facing toward the center of the T-frame and position the base end of a ram into the formed channel of the T-frame.
- Insert a 1" x 4" rivet from the top down.
- Swing the T-frame to the other side and repeat Step 2 to connect the other ram to the T-frame.
- Position the rod ends of the rams to the brackets on each of the blade wings.
- Secure the rod end of each ram to the blade with a 1" x 4" rivet installed from the top down.
- Install cotter pins into rivets once all the rivets have been installed.

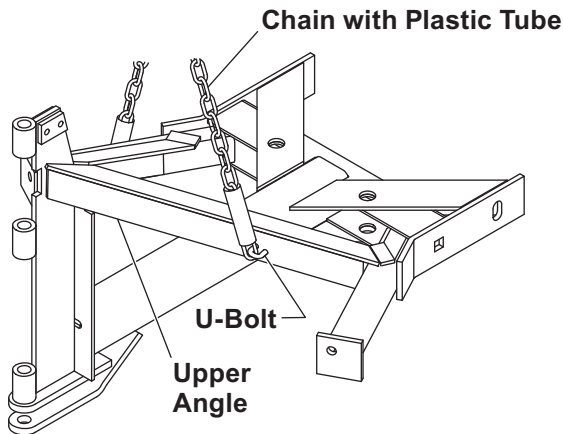
INSTALLATION INSTRUCTIONS

CHAIN TO T-FRAME

1. Use a hook or piece of wire to pull the end of the chain through the plastic tube. The end link of the chain must be fully exposed.

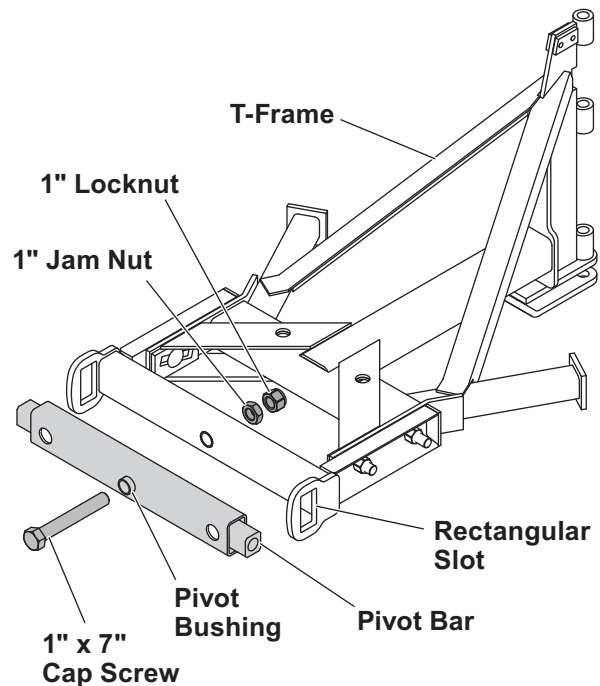


2. Insert the ends of the 3/8" x 1-1/2" U-bolt through the chain and then into the holes in the upper angles of the T-frame and secure with locknuts.
3. Repeat Steps 1 and 2 for the other side.



PIVOT BAR TO T-FRAME

1. Insert one end of pivot bar into rectangular slot on one side of rear of T-frame as far as possible. Pivot bushing must face away from T-frame.
2. Rotate the pivot bar until it is level with the T-frame and slide the other end into the corresponding rectangular slot.
3. Align the center holes and insert a 1" x 7" cap screw as shown in illustration.
4. Install a 1" jam nut and tighten to 25 ft-lb, then loosen 1/16 turn.
5. Hold a 1" cap screw and jam nut to prevent rotation and install a 1" locknut. Tighten the locknut securely against the jam nut.



NOTE: When properly adjusted, the pivot bar should pivot freely without any looseness.

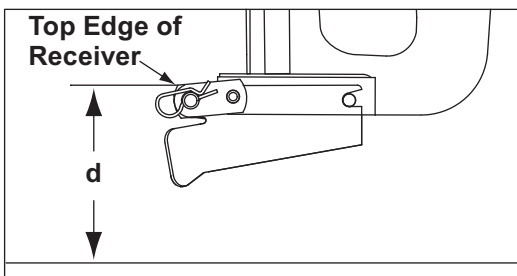
INSTALLATION INSTRUCTIONS

PIVOT PLATES TO PIVOT BAR

IMPORTANT! Before assembling pivot plates to ends of pivot bar, pivot plate orientation and pivot hole position must be determined using the following procedure.

Before measuring vehicle mount height, vehicle mount and receiver brackets must be installed, ballast must be installed if required, and vehicle must be parked on a level surface.

1. Measure the distance "d" from the ground to the top edge of the receiver bracket. Measure both sides and determine average value "d."



2. Use dimension "d" from Step 1, and the following table to determine the proper pivot plate mounting position and pivot hole selection.

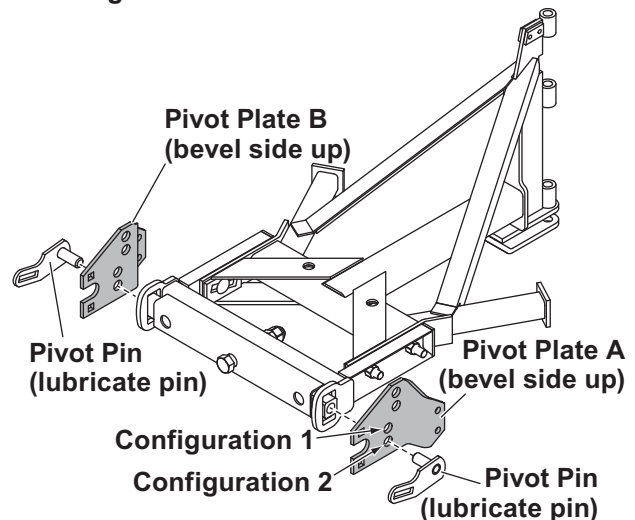
Pivot Plate Configuration Table		
Dimension "d"	Configuration	Stacking Stop
13.0" – 4.5"	1	No
14.5" – 16.0"	2	Yes
16.0" – 17.5"	3	Yes
17.5" – 19.0"	4	Yes

4. Position snowplow with T-frame level (support bottom of the pivot bar 9" above floor). See diagram on bottom of page 9.
5. Before assembly, apply grease to the pivot pin holes in each end of the pivot bar and to each pivot pin.
6. Assemble the pivot plates to the ends of the pivot bar, using the appropriate plate orientation and hole position for the configuration determined in Step 2.

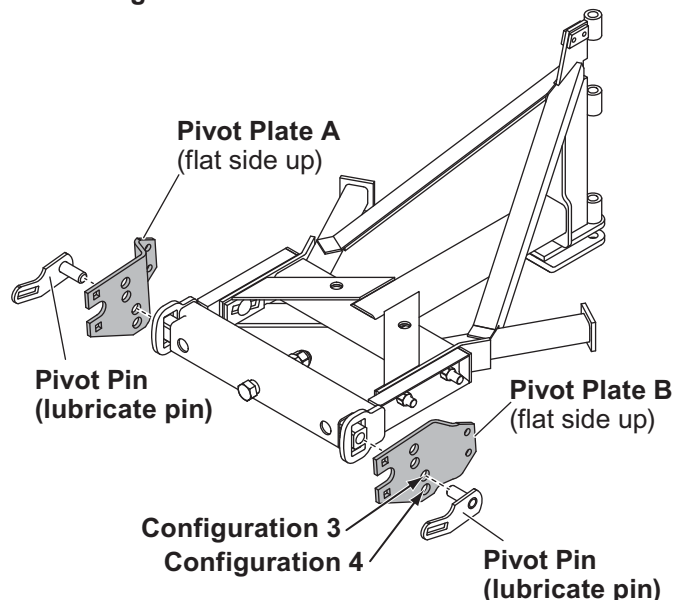
There are two pivot plates (A and B) which are mirror images of each other. They can be turned upside down and switched from one side of the pivot bar to the other to provide two different mounting positions.

