



MVP PLUS™ SNOWPLOW

Installation Instructions

⚠ CAUTION

Read this document before installing the snowplow.

⚠ CAUTION

See your WESTERN® outlet for specific vehicle application recommendations before installation. The Selection List 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 & INSTRUCTION LABELS

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

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

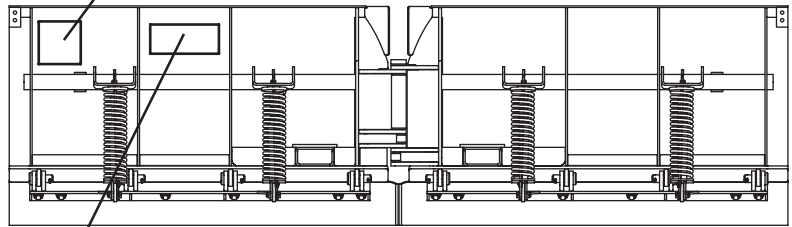
Warning and Caution Label

⚠ WARNING

LOWER BLADE WHEN VEHICLE IS PARKED.
REMOVE BLADE ASSEMBLY BEFORE PLACING VEHICLE ON HOIST.
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. REDUCE SPEED UNDER ADVERSE TRAVEL CONDITIONS.
PLOWING SPEED SHOULD NOT EXCEED 10 MPH.
SEE YOUR SALES OUTLET FOR APPLICATION RECOMMENDATIONS.



Instruction Label

UltraMount[®] INSTRUCTIONS

MOUNTING PLOW (ON)

Read Owner's Manual for complete instructions.

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 plow.

STEP 3

Push down top of Shoe; Shoe will be on the ground. Repeat steps 2 and 3 on other side of plow. Back vehicle away.

STEP 2

Pull and hold Lock Pin out; then rotate Handle DOWN and release Lock Pin. It must lock into LOWER hole.

STEP 1

After lowering blade and turning control off, disconnect electrical connections.

REMOVING PLOW (OFF)

Read Owner's Manual for complete instructions.

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Patents: US 4,999,935; 5,420,480; RE 35,700; 6,145,222; 6,209,231; 6,253,470; 6,526,677; CAN 2,060,425; 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 can 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

Remove blade assembly before placing vehicle on hoist.

⚠ CAUTION

Refer to the current Selection List for minimum vehicle recommendations and ballast requirements.

⚠ CAUTION

To prevent accidental movement of the blade, always turn the ON/OFF switch to OFF whenever the snowplow is not in use. The control indicator light will turn off.

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.

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.

SAFETY

FUSES

The WESTERN® electrical and hydraulic systems contain 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.

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.

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

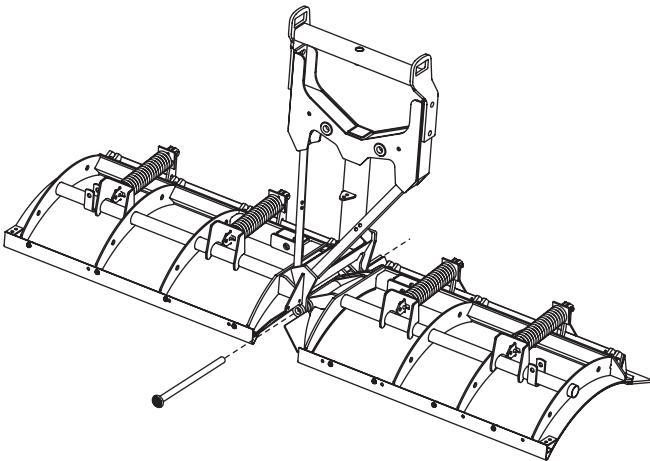
Read instructions before assembling. Fasteners should be finger tight until instructed to tighten according to torque chart. Use standard methods and practices when attaching snowplow including proper personal protective safety equipment.

Recommended Fastener Torque Chart (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	150	378	591
1-8	220	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 fasteners except those noted in the instruction.			

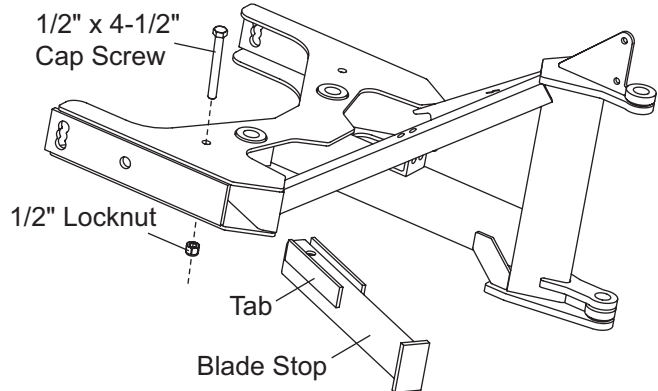
INSTALLATION INSTRUCTIONS

BLADE TO T-FRAME

1. Remove headlamp box and small parts box from carton. Remove carton wall sleeve by sliding it up and over box contents. Remove and discard the four corner tubes and place sleeve flat on the floor. Remove lift frame and power unit assembly from the box and place it on carton sleeve. Remove T-frame assembly and place it on carton sleeve.
2. Place some cardboard or wood on the floor where blade will be assembled. Remove blade wings from pallet and place them face down with hinges facing each other. Push blade wings together so holes in hinges are aligned. Position T-frame assembly between blade wings so holes in T-frame hinges are aligned with holes in wings. Insert pivot pin (from top to bottom) through all hinges as shown.

