



# OWNER'S MANUAL

## Straight Blades with Relay Electrical System



**SNOWPLOWS**

**⚠ CAUTION**

Read this manual before operating or servicing  
snowplow.

This document supersedes all editions with an earlier date.

## OWNER'S INFORMATION

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

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

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

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

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

Snowplow Type (Model): \_\_\_\_\_ Year:\* \_\_\_\_\_

Blade Width: \_\_\_\_\_ Weight \_\_\_\_\_ LBS/KG

Ballast: No \_\_\_ Yes \_\_\_ Amount \_\_\_\_\_ LBS/KG

ISARMATIC® Serial Number: \_\_\_\_\_

*\* The year of manufacture is found on blade size label. Seven digit code has year of manufacture as third and fourth digits.*

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# PREFACE

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## PREFACE

Welcome to the growing family of WESTERN® snowplow owners.

This manual provides safety, operation, maintenance, and troubleshooting information for your new WESTERN snowplow. To keep your snowplow in good condition, read and understand this manual and follow its recommendations. Failure to do so may affect your warranty.

When service is necessary, your local WESTERN outlet knows your snowplow best. Contact your snowplow outlet for maintenance service or any other assistance you may require. We have enclosed a "Report Card" in your *Owner's Manual* packet for your use.

Your ISARMATIC® Mark IIIa hydraulic unit has a serial number. Record this serial number on the Owner's Information page at the front of this manual.

Before using your WESTERN snowplow, make sure your vehicle is equipped with all vehicle manufacturer's and our required options for snowplowing.

## FACTORY ORIGINAL PRODUCTS

Your WESTERN snowplow is a valuable investment. The best way to assure original equipment reliability and efficiency is to purchase only genuine **Factory Original parts and accessories**. "Will-fit" parts and accessories can alter your plow's performance characteristics and may affect your product warranty.

Protect your investment by staying with the best—original WESTERN parts and accessories from your local WESTERN outlet.



# SAFETY

## SAFETY DEFINITIONS

### ⚠ WARNING

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

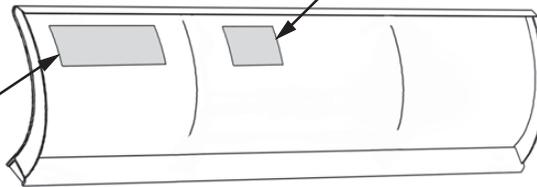
### ⚠ CAUTION

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

**NOTE:** Identifies tips, helpful hints and maintenance information the owner/operator should know.

## WARNING/CAUTION & INSTRUCTION LABELS

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



## 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

## ⚠ WARNING: TO AVOID PERSONAL INJURY, FOLLOW STEPS IN SEQUENCE.

**UniMount**  
SUBSYSTEM INSTRUCTIONS

REMOVING PLOW			
<p><b>STEP 1</b></p> <ul style="list-style-type: none"> <li>Adjust blade to straight position.</li> <li>Place cab control in "LOWER".</li> <li>Push lift channel down.</li> <li>Disconnect electrical plugs.</li> <li>Pull stand pin and lock pin to release stand from A-frame.</li> </ul>	<p><b>STEP 2</b></p> <ul style="list-style-type: none"> <li>Place stand shoe on ground. If necessary, raise stand slightly to align hole in stand with hole in lift frame. Insert stand pin to attach stand to lift frame.</li> </ul>	<p><b>STEP 3</b></p> <ul style="list-style-type: none"> <li>Remove hairpin from lift frame stud.</li> <li>Push lift frame toward vehicle to relieve tension on link arm, now slide link arm off stud.</li> <li>Repeat above steps on other side.</li> </ul>	<p><b>STEP 4</b></p> <ul style="list-style-type: none"> <li>Pull 2 hitch pins to release A-frame from vehicle. (Move lift frame to relieve hitch pin tension)</li> <li>Rotate lift frame toward blade.</li> <li>Use lock pin to lock stand to A-frame.</li> <li>Move plow away from vehicle.</li> <li>Install electrical covers.</li> </ul>
<p><b>STEP 4</b></p> <ul style="list-style-type: none"> <li>Rotate stand to storage position.</li> <li>Use stand pin and lock pin to attach stand to A-frame.</li> <li>Connect electrical plugs.</li> </ul>	<p><b>STEP 3</b></p> <ul style="list-style-type: none"> <li>Pull stand pin to release stand from lift frame.</li> </ul>	<p><b>STEP 2</b></p> <ul style="list-style-type: none"> <li>Rotate lift frame toward vehicle and swing link arm up to position link arm hole over lift frame stud. Now slide link arm onto stud.</li> <li>Install hairpin on stud.</li> <li>Repeat above steps on other side.</li> </ul>	<p><b>STEP 1</b></p> <ul style="list-style-type: none"> <li>Remove electrical covers.</li> <li>Position plow close to vehicle.</li> <li>Pull lock pin to unlock stand from A-frame.</li> <li>Rotate lift frame toward vehicle to align hitch pin holes.</li> <li>Attach A-frame to vehicle using 2 hitch pins.</li> </ul>

## MOUNTING PLOW

61740

# 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

**Remove blade assembly before placing vehicle on hoist.**

### WARNING

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

### CAUTION

**Read Owner's Manual before operating or servicing snowplow.**

### CAUTION

**Transport speed should not exceed 45 mph. Reduce speed under adverse travel conditions.**

### CAUTION

**Plowing speed should not exceed 10 mph.**

### CAUTION

**See your WESTERN® outlet for application recommendations.**

## PERSONAL SAFETY

- 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.

## 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 deadly carbon monoxide (CO) gas. Breathing this gas, even in low concentrations, could cause death. Never operate a vehicle in an enclosed area without venting exhaust to the outside.**

# SAFETY

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## 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.

## 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 70db(A) for the snowplow operator

# VEHICLE APPLICATION INFORMATION

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## VEHICLE APPLICATION REQUIREMENTS

### **⚠ CAUTION**

**See your WESTERN® outlet for application recommendations. The Selection List has specific vehicle and snowplow requirements.**

Vehicle application recommendations are based on the following:

- The vehicle with the snowplow installed must comply with applicable Federal Motor Vehicle Safety Standards (FMVSS).
- The vehicle with the snowplow installed must comply with the vehicle manufacturer's stated gross vehicle and axle weight ratings (found on the driver-side door cornerpost of the vehicle) and front and rear weight distribution ratio. In some cases, rear ballast may be required to comply with these requirements. See Ballast Requirements section.
- WESTERN Selection List is based on available vehicle capacity for snowplow equipment on a representative vehicle equipped with options commonly used for snowplowing and with 300 lb. of front seat occupant weight.
- Weights of front seat occupants can be adjusted above 300 lb. but vehicle with snowplow must not exceed vehicle GVWR or GAWR.
- In some cases there may be additional limitations and requirements.
- Installation, modification, and addition of accessories must comply with published WESTERN recommendations and instructions. Available capacity decreases as the vehicle is loaded with cargo or other truck equipment or snowplow accessories are installed.
- If there is uncertainty as to whether available capacity exists, the actual vehicle as configured must be weighed.

## BALLAST REQUIREMENTS

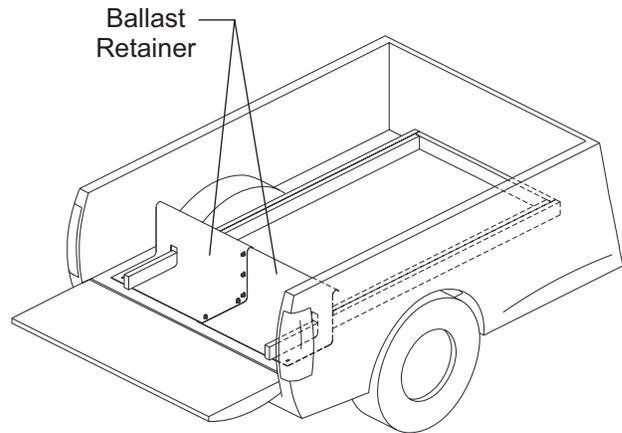
Ballast (additional weight) is an important part of qualifying vehicles for snowplow eligibility. Rear ballast must be used, when necessary, to remain in compliance with axle ratings and ratios as specified by the vehicle manufacturer.

If ballast is required, it is important that it be secured properly behind the rear axle. A ballast retainer kit is available from your WESTERN outlet, PN 62849.

