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Personal Plow

OWNER'S MANUAL

This snowplow is for personal/homeowner use only.

⚠ CAUTION

Read this document before operating or servicing snowplow.

This manual supersedes all editions with an earlier date.

Register your snowplow online at www.westernplows.com

OWNER INFORMATION

Owner Name: _____

Date Purchased: _____

Outlet Name: _____ Phone: _____

Outlet Address: _____

Vehicle Model: _____ Year: _____

Snowplow Type (Model): _____

Blade Width: _____ Weight _____ lb/kg

Ballast: No ___ Yes ___ Amount _____ lb/kg

Hydraulic Unit Serial Number: _____
(Located on hydraulic reservoir)

Blade Serial Number: _____
(Located on back of blade)

PREFACE

This manual has been prepared to acquaint you with the safety information, operation and maintenance of your new snowplow. Please read this manual carefully and follow all recommendations.

Before installing a snowplow, make sure your vehicle is equipped with our recommended options for plowing snow. This will help ensure trouble-free operation of your snowplow. Keep this manual accessible. It is a handy reference in case minor service is required.

When service is necessary, bring your snowplow to your local outlet. They know your snowplow best and are interested in your complete satisfaction.

The illustrations found in this manual represent typical components. They may not match your exact installation.

SNOWPLOW USAGE CHECKLIST

Before Plowing

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BEFORE PLOWING

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/spreader 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 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

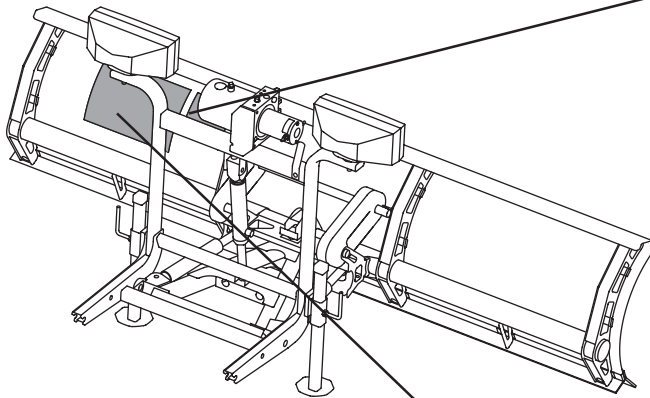
LOWER BLADE WHEN VEHICLE IS PARKED.
DO NOT EXCEED GVWR OR GAWR INCLUDING BLADE AND BALLAST.
REMOVE BLADE ASSEMBLY BEFORE PLACING VEHICLE ON HOIST.

⚠ CAUTION

READ *OWNER'S MANUAL* BEFORE OPERATING OR SERVICING SNOWPLOW.
TRANSPORT SPEED SHOULD NOT EXCEED 45 MPH. FURTHER REDUCE SPEED UNDER ADVERSE TRAVEL CONDITIONS.
PLOWING SPEED SHOULD NOT EXCEED 10 MPH.
SEE YOUR SALES OUTLET/WEB SITE FOR SPECIFIC VEHICLE APPLICATION RECOMMENDATIONS.

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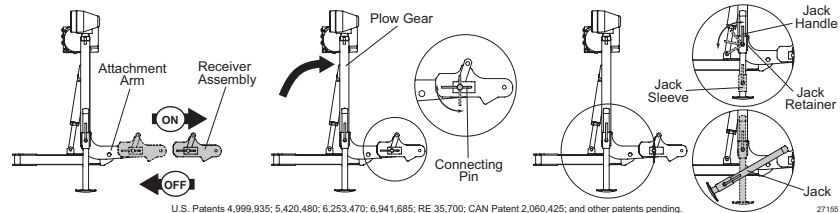
Instruction Label



This snowplow is for personal/homeowner use only.

ATTACH INSTRUCTIONS

1. Make certain both **connecting pins** are fully retracted.
2. Drive vehicle slowly to completely insert **attachment arms** into **receiver assembly** slots.
3. Twist both **connecting pins** to release spring tension, then push **plow gear** toward vehicle so **connecting pins** fully engage holes in **attachment arms**.
4. Loosen one **jack handle** and slide **jack sleeve** down below **jack retainer**. Remove **jack** and retighten **jack handle**. Repeat for other **jack** and store them.
5. Connect all electrical cables from vehicle to snowplow.



U.S. Patents 4,999,935; 5,420,480; 6,253,470; 6,941,685; RE 35,700; CAN Patent 2,060,425; and other patents pending.

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5. Back vehicle away from snowplow.
6. See Owner's Manual for proper snowplow storage.

3. While pushing **plow gear** toward vehicle to release **connecting pin** tension, pull **connecting pin** out on one side and twist pin handle to keep pin retracted. Repeat procedure for other **connecting pin**.
4. Disconnect all electrical cables.

1. Put blade on ground using **LOWER/FLOAT** on snowplow control. Leave control ON and in **FLOAT**.
2. Attach **jacks**. Loosen **jack handle**, put **jack** on ground, and raise **jack sleeve** until fully engaging **jack retainer**. Tighten **jack handle**. Repeat for other **jack**.

DETACH INSTRUCTIONS

Read *Owner's Manual* for Complete Instructions

BEFORE PLOWING

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

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

⚠ 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.

⚠ WARNING

Remove blade assembly before placing vehicle on hoist.

⚠ CAUTION

Read Owner's Manual before operating or servicing snowplow.

⚠ CAUTION

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

⚠ CAUTION

Plowing speed should not exceed 10 mph.

⚠ CAUTION

See your sales outlet for application recommendations.

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.

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 this Owner's Manual.

BEFORE PLOWING

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.

NOISE

Airborne noise emission during use is below 70 dB(A) for the snowplow operator.