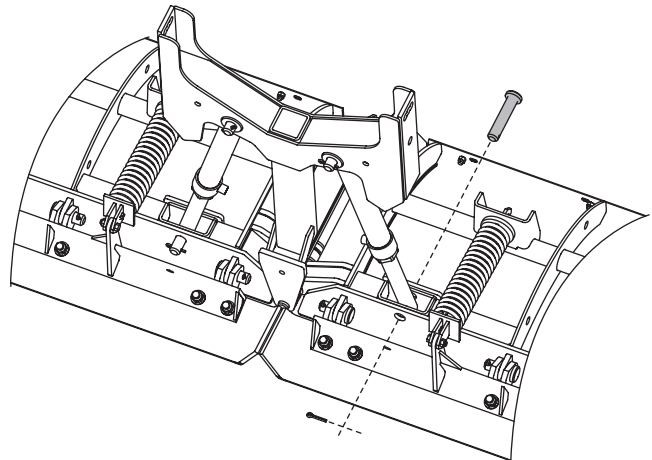


3. **On 9-1/2' MVP PLUS™ blades only:** Install the blade stops. Slide the blade stop into the T-frame as shown in figure below. Fasten blade stop to the T-frame with one 1/2" x 4-1/2" cap screw and 1/2" locknut. Tighten and repeat on the other side.



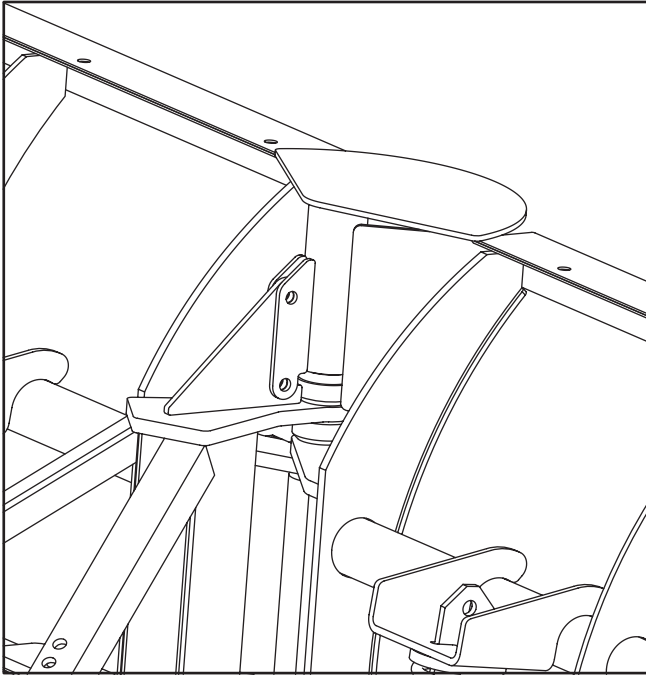
NOTE: Be sure to install the blade stops with the welded flat bar tabs pointing up as shown. Installing the stops with the tabs pointing down could result in damage to the blade stops.

4. Cut the tie holding the angle rams to the T-frame. Remove the dust caps on the angle rams. Swing the T-frame to one side so that the holes in the rod end of the angle ram and the blade are aligned.
5. Install a 1" x 4-3/4" clevis pin from the top down. Swing the T-frame to the other side and secure the second angle ram in the same manner. Secure the angle rams by installing 1/4" x 1-1/2" cotter pins in the two clevis pins.

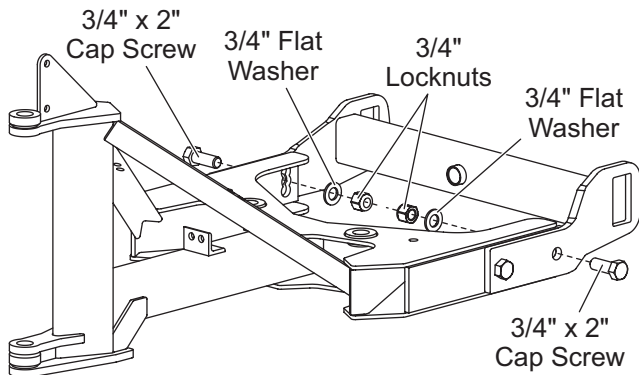


INSTALLATION INSTRUCTIONS

6. Stand the blade and T-frame upright and support in a level position using block under the main T-frame tube. Install the blade guides.
7. Install the center snow deflector using two 3/8" x 1-1/4" cap screws, and 3/8" locknuts.



8. Align the holes in the push beam with the holes in the T-frame, and fasten in the middle position using two 3/4" x 2" cap screws, 3/4" flat washers and 3/4" locknuts. Tighten until assembly is secure, but do not torque at this time.

