



OWNER'S MANUAL

MVP® 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

FloStat® 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

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 WESTERN® snowplow FloStat® 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 the 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/caution and instruction labels on the back of the blade.

Warning/Caution Label

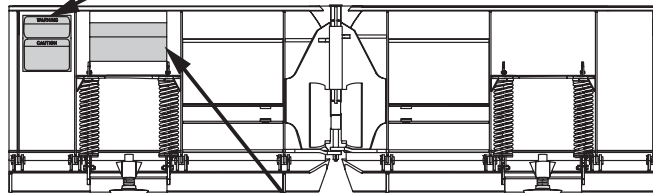
⚠ WARNING

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.

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Instruction Label

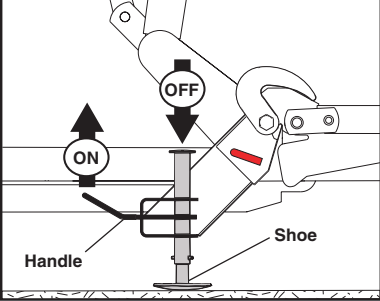
UltraMount[®] SYSTEM INSTRUCTIONS

MOUNTING PLOW (ON)

Read Owner's Manual for complete instructions.

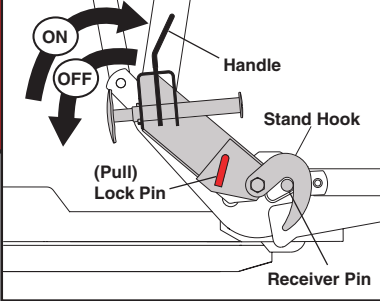
STEP 1

After seating plow horns in receiver brackets, pull Handle up; Shoe will lift off the ground.



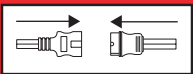
STEP 2

Pull and hold Lock Pin out; then rotate Handle UP and release Lock Pin. It must lock into UPPER hole. Stand Hook must grip Receiver Pin.



STEP 3

Plug in electrical connections. Repeat steps 1 and 2 on other side of plow.

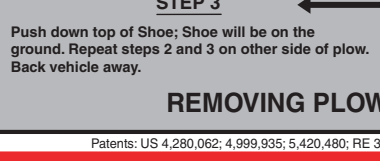


REMOVING PLOW (OFF)

Read Owner's Manual for complete instructions.

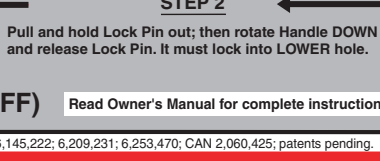
STEP 3

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




STEP 2

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



STEP 1

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



67796

Patents: US 4,280,062; 4,999,935; 5,420,480; RE 35,700; 6,145,222; 6,209,231; 6,253,470; CAN 2,060,425; patents pending.

SAFETY

SAFETY PRECAUTIONS

Improper installation and operation could cause personal injury, and/or equipment and property damage. Read and understand labels and the *Owner's Manual* before installing, operating, or making adjustments.

WARNING

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

WARNING

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

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.

FUSES

The WESTERN® vehicle control harness has an in-line fuse located in the vehicle cab under the dash. This fuse provides electrical power to the snowplow control. If a problem should occur and fuse replacement is necessary, the replacement fuse should be of the same value as the original. Installing a fuse of a larger value could damage the system.

See Fuse Replacement in the Maintenance section of this Owner's Manual for fuse locations.

NOISE

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

VEHICLE APPLICATION INFORMATION

VEHICLE APPLICATION REQUIREMENTS

⚠ CAUTION

See your WESTERN® outlet for application recommendations.

Vehicle application recommendations are based on the following:

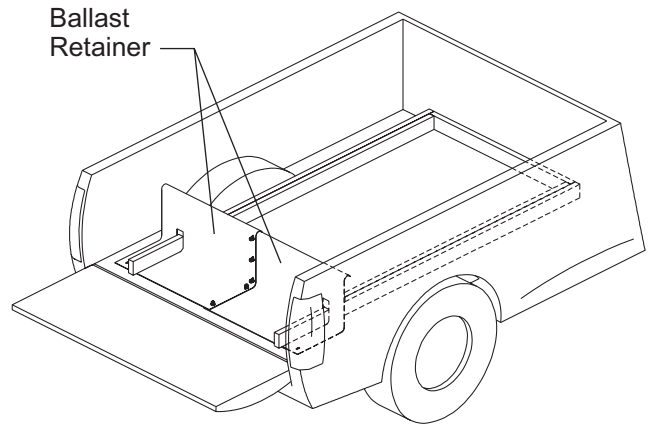
- The vehicle with the snowplow installed must comply with applicable Federal Motor Vehicle Safety Standards (FMVSS).
- The vehicle with the snowplow installed must comply with the vehicle manufacturer's stated gross vehicle and axle weight ratings (found on the driver side door cornerpost of the vehicle) 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 the snowplow equipment on a representative vehicle equipped with options commonly used for snowplowing and with 300 lb. of front seat occupant weight.
- Weight of front seat occupants can be adjusted above or below 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 required 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. Sand bags are recommended for use as ballast.



GETTING TO KNOW YOUR SNOWPLOW

MVP® SNOWPLOW

The MVP® snowplow consists of all the components that are readily removable from the vehicle as a unit. This includes the blade wings, lift frame, T-frame, hydraulic unit, and the 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 chains or the hydraulic hoses. When the lift frame is pinned to the stands and locked in place (see blade label or snowplow removal section of this manual), the complete UltraMount® snowplow can easily be moved around on most hard surfaces.

STEEL BLADE WINGS

The blade wings on your new snowplow are constructed of heavy gauge steel. To increase rigidity and strength, the blade wings are reinforced with several vertical ribs. The top edges are formed for added strength and improved appearance.

The blade comes equipped with a reinforced rubber snow deflector. This helps keep snow off the windshield and away from the radiator.

Each of the blade wings has a trip edge. Heavy-duty compression springs hold each trip edge in the plowing position (2 springs per blade for 8-1/2', 3 for 9-1/2'). The springs are a safety device which allow the trip edge to rotate back and ride over obstacles such as low curbs, manhole covers, etc. without damaging the snowplow, vehicle, or injuring the driver. The trip springs need no adjustment and offer protection in all blade wing positions.

Each wing has a replaceable high carbon steel cutting edge bolted to the trip angle. These cutting edges should be replaced when they are worn within 1" of the carriage bolts.

The blade also features large, adjustable disc-type skid shoes. These rotate 360° for longer wear and better blade flotation over all surfaces.

Your new blade's steel components are protected with a baked-on powder finish that resists cracking,

corrosion, scratching, and rust. It can be touched up when necessary.

Blade guides with replaceable flags are included with your complete snowplow. These help the operator to visualize the edges of the blade and aid in blade positioning.

T-FRAME AND LIFT FRAME

The wings are attached to the T-frame with a hinge pin, which allows the wings to extend and retract. Trip springs allow the trip angle located at the bottom of the blade to pivot backward 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 hydraulic unit is mounted on the front of the lift frame. The hoses remain connected to the hydraulic unit and the rams. The snowplow headlamps are also attached to the lift frame.

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 plus combination park and turn signals. A patented 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 snowplow plugs are connected, the vehicle headlamps will automatically switch to the snowplow headlamps when they are turned on.

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

Replacement 2E1 Seal Beam headlamps are available through your local WESTERN® outlet.

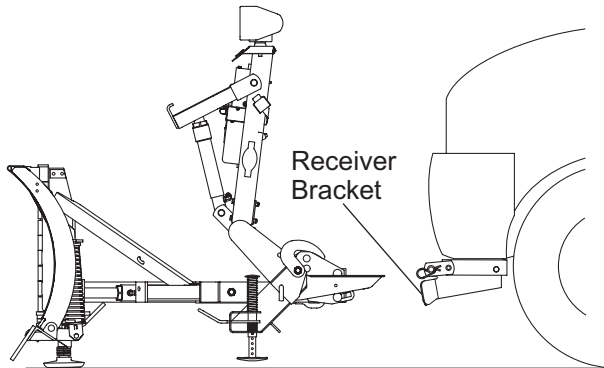
GETTING TO KNOW YOUR SNOWPLOW

VEHICLE MOUNT

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

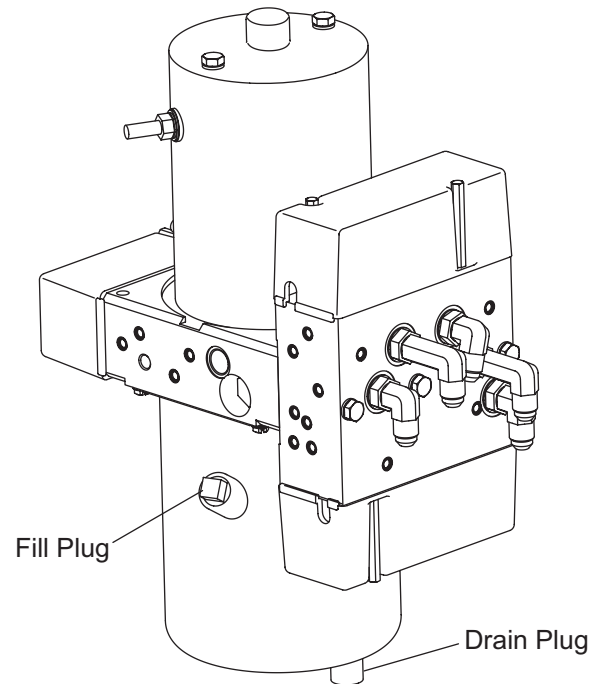
The mount is fastened to the underside of the vehicle frame and provides the primary connecting point between the snowplow and the vehicle.