In each pivot plate mounting position, the pivot bar pins may be installed through one of the two lower holes in the pivot plates. This provides four different height adjustment positions. For all configurations, pivot pins must be positioned with the notches in the pivot pins facing up and the slots in the pivot pins aligned with the bottom holes at the rear of the pivot plates. Note that the pivot bar pins are never installed in either of the two upper holes in the pivot plates. A stacking stop is mounted to the cross tube of the lower lift frame for configurations 2, 3, and 4.

Pivot Plate Mounting and Hole Positions for Configurations 1 & 2



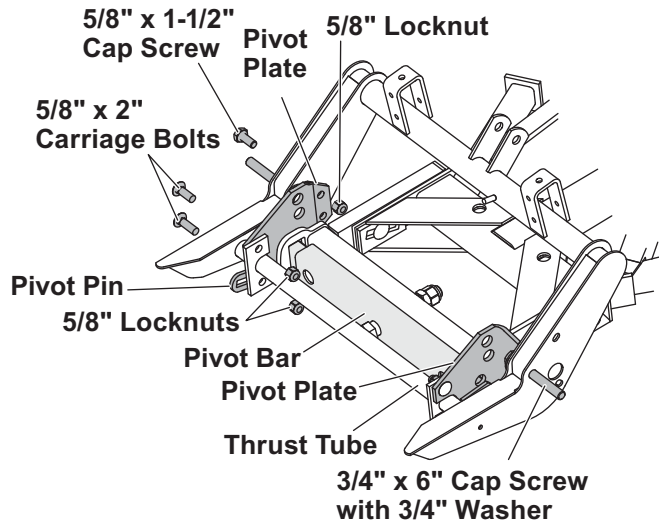
Pivot Plate Mounting and Hole Positions for Configurations 3 & 4



INSTALLATION INSTRUCTIONS

PIVOT PLATES TO LOWER LIFT FRAME

1. Install a 3/4" flat washer onto a 3/4 x 6" cap screw and insert through the 3/4" hole in the lower lift frame from the inside. Repeat on other side.



2. Position the lower lift frame outside the pivot plates with the notch in the pivot plates around the thrust tube on the lower lift frame and align 5/8" mounting holes (three per side).
3. Insert two 5/8" x 2" carriage bolts from the outside into the rear holes of the pivot plate. The top bolt passes through the pivot plate and attaching lug. The bottom bolt passes first through the slot in the pivot pin, then through the pivot plate and attaching lug. Retain using locknuts (hand tighten only). Repeat on the other side.
4. Insert one 5/8" x 1-1/2" cap screw through the clearance hole in the lower lift frame and top hole in the front of the pivot plate. Retain with a locknut. Repeat on the other side.
5. Tighten all fasteners according to torque chart.

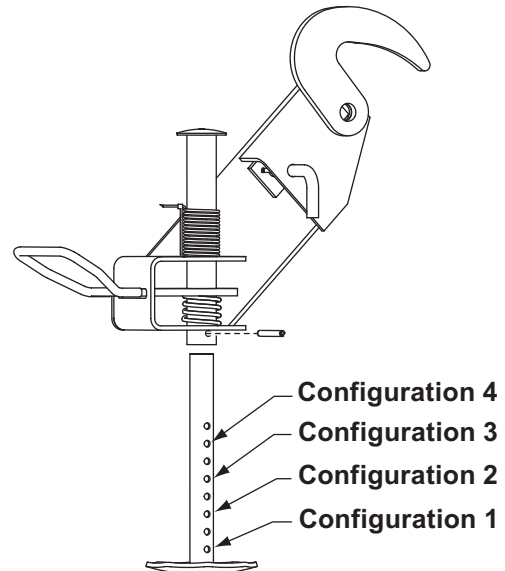
STAND SHOE

⚠ WARNING

Stand plunger spring is shipped compressed and tied. Do not cut spring tie until final stand shoe adjustment is complete and roll pin is installed.

Initial stand shoe height adjustment is based on height configuration chart. A final adjustment of stand shoe will be made after attaching snowplow to vehicle.

1. Slide stand shoe into stand tube and align 1/4" hole in stand tube with 1/4" hole in stand shoe determined from height configuration table and illustration below.



2. Insert 1/4" roll pin.
3. Do not cut the spring tie until after the final stand shoe adjustment.

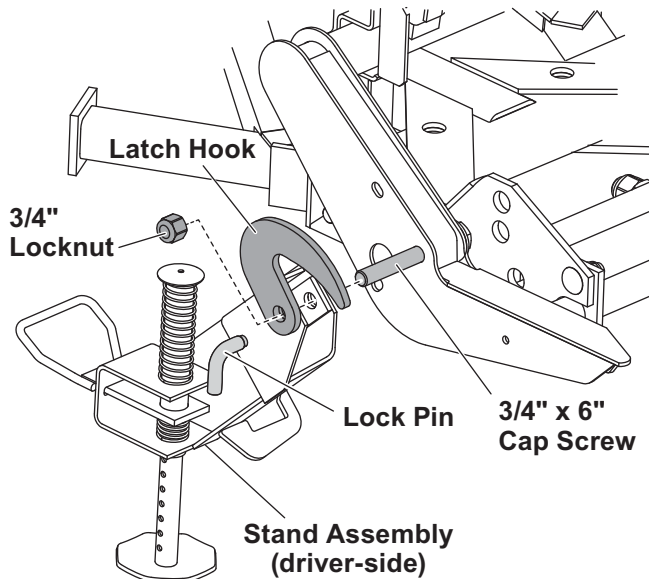
Pivot Plate Configuration Table

Dimension "d"	Configuration	Stacking Stop
13.0" – 4.5"	1	No
14.5" – 16.0"	2	Yes
16.0" – 17.5"	3	Yes
17.5" – 19.0"	4	Yes

INSTALLATION INSTRUCTIONS

STAND

1. Position stand with latch hook facing rear and align 3/4" hole in stand to 3/4" x 6" cap screw installed previously. Slide stand over cap screw and engage lock pin on stand into the bottom slot in the lower lift frame.



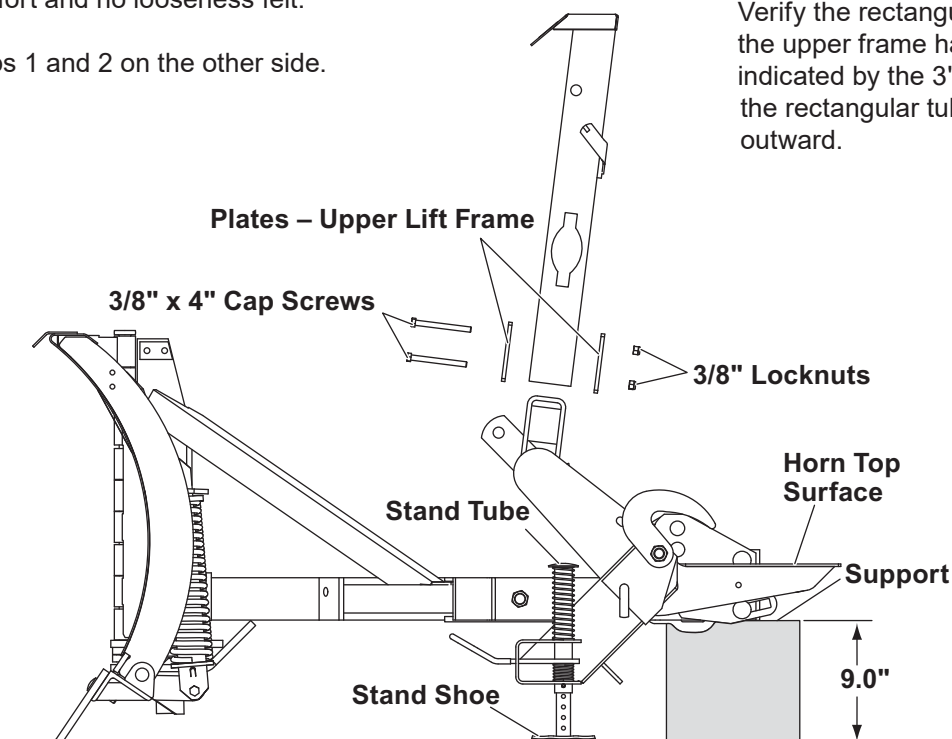
2. Install a 3/4" locknut and tighten to 25 ft-lb. Then loosen nut 1/4 turn. When adjusted correctly, after pulling lock pin out stand should rotate with moderate effort and no looseness felt.
3. Repeat Steps 1 and 2 on the other side.