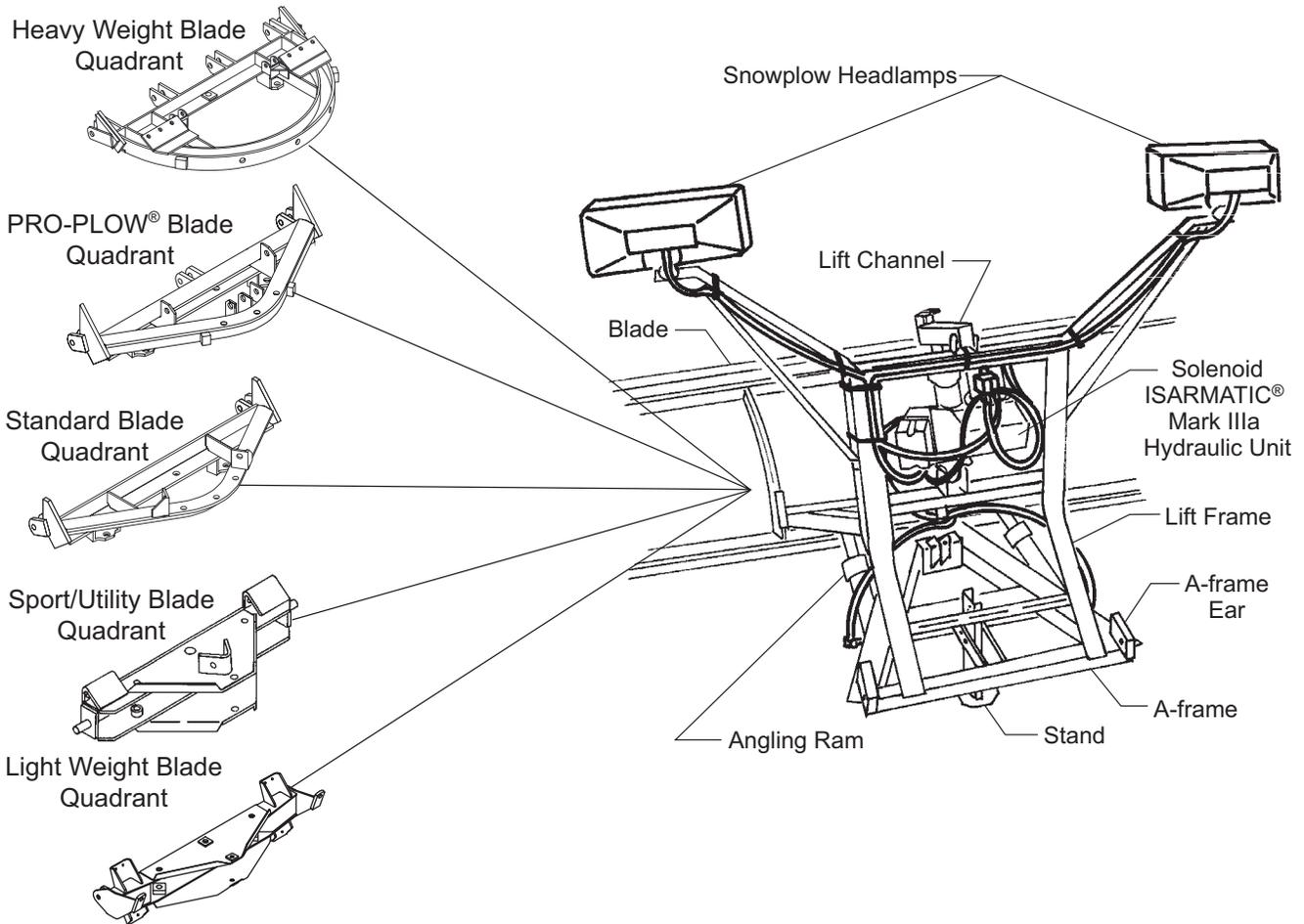
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**NOTE: The ballast retainer kit is for snowplow vehicles requiring ballast. See your WESTERN outlet for the correct amount of ballast required. Include the weight of the retainer as part of the ballast requirement. Sand bags are recommended for use as ballast.**

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# GETTING TO KNOW YOUR SNOWPLOW



## UniMount® SNOWPLOW

A UniMount snowplow consists of all the components that are readily removable from the vehicle as a unit. This includes the blade, quadrant, A-frame, lift frame, stand, hydraulic unit, and snowplow headlamps. The snowplow is ready and easy to mount when you need to plow snow. When plowing is completed, remove the snowplow.

The snowplow shall be installed according to instructions supplied. WESTERN® outlets are trained to provide this service and other services for this plow.

There is no need to unhook the chain or the hydraulic hoses. When the lift frame is pinned to the stand and locked in place (see blade label or snowplow removal section of this manual), the complete UniMount snowplow can easily be moved around on most hard surfaces.

## BLADE

WESTERN snowplows with steel blades are constructed of heavy gauge steel. To increase rigidity and strength, the blade is reinforced with several vertical ribs. The top edge is formed for added strength and improved appearance.

WESTERN snowplows with poly blades are constructed of a high molecular weight polyethylene sheet that is supported with structural steel. The blade comes equipped with a rubber snow deflector.

The exclusive Roll-Action™ blade is designed to roll snow ahead and to the side instead of just pushing snow. This action means you can move more snow and move it faster using less power, saving fuel and reducing wear and tear on both the vehicle and the snowplow.

The blade has a replaceable high-carbon steel cutting edge bolted to the bottom. This cutting edge is reversible to equalize wear (except Sport/Utility snowplows). Replace when it is worn to the bottom edge of the blade. (See the Maintenance section of this manual.)

# GETTING TO KNOW YOUR SNOWPLOW

The blade also features large, adjustable disc-type skid shoes. These rotate 360° for longer wear and better blade flotation over all surfaces. For severe service, heavy-duty disc shoes are standard on PRO-PLOW® and Heavy Weight snowplows.

Your new blade's steel components are protected with a PRO-GUARD™ coating — a baked-on powder finish that resists cracking, corrosion, scratching and rust. The PRO-GUARD coating — many times thicker than paint — will maintain its luster and glossy good looks. It can be touched up when necessary.

Blade guides with replaceable flags are furnished with your complete snowplow. These help improve operator visibility and blade control.

## A-FRAME, QUADRANT AND LIFT FRAME

The quadrant is attached to the back of the blade with bolts, locknuts, and heavy-duty trip springs. The trip springs allow the blade to trip forward and ride over obstacles such as low curbs, manhole covers, etc. without damaging the blade or the vehicle, or injuring the driver. See the Regular Maintenance and Adjustments section for Trip Spring Adjustment.

The quadrant is attached to the triangular A-frame with a pivot bolt. The pivot bolt allows the quadrant and blade to swing right or left. Heavy 1" diameter hitch pins secure the A-frame ears to the vehicle mount.

The lift frame is hinged to the rear angle of the A-frame with clevis pins. The hydraulic unit is mounted on the front of the lift frame. The hoses remain connected to the hydraulic unit and the Hydra-Turn™ rams. The snowplow headlights are also attached to the lift frame.

## SNOWPLOW HEADLAMPS

### **⚠ WARNING**

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

The headlamps include a set of rectangular, dual-beam, halogen headlamps plus combination park and turn signals. A pre-wired harness with a plug-in module requires no headlamp wire splicing. The headlamps conform to Federal Motor Vehicle Safety Standards (FMVSS).

When the electrical plugs are connected, the vehicle headlamps will automatically switch to the snowplow headlamps when they are turned on.

When the electrical plugs are disconnected, the headlamps will automatically switch to vehicle headlamps when they are turned on.

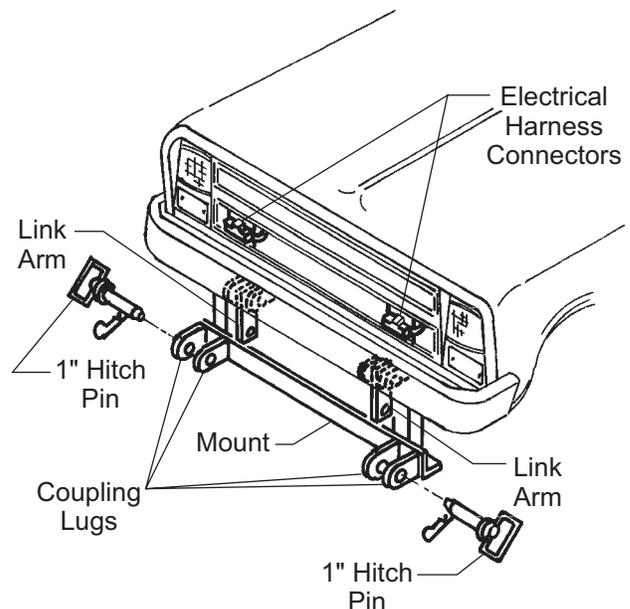
Replacement 2E1 sealed beam headlamps are available through your local WESTERN® outlet.

## VEHICLE MOUNT

WESTERN has designed custom mounts for most vehicles. Due to differences between vehicle models, mounts are generally not interchangeable.

The mount is fastened to the underside of the vehicle frame and provides the primary connecting point between the snowplow and the vehicle.