Attached to the mount are two removable receiver brackets. The receiver brackets are attached to the mount with lock tabs and hairpin cotters. The receiver brackets are easily removed to provide even more road clearance during the non-plowing months of the year.



FloStat® HYDRAULIC SYSTEM

Western Products' FloStat® hydraulic system provides a fast and uniform speed of lifting and angling. The system raises the blade in two seconds, and all angling functions are less than five seconds. For hydraulic fluid type and filling instructions, see Hydraulic System in the Maintenance section of this Owner's Manual.



FloStat® Hydraulic Unit

System Capacity

FloStat Unit Reservoir	1-3/4 quarts
FloStat System Total	2-3/4 quarts

Pump Motor Specifications

12 volt DC with +/- connection
1700-1800 psi pump relief valve
3950-4050 psi angling relief valve
4.5" dia. 1.04 kw motor
.000477 GAL/REV Pump
Hydraulic Hose SAE 100R1

GETTING TO KNOW YOUR SNOWPLOW

CAB 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 MVP® snowplow is equipped with one of three special controls – the CabCommand 9-button hand-held control, CabCommand 6-button hand-held control or a joystick-style control. The controls allow you to go from a V-plow, to a scoop, to a standard straight-blade plow, all at the touch of a button or single-lever movement.

Each control has its own ON/OFF switch with an indicator light to show when the control is powered up. Your vehicle ignition (key) switch controls a fused circuit that powers your cab control directly from the battery.

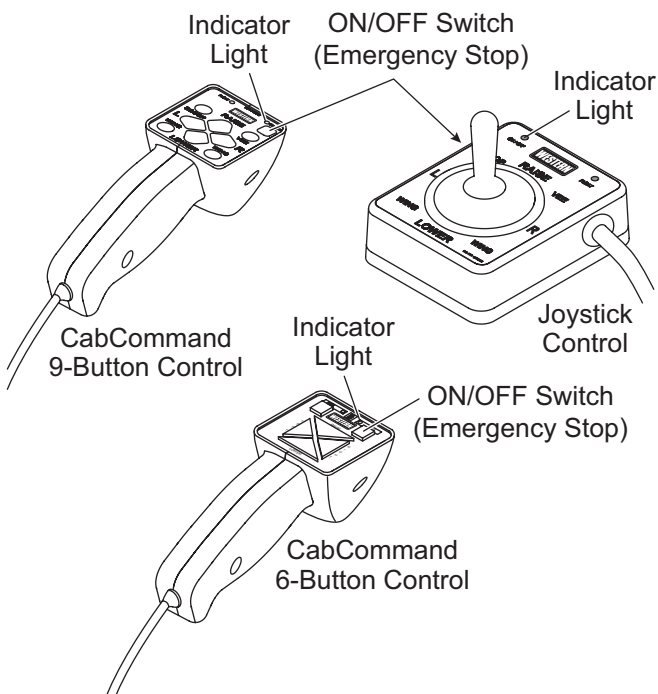
The ON/OFF switch on the cab control allows you to turn off the control and prevent blade movement even when the ignition switch is on. **The control ON/OFF switch serves as an emergency stop if required.**

All controls have on-board fuses. See Fuse Replacement in the Maintenance section of this Owner's Manual.

BLADE ACCESSORIES — OPTIONAL

Adapter Cable (PN 66760K)

The MVP® adapter cable modifies the MVP® harness to allow you to use a straight blade UltraMount® snowplow with a straight blade control (either a CabCommand or solenoid control).



MOUNTING SNOWPLOW TO VEHICLE

MOUNTING SNOWPLOW (ON)

⚠ WARNING

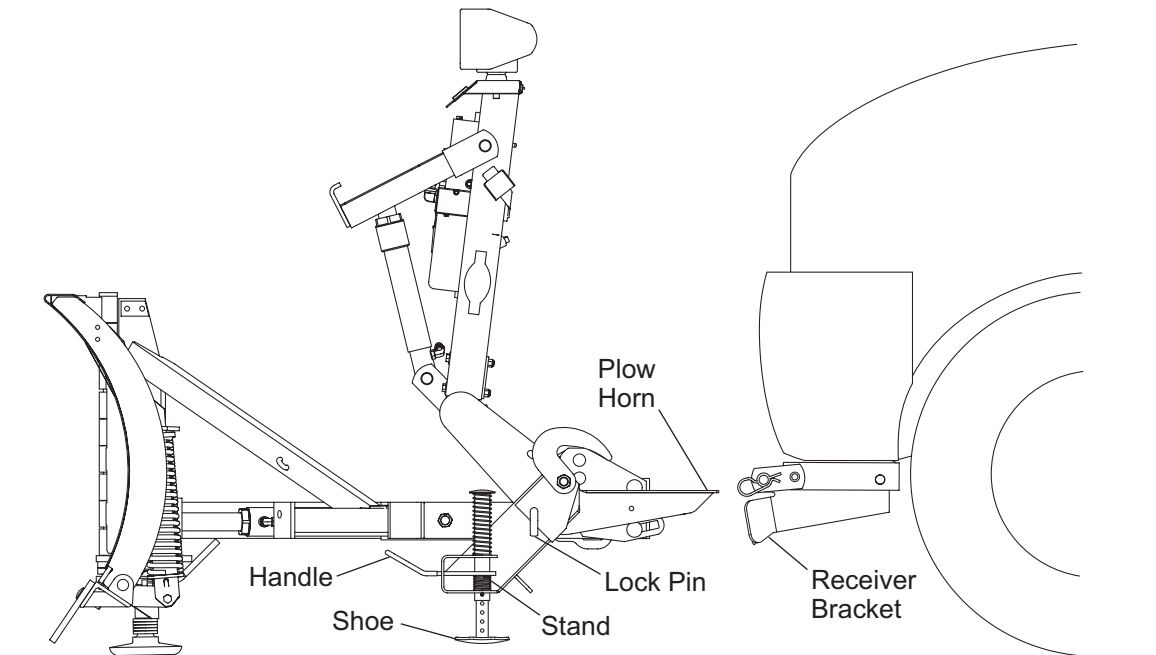
Keep 8' clear of the blade drop zone when it is being raised, lowered or angled. Do not stand between the vehicle and blade or directly in front of blade. If the blade hits you or drops on you, you could be seriously injured.

⚠ WARNING

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

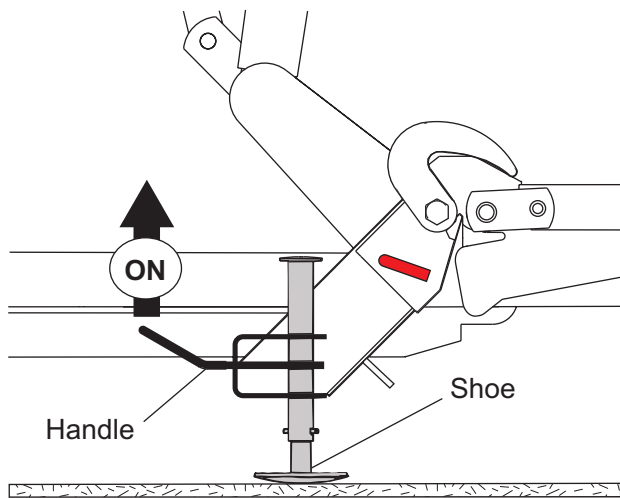
NOTE: Use dielectric grease to prevent corrosion on all connections.

- Remove the electrical covers from the plugs.
- Align vehicle receiver brackets with plow horns and drive vehicle slowly forward until plow horns fully seat inside receiver brackets.
- Turn vehicle ignition to off position.

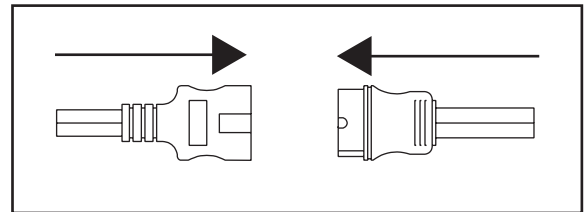


MOUNTING SNOWPLOW TO VEHICLE

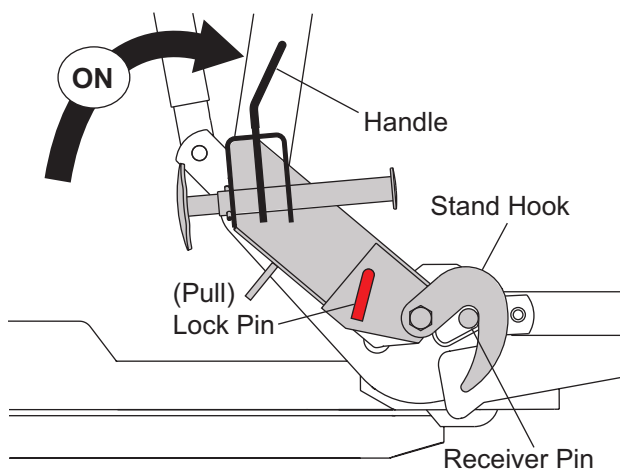
1. After seating plow horns in receiver brackets, pull handle up; shoe will lift off the ground.