POSITION LOWER LIFT FRAME

1. Rotate lower lift frame until the top surface of the horns are level
2. Push down on stand tube until stand shoe contacts ground.
3. The lower lift frame is now positioned correctly for further assembly.

UPPER LIFT FRAME TO LOWER LIFT FRAME

1. Position upper lift frame above mounting brackets on lower lift frame with the WESTERN® logo facing the front.
2. Slide the upper lift frame down onto mounting brackets and align holes.
3. Position one upper lift frame plate on front and back of the upper frame. Insert 3/8" x 4" cap screws through the holes in the plate, and holes at the bottom of the upper lift frame, from the front towards the back. Install another plate over the ends of the cap screws.
4. Secure with 3/8" locknuts. Tighten the bottom nut first to 31 ft-lb. Then tighten the top nut to 31 ft-lb. Verify the rectangular tubing on the upper frame has collapsed, indicated by the 3" sides of the rectangular tubing bulging outward.

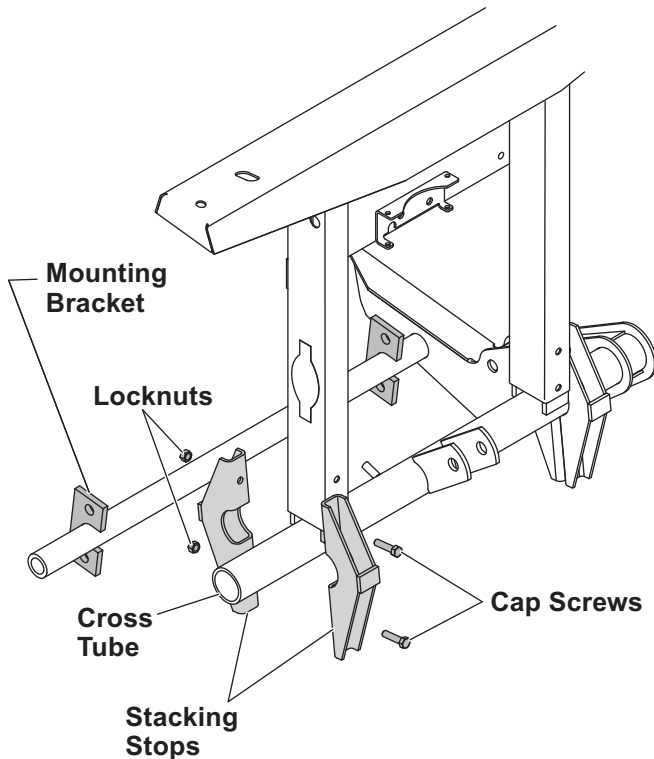


INSTALLATION INSTRUCTIONS

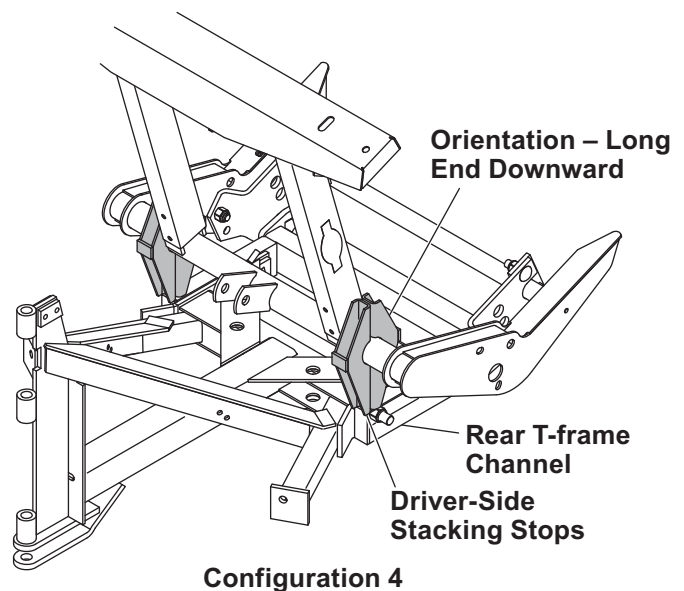
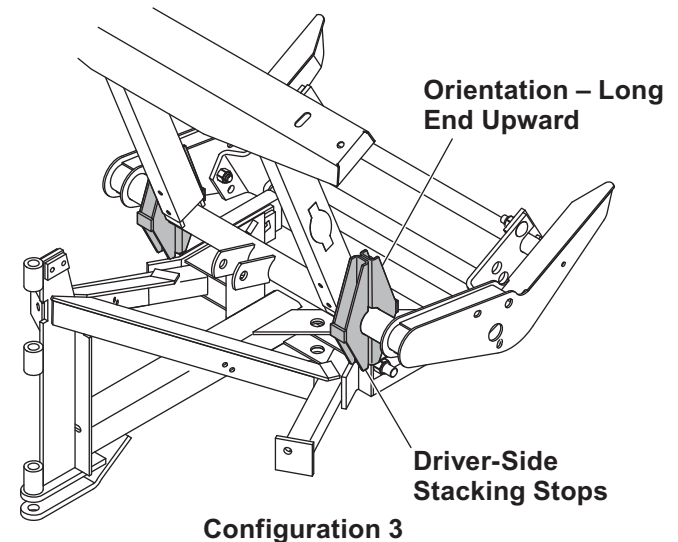
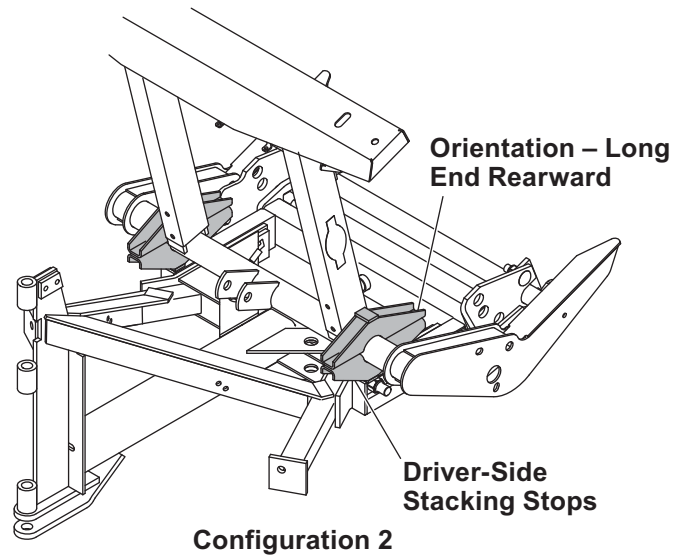
STACKING STOPS

The stacking stops are used only with configurations 2, 3, and 4. Determine the snowplow configuration using the figures on page 7.

1. With the snowplow on the ground, position the stacking stop sets on the cross tube of the lower lift frame to the outside of the upper lift frame mounting brackets.



2. Install 3/8" x 1-1/2" cap screws and 3/8" locknuts. Tighten cap screws evenly just enough so the stacking stop brackets can be moved by hand.
3. Rotate the stacking stops into the position that corresponds with your snowplow configuration. (See figures at right). Align the stops sideways so they will contact the top of the rear T-frame channels.
4. Rotate the lift frame until the stacking stops contact the rear T-frame channels. Adjust the stacking stops so they make full surface contact with the rear T-frame channels. Tighten all fasteners to 30–35 ft-lb.
5. Return lift frame to vertical position. (Support the bottom of the pivot bar 9" above floor.)