BEFORE PLOWING

ATTACHING SNOWPLOW

⚠ 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 the blade. If the blade hits you or drops on you, you could be seriously injured.

⚠ WARNING

Inspect snowplow components and fasteners for wear or damage whenever attaching or detaching the snowplow. Worn or damaged components could allow the snowplow to drop unexpectedly.

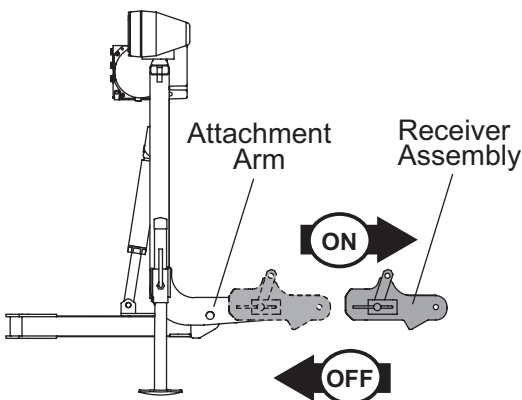
NOTE: The blade must be in the straight position when attaching or detaching the snowplow.

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

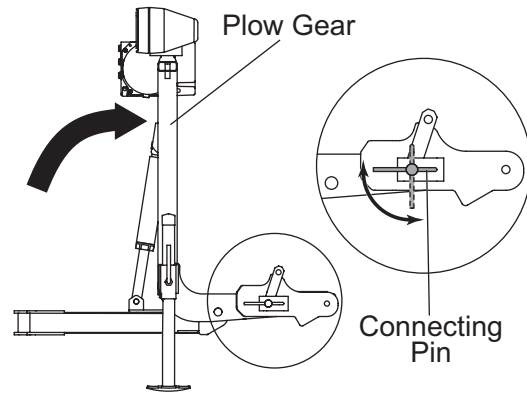
NOTE: Use lubricant on connecting pins to ensure ease of attach/detach.

Attaching Steps:

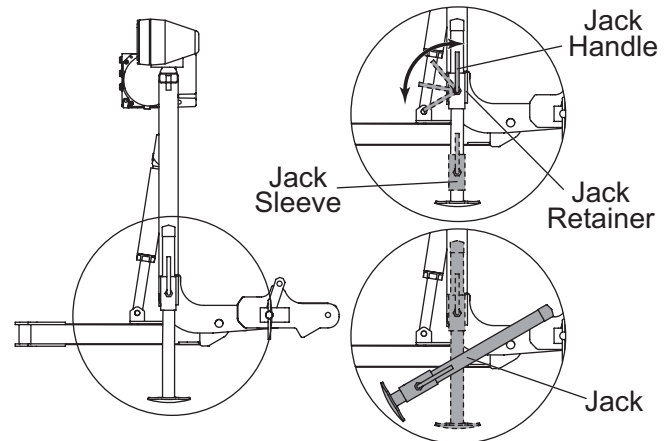
1. Make certain both connecting pins are fully retracted.
2. Drive vehicle slowly to completely insert attachment arms into receiver assembly slots.



3. Twist both connecting pins to release spring tension, then push plow gear toward vehicle so connecting pins fully engage holes in attachment arms.



4. Loosen one jack handle and slide jack sleeve down below jack retainer. Remove jack and retighten handle. Repeat for other jack and store them.



5. Connect all electrical cables from vehicle to snowplow.

BEFORE PLOWING

VEHICLE APPLICATION RECOMMENDATIONS

⚠ CAUTION

See your WESTERN® outlet/Web site for specific vehicle application recommendations before installation. 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 the front and rear weight distribution ratio. In some cases, rear ballast may be required to comply with these requirements. See Ballast Requirements section.
- Snowplow applicability is based on available vehicle capacity for snowplow equipment on a representative vehicle equipped with options commonly used for plowing snow 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 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.

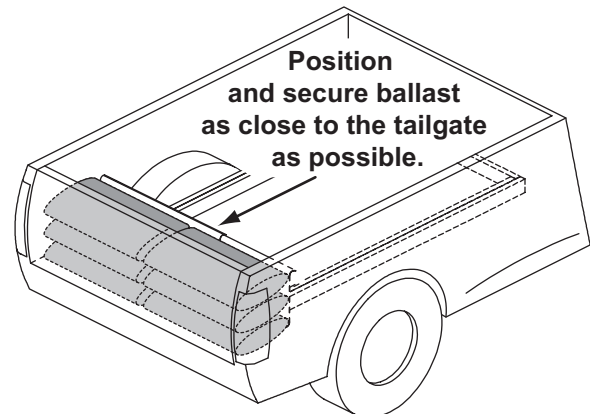
BALLAST REQUIREMENTS

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.

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. Sandbags are recommended for use as ballast.

NOTE: Ballast recommended and its weight calculations assume the entire width of the bed is filled as close to tailgate as possible.



BEFORE PLOWING

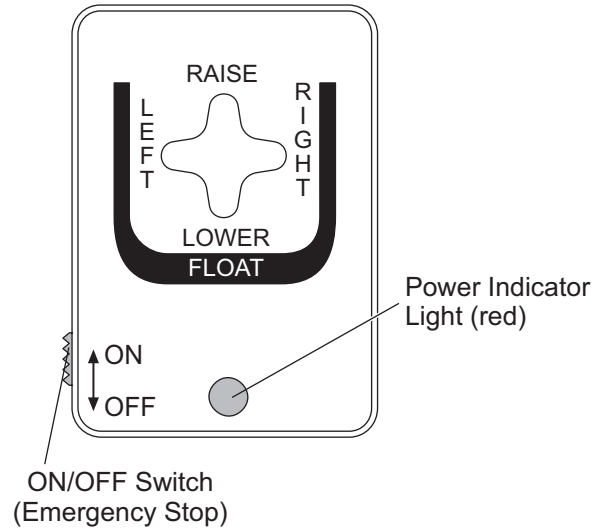
JOYSTICK SOLENOID CONTROL

⚠ 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 use excess current and overheat components.