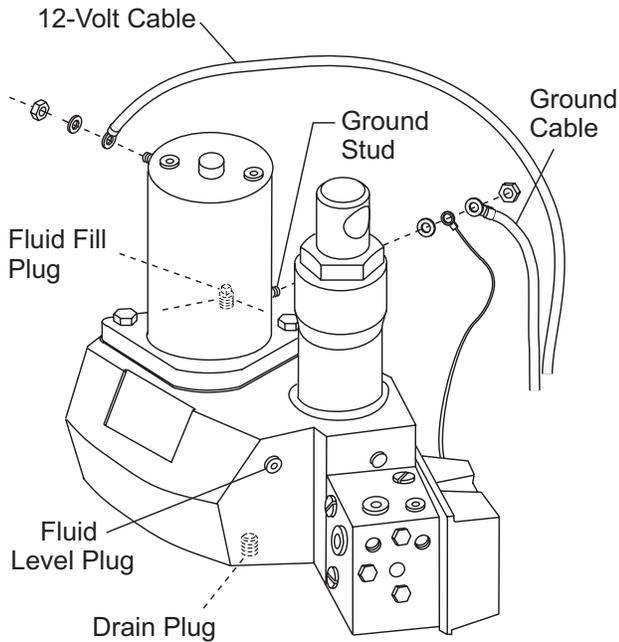
Link arm style mounts have two pinned link arms (normally attached to the mount). The link arms attach to two studs on the lift frame when the snowplow assembly is attached to the vehicle.



# GETTING TO KNOW YOUR SNOWPLOW

## HYDRAULIC POWER

The WESTERN® Solenoid ISARMATIC® Mark IIIa system provides a fast and uniform speed for lifting and angling. The system raises the blade in two seconds and angles side to side in less than four seconds. The Heavy Weight system angles side to side in eight seconds. For hydraulic fluid type and filling instructions, see Hydraulic System, Annual Fluid Change, in the Maintenance section of this manual.



## System Capacity

APPLICATION	CAPACITY IN QUARTS
Solenoid ISARMATIC Mark IIIa Angling Rams	1-3/4
With 6" Hydraulic Rams	2-1/8
With 8" Hydraulic Rams	2-1/4
With 10" Hydraulic Rams	2-3/8
With 16" Hydraulic Rams	2-3/4

## Pump Motor Specifications

12 volt DC with +/- connection
1450-2100 psi pump relief valve
2500-3800 psi angling relief valve
4.5" dia. 1.04 kw motor
.000477 GAL/REV Pump
Hydraulic Hose SAE 100R

# GETTING TO KNOW YOUR SNOWPLOW

## Hydra-Turn™ Angling

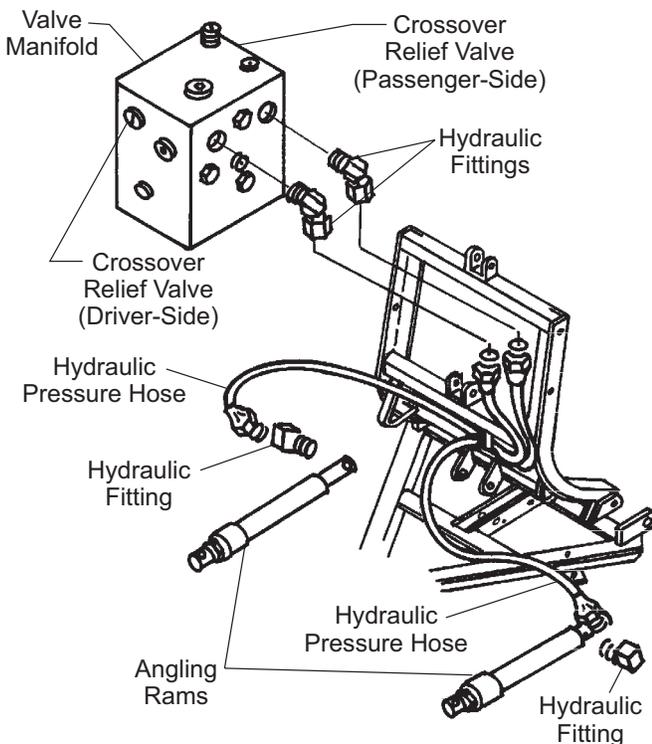
### ⚠ WARNING

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.

**NOTE:** In the event of angling failure, place a 5/8" bolt through the holes in the A-frame and quadrant (not applicable to Sport/Utility plows). This will hold the blade in position until the problem is corrected.

Hydra-Turn angling gives you full control of the snowplow from within the cab of the vehicle — you will never have to get out in the snow to change the angle of the blade. Two single-acting hydraulic rams hold the blade at the desired angle. The rams are operated by the solenoid control. Hydraulic fluid transfers between angling rams.

The solenoid ISARMATIC® Mark IIIa valve manifold has two relief (cushion) valves built in to prevent damage to the blade or vehicle if obstacles are hit. When the force against the blade causes pressure in an extended ram to exceed set limits, the relief (cushion) valve opens allowing fluid to escape and the ram plunger retracts.

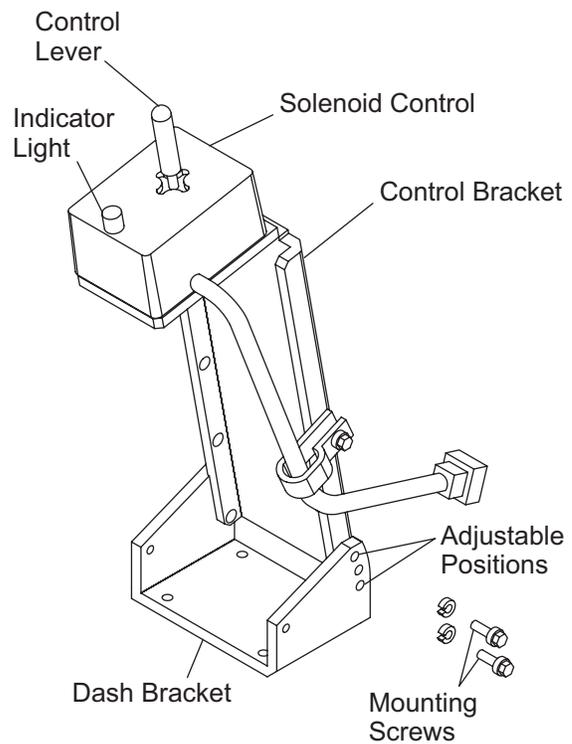


## SOLENOID CONTROL

### ⚠ 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.

The solenoid control is electrically powered through the ignition (key) switch of your vehicle and is protected by a replaceable 6-amp in-line fuse. The ON/OFF switch allows you to turn off the control and prevent blade movement even when the ignition is on. **The ON/OFF switch operates as emergency stop when required.**



# ACCESSORIES AND OPTIONS

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## BLADE ACCESSORIES

### Snow Deflector

The optional snow deflector, available in poly or reinforced rubber, helps keep snow off the windshield and away from the radiator. The deflector improves the Roll-Action™ feature and increases snowplow efficiency. The snow deflector is standard on poly snowplows, but is not available for Sport/Utility blades.

### Dolly Wheels

The optional dolly wheels provide easy snowplow maneuvering on any hard surface and simplify snowplow positioning for hook-up. Dolly wheels are standard for the Heavy Weight blade and are available as an accessory for the PRO-PLOW® and POLY PRO-PLOW® snowplows.

### Rubber Cutting Edge

The rubber cutting edge is made of resilient rubber compounds that allow for a longer lasting cutting edge. It adjusts easily to road surface irregularities without gouging and removes all types of snow quickly and cleanly. The rubber cutting edge is available for all snowplows, except the Sport/Utility blade.

# MOUNTING SNOWPLOW TO VEHICLE

## MOUNTING SNOWPLOW

### ⚠ WARNING

To avoid personal injury, follow steps in sequence.

### ⚠ WARNING

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

### ⚠ 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.

### ⚠ WARNING

Inspect snowplow components and bolts for wear or damage when mounting or removing the snowplow. Worn or damaged components could allow the snowplow to drop unexpectedly.

### ⚠ CAUTION

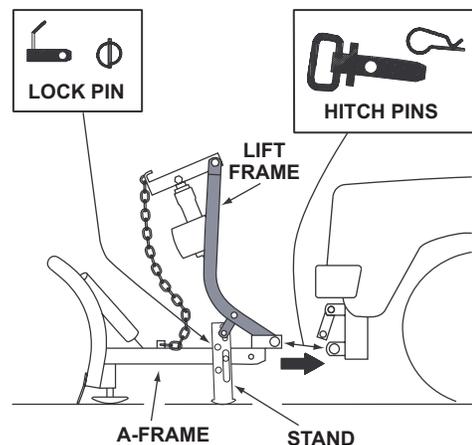
Never use a finger to check an alignment. If the snowplow moves, your finger could be crushed.