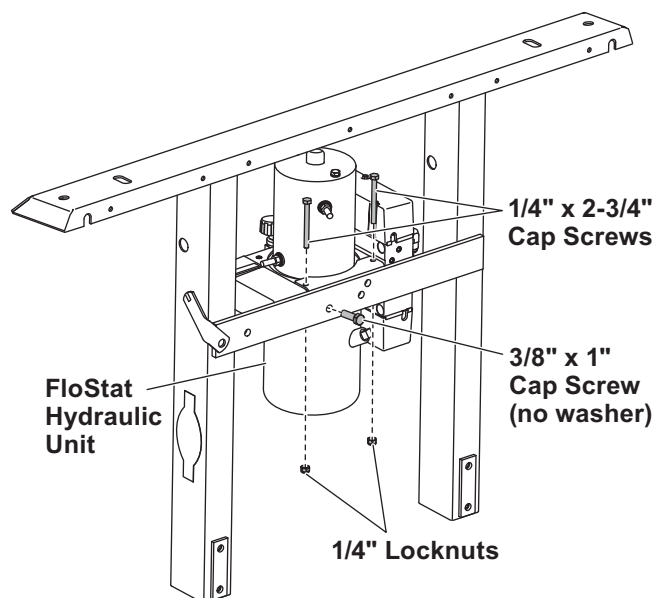


INSTALLATION INSTRUCTIONS

FloStat® HYDRAULIC UNIT

The FloStat hydraulic unit and mounting hardware are found in the hydraulics box.

1. Remove valve covers from the hydraulic unit valve blocks and set aside. Discard the six 8" x 1/2" TORX® cover screws.
2. Position hydraulic unit in bracket on upper lift frame cross member with bank of three solenoid valves toward driver side. Install two 1/4" x 2-3/4" cap screws down through bracket and valve block and retain with locknuts. Do not tighten nuts at this time.



3. Install a 3/8" x 1" cap screw through hole in rear of cross member into valve block. Do not use any washers on the cap screw. Tighten to 15–20 ft-lb. Valve block should be tight rearward against bracket.
4. Tighten the two 1/4" locknuts from Step 2.

Procedure for Installing Hydraulic Fittings and Hoses

Do not use thread sealant or tape on hoses or fittings. These materials could damage the product.

Always use two wrenches to ensure proper tightening of fittings and hoses.

Use the following procedure to install SAE O-ring fittings in rams.

1. Turn jam nut on fitting as far back as possible.
2. Lubricate O-ring with clean hydraulic fluid.
3. Screw fitting into port by hand until the washer contacts port face and shoulder of the jam nut threads.
4. Unscrew fitting to proper position no more than one full turn.
5. Using two wrenches, hold fitting body in position and tighten jam nut until the washer again contacts port face, then tighten an additional 1/8–1/4 turn to lock fitting in place. Final torque on the jam nut should be approximately 20 ft-lb.

Use the following procedure to install hydraulic hoses.

NOTE: Overtightening JIC hose fitting ends will result in a fractured fitting.

1. Screw the flare nut onto the fitting flare and hand tighten.
2. Align the hose so that there are no twists or sharp bends.
3. Using two wrenches, hold the hose in position and tighten the flare nut 1/8–1/4 turn beyond hand tight. Final torque on the flare nut should be approximately 20 ft-lb.

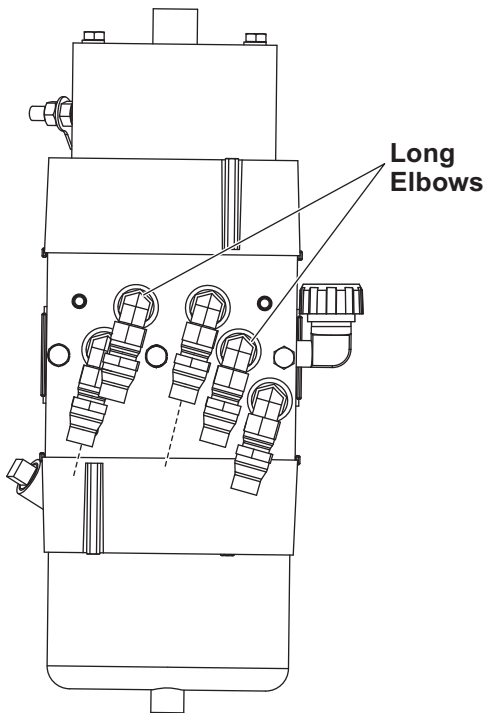
INSTALLATION INSTRUCTIONS

Installation of Fittings and Hoses

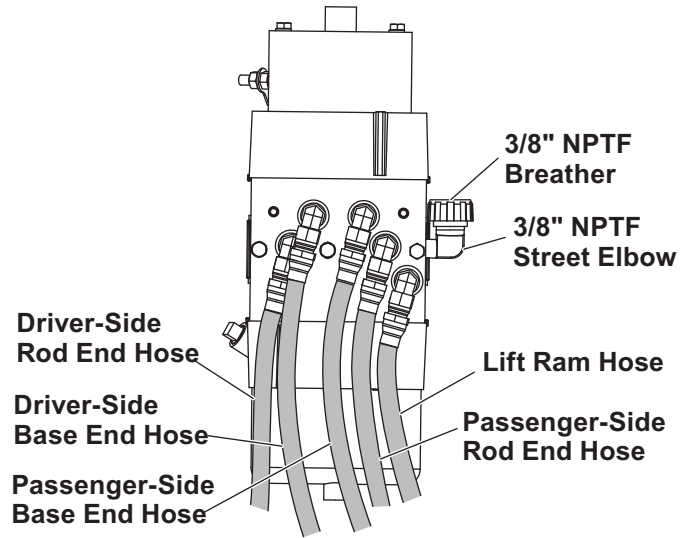
The hydraulic fittings and hoses are found in the hydraulics box.

1. Remove the five SAE O-ring plugs from the passenger side face of the valve on the hydraulic unit.
2. First install the three short fittings and tighten. Next install the two long fittings and tighten.

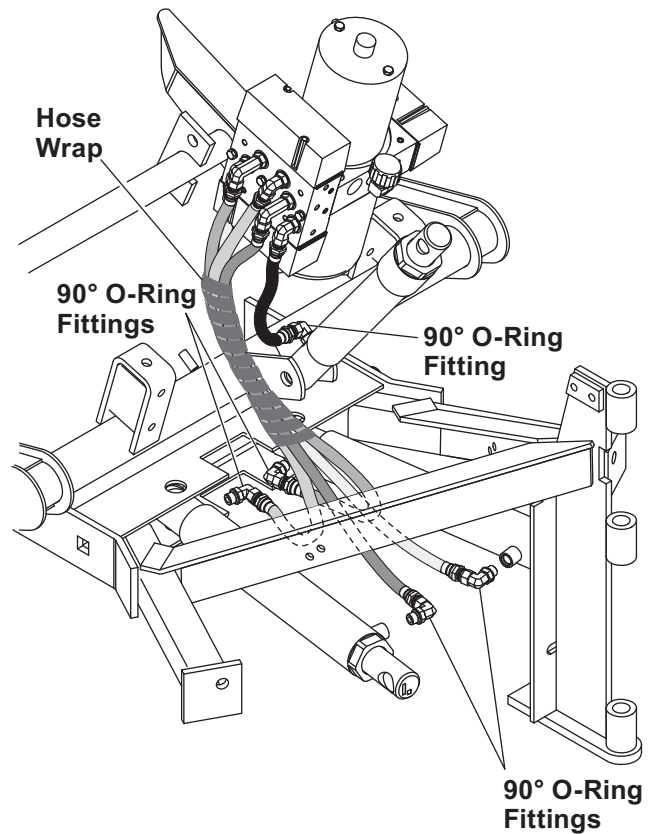
NOTE: When installing fittings, be sure to angle them slightly towards the vehicle to ease installation of hoses and reduce stress on the hoses.