1. Turn the vehicle ignition switch to the "ON" or "ACCESSORY" position.
2. Move control ON/OFF switch to the "ON" position. The power indicator light glows red, indicating the control is ON. The power indicator light glows red whenever the control and the vehicle ignition switch are both ON and the electrical connections to the snowplow are completed.

The ON/OFF switch operates as emergency stop when required.

Function	Description of Operation
ON/OFF	Move 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.
RAISE	Move the control lever up (forward) to raise the snowplow and cancel the FLOAT mode.
LOWER	Move the control lever down (back) to lower the snowplow. Release the lever to stop blade at desired height.
FLOAT	Move the control lever down (back) and hold for 3/4 second to activate the FLOAT mode. Blade will lower to ground surface and follow contour of surface as it dips or raises. 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.
LEFT	Move the control lever left to angle the blade to the left.
RIGHT	Move the control lever right to angle the blade to the right.

BEFORE PLOWING

HAND-HELD CONTROL

⚠ WARNING

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

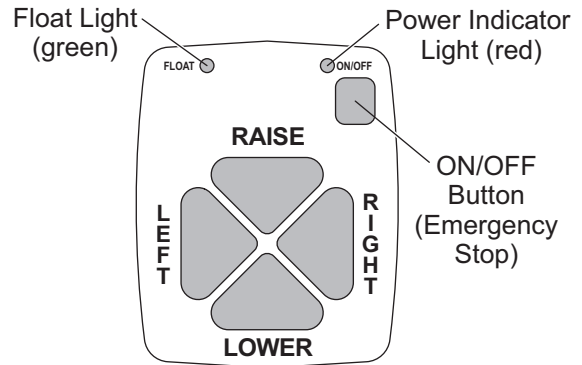
1. Turn the vehicle ignition switch to the "ON" or "ACCESSORY" position.
2. Press the ON/OFF button on the control. The power indicator light glows red, indicating the control is ON. The power indicator light glows red whenever the control and the vehicle ignition switch are both ON and the electrical connections to the snowplow are completed.

The ON/OFF switch operates as an emergency stop when required.

Function Time-Outs

All control functions, except LOWER/FLOAT, time out (stop) automatically after a period of time. This is to limit the amount of electrical energy required from the vehicle.

NOTE: If control function times out before desired blade movement is complete, release button and press again.



Automatic Shutdown

The control will automatically turn OFF after being idle for 20 minutes. To reactivate the control after a shutdown, press the ON/OFF button.

Smooth Stop

The control automatically allows the blade to coast to a stop. This results in smoother operation, reduces the shock to the hydraulic system and increases hose and valve life.

Control Functions

Raise, Lower, Float, Angle

The four triangle-shaped buttons in the center of the control face, when pressed, will result in the blade movements described in the table.

Button	Description of Operation
ON/OFF	Press this button to turn the control ON and OFF. Turn the control OFF (power indicator light OFF) to lock the blade in place. This prevents accidental movement of the blade.
RAISE	Press this button to raise the snowplow and to cancel FLOAT mode. Function times out after 4.8 seconds.
LOWER	Press this button to lower the snowplow. Release button to stop blade at desired height.
FLOAT	Press LOWER button and hold for 0.75 seconds to activate this mode. FLOAT indicator light in upper left corner of control face will illuminate. Blade will lower to ground surface and follow contour of surface as it dips or raises. Function does not time out; however, control will shut down after 20 minutes of nonuse. Press RAISE button momentarily to cancel FLOAT. Angling left or right will interrupt (stop) the FLOAT function, but FLOAT will resume when angling is complete.
LEFT	Press this button to angle blade to the left. Function times out after 9.6 seconds.
RIGHT	Press this button to angle blade to the right. Function times out after 9.6 seconds.

BEFORE PLOWING

SNOWPLOW HEADLAMP CHECK

With all three snowplow 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 snowplow plug should switch between the vehicle and snowplow headlamps as follows:

- Snowplow plugs DISCONNECTED—The vehicle headlamps should light up.
- Snowplow 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 Miscellaneous section for instructions.
- Aim the vehicle headlamps with the snowplow removed from the vehicle.

WHILE PLOWING

TRANSPORTING 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. Further reduce speed under adverse travel conditions.

These instructions are for driving short distances. Remove the snowplow from the vehicle for long trips.

1. Completely raise the blade.
2. Adjust the blade height for maximum headlamp illumination.
3. Adjust the blade to the straight position.
4. Move the control ON/OFF switch to OFF to lock blade in place.

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

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

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.

Refer to vehicle owner's manual instructions 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 or ice 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 seat belt 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.

WHILE PLOWING

⚠ 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: curbs, sidewalk, shrubs, fences or pipes sticking up from the ground. If unfamiliar with the 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 you are stacking snow, begin raising the blade as you come close to the stack. This will let the blade ride up the stack.

Hard-Packed Snow

1. On blades equipped with a shoe kit, raise the antiwear shoes so that the cutting edge comes into direct contact with the pavement.
2. Use lowest gear to place maximum power behind cutting edge.
3. An angled blade is more effective for removing 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 job is cut down to size for full blade plowing.

Rule of thumb:

- 3" of snow — plow with entire blade width;
- 6" of snow — plow with 3/4 blade width; and
- 9" of snow — plow with 1/2 blade width.

Experience and "feel" are the best guides.