**NOTE:** Adequate chain slack is necessary for connecting pin hole alignment.

**NOTE:** Use dielectric grease to prevent corrosion on all connections.

## Step 1

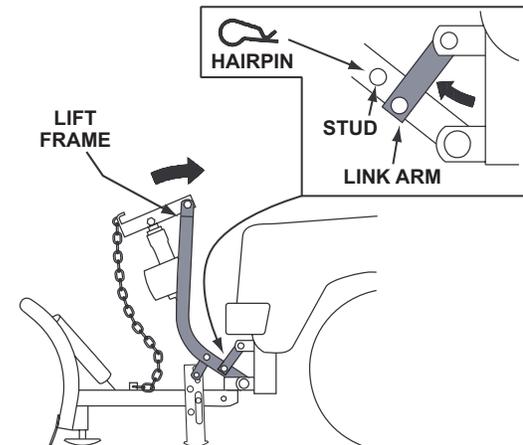
- Remove electrical covers.
- Position plow close to vehicle.
- Pull lock pin to unlock stand from A-frame.
- Rotate lift frame toward vehicle to align hitch pin holes.
- Attach A-frame to vehicle using 2 hitch pins.



# MOUNTING SNOWPLOW TO VEHICLE

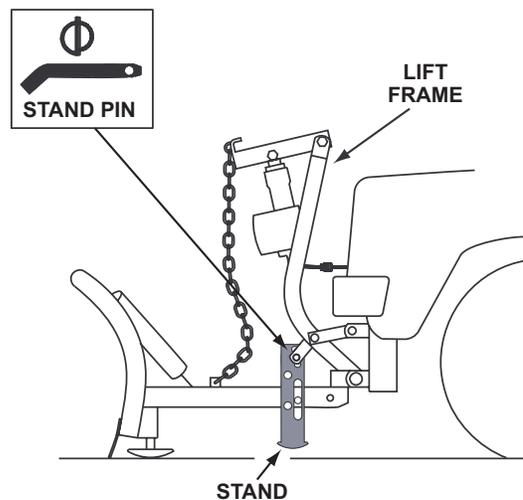
## Step 2

- Rotate lift frame toward vehicle and swing link arm up to position link arm hole over lift frame stud. Now slide link arm onto stud.
- Install hairpin into stud.
- Repeat above steps on other side.



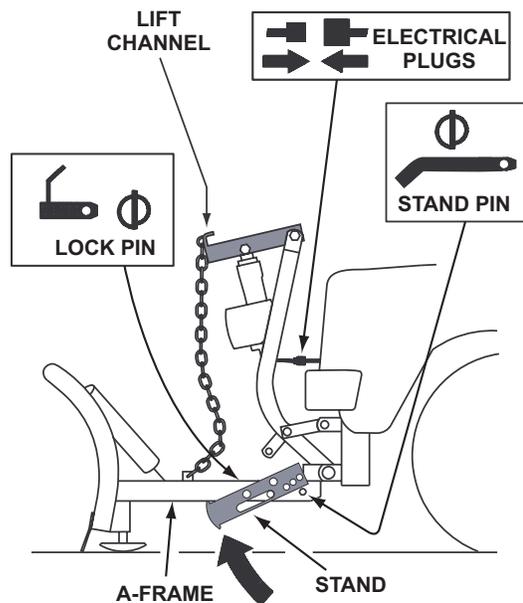
## Step 3

- Pull stand pin to release stand from lift frame.



## Step 4

- Rotate stand to storage position.
- Use stand pin and lock pin to attach stand to A-frame.
- Connect electrical plugs.



# OPERATION

## SOLENOID CONTROL

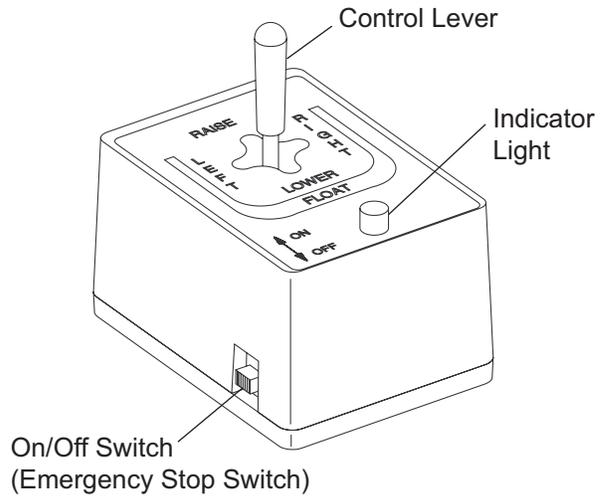
### ⚠ WARNING

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 hold control lever in RAISE, ANGLE LEFT or ANGLE RIGHT position after blade has reached desired position. To do so will cause extra current and overheat components.

Turn the vehicle ignition (key) switch to the ON or the ACCESSORY position. Move control ON/OFF switch to the ON position. The control indicator light (red) lights when the control ON/OFF and the ignition (key) are both turned on. **The ON/OFF switch operates as emergency stop when required.**



Action	Description of Operation
ON/OFF	Slide the control power switch ON to activate the hydraulic system. Turn the control OFF to lock the blade in place. This prevents accidental movement of the blade.
RIGHT	Move the control lever right to angle the blade to the right.
LEFT	Move the control lever left to angle the blade to the left.
RAISE	Move the control lever up (forward) to raise the blade to the desired height.
LOWER/FLOAT	Move the control lever down (back) to lower the blade and activate the float mode, which allows the blade to move up and down to follow the contour of the surface being plowed.
Cancel FLOAT	Cancel the float mode by momentarily placing the control in the RAISE position, turning the control off or turning the vehicle ignition off. Angling left or right does not cancel float.

# OPERATION

## SNOWPLOW HEADLAMP CHECK

With all electrical plugs connected, check the operation of vehicle and snowplow headlamps.

Lights	Results
Parking Lamps	Both vehicle and snowplow lamps should be on.
Right Turn Signal	Both vehicle and snowplow lamps should be on.
Left Turn Signal	Both vehicle and snowplow lamps should be on.

Connecting and disconnecting the electrical plugs should switch between the vehicle and snowplow headlamps as follows:

- Electrical plugs **DISCONNECTED**—The vehicle headlamps should light up.
- Electrical plugs **CONNECTED**—The snowplow headlamps should light up.

## Aiming the Headlamps

- Aim the snowplow headlamps with the snowplow mounted and raised in the transport position. See Aiming Headlamp Beams in the Maintenance section for instructions.
- Aim the vehicle headlamps with the snowplow removed from the vehicle.

## DISC SHOE ADJUSTMENT

### **⚠ WARNING**

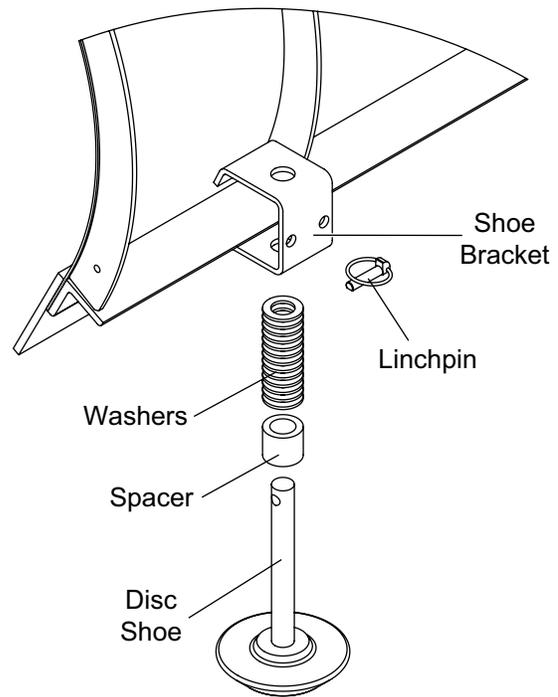
**Blade can drop unexpectedly. Place blade on jack stands. Failure to do so could result in serious personal injury.**

### Recommended Shoe Adjustments

**For gravel surfaces:** The bottom surface of the shoe should be 1/4" to 1/2" below the cutting edge.

**For hard surfaces (concrete or asphalt):** The bottom surface of the shoe should be even with the cutting edge.

## Adjustment Procedure



1. Raise the blade 1' off the road surface, turn the control to the OFF position, and from in front of the blade, place jack stands or sturdy blocking under the cutting edge.
2. Turn the control to the ON position, and lower the blade onto the jack stands or blocking. Turn the control and the vehicle ignition to the OFF position.
3. Remove the linchpin, and slide the disc shoe down and out of the shoe bracket.
4. Remove one or more washers from the shoe stem, and reinstall the shoe into the shoe bracket.
5. Place the removed washers onto the shoe stem above the shoe bracket.
6. Reinstall the linchpin.
7. Turn the vehicle ignition to the ON position, and turn the control to the ON position. Raise the blade slightly from the jack stands. Turn the control to the OFF position, and remove the jack stands.
8. Stand 8' clear of the blade drop zone when checking the height adjustment of the cutting edge to the road surface.