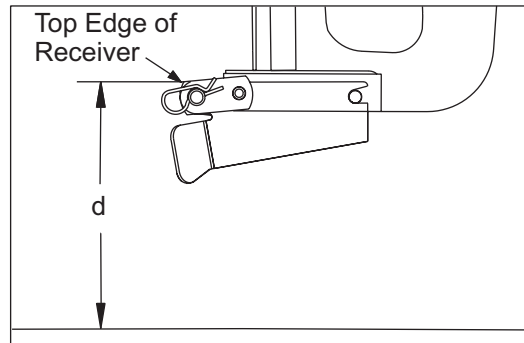


PIVOT PLATES TO PIVOT BAR

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 chart to determine the proper pivot plate mounting position and pivot hole selection.

Pivot Plate Configuration Chart		
Dimension "d"	Configuration	Stacking Stop
13.0" - 14.5"	1	No
14.5" - 16.0"	2	No
16.0" - 17.5"	3	No
17.5" - 19.0"	4	Yes

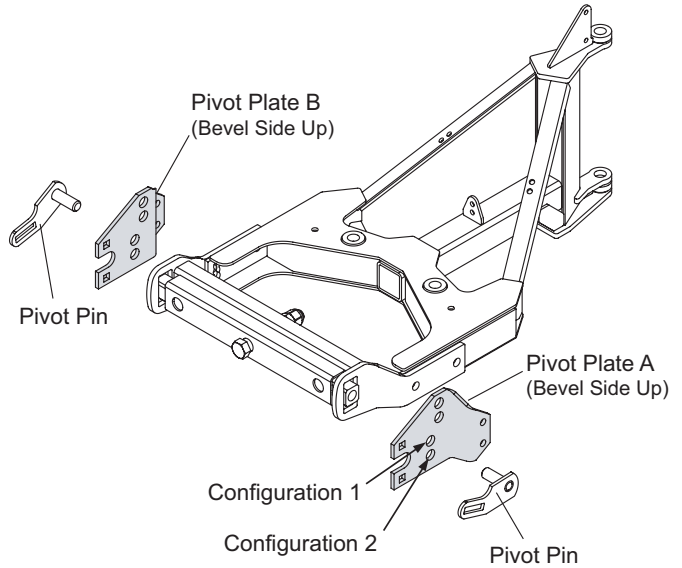
INSTALLATION INSTRUCTIONS

3. 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.

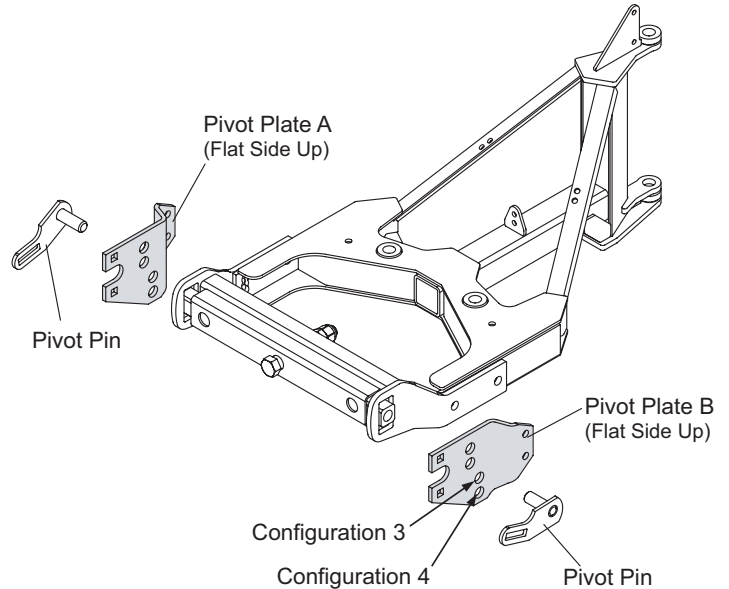
There are two pivot plates (A and B) which are mirror images of each other. They can be turned upside down and switched from one side of the pivot bar to the other to provide two different mounting positions.

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 in the pivot plates. Note that the pivot bar pins are never installed in either of the two upper holes in the pivot plates.