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

Clearing Driveways

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

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 VEHICLES

Do not use any snowplow components as an attaching point when retrieving, towing, or winching a disabled or stuck vehicle.

AFTER PLOWING

TRANSPORTING 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. Further reduce speed under adverse travel conditions.

These instructions are for driving short distances. Remove the snowplow from the vehicle for long trips.

1. Completely raise the blade.
2. Adjust the blade height for maximum headlamp illumination.
3. Adjust the blade to the straight position.
4. Move the control ON/OFF switch to OFF to lock blade in place.

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

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

PARKING WITH SNOWPLOW ATTACHED

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TOWING DISABLED OR STUCK VEHICLES

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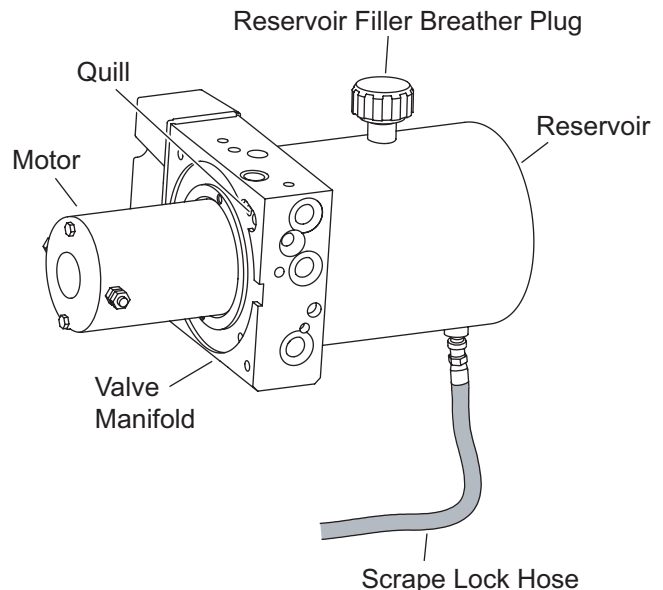
CHECKING HYDRAULIC FLUID

⚠ CAUTION

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

Lower the blade to the ground. The fluid level should be between the marks on the dipstick when the reservoir filler breather plug is fully installed. Add recommended hydraulic fluid if necessary. For hydraulic fluid type and filling instructions, see Annual Fluid Change in the Hydraulic System section of this Owner's Manual.

Do not overfill. Reinstall reservoir filler breather plug.



AFTER PLOWING

DETACHING SNOWPLOW

⚠ 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.

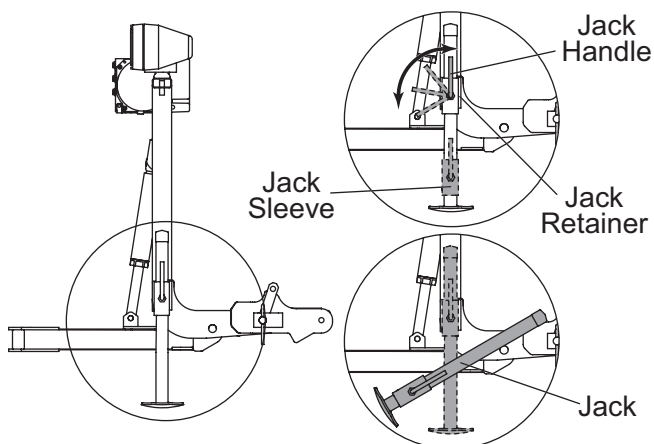
⚠ WARNING

Inspect snowplow components and bolts for wear or damage whenever attaching or detaching the snowplow. Worn or damaged components could allow the snowplow to drop unexpectedly.

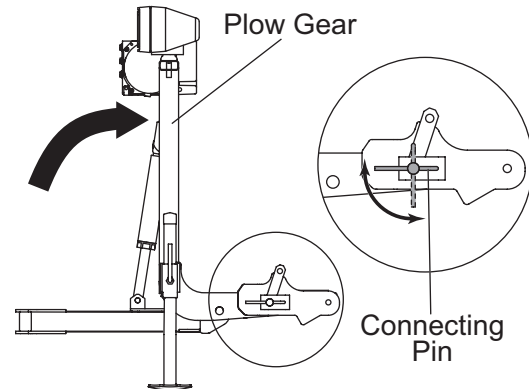
NOTE: The blade must be in the straight position when attaching or detaching the snowplow.

Detaching Steps:

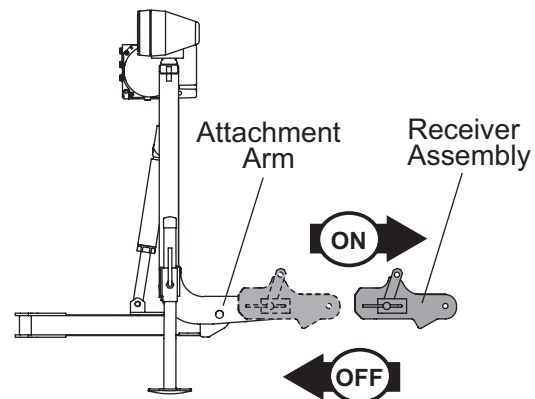
1. Put blade on ground using LOWER/FLOAT on snowplow control. Leave control ON and in FLOAT.
2. Attach jacks. Loosen jack handle, put jack on ground, and raise jack sleeve until fully engaging jack retainer. Tighten jack handle. Repeat for other jack.



3. While pushing plow gear toward vehicle to release connecting pin tension, pull connecting pin out on one side and twist pin handle to keep pin retracted. Repeat procedure for other connecting pin.