# OPERATION

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## 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.
3. Stand 8' clear of the blade when checking adjustment.

## TRANSPORTING THE SNOWPLOW

### **⚠ WARNING**

Position blade so it does not block headlamp beam.  
Do not change blade position while traveling. You could suddenly lower blade accidentally.

### **⚠ CAUTION**

Transport speed should not exceed 45 mph. Reduce speed under adverse travel conditions.

These instructions are for driving short distances to and from plowing jobs. Remove the snowplow from the front of the vehicle for long trips and place in pickup box.

1. Completely raise the blade.
2. Adjust the blade height for maximum snowplow light illumination.
3. Adjust the blade to the straight position.
4. Turn the control OFF to lock the blade in place.

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**NOTE: Overheating is unlikely under normal driving conditions, but occasionally the snowplow may be positioned where it deflects air away from the radiator. If this occurs, stop the vehicle and raise, lower, or angle the snowplow to correct overheating.**

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**NOTE: Only the driver should be in the vehicle cab when the snowplow is attached.**

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# OPERATION

## DRIVING AND PLOWING ON SNOW AND ICE

### **⚠ CAUTION**

Drinking then driving or plowing is very dangerous. Your reflex, perceptions, attentiveness and judgement can be affected by even a small amount of alcohol. You can have a serious or even fatal collision if you drive after drinking. Please, do not drink and then drive or plow.

Follow your vehicle owner's manual for driving in snow and ice conditions. Remember when you drive on snow or ice, your wheels will not get good traction. You cannot accelerate as quickly, turning is more difficult and you will need longer braking distance.

Wet and hard packed snow offers the worst tire traction. It is very easy to lose control. You will have difficulty accelerating. If you do get moving, you may have poor steering and difficult braking which can cause you to slide out of control.

Here are some tips for driving in these conditions:

- Drive defensively.
- Do not drink then drive or plow snow.
- Plow or drive only when you have good visibility for operating a vehicle.
- If you cannot see well due to snow or icy conditions, you will need to slow down and keep more space between you and other vehicles.
- Slow down, especially on higher speed roads. Your headlamps can light up only so much road ahead.
- If you are tired, pull off in a safe place and rest.
- Keep your windshield and all glass on your vehicle clean to see around you.
- Dress properly for the weather. Wear layers of clothing. As you get warm you can take off layers.

## PLOWING SNOW

### **⚠ WARNING**

Never plow snow with head out the vehicle window. Sudden stops or protruding objects could cause personal injury.

### **⚠ CAUTION**

Wear a seatbelt when plowing snow. Hidden obstructions could cause the vehicle to stop suddenly resulting in personal injury.

### **⚠ CAUTION**

Flag any obstructions that are hard to locate under snow to prevent damage to product or property.

### **⚠ CAUTION**

Never stack snow with the blade angled. This could damage the snowplow or the vehicle bumper.

### **⚠ CAUTION**

Plowing speed should not exceed 10 mph.

**NOTE:** Only the driver should be in the vehicle cab when the snowplow is attached.

## General Instructions

1. Before plowing, make sure you know of any obstructions hidden beneath the snow such as bumper stops in parking lots, curbs, sidewalk edges, shrubs, fences, or pipes sticking up from the ground. If unfamiliar with area to be plowed, have someone familiar with the area point out obstacles.
2. If possible, and you have good visibility, plow during the storm rather than letting snow accumulate.
3. Do not exceed 10 mph (16 kph) when plowing snow.
4. When stacking snow, begin raising the blade as you come close to the stack. This will let the blade ride up the stack.

# OPERATION

## Hard-Packed Snow

1. Raise the disc shoes so that the cutting edge comes into direct contact with the pavement.
2. Use the lowest gear to place maximum power behind the cutting edge.
3. An angled blade is more effective to remove hard-packed snow.

## Deep Snow

1. Shear off top layers by plowing with the blade raised 3 to 4 inches for the initial pass.
2. Bite into the edges using only partial blade width until the job is cut down to size for full blade plowing.

Rule of thumb:

6" snow — plow with entire blade width;

9" snow — plow with 3/4 blade; and

12" snow — plow with 1/2 blade.

Experience and "feel" are the best guides.

3. When plowing deep snow, be sure to keep the vehicle moving.
4. Ballast is suggested for maximum traction. Secure ballast behind rear wheels for better traction. Do not exceed vehicle's GVWR and GAWR.
5. For increased traction, use tire chains where legal.

## Clearing Driveways

1. Head into driveway with the blade angled and plow snow away from buildings. Widen the driveway by rolling snow away from buildings.
2. If the building is at the end of the driveway, plow up to within a vehicle length of the building. Push as much snow as possible off driveway.
3. With a raised, straight blade, drive through remaining snow to building. Drop blade and "back drag" snow away from building one vehicle length. Repeat if necessary.
4. Back vehicle to the building door and plow forward, removing the remaining snow from the driveway. Check municipal ordinances for proper disposal of snow.

## Clearing Parking Lots

1. Clear areas in front of the buildings first. With the blade raised, drive up to the building. Drop blade and "back drag" snow away from building. When snow is clear of the buildings, turn the vehicle around and push snow away from the buildings towards outer edges of lot.
2. Plow a single path down the center in the lengthwise direction.
3. Angle the snowplow towards the long sides, and plow successive strips lengthwise until the area is cleared and snow is "stacked" around the outer edges.
4. If snow is too deep to clear in the above manner, clear main traffic lanes as much as possible.

## PARKING WITH SNOWPLOW ATTACHED

### WARNING

**Lower blade when vehicle is parked. Keep 8' clear of blade drop zone. 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.**

Whenever you park your vehicle, completely lower the blade to the ground.

## TOWING DISABLED OR STUCK VEHICLE

DO NOT use any part of the snowplow assembly as an attachment point when retrieving, towing, or winching a disabled or stuck vehicle.

# SNOWPLOW REMOVAL

## REMOVING SNOWPLOW

### ⚠ WARNING

To avoid personal injury, follow steps in sequence.

### ⚠ WARNING

Stand must be lowered and pinned to lift frame before removing link arms. Falling assemblies could cause personal injury.

### ⚠ WARNING

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

### ⚠ 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.

### ⚠ WARNING

Inspect snowplow components and bolts for wear or damage when mounting or removing the snowplow. Worn or damaged components could allow the snowplow to drop unexpectedly.

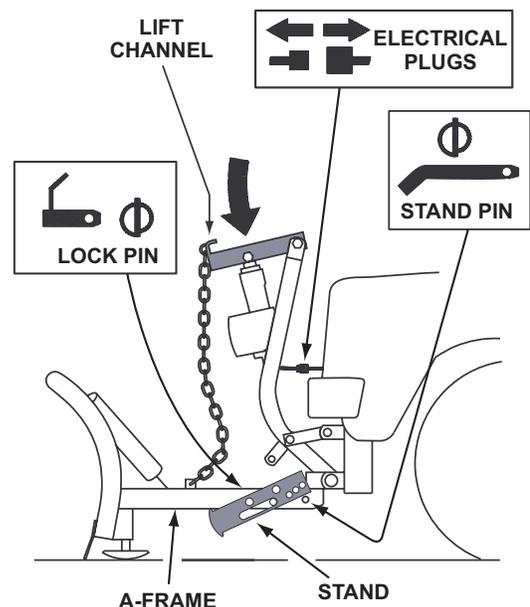
### ⚠ CAUTION

Store PRO-PLOW® A-frame in a horizontal position. This will prevent water from collecting and freezing in shock absorber.

During the off season, the solenoid control and bracket can be removed from the dash/floor bracket. Disconnect the molded connector in the cab and remove the four mounting screws. Store the control and the bracket in the glovebox of the vehicle.

## Step 1

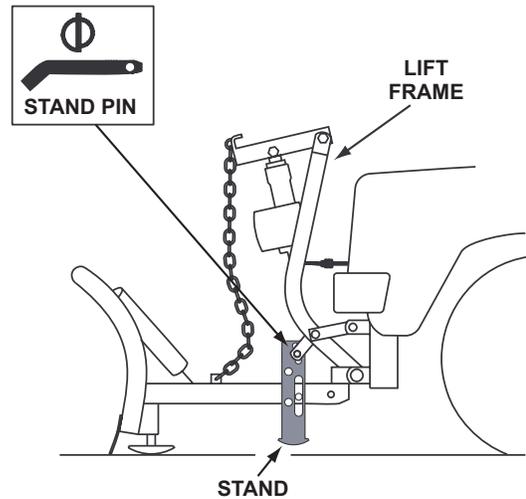
- Adjust blade to straight position.
- Place cab control in "LOWER".
- Push lift channel down.
- Disconnect electrical plugs.
- Pull stand pin and lock pin to release stand from A-frame.