3. Plug in electrical connections. Repeat steps 1 and 2 on other side of plow.



2. Pull and hold lock pin out; then rotate handle UP and release lock pin. It must lock into UPPER hole. Stand hook must grip receiver pin.



OPERATION

CabCommand HAND-HELD CONTROL (9 BUTTON)

⚠ 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.

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

The ON/OFF switch operates as an emergency stop if 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. The time-out period for the RAISE function is 3.0 seconds, while all others are 5.5 seconds.

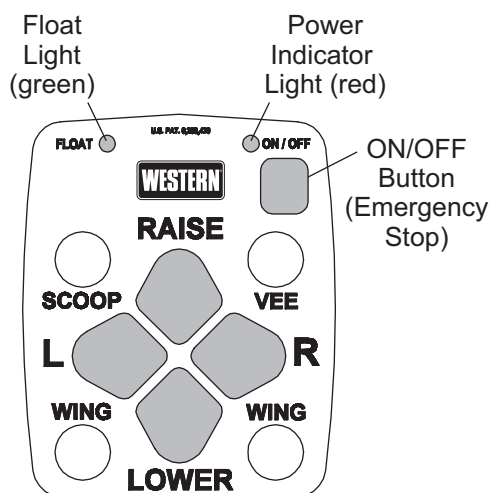
NOTE: If control function times out before desired blade movement is complete, release button and press again.

Automatic Shutdown

The control will automatically turn off after being idle for 20 minutes.

Smooth Stop

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



Control Functions

Raise, Lower, Float, Angle

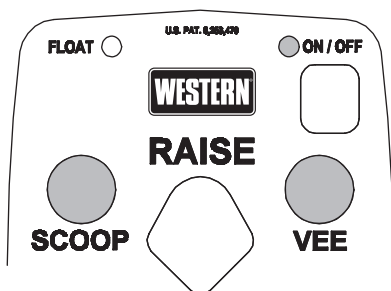
The four diamond-shaped buttons in the center of the control face, when pressed, will result in the following blade movements:

Function	Description of Operation
RAISE	Press this button to raise the snowplow and cancel the float mode. Function times out after 3.0 seconds.
LOWER	Press this button to lower the snowplow. Release the button to stop blade at desired height.
FLOAT	Press the LOWER button and hold 3/4 second to activate this mode. The FLOAT indicator light in the upper left corner of the control face will illuminate. The blade will lower to the ground surface and follow the contour of the surface as it dips or raises. Function does not time out, but 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 while the blade angles, but will return to float when angling is complete.
L – Angle Left	With wings in a straight line, press the L button to move both wings to the angle left position to cast snow to the driver's left side. The left wing retracts while the right wing extends. Function times out after 5.5 seconds.
R – Angle Right	With wings in a straight line, press the R button to move both wings to the angle right position to cast snow to the driver's right side. The right wing retracts while the left wing extends. Function times out after 5.5 seconds.

OPERATION

Scoop/Vee Blade Position

The two round buttons located to the left and right of the RAISE button move both wings at the same time into the following blade positions:

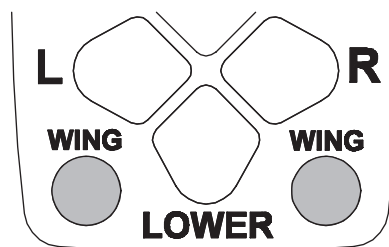


Function	Description of Operation
SCOOP	Press this button to extend both wings forward into the scoop position. Function times out after 5.5 seconds.
VEE	Press this button to retract both wings into the vee position. Function times out after 5.5 seconds.

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

Wing Positions

The two round buttons located to the left and right of the LOWER button move either wing independently of the other as described below.



Function	Description of Operation
L WING	Press the round WING button on the left side of the control to move the left wing. The first time the button is pressed after the control is turned on or another function is used, the wing will extend. Repeated use of the same button, without using another function, results in movement in the opposite direction from the previous movement. Function times out after 5.5 seconds.
R WING	Press the round WING button on the right side of the control to move the right wing. The first time the button is pressed after the control is turned on or another function is used, the wing will extend. Repeated use of the same button, without using another function, results in movement in the opposite direction from the previous movement. Function times out after 5.5 seconds.

OPERATION

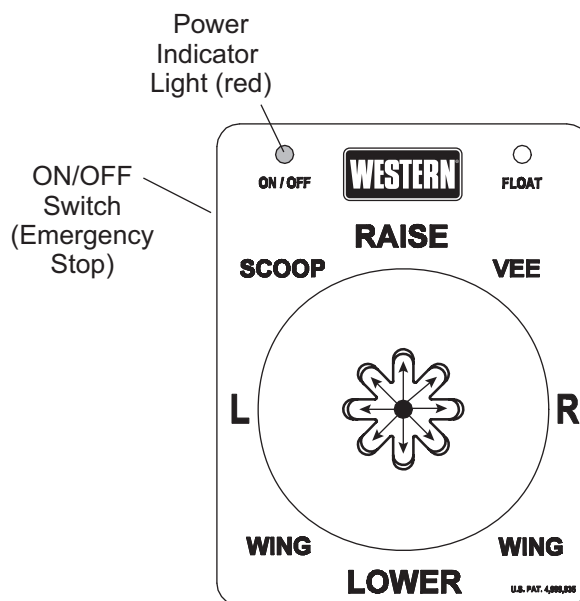
JOYSTICK CONTROL

⚠ 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.

1. Turn the vehicle ignition switch to the ON or the ACCESSORY position.
2. Move the slide switch on the side of the control to the ON position. The control ON/OFF indicator light glows red, indicating the control is on. The indicator light glows red whenever the control and the vehicle ignition switch are both on.

The ON/OFF switch operates as an emergency stop if 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. The time-out period for the RAISE function is 3.0 seconds, while all others are 5.5 seconds.

NOTE: If control function times out before desired blade movement is complete, release the lever to the center position, then move back into the desired function.

Control Lever Movement

From the center position, the control lever can be moved in one of eight (8) directions to control various movements of the snowplow blade. To change from one movement of the blade to another, the control lever must be moved back to the center position before selecting the desired function. Whenever the lever is released, it should spring back into the center position to stop any blade movement.

Automatic Shutdown

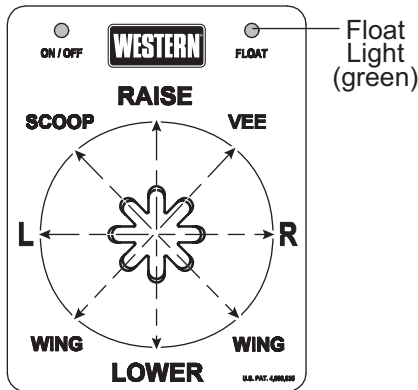
The control will automatically turn off after being idle for 20 minutes. To reactivate the control after a shut down, move the ON/OFF switch to OFF, then back to ON.

Smooth Stop

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

OPERATION

Control Functions



Raise, Lower, Float, Angle

Movement of the control lever in straight lines up and down or from side to side on the control body will result in the following blade movements:

Function	Description of Operation
RAISE	Move the control lever toward the top of the control body to raise the snowplow and cancel the float mode. Function times out after 3.0 seconds.
LOWER	Move the control lever toward the bottom of the control body to lower the snowplow. Release the lever to stop blade at desired height.
FLOAT	<p>Move the control lever to the LOWER position and hold 3/4 second to activate this mode. The FLOAT indicator light in the upper right corner of the control face will illuminate. The blade will lower to the ground surface and follow the contour of the surface as it dips or raises. Function does not time out; however, control will shut down after 20 minutes of nonuse.</p> <p>Move lever to the RAISE position momentarily to cancel float. Angling left or right will interrupt (stop) the float function while the blade angles, but will return to float when angling is complete.</p>
L – Angle Left	With wings in a straight line, move the control lever straight to the left to move both wings to the angle left position to cast snow to the driver's left side. The left wing retracts while the right wing extends. Function times out after 5.5 seconds.
R – Angle Right	With wings in a straight line, move the control lever straight to the right to move both wings to the angle right position to cast snow to the driver's right side. The right wing retracts while the left wing extends. Function times out after 5.5 seconds.

NOTE: If control function times out before desired blade movement is complete, release the lever to the center position, then move back into the desired function.

Scoop/Vee Blade Position

Move the control lever from the center position toward the “SCO” of SCOOP or the “EE” of VEE on the face of the control body. The use of either of these slots will cause both the left and right wings to move at the same time into the following blade positions:

Function	Description of Operation
SCOOP	Move the control lever toward the word, SCOOP, on the control face to extend both wings forward into the scoop position. Function times out after 5.5 seconds.
VEE	Move the control lever toward the word, VEE, on the control face to retract both wings into the vee position. Function times out after 5.5 seconds.

Wing Positions

Move the control lever from the center position toward the word, WING, on either side of the face of the control body. The use of either of these slots will allow movement of either wing independently of the other as described below.