3. Connect angle ram hoses to side of valve block.



4. Attach 16" hydraulic hose to front fitting on valve block.

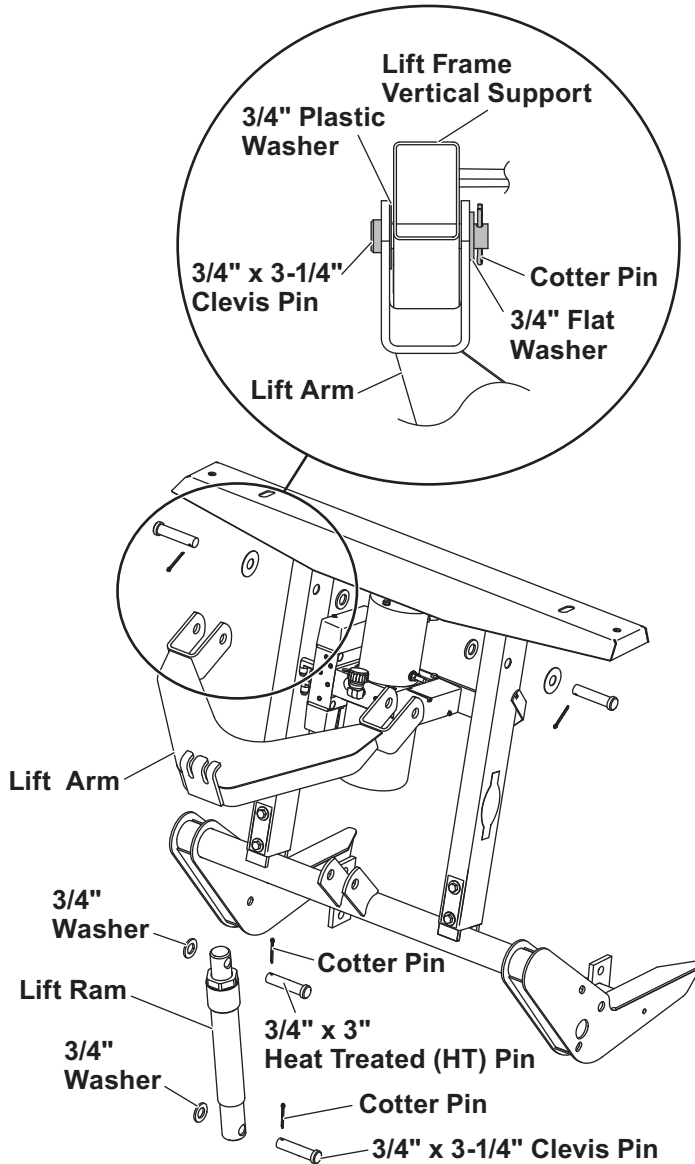


5. Remove the 3/8" NPTF square head pipe plug from the front side of valve block and install 3/8" NPTF street elbow oriented up. Install 3/8" NPTF breather in elbow.

INSTALLATION INSTRUCTIONS

Lift Arm

The lift arm and hardware are found in the Lift Frame and Stands Assembly box.

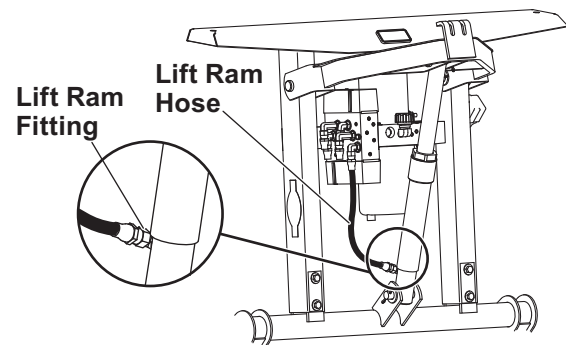


1. With chain hooks forward and up, position lift arm ends around upper lift frame vertical supports and align holes.
2. On each side, install a 3/4" plastic washer between the outside leg of the lift arm and the lift frame vertical supports. Install a 3/4" x 3-1/4" clevis pin from the outside. Secure with 3/4" flat washer and cotter pin.

Lift Ram

The 8" lift ram is found in the hydraulics box. The mounting hardware is found in the lift frame and stands assembly box.

1. Position base end of lift ram between lugs on lower lift frame with port toward the rear. Install a 3/4" x 3-1/4" clevis pin. Secure with a 3/4" washer and cotter pin.
2. Align hole in the lift ram rod between holes in end of lift arm. Install a 3/4" x 3" heat treated (head marked "HT") clevis pin, and secure with a 3/4" washer, and a cotter pin.
3. Remove port plug from lift ram and install a 90° SAE O-ring fitting oriented toward the passenger's side. (See figure below.)



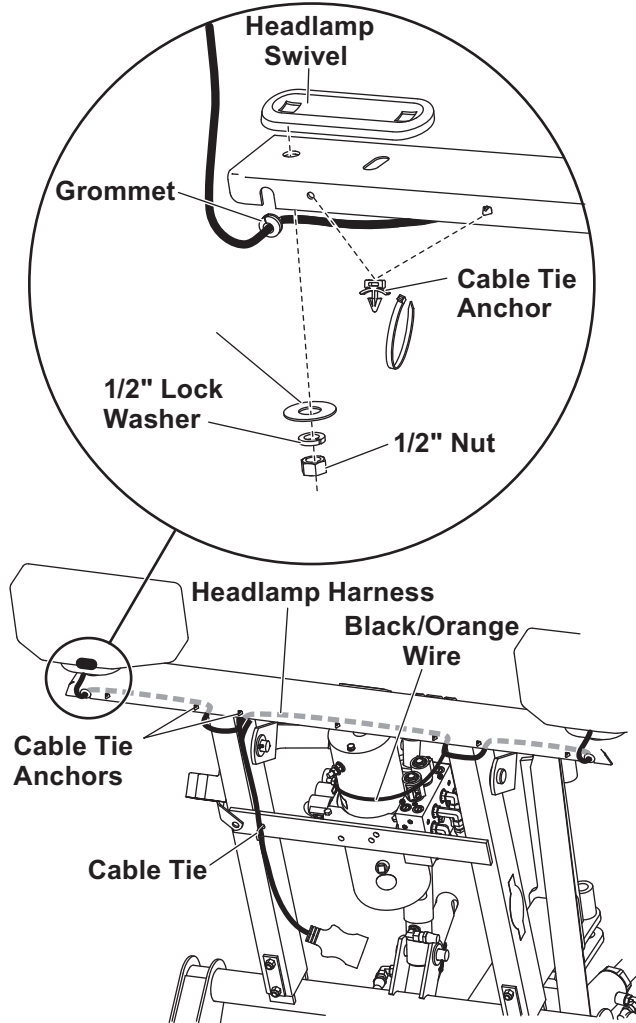
4. Attach 16" lift ram hose from valve block to lift ram fitting.
5. Wrap angle ram hoses with spiral wrap starting no further than 6" below edge of valve block. See diagram on page 13.
6. With lift ram fully collapsed, rotate light bar until lower lift frame horns are horizontal, pull chains tight and insert into lift arm hooks. Final lift chain adjustment will be made after the snowplow is mounted to vehicle.

INSTALLATION INSTRUCTIONS

HEADLAMPS

Headlamps and hardware are found in the headlamp box. Additional hardware (1-7/8" OD flat washer) is found in the hydraulics box.

1. With wire harness behind the lift frame, attach headlamps to the hole in the headlamp channel (not the slot) with headlamp swivel on top and 9/16" x 1-7/8" OD flat washer, 1/2" lock washer, and 1/2" nut underneath.



2. Insert seven cable tie anchors into 1/4" holes on rear of headlamp channel from inside channel, with locking tabs horizontal.

3. Install a split rubber grommet on each headlamp wire 3" from headlamp and insert grommet and wire into slot on rear of channel.
4. Route wires underneath channel, in back of vertical supports, and down along inside of driver-side vertical support, securing wires to anchors with cable ties.
5. Attach harness to front of hydraulic unit cross member at the driver-side vertical support with a cable tie through hole in cross member.
6. Route black/orange wire with ring terminal to motor ground stud.

NOTE: Use dielectric grease to prevent corrosion on all connections. Fill receptacles and lightly coat ring terminals and blades before assembly.