Pivot Plate Mounting and Hole Positions for Configurations 1 and 2



Pivot Plate Mounting and Hole Positions for Configurations 3 and 4



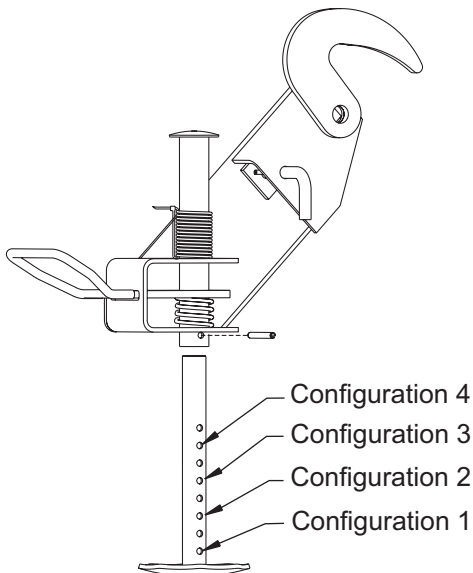
INSTALLATION INSTRUCTIONS

STAND SHOE

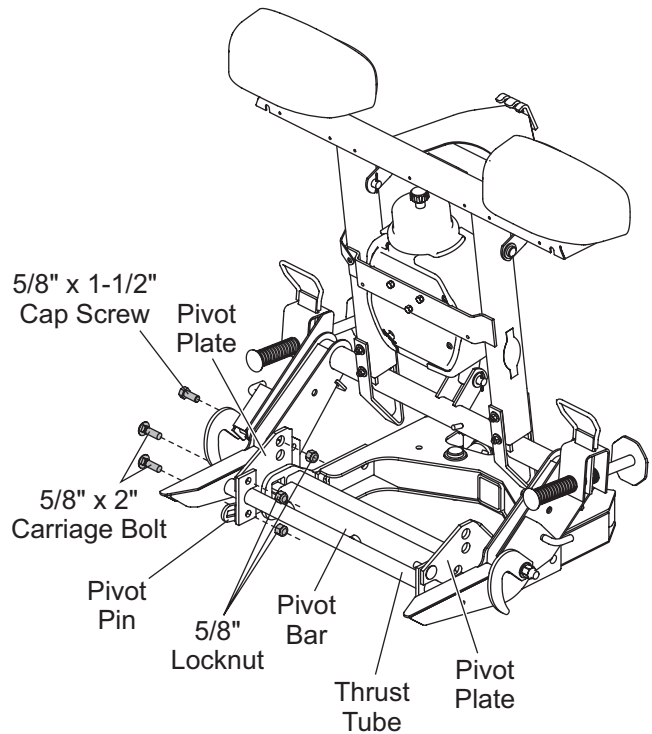
Initial stand shoe height adjustment is based on height configuration chart. A final adjustment of stand shoe will be made after attaching plow to vehicle.

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 chart and illustration below.
2. Insert 1/4" roll pin.
3. Do not cut spring tie until after final stand shoe adjustment.
4. Remove receivers from lift frame.

Pivot Plate Configuration Chart		
Dimension "d"	Configuration	Stacking Stop
13.0" - 14.5"	1	No
14.5" - 16.0"	2	No
16.0" - 17.5"	3	No
17.5" - 19.0"	4	Yes

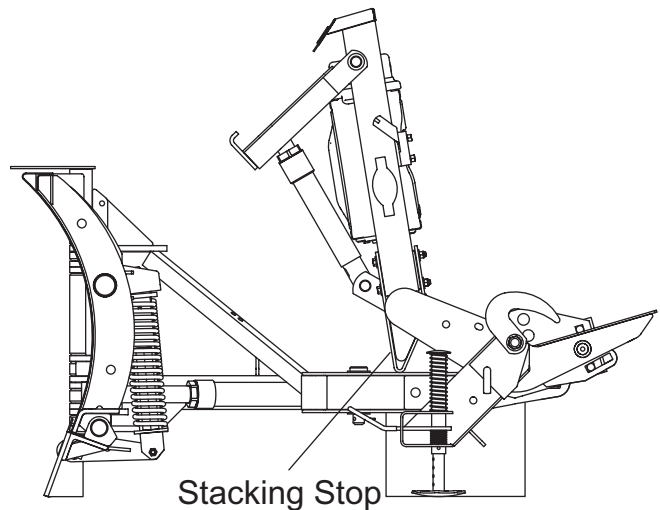


PIVOT PLATES TO LIFT FRAME



Refer to figure above for steps below.

1. Place the lift frame assembly on top of the T-frame assembly so the lift frame is tipped forward and resting on the stacking stops. Position the 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 (3 per side).



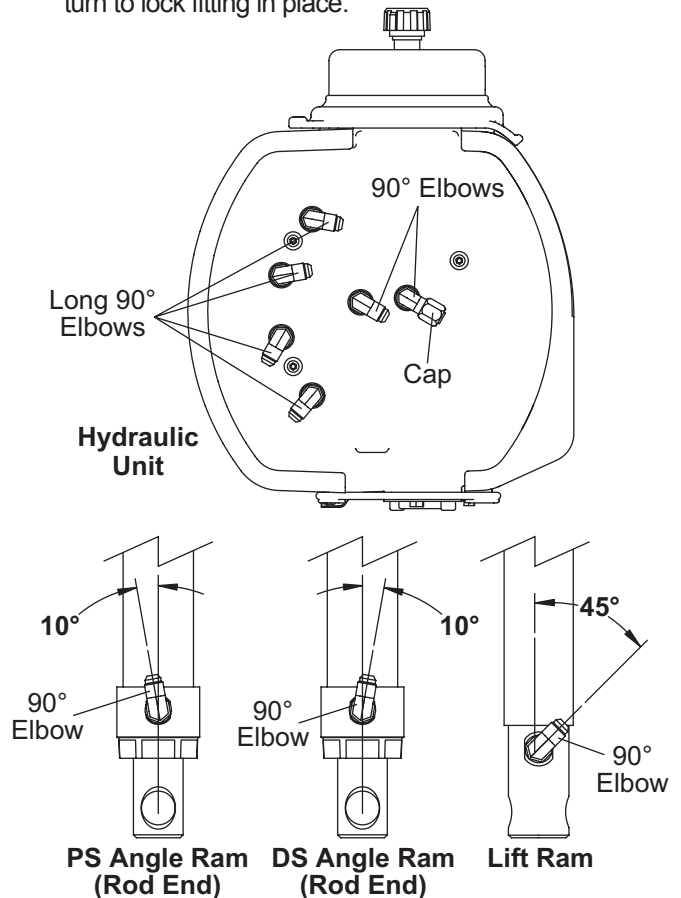
INSTALLATION INSTRUCTIONS

2. 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 other side.
3. Rotate stand assembly downward until clearance hole is visible. Insert one 5/8" x 1-1/2" cap screw through clearance hole in lower lift frame and top hole in the front of pivot plate. Retain with a locknut. Repeat on other side.
4. Tighten all fasteners according to torque chart.
5. If the plow is going to be assembled using configurations 1, 2, or 3. The stacking stops must be removed from the lift frame. The 3/8" x 4-1/2" cap screws must be replaced with the 3/8" x 3-3/4" cap screws located in the loose parts kit.