# SNOWPLOW REMOVAL

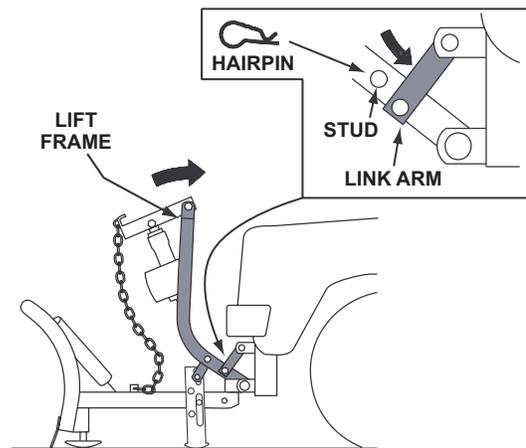
## Step 2

- Place stand shoe on ground. If necessary, raise stand slightly to align hole in stand with hole in lift frame. Insert stand pin to attach stand to lift frame.



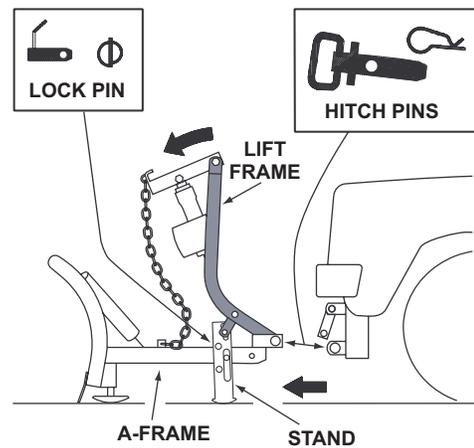
## Step 3

- Remove hairpin from lift frame stud.
- Push lift frame toward vehicle to relieve tension on link arm, now slide link arm off stud.
- Repeat above steps on other side.



## Step 4

- Pull 2 hitch pins to release A-frame from vehicle. (Move lift frame to relieve hitch pin tension)
- Rotate lift frame toward blade.
- Use lock pin to lock stand to A-frame.
- Move plow away from vehicle.
- Install electrical covers.



**NOTE:** After each disconnection of the snowplow, reapply dielectric grease to the electrical plugs to maintain the protective coating on the terminals.

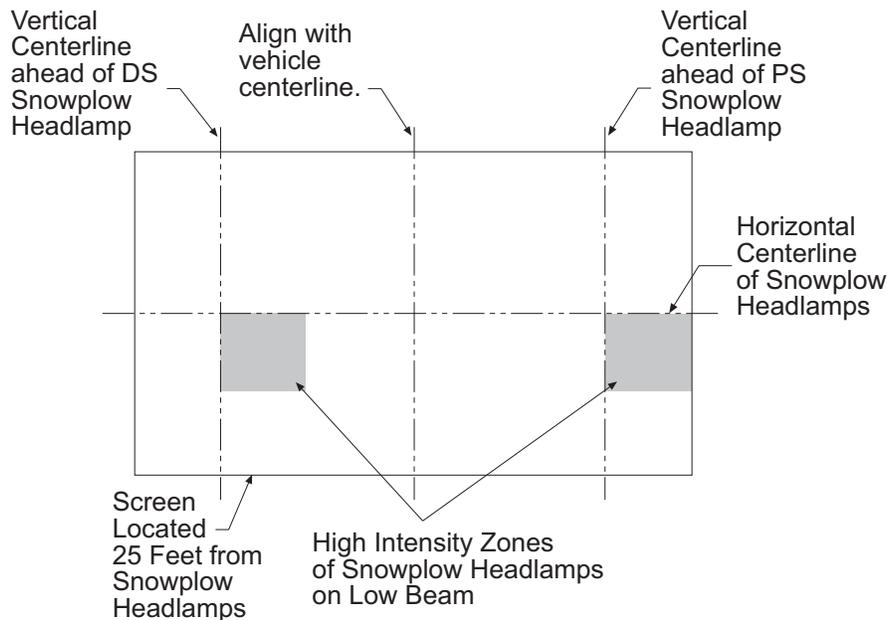
**NOTE:** Place electrical plugs in storage position. On the snowplow, insert the plugs into the boot. On the vehicle, cover plugs with attached plug covers.

# MAINTENANCE

## AIMING HEADLAMP BEAMS

Torque headlamp fasteners to 45 ft-lb once correct visual aim is achieved.

1. Place vehicle on a level surface 25 feet in front of a matte-white screen, such as a garage door. The screen should be perpendicular both to the ground and to the vehicle centerline.
  2. The vehicle should be equipped for normal operation. The snowplow blade should be in place and in raised position. Below are steps listed by the Society of Automotive Engineers (SAE) pertinent to headlamp aiming in specification #SAE J599d.
  3. Prepare vehicle for headlamp aim or inspection. Before checking beam aim, the inspector will:
    - a. Remove ice or mud from under fenders.
    - b. Set tire inflation pressures to the values specified on vehicle information label.
    - c. Check springs for sag or broken leaves.
    - d. See that there is no load in the vehicle other than the driver and ballast as specified in the Selection List.
  - e. Check functioning of any automatic vehicle leveling systems and specific manufacturer's instructions pertaining to vehicle preparation for headlamp aiming.
  - f. Clean lenses.
  - g. Check for bulb burnout and proper beam switching.
  - h. Stabilize suspension by rocking vehicle sideways.
4. Mark (or tape) the vertical centerline of the snowplow headlamps and the vertical centerline of the vehicle on the screen. Mark the horizontal centerline of the snowplow headlamps on the screen (distance from ground to snowplow headlamp centers).
  5. Align the top edge of the high intensity zone of the snowplow lower beam below the horizontal centerline and the left edge of the high intensity zone on the vertical centerline for each snowplow headlamp. (Refer to diagram below.)



# MAINTENANCE

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## PRESEASON CHECK

### **⚠ 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.**

Before the snow season, check your equipment to make sure it's in working condition. Here are some tips for getting your equipment ready:

- Clean and tighten all electrical connections and coat with dielectric grease to prevent corrosion.
- Check hydraulic system for leaks and cracked or damaged hoses.
- Drain and flush hydraulic system and refill with recommended hydraulic fluid. For hydraulic fluid type and filling instructions, see Hydraulic System, Annual Fluid Change, in this section of the manual.
- Replace any worn or damaged parts.
- Check all mounting points and tighten fasteners.
- Repaint blade assembly and attachments, as necessary, to protect the metal.
- Install auxiliary and flashing lights for safety in accordance with local regulations.
- Check headlamps, auxiliary lights, heater and windshield wipers for proper operation.
- Ballast may be necessary, or beneficial, on some vehicles to provide maximum traction, braking and handling.
- Any ballast material (such as sand and blocks) must be solidly secured to the vehicle preventing it from moving under plowing conditions.

## POSTSEASON MAINTENANCE

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**NOTE: Coat all electrical plugs with dielectric grease.**

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- Clean and paint blade assembly as needed.
- Be sure the lift ram is fully collapsed.
- For summer or long-term storage, apply general purpose petroleum grease to exposed chrome surfaces of the Hydra-Turn™ rams to prevent rust.
- Lubricate all pivot points with general-purpose petroleum grease (for example, stand lock pin assembly and lower spring anchor).

# MAINTENANCE

## MAINTENANCE AND ADJUSTMENT

### **⚠ 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.**

Your WESTERN® snowplow is designed for rugged, dependable service. Though, like the vehicle on which it is mounted, it needs regular care and maintenance. Check the following before and frequently during the plowing season:

1. Make sure all fasteners, mounting bolts, and hydraulic connections are tight.
2. Make sure all electrical connections including grounds are clean, tight, free of rust or corrosion, and are coated with dielectric grease.
3. Check all plugs and seals for fluid leaks. Repair as necessary.
4. Cutting Edge

To equalize wear, the cutting edge can be reversed. The Sport/Utility cutting edge is not reversible. Replace the cutting edge when it is worn to the bottom of the blade.

- Raise the blade and place blocking under the A-frame.
- Remove the cutting edge and turn end for end.
- Reinstall.

5. Trip Spring Adjustment

To adjust trip spring tension, adjust the eyebolts located at the top of the blade.

- Loosen the locknut (nut closest to the spring).
- Tighten the adjusting nut (nut furthest from the spring) until the coils begin to separate. When tension is properly adjusted, a sheet of paper should pass between the second and third coils.
- Tighten locknut.