4. Disconnect all electrical cables.
5. Back vehicle away from snowplow.



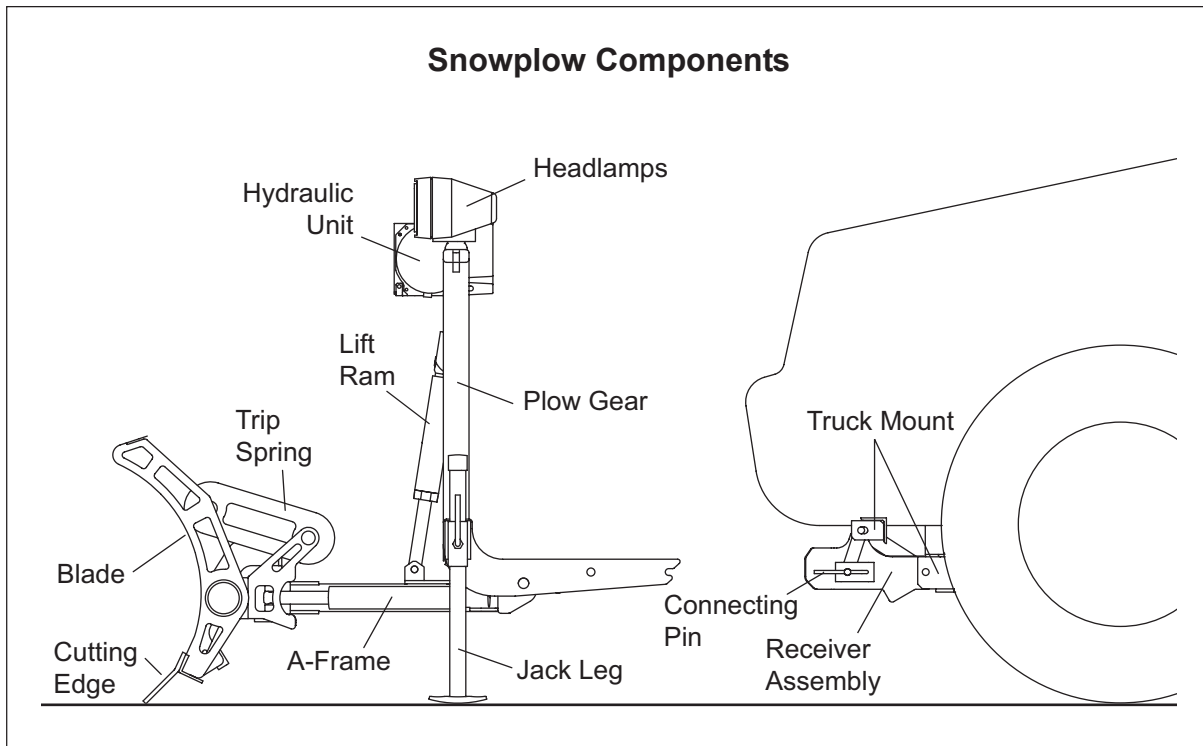
6. See Postseason Maintenance section for proper snowplow storage.

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, connect control and lighting electrical plugs together. Insert battery cable into boot. On the vehicle, connect control and lighting electrical plugs together. Cover battery cable with attached boot.

NOTE: The receiver assembly and control can be removed for off-season storage. The receiver assembly is removed by removing the two pins on each receiver. Disconnect the control connector in the cab and store the control in the glovebox of the vehicle.

MISCELLANEOUS



SNOWPLOW COMPONENTS

A snowplow consists of all the components that are readily removable from the vehicle as a unit. This includes the blade, A-frame, plow gear, 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.

TRUCK MOUNT KIT

A truck mount kit has been designed for most vehicles. Due to the differences between vehicle models, the kits are not interchangeable. The truck mount is bolted to the underside of the vehicle frame, and the receiver assembly is attached to the truck mount. It is engineered to provide the primary connecting points between the snowplow assembly and the vehicle. The weight of the snowplow system is distributed to the frame of your vehicle by the truck mount.

SNOWPLOW HEADLAMPS

⚠ WARNING

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

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

When the snowplow plugs are connected, the vehicle headlamps, when turned on, automatically switch to the snowplow headlamps. When the electrical plugs are disconnected during snowplow removal, the snowplow headlamps automatically switch back to the vehicle headlamps.

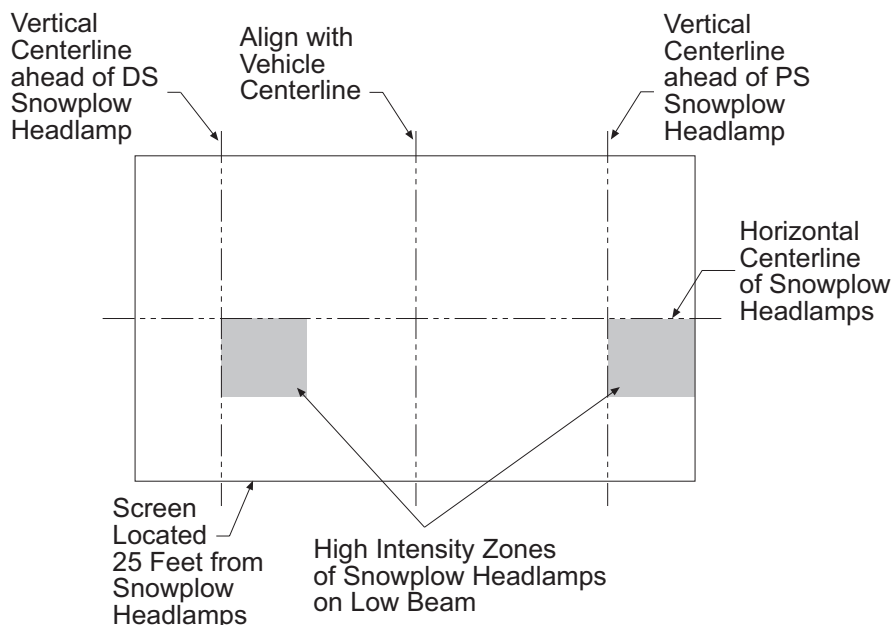
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AIMING HEADLAMP BEAMS

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.
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.)