Function	Description of Operation
L WING	When the control lever is moved to the left side of LOWER , the left wing will move either in or out. The first time the lever is moved into the slot after the control is turned on or another function is used, the wing will extend. Repeated use of lever in the same slot, without using another function, results in movement in the opposite direction from the previous movement. Function times out after 5.5 seconds.
R WING	When the control lever is moved to the right side of LOWER , the right wing will move either in or out. The first time the lever is moved into the slot after the control is turned on or another function is used, the wing will extend. Repeated use of lever in the same slot, without using another function, results in movement in the opposite direction from the previous movement. Function times out after 5.5 seconds.

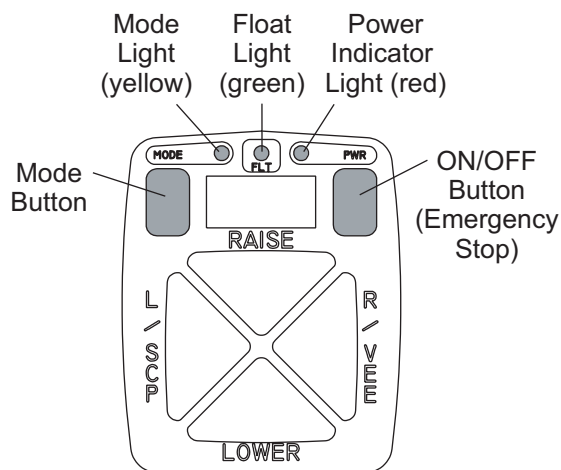
OPERATION

CabCommand HAND-HELD CONTROL (6 BUTTON)

⚠ WARNING

To prevent accidental movement of the blade, always push ON/OFF 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 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. **The ON/OFF button operates as an emergency stop if required.**



Function Time Outs

Except for the LOWER function, all functions automatically time out, or stop, after a period of time. This helps prevent excessive battery drain.

The RAISE function time-out period is 2.5 seconds, while all others are 4.25 seconds.

Automatic Shutdown

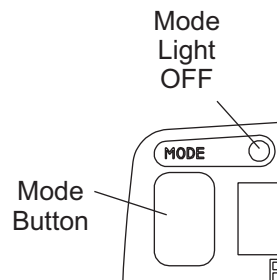
If the snowplow control is not used for 20 or more minutes, it will automatically turn off.

Smooth Stop

The control automatically allows the blade to coast to a stop. This results in a smoother operational “feel” and reduces shock to the hydraulic system, resulting in longer hose and valve life.

Straight Blade Mode (Default)

When the control is turned on, it automatically defaults to the straight blade mode. When the control is in the straight blade mode, the yellow MODE LIGHT near the MODE button in the upper left corner of the keypad is not illuminated or flashing.



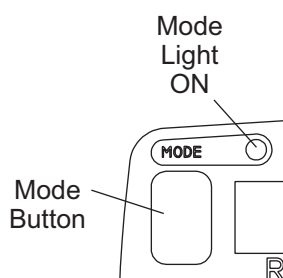
The following functions are performed in the straight blade mode:

STRAIGHT BLADE MODE	
BUTTON	DESCRIPTION OF OPERATION
RAISE	Press this button to raise the snowplow and to cancel the float mode. NOTE: Snowplow will automatically stop raising after 2.5 seconds. To resume raising the snowplow, release the button and press again.
LOWER	Press this button to lower the snowplow. NOTE: After reaching the desired height, release the button. Holding the button down for more than 3/4 second will activate the float mode (indicated by green FLT LIGHT), which allows the blade to move up and down to follow the contour of the surface being plowed.
L/SCP	Press this button to angle both wings to the left.
R/VEE	Press this button to angle both wings to the right.

OPERATION

Vee/Scoop Mode

To put the control into the vee/scoop mode, quickly press and release the MODE button. The yellow MODE LIGHT near the upper left corner of the keypad will light. Quickly pressing and releasing the MODE button will toggle the control between straight blade mode and vee/scoop mode.

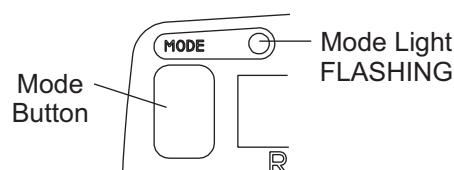


The following functions are performed in the vee/scoop mode:

VEE/SCOOP MODE	
BUTTON	DESCRIPTION OF OPERATION
RAISE	Press this button to raise the snowplow and to cancel the float mode. NOTE: Snowplow will automatically stop raising after 2.5 seconds. To resume raising the snowplow, release the button and press again.
LOWER	Press this button to lower the snowplow. NOTE: After reaching the desired height, release the button. Holding the button down for more than 3/4 second will activate the float mode (indicated by green FLT LIGHT), which allows the blade to move up and down to follow the contour of the surface being plowed.
L/SCP	Press this button to extend both wings to the scoop position.
R/VEE	Press this button to retract both wings to the Vee position.

Wing Mode

To put the control into the wing mode, press and hold the MODE button for about two seconds until the yellow MODE LIGHT near the upper left corner of the keypad is flashing. The L/SCP and R/VEE buttons are used to activate the four functions of the wing mode. The RAISE and LOWER buttons retain the same functions as the other modes.



To deactivate the wing mode, quickly press and release the MODE button. This will put the control in the straight blade mode.

The following functions are performed in the wing mode:

WING MODE	
BUTTON	DESCRIPTION OF OPERATION
RAISE	Press this button to raise the snowplow and to cancel the float mode. NOTE: Snowplow will automatically stop raising after 2.5 seconds. To resume raising the snowplow, release the button and press again.
LOWER	Press this button to lower the snowplow. NOTE: After reaching the desired height, release the button. Holding the button down for more than 3/4 second will activate the float mode (indicated by green FLT LIGHT), which allows the blade to move up and down to follow the contour of the surface being plowed.
L/SCP	Pressing this button the first time will retract the left wing. Pressing this button the next time will extend the left wing.
R/VEE	Pressing this button the first time will retract the right wing. Pressing this button the next time will extend the right wing.

OPERATION

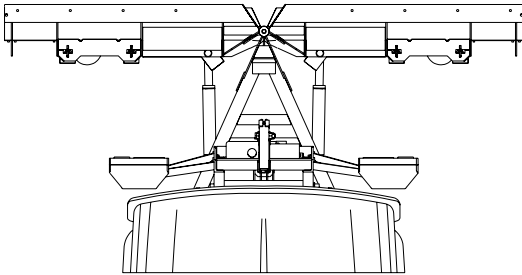
BLADE POSITIONS

NOTE: For best road clearance during transport, place the blade halfway between the straight and Vee positions. The scoop position is **NOT RECOMMENDED** during transport.

The MVP® snowplow can be used in five basic plowing positions:

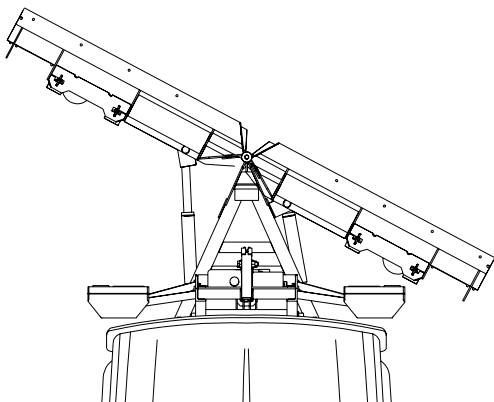
Straight Blade

Move both wings to form a straight blade for wide path plowing or “stacking” snow.



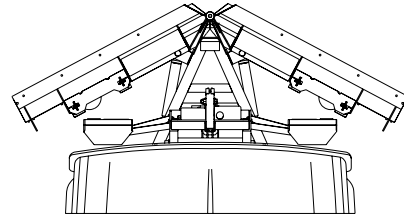
Angled Blade

Move one wing “OUT” and the other wing “IN” to form an angled blade in either direction for general plowing and widening.



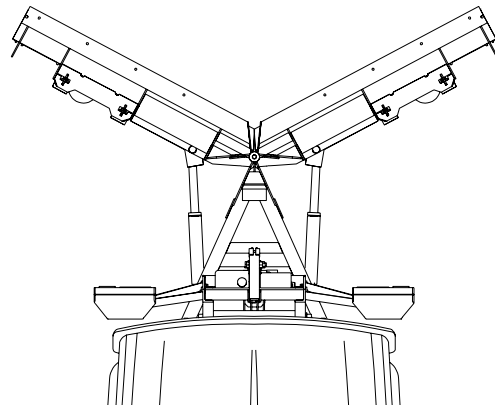
Vee Blade

Move both wings “IN” towards the vehicle for initial break through plowing and plowing paths or walkways.



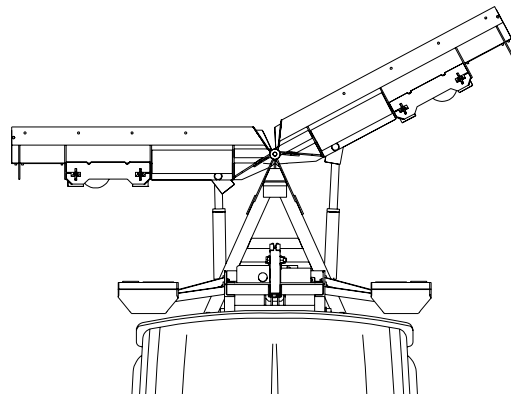
Scoop Blade

Move both wings “OUT” away from the vehicle to form a scoop to “carry” snow with minimum spilloff.