HYDRAULIC FITTINGS

Do not use thread sealant/tape on hoses and fittings. This could damage the product. Install all fittings into rams and hydraulic unit using the following procedure and fitting orientation illustrations:

1. Remove plug from ram or manifold port. Use a rag to catch residual fluid when removing manifold plugs.
2. Turn the jam nut on the fitting as far back as possible.
3. Lubricate the O-ring with clean hydraulic fluid.
4. Screw fitting into port by hand as far as it will go. The washer should contact port face and shoulder of the jam nut threads.
5. Unscrew fitting to proper position, no more than one full turn.
6. Use one wrench to hold the fitting body in position and tighten the jam nut with another wrench until the washer again contacts port face. Tighten 1/8 to 1/4 turn to lock fitting in place.

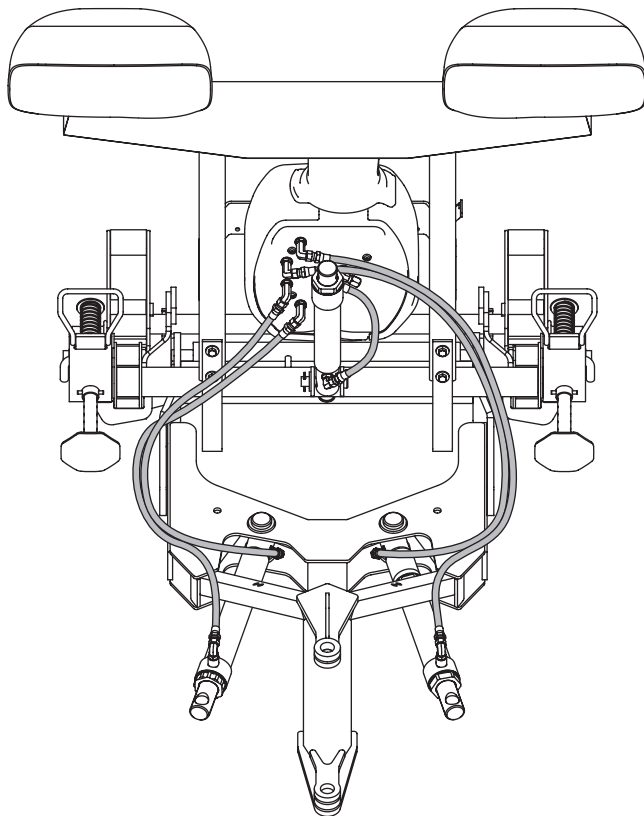
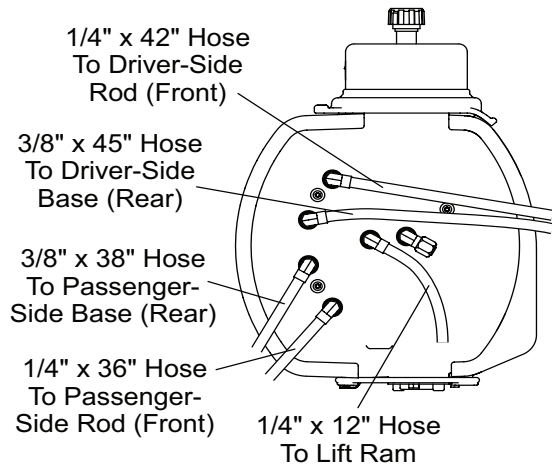


INSTALLATION INSTRUCTIONS

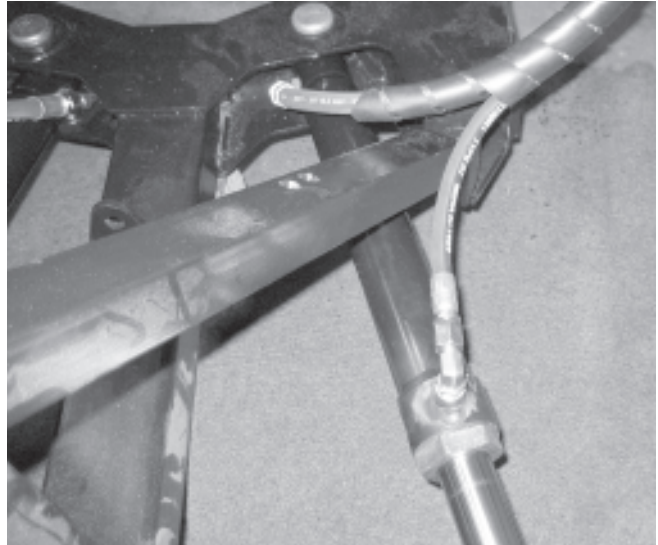
HYDRAULIC HOSES

Do not use thread sealant/tape on hoses and fittings. This could damage product.