Aiming Headlamp Beams

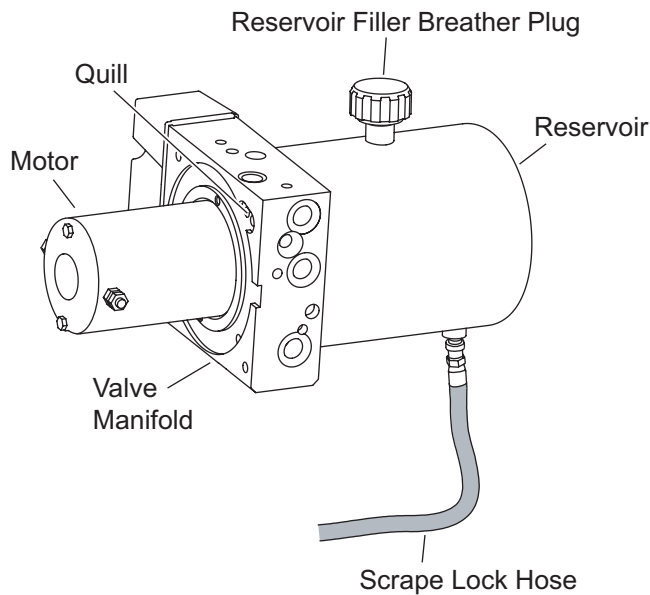


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HYDRAULIC UNIT

The Hydraulic Unit's angling gives you full control of the snowplow from within the cab. Two single-acting hydraulic rams hold the blade at the desired angle.

The Hydraulic Unit's lift ram has blade scrape lock circuitry built into it. This feature resists the tendency a snowplow has to "float up" as larger amounts of snow build up in front of it while plowing deep snow, or stacking snow into piles. This feature is factory set. See your sales outlet for adjustment.



System Capacity

Unit reservoir	1-3/4 quarts
System total	2-1/8 quarts

Pump Motor Specifications

12 volt DC with +/- connection
1750 psi pump relief valve
4000 psi angling relief valve
3.0" dia 2.8 kW motor = 1.39 hp
.000208 GAL/REV Pump
Hydraulic Hose SAE 100R1

CONTROLS

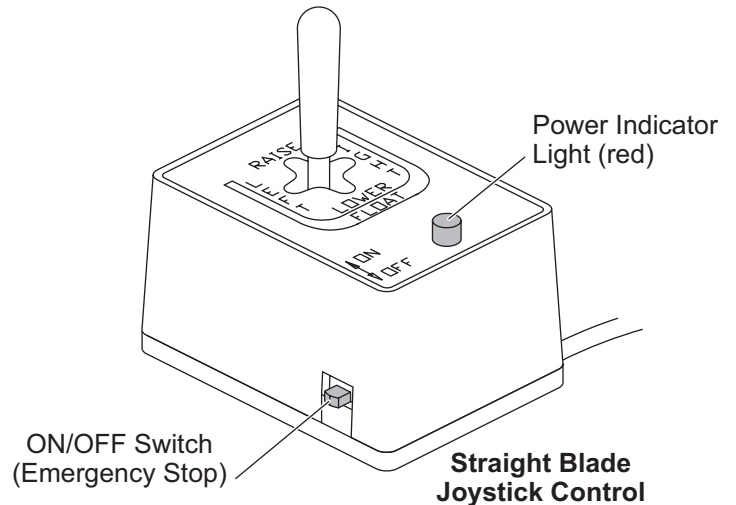
⚠ WARNING

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.

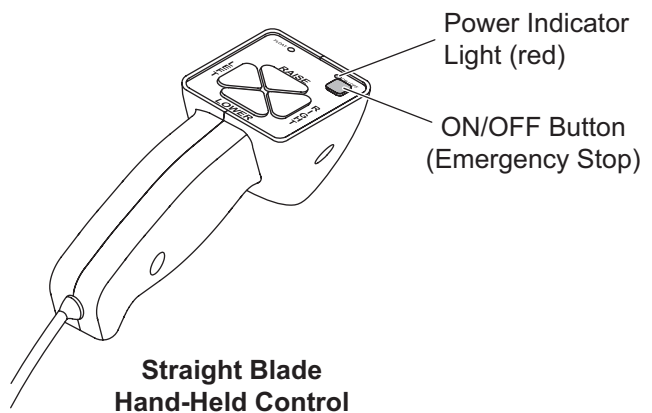
The controls are electrically powered through the ignition (key) switch of your vehicle and are protected by a replaceable in-line fuse. The ON/OFF switch allows you to turn OFF the control and prevent blade movement even when the ignition is ON.

The ON/OFF switch serves as an emergency stop when required.

Joystick Solenoid Control



Hand-Held Control



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PRESEASON CHECK

⚠ 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.

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 hydraulic system and refill with recommended hydraulic fluid. For hydraulic fluid type and filling instructions, see Annual Fluid Change in the Hydraulic System section of this Owner's Manual.
- Replace worn or defective parts.
- Check all mounting points and tighten fasteners, on both snowplow and vehicle.
- Repaint blade assembly and attachments, as necessary, to protect the metal.
- Install auxiliary and flashing lights for compliance and visibility in accordance with local regulations.
- Check headlamps, auxiliary lights, heater and windshield wipers for proper operation.
- Inspect and test your battery. Recharge or replace as necessary.
- 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 harsh plowing conditions.