Dogleg Blade

Move one wing to straight blade position and the other “OUT” to scoop blade position for clean up of windrows.



OPERATION

SNOWPLOW HEADLAMP CHECK

With both 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 Maintenance section for instructions.
- Aim the vehicle headlamps with the snowplow removed from the vehicle.

DISC SHOE ADJUSTMENT

Recommended shoe adjustments:

1. For gravel surfaces—bottom surface of shoe should be 1/4" to 1/2" below the cutting edge.
2. For hard surfaces (concrete or asphalt)—bottom surface of shoe should be even with the cutting edge.

Adjustment Procedure:

1. Raise blade and place on sturdy blocking at least 6" tall.
2. Remove the linchpin and slide the shoe down out of the bracket.
3. Remove one or more washers from the shoe stem and reinstall the shoe into the bracket.
4. Place removed washers onto the shoe stem above the bracket.
5. Install the linchpin.

OPERATION

HYDRAULIC SYSTEM

The FloStat® hydraulic unit valve manifold has four relief valves built in to prevent damage to the snowplow or the vehicle if obstacles are hit. These valves are preset at the factory and do not need any adjustments unless the valve manifold is serviced. When the force against the blade causes pressure **in an extended ram** to exceed set limits, the relief valve opens allowing fluid to escape, and the ram plunger retracts.

For hydraulic fluid type and filling instructions, see Hydraulic System in the Maintenance section of this Owner's Manual.

BLADE DROP SPEED ADJUSTMENT

⚠ WARNING

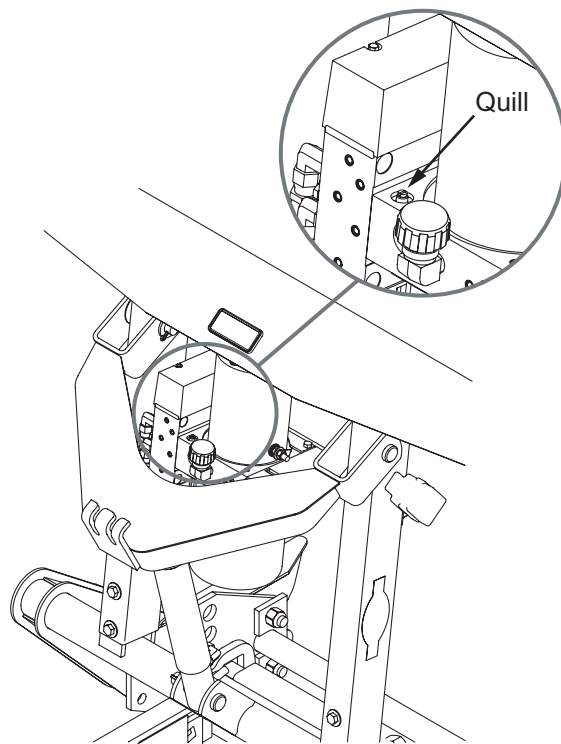
Keep 8' clear of the blade drop zone when it is being raised, lowered or angled. Do not stand between the vehicle and blade or directly in front of blade. If the blade hits you or drops on you, you could be seriously injured.

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

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

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

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



OPERATION

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.

NOTE: Use care when driving or entering driveways with the snowplow in the vee position. The outer ends of the cutting edges could contact the ground.

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

1. Completely raise the blade.
2. Place the blade half way between the Vee and the straight positions. This configuration allows:
 - Full light illumination,
 - Ample vehicle cooling, and
 - Ample travel height.
3. Verify the blade does not block the headlamp beams.
4. Press the CabCommand hand-held control ON/OFF switch (red control indicator light turns off) to lock the blade in place.

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.

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.

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.

OPERATION

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 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. 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. Use an angled blade or the Vee position to more effectively remove hard-packed snow.

Deep Snow

1. Move the blade into the Vee position and make an initial pass.
2. Bite into the edges using only partial blade width until job is cut down to size for full blade plowing. Continue to move the snow using angle, scoop, and/or dogleg positions.

Rule of thumb:

6" of snow – use entire blade width;

9" of snow – use 3/4 of the blade; and

12" of snow – use 1/2 of the 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. Do not exceed vehicles GVWR and GAWR.
5. For increased traction, use tire chains where legal.

Clearing Driveways

1. Head into the driveway with the blade angled plow snow away from buildings. Widen driveway by rolling snow away from buildings.
2. If the 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, straight blade, drive through the remaining snow to the building. Drop the blade and “back drag” snow away from the building one vehicle length. Repeat if necessary.
4. Back the vehicle to the building and plow forward removing the remaining snow from the driveway. Check municipal ordinances for disposal of snow.

OPERATION

Clearing Parking Lots

1. Clear areas in front of buildings first. With 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 with the blade in the Vee position.
3. With the blade in the scoop, angle, or dogleg position, plow successive strips lengthwise until the area is cleared and snow is “stacked” around outer edges.
4. If the snow pile becomes too deep for the truck to push, scoop away the edges of the pile until it can be pushed by the truck.

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.

REMOVING SNOWPLOW FROM VEHICLE

REMOVING SNOWPLOW (OFF)

⚠ 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.

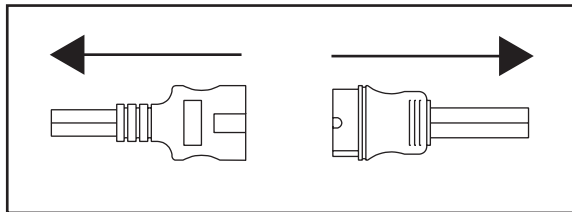
⚠ WARNING

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

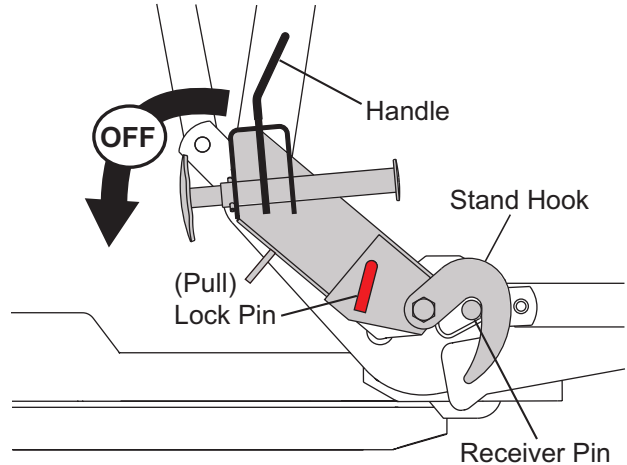
During the off season, the control and bracket can be removed. Disconnect the molded connector in the cab and store the control in the glovebox of the vehicle.

- Drive vehicle to desired plow storage location.
- Adjust blade to Vee position.
- Lower blade to ground.
- Turn vehicle ignition to off position.

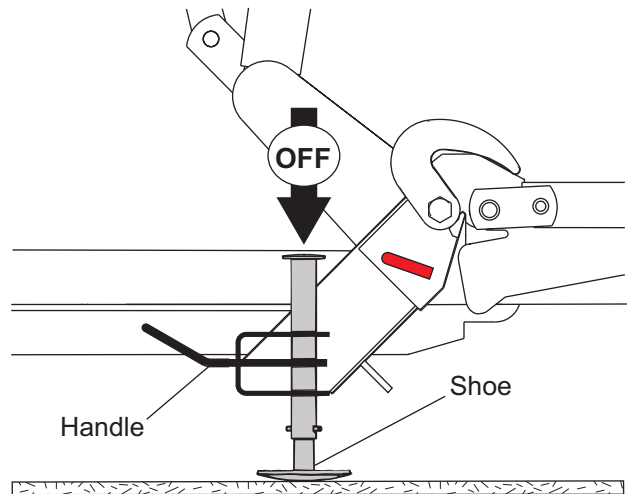
1. After lowering blade and turning control off, disconnect the electrical plugs.



2. Pull and hold lock pin out; then rotate handle DOWN and release lock pin. It must lock into LOWER hole.



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



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

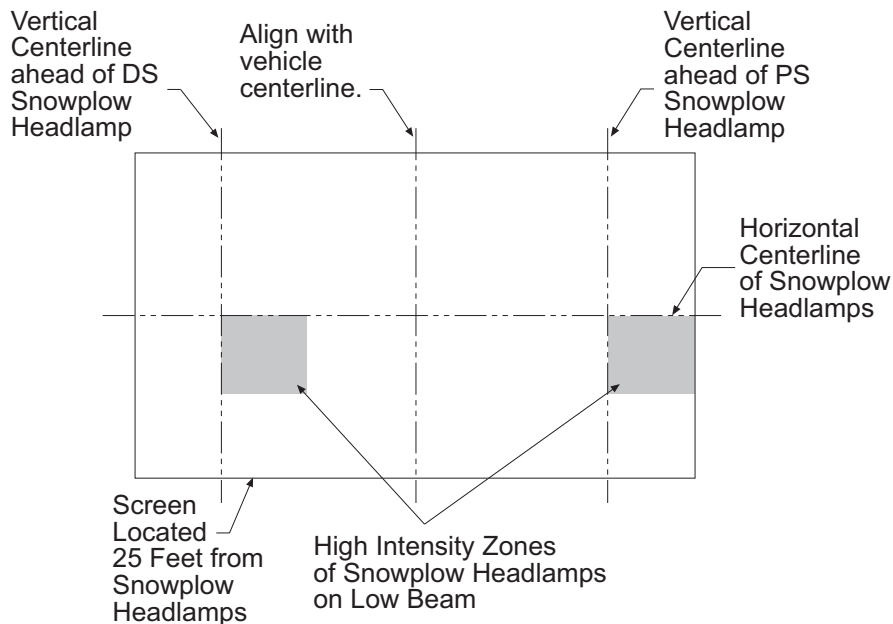
4. Place electrical plugs in storage position. On the snowplow, insert both plugs into boot on lift frame. On the vehicle, cover plugs with attached boots.