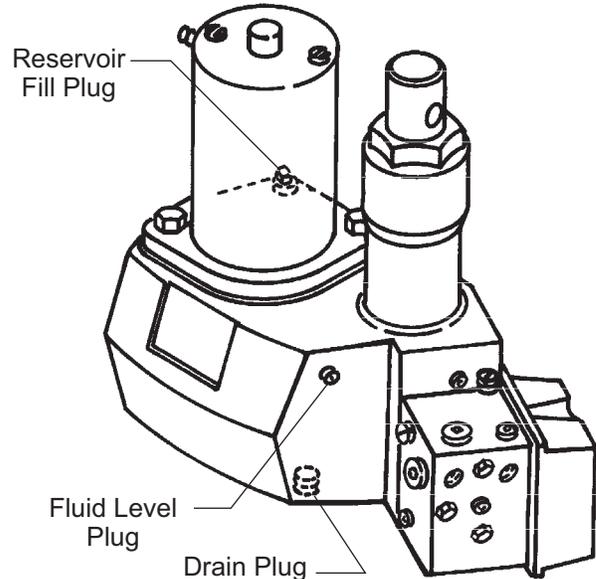
7. PRO-GUARD™ Blade Finish

- If the PRO-GUARD powder-coated finish is nicked or scratched, repair the surface and paint with WESTERN red or black paint in aerosol or quart can.

## Lifting

The front of the lift frame can be used as an attaching point to lift and move this snowplow following recommended mechanical lifting cautions and procedures.

## HYDRAULIC SYSTEM



## Fluid Level Check

### **⚠ CAUTION**

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

1. Perform this operation with the plow attached to the truck on a hard level surface.
2. Lower the blade to the ground.
3. Active control float function and manually collapse lift ram all the way. Turn control off.
4. Remove the reservoir fill plug (behind the motor) and the fluid level plug (on the driver-side front corner of the reservoir).
5. Fill the reservoir through the reservoir fill hole until the fluid runs out of the fluid level hole. Replace both plugs. For hydraulic fluid type and filling instructions, see the following section, Annual Fluid Change.

# MAINTENANCE

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## Annual Fluid Change

### **⚠ CAUTION**

Change fluid at the beginning of each plowing season. Failure to do so could result in condensation buildup during non-snowplow season.

### **⚠ CAUTION**

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

1. Follow steps 1–4 of Fluid Level Check from the previous section.
2. Remove the drain plug located at the bottom of the left front corner of the reservoir. Drain fluid into drain pan or suitable container.
3. Completely drain reservoir and replace drain plug.
4. Remove the angle ram hoses from the fittings on the hydraulic unit and place in a drain pan or suitable container. **(See Hose or Fitting Replacement on the next page.)**
5. Manually angle the blade fully in each direction to remove fluid from the angle rams. Do not allow the hose from the extending ram to take fluid back in.
6. Reconnect the angle ram hoses to the proper fittings.

### **⚠ 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.

### **⚠ CAUTION**

Do not raise blade during fill process as this may cause pump cavitation.

7. Fill reservoir through fill hole until the fluid runs out of the fluid level hole 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 both plugs.
8. Activate control and angle blade fully to the left and right several times to remove air from angle rams.
9. Turn off control and refill reservoir through reservoir fill hole until the fluid runs out of the fluid level hole. Replace both plugs.
10. Activate control and raise and lower plow several times to remove air from lift ram. Activate control float function and manually collapse lift ram all the way after each lowering of the blade. Turn control off.
11. Recheck fluid level with lift ram fully collapsed.

# MAINTENANCE

## System Capacity

### ⚠ CAUTION

Fill through the reservoir fill hole **ONLY**. Never fill through motor/pump opening. Over filling could damage the unit.

APPLICATION	CAPACITY IN QUARTS
Solenoid ISARMATIC® Mark IIIa Angling Rams	1-3/4
With 6" Hydraulic Rams	2-1/8
With 8" Hydraulic Rams	2-1/4
With 10" Hydraulic Rams	2-3/8
With 16" Hydraulic Rams	2-3/4

## Hose or Fitting Replacement

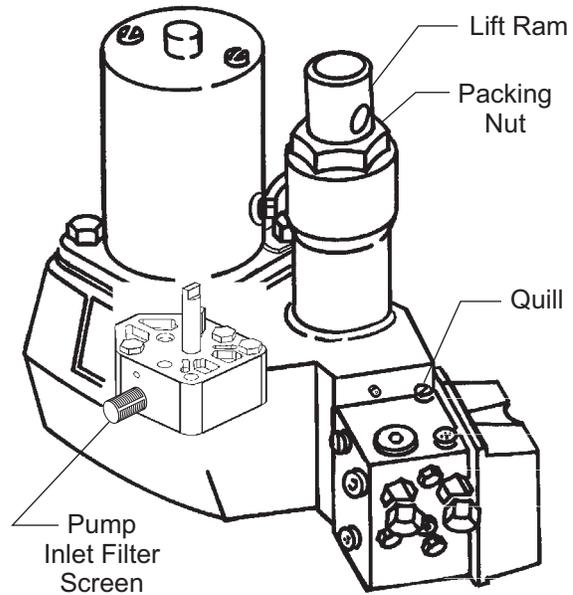
DO NOT use thread sealant/tape on hoses or fittings. This could damage product. Follow recommended replacement procedures for fittings and hoses.

### ⚠ 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.**

1. Lower plow completely and turn off control.
2. Loosen hoses or fittings slowly to bleed off any residual pressure.
3. To remove a hose, loosen and unscrew the hose from the fitting.
4. To remove a fitting, unscrew the fitting from the port.

## Packing Nut Adjustment



Periodically verify the lift ram and the Hydra-Turn™ ram packing nuts are tight.

If packing nuts are loose or leakage appears while lifting or angling the snowplow, tighten 1/4 turn maximum after you feel the packing nut contact the packing. It is necessary that a light film of fluid be present on the rod of the rams to properly lubricate the packing set.

### ⚠ CAUTION

**Do not over tighten the packing nut. Over tightening affects the operation and shortens life of the packing.**

Packings not used for a period of time may show signs of fluid weep. This will usually stop after use.

## Pump Inlet Filter Screen

Clean the pump inlet filter screen whenever the pump is removed for service.

Replace the screen if it is damaged. Torque die-cast pump mounting cap screws to 175-185 in.-lb. and motor mounting cap screws to 180-240 ft.-lb.

# MAINTENANCE

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## VEHICLE

The snowplow operating vehicle shall be maintained according to manufacturers recommendations. Tire pressure shall be maintained according to manufacturer's recommendations.

## RECYCLE

When your snowplow has performed its useful life, the majority of its components can be recycled as steel or aluminum. Hydraulic fluid shall be disposed according to local regulations. Balance of parts made of plastic shall be disposed in customary manner.

## BLADE FINISH

If the powder-coated finish is nicked or scratched, repair the blade surface with WESTERN® red or black paint in aerosol or quart can from your WESTERN outlet. Clean and repaint parts as necessary.

## EMERGENCY PARTS

We suggest that you keep a WESTERN UniMount® Parts Kit (PN 49370) in your vehicle. This kit contains WESTERN hydraulic fluid, dielectric grease and common hoses, pins, clips, fasteners and motor relay.

Also keep the following items in your vehicle for emergency use:

- 10" Adjustable Wrench
- Pliers (Vise-grip, Channel Lock, etc.)
- Medium Screw Driver
- Miscellaneous Fasteners.

*Always use WESTERN designed and tested replacement parts.*



## TROUBLESHOOTING GUIDE

This guide is arranged in the most likely correction order. Your WESTERN® outlet is trained to service your plow with Factory Original parts.