POSTSEASON MAINTENANCE

NOTE: Coat all electrical connections with dielectric grease.

- Clean and paint blade and attachments as needed.
- Coat ram rods with general purpose petroleum grease.
- Lubricate all pivot points (for example, connecting pin assembly) with general purpose petroleum grease.
- Receiver assemblies can be removed by pulling the 1/8" cotter pins out of each receiver mounting pin, then removing the mounting pins. To reattach receivers, slide the receivers into the truck mount with the connecting pins toward the outside, and secure with the receiver mounting pins and cotter pins.

MAINTENANCE AND ADJUSTMENT

⚠ 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.

Your snowplow is designed for rugged, dependable service. Though, like the vehicle on which it is mounted, it needs regular care and maintenance.

Check that all fasteners, mounting bolts, hydraulic and electrical connections are tight before each storm and frequently throughout season. Also check all plugs and seals for leaks. Repair as necessary.

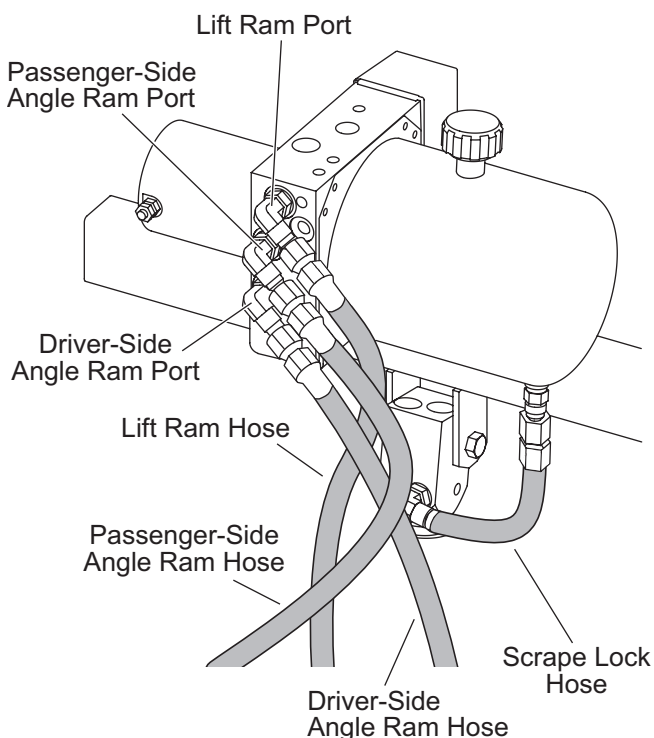
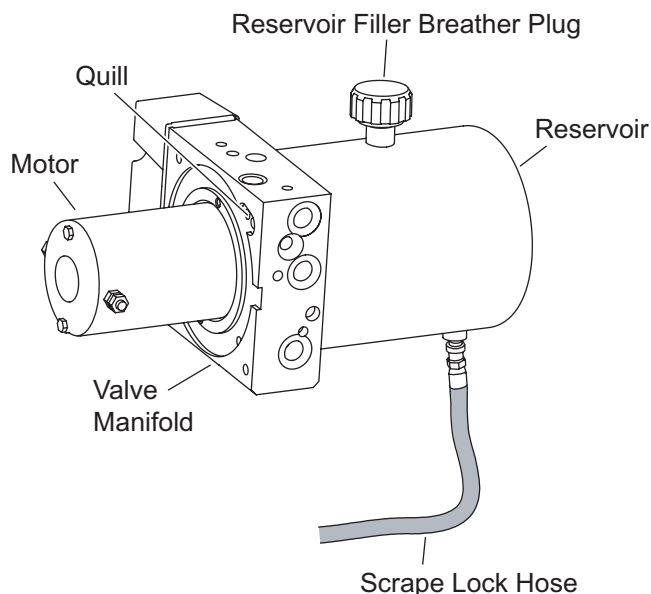
Lubricate all moving parts for ease of operation.

LIFTING

The plow gear can be used as an attaching point to lift and move this snowplow following recommended mechanical lifting cautions and procedures.

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HYDRAULIC SYSTEM



Annual Fluid Change

⚠ CAUTION

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

⚠ 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 snowplow attached to the truck on a hard, level surface.
2. Lower blade to ground.
3. Detach scrape lock hose, located in the bottom of the hydraulic reservoir.
4. Completely drain reservoir and reattach scrape lock hose.
5. Remove the angle ram hoses from the fittings on the hydraulic unit and place in a drain pan or other suitable container. (See illustration and "Hose or Fitting Replacement" instructions on following page.)
6. 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.
7. Reconnect the angle ram hoses to the proper fittings.
8. Remove reservoir filler breather plug. Fill reservoir to the dipstick full level with WESTERN® High Performance 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.

Reinstall reservoir filler breather plug.

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⚠ 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.

9. Activate control and angle blade fully to the left and right several times to remove air from the angle rams.
10. Turn OFF control. Remove reservoir filler breather plug, and refill reservoir to dipstick full level. Reinstall reservoir filler breather plug.
11. Activate control and raise and lower blade several times to remove air from lift ram.
12. Lower the blade to the ground. The fluid level should be between the marks on the dipstick when the reservoir filler breather plug is fully installed. Do not overfill. Reinstall reservoir filler breather plug.

⚠ 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.

Hose or Fitting Replacement

⚠ 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.

Do not use thread sealant/tape on hoses or fittings. These materials could damage the product. Follow recommended replacement procedures for fittings and hoses.

1. 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 flare nut from the fitting.
4. To remove a fitting, loosen the jam nut and unscrew the fitting from the port.