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

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 WESTERN® High Performance Hydraulic Fluid. (See Annual Fluid Change in this section of this Owner's Manual.)
- Replace any worn or damaged parts.
- Check all mounting points and tighten fasteners. Verify all cotter pins are in place.
- 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

NOTE: Coat all electrical plugs with dielectric grease.

- Clean and paint blade assembly as needed.
- Always store plow with blades in Vee position. This exposes the minimum amount of angle ram rods, and captures the least amount of hydraulic fluid in system.
- 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 rams to prevent rust.
- Lubricate all pivot points with general-purpose petroleum grease (for example, stand lock pin assembly and lower spring anchor).

MAINTENANCE AND ADJUSTMENTS

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.

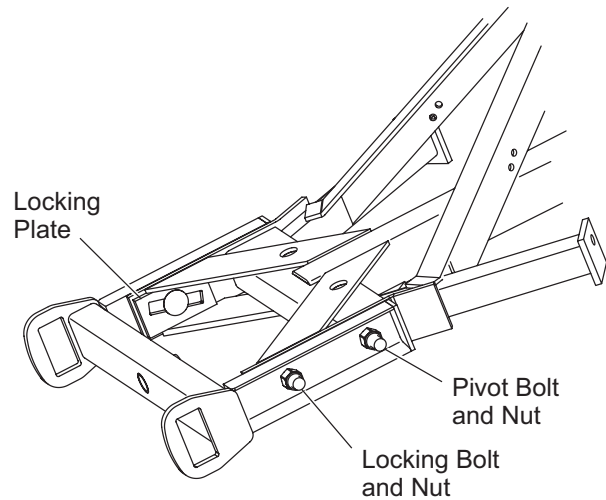
Your WESTERN® snowplow is designed for rugged, dependable service. Though, like the vehicle on which it is mounted, it needs a certain amount of regular care and maintenance. Check the following before and frequently during the plowing season:

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.

MAINTENANCE

3. Check all plugs and seals for fluid leaks. Repair as necessary.
4. Cutting Edge
 - To equalize wear, refer to the leveling adjustment procedure in the cutting edge section.
5. Blade Finish
 - If the powder-coated finish is nicked or scratched, repair the surface and paint with WESTERN® red or black paint in aerosol or quart can.

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



CUTTING EDGE

⚠ CAUTION

Servicing the trip springs without special tools and knowledge could result in personal injury. See your authorized WESTERN® outlet for service.

Leveling Adjustment Procedure

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

1. Plow must be installed on a properly ballasted vehicle, in the correct configuration.
2. Vehicle and plow must be on a level surface.
3. Temporarily remove the blade shoes during this adjustment procedure.
4. Place blade wings in scoop position on the ground with no tension on lift chains.
5. Loosen the locking bolts and the pivot bolts on the T-frame just enough to allow the lock plates to move back and forth freely. Do not loosen the bolts to the point where the square neck of the bolt loses engagement in the plate. (See following diagram.)

6. Raise and lower the blade several times. The cutting edge should be contacting the level surface across the full length of the cutting edge.
7. Move the locking plates rearward by hand as far as they will go and tighten the locking bolts and the pivot bolts to 250 ft-lbs.
8. Verify that the cutting edges remain in full contact with the ground while the wings are shifted from the scoop position to a Vee position. Reinstall blade shoes.

Adjustment for Cutting Edge Wear

During periods of heavy plowing activity the leveling adjustment should be performed as needed to provide even cutting edge wear.

1. Continue making leveling adjustments as outlined to provide for wear across the cutting edges.
2. When the lock plates have been moved as far forward as they can go, you have reached the end of the adjustment range for that configuration. Move the plow up to the next configuration, relocate the lock plates to the farthest rearward position and continue the leveling adjustment procedure.

Replace the cutting edge(s) on your MVP® blade when worn to within 1" of the carriage bolts.

MAINTENANCE

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.

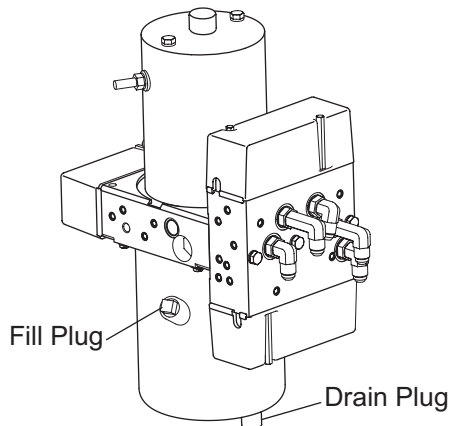
NOTE: Add fluid only when all rams are retracted.

NOTE: The Fill Plug must be installed at all times or damage to the FloStat® Hydraulic Unit will result.

1. Perform this operation with the snowplow attached to the truck on a hard level surface.
2. Lower blade to ground.
3. Activate control and move blade wings to Vee position. Activate control float function and manually collapse lift ram all the way. Turn off control.
4. Remove fill plug. Fill reservoir to top of fill hole with new hydraulic fluid. Replace fill plug.

USE

- WESTERN® High Performance Fluid to -25°F (-32°C)
- Automatic transmission fluid (ATF) DEXRON® III to -10°F (-23°C)
- Texaco 1537 Aircraft Hydraulic Fluid for temperatures below -25°F (-32°C)



Annual Fluid Change

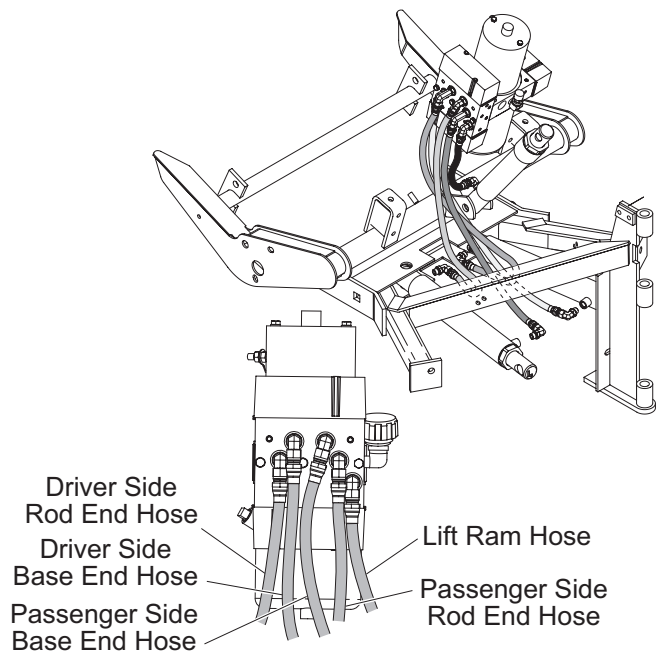
⚠ CAUTION

Change the fluid at the beginning of each plowing season. Failure to do this could result in condensation buildup during the non-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. Perform this operation with the snowplow attached to the truck on a hard level surface.
2. Lower blade to ground.
3. Activate control float function and manually collapse lift ram all the way. Turn control off.
4. Remove drain plug located in the bottom of the hydraulic reservoir.
5. Completely drain reservoir and replace drain plug.
6. Remove the angle ram hoses from the fittings on the hydraulic unit and place in a drain pan or suitable container. (See illustrations below and Hose or Fitting Replacement on next page.)



MAINTENANCE

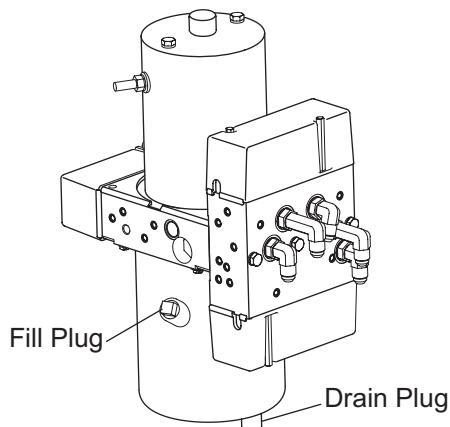
7. Manually angle the blade wings fully in each direction to remove fluid from the angle rams. Do not allow the hose from the opposite side of the ram to take fluid back in.
8. Reconnect the angle ram hoses to the proper fittings. (See illustrations on previous page and Procedure for Installing Hydraulic Fittings and Hoses on next page.)

⚠ WARNING

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

NOTE: Add fluid only when all rams are retracted.

9. With snowplow in Vee position and lift ram fully retracted, fill the reservoir with hydraulic fluid. Replace fill plug.