CONDITION	POSSIBLE CAUSE	CORRECTION
Motor does not run.	<ol style="list-style-type: none"> <li>1. No power to the motor relay.</li> <li>2. No ground to the motor relay.</li> <li>3. Motor relay does not operate.</li> <li>4. Poor connections on snowplow battery cables.</li> <li>5. Motor is worn or damaged.</li> <li>6. Pump is seized.</li> </ol>	<ol style="list-style-type: none"> <li>1. Repair or replace wiring, cab control or harness fuse.</li> <li>2. Repair wiring or connections.</li> <li>3. Replace motor relay.</li> <li>4. Clean and verify cable connections.</li> <li>5. Repair or replace motor.</li> <li>6. Replace pump.</li> </ol>
Motor will not shut off.	<ol style="list-style-type: none"> <li>1. Motor relay is shorted.</li> <li>2. Vehicle wiring has a short.</li> <li>3. Cab control is malfunctioning.</li> <li>4. Open ground circuit.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace motor relay.</li> <li>2. Repair the wiring.</li> <li>3. Repair or replace cab control.</li> <li>4. Repair ground.</li> </ol>
Motor operates properly, but plow raises slowly, partially, not at all, and/or angles instead.	<ol style="list-style-type: none"> <li>1. There is excess weight on the A-frame and quadrant.</li> <li>2. Hydraulic fluid level is incorrect.</li> <li>3. Quill is adjusted in too far.</li> <li>4. Lift ram packing nut is not adjusted properly.</li> <li>5. Pump filter is clogged.</li> <li>6. Pump relief pressure is low.</li> <li>7. Pump and/or pump O-ring are damaged.</li> <li>8. Motor rpm is low.</li> <li>9. Vehicle battery is weak.</li> <li>10. Cartridge valve coils are not activating properly.</li> <li>11. Cartridge valves are contaminated or are sticking.</li> <li>12. Cartridge valves are damaged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove built-up snow and ice or after-market accessories (excess weight).</li> <li>2. Fill with recommended fluid.</li> <li>3. Turn quill out.</li> <li>4. Adjust lift ram packing nut.</li> <li>5. Clean or replace filter and flush and refill the system.</li> <li>6. Adjust the pump relief screw.</li> <li>7. Replace pump and/or pump O-ring.</li> <li>8. Repair motor, electrical connections, or wiring.</li> <li>9. Replace battery and check charging system.</li> <li>10. Repair or replace coils, wiring, or cab control.</li> <li>11. Clean or replace valve. Find the cause of contamination. Flush and refill system.</li> <li>12. Replace cartridge valves.</li> </ol>
Snowplow will not stay in RAISED position or lowers by itself.	<ol style="list-style-type: none"> <li>1. Cartridge valves are contaminated or are sticking.</li> <li>2. Cartridge valves are damaged.</li> <li>3. There are shorts or open connections in the wiring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean or replace valves. Find the cause of contamination. Flush and refill system.</li> <li>2. Replace cartridge valves.</li> <li>3. Repair wiring.</li> </ol>
Snowplow will not lower, lowers slowly, or will not float.	<ol style="list-style-type: none"> <li>1. Incorrect hydraulic fluid for the temperature.</li> <li>2. Quill is adjusted in too far.</li> <li>3. Lift ram packing nut is not adjusted properly.</li> <li>4. Cartridge valve coils are not activating properly.</li> <li>5. Cartridge valves are contaminated and are sticking.</li> <li>6. Cartridge valves are damaged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Use recommended hydraulic fluid. <b>(See page 23.)</b></li> <li>2. Turn quill out.</li> <li>3. Loosen lift ram packing nut.</li> <li>4. Repair or replace coils, wiring or cab control.</li> <li>5. Clean or replace valves. Find the cause of contamination. Flush and refill system.</li> <li>6. Replace cartridge valves.</li> </ol>

## TROUBLESHOOTING GUIDE

CONDITION	POSSIBLE CAUSE	CORRECTION
Motor operates properly, but blade will not angle or angles slowly.	<ol style="list-style-type: none"> <li>1. Incorrect hydraulic fluid for the temperature.</li> <li>2. There is binding between A-frame and quadrant.</li> <li>3. Angle ram packing nut is not adjusted properly.</li> <li>4. Pump filter is clogged.</li> <li>5. Pump relief pressure is low.</li> <li>6. Pump and/or pump O-ring are damaged.</li> <li>7. Motor rpm is low.</li> <li>8. Cartridge valve coils are not activating properly.</li> <li>9. Cartridge valves are contaminated and are sticking.</li> </ol>	<ol style="list-style-type: none"> <li>1. Use recommended hydraulic fluid. <b>(See page 23.)</b></li> <li>2. Repair or replace damaged parts.</li> <li>3. Loosen angle ram packing nut.</li> <li>4. Clean or replace filter and flush and refill the system.</li> <li>5. Adjust the pump relief screw.</li> <li>6. Replace pump and/or pump O-ring.</li> <li>7. Repair motor, electrical connections, or wiring.</li> <li>8. Repair or replace coils, wiring, or cab control.</li> <li>9. Clean or replace valves. Find the cause of contamination. Flush and refill system.</li> </ol>
Motor operates properly, but plow angles wrong way, one way only, or raises instead.	<ol style="list-style-type: none"> <li>1. Angle ram hoses are reversed.</li> <li>2. Cartridge valve coils are not activating properly.</li> <li>3. Cartridge valves are contaminated and are sticking.</li> </ol>	<ol style="list-style-type: none"> <li>1. Correct hose installation.</li> <li>2. Repair or replace coils, wiring, or cab control.</li> <li>3. Clean or replace valves. Find the cause of contamination. Flush and refill system.</li> </ol>
Blade will not hold side-to-side position.	<ol style="list-style-type: none"> <li>1. Spool poppet valve is worn, damaged, or contaminated.</li> <li>2. Cushion valves are contaminated.</li> <li>3. Cushion valves are damaged, missing parts, or out of adjustment.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean or replace worn or damaged parts. Find the cause of contamination. Flush and refill system.</li> <li>2. Clean and adjust cushion valves. Find cause of contamination. Flush and refill system.</li> <li>3. Replace damaged or missing parts, or adjust cushion valves.</li> </ol>
Fluid leaks from hydraulic power unit.	<ol style="list-style-type: none"> <li>1. There is external damage to housing.</li> <li>2. There are loose pipe plugs or fittings.</li> <li>3. Base lug is loose or the base lug O-ring is damaged.</li> <li>4. Lift ram packing nut is loose.</li> <li>5. Lift ram packing is worn or damaged.</li> <li>6. Motor seal or gasket is damaged.</li> <li>7. Valve manifold is loose or the manifold O-rings are damaged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Repair or replace housing.</li> <li>2. Tighten pipe plugs or fittings.</li> <li>3. Tighten base lug. Replace base lug O-ring.</li> <li>4. Tighten lift ram packing nut.</li> <li>5. Replace packing.</li> <li>6. Replace motor seal or gasket.</li> <li>7. Tighten valve manifold. Replace manifold O-rings.</li> </ol>

## TROUBLESHOOTING GUIDE

CONDITION	POSSIBLE CAUSE	CORRECTION
Fluid leaks from angle rams.	<ol style="list-style-type: none"> <li>1. Angle ram packing nut is loose.</li> <li>2. Angle ram packing is worn or damaged.</li> <li>3. Hydraulic fittings or hoses are loose or damaged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten angle ram packing nut.</li> <li>2. Replace packing.</li> <li>3. Repair or replace hydraulic fittings or hoses.</li> </ol>
Snowplow wire harness fuse blows.	<ol style="list-style-type: none"> <li>1. Motor relay is shorted.</li> <li>2. There are shorts in the wiring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace motor relay.</li> <li>2. Repair the wiring.</li> </ol>
Vehicle fuse blows.	<ol style="list-style-type: none"> <li>1. Circuit is overloaded.</li> <li>2. There are shorts in the wiring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Refer to vehicle's owner's manual for recommended after-market electrical application.</li> <li>2. Repair the wiring.</li> </ol>
There is excessive load on vehicle electrical system while using snowplow.	<ol style="list-style-type: none"> <li>1. Lift or angle ram packing nuts are not adjusted properly.</li> <li>2. Quill is adjusted in too far.</li> <li>3. Motor is worn or damaged.</li> <li>4. Pump is binding or damaged.</li> <li>5. Vehicle battery is weak.</li> <li>6. Battery charging system is inefficient.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten lift or angle ram packing nuts.</li> <li>2. Adjust quill out.</li> <li>3. Repair or replace motor.</li> <li>4. Replace pump.</li> <li>5. Install recommended battery.</li> <li>6. Repair vehicle charging system.</li> </ol>
Vehicle battery loses charge when snowplow is not being used.	<ol style="list-style-type: none"> <li>1. Battery is weak or worn out.</li> <li>2. Electrical wiring installation is incorrect.</li> <li>3. Wires are shorted or grounded.</li> </ol>	<ol style="list-style-type: none"> <li>1. Install recommended battery.</li> <li>2. Review and correct wiring installation.</li> <li>3. Check and repair the wiring.</li> </ol>
Snowplow headlamps operate irregularly or not at all.	<ol style="list-style-type: none"> <li>1. Bulbs are burned out or corroded.</li> <li>2. Wiring is incorrect and electrical connections are corroded.</li> <li>3. Light relay(s) do not operate.</li> <li>4. There are shorts or open wiring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace bulbs. Clean the contacts.</li> <li>2. Check and repair wiring. If electrical connections are corroded, clean connections.</li> <li>3. Replace relay(s).</li> <li>4. Check and repair wiring.</li> </ol>
Vehicle headlamps operate irregularly or not at all.	<ol style="list-style-type: none"> <li>1. Wiring is incorrect and electrical connections are corroded.</li> <li>2. Light relay(s) do not operate.</li> <li>3. There are shorts or open wiring.</li> <li>4. DRL's Only: Parking brake is on.</li> <li>5. DRL's Only: Power is interrupted.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check and repair wiring. If electrical connections are corroded, clean connections.</li> <li>2. Replace relay(s).</li> <li>3. Check and repair wiring.</li> <li>4. Release parking brake.</li> <li>5. Turn light and/or ignition switch on and off to cycle the circuitry.</li> </ol>

**NOTE: For further information regarding diagnosis and repair of your WESTERN® snowplow, see your WESTERN outlet.**



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 A DIVISION OF DOUGLAS DYNAMICS, L.L.C.



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