Procedure for Installing Hydraulic Fittings and Hoses

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

Do not use thread sealant/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 valve block and 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:

1. Screw flare nut onto fitting flare and hand tighten.
2. Align hose so there are no twists or sharp bends and so it will not be pinched or pulled by moving parts.
3. Using two wrenches, hold the hose in position and tighten flare nut 1/8–1/4 turn beyond hand tight. Final torque on the flare nut should be approximately 20 ft-lb.

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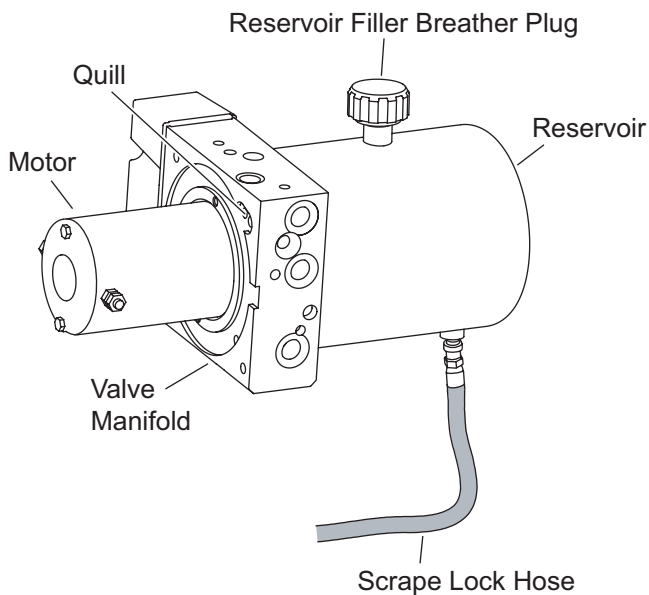
Blade Drop Speed Adjustment

⚠ 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 side 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 drop zone when checking adjustment.



VEHICLE

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

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 of according to local regulations. Balance of parts made from plastic shall be disposed of in customary manner.

EMERGENCY PARTS / TOOLS

- | | |
|---|------------------------|
| 1 - 10" Adjustable Wrench | 1 - Medium Screwdriver |
| 1 - Pair of Pliers | 1 - #20 TORX® Driver |
| 7.5, 15 Amp Automotive Blade-Type Fuses | |
| Test Light | Funnel |
| 1/8" Allen Wrench | Flashlight |
| 1/4" Ratchet, 6" Extension, 5/16" Socket | |
| Electrical Tape | |
| 1 - Quart WESTERN® High Performance Hydraulic Fluid | |

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Some of the following guide corrections listed here are complicated. Unless you are very experienced in electrical and hydraulic repair, let your sales outlet service personnel do the repairs. If your problem does not appear in this guide, contact your sales outlet.

Condition	Possible Cause	Correction
Control power indicator not ON	Control not turned ON.	Turn ON control.
	No power to control.	Blown fuse. Part of the vehicle control harness. Replace fuse.
	Plow/vehicle lighting harness not connected.	Properly connect both harnesses.
Motor does not run	Plow/vehicle control harnesses not connected.	Properly connect both harnesses.
	Blown fuse in vehicle control harness.	Replace blown fuse in control harness.
Snowplow won't raise or raises slowly or partially	Excess weight on blade.	Remove snow and/or ice buildup or aftermarket accessories (excess weight).
	Hydraulic fluid level low or wrong fluid is used.	Fill reservoir to proper level with recommended fluid. Do not mix different hydraulic fluid types.
	Vehicle battery weak or charging system defective.	Replace battery and check charging system.
Snowplow angles slowly or partially	Hydraulic fluid level low or wrong fluid is used.	Fill reservoir to proper level with recommended fluid. Do not mix different hydraulic fluid types.
	Vehicle battery weak or charging system defective.	Replace battery and check charging system.
	Air trapped in angle rams.	Cycle per procedure to remove air from rams. See Annual Fluid Change section.
Snowplow won't lower, lowers slowly, or won't float	Hydraulic fluid not correct for outside temperature.	Use recommended fluid.
	Blown fuse in vehicle control harness.	Replace blown fuse.
Snowplow lowers by itself or won't stay in raised position	Hydraulic fittings or hoses loose or damaged.	Tighten or replace components or see sales outlet for repair information.
Fluid leaks from hydraulic system	Reservoir overfilled.	Do not fill reservoir beyond filler plug.
	Failed seal/O-ring.	See sales outlet for repair information.
	Loose or damaged hydraulic fittings, hoses, plugs, or hardware.	Tighten loose components. See sales outlet for repair information.
Fluid leaks from angle or lift ram	Hydraulic fittings or hoses loose or damaged.	Tighten or replace components or see sales outlet for repair information.
Excessive load on vehicle electrical system while using snowplow	Hydraulic fluid not correct for outside temperature.	Use recommended fluid.
	Vehicle battery weak or charging system defective.	Replace battery and check charging system.
	Vehicle electrical system inadequate.	Check vehicle specifications and recommendations.

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Condition	Possible Cause	Correction
Vehicle battery loses charge when snowplow is not being used	Vehicle battery weak.	Replace battery.
Snowplow headlamps operate irregularly or not at all (snowplow attached)	Snowplow and vehicle lighting harnesses are not mated correctly.	Properly connect both harnesses.
	Burned out bulbs or corroded sockets.	Replace bulbs, clean contacts.
Vehicle headlamps operate irregularly or not at all, with snowplow removed	Burned out bulbs.	Replace bulbs.
	Defective vehicle fuse.	Replace fuse.
Plow park/turn lamps not operating	Blown fuse. Part of the vehicle control harness.	Replace fuse.



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