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

⚠ CAUTION

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

11. Fill reservoir to top of fill hole and replace fill plug.

⚠ CAUTION

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

USE

- WESTERN® High Performance Fluid to -25°F (-32°C)
- Automatic transmission fluid (ATF) DEXRON® III to -10°F (-23°C)
- Texaco 1537 Aircraft Hydraulic Fluid for temperatures below -25°F (-32°C)

12. Repeat steps 10 and 11 for the passenger side wing.

13. Turn control on and raise and lower the snowplow several times. Activate control float function and manually collapse lift ram all the way after each lowering of the blade. With all rams fully retracted, turn control off.

14. Fill reservoir to top of fill hole and replace fill plug.

FLUID CAPACITY

- FloStat® Unit Reservoir 1-3/4 quarts
- FloStat System Total 2-3/4 quarts

⚠ WARNING

To prevent accidental movement of plow, always turn the solenoid control to the OFF position when not using the mounted plow.

MAINTENANCE

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.

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: Over torquing JIC hose fitting ends will result in a fractured fitting.

Do not use any type of sealant or tape on the fittings or hoses. This could damage 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 to 1/4 turn to lock fitting in place. Final torque on the jam nut should be approximately 20 ft-lbs.

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.
3. Using two wrenches, hold the hose in position and tighten flare nut 1/8 to 1/4 turn beyond hand tight. Final torque on the flare nut should be approximately 20 ft-lbs.

Pump Inlet Filter Screen

Clean the pump inlet filter screen whenever the pump is removed. Replace the screen if it is damaged. Torque the pump mounting cap screws to 150-160 in-lbs.

MAINTENANCE

FUSE REPLACEMENT

The snowplow vehicle harness has a 10-amp 3AG fuse located in the vehicle cab under the dash. Power is available to the cab control whenever the vehicle ignition (key) switch is turned ON or in accessory position. The plow connections at the front of the vehicle do not have to be completed for the control ON/OFF indicator light to illuminate.

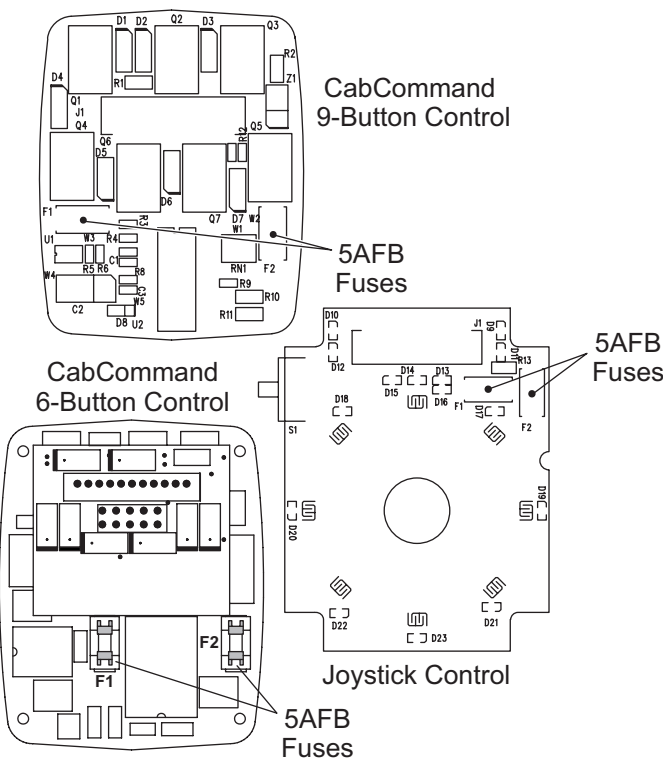
If a problem should occur and fuse replacement is necessary, the replacement fuse should be of the same value as the original. Installing a fuse of a larger value could damage the system.

See Harness Diagram on page 35 for fuse location.

⚠ CAUTION

Circuit board may be damaged by static electricity. Always touch ground before handling PC board.

The cab control contains two 5AFB printed circuit board (PCB) mounted fuses. These fuses are to protect the solid state devices that control the six solenoid valves and the motor relay coil. If the control does not function and the 10-amp fuse under the vehicle hood is not blown, one or both of these 5AFB PCB-mounted fuses may be blown.



If fuse F1 on the board is blown, the motor relay and solenoid coils on the main manifold block (1 cover) will not function.

If fuse F2 on the board is blown, the solenoid coils on the secondary manifold block (2 covers) will not function.

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 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 supply of WESTERN® Factory Original parts including WESTERN® hydraulic fluid, dielectric grease, common hoses, fasteners and relay.

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

- 10" Adjustable Wrench
- Pair of Pliers
- 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. Remember, your WESTERN® outlet is trained to

CONDITION	POSSIBLE CAUSE	CORRECTION
Motor does not run.	<ol style="list-style-type: none"> 1. Snowplow wire harnesses not connected. 2. Harness or cab control fuses blown. 3. Cab control malfunction or fault in wiring. 	<ol style="list-style-type: none"> 1. Properly connect both wire harnesses. See page 10. 2. Replace blown fuses. See pages 4, 30 and 35. 3. See WESTERN® outlet for repair information.
Motor will not shut off.	Motor relay or cab control malfunction or fault in wiring.	See WESTERN® outlet for repair information.
Snowplow will not raise or raises slowly or partially.	<ol style="list-style-type: none"> 1. Excess weight on the blade and A-frame. 2. Hydraulic fluid level low or wrong fluid is used. 3. Blown fuse in harness or cab control. 4. Vehicle battery weak or charging system malfunction. 5. Motor worn or damaged or fault in wiring. 6. Pump filter clogged, worn or damaged pump, or hydraulic system malfunction. 	<ol style="list-style-type: none"> 1. Remove built-up snow and ice or after-market accessories (excess weight). 2. Fill reservoir to proper level with recommended fluid. See pages 27 and 28. 3. Replace blown fuse. See pages 4, 30 and 35. 4. Replace battery and/or check charging system. 5. See WESTERN® outlet for repair information. 6. See WESTERN® outlet for repair information.
Snowplow angles or wings move slowly or partially.	<ol style="list-style-type: none"> 1. Hydraulic fluid level low or wrong fluid is used. 2. Vehicle battery weak or charging system malfunction. 3. Air in angle rams. 4. Angle rams damaged or leaking internally. 5. Motor worn or damaged or fault in wiring. 6. Pump filter clogged, worn or damaged pump, or hydraulic system malfunction. 	<ol style="list-style-type: none"> 1. Fill reservoir to proper level with recommended fluid. See pages 27 and 28. 2. Replace battery and/or check charging system. 3. Cycle wings to remove air from rams. 4. See WESTERN® outlet for repair information. 5. See WESTERN® outlet for repair information. 6. See WESTERN® outlet for repair information.

TROUBLESHOOTING GUIDE

CONDITION	POSSIBLE CAUSE	CORRECTION
Snowplow will not lower, lowers slowly, or will not float.	<ol style="list-style-type: none"> 1. Hydraulic fluid not correct for outside temperature. 2. Quill adjusted in too far. 3. Blown fuse in cab control. 4. Cab control or hydraulic system malfunction or fault in wiring. 	<ol style="list-style-type: none"> 1. Use recommended fluid. See pages 27 and 28. 2. Adjust quill out. See page 19. 3. Replace blown fuse. See pages 4, 30 and 35. 4. See WESTERN® outlet for repair information.
Snowplow lowers by itself or will not stay in raised position.	<ol style="list-style-type: none"> 1. Hydraulic fittings or hoses loose or damaged. 2. Cab control or hydraulic system malfunction. 	<ol style="list-style-type: none"> 1. Tighten or replace components or see WESTERN® outlet for repair information. 2. See WESTERN® outlet for repair information.
Wings will not lock hydraulically or hold position.	<ol style="list-style-type: none"> 1. Hydraulic fittings or hoses loose or damaged. 2. Air in angle rams. 3. Angle rams damaged or leaking internally. 4. Cab control or hydraulic system malfunction, or fault in wiring. 	<ol style="list-style-type: none"> 1. Tighten or replace components or see WESTERN® outlet for repair information. 2. Check fluid level and cycle wings to remove air from rams. 3. See WESTERN® outlet for repair information. 4. See WESTERN® outlet for repair information.
Snowplow does not perform the selected function or performs a different function.	<ol style="list-style-type: none"> 1. Hydraulic hose routing incorrect. 2. Cab control or hydraulic system malfunction, or fault in wiring. 	<ol style="list-style-type: none"> 1. See WESTERN® outlet for repair information. 2. See WESTERN® outlet for repair information.