1. Attach all hoses to fittings, routing hoses as shown. Leave hoses finger tight at this time.



2. Wrap angle ram hoses with protective hose wrap as shown. Start wrap on base end hose so wrap covers diagonal brace. Group hoses away from brace and continue wrapping, forming a smooth outward loop to the hydraulic unit.



3. Using a wrench to hold the hose end in position, tighten all hose fittings 1/8"-1/4" turn past finger tight.

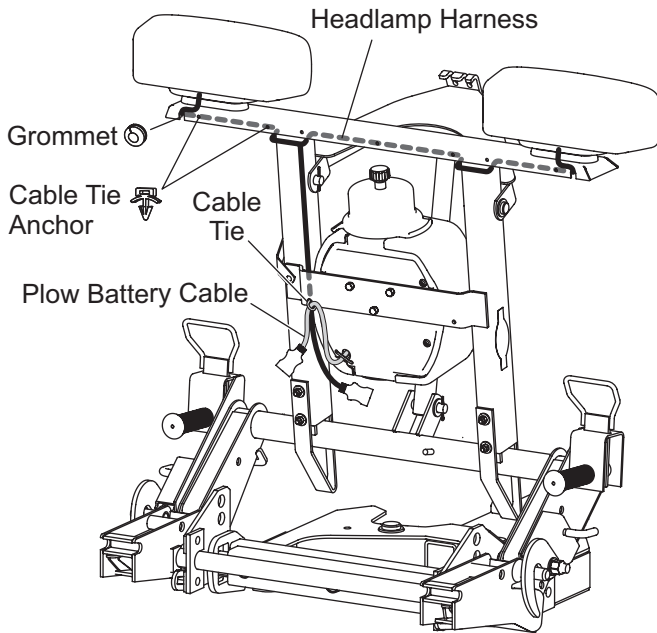
INSTALLATION INSTRUCTIONS

HEADLAMPS

⚠ WARNING

Your vehicle must be equipped with snowplow headlamps and directional lights.

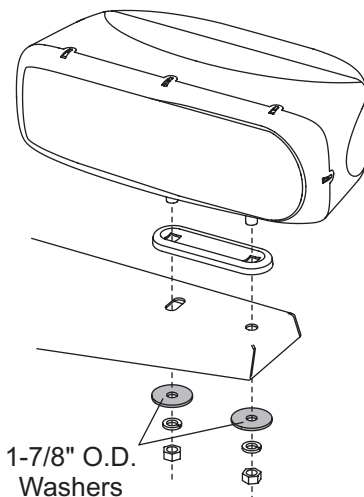
Headlamps, hardware and instructions are found in the headlamp box. Additional hardware (four 1-7/8" OD flat washers) are found in the loose parts box.



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 driver side vertical support with a cable tie through hole in cross member.
6. Cable tie harnesses and battery cable to the lift frame as shown in illustration.
7. Install cable boot onto the upper lift frame.

Refer to figure above for the following instructions.

1. With wire harness behind the lift frame, attach headlamps to the hole and slot in the headlamp channel by following the instructions included with the headlamps. Install 1-7/8" O.D. washers between the headlamp channel and the lock washers.



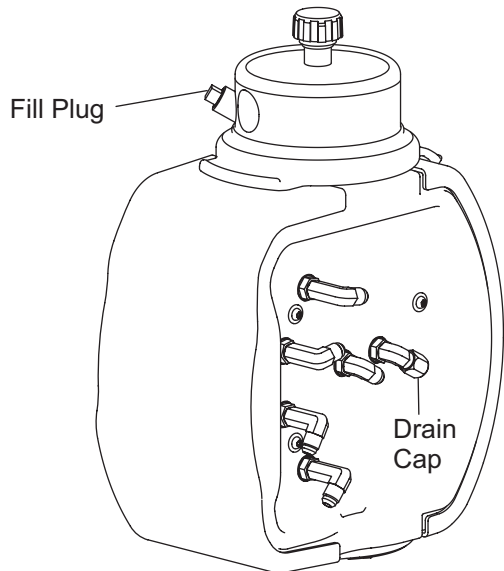
OPERATIONAL TEST AND FINAL ADJUSTMENTS

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 snowplow in vee position and lift ram fully retracted, fill the reservoir with WESTERN® High Performance Hydraulic Fluid 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 fill plug.



NOTE: Add fluid only when all rams are retracted.

⚠ WARNING

To prevent accidental movement of the blade, always turn the ON/OFF switch to OFF whenever the snowplow is not in use. The control indicator light will turn off.

⚠ CAUTION

DO NOT raise blade at this time as this may cause pump cavitation.

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

⚠ 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 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 control on and raise and lower the snowplow several times. Activate control float function and manually collapse lift ram all the way after each lowering of the blade. With all rams fully retracted, turn control off.
7. Fill reservoir to top of fill hole and replace 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

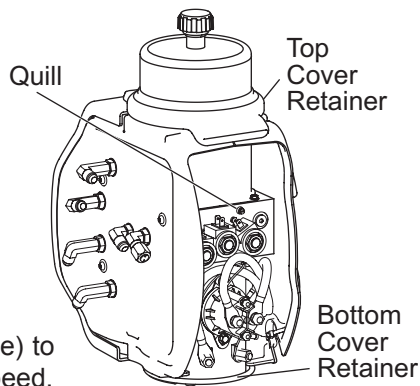
BLADE DROP SPEED ADJUSTMENT

⚠ WARNING

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

The quill in the top of the valve manifold adjusts the blade drop speed.