INSTALLATION INSTRUCTIONS

SNOWPLOW CONTROL HARNESS

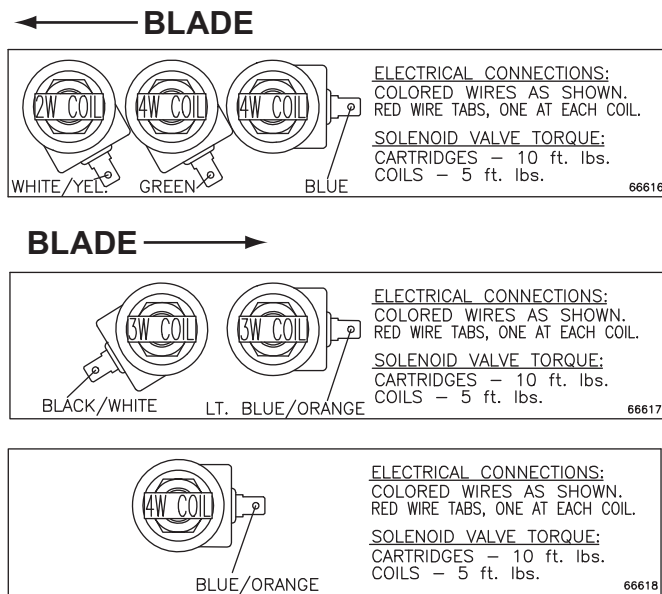
1. Confirm that all covers have been removed from valve manifolds on the hydraulic unit.
2. Route the branches of the harness with loose wires to the manifolds. Refer to the diagrams below in order to route the correct branch to the correct manifold.

NOTE: Dielectric grease has been applied to coil terminals. DO NOT wipe off terminals.

3. Apply dielectric grease (PN 56099) (furnished in the hydraulics box) into the opening of each wire terminal before connecting to the coil terminals as shown on the label on the inside of each cover and in figures below.

4. Route wires under valve coils and reinstall valve covers with harness strain relief inside cover harness slot. Avoid pinching wires between cover and coils or valve block. Attach each cover with two 8" x 2-1/2" standoff screws. Apply anti-seize to screw threads.

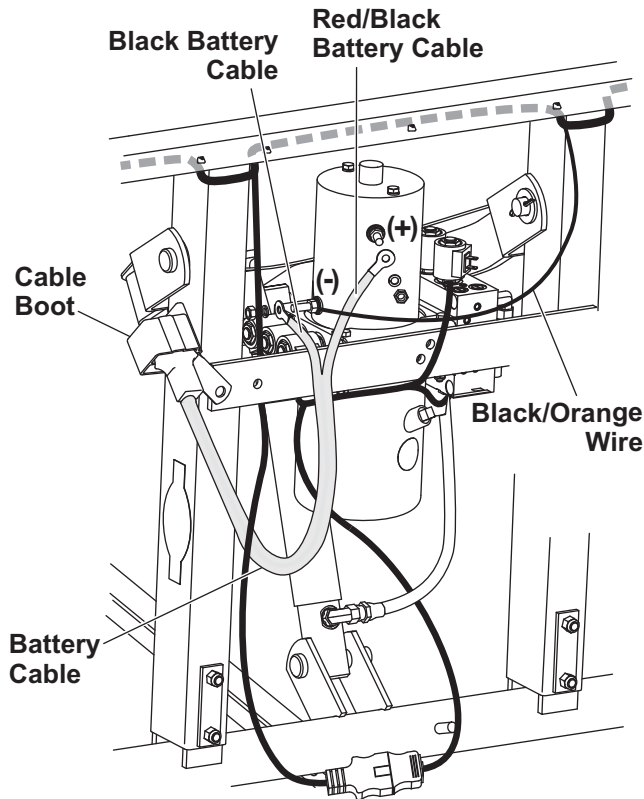
NOTE: Snowplow lighting and control harnesses plug into one another for storage.



INSTALLATION INSTRUCTIONS

PLOW BATTERY CABLE

All parts installed in this section are found in the hydraulics box.

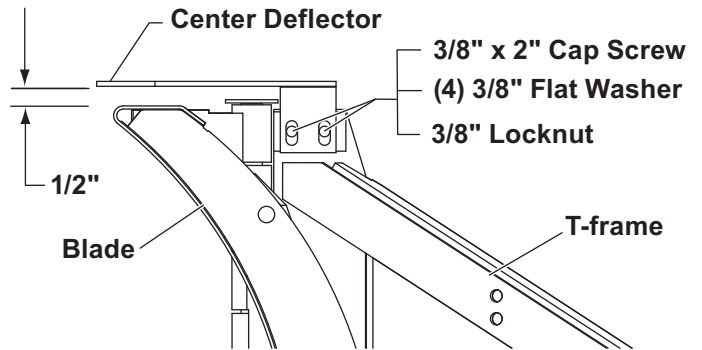


Refer to figure above for the following instructions.

1. Attach the black/red battery cable to the POSITIVE (+) motor stud on the hydraulic unit.
2. Attach the black battery cable and the black/orange wire from the headlamp harness to the NEGATIVE (-) motor ground stud on the hydraulic unit.
3. Tighten both stud nuts to 50–60 in-lb. Do not allow stud to rotate while tightening.
4. Install the cable boot over the bracket on driver's side of the lift frame.
5. Insert battery cable into cable boot for storage.

CENTER DEFLECTOR

1. Slide the center deflector into place over the top of the hinge. (See figure below.)

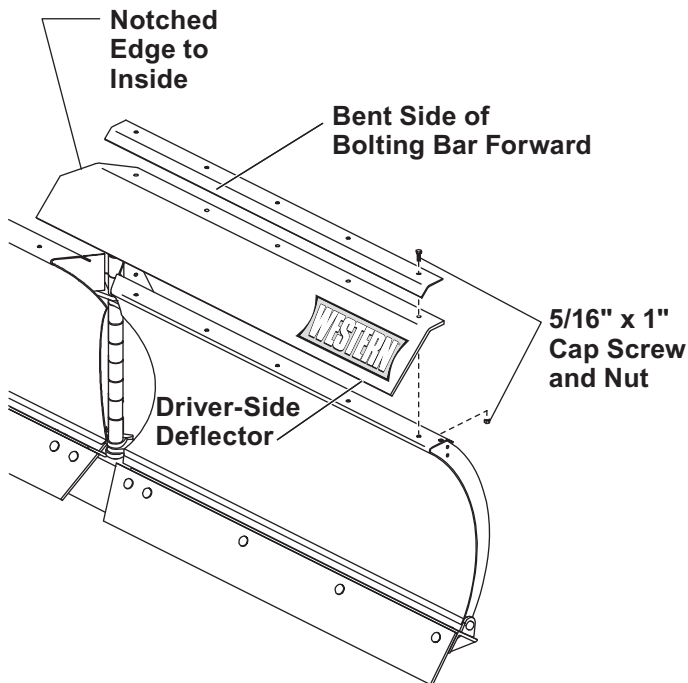


2. Install two 3/8" washers onto 3/8" x 2" cap screws.
3. Fasten the center deflector to the T-frame using two 3/8" x 2" cap screws, two 3/8" flat washers for each cap screw, and two 3/8" locknuts.
4. Allow 1/2" clearance between the blade and the center deflector. Tighten the two 3/8" fasteners on the center deflector to 31 ft-lb.