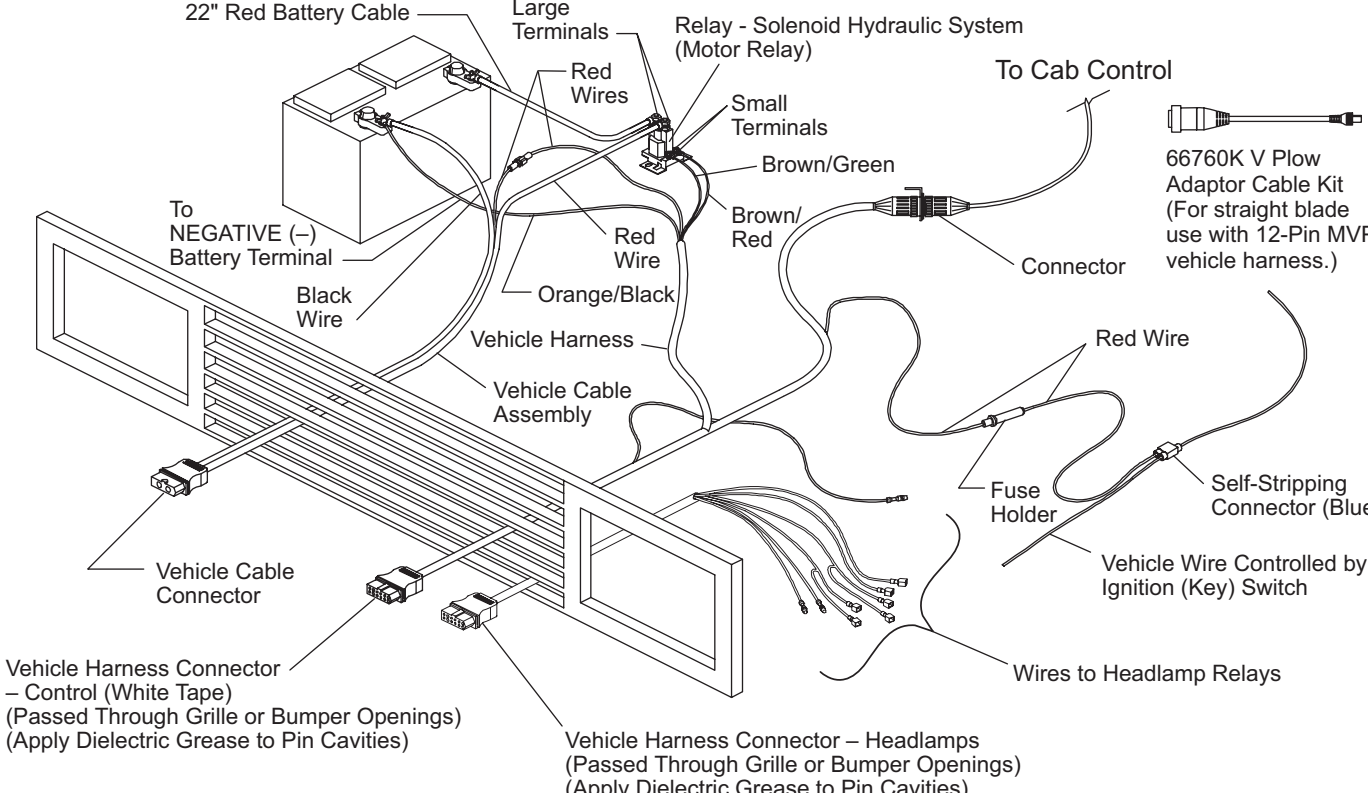
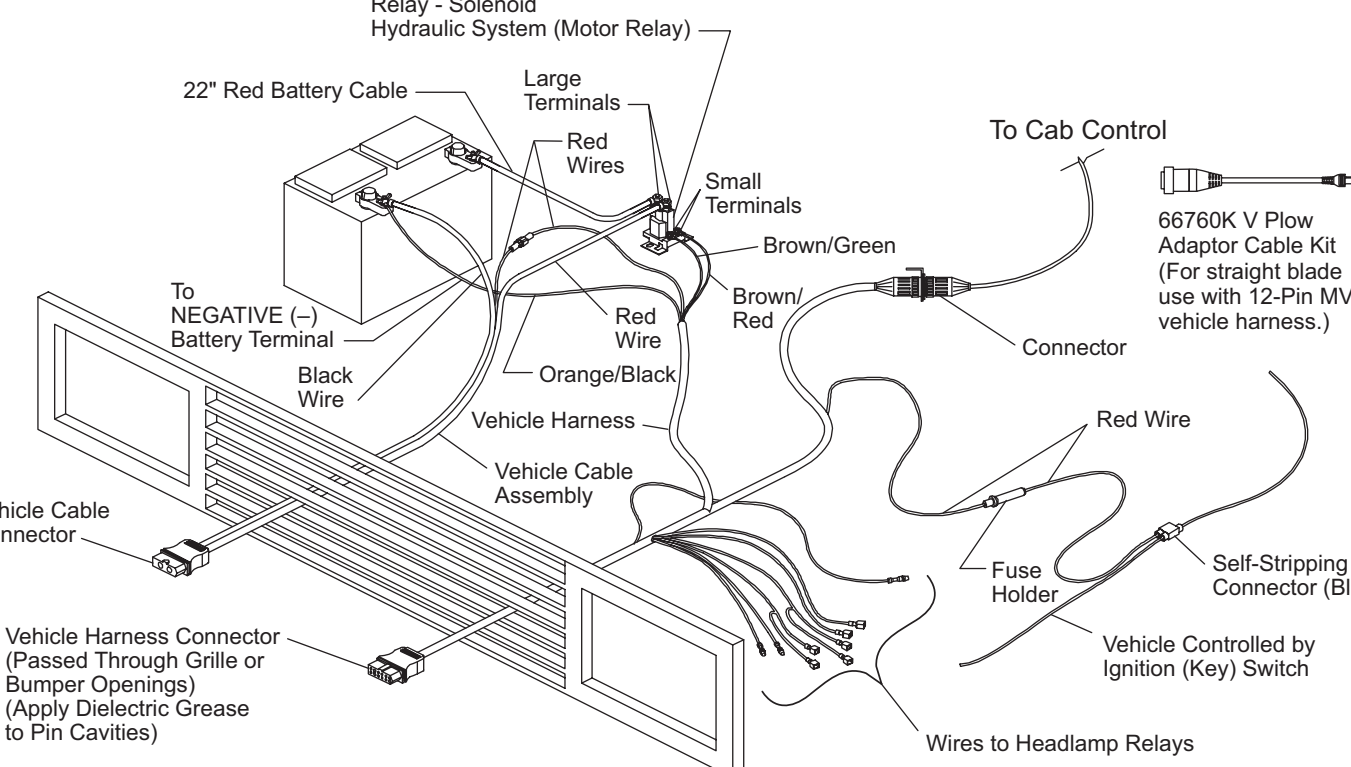
TROUBLESHOOTING GUIDE

CONDITION	POSSIBLE CAUSE	CORRECTION
Fluid leaks from hydraulic power unit.	<ol style="list-style-type: none"> 1. Reservoir overfilled. 2. Loose or damaged hydraulic fittings, hoses, plugs, or hardware. 	<ol style="list-style-type: none"> 1. Drain excess fluid and verify proper fluid level. 2. Tighten loose components, see WESTERN® outlet for repair information.
Fluid leaks from angle or lift rams.	<ol style="list-style-type: none"> 1. Angle or lift ram gland nut loose. 2. Hydraulic fittings or hoses loose or damaged. 3. Angle or lift rams damaged. 	<ol style="list-style-type: none"> 1. Tighten ram gland nut. 2. Tighten or replace components, or see WESTERN® outlet for repair information. 3. See WESTERN® outlet for repair information.
Snowplow wire harness or cab control fuses blown.	Motor relay or cab control malfunction, or fault in wiring.	See WESTERN® outlet for repair information.
Vehicle fuse blows.	Circuit overloaded, or fault in wiring.	See WESTERN® outlet for repair information.
Excessive load on vehicle electrical system while using snowplow.	<ol style="list-style-type: none"> 1. Hydraulic fluid not correct for outside temperature. 2. Quill adjusted in too far. 3. Vehicle battery weak or charging system malfunction. 4. Worn or damaged motor or pump, or fault in wiring. 	<ol style="list-style-type: none"> 1. Use recommended fluid. See pages 27 and 28. 2. Adjust quill out. See page 19. 3. Replace battery and/or check charging system. 4. See WESTERN® outlet for repair information.
Vehicle battery loses charge when snowplow is not being used.	<ol style="list-style-type: none"> 1. Vehicle battery weak. 2. Fault in wiring. 	<ol style="list-style-type: none"> 1. Replace battery. 2. See WESTERN® outlet for repair information.

TROUBLESHOOTING GUIDE

CONDITION	POSSIBLE CAUSE	CORRECTION
Snowplow headlamps operate irregularly or not at all (snowplow attached).	<ol style="list-style-type: none">1. Snowplow wire harnesses not connected.2. Blown fuse.3. Burned out bulbs or corroded sockets.4. Light relays not operating or fault in wiring.	<ol style="list-style-type: none">1. Properly connect both wire harnesses.2. See WESTERN® outlet for repair information.3. Replace bulbs, clean contacts.4. See WESTERN® outlet for repair information.
Vehicle headlamps operate irregularly or not at all (snowplow removed).	<ol style="list-style-type: none">1. Burned out bulbs.2. Blown fuse.3. Fault in wiring.	<ol style="list-style-type: none">1. Replace bulbs.2. See WESTERN® outlet for repair information.3. See WESTERN® outlet for repair information.
Vehicle daytime running lights (DRL) do not work (snowplow removed).	<ol style="list-style-type: none">1. Parking brake on.2. Power in DRL circuit has been interrupted.	<ol style="list-style-type: none">1. Fully release parking brake.2. Turn light and/or ignition switch on and off to cycle the DRL circuitry.

NOTE: For further information regarding diagnosis and repair of your WESTERN® snowplow, refer to the MVP® Mechanic's Guide available from your WESTERN® outlet. Your WESTERN® outlet is trained to service this snowplow with factory original parts.





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