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

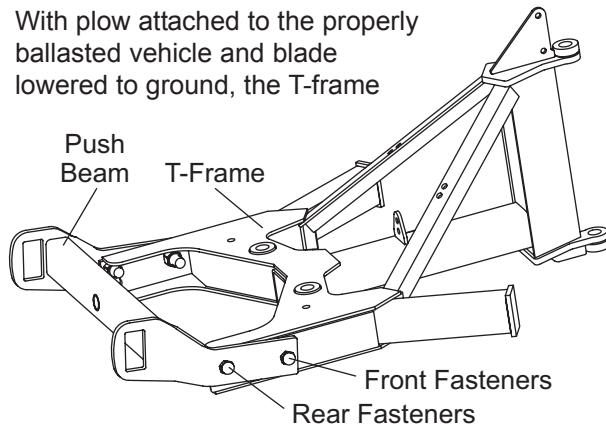


NOTE: To access the quill on the MVP PLUS™ hydraulic unit, raise top cover retainer, remove bottom cover retainer and remove side cover.

3. Stand 8' clear of the blade drop zone when checking adjustment.
4. On the MVP PLUS unit, replace cover and reinstall O-ring and top cover seal.

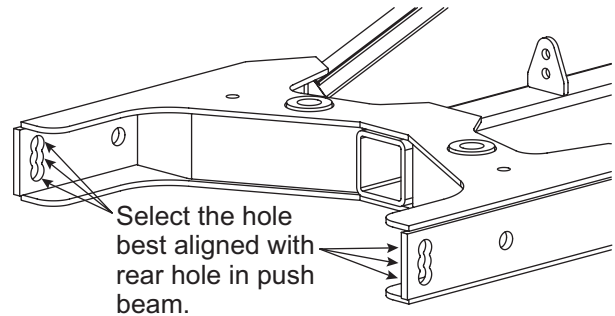
LEVELING ADJUSTMENT PROCEDURE

1. With plow attached to the properly ballasted vehicle and blade lowered to ground, the T-frame



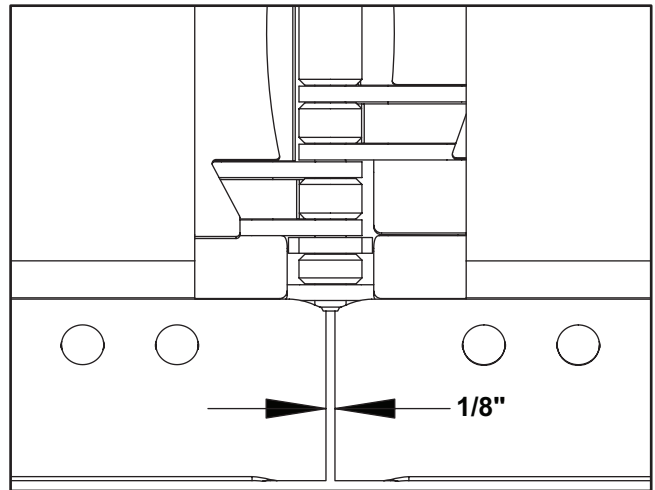
should be parallel with the ground. If not, place the plow in the scoop position.

2. Loosen the front fasteners for the push beam to T-frame connection, but do not remove them. Next remove the rear fasteners from the push beam to T-frame connection. Level the T-frame.
3. Select the hole in the rear of the T-frame that is aligned closest to the rear hole in the push beam. Reassemble the previously removed fasteners into the rear holes and tighten all fasteners.



CUTTING EDGE GAP ADJUSTMENT

1. With the wings in the straight position, measure the gap between the two cutting edges.



2. If the gap between the cutting edges is not 1/8" (centered on main pivot pin), raise the blade and support it safely on solid block. Loosen all of the cutting edge fasteners and slide the cutting edges to obtain the proper dimension.
3. Once the measurement is correct, fully tighten cutting edge fasteners according to the torque chart.