INSTALLATION INSTRUCTIONS

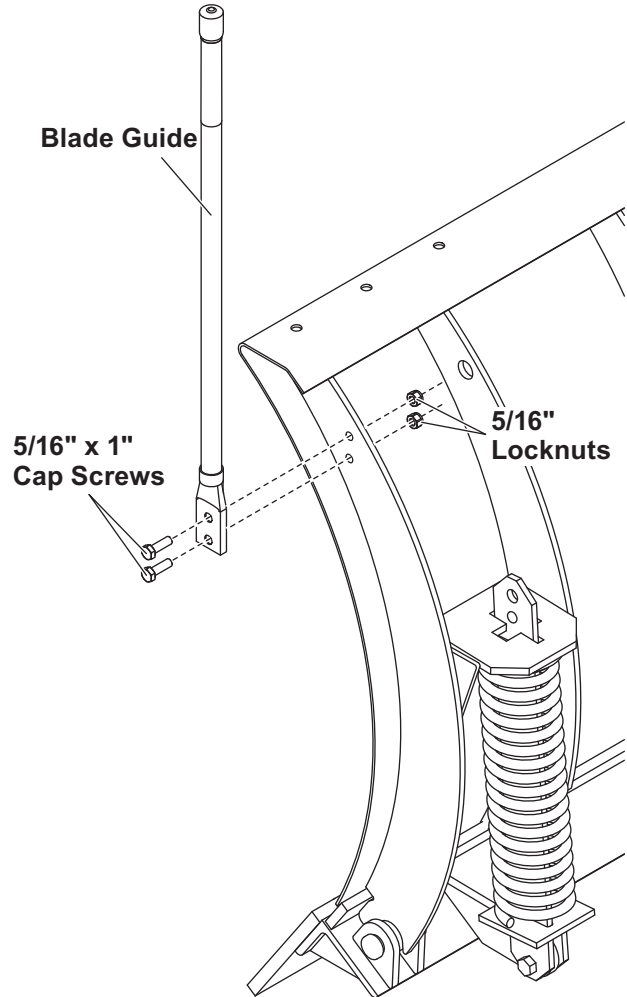
RUBBER DEFLECTOR

1. Align the holes in the bolting bar, rubber deflector, and the top curl of the blade. The notched edge of the rubber deflector goes towards the inside. The rubber deflector with the WESTERN® logo goes on the driver's side. **The bent side of the bolting bar goes towards the front.**
2. Insert a 5/16" x 1" cap screw into each hole and attach a nut to each cap screw.



BLADE GUIDE ASSEMBLY

1. Attach a blade guide rod to each outer rib using 5/16" x 1" cap screws and 5/16" locknuts.



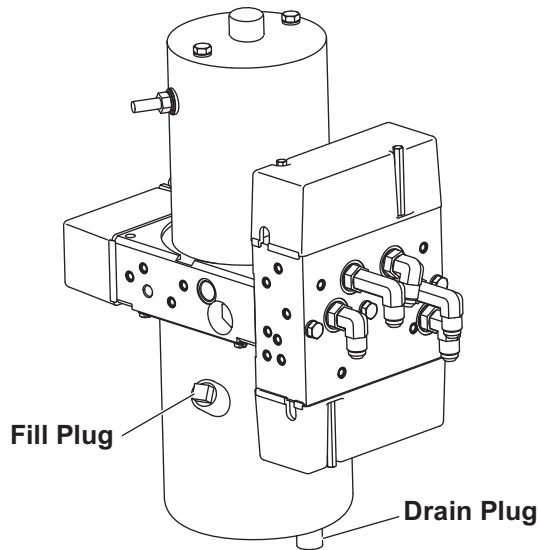
INSTALLATION INSTRUCTIONS

FILLING HYDRAULIC UNIT

⚠ WARNING

Keep 8' clear of the blade when it is being raised, lowered, or angled. Do not stand between the vehicle and blade or directly in front of the blade. If the blade hits or drops on you, you could be seriously injured.

1. Attach the snowplow to the vehicle according to the instructions on the back of the blade.
2. With the snowplow wings and lift ram fully retracted, fill the reservoir with WESTERN® High Performance Hydraulic Fluid rated to -40°F (-40°C), or other fluid conforming to Military Specification MIL-H-5606A, such as Mobil Aero HFA or Shell AeroShell® Fluid 4. Replace the fill plug.



NOTE: Add fluid only when all rams are retracted.

⚠ WARNING

To prevent accidental movement of the blade, always turn the control OFF whenever the snowplow is not in use. The power indicator light will turn OFF.

3. Turn the control ON and completely extend and retract the driver-side wing several times. With all rams fully retracted, turn the control OFF.

⚠ CAUTION

DO NOT raise blade during fill process as this may cause pump cavitation.

⚠ CAUTION

Do not mix different types of hydraulic fluid. Some fluids are not compatible and may cause performance problems and product damage.

4. With the lift ram fully retracted, fill the reservoir with hydraulic fluid. Replace the fill plug.

NOTE: Remove fill plug slowly to relieve any pressure in reservoir.

5. Repeat Steps 3 and 4 for the passenger-side wing.
6. Turn the control ON and raise and lower the snowplow several times. Activate the control FLOAT function and manually collapse the lift ram all the way after each lowering of the blade. With all rams fully retracted, turn the control OFF.
7. Fill the reservoir to the top of the fill hole and replace the fill plug.

FLUID CAPACITY

- | | |
|---------------------------|-----------------------|
| • FloStat® Unit Reservoir | 1-3/4 quarts |
| • FloStat System Total | 2-3/8 to 2-3/4 quarts |

OPERATIONAL TEST AND FINAL ADJUSTMENTS

BLADE DROP SPEED ADJUSTMENT

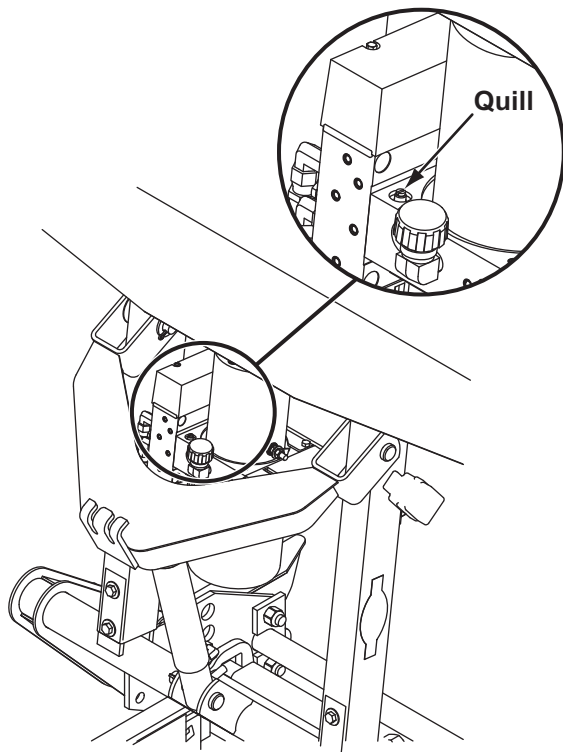
⚠ WARNING

Keep 8' clear of the blade when it is being raised, lowered, or angled. Do not stand between the vehicle and blade or directly in front of the blade. If the blade hits or drops on you, you could be seriously injured.

The quill in the top of the valve manifold on the passenger-side front corner adjusts the blade drop speed.

1. Lower the blade to the ground before making adjustment. Turn the control OFF.
2. Turn the quill IN (clockwise) to decrease drop speed.

Turn the quill OUT (counterclockwise) to increase drop speed.



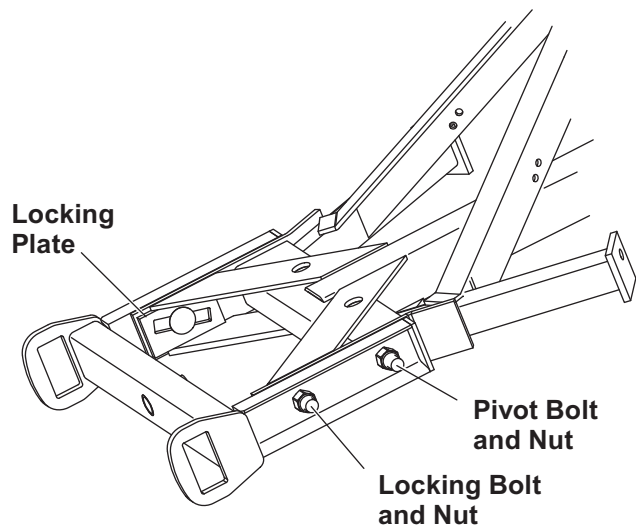
NOTE: Turning quill too far IN can slow raise time.

3. Stand clear of the blade when checking adjustment.

LEVELING ADJUSTMENT PROCEDURE

After the snowplow has been installed on the vehicle in the correct configuration, a fine adjustment can be made to bring the cutting edges of the snowplow in full contact with the ground across the entire cutting edge. This adjustment feature should be used as the cutting edges begin to wear in order to maintain an even wear pattern across both cutting edges and provide good scraping action.