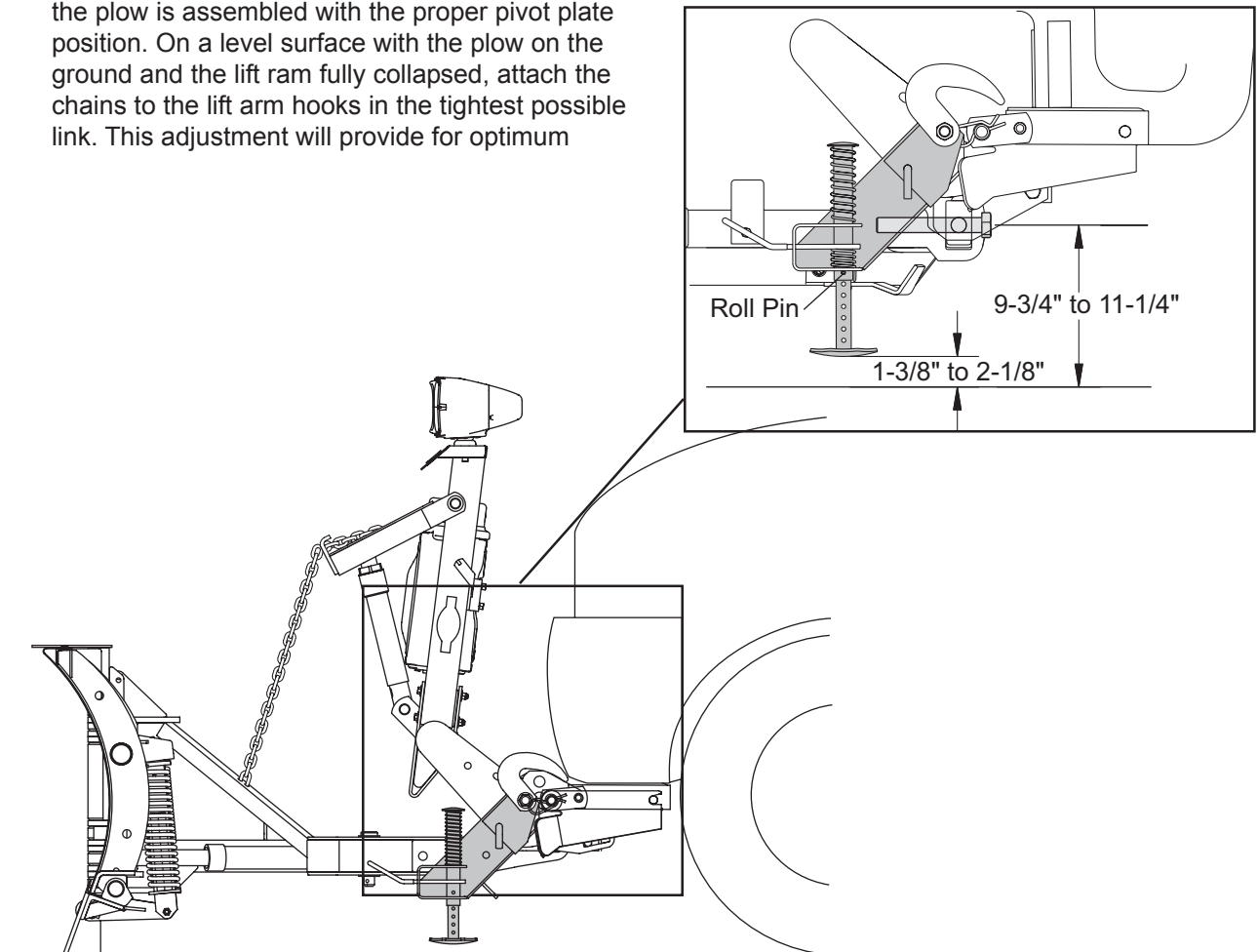
OPERATIONAL TEST AND FINAL ADJUSTMENTS

FINAL INSPECTION AND ADJUSTMENT

1. Attach plow to the vehicle mount. With plow 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 plow 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.
3. Final lift chain link adjustment must be made after the plow is assembled with the proper pivot plate position. On a level surface with the plow 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.
5. Raise and lower the plow in vee position to verify hydraulic hoses bow outward and do not interfere with plow components. Ensure base and angle ram hoses are wrapped over the diagonal brace. Adjust hoses, fittings and wraps as necessary.



OPERATIONAL TEST AND FINAL ADJUSTMENTS

VEHICLE LIGHTING CHECK

1. Check the operation of vehicle and plow lights with plow mounted to vehicle and all harnesses connected.

Turn signals and parking lamps

Parking lamps ON

- Both vehicle and plow parking lamps should be on at the same time.

Driver-side turn signal ON

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

Passenger-side turn signal ON

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

Headlamps

Move vehicle headlamp switch to the ON position. Connecting and disconnecting the headlamp harness plug from the vehicle harness connector should switch between vehicle and plow headlamps as follows:

Headlamp harness plug DISCONNECTED

- Vehicle headlamps should be on.
- Plow headlamps should be off.

Headlamp harness plug CONNECTED

- Plow headlamps should be on.
- Vehicle headlamps should be off.

Dimmer switch should dim whichever headlamps are operating. The high beam indicator on the dash should light when either set of headlamps is on high beam.

Daytime Running Lamps (DRLs)

With headlamp switch off, activate the DRLs.

Headlamp harness plug DISCONNECTED

- Vehicle DRLs should be on.
- Plow headlamps should be off.

Headlamp harness plug CONNECTED AND vehicle uses the headlamp bulbs for DRLs:

- Plow headlamps should be on in DRL mode (with reduced intensity compared to high or low beam).
- Vehicle DRLs should be OFF.

Headlamp harness plug CONNECTED AND vehicle uses lamps **other than** the headlamp bulbs for DRLs:

- Plow headlamps should be on in DRL mode (with reduced intensity compared to high or low beam).
- Vehicle DRLs should be on.
- Vehicle headlamps should be off.

Joystick Control or CabCommand Control

The control indicator light should light whenever the control ON/OFF switch and the ignition (key) switches are both in the ON position. The plow plugs do not need to be connected to the vehicle harness connectors.

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

▲ CAUTION

On 2-plug electrical systems, plug covers shall be used whenever plow is disconnected. Cable is 12-volt unfused source.

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

OWNER'S MANUAL PACKET

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

If the plow 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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