1. Snowplow must be installed on a properly ballasted vehicle, in the correct configuration.
2. Vehicle and snowplow must be on a level surface.
3. Temporarily remove the blade shoes during this adjustment procedure.
4. Place blade wings in scoop position on the ground with no tension on lift chains.
5. Loosen the locking bolts and the pivot bolts on the T-frame just enough to allow the lock plates to move back and forth freely.



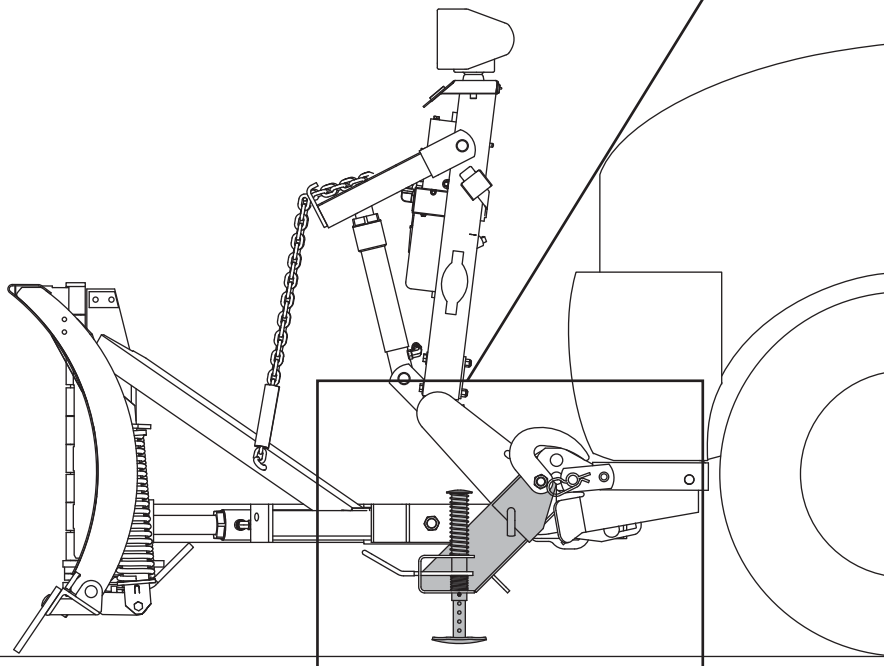
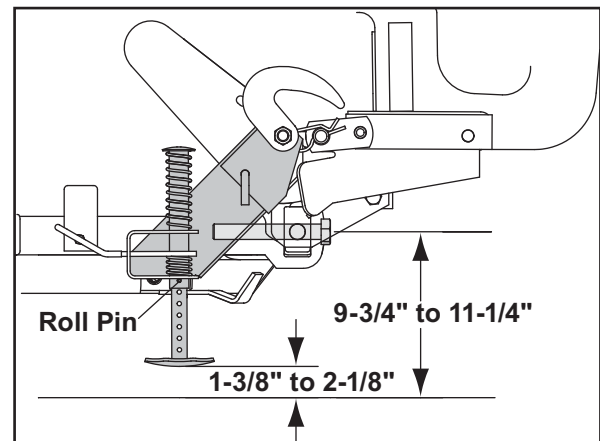
It may be necessary to pry one or both locking plates loose in order to relieve any tension in the T-frame and allow the blade to find a level position.

OPERATIONAL TEST AND FINAL ADJUSTMENTS

6. Raise and lower the blade several times. The cutting edge should be contacting the level surface across the full length of the cutting edge.
7. Move the locking plates rearward by hand as far as they will go and tighten the locking bolts and the pivot bolts to 250 ft-lb.
8. Verify that the cutting edges remain in full contact with the ground while the wings are shifted from the "scoop" position to a "retract" position. Replace blade shoes.
3. Final lift chain link adjustment must be made after the snowplow is assembled with the proper pivot plate position. On a level surface with the snowplow on the ground and the lift ram fully collapsed, attach the chains to the lift arm hooks in the tightest possible link. This adjustment will provide for optimum transport height, blade float, and stacking stop clearance. When chain tension is correct, the T-frame will not contact the lift frame when the blade is fully raised.
4. Fully raise the blade and verify that it does not block the headlamp beams. If the blade blocks the headlamp beams, lower the blade to the ground, collapse the lift ram and lengthen each chain by one link. Repeat this process, lengthening the chains by one link each time, until the blade does not block the headlamp beams.

FINAL INSPECTION AND ADJUSTMENT

1. Attach the snowplow to the vehicle mount. With the snowplow lowered to the ground and on level pavement, measure the dimension from the ground to the center of the pivot bar cap screw. This dimension must be 9-3/4" to 11-1/4".
2. With the snowplow attached and on the ground, place the stand arm in the lower position with the lock pin engaged and with the stand shoe fully retracted in the "up" position. Measure the distance from the ground to the bottom of the stand shoe. This distance should be 1-3/8" to 2-1/8". The stand can be adjusted to achieve this dimension by removing the roll pin and selecting the proper hole in the stand stem. When the stand height is correct, cut and remove the spring tie.



OPERATIONAL TEST AND FINAL ADJUSTMENTS

VEHICLE LIGHTING CHECK

1. Verify the operation of all vehicle front lighting prior to connecting the snowplow harness.
2. Check the operation of the snowplow lights with snowplow mounted to vehicle and all harnesses connected.

Turn signals and parking lamps

Parking lamps ON:

- Both vehicle and snowplow parking lamps should be ON at the same time.

Driver-side turn signal ON:

- Both vehicle and snowplow driver-side turn signal lamps should flash at the same time.

Passenger-side turn signal ON:

- Both vehicle and snowplow passenger-side turn signal lamps should flash at the same time.

Headlamps

Move vehicle headlamp switch to the "ON" position. Connecting and disconnecting the snowplow lighting harness plug should switch the lights between vehicle and snowplow as follows:

Snowplow lighting harness DISCONNECTED:

- Vehicle headlamps should be ON.
- Snowplow headlamps should be OFF.

Snowplow lighting harness CONNECTED:

- Snowplow headlamps should be ON.
- Vehicle headlamps should be OFF.

Dimmer switch should toggle headlamps between high and low beams. The high beam indicator on the dash should light when headlamps are placed in high beam.

Daytime Running Lamps (DRLs)

An operational check of the vehicle and snowplow DRLs will depend on the vehicle model, vehicle DRL system and type of isolation module installed. Due to the variations in the OEM DRL systems and the different isolation module

options available, checking the functionality of the snowplow DRLs will depend on the type of module installed on the vehicle.

With headlamp switch OFF, activate the vehicle DRLs.

Snowplow lighting harness DISCONNECTED:

- Vehicle DRLs should be ON.
- Snowplow headlamps should be OFF.

Snowplow lighting harness CONNECTED and vehicle in DRL mode:

- Check snowplow DRL function per the type of isolation module installed.

Refer to the Mechanic's Guide for information on the isolation module DRL functions.

Joystick Control or CabCommand Control

The snowplow plugs **do** need to be connected to the vehicle harness connectors. The control power indicator light should light whenever the control ON/OFF switch and the ignition (key) switches are both in the "ON" position.

3. Connect all snowplow and vehicle harnesses. Raise the snowplow and aim snowplow headlamps according to the Snowplow Headlamp Beam Aiming instructions included with the headlamps and any state or local regulations.
4. Check aim of vehicle headlamps with snowplow removed.

CAUTION

On 2-plug electrical systems, plug covers shall be used whenever snowplow is disconnected. Vehicle battery cable is 12V unfused source.

5. When the snowplow is removed from the vehicle, install plug covers on the vehicle battery cable and lighting harness. Insert the snowplow battery cable and lighting harness into the cable boot on the snowplow.

OPERATIONAL TEST AND FINAL ADJUSTMENTS

OWNER'S MANUAL PACKET

If the completed snowplow will be delivered immediately, the Owner's Manual should be reviewed with and given to the purchaser according to the snowplow checklist.

If the snowplow is completed prior to delivery to the purchaser, attach the Owner's Manual packet to the electrical cable of the cab control for safekeeping.



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